

HAPC DRAFT Alternatives:

In April the Council forwarded the package of proposals to be formulated into alternatives by staff such that the Council will review the framework and select final alternatives for analysis including sites and management measures during this Council meeting (June, 2004).

Staff prepared a preliminary analysis of the following actions to address the Council's purpose and need. Within each Action there are several alternatives based on originally submitted proposals. Management measures originally linked to the various HAPC site based proposals were maintained within these alternatives. Additionally alternatives that had several proposals identifying the same area were combined into hybrids to address the Council's purpose and need. Proposed sites were evaluated to determine if they occurred in core fishing areas and the created hybrids modified some of the boundaries that may reduce the effect on the core fished areas.

Action 1 – Seamounts

Alternative 1: No action (no seamount HAPCs).

Alternative 2: Designate 5 named seamounts in the EEZ off Alaska as HAPCs (Dickens, Giacomini, Patton, Quinn, Welker)(Table 1 bold only). Site-specific habitat and species presence/absence data is available for these 5 named seamounts. (Based on proposal 4)

Management measures: All Council-managed bottom contact fishing would be prohibited within the proposed HAPC.

Core Fishing: A preliminary analysis does not demonstrate that any core fishing under any Council managed fisheries occurring within any of the 5 named seamounts.

Alternative 3: Designate 16 named seamounts in the EEZ off Alaska as HAPCs (Table 1). Sixteen named seamounts are within 3,000m in depth, which is the deepest recorded range of FMP species (Table 1 all). Although site-specific habitat and species presence/absence data is available for only 5 of these sites, species composition can be inferred for the 11 unexplored seamounts. (Based on proposal 4).

Management measures: All Council-managed bottom contact fishing would be prohibited within the proposed HAPC.

Core Fishing: A preliminary analysis does not demonstrate any core fishing under any Council managed fisheries occurring within the total seamounts named in Table 1.

Table 1. Named Seamounts HAPC Geographic Coordinates and Area.

#	Named Seamount	Latitude	Longitude	Depth (m)	Area (nm ²)	#	Named Seamount	Latitude	Longitude	Depth (m)	Area (nm ²)
1	Bowers Seamount	54.1500 N	174.7000 E	2268	28.9	10	Kodiak Seamount	57.0000 N	149.5000 W	2176	158.3
		54.0700 N	174.7000 E					57.0000 N	149.1000 W		
		54.0700 N	174.8700 E					56.8000 N	149.5000 W		
		54.1500 N	174.8700 E					56.8000 N	149.1000 W		
2	Brown Seamount	55.0000 N	138.8000 W	1390	166.6	11	Odessey Seamount	54.7000 N	150.0000 W	1657	209.8
		55.0000 N	138.4000 W					54.7000 N	149.5000 W		
		54.8000 N	138.8000 W					54.5000 N	150.0000 W		
		54.8000 N	138.4000 W					54.5000 N	149.5000 W		
3 4	Chirikof & Marchand Seamounts	55.1000 N	153.7000 W	2560	2248.4	12	Patton Seamount	54.7200 N	150.6000 W	168	94.3
		55.1000 N	151.0000 W	2524				54.7200 N	150.3000 W		
		54.7000 N	153.7000 W					54.5700 N	150.6000 W		
		54.7000 N	151.0000 W					54.5700 N	150.3000 W		
5	Dall Seamount	58.3000 N	145.8000 W	2507	949.9	13	Quinn Seamount	56.4500 N	145.4000 W	658	200.9
		58.3000 N	144.9000 W					56.4500 N	145.0000 W		
		57.7500 N	145.8000 W					56.2000 N	145.4000 W		
		57.7500 N	144.9000 W					56.2000 N	145.0000 W		
6	Denson Seamount	54.2200 N	137.6000 W	927	286.7	14	Sirius Seamount	52.1000 N	161.1000 W	1929	167.0
		54.2200 N	137.1000 W					52.1000 N	160.6000 W		
		53.9500 N	137.6000 W					51.9500 N	161.1000 W		
		53.9500 N	137.1000 W					51.9500 N	160.6000 W		
7	Derickson Seamount	53.0000 N	161.5000 W	2890	218.4	15	Unimak Seamount	53.8000 N	162.7000 W	1308	128.5
		53.0000 N	161.0000 W					53.8000 N	162.3000 W		
		52.8000 N	161.5000 W					53.6500 N	162.7000 W		
		52.8000 N	161.0000 W					53.6500 N	162.3000 W		
8	Dickins Seamount	54.6500 N	137.1500 W	427	147.0	16	Welker Seamount	55.2300 N	140.5500 W	618	161.5
		54.6500 N	136.8000 W					55.2300 N	140.1600 W		
		54.4500 N	137.1500 W					55.0300 N	140.5500 W		
		54.4500 N	136.8000 W					55.0300 N	140.1600 W		
9	Giacomini Seamount	56.6200 N	146.5300 W	618	163.9						
		56.6200 N	146.1200 W								
		56.4200 N	146.5300 W								
		56.4200 N	146.1200 W								

Action 2 – Gulf of Alaska (GOA) Corals

Alternative 1: No action (no GOA coral HAPCs).

Alternative 2: Designate three sites along the continental slope at Sanak Island, Albatross, and Middleton Island as HAPCs. These sites are identical to proposed closure areas that were delineated in Alternative 5a for the EFH EIS. These areas were proposed based on anecdotal information from trawl captains that the area is likely rockfish habitat and relatively unfished. (Based on Proposals 5,6,7)

Management measures: These areas would be for designation only, with a recommendation for further research.

Core Fishing: HAPC designation would not restrict any of the current FMP managed fishing practices.

Recommended Research Concepts: Prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist within these sites. Evaluate the benthic features in this section of the GOA slope. Support ongoing research for rockfish abundance. Design and conduct applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat. Support continued research on how fishing affects use and productivity, and how different levels of fishing intensity and gear effects influence productivity of habitats.

Table 2. Locations of proposed HAPC designations within the central Gulf of Alaska for corals.

Proposed HAPC Designation Area	Latitude	Longitude	Management	NOAA Chart number	Area
Sanak Island	54.0000N 53.8800N 54.0800N 54.2100N	163.2500W 163.2500W 162.2000W 162.2000W	Designation	500	279 nm ²
Albatross Banks	56.2700N 56.1900N 56.1700N 56.2700N	153.3300W 153.3300W 152.6700W 152.6700W	Designation	500	122 nm ²
Middleton Island	59.2500N 59.1700N 59.1700N 58.2500N	147.0000W 147.0000W 146.5000W 146.5000W	Designation	500	85 nm ²

Alternative 3: Designate nine sites at Cape Ommaney, Dixon Entrance, Fairweather Ground Northwest, and at Fairweather Southern as HAPC, (management measures for 6 areas and designate 3 areas as HAPC (Table 3)). Site-specific habitat and species presence/absence data is available for these areas. These sites are in areas where concentrations of *Primnoa* were documented using a manned submersible conducting groundfish stock assessments and researching the effects of fishing gear on benthic habitats. During these investigations, rockfish and other managed species were observed in association with high relief corals. Disturbance to these fragile corals was observed *in situ*, including derelict fishing gear contacting the coral. (The management sites are modifications of Proposal 8 by the HAPC technical subgroup 5/5/04, the staff hybrid recommends these original areas)

Management measures: All Council-managed bottom contact fishing would be prohibited within 6 subareas within the 3 HAPC designated sites. Council will need to clarify if this would exclude any NMFS research with bottom contact gear (bottom trawl or longline surveys) in the future.

Core Fishing: Within the six managed HAPC sites, there would be minimal effect on the halibut, demersal rockfish, sablefish hook and line fisheries. The technical subcommittee selected these refined boundaries to reduce the impacts on core fishing areas. The 3 larger designations- only sites would not have an impact on any other Council managed fisheries.

- 1) Cape Ommaney Site. *Primnoa* sp. (red tree coral) colonies are concentrated on a series of small pinnacles about 28 km west of Cape Ommaney, Baranof Island, Alaska. Red tree coral (*Primnoa* sp.) is located on bedrock and large boulders at depths between 201 and 256 m. Several hundred colonies were observed at this site and many were greater than 1 m in height. Several sections of derelict longline gear were observed at the study site and damage to several colonies was evident. The majority of colonies were attached to the seafloor and undamaged. HAPC designation would apply to the coordinates in the table above with an area of 4.0 nm². This area was identified by submersible research dives, and provided a buffer encompassing the bottom feature thought to have coral present. The managed area is a smaller component of the designation area that would prohibit bottom contact gear within the southern end of the feature while allowing historic fishing to occur within the 100 fathom contour. The subarea with management restrictions is 0.93 nm².
- 2) Dixon Entrance Site. In 1997, NMFS/AFSC/Auke Bay Laboratory scientists conducted submersible dives with the DSV *Delta* in two areas of Dixon Entrance where large catches of *Primnoa* sp. coral were collected as bycatch during triennial groundfish surveys. Submersible observations confirmed the presence of a series of dense *Primnoa* sp. concentrations. Additionally, two sites in this area sampled as part of the Auke Bay Laboratory's sablefish stock assessment program have consistently produced the highest incidental long line catches of *Primnoa* sp. coral in the Gulf of Alaska since 1989. Red tree coral is located on scattered large boulders at depths between 150 and 380 m. Several hundred colonies were observed at the submersible sites and 163 colonies have been collected as bycatch at the two survey sites since 1989. Many colonies were greater than 1 m in height. The majority of colonies at the submersible site were attached to the seafloor and undamaged. The area in the above table would have the management measures applied with an overall area of 45.8 nm².
- 3) Fairweather Ground Sites. In 2001, NMFS/AFSC/Auke Bay Laboratory scientists conducted submersible dives with the DSV *Delta* in areas of the Fairweather Grounds where large catches of *Primnoa* sp. coral were collected as bycatch during triennial groundfish surveys. Submersible observations confirmed the presence of a series of dense *Primnoa* sp. concentrations. Red tree coral is located on scattered large boulders at depths between 150 and 200 m. Colonies were observed at the submersible sites and distributed throughout the dive transects. Many colonies were greater than 1 m in height. The majority of colonies at the submersible site were attached to the seafloor and undamaged. The north and south sites as proposed in the table above would be designated as HAPC and include an area of , and respectively. 13.0 nm² and 23.3 nm². The committee suggested modifications to both the northern and southern boxes within the existing proposal. In the Northern site, the boundaries encompass two sections seen in side scan sonar that have rough rocky habitat, and between the two features there are sandy bottoms that have fishing effort. The committee recommended splitting the Northern site into two separate boxes to allow the halibut fisherman to fish the sandy bank, while protecting the rocky habitat that has observed coral densities. The committee additionally suggested modifying the southern Fairweather site to be separated into two areas to protect the coral features while allowing the fisheries to occur in their historic areas. The left site within the southern box would be triangular to encompass the 3 submersible dives. The right side within the southern box would be a rectangular box the submersible site.

Table 3. Locations of proposed HAPC sites within southeast Gulf of Alaska.

Proposed HAPC Area	Latitude	Longitude	Management	NOAA Chart number	Area
Cape Ommaney	56.2100N 56.1600N 56.1600N 56.2100N	135.1300W 135.1300W 135.0900W 135.0900W	Designation	17320	3.3 nm x 1.2 nm (4.0 nm ²)
Fairweather Ground NW Area	58.4700N 58.3700N 58.3700N 58.4700N	139.3300W 139.3300W 139.2600W 139.2600W	Designation	16760	6.2 nm x 2.1 nm (13.0 nm ²)
Fairweather Ground Southern Area	58.2600N 58.2600N 58.2200N 58.2200N	138.8600W 139.1500W 139.1500W 138.8600W	Designation	16760	9.3 nm x 2.5 nm (23.3 nm ²)
Dixon Entrance	54.6300N 54.5600N 54.6300N 54.5600N	133.1800W 133.1800W 132.8700W 132.8700W	Management applied	17400	10.9 nm x 4.2 nm (45.8 nm ²)
Cape Ommaney	56.1600N 56.1600N 56.1800N 56.1900N	135.1300W 135.1200W 135.1000W 135.1200W	Management applied	17320	0.93 nm ²
Fairweather Ground NW Area 1	58.4600N 58.4400N 58.4400N 58.4600N	139.3100W 139.3100W 139.3000W 139.3000W	Management applied	16760	0.44 nm ²
Fairweather Ground NW Area 2	58.4000N 58.3800N 58.3800N 58.4000N	139.3100W 139.3100W 139.2500W 139.2500W	Management applied	16760	2.51 nm ²
Fairweather Ground Southern Area 1	58.2600N 58.2200N 58.2600N	139.1500 W 138.9900 W 138.9900 W	Management applied	16760	6.52 nm ²
Fairweather Ground Southern Area 2	58.2500N 58.2300N 58.2300N 58.2500N	138.9000 W 138.9000 W 138.8800 W 138.8800 W	Management applied	16760	0.52 nm ²

Alternative 4: Alternative 2 plus Alternative 3.

Action 3 – Aleutian Island Corals

Alternative 1: No action (no Aleutian Islands coral HAPCs).

Alternative 2: Designate six coral garden sites within the Aleutian Islands as HAPCs.

In 2002, NMFS/AFSC scientists discovered unique habitat in the central Aleutian Islands consisting of high density “gardens” of corals, sponges, and other sedentary invertebrates. This habitat had not been previously documented in the North Pacific Ocean or Bering Sea and appeared to be particularly sensitive to bottom disturbance. Garden habitat was observed in situ with the DSV Delta and was found at 9 of 40 dive locations. Garden habitat was found at depths between 150-365m and can be distinguished from other coral habitat in that the seafloor is completely covered by sedentary invertebrates including hydrocorals, gorgonian and alcyonacean corals, and sponges. These gardens are similar in structural complexity to tropical coral reefs with which they share several important characteristics including a rigid framework, complex vertical relief, and high taxonomic diversity. Each coral garden area warrants consideration as a HAPC based on the specific characteristics of each site.

Core fishing was analyzed with data by target fishery from 1998-2002. These data were gridded to 10km² for an initial examination of “core fishing”. Catch was broken into low, medium, medium-high, and high categories. Core fishing was defined as those grids in the upper 50% (medium-high and high) by extrapolated catch (or legal males retained in the case of Golden king crab). Potential HAPC areas that were found to contain core fishing were then analyzed using the original point data. Hybrid HAPC areas were then developed, if necessary, to minimize overlap with core fishing areas.

Most of the Aleutian Island proposals centered on the protection of coral garden sites delineated by NMFS/AFSC scientists. The boundaries necessary to protect these areas varied between proposals from three to five miles or more. After discussion with representatives from longline and trawl fisheries, staff determined that a one-mile buffer would be sufficient to protect coral garden sites from incidental disturbance due to bottom contact fishing gear.

- 1) Adak Canyon is a large, geologically active submarine canyon on the south end of Adak Strait. Eastern flank of the canyon is rich in corals and other sedentary invertebrates. The area contains a series of small coral gardens on the island arc slope between the 150-300m. (Proposals 9, 16, 19)

The Adak Canyon hybrid HAPC area would include components of the NMFS, AMCC, and MCA proposals.

Management measures: All Council-managed bottom contact fishing would be prohibited within the NMFS HAPC area. In addition, a portion of the AMCC site to the west and MCA site to the east could be designated as HAPC with no management measures attached. The AMCC & MCA proposal provided anecdotal information regarding the presence of coral habitat and provides a focus for further research.

Core Fishing Analysis: The proposed boundaries for the managed component of the Adak Canyon HAPC hybrid could have a low effect on the sablefish/turbot longline fishery, a medium effect on golden king crab fishery, and a medium-high effect on pacific cod longline fishery in the lower portion. The hybrid area reduces the effect on core fishing from a high effect on sablefish/turbot longline fishery in AMCC proposal and avoids high effect pacific cod longline fishery from MCA proposal. The designation-only sites would have no impact on Council-managed fisheries.

Recommended Research Concepts: Prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist within these sites. Evaluate the benthic features in this section of the Aleutian Islands. Support ongoing research for rockfish abundance. Design and conduct applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat. Support continued research on how fishing affects use and productivity, and how different levels of fishing intensity and gear effects influence productivity of habitats.

- 2) Cape Moffett: The Cape Moffett area contains series of small coral gardens on the island arc slope between 150-250m. (Proposals 11, 16, 19)

The Cape Moffett hybrid HAPC area would include components of the MCA, NMFS, Oceana, and TOC proposals.

Management measures: The Cape Moffett hybrid HAPC area would be a one-mile box centered on coral garden sites, as well as modified MCA sites to the east and west of the coral garden sites. All Council-managed bottom contact fishing would be prohibited within the 1-mile box to provide protection for coral garden sites. The modified MCA sites would have no management measures attached. The MCA proposal provided anecdotal information regarding the presence of coral habitat and provides a focus for further research.

Core Fishing Analysis: The Cape Moffett closure could have a low effect on golden king crab and pacific cod pot fisheries and a medium effect on the sablefish/turbot longline fishereis. It could have a medium-high effect on pacific cod trawl. Reducing the size of the managed area to 1 mile reduced the impact on fisheries in the area. The potential effect on the small boat fleet (<60 feet) is not known. The designation-only sites would have no impact on Council-managed fisheries.

Recommended Research Concepts: Prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist within these sites. Evaluate the benthic features in this section of the Aleutian Islands. Support ongoing research for rockfish abundance. Design and conduct applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat. Support continued research on how fishing affects use and productivity, and how different levels of fishing intensity and gear effects influence productivity of habitats.

- 3) Bobrof Island: The Bobrof Island area contains series of small coral gardens on the island arc slope between 150-250m. (Proposals 11, 13, 19)

The Bobrof Island hybrid HAPC area would include components of the NMFS, Oceana, and TOC proposals.

Management measures: All Council-managed bottom contact fishing would be prohibited within the 1-mile box to provide protection for coral garden sites. The larger three-mile box would have no management measures attached. This larger three-mile box, which corresponds with the NMFS & Oceana proposals, provides a focus for further research.

Core Fishing Analysis: The Bobrof Island closure could have a low effect on pacific cod pot and golden king crab fisheries and a medium effect on sablefish/turbot longline fishery. The designation-only sites would have no impact on Council-managed fisheries.

Recommended Research Concepts: Prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist within these sites. Evaluate the benthic features in this section of the

Aleutian Islands. Support ongoing research for rockfish abundance. Design and conduct applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat. Support continued research on how fishing affects use and productivity, and how different levels of fishing intensity and gear effects influence productivity of habitats.

- 4) Semisopchnoi Island: The Semisopchnoi Island area contains a submarine volcano, Amchixtam Chaxsxii, whose summit is at ~115 m, with an overall height of 580m. Lava flows extend 14 km downslope to the southeast of the volcano. Strong currents were observed. Coral garden habitat exists on the west side of volcano from the summit to a depth of 365m. NMFS scientists suspect the entire undersea volcano is likely covered with coral garden habitat. Large *Primnoa* spp. colonies present at 365m indicate that the submarine volcano may not have erupted within the last several hundred years. (Proposals 11, 12, 13, 18, 19)

The Semisopchnoi Island Hybrid HAPC area would include components of the MCA, NMFS, Oceana, and TOC proposals.

Management measures: All Council-managed bottom contact fishing would be prohibited within the 1-mile box to provide protection for coral garden sites. This closure would encompass the entire submarine volcano. In addition, the MCA site at Semisopchnoi (which corresponds to the ten-mile SSL closures around Petrel and Pochnoi Points) could be designated as HAPC with no management measures attached. The MCA proposal provided anecdotal information regarding the presence of coral habitat and provides a focus for further research.

Core Fishing Analysis: The Semisopchnoi I. closure would have a low effect on sablefish/turbot longline and golden king crab fisheries. The designation-only sites would have no impact on Council-managed fisheries.

Recommended Research Concepts: Prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist within these sites. Evaluate the benthic features in this section of the Aleutian Islands. Support ongoing research for rockfish abundance. Design and conduct applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat. Support continued research on how fishing affects use and productivity, and how different levels of fishing intensity and gear effects influence productivity of habitats.

- 5) Great Sitkin: The Great Sitkin Island area contains series of small coral gardens on the island arc slope between 300-365m. (Proposals 16, 19)

The Great Sitkin hybrid HAPC area would include components of the MCA & NMFS proposals.

Management measures: All Council-managed bottom contact fishing would be prohibited within the 1-mile box to provide protection for coral garden sites. In addition, a modified MCA site around the coral garden site could be designated as HAPC with no management measures attached. The MCA proposal provided anecdotal information regarding the presence of coral habitat and provides a focus for further research.

Core Fishing Analysis: The Great Sitkin closure would have a low effect on golden king crab, sablefish/turbot longline, and Atka mackerel trawl fisheries. The designation-only sites would have no impact on Council-managed fisheries.

Recommended Research Concepts: Prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist within these sites. Evaluate the benthic features in this section of the Aleutian Islands. Support ongoing research for rockfish abundance. Design and conduct applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat. Support continued research on how fishing affects use and productivity, and how different levels of fishing intensity and gear effects influence productivity of habitats.

- 6) Ulak Island: The Ulak Island area contains series of small coral gardens on the island arc slope between 150-250m. (Proposals 11, 13, 17, 19)

The Ulak Island hybrid HAPC area would include components of the MCA, NMFS, Oceana, & TOC proposals.

Management measures: All Council-managed bottom contact fishing would be prohibited within the 1-mile box to provide protection for coral garden sites. In addition, the MCA site at Ulak Island (which corresponds to the ten-mile SSL closure around Hasgox Point) could be designated as HAPC with no management measures attached. The MCA proposal provided anecdotal information regarding the presence of coral habitat and provides a focus for further research.

Core Fishing Analysis: The Ulak Island closure could have a low effect on pacific cod longline fishery and a medium effect on sablefish/turbot longline fishery. The designation-only sites would have no impact on Council-managed fisheries.

Recommended Research Concepts: Prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist within these sites. Evaluate the benthic features in this section of the Aleutian Islands. Support ongoing research for rockfish abundance. Design and conduct applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat. Support continued research on how fishing affects use and productivity, and how different levels of fishing intensity and gear effects influence productivity of habitats.

Alternative 3: Designate Bowers Ridge as an HAPC. North of Petrel Bank in the Aleutian Islands, Bowers Ridge is a unique submerged ridgeline that spans depths from 11m to greater than 3,700 m. This area is designated EFH for several rockfish species. The complex bathymetric features of the ridge provide a physically complex habitat that likely supports undisturbed coral gardens. (Proposals 10, 18)

The Bowers Ridge hybrid HAPC area would include components of the AMCC and MCA proposals.

Management measures: All bottom trawling would be prohibited within the Bowers B option of the AMCC proposal. A box encompassing the MCA proposal and all waters shallower than 1,000m could be designated as HAPC with no management measures attached. The MCA proposal provided anecdotal information regarding the presence of coral habitat and provides a focus for further research.

Core Fishing Analysis: The Bowers Ridge closure could have a low effect on golden king crab and sablefish/turbot longline. The designation-only sites would have no impact on Council-managed fisheries.

Recommended Research Concepts: Prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist within these sites. Evaluate the benthic features in this section of the Aleutian Islands. Support ongoing research for rockfish abundance. Design and conduct applied

research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat. Support continued research on how fishing affects use and productivity, and how different levels of fishing intensity and gear effects influence productivity of habitats.

Alternative 4: Designate 4 sites as HAPCs in the Aleutian Islands (South Adria/Atka, Kanaga Volcano, and Kanaga, and Tanaga. Trawl skippers with experience and knowledge of the Aleutian Islands selected these sites because they meet the NPFMC priority for high relief hard coral stands likely to be good rockfish habitat. These areas are mostly considered untrawlable grounds with very rocky substrates, numerous snags, and strong tide changes. (Proposals 15, 16, 17)

Management measures: These areas would be for designation only, with a recommendation for further research.

Core Fishing Analysis: With a designation only management measure there would be no effect on core fishing areas. However these sites would greatly effect the hook and line fishery overall if the management measure is added to restrict that gear type.

Alternative 5: Alternatives 2, 3 and 4.

Table 4. Locations of proposed HAPC sites within the Aleutian Islands.

Proposed HAPC Area	Latitude	Longitude	Management	NOAA Chart number	Area
Adak Canyon	51 39 00N 51 39 00N 51 30 00N 51 30 00N	177 03 00W 177 00 00W 177 00 00W 177 03 00W	Management applied	16460	16.87 nm ²
Adak Canyon	51 39 00N 51 39 00N 51 30 00N 51 30 00N	177 08 00W 177 03 00W 177 03 00W 177 08 00W	Designation	16460	28.07 nm ²
Adak Canyon	51 34 30N 51 34 30N 51 36 30N 51 33 30N 51 30 00N 51 30 00N	177 00 00W 176 49 00W 176 40 00W 176 40 00W 176 53 30W 177 00 00W	Designation	16460	46.66 nm ²
Bobrof Island	51 55 30N 51 55 30N 51 53 30N 51 53 30N	177 26 00W 177 23 00W 177 23 00W 177 26 00W	Management applied	16460	3.74 nm ²
Bobrof Island	51 57 30N 51 57 30N 51 51 30N 51 51 30N	177 29 00W 178 20 00W 178 20 00W 177 29 00W	Designation	16460	29.89 nm ²
Cape Moffett	51 59 00N 51 59 00N 51 57 00N 51 57 00N	176 51 00W 176 48 00W 176 48 00W 176 51 00W	Management applied	16460	3.74 nm ²
Cape Moffett	51 59 00N 51 59 00N 51 56 00N 51 56 00N	176 51 00W 176 52 00W 176 51 00W 176 56 00W	Designation	16460	15.12 nm ²
Cape Moffett	51 59 00N 52 02 00N 51 57 30N 51 57 00N	176 48 00W 176 41 00W 176 41 00W 176 48 00W	Designation	16460	5.54 nm ²
Great Sitkin	52 08 30N 52 08 30N 52 06 00N 52 06 00N	176 11 30W 176 08 00W 176 08 00W 176 11 30W	Management applied	16460	5.40 nm ²
Great Sitkin	52 02 30N 52 02 30N 52 06 30N 52 10 00N 52 10 00N 52 06 00N	176 12 00W 176 16 30W 176 16 30W 176 10 00W 176 03 00W 176 03 00W	Designation	16460	37.17 nm ²
Semisopchnoi Island	51 52 00N 52 52 00N 51 50 00N 51 50 00N	179 48 30E 179 51 30E 179 51 30E 179 48 30E	Management applied	16460	3.67 nm ²
Semisopchnoi Island	52 01.40N 51 57.30N	179 36.90E 179 46.00E	Designation	16460	10-mile radius (388 nm ²)
Ulak Island	52 08 30N 52 08 30N 52 06 00N 52 06 00N	176 11 30W 176 08 00W 176 08 00W 176 11 30W	Management applied	16460	5.64 nm ²

Proposed HAPC Area	Latitude	Longitude	Management	NOAA Chart number	Area
Ulak Island	51 18.90N	178 58.90W	Designation	16460	10-mile radius (296 nm ²)
Bowers Ridge B	54 59 00 55 29 00 55 22 00 53 39 00 52 33 00	175 34 00 E 176 26 00 E 178 43 00 E 178 31 00 W 179 45 00 E	Management applied	16012	17,251 nm ²
Bowers Ridge	54 54 30N 55 10 30N 54 15 30N 52 44 30N 52 40 30N 54 06 00N	177 56 00 E 178 27 00 E 179 54 00 E 179 27 00 W 179 55 00 W 179 20 00 E	Designation	16012	3,933 nm ²
Bowers Ridge	55 04 30N 55 04 30N 54 32 30N 54 32 30N	176 00 00 E 177 14 30 E 177 14 30 E 176 00 00 E	Designation	16012	1,378 nm ²