AGENDA C-4
FEBRUARY 2004

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver
Executive Director

ESTIMATED TIME
2 HOURS

DATE: January 30, 2004

SUBJECT: Habitat Areas of Particular Concern (HAPC)

ACTION REQUIRED:

Receive report on initial call for proposals and provide any guidance for plan team review.

BACKGROUND

During the October 2003 meeting the Council established a HAPC process which is documented in the draft environmental impact statement (EIS) for EFH under Appendix J. A notice of the Draft Environmental Impact Statement (DEIS) for Essential Fish Habitat (EFH) was released in January 2004, attached as Item C-4(a). 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."

Within the HAPC process the Council set habitat priorities and issued an initial call for proposals, which ended January 10, 2004 (Item C-4(b)). A summary of the proposals attached as Item C-4(c).

As a portion of the HAPC process the proposals will be reviewed by the Council's plan teams including the additions of an enforcement and socioeconomic component in early March. Submitted proposals will be evaluated on ecological and management considerations, socio-economic concerns, and for practicability (Item C-4(d)). The plan teams will rank the proposals using a matrix and their recommendations will be forwarded to the Council in April.

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

AGENDA C-4(a)
FEBRUARY 2004

January 23, 2004

Stephanie Madsen, Chair
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, Alaska 99501-2252

Dear Ms. Madsen:

I am pleased to report that the Draft Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska is now complete and available for public comment. The National Marine Fisheries Service posted the document on our website (www.fakr.noaa.gov/habitat/seis/efheis.htm) on January 9, 2004, and a notice of availability appeared in the Federal Register on January 16, 2004 (69 FR 2593). We have mailed copies to everyone on our distribution list, and we are accepting comments through April 15, 2004. We will schedule public hearings in the near future, in consultation with Council staff.

For the Council's information, enclosed is a brief summary of changes we incorporated into the document following Council review of the preliminary draft in October. If you have any questions, please contact Jon Kurland, Assistant Regional Administrator for Habitat Conservation, at 907-586-7638 or jon.kurland@noaa.gov.

Sincerely,

James W. Balsiger
Administrator, Alaska Region

Enclosure

Summary of Changes from the September 2003 Preliminary Draft EFH EIS to the January 2004 Draft EFH EIS

- The cover sheet, Executive Summary, and Section 4.5 include clearer statements about the conclusions of the effects of fishing analysis. The revisions clarify the scientific uncertainty and the reasons behind the conclusion that effects of fishing on EFH are minimal.

- Chapter 1 clarifies the relationship between the EFH EIS and the subsequent Environmental Assessment that will be developed to consider site-specific Habitat Areas of Particular Concern (HAPCs).

- Chapters 2 reflects the preliminary preferred alternatives selected by the Council.

- Chapter 3 includes revisions to update and correct text concerning Steller sea lions.

- Chapter 4 reflects the preliminary preferred alternatives selected by the Council. Additionally, Section 4.3 reflects the updates to the Regulatory Impact Review (Appendix C) discussed below.

- Chapter 6 includes updates to the distribution list.

- The introduction to Appendix B clarifies how localized effects to habitat were considered in the analysis, and clarifies how analysts considered stock status when determining whether continued fishing activities at the current rate and intensity are likely to alter the ability of a managed species to sustain itself over the long term. Appendix B also includes a number of minor technical corrections and clarifications.

- Appendix C includes a number of revisions. A new analytical clarification section addresses assumptions and methodological issues, data limitations and interpretation, and several technical issues concerning application of economic theory. An expanded analysis of first wholesale value impacts captures potential revenue effects at the inshore processing level, by region and alternative. Appendix C reexamines potential operational and economic impacts of the alternatives, within the context of a competitive open access fishery management regime. It includes a revised calculation of revenue at risk in the GOA slope rockfish trawl fishery, and reassesses the method of proportional allocation of catch and revenue at risk for statistical reporting blocks only partially impacted by the alternatives. These changes clarify the economic effects of GOA slope closures, including the industry's ability to make up lost revenues by switching to other areas or gear, and better account for changes in economically important amounts of sablefish and Pacific cod bycatch. The analysts reexamined the relative dependence of several industry sub-sectors to assure that adverse effects on specific components of the industry were not being masked by regional aggregation. Likewise, Appendix C extends the dependent community analysis to clarify distributional impacts between Alaska and non-Alaska communities. Appendix C includes reorganized sections on distributional impacts for each alternative, facilitating the direct comparison of each potential

impact at the level of catcher vessels, catcher/processors, and shoreside sectors, as well as multi-sectoral and secondary (e.g., community) impacts, across alternatives. Finally, Appendix C includes several technical changes to the text to address specific comments on the preliminary draft.

- Appendix G includes revised text in the introduction to clarify that a variety of federal, state, and local laws limit environmental impacts from non-fishing activities and may help to avoid or minimize adverse effects to EFH. Appendix G also adds a discussion of the Alaska Forest Resources and Practices Act.

- Appendix H provides more information to assist in reading the catch and redistribution maps.

- Appendix J includes revisions to the HAPC process to reflect the guidance in the Council's October 2003 motion.

- Other sections and appendices include a variety of minor corrections and clarifications.

EFH Motion October 12, 2003

Essential Fish Habitat

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

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

Minimization of fishing effects on EFH: The Council adopts Alternative 1, status quo habitat protections, as the Preliminary Preferred Alternative.

HAPC Proposal and Review Process

Criteria for consideration of HAPCs:
The following criteria were established for consideration of HAPC proposals. HAPC proposals would be required to meet at least two of the four HAPC considerations (criteria) established in the EFH Final Rule: importance of ecological function, sensitivity, vulnerability, and rarity. Rarity will be a mandatory criterion of all HAPC proposals.

Council priorities for initial (2003) Request for HAPC Proposals:
The Council believes that concrete and realistic priorities need to be set 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.

The Council recommends that the priorities for HAPC proposals should focus on specific sites within two specific priority areas for the November 1,2003 – January 10, 2004 call for proposals:

1. Seamounts in the EEZ, named on NOAA charts, that provide important habitat for managed species.

2. Largely undisturbed, high relief, long lived hard coral beds, with particular emphasis on those located in the Aleutian Islands, which provide habitat for life stages of rockfish, or other important managed species. Nominations shall be based upon best available scientific information, and include the following features:

    a) Sites must have likely or documented presence of FMP rockfish species.
    b) Sites must be largely undisturbed and occur outside core fishing areas

The Council may establish HAPC's for a representative subset of those areas identified through HAPC proposals.

Proposal prioritization:
Submitted proposals will be ranked according to how many of the four HAPC considerations they meet, with the highest ranking given to those proposals that meet all four.

Review and Stakeholder process:
The Council will utilize its normal public process in the review of HAPC proposals, including the use of Plan Teams, which are comprised of scientists and managerial expertise. The following section will replace the existing section 6 portion of section J of the EIS:

Call for proposals for HAPC Process

(1) HAPC proposals will be solicited every three years, and
(2) on the same schedule as the regular plan or regulatory amendment schedule, and
(3) HAPC site proposals will be focused on specific HAPC priority areas designated by the Council.

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.

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, the proposal is rejected. If accepted, the proposal is forwarded to the next step.

• Proposals reviewed by Plan teams.

The Council refers proposals to the appropriate plan teams. The teams evaluate the proposals for ecological, socio-economic, management, and for practicability. The plan teams rank the proposals using a system like the matrix illustrated below, and makes their recommendations directly to the Council. The Council may refer the proposals to the enforcement committee or other technical team for review.

• Evaluation of Candidate HAPC's:

The teams should evaluate each proposal on the basis of how well it meets the Council HAPC priorities, the requirements established above for formatting the proposals, the four considerations for HAPC set forth in the EFH final rule, and determine whether designation and any management measures are warranted. The teams should give all considerations equal attention.

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 will 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:

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.

Further, in reviewing the EIS, the Council suggest the following revisions be made in so far as possible:

1. Re-evaluate the economic impacts of GOA slope closures
2. Address the SSC's concerns regarding 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

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL SUMMARY

HAPCs are areas of special importance that may require additional protection from adverse effects from fishing. Regulations at 50 CFR 600.815(a)(8) provide that "Fishery Management Plans (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:

- 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 the development activities are, or will be, stressing the habitat type
- The rarity of the habitat."

Criteria for consideration of HAPCs:

The Council established the following criteria for consideration of HAPC proposals. HAPC proposals would be required to meet at least two of the four HAPC considerations (criteria) established in the EFH Final Rule. Rarity will be a mandatory criterion of all HAPC proposals.

The Council accepted proposals for initial HAPC designation between November 1, 2003 – January 10, 2004. The Council invited proposals to identify HAPC sites within the following priority areas. Additionally the proposals needed to meet the following:

1. Seamounts in the EEZ, named on NOAA charts, that provide important habitat for managed species.

2. Largely undisturbed, high relief, long lived hard coral beds, with particular attention in the Aleutian Islands (AI), which provide habitat for life stages of rockfish, or other important managed species. Nominations shall be based upon best available scientific information, and include the following features
   a) Sites must have likely or documented presence of Fishery Management Plan (FMP) rockfish species
   b) Sites must be largely undisturbed and occur outside core fishing areas

The Council received twenty-four proposals from six separate submitters including NOAA fisheries (Items C-4(c)(i&ii)). The proposals are viewable on the NPFMC website at http://www.fakr.noaa.gov/npfmc/current_issues/efh/HAPC_proposals/HAPCproposals.htm. Four proposals that focused on seamounts. There was some overlap within these. Eleven proposals focused on high-relief corals in the AI region (with likely or documented presence of FMP rockfish species), some of which had overlap with recent research conducted by NOAA Fisheries. Additional proposals were submitted on high relief coral areas in the Gulf of Alaska. The proposals that do not encompass the Council priorities included Bering Sea soft corals, Deepwater Canyons within the Bering Sea and Prince William Sound. All proposals followed the specified format.

The next stage of the HAPC process is to have the proposals reviewed for ecological and management considerations, as well a socio-economic assessment. The review process entails a plan team review with the addition of enforcement and socioeconomic specialists. This review is scheduled for March 8-9th. Specifically, the teams will provide input on: How well the Council's HAPC priorities are met; the four HAPC considerations set forth in the EFH final rule; and whether HAPC designation and any management measures are warranted. The intent is that the teams should give all of the identified considerations equal attention. The Council requested the ecological considerations to be reviewed in a matrix, attached is a draft as a guideline for plan team use (Item C-4(d)). NMFS enforcement will provide

a qualitative review of each proposal, to assess the ability of NMFS to enforce the proposed management area boundaries, and additional factors influencing fleet compliance and ability of Enforcement to monitor compliance. The initial review will also provide a qualitative assessment of socioeconomic factors, such as identifying affected fishing communities and the potential adverse effects.

The Council will receive a report during the April Council meeting on the results of this review, and will select the proposals to include in the NEPA analysis.

Proposer	Proposal Name	Sites Proposed	Council Priorities					FMP Affected					Within Existing Closure Area	Includes State Waters
			Named Seamount	High Relief Coral	Aleutian Islands	Rockfish	Relatively Unfished / Undisturbed	BSAI Groundfish	GOA Groundfish	BSAI Crab	Scallops	Salmon		
AMCC	Adak Canyon	1												
	Bowers Ridge	2												
TOC	Zemchug & Pribilof Canyon	2												
	AI Coral & Sponges	5												
	PWS Deepwater Canyon	1												
	North Pacific Seamounts	23												
	AI Marine Reserve Network	4												
Oceana	AI Coral Gardens	5												
	AI Pinnacles & Seamounts	85												
	AI Core Bottom Trawling Open Permit Area	55												
	Bering Sea Soft Corals and Seamount	3												
	GOA Pinnacles & Seamounts	73												
MCA	South Amlia/Atka	1												
	Adak & Kanaga	5												
	Amatignak/Ulak & Tanaga	2												
	Semisopochnoi & Bowers	2												
AGDB	Sanak Island rockfish	1												
	Albatross	1												
	Middleton Island	1												
NMFS	Named Seamounts	16												
	AI Coral Gardens	6												
	GOA Primnoa	4												
	8-fathom Pinnacle	1												

Council Priority - Named Seamounts on NOAA Charts									
	HAPC Considerations					Council Priority Factors			
Score	Rarity	Ecological Importance	Sensitivity	Stressed	Data	Within EEZ	Named on NOAA Chart	Within depth or known habitat of managed species	Score
1	feature is common	habitat is featureless; fish are present; reproductive associations with the habitat do not exist	little to none; unknown	little to no disturbance	little or no data exists	no	no	not known	1
2	somewhat	habitat exhibits some structure; fish are present within known substrates; habitat or reproductive associations may exist	somewhat	exposure to occasional disturbance	some data exists; data can be inferred	n/a	n/a	presence inferred by best professional judgment or some anecdotal information exists	2
3	very	habitat consists of highly diverse or vertical structure; substrate is notable; vulnerable life history stages of fish or habitat reproductive associations exist	high	exposed to routine disturbance	site specific data exists	yes	yes	presence documented or physically observed (RACE, NORPAC or *in situ* observation)	3

Council Priority - Named Seamounts on NOAA Charts									Area Size (nm^2)	HAPC Considerations				Data	Council Priority Factors			Total Score
Proposer						Seamount Name	Specific Site Name & Area			Rarity	Ecological Importance	Sensitivity	Stressed		Within EEZ	Named on NOAA Chart	Within depth or known habitat of managed species	
ADGB	AMCC	MCA	NMFS	Oceana	TOC		Latitude	Longitude										
						A. Jones Seamount	51.4167 N	159.1667 E										
				X	X	Adams Seamount	50.0167 N	176.2333 E										
						Alden Seamount	49.0833 N	158.7500 E										
						Amlia Knoll	53.0833 N	173.8833 E										
						Applequist Seamount	55.4167 N	142.7500 E										
				X	X	Atka Seamount	50.2667 N	175.1667 E										
						Bean Seamount	52.2500 N	147.0000 E										
						Bolles Knoll	49.0000 N	157.7500 E										
			X	X	X	Bowers Seamount	54.0833 N	174.7833 W										
						Bowie Seamount	53.3000 N	135.6333 E										
						Brown Bear Seamount	46.0167 N	130.4167 E										
			X	X	X	Brown Seamount	55.0000 N	138.5000 E										
						Bryant Seamount	49.3333 N	157.9500 E										
						Burdick Knoll	45.8500 N	157.8000 E										
						Campbell Seamount	50.2500 N	141.9167 E										
						Chelan Seamount	49.7500 N	131.5333 E										
			X	X	X	Chirikof Seamount	54.8333 N	153.0000 E										
						Cobb Seamount	46.7667 N	130.8167 E										
						Comstock Seamount	48.2500 N	156.9167 E										
						Cowie Seamount	54.2500 N	149.5000 E										
						Cutts Knoll	49.3000 N	157.4167 E										
			X	X	X	Dall Seamount	58.1667 N	145.5833 E										
						Dalton Seamount	49.3833 N	156.5333 E										
						Dellwood Seamounts	50.6167 N	130.7000 E										
			X	X	X	Denson Seamount	54.0000 N	137.2500 E										
			X	X	X	Derickson Seamount	52.8333 N	161.2500 E										
			X	X	X	Dickins Seamount	54.5000 N	137.0000 E										

Council Priority - Named Seamounts on NOAA Charts									Area Size (nm^2)	HAPC Considerations				Data	Council Priority Factors			Total Score
Proposer						Seamount Name	Specific Site Name & Area			Rarity	Ecological Importance	Sensitivity	Stressed		Within EEZ	Named on NOAA Chart	Within depth or known habitat of managed species	
ADGB	AMCC	MCA	NMFS	Oceana	TOC		Latitude	Longitude										
						Dorsey Seamount	48.8000 N	156.7500 E										
						Durgin Seamount	56.0000 N	142.0000 E										
						Eickelberg Seamount	48.5000 N	133.1667 E										
				X	X	Ely Seamount	56.2500 N	145.6667 E										
						Explorer Seamount	49.0833 N	130.8000 E										
						Faris Seamount	54.5000 N	147.2500 E										
						Forster Seamount	48.9500 N	133.8333 E										
						Gerdes Seamount	48.7000 N	160.4167 E										
			X	X	X	Giacomini Seamount	56.4167 N	146.4167 E										
						Gibson Seamount	52.0000 N	148.6667 E										
						Gilbert Seamount	52.8333 N	150.1667 E										
						Gordon Seamount	46.8333 N	135.0667 E										
						Graham Seamount	53.2333 N	134.5167 E										
						Harris Seamount	46.1667 N	161.4167 E										
				X	X	Hecht Seamount	53.7500 N	151.3333 E										
						Heck Seamount	48.5000 N	130.0000 E										
						Hodgkins Seamount	53.5000 N	136.0833 E										
						Jones Seamount	52.4167 N	148.9167 E										
						Kagami Seamount	45.4833 N	140.6167 E										
			X	X	X	Kodiak Seamount	56.8667 N	149.2500 E										
						Laskowski Seamount	51.8333 N	144.7500 E										
						Lefacor Knoll	45.5833 N	157.3833 E										
						Macnab Seamount	45.1833 N	135.7000 E										
			X	X	X	Marchand Seamount	54.8333 N	151.7500 E										
				X		Mednyy Seamount	55.4167 N	167.2833 W										
						Mendell Knoll	50.7000 N	157.2000 E										
						Miller Seamount	53.5000 N	144.3333 E										

Council Priority - Named Seamounts on NOAA Charts									Area Size (nm^2)	HAPC Considerations				Data	Council Priority Factors			Total Score
Proposer						Seamount Name	Specific Site Name & Area			Rarity	Ecological Importance	Sensitivity	Stressed		Within EEZ	Named on NOAA Chart	Within depth or known habitat of managed species	
ADGB	AMCC	MCA	NMFS	Oceana	TOC		Latitude	Longitude										
						Minnetonka Seamount	48.0833 N	168.5000 W										
						Moore Seamount	48.8833 N	136.0000 E										
						Morton Seamount	50.2500 N	142.7500 E										
						Moser Seamount	49.4833 N	136.9167 E										
						Murray Seamount	54.0000 N	148.5000 E										
			X	X	X	Odessey Seamount	54.5000 N	149.7500 E										
						Oglala Seamount	50.3000 N	131.4667 E										
						Oshawa Seamount	52.3667 N	134.0833 E										
						Parker Seamount	52.5833 N	151.2500 E										
						Pathfinder Seamount	50.9167 N	143.2500 E										
			X	X	X	Patton Seamount	54.6667 N	150.5000 E										
						Pavlov Seamount	50.6667 N	162.0000 W										
				X		Peirce Seamount	53.7333 N	136.5333 E										
						Piip Seamount	55.4167 N	167.2167 W										
						Powe Seamount	49.5333 N	152.1333 E										
						Pratt Seamount	56.1667 N	142.5000 E										
						Pritchett Seamount	50.3333 N	161.1667 E										
			X	X	X	Putnam Seamount	51.5500 N	160.4167 E										
			X	X	X	Quinn Seamount	56.2500 N	145.2500 E										
						Saxton Seamount	47.4000 N	157.5000 E										
						Schott Seamount	48.6500 N	155.8667 E										
						Scott Seamount	50.5000 N	141.5000 E										
						Sengfeller Seamount	49.8333 N	157.7500 E										
						Shalowitz Seamount	46.1500 N	135.2000 E										
						Shaw Seamount	52.6667 N	150.7500 E										
			X	X	X	Sirius Seamount	52.0000 N	160.8333 E										
					X	Smook Seamount	55.1500 N	150.1167 E										

Council Priority - Named Seamounts on NOAA Charts									Area Size (nm^2)	HAPC Considerations				Data	Council Priority Factors			Total Score
Proposer						Seamount Name	Specific Site Name & Area			Rarity	Ecological Importance	Sensitivity	Stressed		Within EEZ	Named on NOAA Chart	Within depth or known habitat of managed species	
ADGB	AMCC	MCA	NMFS	Oceana	TOC		Latitude	Longitude										
						Springfield Seamount	48.0667 N	130.2000 E										
				X		Stevens Seamount	48.1500 N	158.0000 E										
						Stirni Seamount	49.1333 N	132.3000 E										
						Studds Seamount	46.0000 N	155.0000 E										
						Surveyor Seamount	56.0833 N	144.3333 E										
						Taussig Seamount	48.5000 N	158.2500 E										
						Tittman Seamount	45.1667 N	157.7500 E										
						Tobin Seamount	47.6000 N	156.2667 E										
						Toivo Pinnacle	58.3333 N	138.6667 E										
						Tucker Seamount	49.8333 N	133.5000 E										
						Tuzo Wilson Seamount	51.4333 N	130.9167 E										
			X	X	X	Unimak Seamount	53.6667 N	162.5000 E										
						Union Seamount	49.5833 N	132.7500 E										
						Vance Seamount	45.5000 N	130.6667 E										
						W. Ellis Seamount	50.2167 N	160.3333 E										
						Warwick Seamount	48.0667 N	132.8000 E										
			X	X	X	Welker Seamount	55.1167 N	140.3333 E										
						White Marsh Seamoun	53.1333 N	143.4833 E										
						Winnebago Seamount	48.3500 N	168.0667 W										
						Woodworth Seamount	52.2500 N	149.5000 E										
				X		Wyer Seamount	54.4167 N	148.6667 E										
					X	Thurmond Seamount	? ?											

Council Priority - AI Corals & Rockfish				HAPC Considerations					Council Priority Factors				
Proposer	Specific Site Name & Area	Area - radius or dimensions	Area Size (nm^2)	Rarity	Ecological Importance	Sensitivity	Stressed	Data	Disturbance	Core Fishing Area	High Relief & Long-lived Hard Coral Beds	Rockfish	Total Score
NMFS	Adak Canyon												
	Bobrof Island												
	Cape Moffet												
	Great Sitkin												
	Semisopochnoi Island												
	Ulak Island												
MCA	Adak South												
	Kanaga Vocano												
	Cape Moffet (west)												
	Cape Moffet (east)												
	Great Sitkin												
	Kanaga Island (south side)												
	Amatignak/Ulak												
	Tanaga												
	Semisopochnoi Island												
	Bowers Ridge												
TOC	Semisopochnoi Island												
	Ulak Island												
	Bobrof Island												
	Cape Moffet												
Oceana	Semisopochnoi Island												
	Ulak Island												
	Bobrof Island												
	Cape Moffet												
AGDB	n/a												
AMCC	Adak Canyon												

Council Priority - AI Corals & Rockfish										
	HAPC Considerations				Data	Council Priority Factors				
Score	Rarity	Ecological Importance	Sensitivity	Stressed		Disturbance	Core Fishing Area	High Relief & Long-lived Hard Coral Beds	Rockfish	Score
1	habitat is common	habitat is featureless; fish are present; reproductive associations with the habitat do not exist	little to none	N/A*	little or no data exists	high	within	none	none	1
2	somewhat	habitat exhibits some structure; fish are present within common substrates; habitat or reproductive associations may exist	somewhat	N/A*	some data exists; data can be inferred	some	partially within	presence inferred by best professional judgment or some anecdotal information exists	presence inferred	2
3	very	habitat consists of highly diverse or vertical structure; substrate is notable; vulnerable life history stages of fish or habitat reproductive associations exist	high	N/A*	site specific data exists	little or none	outside	presence documented or physically observed (RACE, NORPAC or *In situ* observation)	presence documented or physically observed	3

* N/A The extent to which a HAPC is stressed is a priority factor in the HAPC proposal process. See applicable column under Council Priorities.

Plan Team Meeting to Review HAPC Proposals
March 8-9, 2004

DRAFT Agenda

1. Welcome and Introductions

2. Background
- Charge from the Council
- Timeline for the HAPC process

3. Review Specific Outcomes Needed from this Meeting
- Plan Team comments on the summary tables and rankings prepared by NMFS and Council staff regarding the four HAPC considerations in the EFH final rule and the Council's priorities for HAPCs
- Plan Team comments and ratings on the ecological merits of each HAPC proposal (note that input regarding enforcement and socioeconomic considerations will be provided by others)

4. Review and Discussion of Seamount HAPC Proposals

5. Review and Discussion of Hard Coral HAPC Proposals

6. Review and Discussion of Other HAPC Proposals

7. Summary of Feedback to the Council

Materials provided to the Plan teams:
HAPC proposals (24)
HAPC sections of the EFH final rule and preamble
Draft summary tables prepared by NMFS and Council staff
Draft ranking tables prepared by NMFS and Council staff
Blank worksheets for Plan Team comments and ratings on each HAPC proposal
Maps:
- Proposal locations
- Rockfish distributions (Oceana FOIA data)
- Official tons of catch
- Hauls of rockfish (grids less than 3 not shown)
- Existing Steller sea lion closures
- Coral/bryozoan catch distribution

Council Priority - AI Corals & Rockfish				HAPC Considerations					Council Priority Factors				
Proposer	Specific Site Name & Area	Area - radius or dimensions	Area Size (nm^2)	Rarity	Ecological Importance	Sensitivity	Stressed	Data	Disturbance	Core Fishing Area	High Relief & Long-lived Hard Coral Beds	Rockfish	Total Score
NMFS	Adak Canyon												
	Bobrof Island												
	Cape Moffet												
	Great Sitkin												
	Semisopochnoi Island												
	Ulak Island												
MCA	Adak South												
	Kanaga Vocano												
	Cape Moffet (west)												
	Cape Moffet (east)												
	Great Sitkin												
	Kanaga Island (south side)												
	Amatignak/Ulak												
	Tanaga												
	Semisopochnoi Island												
	Bowers Ridge												
TOC	Semisopochnoi Island												
	Ulak Island												
	Bobrof Island												
	Cape Moffet												
Oceana	Semisopochnoi Island												
	Ulak Island												
	Bobrof Island												
	Cape Moffet												
	Eastern AI Open Core areas												
AGDB	n/a												
AMCC	Adak Canyon												
	Bowers Ridge												

Council Priority - AI Corals & Rockfish										
	HAPC Considerations				Data	Council Priority Factors				
Score	Rarity	Ecological Importance	Sensitivity	Stressed		Disturbance	Core Fishing Area	High Relief & Long-lived Hard Coral Beds	Rockfish	Score
1	habitat is common	habitat is featureless; fish are present; reproductive associations with the habitat do not exist	little to none	N/A*	little or no data exists	high	within	none	none	1
2	somewhat	habitat exhibits some structure; fish are present within common substrates; habitat or reproductive associations may exist	somewhat	N/A*	some data exists; data can be inferred	some	partially within	presence inferred by best professional judgment or some anecdotal information exists	presence inferred	2
3	very	habitat consists of highly diverse or vertical structure; substrate is notable; vulnerable life history stages of fish or habitat reproductive associations exist	high	N/A*	site specific data exists	little or none	outside	presence documented or physically observed (RACE, NORPAC or *in situ* observation)	presence documented or physically observed	3

* N/A The extent to which a HAPC is stressed is a priority factor in the HAPC proposal process. See applicable column under Council Priorities.

AI Coral & Rockfish		Considerations							Overall Practicability
Name	Proposal Name	Ecological	Comments	Enforcibilty	Comments	Socio-Economic	Comments	⇨	
NMFS	Adak Canyon							⇨	
	Bobrof Island							⇨	
	Cape Moffet							⇨	
	Great Sitkin							⇨	
	Semisopochnoi Island							⇨	
	Ulak Island							⇨	
MCA	Adak South							⇨	
	Kanaga Vocano							⇨	
	Cape Moffet (west)							⇨	
	Cape Moffet (east)							⇨	
	Great Sitkin							⇨	
	Kanaga Island (south side)							⇨	
	Amatignak/Ulak							⇨	
	Tanaga							⇨	
	Semisopochnoi Island							⇨	
	Bowers Ridge							⇨	
TOC	Semisopochnoi Island							⇨	
	Ulak Island							⇨	
	Bobrof Island							⇨	
	Cape Moffet							⇨	
Oceana	Semisopochnoi Island							⇨	
	Ulak Island							⇨	
	Bobrof Island							⇨	
	Cape Moffet							⇨	
	Eastern AI Open Area								
AGDB	n/a							⇨	
AMCC	Adak Canyon							⇨	
	Bowers Ridge							⇨	

Ecological	Definition	Enforcibility	Definition	Socio-Economic	Definition	⇨	Practicability	Definition
High	Area has relatively complex habitat characteristics and likely provides a niche for many managed species. Habitat diversity with complex vertical structure has been observed in situ or scientifically documented. Surrounding areas are likely to contain similar fish diversity and habitat complexity. Vulnerable life history stages of fish are present and use the habitat. The proposal documents the vulnerability of the habitat and suggests an ecologically sound management approach.	High		High			High	
Medium	Area has less complex habitat characteristics. In situ observation or scientific information notes presence of fish and structure, however the area is not especially notable. Some information may exist from local knowledge, however this information has not been scientifically validated. Numerous life history stages of fish may exist, however habitat associations are not known. The proposal discusses the vulnerability of the habitat. The ecological merits of the management approach are less well justified.	Medium		Medium			Medium	
Low	Area is not complex. Fish and structure are present, however, a highly diverse species environment with complex vertical structure has not been observed. Vulnerable life history stages of fish and habitat associations do not exist. The proposal does not provide adequate ecological justification for the management approach.	Low		Low			Low	

Plan Team Work Table for Aleutian Islands Corals and Rockfish

Proposal Area	Name of Proposer	Ecological Merit Rating	Comments
Adak Canyon	NMFS		
	AMCC		
Adak Island (south)	MCA		
Semisopochnoi Island	NMFS		
	MCA		
	TOC		
	Oceana		
Bobrof Island	NMFS		
	TOC		
	Oceana		

Rating	Definition
High	Area has relatively complex habitat characteristics and likely provides a niche for many managed species. Habitat diversity with complex vertical structure has been observed *in situ* or scientifically documented. Surrounding areas are likely to contain similar fish diversity and habitat complexity. Vulnerable life history stages of fish are present and use the habitat. The proposal documents the vulnerability of the habitat and suggests an ecologically sound management approach.
Medium	Area has less complex habitat characteristics. *In situ* observation or scientific information notes presence of fish and structure, however the area is not especially notable. Some information may exist from local knowledge, however this information has not been scientifically validated. Numerous life history stages of fish may exist, however habitat associations are not known. The proposal discusses the vulnerability of the habitat. The ecological merits of the management approach are less well justified.
Low	Area is not complex. Fish and structure are present, however, a highly diverse species environment with complex vertical structure has not been observed. Vulnerable life history stages of fish and habitat associations do not exist. The proposal does not provide adequate ecological justification for the management approach.

Plan Team Work Table for Aleutian Islands Corals and Rockfish

Proposal Area	Name of Proposer	Ecological Merit Rating	Comments
Ulak Island	NMFS		
	TOC		
	Oceana		
Ulak/Amatignak Island	MCA		
Cape Moffet	NMFS		
	TOC		
	Oceana		
Cape Moffet (west)	MCA		
Cape Moffet (east)	MCA		

Rating	Definition
High	Area has relatively complex habitat characteristics and likely provides a niche for many managed species. Habitat diversity with complex vertical structure has been observed *in situ* or scientifically documented. Surrounding areas are likely to contain similar fish diversity and habitat complexity. Vulnerable life history stages of fish are present and use the habitat. The proposal documents the vulnerability of the habitat and suggests an ecologically sound management approach.
Medium	Area has less complex habitat characteristics. *In situ* observation or scientific information notes presence of fish and structure, however the area is not especially notable. Some information may exist from local knowledge, however this information has not been scientifically validated. Numerous life history stages of fish may exist, however habitat associations are not known. The proposal discusses the vulnerability of the habitat. The ecological merits of the management approach are less well justified.
Low	Area is not complex. Fish and structure are present, however, a highly diverse species environment with complex vertical structure has not been observed. Vulnerable life history stages of fish and habitat associations do not exist. The proposal does not provide adequate ecological justification for the management approach.

Plan Team Work Table for Aleutian Islands Corals and Rockfish

Proposal Area	Name of Proposer	Ecological Merit Rating	Comments
Great Sitkin	NMFS		
	MCA		
Kanaga Volcano	MCA		
Kanaga Island (south side)	MCA		
Tanaga Island	MCA		
Bowers Ridge	AMCC		
Bowers Ridge	MCA		
Eastern Aleutian Core Area	Oceana		

Rating	Definition
High	Area has relatively complex habitat characteristics and likely provides a niche for many managed species. Habitat diversity with complex vertical structure has been observed *in situ* or scientifically documented. Surrounding areas are likely to contain similar fish diversity and habitat complexity. Vulnerable life history stages of fish are present and use the habitat. The proposal documents the vulnerability of the habitat and suggests an ecologically sound management approach.
Medium	Area has less complex habitat characteristics. *In situ* observation or scientific information notes presence of fish and structure, however the area is not especially notable. Some information may exist from local knowledge, however this information has not been scientifically validated. Numerous life history stages of fish may exist, however habitat associations are not known. The proposal discusses the vulnerability of the habitat. The ecological merits of the management approach are less well justified.
Low	Area is not complex. Fish and structure are present, however, a highly diverse species environment with complex vertical structure has not been observed. Vulnerable life history stages of fish and habitat associations do not exist. The proposal does not provide adequate ecological justification for the management approach.

PUBLIC TESTIMONY SIGN-UP SHEET FOR AGENDA ITEM C-4 HAPC

	NAME (PLEASE PRINT)	AFFILIATION
1	JOHN GAUVIN	GROUNDFISH FORUM
2	Joe Moore	TOC
3	Ben Enticknap	AMCC
4	DAN FALVEY	AFA
5	Ron Clarke/Heather McCarty	MCA
6	Donna Parker	HSCC
7	GERRY MERRIGAN	PROWLER FISHERIES
8	Jon Warrenchuk	Oceana
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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.

HAPC Proposal Summary

Group	Title
AMCC	Adak Canyon Bowers Ridge
The Ocean Conservancy	Zhemchug and Pribilof Canyons Marine Reserve Aleutian Islands Coral and Sponge Marine Reserves (4 sites) PWS Deepwater Canyon North Pacific Seamounts Marine Reserve Network (23 named seamounts). Aleutian Island Marine Reserve Network
Oceana	GOA Pinnacles and seamounts AI corals/ gardens AI pinnacles and seamounts AI core bottom trawling area BS Sea raspberry area
MCA	South Amlia/Atka coral and rockfish HAPC in the eastern Aleutian Islands Adak and Kanaga area coral/rockfish HAPCs Amatignak/Ulak Islands and Tanaga West coral/rockfish HAPCs Semisopochnoi and Bowers Ridge coral/rockfish HAPCs
AGDB	Sanak Island rockfish HAPC in the Western Gulf of Alaska Albatross rockfish HAPC in the Central Gulf of Alaska Middleton Island rockfish HAPC in the West Yakutat regulatory area of the Gulf of Alaska
NMFS	Named Seamounts Eight Fathom Pinnacle Aleutian Islands Coral Gardens GOA Primnoa forrest

Habitat Areas of Particular Concern (HAPC) Proposal

Name/ Affiliation: Ben Enticknap, Fishery Project Coordinator
Alaska Marine Conservation Council
Address: PO Box 101145
Anchorage, AK 99510

Please check applicable box (es):
- ☐ GOA Groundfish FMP
- X BSAI Groundfish FMP
- ☐ Scallop FMP
- ☐ BSAI Crab FMP
- ☐ Salmon FMP

Date: January 2004

Title and Brief Statement of Proposal:

Bowers Ridge Habitat Area of Particular Concern

North of Petrel Bank in the Aleutian Islands is a unique submerged ridgeline that spans depths from as shallow as 11 meters, to greater than 3,700 meters. The proposed area contains essential fish habitat for dusky (*Sebastes ciliatus*), northern (*Sebastes polyspinis*), shortraker (*Sebastes borealis)*, rougheye (*Sebastes aleutianus*), thornyhead rockfish (*Sebastolobus alascanus*), plus other FMP species. The complex bathymetric features of Bowers Ridge provide a physically complex habitat that likely supports undisturbed coral gardens and provides important habitat refuge for managed fish species. The area includes a number of pinnacles that rise close to the surface as well as submarine canyons and a deep-sea plateau. A similar area was proposed for essential fish habitat protection in the Preliminary Draft EFH EIS, where the analysts noted, "Because of limited recent fishing effort, it is more likely that resident corals have not been removed..."(NMFS 2003a). Protection of Bowers Ridge from bottom trawling will greatly reduce unintentional impacts to coral and rockfish habitat caused by exploratory fishing or the development of any future trawl fisheries in this area.

Objectives of Proposal:

The objective of this proposal is to provide for the lasting conservation of undisturbed cold-water corals located in the Bowers Ridge area.

Statement of Purpose and Need:

An average of 40 metric tons of corals were taken as bycatch in the Bering Sea and Aleutian Island bottom trawl fisheries annually between 1997 and 1999 (NMFS 2003b). Historically, some bottom trawl effort has occurred in the Bowers Ridge area (Fritz et al. 1998). However, north of Petrel Bank, only a few bottom trawl tows have been documented in recent years (see attached map). Researchers have documented that Alaska cold-water corals provide important habitat features for both commercial and non-commercial species (Krieger and Wing 2002). Research on bottom trawl impacts has determined that the first passage of a trawl in an unfished area has the greatest impact to seafloor habitat features (Freese 1999). Since Bowers Ridge is a relatively unfished area, HAPC designation with management measures that prevent bottom trawling will

significantly limit impacts to undisturbed corals, sponges and other living habitat features in this area.

While no seafloor habitat research has been conducted on Bowers Ridge, the complex physical features of the ridge indicate that this area supports coral habitat similar to that documented in other areas of the Aleutian Islands that have similar physical complexity. Observers have documented some coral bycatch in areas of the ridge that have been historically fished. However, much of the ridge has received little to no fishing effort and therefore data is limited. This should not be considered a setback but an opportunity to implement a management tool that conserves cold-water corals and marine biodiversity in a data-limited area.

A description of how the proposed HAPC addresses the four considerations set out in the final EFH regulations:

Importance of the ecological function provided by the habitat:

Although few *in situ* observations have been made of deepwater corals, researchers are beginning to understand their ecological significance. Research in the Gulf of Alaska documented multiple rockfish species, shrimp and crab in close association with *Primnoa* coral (Krieger and Wing 2002). The structure and color of corals likely provide juvenile rockfish protection from predators, while adult rockfish may associate with corals for feeding. Bowers Ridge is considered to be essential fish habitat for a number of rockfish species and corals have been documented as bycatch in this area.

Extent to which the habitat is sensitive to human-induced environmental degradation:

Deepwater corals found off Alaska, especially of the order Gorgonacea, are long-lived (>500 years) and slow growing animals (Witherell and Coon 2000). Given their size and longevity, gorgonian corals may be the most sensitive to fishing impacts. Bottom trawls have been documented to have the greatest and most intensive impact on coral habitats in the North Pacific region (NMFS 2003b). Often corals are not brought to the surface by fishing gear yet are still damaged. Broken corals remaining on the seafloor and colonies that are tipped over have increased susceptibility to predation and polyps die because they are no longer oriented with the current, rendering them unable to feed (Krieger 2001).

Whether, and to what extent development activities are, or will be, stressing the habitat type:

Fishing effort distribution maps indicate that there has been little bottom trawling and relatively low levels of longline effort along Bowers Ridge in recent years (NPFMC 2002). Since some bottom trawl effort has been documented in the past, it is foreseeable that exploratory fishing or developing fisheries could occur in this area in the future.

However, because of its remote geographic location, it is not likely that Bowers Ridge will become an economically important fishing ground.

Rarity of the habitat:

The complex physical features of this submerged ridgeline, including a series of pinnacles and steep canyon walls, make this a highly unique habitat area. Relatively undisturbed cold-water corals are a highly likely component of the living seafloor in this area as determined from coral bycatch records, complex bathymetric features and the relatively unfished state of the proposed area.

Proposed management measures and their specific objectives:

The proposed management measure for the Bowers Ridge Habitat Area of Particular Concern is no bottom trawling. The specific objective is to provide for the lasting conservation of undisturbed cold-water corals and rockfish habitat located in the Bowers Ridge area.

Proposed solutions to achieve these objectives: (how might the problem be solved) Include concepts and methods of measuring progress towards those objectives:

Since Bowers Ridge is a data-limited area, specific locations of coral gardens along the ridge are unknown. Designating Bowers Ridge as a Habitat Area of Particular Concern with the associated management measure of no bottom trawling, will limit potential fishery impacts from incidentally damaging resident corals. Future research in Bowers Ridge may be warranted using a manned submersible or remotely operated vehicle, to research coral abundance and diversity in the proposed area.

Identification of the fisheries, sector, 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:

There are no foreseeable economic costs to any fisheries, sector, stakeholders or communities by designating the proposed Bowers Ridge HAPC and implementing a no bottom trawl management measure.

See attached maps for fishing effort data by bottom trawls, pots, and longlines over the five-year period of 1998 – 2002.

Clear geographic delineation for proposed HAPC (example written latitude and longitude reference points and/or delineation on an appropriately scaled NOAA chart):

This proposal contains two different sites for Bowers Ridge (Bowers A and B) so that the design of the site can be evaluated against different standards such as ease of enforcement, socioeconomic and ecological considerations.

Bowers A:

177.4800	52.8500
177.5200	54.3400
175.9700	54.3800
175.8900	55.5100
-178.9800	55.1900
-178.9800	52.9100

Bowers B:

175.5900	54.9800
176.4600	55.4900
178.7600	55.3700
-178.5300	53.6700
179.7400	52.5700

Positive longitudes denotes E of 180° longitude.

See attached maps.

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):

Freese, L., P.J. Auster, J. Heifetz, and B.L. Wing. 1999. Effects of trawling on seafloor habitat and associated invertebrate taxa in the Gulf of Alaska. Mar Ecol Prog Ser 182: 119-126.

Fritz, L.W. et al. 1998. Catch-per-unit-effort, Length, and Depth Distributions of Major Groundfish and Bycatch Species in the Bering Sea, Aleutian Islands, and Gulf of Alaska Regions Based on Groundfish Fishery Observer Data. NOAA Technical Memorandum NMFS-AFSC-88.

Krieger, K.J. 2001. Coral (Primnoa) impacted by fishing gear in the Gulf of Alaska. In J.H. Martin Willison et al (eds.) Proceedings of the First International Symposium on Deep-Sea Corals, Ecology Action Center and Nova Scotia Museum, Halifax, Nova Scotia Canada.

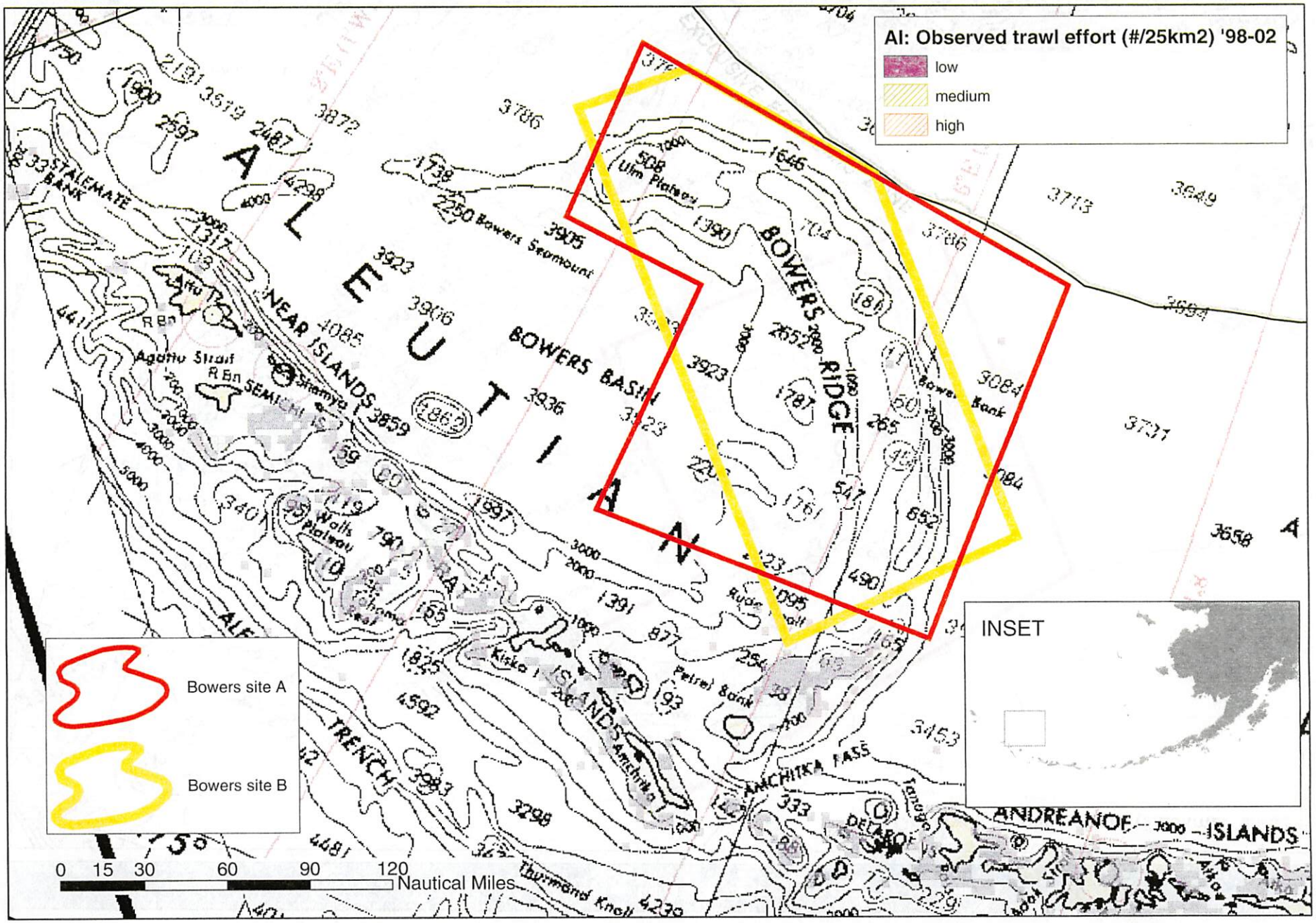
Krieger, K.J., and B.L. Wing. 2002. Megafauna associations with deepwater corals (*Primnoa* spp.) in the Gulf of Alaska. Hydrobiologia 471: 83-90.

NMFS 2003a. Preliminary Draft Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska. Chapter 4 – 129.

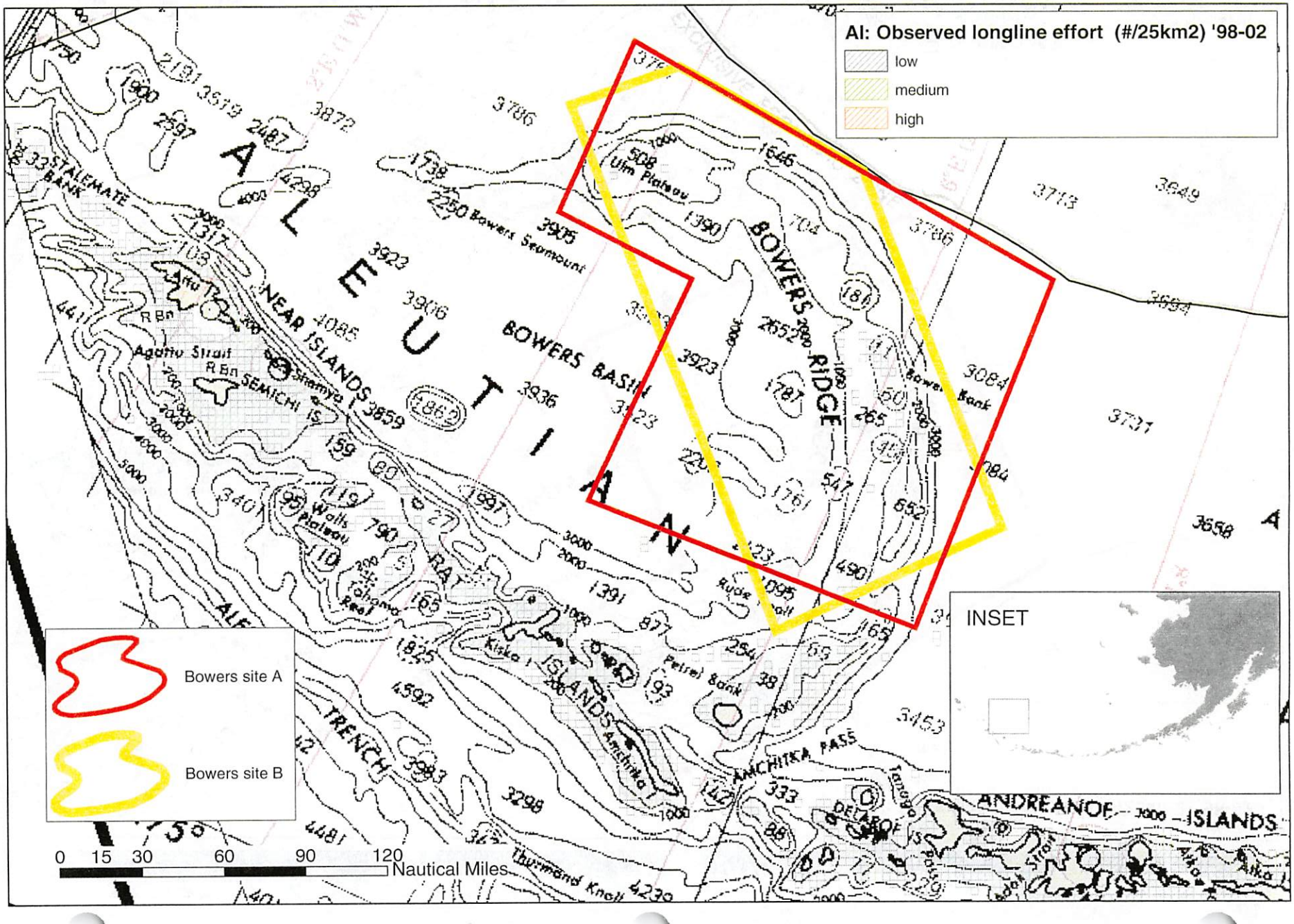
NMFS 2003b. Alaska Groundfish Fisheries Draft Programmatic Supplemental Environmental Impact Statement. Appendix A-T-231, A-T-535.

Witherell, D., and C. Coon. 2000. Protecting Gorgonian Corals off Alaska from Fishing Impacts. Proceedings of the Nova Scotian Institute of Science; First International Symposium on Deep Sea Corals; 117-115. Nova Scotia Museum, Halifax, Canada.

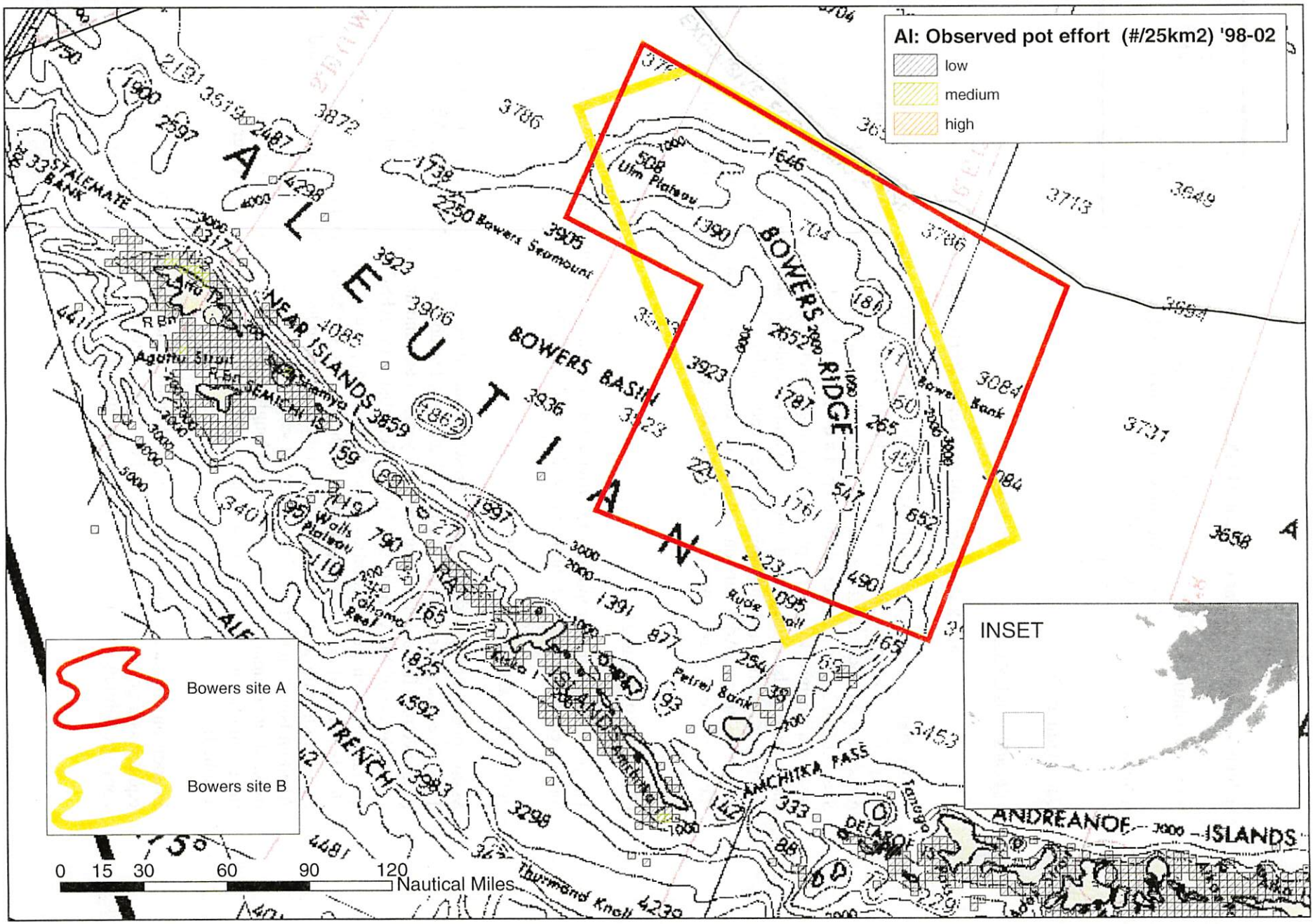
Bowers Ridge HAPC proposal



Bowers Ridge HAPC proposal



Bowers Ridge HAPC proposal



Habitat Areas of Particular Concern (HAPC) Proposal

Please check applicable box (es):
☐ GOA Groundfish FMP
X BSAI Groundfish FMP
X Scallop FMP
X BSAI Crab FMP
☐ Salmon FMP

Name/ Affiliation: Ben Enticknap, Fishery Project Coordinator
Alaska Marine Conservation Council
Address: PO Box 101145
Anchorage, AK 99510

Date: January 2004

Title and Brief Statement of Proposal:

Adak Canyon Habitat Area of Particular Concern

In July 2002, researchers with the Alaska Fisheries Science Center (AFSC) conducted a study of shortraker (*Sebastes borealis)* and rougheye (*Sebastes aleutianus*) rockfish in Adak Canyon, located off the southwestern end of Adak Island, Alaska (Reuter and Spencer 2002). Researchers documented a diversity of habitat types including sandy areas and steep rocky outcroppings with living habitat features such as high relief corals and sponge. Also documented were adult and juvenile life stages of rougheye rockfish, shortraker rockfish and shortspine thorneyheads (*Sebastolobus alascanus*). The sensitive habitat features in Adak canyon and the importance of this area to a diversity of rockfish species make this area a prime candidate for designation as a Habitat Area of Particular Concern.

Objectives of Proposal:

The objective of this proposal is to provide for the lasting protection and conservation of long-lived rockfish species and coral within Adak Canyon.

Statement of Purpose and Need:

Many species of rockfishes are slow growing, long-lived, and relatively old at maturity. These life-history traits make them particularly vulnerable to overfishing. Off Alaska, rougheye rockfish are mature at about 20 years of age and have been documented to reach the age of 205 years (Love 2002). Scientist at the AFSC have indicated that if quotas for rougheye and shortraker rockfish were applied to smaller areas that more closely matched the actual distribution of the species, the commercial catch would have exceeded the allowable biological catch and overfishing levels in both the Bering Sea and Aleutian Islands numerous times in recent years (NPFMC 2002). High volumes of rockfish are caught and discarded in both longline and bottom trawl fisheries throughout the Bering Sea and Aleutian Island management areas (see rockfish bycatch graphs attached).

In addition to concerns about rockfish populations, concerns about cold-water corals run equally as high. Cold-water corals can be extremely long-lived, they create structurally complex habitats and are areas of high taxonomic diversity. Researchers have

documented that Alaska cold-water corals provide important habitat features for both commercial and non-commercial species (Krieger and Wing 2002). Corals are also highly vulnerable to fishing impacts. An average of 40 metric tons of corals were taken as bycatch in the Bering Sea and Aleutian Island bottom trawl fisheries annually between 1997 and 1999 (NMFS 2003a). While significantly less than in the bottom trawl fisheries, longline fisheries in the BSAI accounted for an average of three metric tons of coral bycatch during 1997 – 2001 (NMFS 2003a).

Designating and protecting Habitat Areas of Particular Concern is a valuable way to assist in the conservation of rockfish and coral. Adak Canyon is an exemplary candidate for such designation because of the ecological importance of this area and its integrity as a relatively undisturbed habitat. Maintaining the integrity of habitat features in Adak Canyon will be a positive step towards rockfish and coral conservation.

A description of how the proposed HAPC addresses the four considerations set out in the final EFH regulations:

Importance of the ecological function provided by the habitat:

Although few *in situ* observations have been made of deepwater corals, researchers are beginning to understand their ecological significance. Research in the Gulf of Alaska documented multiple rockfish species, shrimp, and crab in close association with *Primnoa* coral (Krieger and Wing 2002). The structure and color of corals likely provide juvenile rockfish protection from predators, while adult rockfish may associate with corals for feeding. Shrimp – often associated with corals for protection - is a main prey for shortraker and rougheye rockfish (Krieger and Wing 2002). In Adak canyon, researchers using a manned submersible in Adak canyon documented a diversity of invertebrates including high-relief corals and sponge. Research of another submarine canyon, indicates that the complex features provided by submarine canyons provide a valuable habitat refuge for rockfish (Yoklavich 2000). In the paper "Habitat associations of deep-water rockfishes in a submarine canyon: an example of a natural refuge", the authors determined that higher numbers of large rockfishes were locally associated with complex habitat features having little or no evidence of fishing activity (Yoklavich 2000).

Extent to which the habitat is sensitive to human-induced environmental degradation:

Deepwater corals found off Alaska, especially of the order Gorgonacea, are long-lived (>500 years) and slow growing animals (Witherell and Coon 2000). Given their size and longevity, gorgonian corals may be the most sensitive to fishing impacts. Bottom trawls have been documented to have the greatest impact on coral habitats in the North Pacific region but both longlines and pots have some degree of impact as well (NMFS 2003a).

When describing longline impacts to coral, Krieger and Wing (2002) noted that, "Primnoa and other coral species were caught during the sablefish longline survey in the GOA and Aleutian Islands in 1998 at depths of 150-900m (NMFS sablefish long-line

database, Alaska Fisheries Science Center, Auke Bay, Alaska)". During submersible dives in the Aleutian Islands, researchers observed a site where corals had been damaged by pot gear (Bob Stone, NOAA Fisheries, personal communication). Research in Alaska demonstrates that corals not brought to the surface by fishing gear may still be damaged. Broken corals remaining on the seafloor and colonies that are tipped over have increased susceptibility to predation and polyps may die because they are no longer oriented with the current, rendering them unable to feed (Krieger 2001). Other observations indicate that small coral colonies may be pulled over when snagged by longline gear but unless broken or lifted off the bottom, they may be unharmed and reorient into the current (Krieger 2001).

Whether, and to what extent development activities are, or will be, stressing the habitat type:

Fishing effort distribution maps indicate that vessels using bottom trawls and groundfish vessels using pots do not fish this area. However, vessels using longlines have fished the canyon in recent years (see attached maps). One 25km^2 area within the proposed HAPC has received relatively high longline effort. Other areas within the proposed HAPC at depths approximately less than 500 fathoms, have received low to medium longline effort. Although the available data is course, it appears that there is little longline effort inside the proposed area deeper than 500 fathoms. Researchers in the manned submersible noticed some derelict longline gear during submersible transects in the canyon (R. Reuter, NOAA Fisheries, personal communication).

Most of the area of the proposed HAPC falls within state statistical areas 775100 and 775131. Brown crab delivered from statistical areas 775100 and 775131 from 1995 – 2002 totaled 537,060 lbs (ADF&G 2002). This catch represents about 1% of all brown crab catch reported under the confidentiality rules for this time period (ADF&G 2002). If less than three permits or less than three vessels delivered crab from a stat area, the poundage delivered is confidential. If the total catch were reported for all statistical areas, the percentage caught in these two statistical areas would be less than 1% of the total harvest in the last seven years. State statistical area 775139 directly off Cape Yakak showed no reported brown crab catch from 1995 through 2002.

Personal communications with fishermen and representatives indicate that one or two vessels fish brown crab in this area on an intermittent basis but it has not been an area of high importance to the fishery in recent years. An analysis of this proposal should include more detailed crab fishing effort inside the proposed area to better understand the importance of the area to the brown crab fishery and the footprint that the fishery has had in the proposed area.

Rarity of the habitat:

The complex physical and biological habitat features in this submarine canyon, including steep canyon walls, boulders and high relief corals make the Adak Canyon a rare habitat area. On the North Pacific side of the Aleutians, there are only six similar submarine

canyons to the west of Adak, including Murray Canyon, Heck Canyon, Agutta Canyon, Abraham Canyon, Etienne Canyon and Stalemate Canyon (NOAA Chart INT 813/ 513). Two other canyons, Rat Island Canyon and Tahoma Canyon have much less complex physical features. Rock outcrops of high relief, steep canyon walls, coral, sponge and sandy areas make this submarine canyon a more complex habitat area than nearby shelf habitat.

Proposed management measures and their specific objectives:

Cooperative Research Special Management Unit.

After designation of the proposed area as a habitat area of particular concern, vessels using longlines targeting groundfish and vessels using pots, targeting crab, could apply to enter into cooperative research with the National Marine Fisheries Service as a condition of fishing inside the HAPC. Cooperative research would be designed to increase biological data on the canyon and/or conducting fishing impact research by longlines and pots. Observer coverage, VMS, video documentation of the seafloor and other data collection tools would be potential components to a useful research endeavor.

This management measure would allow baseline levels of commercial harvest (no net increase of recent fishing effort inside the area) while increasing biological, physical and fishery data. Based on the results of cooperative research efforts, adaptive management measures could be applied to ensure that the objectives of the proposed HAPC are met while allowing for some levels of commercial harvest in the area.

Proposed solutions to achieve these objectives: (how might the problem be solved) Include concepts of methods of measuring progress towards those objectives:

Cooperative research by vessels using longlines and pots would allow for some levels of commercial fishing inside the Adak Canyon HAPC. The cooperative research special management unit would provide an opportunity to increase data on fishing impacts to coral habitat and rockfish. Because some commercial fishing would still be occurring inside the HAPC, there would likely be some incidental take of sensitive habitat features such as coral, sponge and other seafloor organisms. However, since the habitat features are inherently patchy, studies could be designed to minimize impacts to coral and rockfish. Habitat mapping, submersible and ROV studies could further elucidate biological and physical information in the canyon.

Identification of the fisheries, sector, 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:

Because of the relatively small scale of the proposed Adak Canyon HAPC our intent is that its impact on fishing opportunity will be minimal. There may be some short-term costs to specific vessels that fish the Adak canyon if they choose not to enter into

cooperative research. At this time that information is unknown. A formal analysis should and will be conducted before any HAPC is implemented that will assess potential economic loss. Additional analysis is needed on the importance of the Adak canyon to groundfish and crab fisheries.

Cooperative research programs provide a unique opportunity for those interested in fisheries to collectively resolve complex issues. Participants nationwide increasingly recognize the benefits that can accrue from cooperative research efforts. However, research will involve costs. The Adak Canyon HAPC is a place that cooperative research funding could apply to offset costs associated with research design and implementation.

Attached are maps showing the approximate location of the proposed HAPC with observed longline, groundfish pot, and bottom trawl effort from 1998-2002. Maps of crab pot effort were not available at the time of this proposal.

Clear geographic delineation for proposed HAPC (example written latitude and longitude reference points and/or delineation on an appropriately scaled NOAA chart):

-177.0000, 51.6500
-177.1400, 51.3300
-177.1400, 51.6500
-177.0000, 51.3300

See attached maps.

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):

ADF&G 2002. Alaska Department of Fish and Game Commercial Fisheries Crab Harvest database. 2002 Query.

Krieger, K.J., 2001. Coral (*Primnoa*) impacted by fishing gear in the Gulf of Alaska. In J.H. Martin Willison et al (eds.) Proceedings of the First International Symposium on Deep-Sea Corals, Ecology Action Center and Nova Scotia Museum, Halifax, Canada.

Krieger, K.J., and B.L. Wing. 2002. Megafauna associations with deepwater corals (*Primnoa* spp.) in the Gulf of Alaska. Hydrobiologia 471: 83-90.

Love, M.S., M. Yoklavich, and L. Thorsteinson. 2002. The Rockfishes of the Northeast Pacific. University of California Press. Berkeley and Los Angeles, California.

NMFS 2003a. Alaska Groundfish Fisheries Draft Programmatic Supplemental Environmental Impact Statement. Appendix A-T-231, A-T-535.

NPFMC 2002. Stock Assessment and Fishery Evaluation Report For the Groundfish Resources of the Bering Sea/ Aleutian Island Region. Pgs 574-575.

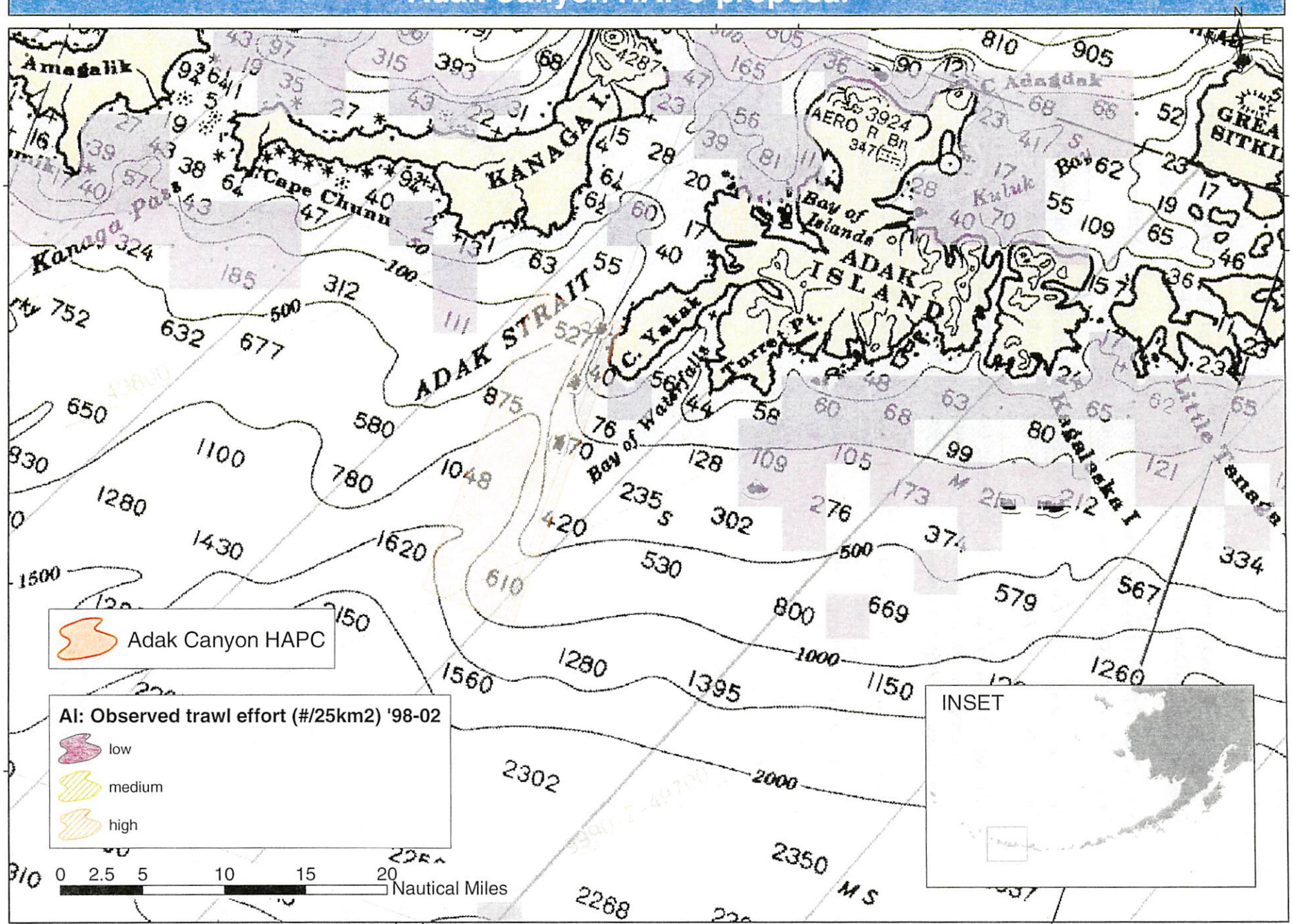
NRC. 2002. Effects of Trawling and Dredging on Seafloor Habitat. National Research Council. National Academy Press, Washington D.C. March 2002.

Reuter, R.F. and P.D. Spencer. 2002. Adak Island Rockfish Submersible Study. Alaska Fisheries Science Center Quarterly Reports, July –September 2002.

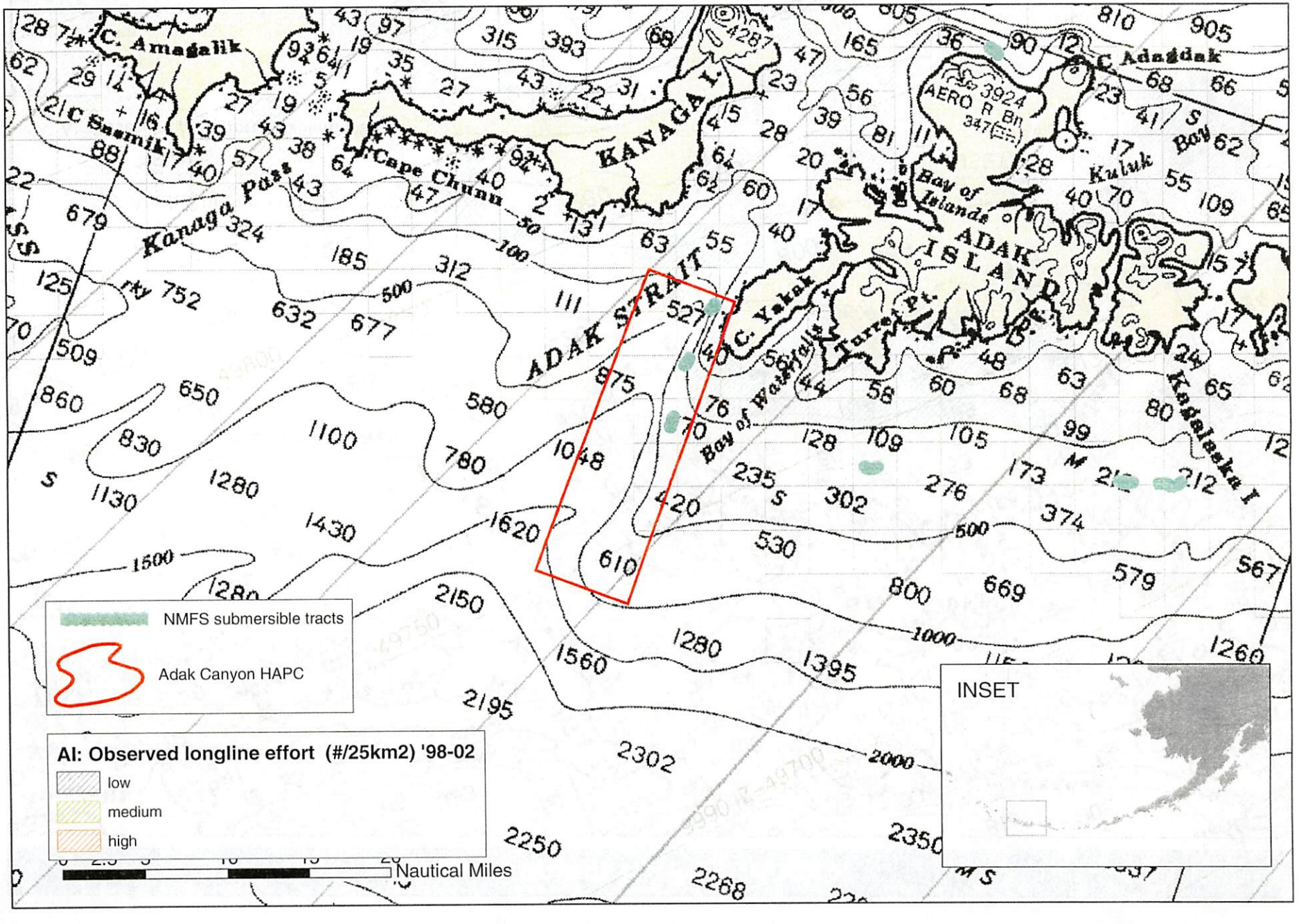
Witherell, D., and C. Coon. 2000. Protecting Gorgonian Corals off Alaska from Fishing Impacts. Proceedings of the Nova Scotian Institute of Science; First International Symposium on Deep Sea Corals; 117-115. Nova Scotia Museum, Halifax, Canada.

Yoklavich, M.M., H.G. Greene, G.M. Cailliet, D.E. Sullivan, R.N. Lea, and M.S. Love. 2000. Habitat associations of deep-water rockfishes in a submarine canyon: an example of a natural refuge. Fisheries Bulletin 98:625-641.

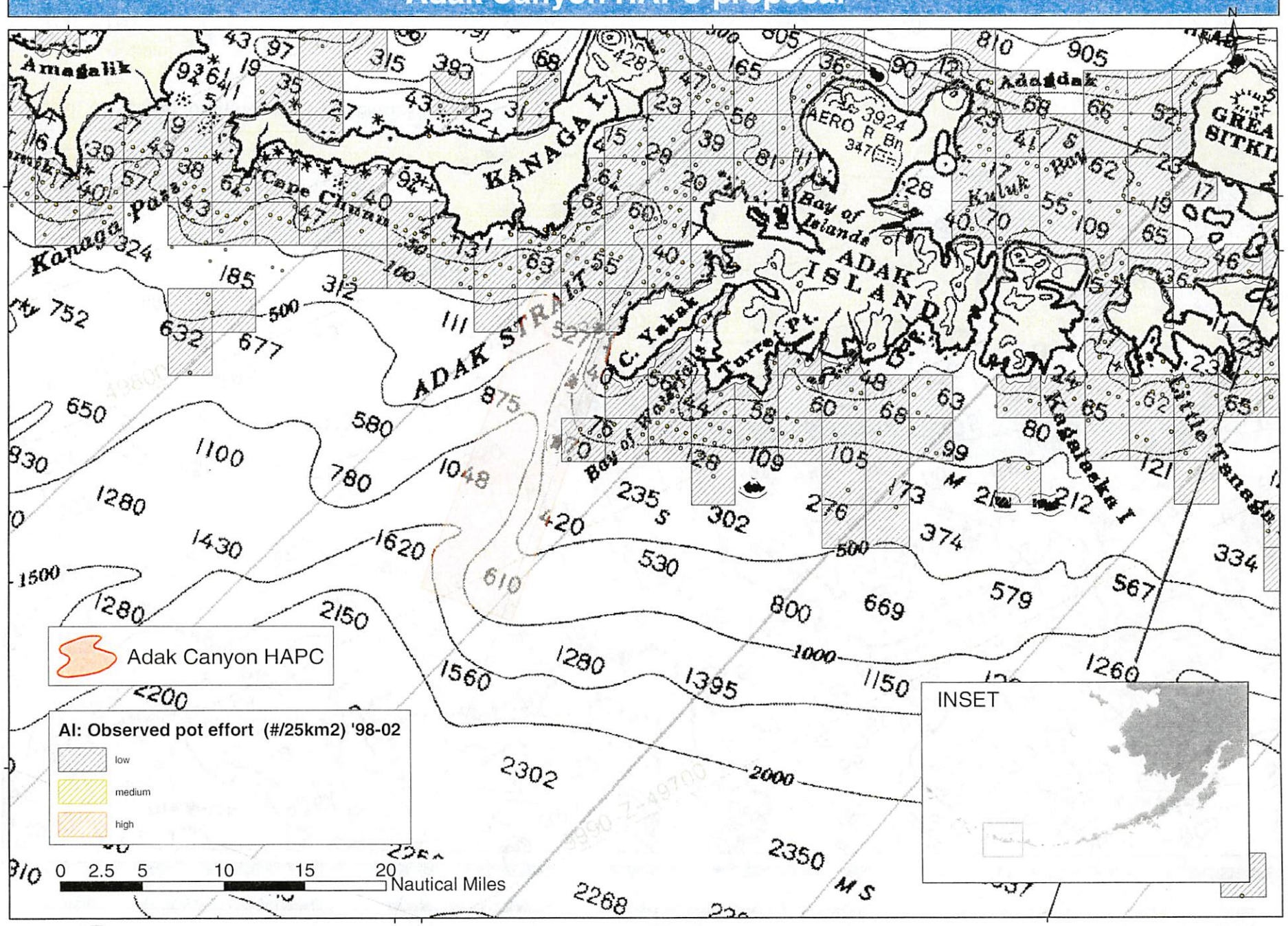
Adak Canyon HAPC proposal



Adak Canyon HAPC proposal



Adak Canyon HAPC proposal



Figures 1 – 4. Bering Sea and Aleutian Island Rockfish Bycatch

Figure 1.

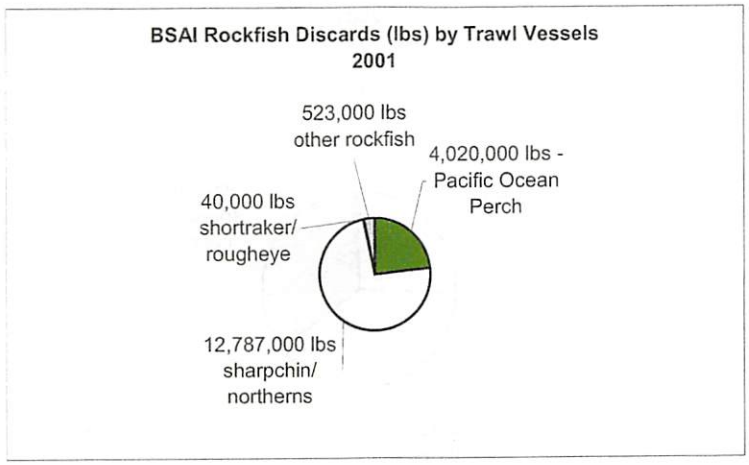


Figure 2.

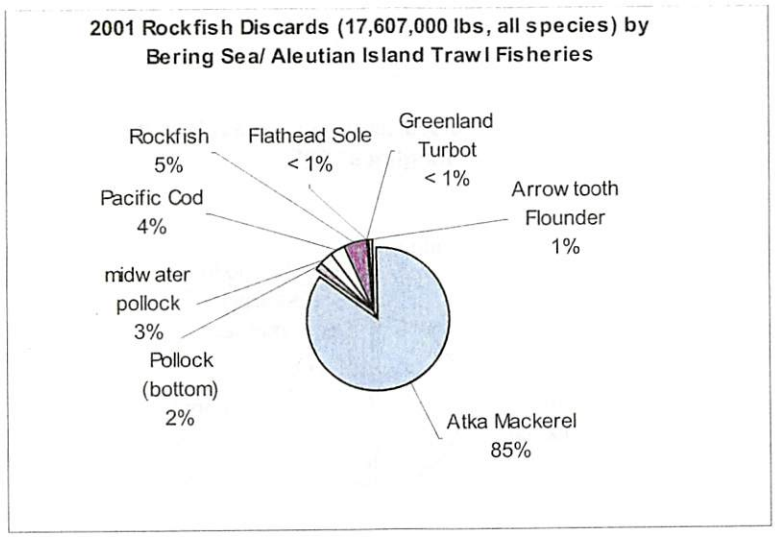


Figure 3.

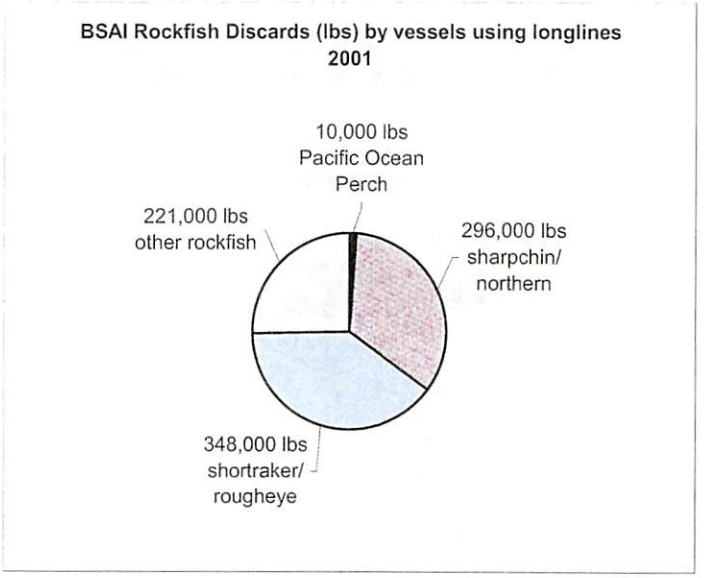
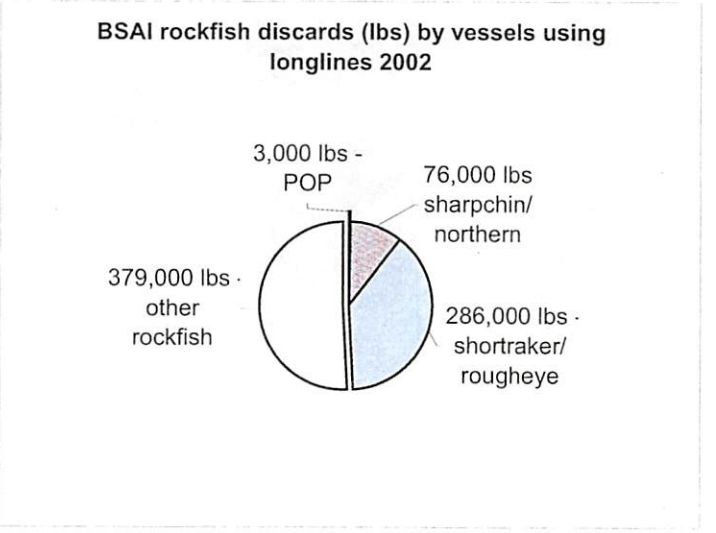


Figure 4.



Source:

AMCC 2003. Discards in the North Pacific Groundfish Fisheries, 2001. Alaska Marine Conservation Council, Anchorage, AK.

AMCC 2003. Discards in the North Pacific Groundfish Fisheries, 2002. Alaska Marine Conservation Council, Anchorage, AK.

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Formerly the Center for Marine Conservation

The Ocean Conservancy

January 9, 2004

North Pacific Fishery Management Council
Attn: Cathy Coon
605 W 4th Ave Suite 306
Anchorage AK 99501-2282

To Whom It May Concern::

In response to NPFMC's November 21, 2003 Federal Register notice calling for HAPC proposals, the Ocean Conservancy proposes designation of the following no-take marine reserves, marine protected areas (MPAs), and marine reserve networks: 1) North Pacific Seamounts Marine Reserve and Marine Protected Area Network; 2) Prince William Sound Deep Basin Habitat Area of Particular Concern; 3) Zhemchug and Pribilof Canyon Marine Reserve Network; 4) Aleutian Islands Marine Reserve Network; and 5) Aleutian Islands Coral and Sponge Marine Reserves.

Each proposed area is rare, ecologically important, sensitive to human induced degradation, and vulnerable to the stress of development activities. (See 50 C.F.R. 600.815(a)(8)). All areas exhibit exceptionally high values for at least three of the four considerations, including the mandatory rarity criteria. All proposals reflect the council's requirement that the areas be "largely undisturbed, and must occur outside core fishing areas." Moreover, all proposed sites within the Aleutian Islands have likely or documented presence of Council managed rockfish species and provide habitat for various life stages of rockfish and other managed species. All proposed Seamount sites provide important habitat for managed species, are named on NOAA charts, and are within the EEZ. Proposals follow the structure provided in the November 21, 2003 Federal Register notice.

The Ocean Conservancy looks forward to your review and detailed analysis of these HAPC proposals.

Sincerely,
[signature]

Kris Balliet, Esq.
Alaska Regional Director
The Ocean Conservancy

The Ocean Conservancy strives to be the world's foremost advocate for the oceans. Through science-based advocacy, research, and public education, we inform, inspire and empower people

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

Please check applicable box (es):
- ☐ GOA Groundfish FMP
- ☑ BSAI Groundfish FMP
- ☑ Scallop FMP
- ☑ BSAI Crab FMP
- ☑ Salmon FMP

Name of Proposer: Kris Balliet, Alaska Regional Director
Affiliation: The Ocean Conservancy

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

Title of Proposal.
Zhemchug and Pribilof Canyons Marine Reserve

HAPC Site Location.
(*Specific latitude/longitude or geographic reference. Include NOAA Chart number, if known.)*
Pribilof Canyon (56 degrees North, 168-170 degrees West)
Zhemchug Canyon (58 degrees North, 173-175 degrees West) includes Zhemchug Pinnacles #2 (58°30 North, 175°05 West) #3 (58°20 North, 175°10 West), and #4 (58°20 North, 175°20 West). Please refer to Appendix B-Map A.

Summary Statement of the Proposal.
(*Provide a brief paragraph concisely describing the HAPC.*)
Zhemchug Canyon and Pinnacles and Pribilof Canyon are located in the Bering Sea. The immense deepwater canyons and pinnacles are part of the Bering Sea continental shelf edge (commonly referred to as the Green Belt) and are known to be areas of high biodiversity and productivity. The concentration of primary and secondary producers in this region attracts large numbers of fish, squid, marine mammals and birds. These canyons and pinnacles are possible sources of dispersal and export for surrounding systems and require protection as HAPC for the benefit of future research, fisheries health, and the conservation of several sensitive species including long-lived and slow-reproducing fish such as rougheye and shortraker rockfish, rare marine mammals such as the harbor seal, and rare seabirds such as the short-tailed albatross.

Statement of Purpose and Need.
(Provide a specific purpose as why the HAPC needs to be identified.)
Pribilof and Zhemchug canyons in the Bering Sea represent some of the world's largest and deepest canyons. Pribilof Canyon is approximately 1800 meters deep and 30 miles wide and starts less than 20 miles north of St. George Island. Zhemchug Canyon is even larger and deeper reaching 2730 meters in depth and spanning over 60 miles in width. St. Paul Island is approximately 100 miles west of the edge of Zhemchug Canyon.

Greater in size and depth than North America's Grand Canyon, both canyons are known to be part of a "highly productive habitat, or Green Belt" located along the edge of the continental shelf of the Bering Sea (Springer et al. 1996). Due to its high productivity of primary and secondary producers, the area is seasonally frequented by commercial and non-commercial fish species as well as an abundance of marine mammals and seabirds (NRC 1996; Springer et al. 1996; Loughlin et al. 1999). In recent years, certain marine mammals populations have experienced significant declines in the area and fishing effort above the canyons has occasionally resulted in the catch of rare seabirds (NRC 1996; NOAA 2000).

Although the Bering Sea includes over 450 species of fish and invertebrates (NRC 1996), our current knowledge of seasonal and temporal distribution, habitat, abundance, and life history, is limited to approximately 25 commercially important species (Loughlin et al. 1999). The existing knowledge and research of these canyons indicates that the areas provide important habitat for a wide array of biodiversity and that the areas offer an important opportunity to further research the characteristics and contributions of the larger "Green Belt" area. Protection of the area as a no-take marine reserve network would provide refugia for commercial and non-commercial fish species as well as marine mammals and seabirds while allowing continued access for research and native subsistence activities.

Habitat Type and Species Information.
(Identify any habitat type(s) and FMP species of the HAPC.)
The high productivity of the Bering Sea shelf-break or Green Belt has been documented for many years. Springer et al. summarize the contributions of the area stating that "sustained primary productivity, intense food web exchange and high transfer efficiency at the shelf edge are important to biomass yield at numerous trophic levels and to ecosystem production of the Bering Sea" (Springer et al. 1996). Zhemchug Pinnacles and Zhemchug and Pribilof Canyons are important parts of this larger system and contain important habitat for a variety of commercial and non-commercial fish species as well as marine mammals and seabirds.

NOAA's EFH queriable database indicates that Zhemchug canyon (58° 11.835', -174° -21.679') is designated as EFH for the following species: Golden King Crab -- Adults, Eggs, Late Juveniles (Map C); Scarlet King Crab -- Adults, Eggs, Snow Crab – Larvae; Grooved Tanner Crab -- Adults, Eggs; Triangle Tanner Crab – Adults; Tanner Crab -- Eggs, Larvae, Late Juveniles (Map I); Pacific Ocean Perch -- Adults, Late Juveniles (Map F); Walleye Pollock – Adults (Map K); Dusky Rockfish -- Adults, Late Juveniles (Map B); Northern Rockfish -- Adults, Late Juveniles (Map E); Shortraker and Rougheye Rockfish -- Adults, Late Juveniles (Map H); and Sculpin -- Adults, Late Juveniles (NOAA 2003).

Likewise, Pribilof Canyon (56° 0.04', -169° -1.021') is designated as EFH for the following species: Golden King Crab -- Adults, Eggs, Late Juveniles (Map C); Scarlet King Crab -- Adults, Eggs; Snow Crab – Larvae; Grooved Tanner Crab -- Adults, Eggs; Triangle Tanner Crab – Adults; Tanner Crab -- Eggs, Larvae (Map I); Dusky Rockfish -- Adults, Late Juveniles (Map B); Shortraker and Rougheye Rockfish -- Adults, Late Juveniles (Map H); and Thornyhead Rockfish -- Adults, Late Juveniles (Map J) (NOAA 2003).

The database lists the following EFH species for Zhemchug Pinnacles #2, #3, and #4 (58° 21.639' -175° -12.285'): Golden King Crab -- Adults, Eggs, Late Juveniles (Map C); Scarlet King Crab – Adults, Eggs; Snow Crab – Larvae; Grooved Tanner Crab -- Adults, Eggs; Triangle

Tanner Crab – Adults; Tanner Crab -- Eggs, Larvae, Late Juveniles (Map I); Pacific Ocean Perch -- Adults, Late Juveniles (Map F); Walleye Pollock – Adults (Map K); Northern Rockfish – Adults, Late Juveniles (Map E); Shortraker and Rougheye Rockfish -- Adults, Late Juveniles (Map H); Thornyhead Rockfish -- Adults, Late Juveniles (Map J); and Sculpin -- Adults, Late Juveniles (NOAA 2003).

Due to an abundance of primary and secondary producers as well as warmer waters from fall to spring, fish and squid have been found to concentrate in this narrow corridor. The collective presence of zooplankton, fish and squid has been shown to attract large numbers of birds and mammals (Springer et al. 1996).

Mesopelagic species such as fish and juvenile squid living at depths of 200-1000 meters during the day and migrating into the upper 200 meters at night have been shown to be ecologically important to the Bering Sea. Research indicates that they account for more than 90 percent of the seasonal food of some marine mammals including fur seals and serve as one of the primary prey for various seabirds (Sinclair et al 1999). They also provide an important prey base for salmon and pollock (Nagasawa 1997).

Seabirds known to gather and feed above the canyon areas include: Black-footed Albatross, Laysan Albatross, Short-tailed albatross, Northern fulmar, Shearwater spp., Fork-tailed storm-petrel, Leach's storm-petrel, Cormorant spp., Black-legged kittiwake, Red-legged kittiwake, Thick-billed murres, Common murres, small auklets (least, crested), Parakeet auklet, Ancient Murrelet, Pigeon guillemot, Horned puffin, Tufted puffin, Jaeger spp., large gull spp., Arctic tern, and Phalarope spp. The rare red-legged kittiwake and the parakeet auklet are found in higher concentrations above the canyons than compared with their overall distribution throughout the Bering Sea (Review 2002). Recent data suggests that the general abundance of kittiwakes and murres has declined in recent years (Loughlin et al. 1999).

Winter studies from the 1960s recorded average densities of seabirds at 10 to 20 birds per square kilometer at Zhemchug Canyon and approximately 5 birds per square kilometer at Pribilof Canyon. Summer studies discovered densities of more than 100 birds per square kilometer at Zhemchug Canyon (Shuntov 1993).

The canyons and the Green Belt as a whole are particularly important to marine mammals. Feeding territory of MMPA-listed fur seals has been shown to include both canyons and Springer et al. noted that fur seals of the Pribilof Islands feed primarily, though not exclusively, along the Green Belt (Springer et al. 1996). Fur seals from the south side of St. Paul Island have been found to use Zhemchug Canyon as part of their feeding territory while Pribilof Canyon has been documented as feeding territory for fur seals from St. George (Robson 2001). Ribbon seals, Stellar sea lions and walrus are also known to seasonally frequent the Green Belt (Springer et al. 1996).

The majority of whale biomass in the Bering Sea is currently or was historically associated with the Green Belt. Species known to presently or historically occur along the continental shelf break and Zhemchug and Pribilof Canyons include: Sperm whales (ESA-listed), fin whales, bowhead whales (ESA-listed), northern right whales (ESA-listed), minke whales, blue whales (ESA-listed), humpback whales (ESA-listed), killer whales, Dall's porpoise, and Stejneger's beaked whales (Springer et al. 1996; Loughlin et al. 1999). The fact that these whales rely on a

wide diversity of trophic levels is evidence of the incredible production and food web interactions within this area (Springer et al. 1996).

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.

Scientists around the world have identified unique biological process occurring within submarine canyons, including[1]:

1. Canyons appear to be important sites of enhanced secondary production and, due to the nature of the canyons' topography and dramatic profiles, these sites provide diverse habitats perhaps not seen anywhere else on continental slopes. (DeDeckker 2003)
2. Organic enrichment macrophyte detritus from canyon heads down to depths >500 m – combined with strong currents also transporting sediments – contribute to a much higher biomass compared to areas adjacent to canyons. In addition, species diversity was also found to be higher in canyons. (Vetter and Dayton 1998).
3. Ecological processes in canyons can be quite different than surrounding waters as a result of the high level of physical disturbance in combination with organic enrichment. (Vetter and Dayton 1998).
4. Microfaunal biomass in canyons can be up to 50 times greater than in non-canyon regions. Values vary with depths, however, and again this may result from the availability of sediment, organic carbon, photodetritus, and oxygen concentration. (Vetter and Dayton 1998).
5. 3 million individuals with a biomass of >1kg. M^{-2} have been identified in La Jolla Canyon offshore California (Vetter, 1994).

Pribilof and Zhemchug canyons are part of the Bering Sea Green Belt and are areas of incredible productivity. Annual primary production is as much as 60 percent greater along the slope of the continental shelf in these areas than in the adjacent outer shelf domain and perhaps 200 percent greater than in the deep ocean (Springer et al. 1996).

The Green Belt contains the greatest biomass of zooplankton in the Bering Sea (Loughlin et al. 1999). Annual secondary production within this Green Belt was also shown to average approximately 60 percent higher than estimates for the adjacent outer shelf domain and 260 percent greater than the deep ocean (Springer et al 1996). Due to this abundance of food as well as warmer waters from fall to spring, fish and squid have been found to concentrate in this narrow corridor. The collective presence of zooplankton, fish and squid has been shown to attract large numbers of birds and mammals (Springer et al. 1996).

In addition, a high presence of corals and a moderate level of seawhips and sponges has been recorded at or near Zhemchug Pinnacles according to the 2002 Eastern Bering Sea Slope Groundfish Survey (Hoff 2002). These benthic invertebrates are known to provide important habitat for rockfish and other sensitive EFH species. Pinnacles in general are known to provide important habitat for a range of species and recently, pinnacles such as the Sitka pinnacles area have been shown to provide important refuge for aggregations of juvenile and adult rockfish as well as spawning habitat for lingcod (NPFMC 2000).

[1] The five points are adapted from DeDecker 2003.

Zhemchug and Pribilof canyons and the associated pinnacles are prominent and unique habitat features within the Bering Sea which is known to be the seasonal or year round home to some of the largest marine mammal, bird, fish and invertebrate populations among the world's oceans and support some of the world's largest commercial harvests of seafoods, including groundfish, salmon, and crabs. In addition, the areas provide subsistence, food, clothing and cultural traditions for the native inhabitants of coastal communities (Loughlin et al. 1999).

Finally, although not an ecological function per se, deep-sea canyons such as Zhemchug and Pribilof Canyons contain invaluable potential to unravel the mysteries of North Pacific regime shifts. "In the deep ocean, the base of such canyons act like giant sediment traps which are geological archives of sediment transport and deposition/erosion. These deposits are referred to as delta fans, and their study ought to inform on the long-term history of environmental changes..." (De Decker 2003).

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

A report on the Bering Sea by the National Research Council of the National Academies states that "since at least the mid-1970's, system-wide shifts in the biomass and composition of the marine community have occurred due to the synergistic effects of environmental fluctuation and disproportionate fishing pressures (NRC 1996). This research demonstrates that the Bering Sea as a whole, including individual features such as Zhemchug and Pribilof canyons and Zhemchug Pinnacles, have experienced historic decline in fishing stock due in large part to commercial fishing effort.

As previously noted, the 2002 Eastern Bering Sea Slope Groundfish Survey indicates a high presence of corals and a moderate level of seawhips and sponges at or near Zhemchug Pinnacles as well as a moderate presence of benthic attached invertebrates at the western edge of both canyons (Hoff 2002). Bottom trawling has been shown to damage coral habitat and a study in Gulf of Alaska reported that 50% of coral had been removed or broken in a single bottom trawl pass. In a review of the site seven months later, the corals had not recovered (Kreiger 2002).

Rockfish and other fish species such as Atka mackerel, Pacific cod, Walleye Pollock and Greenland turbot are associated with a variety of coral species (Heifetz 2000; Krieger 2002). These waters are known to provide essential habitat for the declining populations of rougheye and shortraker rockfish (Map H) (NOAA 2003). Rockfish species are known to have very low productivity and are some of the longest-lived fishes known to science. The maximum ages for many species span over 50 years and some approach 150 years. These factors combine make them extremely vulnerable to fishing pressure and habitat disturbance (Parker et al. 2003). Sablefish, which is a highly valuable commercial species and is present in both canyons (Map G), has suffered population declines in the past and are also susceptible to overfishing (Sigler et al 2003).

In addition to commercial fish species, the canyons are also home to rare and threatened marine mammals and seabirds. Although limited data is available, fishing activity in the area is known to result in the death of seabirds and marine mammals via bycatch. For example, two endangered short-tailed albatross were caught during the 1998-2000 hook and line Pacific cod fishery at the lip of Zhemchug Canyon (Rivera et al. 2001). A photo on NOAA's website shows "as many as 23 short-tailed albatross around a longline vessel fishing in Zhemchug Canyon (58.22 N, 174.19

W) in mid-September, 2000 demonstrating that this is currently a significant management consideration (NOAA 2000).

The fact that seabirds and marine mammals are both characterized by low reproductive rates, low annual mortality, and long life span (Loughlin et al. 1999) makes them particularly sensitive to rapid population declines. Several marine mammal populations in the Bering Sea have suffered significant declines over the past several century. The canyons provide important habitat for the majority of the Bering Sea's MMPA-listed northern fur seals which make up the majority of the world's population for this species as well as habitat for steller sea lions and bowhead and right whales.

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

Pribilof and Zhemchug Canyons and the Bering Sea as a whole have been increasingly exploited for their abundance of natural resources over the past century. This exploitation has centered around commercial fishing for the past fifty years and has had undeniable effects on commercial and non commercial fish species, marine mammals and seabirds.

In the article "Summary of Biology and Ecosystem Dynamics" in the book "Dynamics of the Bering Sea", Loughlin et al. divide human resource development in the Bering Sea into four distinct but overlapping "periods"; the subsistence period (28,000 years ago to today), fur seal period (1786-1984), whaling period (1845-1914) and the commercial fishing period (1952 to present). The paper speculates that the commercial fishing period is "perhaps the most significant in terms of its impact on the Bering Sea ecosystem" (Loughlin et al. 1999).

As noted above, the National Research Council stated in their report "The Bering Sea ecosystem" that "since at least the mid-1970's, system-wide shifts in the biomass and composition of the marine community have occurred due to the synergistic effects of environmental fluctuation and disproportionate fishing pressures" (NRC 1996). The report continues by noting that during the above-mentioned commercial fishing period, the historical composition of the pelagic fish community and that of the fisheries has changed over the years; the change in historical populations are cited as being connected to the intertwined effects of human-induced and climatic and oceanographic conditions (NRC 1996; Loughlin et al 1999).

Furthermore, Loughlin et al. state that "reductions of biomass at lower trophic levels have precipitated depletions of top level predators such as seabirds and marine mammals, to the point where some species may be driven toward extinction" (Loughlin et al. 1999)

Modern fishing technology is currently destroying the habitat benefits provided by the unique geological structure of the canyons and adversely affecting the habitat within Zhimchug and Priblof Canyons. Fishing gear is adversely affecting infaunal and epifaunal species within both canyons. In some areas of Priblof Canyon 25.1% –50% of infaunal and epifaunal prey has suffered adverse affects of fishing. (NMFS EFH PDEIS 2003, Figures B.2-2a & B.2-3a). Living and non-living structural habitat within both canyons are also suffering adverse effects of fishing. In some areas of Priblof Canyon 50.1% – 75% of living structural habitat has already suffered the adverse affects of fishing. (NMFS EFH PDEIS 2003, Figure B.2-4a).

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

Greater in size and depth than North America's Grand Canyon, Pribilof and Zhemchug canyons represent some of the world's largest and deepest underwater canyons. As previously noted, Pribilof and Zhemchug Canyons and the larger Green Belt are perhaps the most productive and diverse trophic systems in all of Alaska. Due to the concentration of primary and secondary producers, this region supports large populatins of fish, squid, marine mammals and birds (Springer et al. 1996).

The bottom waters in the deep basin of the Bering Sea are possibly the oldest in the world and contain the highest concentrations of naturally occurring macronutrients in the world's oceans (Review 2002). The unique physical process of tidal mixing and transverse circulation and eddies at the continental shelf break and within Zhemchug and Pribilof canyon bring nutrients into the euphotic zone and contribute to increased primary and secondary production (Springer et al. 1996) These waters are important for the declining populations of rougheye and shortraker rockfish, which are long-lived and slow-reproducing species. They are also important forage areas for the majority of the Bering Sea's MMPA listed northern fur seals, which make up the majority of the world's population of this species.

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 fauna and habitat associated with Zhemchug and Pribilof Canyons, Zhemchug Pinnacles and the Bering Sea Green Belt; 2) Provide protection for these unique and rare areas from incidental disturbance from fishing effort and other human development; 3) Provide sanctuary for FMP and non-commercial fish and invertebrate species as well as seabirds and marine mammals; and 4) Preserve these relatively unknown but incredibly productive ecosystems for future conservation and fisheries research and native subsistence purposes.

Describe any Proposed Solutions to Achieve These Objectives.
(How might the problem be solved? Include concepts of methods of measuring progress towards those objectives.)
Proposed activities to achieve the above stated objectives include:

- Designate the proposed areas as no-take marine reserves with a 15 nautical mile radius buffer area.
- Create an inventory of the physical environments and biological communities that inhabit Zhemchug and Pribilof Canyons and the Green Belt of the Bering Sea;
- Improve our knowledge of the structure, function, and variability of the Green Belt ecosystems;
- Develop a more comprehensive understanding of the interaction between the bottom waters and continental shelf ecosystems;
- Further our understanding of the relationships and population dynamics between commercial and non-commercial species including marine mammals and seabirds which inhabit Zhemchug and Pribilof Canyons and the Green Belt; 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.)
Although marine reserves have recently been shown to have significant benefits to ocean fisheries and habitat health, reserves encompass less than 1 percent of the world's oceans and less than 0.01 percent of U.S. waters (PISCO 2002). The Ocean Conservancy proposes that Zhemchug and Pribilof Canyon be designated and managed as no-take marine reserves. The proposed management boundary for each area is outlined in Appendix B-Map A.

The suggested management boundary for each of the canyons is a 15 nautical mile radius from the coordinates listed under the "HAPC site location" section. The boundary for Zhemchug Canyon encompasses Zhemchug Pinnacles #2, #3, and #4. Marine reserves in these diverse but largely undisturbed areas will provide important habitat for a wide range of fish, avian, and marine mammal species. The reserves would be closed to all forms of fishing and oil and gas development in order to avoid disturbance of the areas but would remain open to scientific research and native subsistence activities.

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). This is especially important for northern, shortraker, dusky, and rougheye rockfish, which are long-lived, slow-reproducing species facing population threats either at the North Pacific-wide or localized scale.[2] The American Fisheries Society has recommended the use of marine reserves in order to protect spawning areas and refugia for rockfish populations.

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.)
Based on the data available from the NPFMC, there is currently very little active or no fishing activity in Zhemchug and Pribilof Canyons. Longline and trawl effort in both canyons is low according to NPFMC records. We do not anticipate any direct or indirect socioeconomic costs.

Due to the active fishing effort to the east and south of both canyons, commercial fisheries may benefit from export and dispersal from the proposal marine reserves as previously noted. The

[2] See The Ocean Conservancy letter on the 2004 TAC Specs EA dated 12/28/03.

proposal will also benefit the fishing community, research community and general public through the resulting research of deepwater canyons, the Green Belt system, and the myriad of marine mammal, fish, and seabird species associated with the areas.

Residents of the Pribilof Islands, who prosecute a subsistence harvest of northern fur seals should also benefit due to the importance of this habitat to MMPA listed fur seals. Both areas are also suspected spawning grounds for halibut, for which the Pribilovians similarly prosecute a local subsistence and commercial fishery.

Research benefits might include studies on long-term environmental change within the Bering Sea, life-history requirements, dispersal and recruitment, genetic variability, regional and local oceanographic influences, natural biodiversity, natural mortality, refugia design and effectiveness and human impact.

Support Data or Information Sources
(List data sources, information resource, literature, and any traditional knowledge for the proposal.)

Please refer to Appendix A-Literature Cited.

APPENDIX A-LITERATURE CITED

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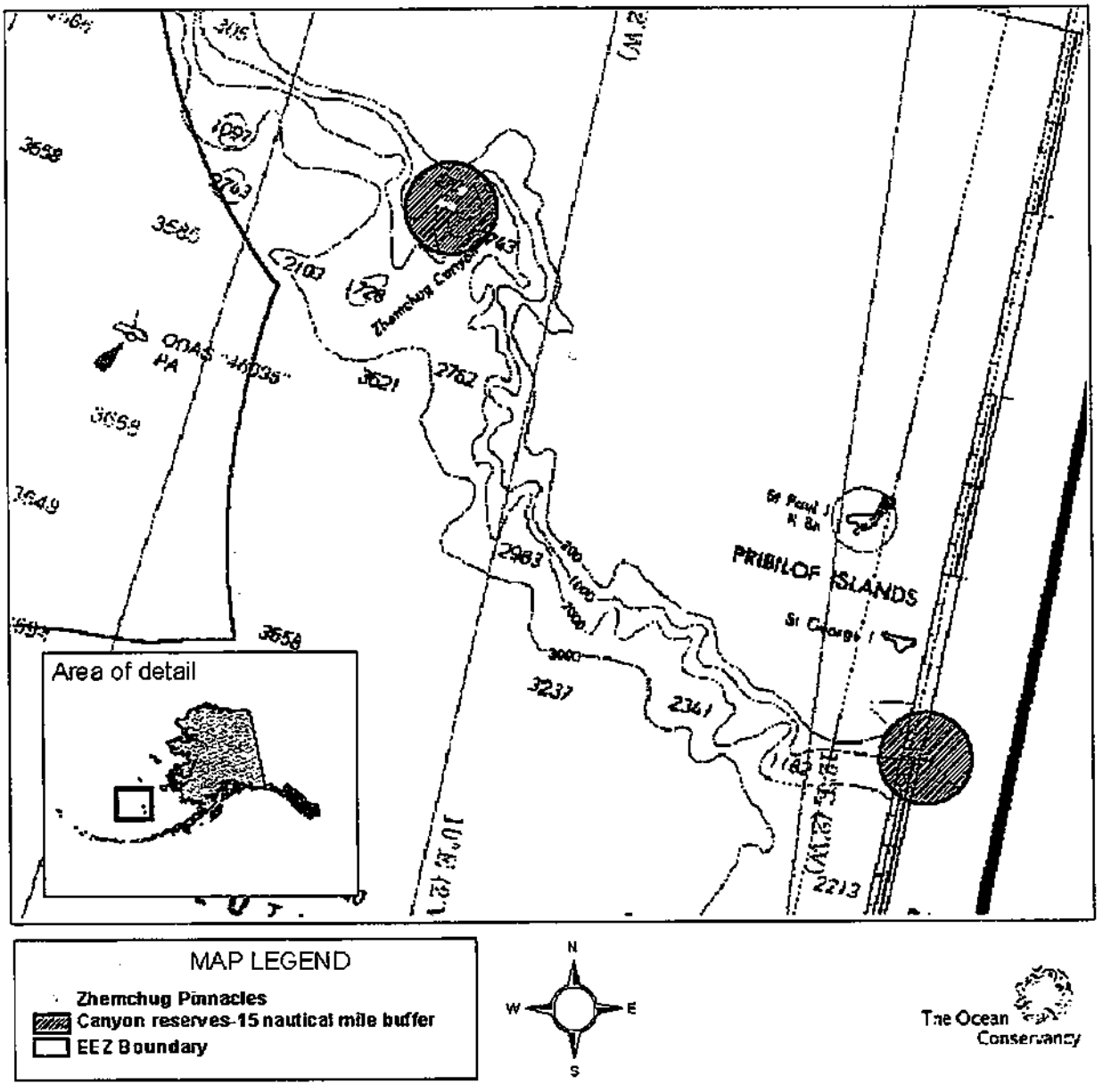
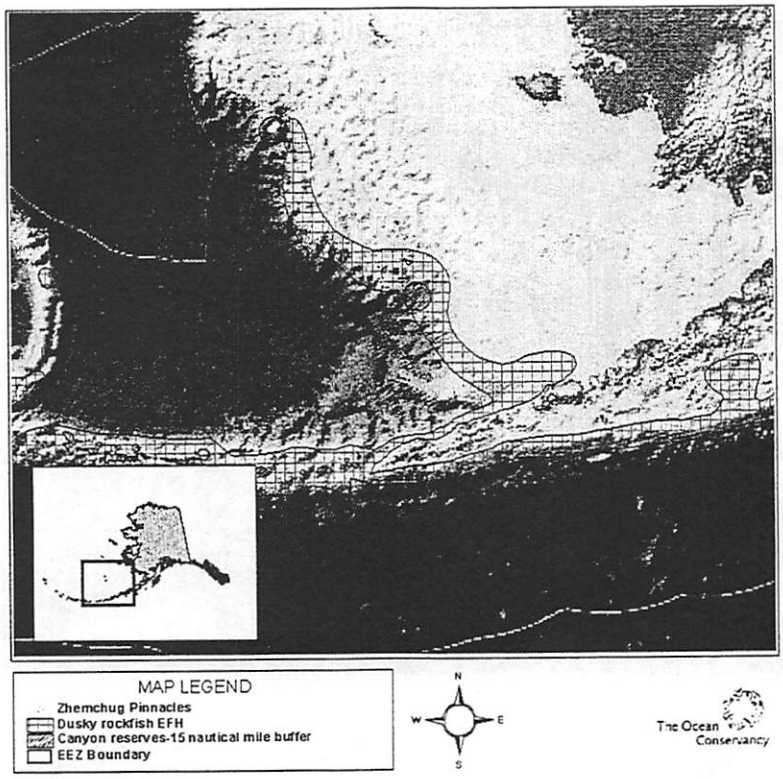
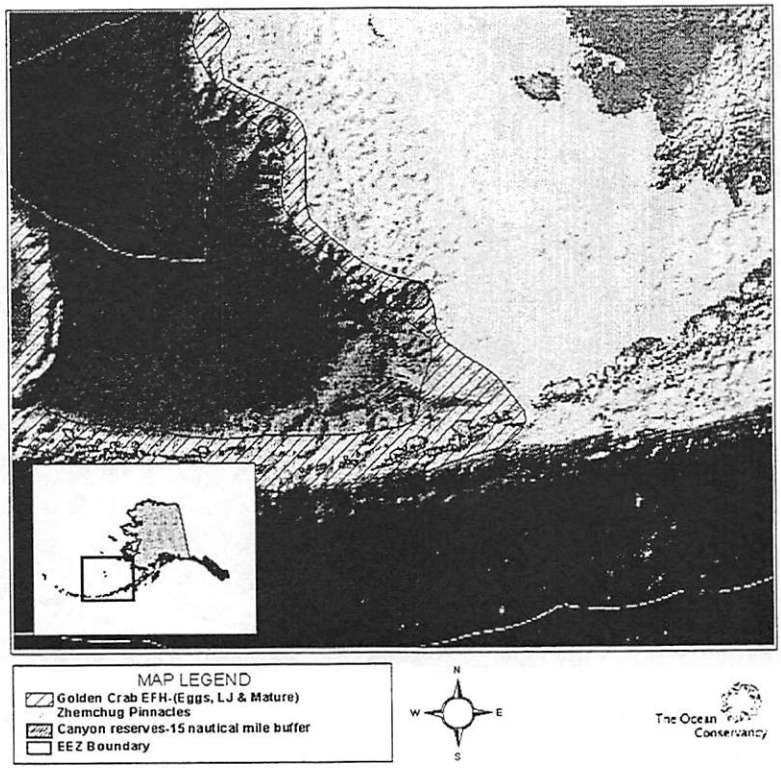
APPENDIX B-MAPS



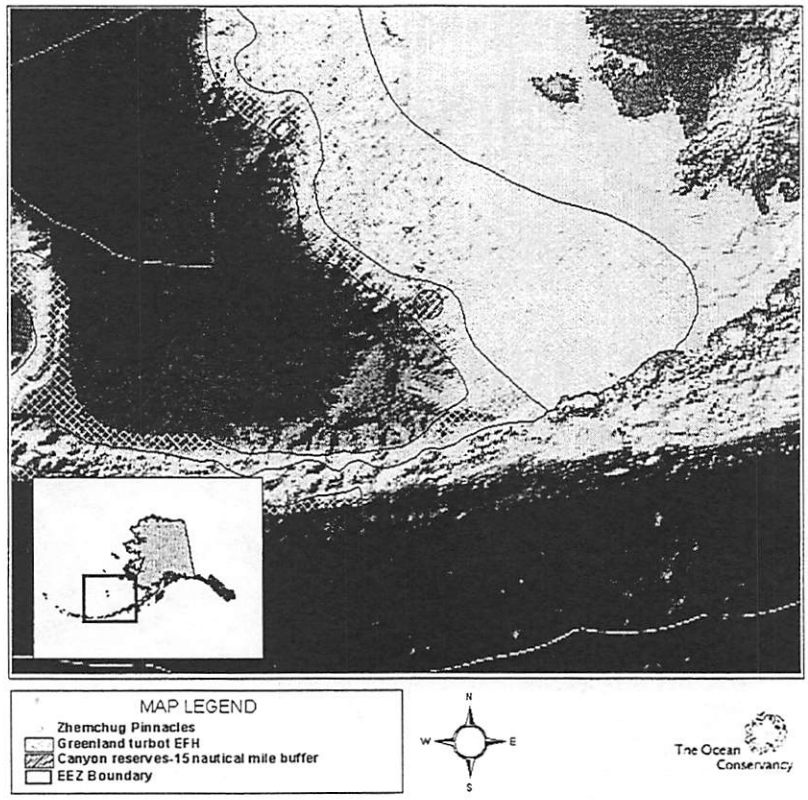
MAP A. Proposed Zhemchug and Pribilof Canyons Marine Reserves



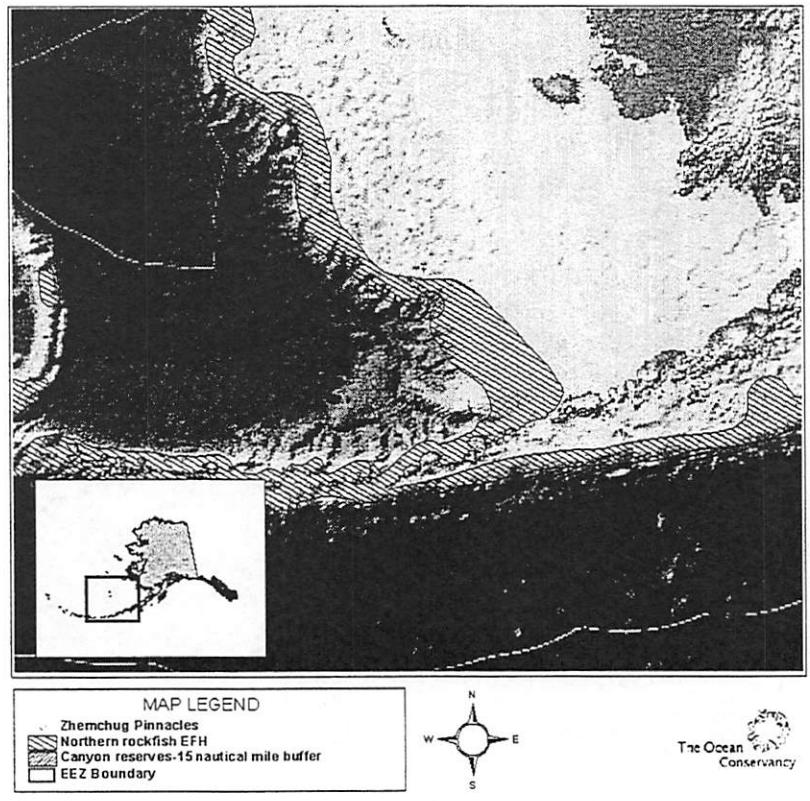
MAP B. Dusky Rockfish EFH map



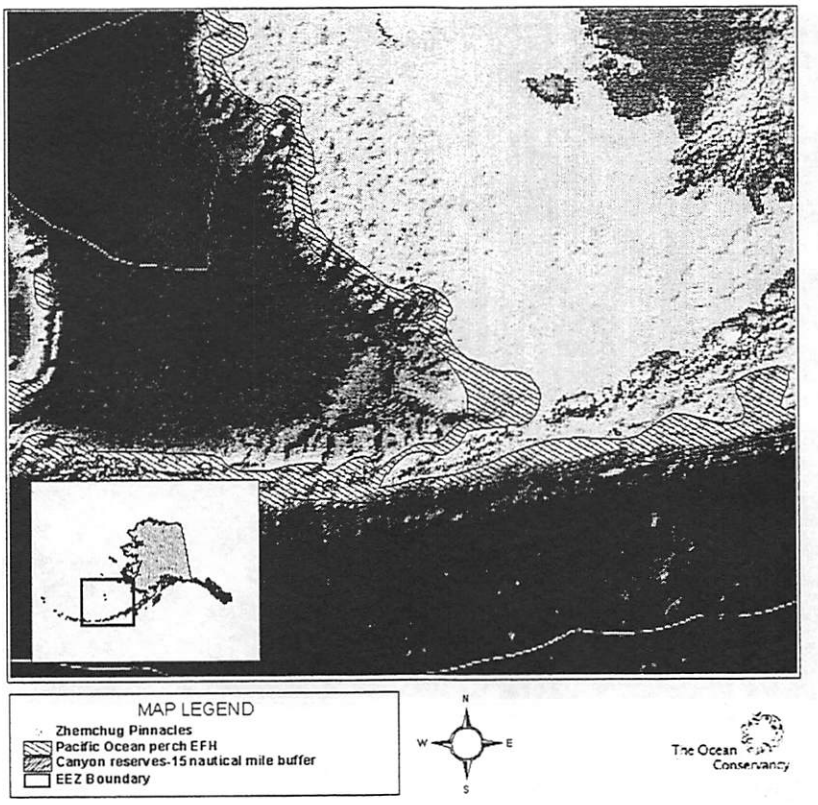
MAP C. Golden Crab EFH-Eggs, Late Juveniles & Mature



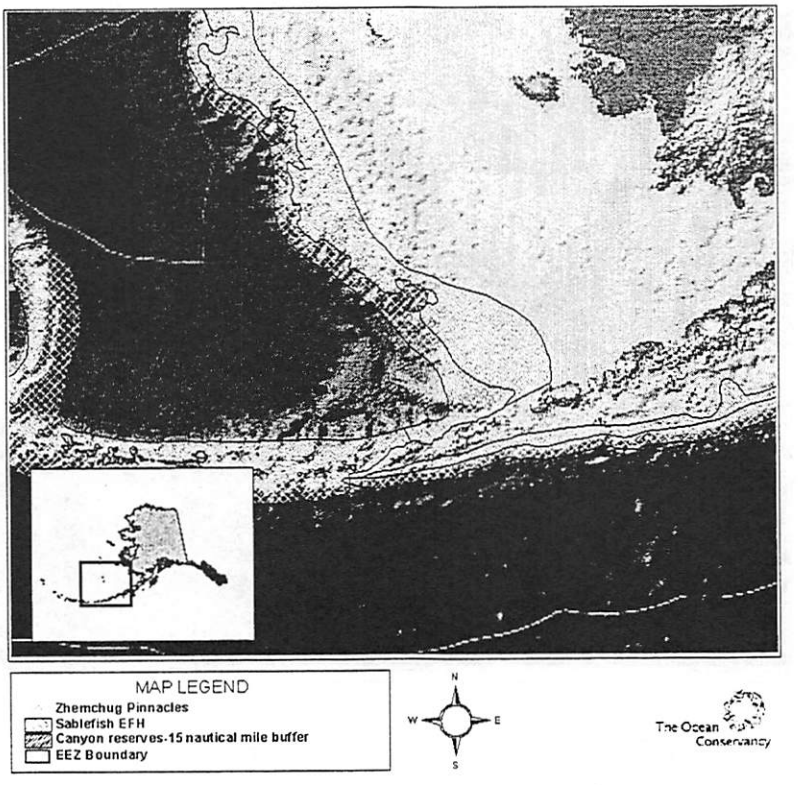
MAP D. Greenland turbot EFH



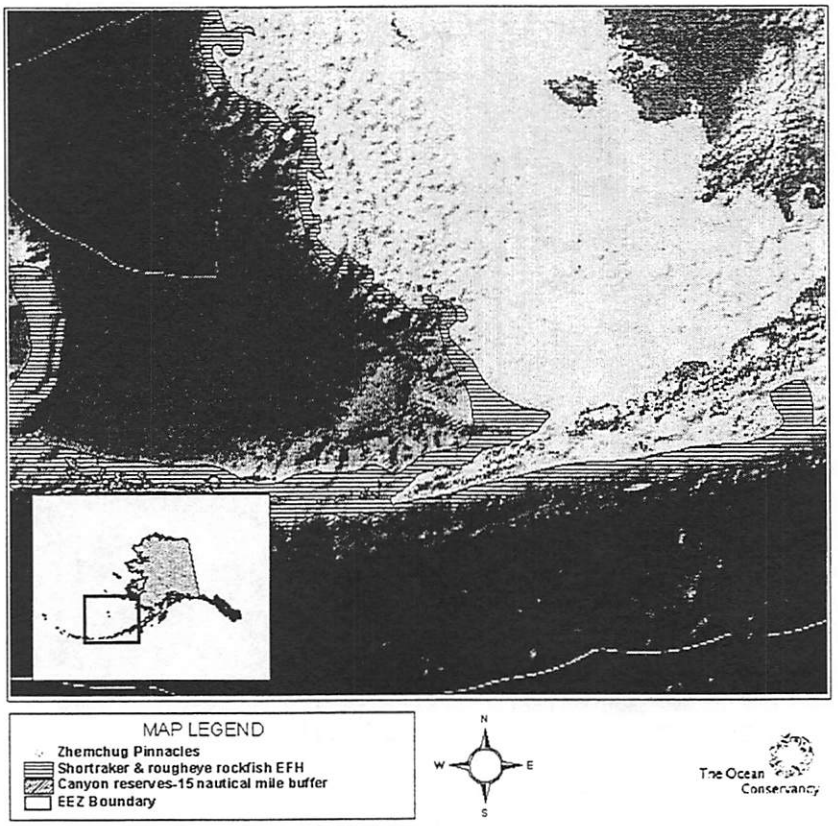
MAP E. Northern Rockfish EFH



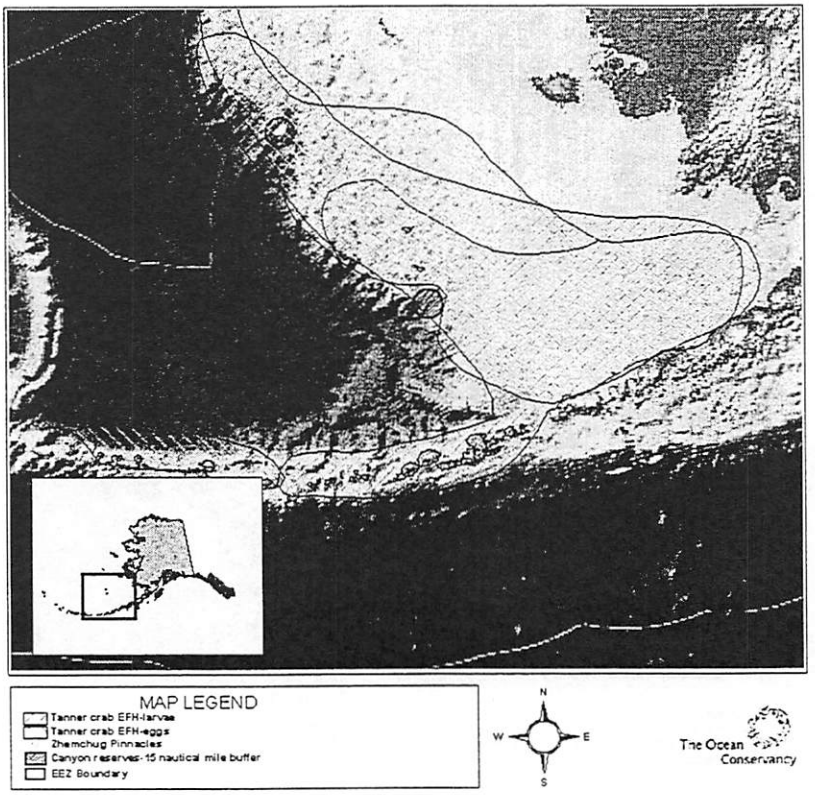
MAP F. Pacific Ocean perch EFH



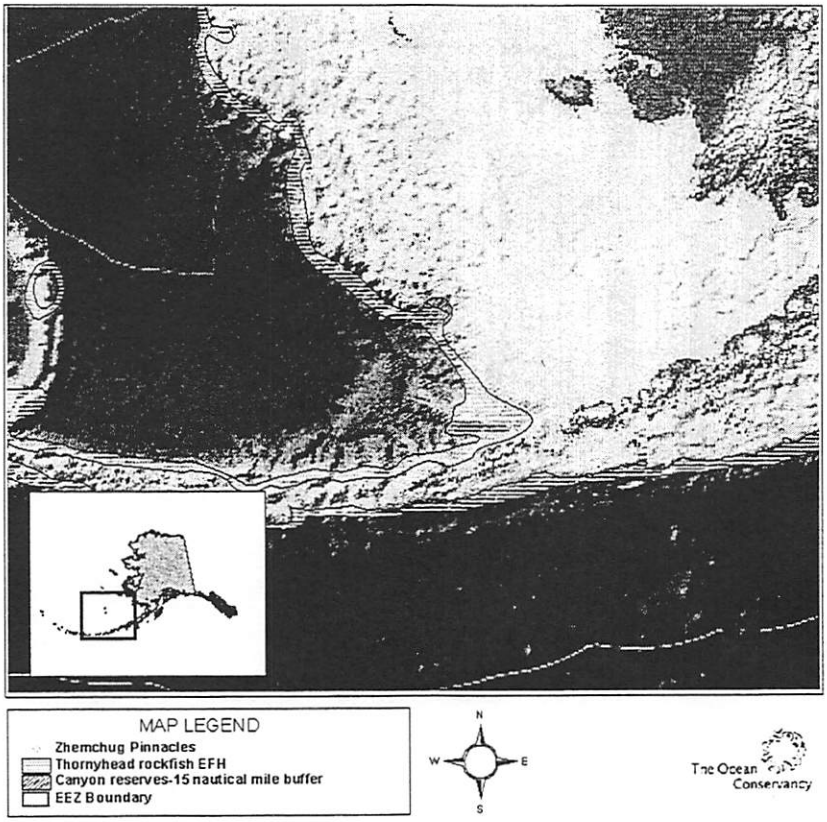
MAP G. Sablefish EFH



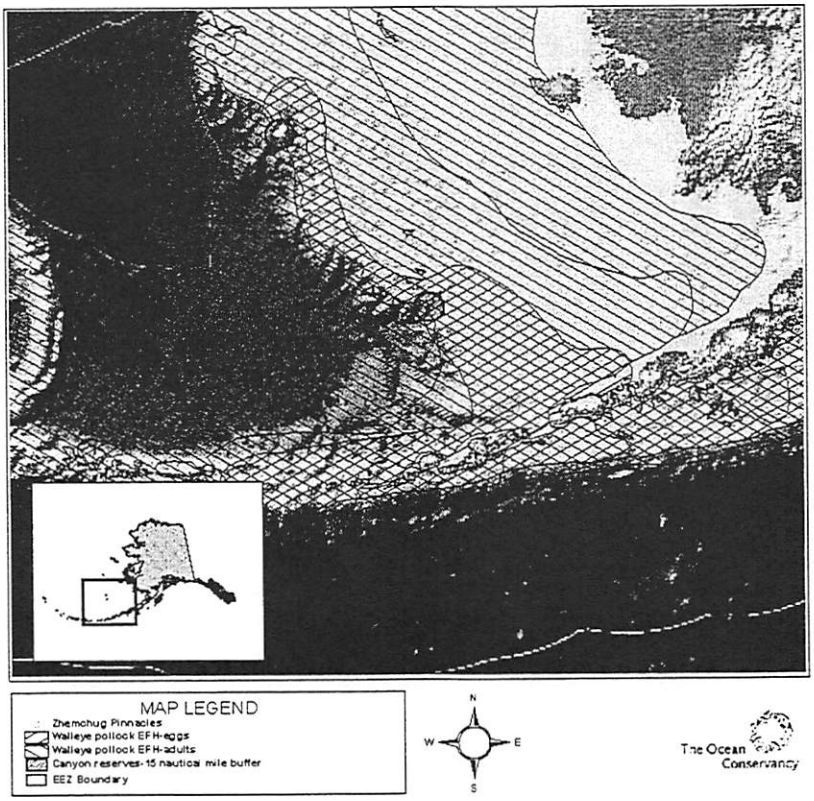
MAP H. Shortraker and Rougheye rockfish EFH



MAP I. Tanner crag EFH-Larvae and eggs



MAP J. Thornyhead rockfish EFH



MAP K. Walleye Pollock EFH-Eggs & adults

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

Please check applicable box (es):
- ☐ GOA Groundfish FMP
- ☑ BSAI Groundfish FMP
- ☑ Scallop FMP
- ☑ BSAI Crab FMP
- ☑ Salmon FMP

Name of Proposer: Kris Balliet, Alaska Regional Director
Affiliation: The Ocean Conservancy

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

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

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 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 ecosytems;
- 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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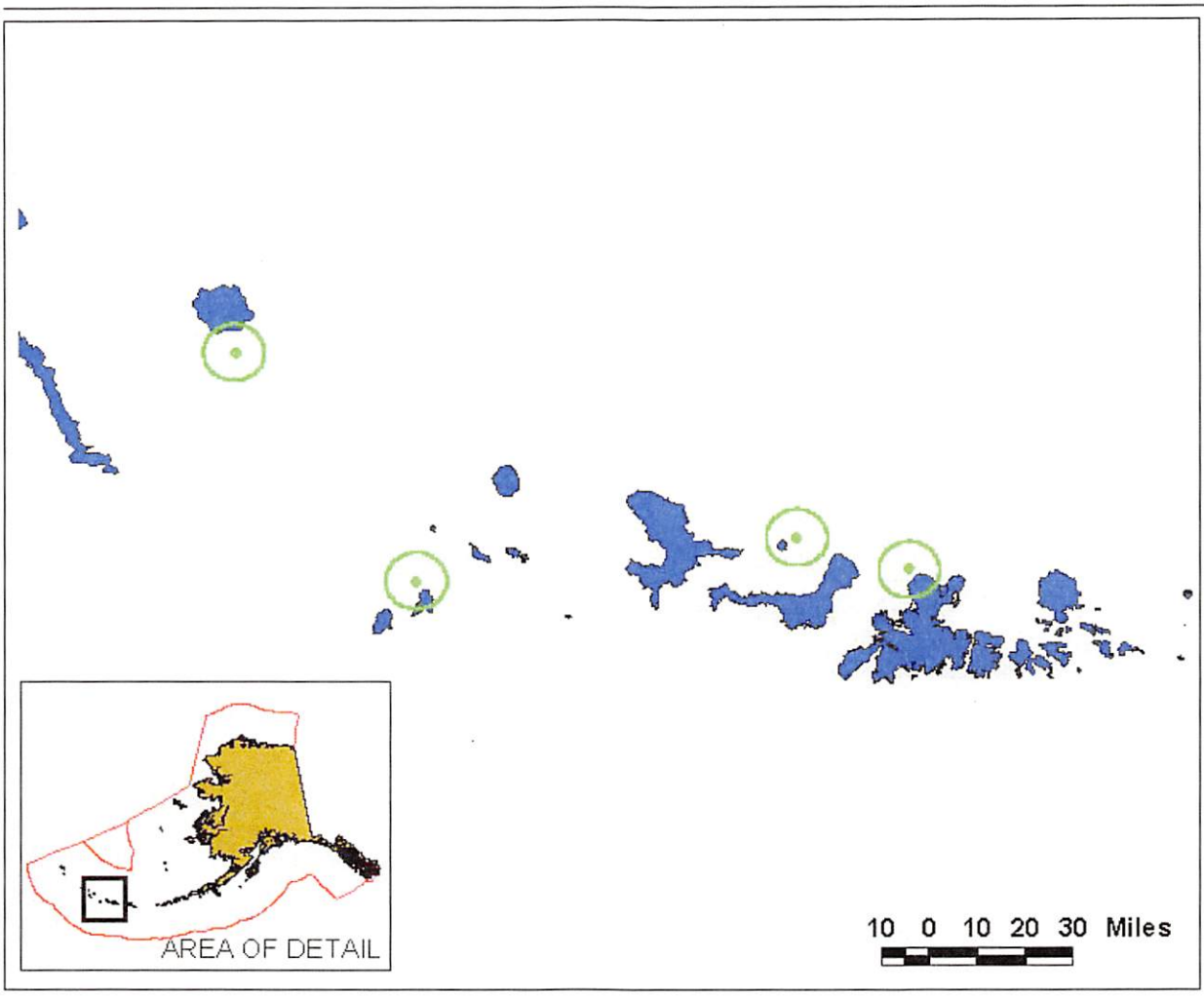
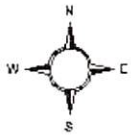


MAP LEGEND

- 10 nautical mile buffer
- Coral gardens
- EEZ Boundary



The Ocean Conservancy

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.
Prince William Sound (PWS) Deepwater Canyon

HAPC Site Location.
(Specific latitude/longitude or geographic reference. Include NOAA Chart number, if known.)
Prince William Sound Deepwater Canyon

General coordinate description is as follows:
Northern extent: 60°45.793', -146°55.54'
Southern extent: 60°30.1', -146°55.931'
Eastern extent: 60°37.004, -146°45.928'
Western extent: 60°38.467, -146°57.583'

Summary Statement of the Proposal.
(Provide a brief paragraph concisely describing the HAPC.)
The PWS deepwater canyon is critical to the entire PWS ecosystem. TOC proposes the designation of the canyon as a HAPC in order to highlight the ecological importance and rarity of the area, encourage further research of the deepwater canyon habitat and associated species, and to ensure adequate EFH consultation in order to protect the area from the potential effects of activities such as oil barging and cruise ship pollutant discharge.

Statement of Purpose and Need.
(Provide a specific purpose as why the HAPC needs to be identified.)
The PWS marine ecosystem supports commercial, recreational and subsistence fisheries for salmon, herring, rockfish, cod, sablefish, halibut, pollock and shellfish (NPFMC 2000). Approximately 100 million pounds of fish are taken from these waters annually. The deepwater canyon is critical to the balance of the PWS food chain. The canyon provides deep-water habitat for a variety of species including overwintering Neocalanus copepods (Kline 1999) that are of critical important to juvenile salmon (Cooney 1993). Continued wild salmon production is paramount to the continued economic and ecological health of PWS.

Prince William Sound's waters and its roughly 3,000 miles of shoreline also support large numbers of sea birds, marine mammals, and, until recently, some of the world's richest herring

and salmon fisheries. Five major salmon hatcheries operate in the Sound. Other important fisheries include dungeness crab, shrimp, halibut and other groundfish. The Sound is home water to one of the world's densest populations of sea otters and killer whales. Seals, sea lions and other ceteceans are also residents and, when combined with the otters and orcas, may represent the world's most profuse population of marine mammals (PWSSC 2003).

Potential impacts to this area are currently little understood. The January 2000 Draft EFH EA states that "the area may be pretty hard to impact, [but] if the habitat was degraded, the consequences for the whole marine ecosystem of Prince William Sound could be catastrophic." The EA goes on to acknowledge the proximity of the canyon to oil shipping lanes and the potential for oil spills in the area as demonstrated by the Exxon-Valdez spill (NPFMC 2000). Today over 15 percent of the nation's oil is shipped through central PWS.

Cruise ships also frequent the Sound several months every year. Cruise ships are known to discharge toxic chemicals, thousands of gallons of waterwater, and tens of thousands of gallons of ballast water bearing pathogens and invasive species from foreign ports (GAO 2000; Eley 2000). A precautionary management approach including further research and a comprehensive EFH consultation process is needed to ensure adequate protection of this important and rare habitat.

Habitat Type and Species Information.
(Identify of any habitat type(s) and FMP species of the HAPC.)

The deep water canyon (60° 36.956', -146° -52.543') is designated as EFH for the following species: Pacific Cod -- Adults, Late Juveniles, Arrowtooth Flounder -- Adults, Late Juveniles, Walleye Pollock -- Adults, Late Juveniles, Sablefish -- Adults, Late Juveniles, Sculpin -- Adults, Late Juveniles, Flathead Sole -- Adults, Late Juveniles, Rex Sole -- Adults, Late Juveniles, Yellowfin Sole -- Adults, Late Juveniles (NOAA 2003). Halibut, golden king crab, Tanner crab, and juvenile salmon are also found in this area (NPFMC 2000).

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.

Prince William Sound (PWS) supports commercial, recreational, and subsistence fisheries for salmon, herring, rockfish, cod, sablefish, halibut, pollok and shellfish. Just east of Lone Island is a 200 to 2800 feet (> 600 m) deep trench. Recent research indicates that this place is vital to maintaining the balance of PWS food chain. The Black Hole area (defined as the area>600 m) provides deep-water habitat for Neocalanus copepods to overwinter (Kline 1999). They are thus present inside the Sound during the early spring phytoplankton bloom, and they graze this bloom heavily to produce very high zooplankton densities early in the annual marine production cycle. These copepods are very important to juvenile salmon (Cooney 1993). Thus the black hole area permits the maintenance of a high-efficiency trophic transfer from phytoplankton to fish, mediated by the copepods. If the habitat was degraded, the consequence for the whole marine ecosystem of PWS could be catastrophic (Jeff Short, NMFS, pers. Comm.. 8/24/9).[1]

[1] This paragraph was taken from the 1999 EFH EA/RIR (Draft for Council Review), prepared by the NMFS for the NPFMC.

Furthermore, scientists around the world have identified unique biological process occurring within submarine canyons, including[2]:

1. Canyons appear to be important sites of enhanced secondary production and, due to the nature of the canyons' topography and dramatic profiles, these sites provide diverse habitats perhaps not seen anywhere else on continental slopes. (DeDeckker 2003)
2. Organic enrichment macrophyte detritus from canyon heads down to depths >500 m – combined with strong currents also transporting sediments – contribute to a much higher biomass compared to areas adjacent to canyons. In addition, species diversity was also found to be higher in canyons. (Vetter and Dayton 1998).
3. Ecological processes in canyons can be quite different than surrounding waters as a result of the high level of physical disturbance in combination with organic enrichment. (Vetter and Dayton 1998).
4. Microfaunal biomass in canyons can be up to 50 times greater than in non-canyon regions. Values vary with depths, however, and again this may result from the availability of sediment, organic carbon, photodetritus, and oxygen concentration. (Vetter and Dayton 1998).
5. 3 million individuals with a biomass of >1kg. M^{-2} have been identified in La Jolla Canyon offshore California (Vetter, 1994).

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

The extent to which the canyon habitat is sensitive to human-induced degradation is not entirely understood. Research indicates that egg and larval forms of many species are especially sensitive to petroleum hydrocarbons, even in extremely small quantities and at low concentrations. Long-term exposure to low concentrations can sometimes be as harmful as acute, short-term exposure to higher concentration (TOC 2002).

Oil from tankers is not the only potential source of oil pollution. Oil leaks can spring from a variety of places on a cruise ship. Spills and leaks occur during the use and transfer of fuels and lubricants for vessel propulsion system as well as other on-board mechanical systems.

Cruise ships and tankers also use tremendous amounts of ballast water to stabilize the vessels. Ballast water is often taken on in the coastal waters of one region and discharged at the next port of call. It is estimated that ballast water transports at least 7,000 different marine species each day around the world, and that the ballast water is discharged at a rate of 2 million gallons per hour (Carlton 2001).

Ballast water is the leading source of invasive species in U.S. marine waters. Invasive species are the second leading cause, after habitat destruction of biological diversity loss. Competition with and predation by invasive species affects at least 49 percent of endangered or threatened species in the United States (TOC 2002).

[2] The five points are adapted from DeDecker 2003.

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

The Prince William Sound serves as a shipping route for significant amounts of oil. Cruise ships frequenting the PWS produce immense amounts of liquid waste each day, including as much as 37,000 gallons of oily bilge water; 30,000 gallons of sewage; 255,000 gallons of non-sewage wastewater; 15 gallons of toxic chemicals from photo processing, dry cleaning and paints; tens of thousands of gallons of ballast water, bearing pathogens and invasive species from foreign ports (TOC 2002). The adverse effects of oil on the PWS environment has been well documented. (Clark 1986). The release of bilge water introduces foreign species into the ecosystem, which threatens its continued production and health. The damaging effects of toxics in the marine environment have also been well documented (Beckmen 2003).

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

The Council already ranked the Prince William Sound deepwater canyon as being of "high" rarity in the draft HAPC Environmental Assessment and stated that the canyon is "probably the only one of its kind" (NPFMC 2000).

Objectives of the Proposal.
(List objectives specific to the identification of the HAPC.)
The objectives of this proposal are to: 1) Provide protection for this unique and rare area from incidental disturbance from oil shipping and cruise ship pollution; and 2) Encourage further research of the deepwater canyon habitat and associated species.

Describe any Proposed Solutions and Management Measures to Achieve These Objectives.
(How might the problem be solved? Include concepts of methods of measuring progress towards those objectives.)
Proposed activities to achieve the above stated objectives include:

- Designate the proposed area as a HAPC;
- Require adequate EFH consultation from oil and cruise ship industries to ensure protection of the deepwater basin ecosystem;
- Create an inventory of the physical environments and biological communities that inhabit the PWS deepwater canyon;
- Improve our knowledge of the structure, function, and variability of the PWS deepwater canyon ecosystem;
- Further our understanding of the relationships and population dynamics between commercial and non-commercial species which inhabit the PWS deepwater canyon;
- Further our knowledge of the local effects of pollutants resulting from cruise ship and oil shipping industries; AND
- Further our knowledge of the value of HAPCs as a conservation and fisheries management tool.

Identify any Expected Benefits to Habitat or FMP species.
(Include specific information regarding a species life history stage, if known.)
Protection of the deepwater canyon as a HAPC will highlight the ecological importance and rarity of the area and thereby encourage further research of the deepwater canyon and its

associated species. The research will result in a fuller understanding and therefore more informed management decision about the canyon habitat and the various managed species which inhabit it. Furthermore, protection of the area will ensure appropriate EFH consultation with the oil and cruise ship industry. Any resulting changes in management of the area will benefit both habitat and FMP species.

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.)

Based on the data available from the NPFMC, there is currently no active bottom trawling or long-line fishing in this area and the proposal does not recommend any management changes affecting commercial or recreational fishing. Therefore, we do not anticipate any direct or indirect socioeconomic costs to the fisheries industry.

The oil and cruise ship industry will be potentially impacted by the need to redirect this shipping lanes or travel corridors in order to avoid pollution discharge or minimize threats to the area. Any resulting changes will be the result of EFH consultation which determines that their activities may negatively impact the deepwater canyon habitat and FMP species.

The proposal will benefit the fishing community, research community and general public through the development of a more thorough understanding of the importance of this area to the Prince William Sound ecosystem.

Supporting Data or Information Sources

(List data sources, information resource, literature, and any traditional knowledge for the proposal.)

Please refer to Appendix A-Literature Cited.

APPENDIX A-LITERATURE CITED

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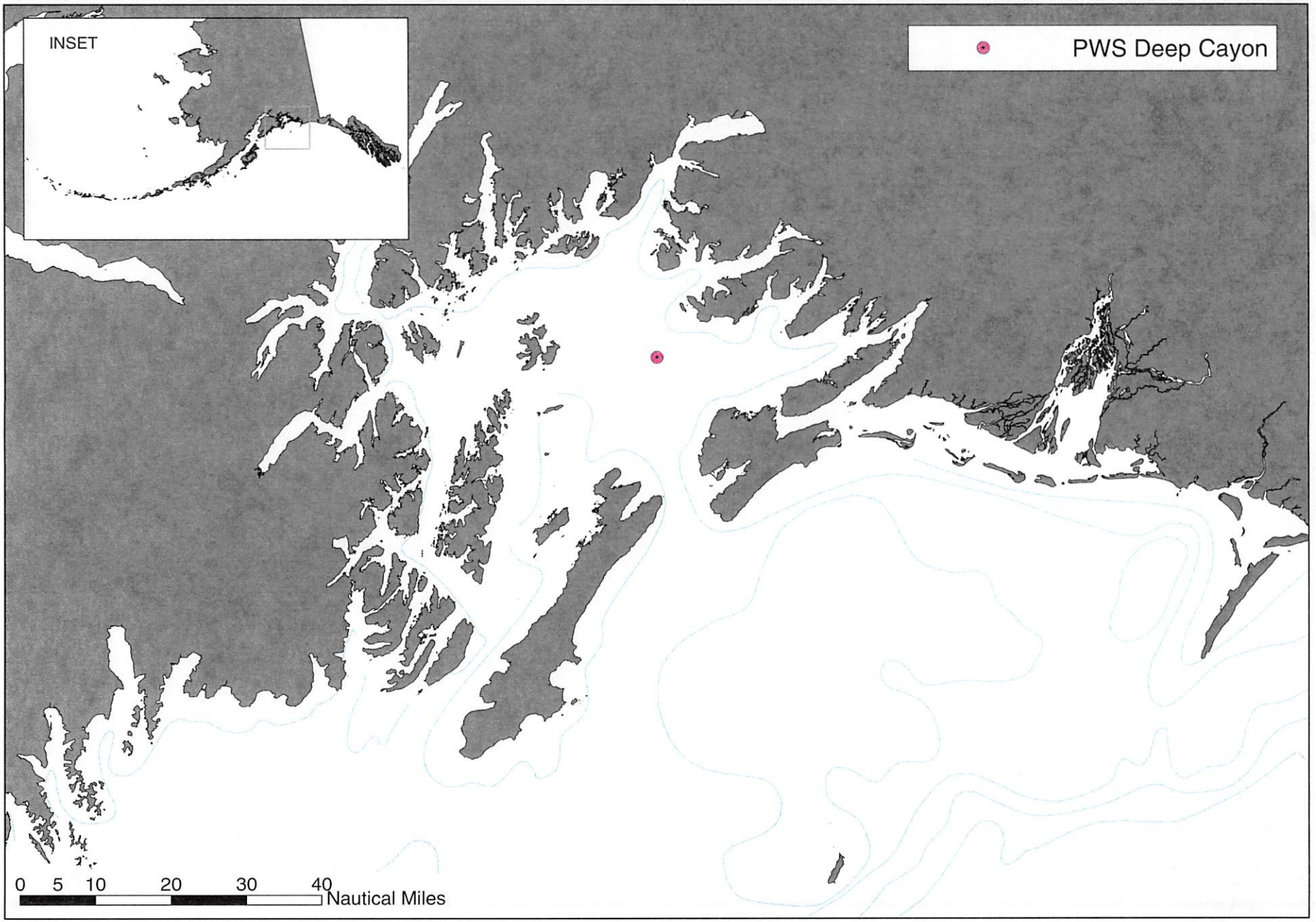
Deepwater Canyon HAPC Proposal



HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

Please check applicable box (es):
- ☑ GOA Groundfish FMP
- ☑ BSAI Groundfish FMP
- ☑ Scallop FMP
- ☑ BSAI Crab FMP
- ☑ Salmon FMP

Name of Proposer: Kris Balliet, Alaska Regional Director
Affiliation: The Ocean Conservancy

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

Title of Proposal.
North Pacific Seamounts Marine Reserve Network

HAPC Site Location.
(*Specific latitude/longitude or geographic reference. Include NOAA Chart number, if known.)*
Bowers Seamount (540500, -1744700);
Dickins Seamount (543000, -1370000);
Denson Seamount (540000, -1371500),
Brown Seamount (550000, -1383000);
Welker Seamount (550700, -1402000);
Quinn Seamount (561500, -1451500);
Dall Seamount (581000, -1453500);
Ely Seamount (561500, -1454000);
Giacomini Seamount (562500, -1462500);
Kodiak Seamount (565200, -1491500);
Odessey Seamount (543000, -1494500);
Smook Seamount (550900, -1500700);
Patton Seamount (544000, -1503000);
Hecht Seamount (534500, -1512000);
Marchand Seamount (545000, -1514500);
Chirikof Seamount (545000, -1530000);
Putnam Seamount (513300, -1602500);
Sirius Seamount (520000, -1605000);
Derickson Seamount (525000, -1611500);
Unimak Seamount (534000, -1623000);
Atka Seamount (501600, -1751000);
Adams Seamount (500100, -1761400);
Thurmond Seamount (50.8333, -182).

Summary Statement of the Proposal.
(*Provide a brief paragraph concisely describing the HAPC.*)
The Ocean Conservancy proposes the protection of twenty-three named seamounts within the Aleutian Islands, Bering Sea, and Gulf of Alaska as no-take marine reserves. Substantial

research has demonstrated that seamounts serve as important habitat for a variety of marine species, including several commercially valuable fish species. Scientific research has also documented a high probability for seamounts to host endemic species that occur nowhere else in the world. In furtherance of both the NPFMC's and National Standard's explicit commitment to precautionary management, TOC proposes closing these relatively unfished and discrete areas to all forms of fishing and mineral development. Understanding the need for adaptive management and ecological control areas, TOC proposes that that the seamounts remain open to research activities that will further our understanding of these sensitive marine environments. TOC further proposes that areas which are individually closed as marine reserves be networked as a system of larger marine protected areas. Suggested boundaries for these areas are included on maps in Appendix B.

Statement of Purpose and Need.
(Provide a specific purpose as why the HAPC needs to be identified.)
Rising sharply from the ocean floor, Alaska's North Pacific seamounts are typically very isolated, being the only hard bottom for miles around, and provide unique habitat in otherwise open water far from the coast. Seamounts are subsurface islands of incredible species richness and high biological productivity compared to surrounding deeper waters (Probert et al. 1997). Alaska's seamounts are a unique type of deep-sea habitat that remains relatively unexplored.

The isolation of seamounts is enhanced by specialized current flows that may help retain larvae, on or near their slopes. Because of the extreme isolation of seamount habitats, they represent potential hotspots for the creation of new species. In fact, scientists have found that many of the species on a given seamount may be endemic or genetically isolated from the next nearest population (AXYS Consulting 2000; NOAA 2002). In addition, species have been found to exist on seamounts in conditions under which they were not previously known to exist. Other organisms, such as fish, marine mammals, and seabirds are also thought to be attracted to seamounts as they transit along migratory feeding routes (AXYS Consulting 2002).

NPFMC's own draft EA published in January 2000 concluded that seamount areas "should receive the highest priority in HAPC type designation" and that the seamount habitat type met all HAPC criteria (NPFMC 2000). Despite recognition that seamounts and their resident species are unique and sensitive to human-caused degradation from fishing and potentially deep-sea mining (WWF Germany 2003), little research has been done on seamounts throughout Alaska's North Pacific.

Seamounts need to be designated as no-take marine reserves for the following reasons: 1) the high species diversity suspected to exist at these locations; 2) the potential for future discovery of endemic species in the proposed reserves; 3) the habitat provided by seamounts for species that are known or suspected to congregate in the areas for spawning and mating; 4) the link between human activity and the decline in biodiversity on seamounts; 5) the apparently limited dispersal between seamounts, the extreme longevity and slow recruitment of many species, and the limited fixed habitat that make seamount fauna sensitive to the impact of fishing; 6) the likelihood that habitat recovery on seamounts may take decades or even centuries; and 7) the use of longlines, driftnets and purse seines on or near seamounts are known to impact seabirds, cetaceans, and turtles via incidental catch. (Gubbay 2003).

Habitat Type and Species Information.
(Identify any habitat type(s) and FMP species of the HAPC.)
Limited research over the past two decades has demonstrated that seamount summits in the Gulf of Alaska provide unique habitat for crab, rockfish, sablefish and grenadier (Raymore 1982). More recently, seamounts and pinnacles such as the Sitka pinnacles area have been found to provide important refuge for aggregations of juvenile and adult rockfish as well as spawning habitat for lingcod (NPFMC 2000).

Although the National Marine Fisheries Service (NMFS) has not included seamounts in EFH mapping efforts, managed species and their prey are known to exist on several of the seamounts. Furthermore, seamount research in the North Pacific and around the globe indicates that seamounts provide unique and important habitat for a variety of managed species and the other species upon which they depend.

Sampling and photographic investigation from five of the proposed seamounts (i.e. Patton, Giacomini, Welker, Quinn, and Dickens) revealed the following EFH species: sablefish *(Anoplopoma fimbria)*, Tanner crab *(Chionoecetes tanneri)*, golden king crab *(Lithodes aequispina)*, deep-sea red king crab *(Lithodes couesi)*, grenadier, rockfish and squid (Raymore 1982; Hughes 1981). In addition to these commercially valuable species, sampling also revealed a "wide species diversity of considerable scientific interest" (Hughes 1981).

During a submersible dive on Patton seamount in 1999, Dr. Bradley Stevens observed an abundance of invertebrates at depths less than 1000m including corals, sponges, feather and brittle stars, and crabs. Giant, large-clawed spider crabs (*Macoregonia macrocheira*) were recorded at depths of up to 3,300 meters; the giant crab was not previously known to exist as far north as Patton seamount or at such depths (Kodiak Daily Mirror, 6/18/2002). Two other unexpected species of crab (*Paralomis verrilli* and *Paralomis multispina*) were also observed during the dive. The dive also documented the presence of the Grooved Tanner crab, Golden king crab, scarlet king crab, and two types of squat lobsters (AFSC/NOAA 1999).

A similar dive in 2002 documented the existence of several types of corals including bamboo coral and bristlestars (AFSC/NOAA 2002). Golden king crabs were observed to depths of approximately 500m, and scarlet king crabs were noted on the seamount from 500m to 1000m in depth. During the dive, scientific samples were taken for 10 species of crabs, 7 species of coral, 10 species of sponges, and 18 species of seastars (Kodiak Daily Mirror 8/6/99).

Tagging of sablefish on seamounts in the Gulf of Alaska has demonstrated that seamount to continental slope migration of sablefish and perhaps other species does occur. Sablefish tagged on Welker and Giacomini seamounts were later recovered in the U.S. commercial fishery on the continental slope. A report on the tagging study noted the possibility that seamounts are used as "stepping stones" on the journey (Maloney 2002).

Seamount research is currently underway at Canada's proposed Bowie Seamount marine reserve and marine protected area (MPA). The proposed Canadian MPA abuts the US exclusive economic zone and would be directly adjacent to the proposed Denson Seamount reserve if the respective proposals are adopted. Bowie seamount is known to host the following EFH species: Pacific halibut, sablefish, squid, rougheye rockfish and yelloweye rockfish. The area has been proposed for protection by the Canadian government to preserve its rich biological productivity,

support of unique plant and animal communities, and vulnerability to human pressures and activities (FOC 2001).

The Ocean Conservancy seamount proposals provide a wide range of habitat types due to the varied relief of the seamounts. Summit depths of the proposed seamounts range from 168m (Patton Seamount) to 4517m (Atka Seamount) and the seamounts each contain unique geologic structure and bathymetry. In addition to the EFH species already noted, a wide-range of non-commercial species have also been found to commonly reside on seamounts such as sponges, gorgonians, black corals, scleractinian corals, antipatharian corals, anemones, brisingid seastars and crinoids (Boehlert and Genin 1987). Enhanced currents that sweep around seamounts provide ideal conditions for suspension feeders and these are often the species that dominate the benthos (Rogers 1994). Seamounts are known to host the following suspension feeders: sponges, hydroids and ascidians, crinoids, asteroids, ophiuroids, holothurians, mollusks and decapods. (WWF Germany 2003).

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

The NPFMC has already concluded in the draft HAPC EA published in January 2000 that seamount areas "should receive the highest priority in HAPC type designation" and that the seamount habitat type met all HAPC criteria (NPFMC 2000). Nevertheless, we have further documented below that seamounts meet all four HAPC considerations.

[√] The **IMPORTANCE** of the ecological function provided by the habitat.

As previously noted, seamounts are subsurface islands of incredible species richness and high biological productivity compared to surrounding deeper waters (Probert et al. 1997). It has long been known that fish aggregate on seamounts but why is only partially understood (Probert 1999). Based on research throughout the world's oceans, individual seamounts have been shown to support species that occur nowhere else in the world or which are genetically isolated from the next nearest population. (AXYS Consulting 2000).

As previously noted, limited research over the past two decades has demonstrated that seamount summits in the Gulf of Alaska provide unique habitat for crabs, rockfish, sablefish, and grenadier, and potentially provide important refuge for these and other species (Raymore 1982). More recently, seamounts and pinnacles such as the Sitka pinnacles area have been found to provide important refuge for aggregations of juvenile and adult rockfish as well as spawning habitat for lingcod (NPFMC 2000).

Although the National Marine Fisheries Service (NMFS) has not included seamounts in EFH mapping efforts, managed species and their prey are known to exist on several of the seamounts. Furthermore, seamount research in the North Pacific and around the globe indicates that seamounts provide unique and important habitat for a variety of managed species and the other species upon which they depend, possibly including unknown and undiscovered endemic species.

Distribution of seamount species and levels of endemism are likely to be determined largely by plate tectonic history and the degree to which ridge systems and seamount chains provide 'stepping stones' between areas (Butler et al. 2001). The concept of 'stepping stones' is thought

to be more relevant where seamounts lie close to continental shelf or occur in chains. (WWF Germany 2003).

The ecological importance of seamounts for top predators and marine mammals is emphasized by the fact that some far ranging pelagic species concentrate their mating and spawning on seamounts (WWF Germany 2003). Within the North Pacific Ocean, Baird's beaked whales have been sighted in deep waters over the continental shelf and particularly in regions with submarine escarpments and seamounts (NMFS 2000). Similarly, blue whales have been found to have a close association with the seamounts near the Kamchatka Peninsula (Moore et al. 2002).

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

Many invertebrate and fish species associated with seamounts are known to have a very low rate of productivity and extreme longevity and are therefore extremely vulnerable to overfishing. Furthermore, recovery of such populations is projected to take decades or even centuries (Koslow 1997). In addition, growth-rate estimates for deep-water corals that are typically present on seamounts indicate that the recovery time for corals could take at least as long (Wilson 1979).

In the past, commercial fisheries on seamounts have a record of being unsustainable and may cause strong and persistent damage to epifauna such as corals, sponges and gorgonians (Koslow et al. 2000). For example, fishing over the southern Emperor Seamounts and seamounts in the northern Hawaiian Ridge drove pelagic armourhead (*Pseudopentaceros wheeleri*) to commercial extinction within 10 years of their discovery (WWF Germany 2003).

In a study on Bowie Seamount, Beamish and Neville (In prep.) contend that due to the longevity and slow growth to maturity, sablefish are vulnerable to overfishing (WWF Canada 2003). This is particularly relevant as sablefish are expected to be the most common finfish on Gulf of Alaska's seamounts (Hughes 1981). Sablefish, which is a highly valuable commercial species, has suffered population declines in the past and are susceptible to overfishing (Sigler et al 2003).

Bottom trawling has been shown to be particularly harmful to the benthos of some seamounts. Recent research revealed that the substrate of a heavily fished Tasmanian seamount is now mostly either bare rock or coral rubble and sand, unlike the lightly or unfished seamounts that were also researched (Koslow et al. 2001). The abundance and species richness of the benthic fauna on heavily fished seamounts was also markedly reduced (WWF Germany 2003).

Fishing also has indirect impacts on avian and other species. The use of longlines, driftnets and purse seines have been shown to impact thousands of seabirds, cetaceans and turtles through 'incidental catch' (Gubbay 2003). This is an important consideration as both marine mammals and avian species have been known to congregate above pinnacles and seamounts.

Although fishing is clearly the most significant current threat to seamount biodiversity, it is not the only threat. The exploration of seamounts by mining companies for ferromanganese crust and polymetallic sulphides would have direct physical impacts on seamounts as well as adjacent areas. (WWF Germany 2003).

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

Effects of fishing on seamounts are difficult to distinguish from the effects of deep-sea fisheries in general since catch statistics are often pooled for relatively large areas. Furthermore, in most cases fishing has taken place before there was a reasonable understanding of the biology of the species and habitat being targeted (WWF Germany 2003). Nevertheless, the research available has consistently demonstrated the damaging effects of commercial fishing on seamount biomass and biodiversity.

As previously noted, many species of fish associated with seamounts have been found to have a very low rate of productivity and extreme longevity and are therefore extremely vulnerable to overfishing. Due to these characteristics, recovery of such populations is projected to take decades or even centuries (Koslow 1997). In addition, growth-rate estimates for deep-water corals that are typically present on seamounts indicate that the recovery time for corals could take at least as long (Wilson 1979).

Based on research from the Northeast Atlantic Ocean and North and South Pacific Oceans, commercial fisheries on seamounts have a record of being unsustainable and may cause strong and persistent damage to epifauna such as corals, sponges and gorgonians (Koslow et al. 2000). For example, fishing of the pelagic armourhead (*Pseudopentaceros wheeleri*) over the southern Emperor Seamounts and seamounts in the northern Hawaiian Ridge drove the species to commercial extinction within 10 years of their discovery (WWF Germany 2003).

In a study on Bowie Seamount in the North Pacific, Beamish and Neville (In prep.) contend that due to the longevity and slow growth to maturity, sablefish are vulnerable to overfishing (WWF Canada 2003). This is particularly relevant as sablefish are expected to be the most common fin-fish on Alaska's North Pacific seamounts (Hughes 1981).

In a separate study in the South Pacific, benthic biomass on unfished Tasmanian seamounts was found to be 106% higher than that of heavily-trawled seamounts. Bottom trawling has been shown to be particularly harmful to the benthos of some seamounts. The substrate of heavily fished Tasmanian seamount is now mostly either bare rock or coral rubble and sand, unlike the lightly or unfished seamounts that were also researched (Koslow et al. 2001). The abundance and species richness of the benthic fauna on heavily fished seamounts was also markedly reduced (WWF Germany 2003). As noted above, the result has been a record of overexploitation and major crashes in fisheries stocks associated with seamounts (WWF Germany 2003).

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

The rarity of seamounts is well-established even though the habitats of seamounts, their values, and their relationship with surrounding waters and the neighboring seabed are not well understood. (Commonwealth of Australia 2002). As previously noted, seamount benthic habitats in Alaska's North Pacific are typically very isolated, being the only hard bottom for miles around in a vast water column. These areas represent a unique type of deep-sea habitat that remain relatively unexplored.

Probert states in his 1999 paper that "although seamounts are numerous, they represent in areal extent a relatively scarce habitat when compared to the deep sea as a whole." In general, seamounts appear to support highly diverse, distinctive faunas and because of the extreme isolation of seamount habitats, they represent potential hotspots for the creation of new species and scientists have found that many of the species on a given seamount may be endemic. (Probert 1999; NOAA 2002)

For example, surveys of over a dozen seamounts in southern Tasmania have revealed 279 species comprising 242 species of inverterbrates and 37 species of fish (Koslow et al. 2001; Koslow and Gowlett-Holmes 1998). The surveys found approximately 60 species that are believed to be new to science (Koslow and Gowlett-Holmes 1998). A subsequent comparison of seamount studies demonstrated a high level of endemism of Tasmanian seamounts (Richers de Forges et al. 2000).

In addition, seamounts appear to provide discrete habitat for deep-water predators and marine mammals based on the fact that some far ranging pelagic species concentrate their mating and spawning on seamounts (WWF Germany 2003). Within the North Pacific Ocean, Baird's beaked whales have been sighted in deep waters over the continental shelf and particularly in regions with submarine escarpments and seamounts (NMFS 2000). Similarly, blue whales have been found to have a close association with the seamounts near the Kamchatka Peninsula (Moore et al. 2002).

Objectives of the Proposal.
(List objectives specific to the identification of the HAPC.)
The objectives of this proposal are to: 1) Preserve known and unknown fish and invertebrate species and habitat associated with Alaska's North Pacific seamounts by providing protection for these unique and rare habitats from incidental disturbance caused by 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.)
Alaska's North Pacific seamounts face two significant problems: 1) there is a general lack of information and understanding of the physical environments and biological communities of these unique systems; and 2) seamounts 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 23 seamounts identified in this proposal as a network of no-take marine reserves.
- Create an inventory of the physical environments and biological communities that inhabit Alaska's North Pacific seamounts;
- Improve our knowledge of the structure, function, and variability of seamount ecosytems;

- Develop a more comprehensive understanding of the interaction between seamounts and other oceanic and nearshore ecosystems;
- Further our understanding of the relationships and population dynamics between commercial and non-commercial species which inhabit seamounts;
- Further our understanding of the known and potential human-induced threats to seamount habitat and 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.)
Although marine reserves have recently been shown to have significant benefits to ocean fisheries and habitat health, reserves encompass less than 1 percent of the world's oceans and less than 0.01 percent of U.S. waters (PISCO 2002). The Ocean Conservancy proposes that the 23 named seamounts within the Exclusive Economic Zone be designated and managed as no-take marine reserves. The proposed management boundary for each seamount is a 15 nautical mile radius from the summit as defined on NOAA charts (please refer to Maps A and B and the latitude and longitude descriptions provided under "HAPC Site Location").

The 15 nautical mile radius is proposed as a uniform marine reserve boundary for each of the 23 seamounts discussed in this proposal in order to ensure the most simple and intuitive management and enforcement. A 15 nautical mile radius is the minimum size reserve necessary to encompass the entire base of the largest proposed seamounts (Sirius and Patton Seamount) according to GIS analysis. Within the no-take marine reserve boundaries, the areas would be open to continued research and closed to future fishing and mineral development.

In addition to the designation of individual seamounts as no-take marine reserves, we propose the designation of five larger marine protected areas (MPAs) encompassing several of the above-described marine reserves on the Patton Seamount Province (Maps G and H), Kodiak Seamount Province (Maps C, D and E), Gulf of Alaska Seamount Province (Map F), Sirius Seamount Cluster (Map I) and the Adams-Atka Seamount Cluster (Map J).

The proposed MPAs would be managed to ensure an emphasis on conservation and fisheries research. Within the MPA boundaries but outside of the proposed marine reserves, future fishing would be allowed with experimental fishing permits and a minimum of 100 percent observer coverage. Several possible MPA suboptions have been offered for the Patton Seamount Province (Map G-Suboption A and Map H-Suboption B) and the Kodiak Seamount Province (Map C-Suboption A, Map D-Suboption B, and Map E, Suboption C).

We believe that this seamount management strategy mirrors the precautionary management direction on New Zealand seamounts, which has proven itself very successful. Our expectation is that the management will evolve incrementally as knowledge of the biological and physical characteristics of seamounts and the effects of trawling and other types of fishing on seamount biodiversity is reviewed.

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 (WWF Canada 2003).

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 concept of establishing seamounts as marine reserves is not a new idea and one that has found support within the fishing community in the past. Alan Haig-Brown's August 1999 article noted that some fisherman from the Pacific Northwest have already stated their support for the protection of seamounts as marine reserves (Haig-Brown 1999).

Based on the data available from the NPFMC, there is currently no active fishing on any of the twenty-three seamounts recommended in this report. Due to the proximity of many of the seamounts to the EEZ boundary and corresponding large distances from shore, it is unlikely that these areas are or will be of particular interest to the fishing community. We do not anticipate any direct 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 seamounts 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.

Support Data or Information Sources
(List data sources, information resource, literature, and any traditional knowledge for the proposal.)

Please refer to Appendix A.

APPENDIX A-LITERATURE CITED

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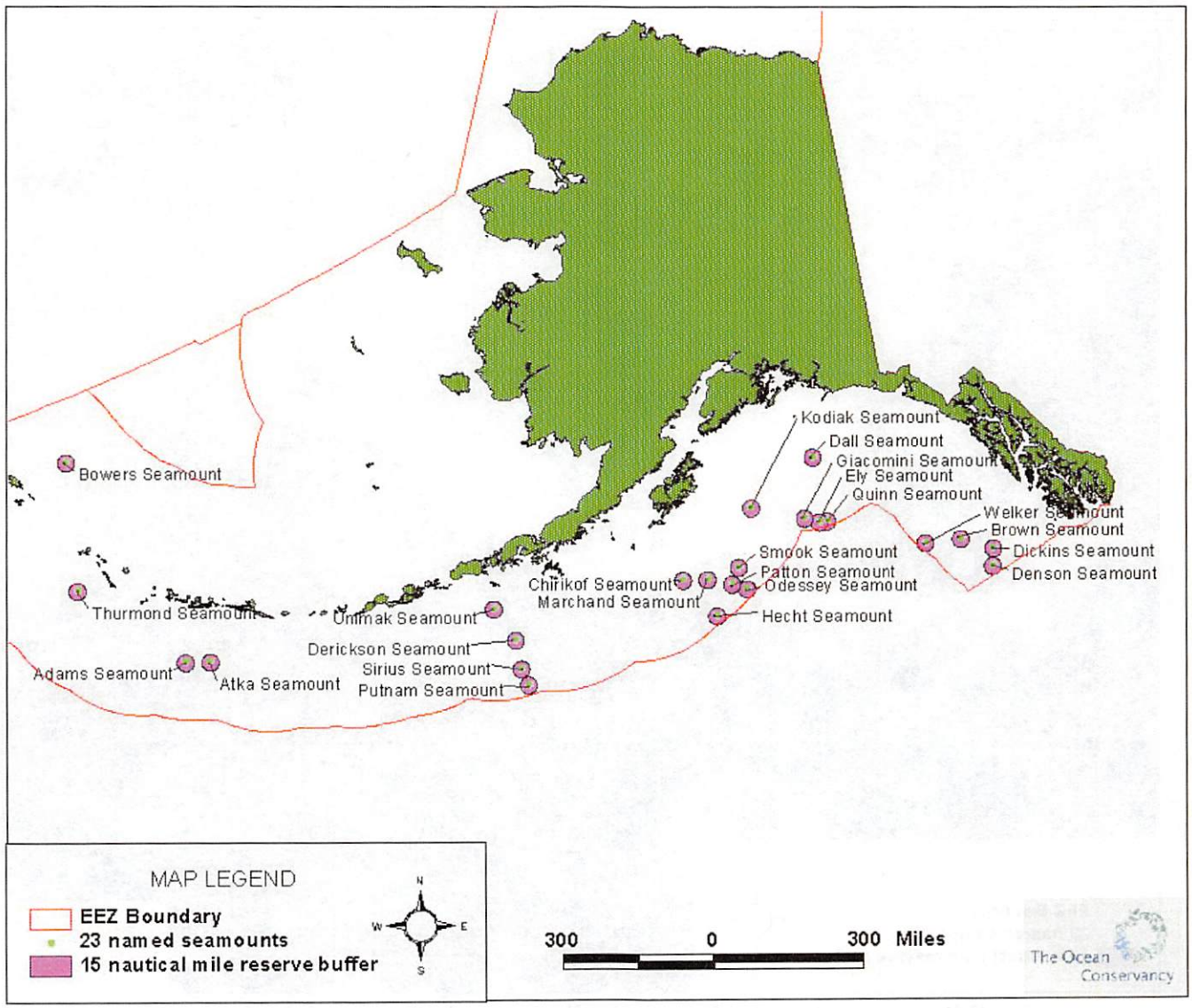
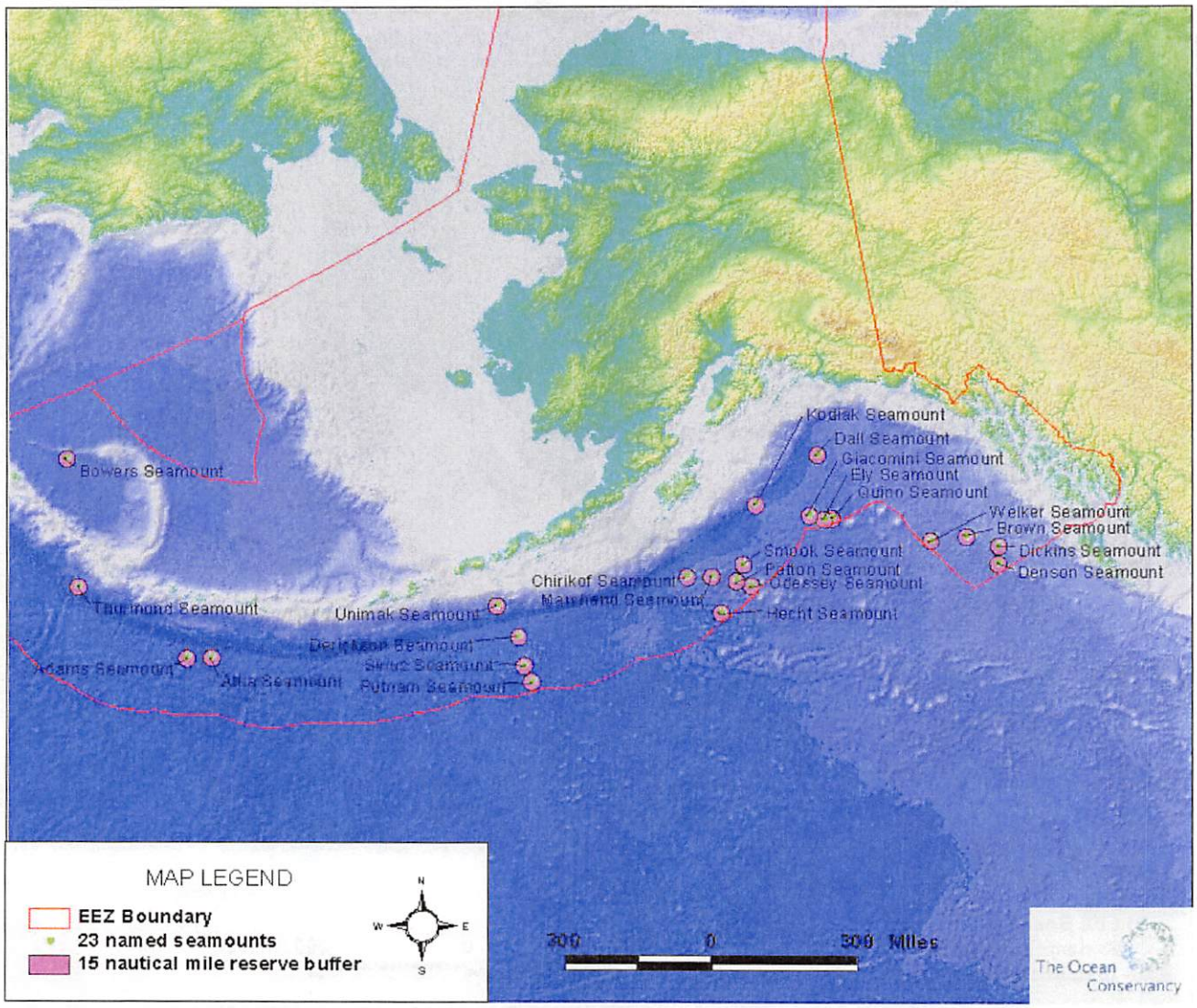
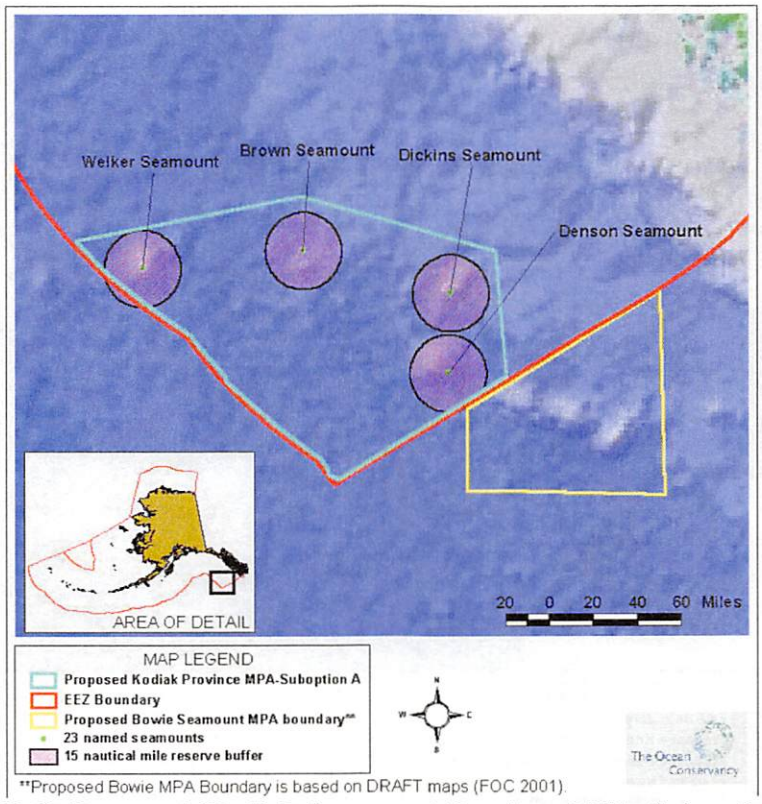
APPENDIX B-MAPS



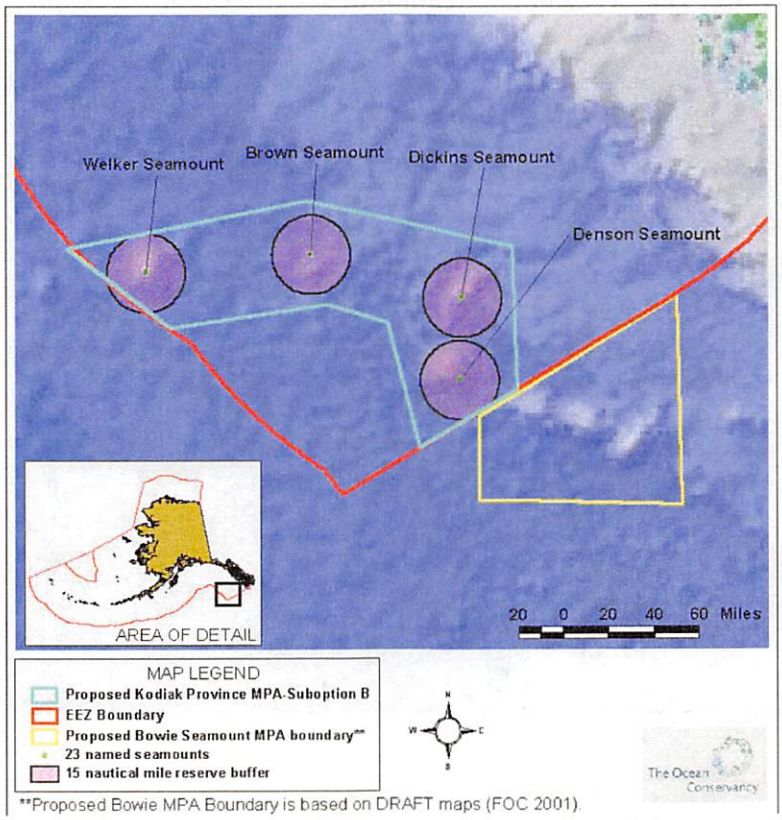
MAP A. Seamounts with 15 nautical mile reserve boundary



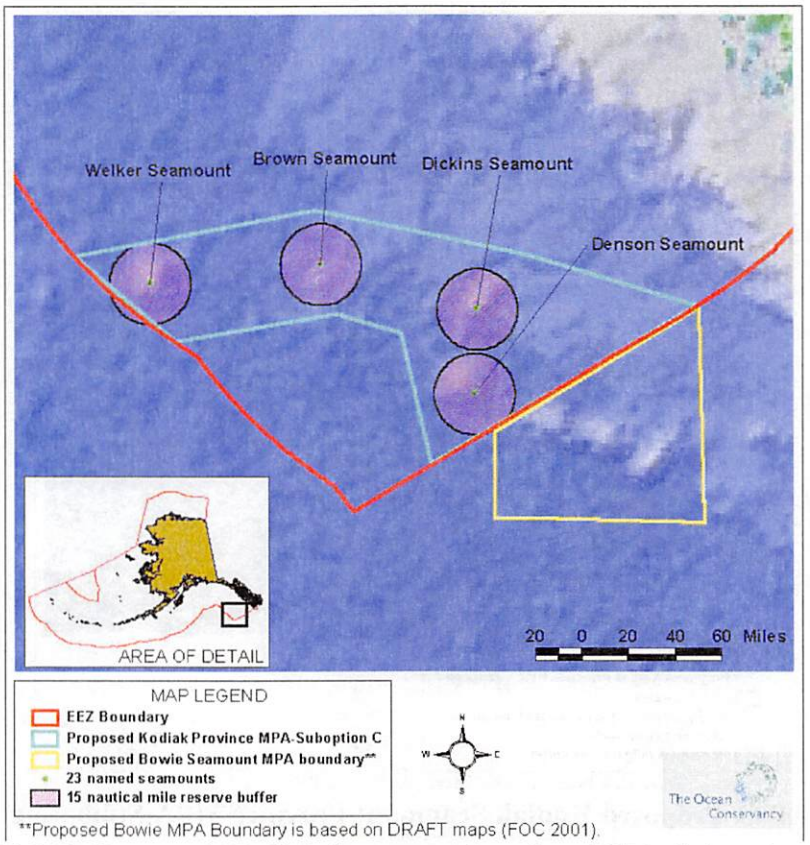
MAP B. Seamounts with 15 nautical mile reserve buffer (depth background)



MAP C. Proposed Kodiak Seamount Province MPA-Suboption A

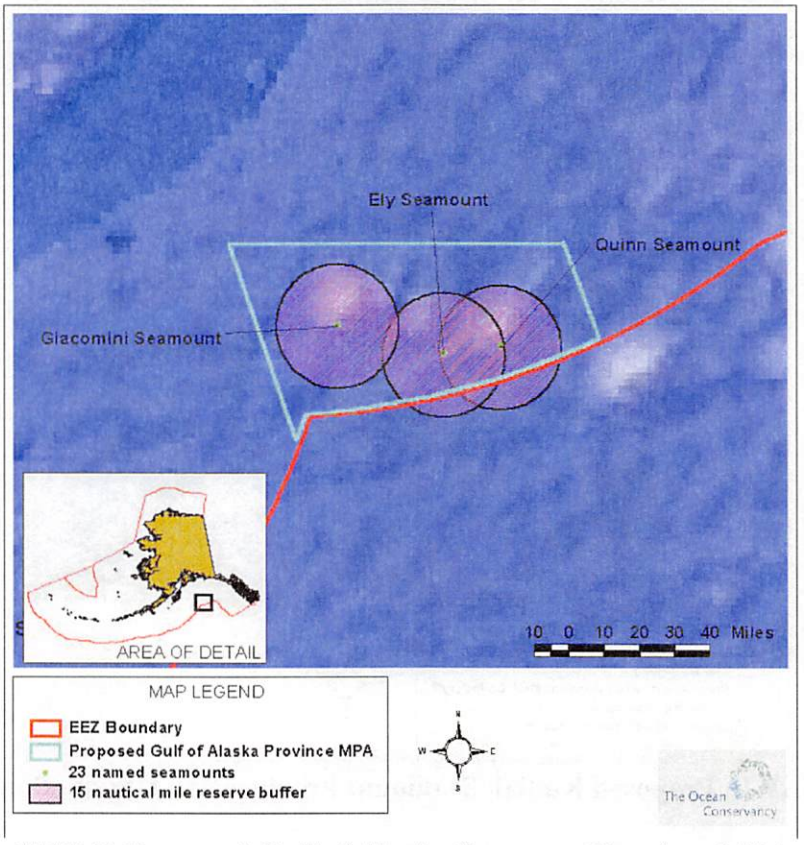


MAP D. Proposed Kodiak Seamount Province MPA-Suboption B

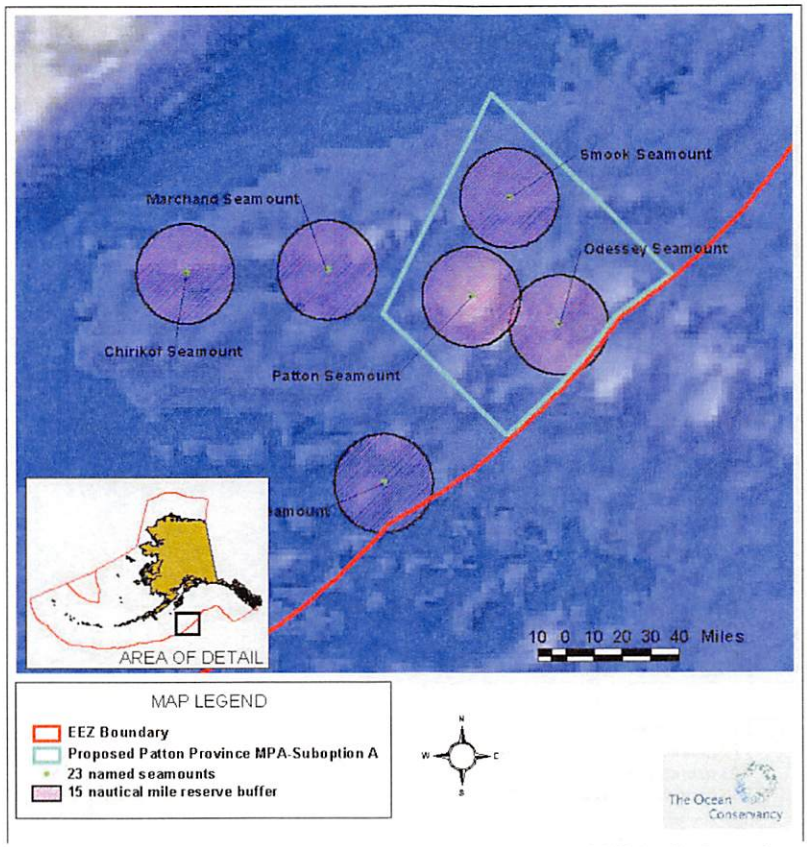


**Proposed Bowie MPA Boundary is based on DRAFT maps (FOC 2001).

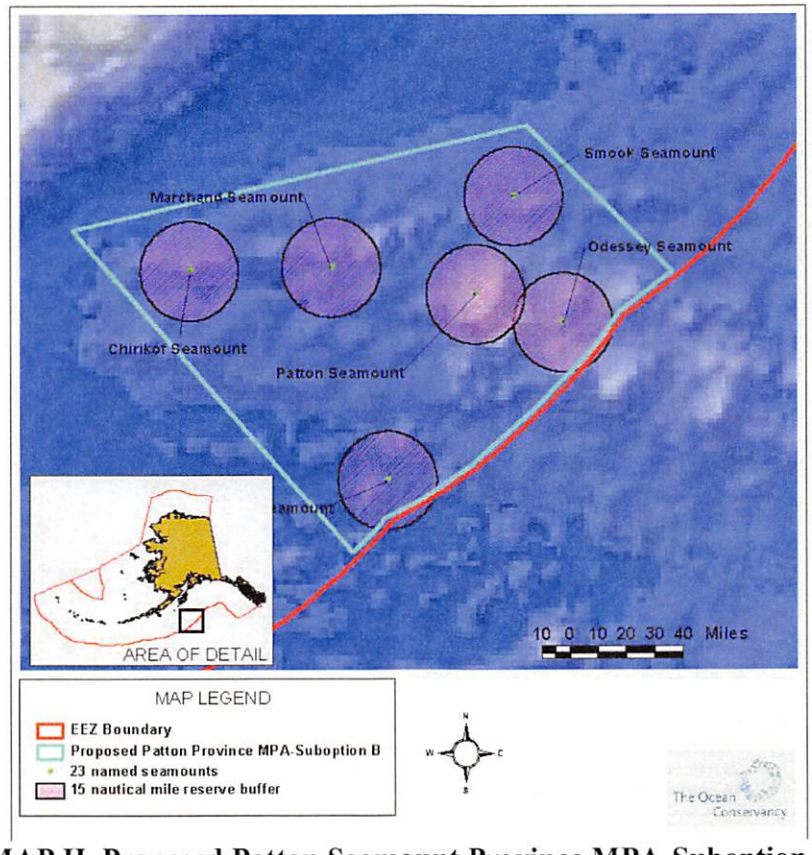
MAP E. Proposed Kodiak Seamount Province MPA-Suboption C



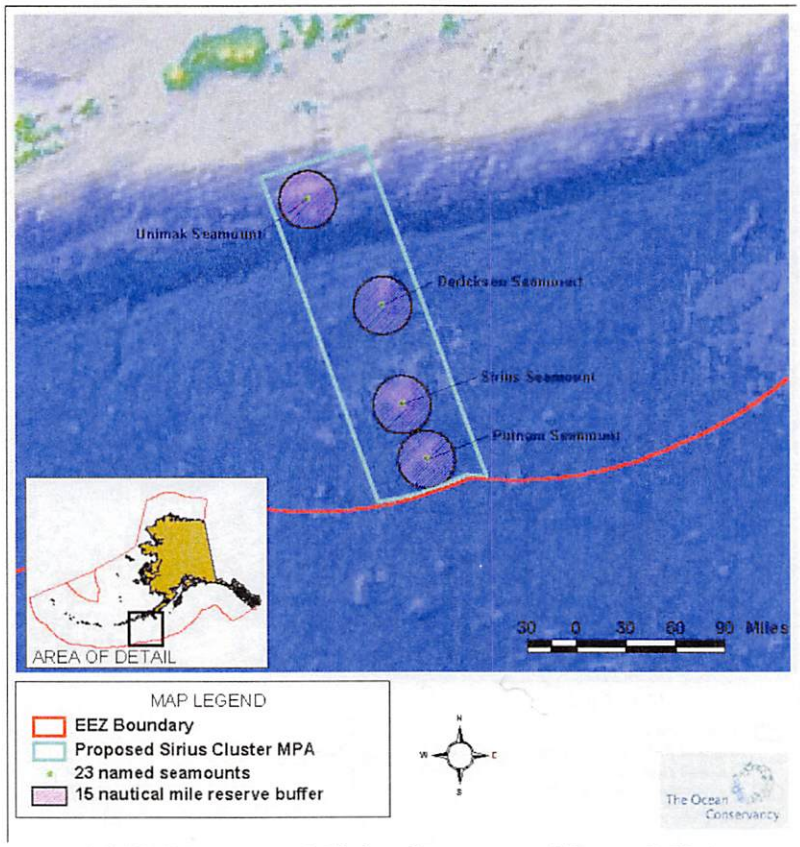
MAP F. Proposed Gulf of Alaska Seamount Province MPA



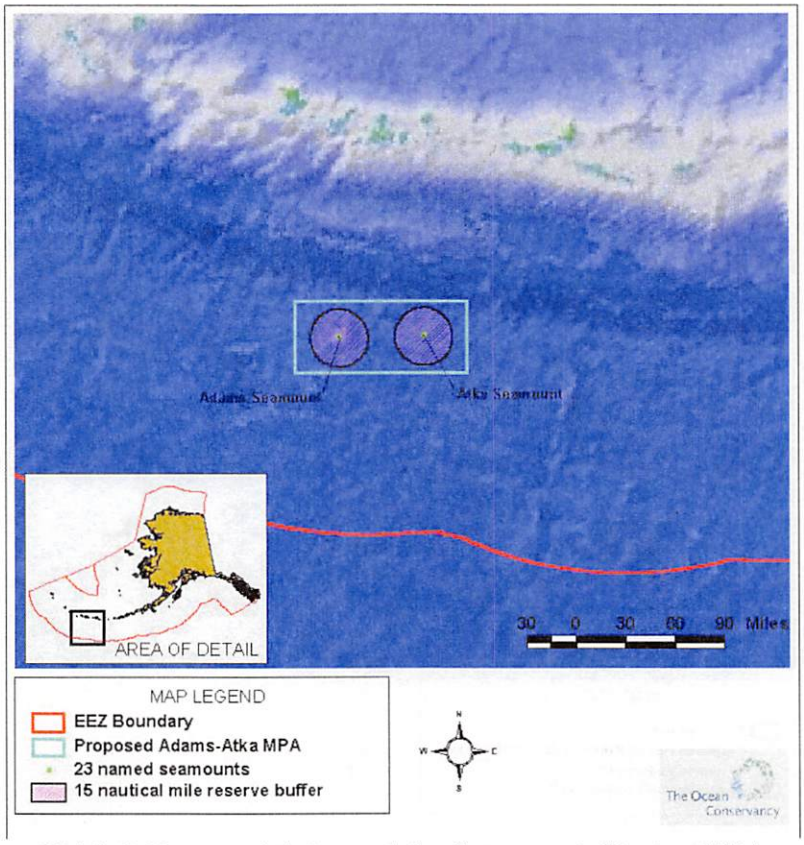
MAP G. Proposed Patton Seamount Province MPA-Suboption A



MAP H. Proposed Patton Seamount Province MPA-Suboption B



MAP I. Proposed Sirius Seamount Cluster MPA



MAP J. Proposed Adams-Atka Seamount Cluster MPA

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

Please check applicable box (es):
☐ GOA Groundfish FMP
☑ BSAI Groundfish FMP
☑ Scallop FMP
☑ BSAI Crab FMP
☑ Salmon FMP

Name of Proposer: Kris Balliet, Alaska Regional Director
Affiliation: The Ocean Conservancy

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

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

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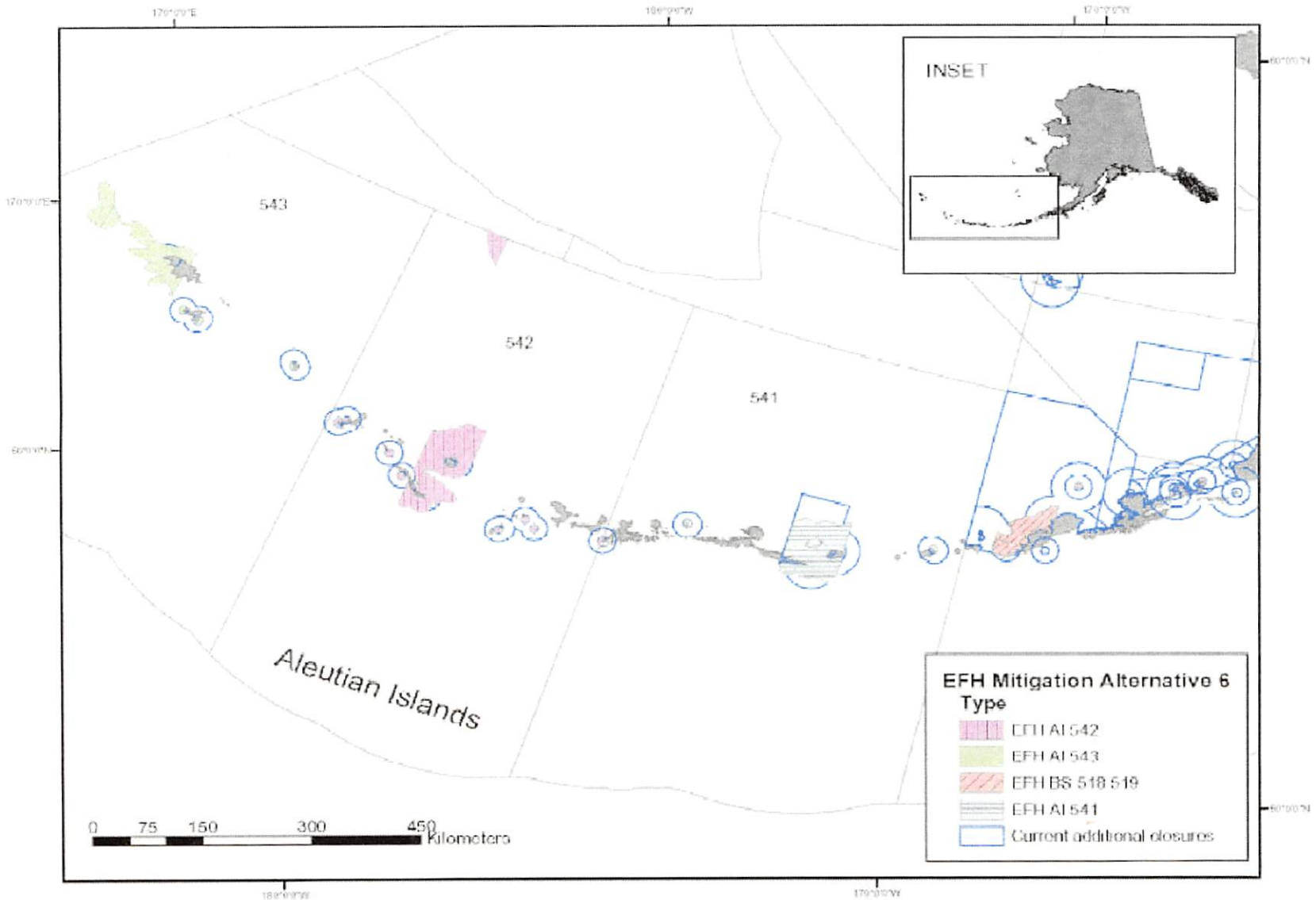
Figure ES-12. Alternative 6: Closure Areas (Aleutian Islands)



HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

Please check applicable box (es):
☐ GOA Groundfish FMP
☑ BSAI Groundfish FMP
☑ Scallop FMP
☑ BSAI Crab FMP
☑ Salmon FMP

Name of Proposer: Kris Balliet, Alaska Regional Director
Affiliation: The Ocean Conservancy

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

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*).

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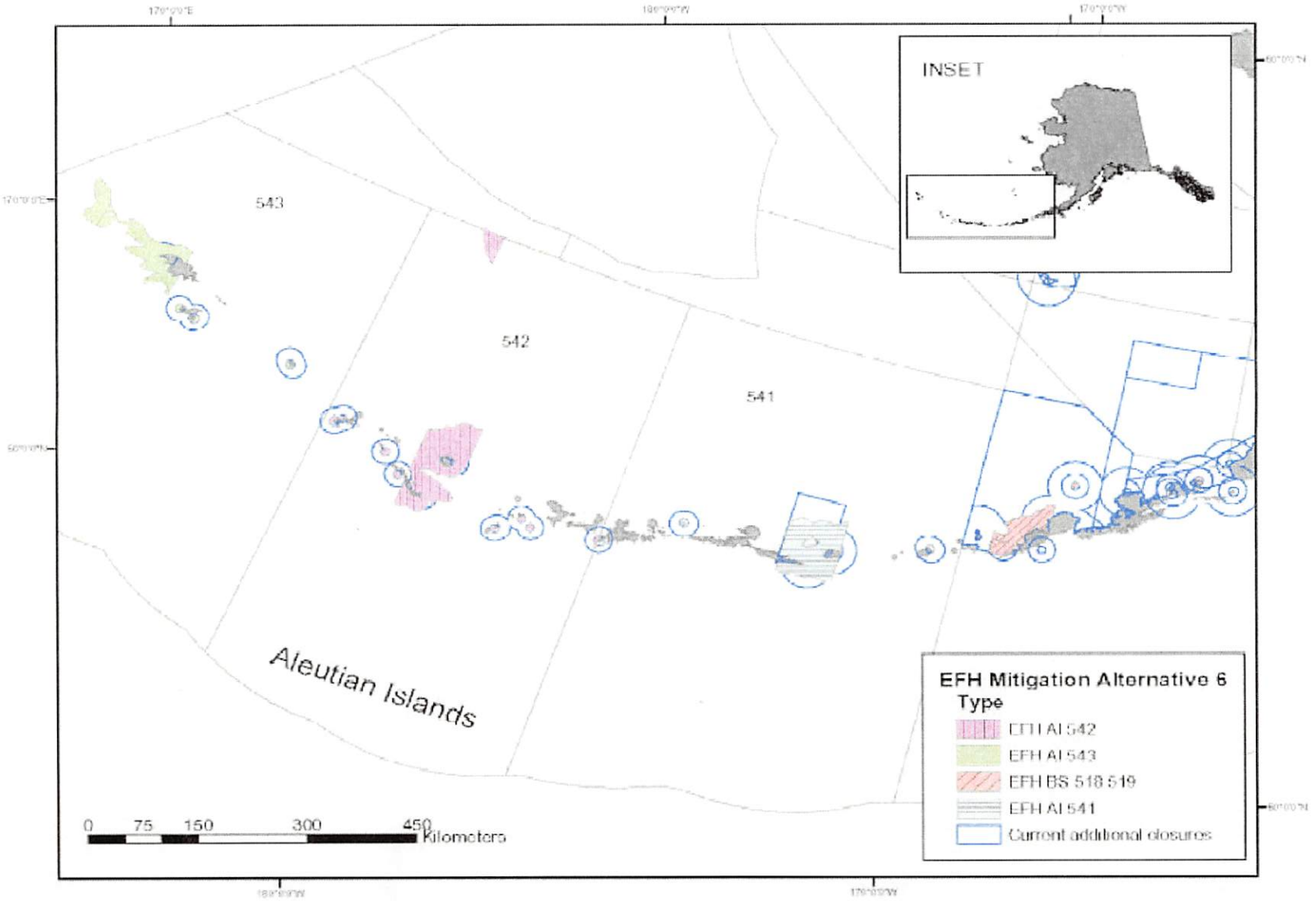


OCEANA

January 10, 2004

Ms. Stephanie Madsen, Chair
North Pacific Fishery Management Council
605 W. Fourth Avenue, Suite 306
Anchorage, AK 99501-2252

Dr. James Balsiger, Regional Administrator
NOAA Fisheries, Alaska Region
709 West Ninth Street
Juneau, AK 99802-1668

Re: Call for Proposals for Habitat Areas of Particular Concern (HAPCs) and Associated Fishery Management Measures

Dear Ms. Madsen and Dr. Balsiger:

Thank you for the opportunity to provide you with the attached HAPC proposals. We have presented the proposals and associated management measures by region – Aleutian Islands, Bering Sea and Gulf Alaska. The Aleutians clearly warrant consideration as a special management area as described in our package. Within each of the three regions, we have further organized our proposals into categories, as appropriate. Within each of the regional categories, we have identified specific sites.

While we believe it is necessary and appropriate for the Council and Fisheries Service to adopt and implement our entire proposal package, we have presented the information by regions and categories to facilitate the Council and Fisheries Service's discussion of discrete components of the proposals.

Should you have any questions about our proposals, please do not hesitate to call me. We look forward to continuing our discussion of HAPCs and Essential Fish Habitat with you in the coming months.

Sincerely,

Jim Ayers
Pacific Region Director
Oceana

Please check applicable box (es):
☒ GOA Groundfish FMP
☐ BSAI Groundfish FMP
☐ Scallop FMP
☐ BSAI Crab FMP
☐ Salmon FMP

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSALS

Name of Proposer: Jim Ayers Date: January 10, 2004

Address: 175 S. Franklin Street, Suite 418
Juneau, AK 99801
(907) 586-4050

Affiliation: Oceana

Title and Brief Statement of Proposal:

Gulf of Alaska Pinnacles and Seamounts

In the rich and productive ecosystem of the Gulf of Alaska, there are 54 documented pinnacles and 19 documented seamounts. Pinnacles and seamounts are rare and exceptional formations that are essential fish habitat rich with the formation of living seafloor such as corals and sponges, and specific fishery mitigation measures are necessary to protect this rare and fragile benthic habitat.

Objectives of Proposal:
(Identification of the habitat and FMP species the HAPC proposal is intended to protect.)

This proposal will protect the living seafloor of the pinnacle and seamount HAPCs of the Gulf of Alaska from impacts from bottom trawls, pelagic trawls that contact the bottom, and other commercial fishing gear that touches the bottom.

There are 54 documented pinnacles and 19 documented seamounts in the Gulf of Alaska region. Pinnacles and seamounts rise up from ocean floor providing habitat for a wide variety of species in a concentrated area.

Corals, sponges, and other living seafloor are habitat that provides nurseries, places to feed, shelter from currents and predators, and spawning areas for many species of marine life including rockfish, Pacific Ocean perch, flatfish, Atka mackerel, golden king crab, shrimp, Pacific cod, pollock, greenling, greenland turbot, and sablefish. Perhaps the oldest animals on the planet, these long-lived corals have evolved in one of the most stable habitats on earth, too deep to be affected by tides and waves or sunlight. Consequently, they are extremely vulnerable to disturbance and are easily destroyed by a variety of fishing gears.

Oceana's Gulf of Alaska Pinnacles and Seamounts HAPC proposal is completely within the designated essential fish habitat areas of the following FMP managed species: Pacific cod, Pacific ocean perch, shortraker rockfish, rougheye rockfish, and yelloweye rockfish.

Statement of purpose and need:

Pinnacles and seamounts provide rich, concentrated, biodiverse ecosystems. However, indiscriminate destructive bottom trawling in delicate living seafloor habitat like corals, sponges, and other living substrates can irreversibly mar this unique environment. As an example, in 1999, a single pass of a bottom trawl removed 21 metric tons of coral and bryozoans from a pinnacle 27 nm offshore of Agattu Island in the Aleutians. With such dire impacts of destructive bottom trawling, it is imperative to protect the HAPC invertebrates on other pinnacles, and on seamounts, from this kind of decimation.

Protection of pinnacles is not unprecedented. In 2000, NOAA Fisheries established the Sitka Pinnacles Marine Reserve in Southeast Alaska. Protection of deep sea corals and sponges was cited as a rationale for the Sitka Pinnacles Marine Reserve and the no-trawl zone in Southeast Alaska (Witherell and Coon 2000). Further, the rationale for closing the Sitka pinnacle to groundfish fishing acknowledged "the pinnacles habitat is fragile, and the

concentration of fishes in a relatively small, compact space can lend itself to overfishing of certain species, particularly lingcod, at sensitive life stages" (Federal Register, Vol. 65, No. 218). The Sitka reserve boasts fantastic aggregations of marine life including lingcod, rockfish, corals and sponges, among others.

Additionally, world fisheries have a documented geographic and depth expansion (Pauly et al., 2003). It is important to protect unexploited areas from future expansion to deeper, previously unfishable areas until there is better understanding of deepwater communities (Koslow et al., 2000).

A description of how the proposed HAPC addresses the four considerations set out in the final EFH regulations:

NOAA Fisheries has identified corals and sponges in Alaska as HAPC as indicated in Amendment 55 to the Groundfish FMPs (1998). Additionally, in a letter from Dr. William Hogarth to Mr. Jim Ayers dated September 9, 2002, Dr. Hogarth stated, "Corals, sponges, and other living substrate in waters off Alaska are already classified by NOAA Fisheries as Habitat Areas of Particular Concern deserving of special protection because of their importance as habitat and their vulnerability to human impacts."

1. Ecological importance: does the habitat perform an important ecological function?

Pinnacles and seamounts provide an obstacle to water flow that creates upwelling of currents and consequently nutrients. This nutrient rich water flow promotes complex and dense ecosystems on these undersea structures which includes corals and sponges. Deep water corals and sponges provide high quality fish habitat. The vertical structure formed by these coral colonies provides relief on the seafloor, increases habitat complexity, increases niche breadth, and increases biodiversity. Sessile epifauna increase habitat complexity and play an important factor in structuring benthic communities (Bradshaw et al. 2003). Pinnacles and seamounts support a rich diversity of species in a small area and are worthy of special protection.

2. Sensitivity: the extent to which the habitat is sensitive to human induced environmental degradation

Areas characterized by low natural disturbance and long lived species are the most sensitive to anthropogenic disturbance (NRC, 2002). Pinnacles and seamounts epitomize the type of habitat that is most sensitive to disturbance and takes the longest to recover, if ever. Deep-water corals are the oldest and slowest growing types of epifauna. Gorgonian coral colonies are long-lived and slow-growing. A colony of *Primnoa resedaeformis* was aged to 112 years in the Gulf of Alaska (Andrews et al. 2002). Larger colonies formed from multiple settlement events may be 500 years old or more (Risk et al, 2000).

Bottom trawling alters the physical structure of the seafloor, reduces habitat complexity, and changes the composition of benthic communities. Bottom trawling removes epifauna, thereby reducing habitat complexity and species diversity of the benthic community (Collie et al. 2000, Kaiser et al. 2000). According to the National Academy of Sciences, if disturbance from trawling exceeds the resiliency threshold, then irrevocable long-term ecological effects will occur. Gravel pavement substrate disturbed by bottom trawling on Georges Bank in the Northeast Atlantic, for example, had significantly less emergent epifauna, shrimp, polychaetes, brittlestars, and small fish than undisturbed sites (Collie et al., 2000). Scavenging organisms tended to dominate communities in areas of high dredging disturbance while long-lived organisms and fragile taxa disappeared (Collie et al. 1997).

Bottom trawling decreases benthic productivity. Trawled areas of the North Sea, off the coast of Ireland, were significantly less productive when compared to untrawled areas of similar habitat type (Jennings et al. 2001). Areas disturbed by mobile fishing gear on Georges Bank had lower levels of benthic production (both biomass and energy) when compared to undisturbed areas (Hermsen et al. 2003).

Research conducted in Alaska confirms research in other regions indicating that bottom trawling gear damages sensitive benthos. When bottom trawling occurs in coral habitat, up to 30% of coral colonies can be removed (Krieger, 1999). During a submersible study in the Gulf of Alaska, it was reported that 50% of the coral had been removed or broken by a single pass of a research bottom trawl (Krieger, 2002). The corals at the site had not recovered seven years later (Krieger, 2002).

In Seguam Pass in the Aleutian Islands, gorgonian corals, which 20 years ago were a major component of the bycatch of the Atka mackerel fishery, steadily declined thereafter (NMFS 2001). This suggests that after years of bottom fishing, there were significantly fewer of these habitat-forming species left to catch. Video observation of

some areas in Seguam Pass show completely destroyed coral habitats with only fragments of coral skeletons and rubble on the bottom (Zenger, 1999).

3. **Exposure: whether, and to what extent, development activities are, or will be stressing the habitat**
In 1999, a single pass of a bottom trawl removed 21 metric tons of coral and bryozoans from a pinnacle 27 nm offshore of Agattu Island in the Aleutians. With such dire impacts of destructive bottom trawling, it is imperative to protect the HAPC invertebrates on other pinnacles, and on seamounts, from this kind of decimation.

4. **Rarity: the rarity of the habitat type**
Gulf of Alaska benthic habitat is unique and fragile. Presence of hard corals in the genera *Primnoa* is evident from trawl survey data. This red tree coral is patchily distributed in dense aggregations in Southeast Alaska (Bizzarro, 2002), and a similar distribution of dense aggregations likely occurs in the Gulf of Alaska. There are 54 pinnacles and 19 seamounts in the Gulf of Alaska.

Proposed management measures and their specific objectives, if appropriate:

In order to protect exquisite and rare benthic habitat of Gulf of Alaska pinnacles and seamounts, the following measures should be taken:

For pinnacles, there should be no bottom trawling and other commercial bottom contact should be limited.

For seamounts, there should be a moratorium on commercial fishing.

Proposed solutions to achieve these objectives: (*how might the problem be solved?*) Include concepts of methods of measuring progress towards those objectives.

The pinnacles and seamounts of the Gulf of Alaska deserve special protection. Management measures should prohibit bottom trawling within a two mile radius around the charted least depth of known pinnacles. Any other commercial bottom contact should be limited and permitted only upon determination by NOAA Fisheries that the fishery can be conducted without habitat destruction.

For seamounts, as a precautionary measure, there should be a moratorium on commercial fishing in these areas until they can be explored, the benthic habitat mapped, populations of seamount species estimated, and until NOAA Fisheries determines that a fishery can be conducted without habitat destruction.

Consistent with the Council and agency's discussion, this HAPC proposal assumes that currently closed or restricted areas would remain closed or restricted. For example, current management measures to protect Steller sea lions and their habitat would remain in place.

Expected benefits to the FMP species of the proposed HAPC, and supporting information/data:

Oceana's Gulf of Alaska Pinnacles and Seamounts HAPC proposal is completely within the designated essential fish habitat areas of the following FMP managed species: Pacific cod, Pacific ocean perch, shortraker rockfish, rougheye rockfish, and yelloweye rockfish.

The areas described in this proposal are ecologically important for many reasons, including as habitat for commercially exploited groundfish species. Pinnacles and seamounts are home to many species of corals, sponges, and other important living seafloor substrates. Corals provide essential habitat for a variety of marine species including several species of rockfish, king crab, Atka mackerel, shrimp, Pacific cod, walleye pollock, Greenland turbot, greenlings, and other flatfish (Krieger 1999). Rockfish and Atka mackerel are associated with gorgonian coral, hydrocoral and cup corals (Heifetz 2002). Soft corals in the Bering Sea were found to be in close association with gadids (e.g. Pacific Cod and Walleye Pollock), Greenland turbot, greenlings, and other flatfish (Heifetz 2002). Krieger (1993) noted that juvenile Pacific ocean perch exhibit a preference for rugged areas containing cobble-

boulder and epifaunal cover and that shortraker rockfish strongly prefer rugged, high-profile habitat interspersed with boulders. Carlson and Straty (1981), Straty (1987), and Pearcy et al. (1989) found that juvenile rockfish exhibit a preference for high-relief habitat. Juvenile and adult *Sebastes sp.* were often found in association with *Primnoa spp.* during underwater video surveys of rockfish habitat in southeast Alaska (Bizzarro, 2002). Corals may be important for growth to maturity for demersal slope rockfish (EFH EIS).

Research from around the world indicates the destruction of living seafloor negatively impacts fish populations. Destruction of bryozoan growths by trawling in Tasman Bay, New Zealand resulted in a marked reduction in numbers of associated juvenile fish (Turner et al. 1999). Predation rate on juvenile Atlantic cod (*Gadus morhua*) increases with decreasing habitat complexity (Walters & Juanes 1993). Case studies in New Zealand and Australia suggested that loss of habitat structure through removal of large epibenthic organisms by fishing had negative effects on associated fish species (Turner et al. 1999). Removal of epifaunal organisms like corals may lead to the degradation of habitat such that it is no longer suitable for associated fish species (Auster et al. 1996).

Protecting habitat areas from fishing impacts has positive effects. In an area of the Irish Sea, for example, an 11 year closure to scallop dredging increased hydroid colonies (Bradshaw et al. 2003). Hydroid colonies increased diversity and abundance of benthic fauna as well as recruitment of juvenile scallops (Bradshaw et al. 2003). A model of trawl closures around locations where trawl "hangs" occurred showed that prohibiting trawling in areas with structural complexity had positive effects on juvenile Atlantic cod (Link & Demerest, 2003).

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:

There are 54 pinnacles recorded in the Gulf of Alaska north of the southeast Alaska trawl closure (Table 1, Pinnacles in the Gulf of Alaska). Pinnacles do not appear to be targeted by bottom trawlers in the Gulf and most pinnacles fall outside of core fishing areas. In 2001, only 4 fishing blocks recorded bottom trawl activity near pinnacles in the Gulf of Alaska. Total ex-vessel value of fish caught by bottom trawl in those blocks was estimated to be $74,000. In 2002, 3 fishing blocks recorded bottom trawl activity near pinnacles with an ex-vessel value of approximately $14,000 caught.

The proposed pinnacle bottom trawl closures would encompass approximately 2,197 km^2. Economic impacts to the bottom trawl fleet from the proposed management measure are minimal as the pinnacle closures fall outside of most of the core fishing area. Further it is likely that NOAA Fisheries will find that other bottom contact fisheries do have habitat damaging impact. Appropriate prohibitions of bottom contact by these other fisheries may result in permissible shifts in location or change of technique but minimal loss of revenue. Further economic assessments may be conducted in the HAPC National Environmental Policy Act process.

The proposed seamount commercial fishing closures would have no economic impact since the seamounts are far offshore and are currently not fished.

Clear geographic delineation for proposed HAPC (example written latitude and longitude reference points and/or delineation on an appropriately scaled NOAA chart):

There are 54 pinnacles (Table 1) and 19 seamounts (Table 2) in the Gulf of Alaska.

Table 1: Pinnacles in the Gulf of Alaska

Location	Latitude N	Longitude W	Charted Least Depth (Fathoms)	Reference to Nearest Shore	Distance from Reference (nm)
GOA	54° 55.0′	157°32.0′	32	Shumagin I.	57
GOA	56° 18.0′	154° 56.0′	7	Tugidak I.	9
GOA	55° 35.0′	154° 27.0′	100	Chirikof I.	39
GOA	56° 40.0′	156° 42.5′	36	Vgaiushak I.	8.5
GOA	56° 22.5′	152° 56.0′	8	Sitkinak I.	62.5
GOA	57° 56.0′	154° 50.0′	8	Kashvik Bay	3.5
GOA	58° 50.0′	151° 44.0′	3	Amatuli I.	8
GOA	58° 54.0′	150° 56.0′	49	Gore Pt.	18
GOA	59° 09.0′	151° 12.0′	2	Kenai Pen.	3.5
GOA	58° 58.0′	153° 16.5′	3	Shaw I.	3.5
GOA	59° 01.5′	153° 16.0′	10	Shaw I.	3
GOA	59° 07.0′	153° 45.0′	5	Shaw I.	6.5
GOA	59° 12.0′	153° 33.0′	3	Augustine I.	7.5
GOA	59° 18.0′	150° 32.0′	38	Nuka I.	4
GOA	59° 28.0′	149° 40.0′	12	Seal Rks	4
GOA	59° 33.5′	149° 49.5′	31	Granite Cape	3
GOA	60° 01.0′	147° 00.0′	27	Montague I.	10
GOA	59° 04.0′	151° 21.0′	11	E Chugach I	4
GOA	59° 08.0′	152° 03.0′	38	Elizabeth I	5
GOA	59° 44.0′	144° 40.0′	7	Kayak I.	5
GOA	59° 50.0′	142° 31.0′	9	Yakataga I.	14
GOA	56° 40.0′	156° 45.0′	23	Ugaiushak I.	7.5
GOA	56° 37.0′	156° 51.0′	22	Sutwik I.	6
GOA	56° 43.0′	156° 55.0′	12	Ugaiushak I.	5
GOA	56° 41.0′	157° 20.0′	4	Kumlik Cape	5
GOA	56° 29.0′	157° 37.0′	19	Nakchamik I.	7
GOA	56° 24.0′	157° 51.0′	19	Nakchamik I.	3
GOA	56° 04.0′	158° 18.0′	12	Seal Cape	3.5
GOA	54° 30.0′	159° 44.0′	39	Shumagin Is.	15
GOA	54° 19.0′	160° 52.0′	6	Shumagin Is.	40
GOA	55° 06.0′	161° 19.0′	16	Wosnesensk I.	5.5
GOA	54° 58.0′	161° 23.0′	17	Poperechnoi I.	8
GOA	54° 55.0′	161° 23.0′	16	Poperchnoi I.	10
GOA	54° 42.0′	161° 35.0′	8	Outerlliask I.	19
GOA	54° 39.0′	161° 51.0′	19	Deer I.	18
GOA	54° 48.0′	162° 41.0′	1	Deer I.	10
GOA	54° 45.0′	162° 51.0′	9	Cape Pankof	9
GOA	54° 37.5′	162° 50.5′	3	Cape Pankof	7
GOA	54° 30.0′	163° 14.0′	8	Cape Pankof	10
GOA	54° 21.0′	163° 10.0′	2	Sanak I.	15
GOA	56°23.0′	157° 32.0′	23	Sutwik I.	9
GOA	55° 23.0′	159° 40.0′	47	Nagai I.	10
GOA	59° 14.0′	151° 58.0′	10	Kenai Pen.	3
GOA	59° 57.0′	152° 28.0′	5	Alaska Mainland	5
GOA	58° 07.0′	149° 04.0′	47	Marmot I.	90
GOA	58° 00.0′	149° 39.0′	65	Marmot I.	72
GOA	57° 44.0′	149° 58.0′	94	Marmot I.	69

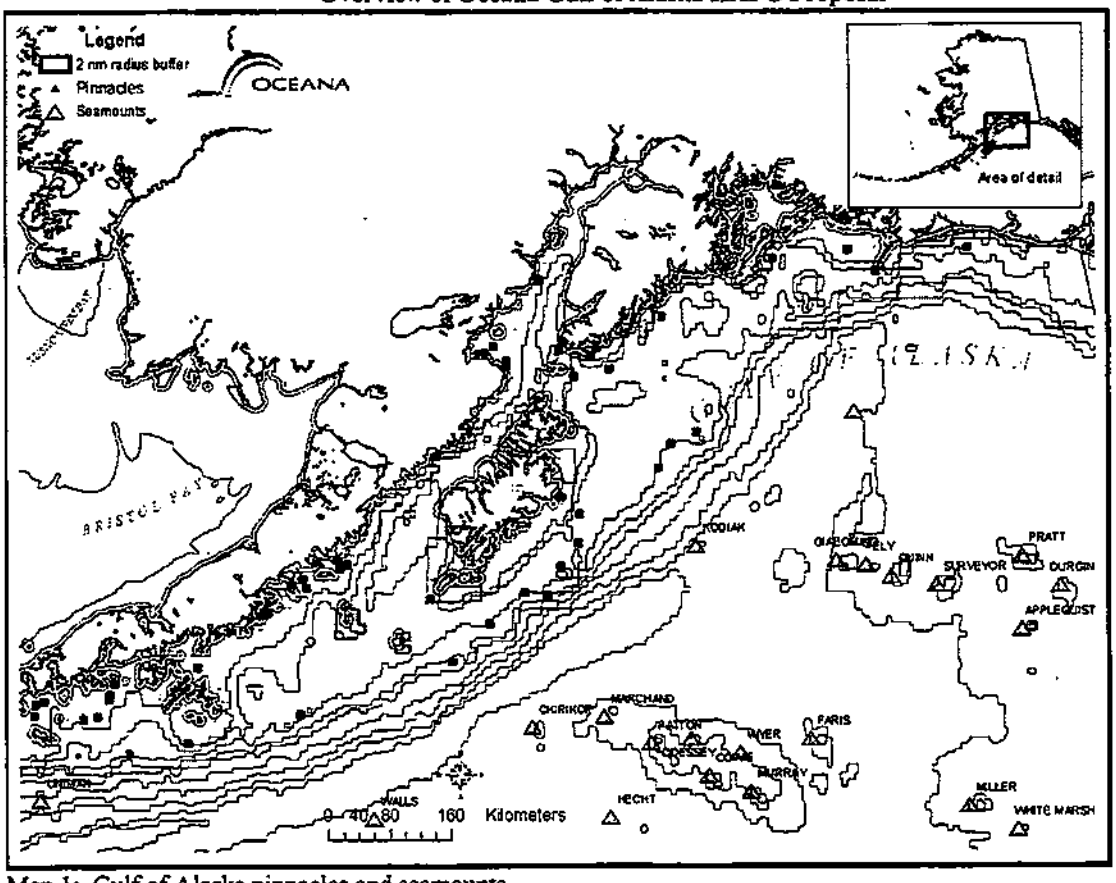
GOA	57° 27.0′	152° 06.0′	10	Narrow Cape	6
GOA	57° 15.0′	151° 43.0′	27	Ugak I.	20
GOA	56° 55.0′	151° 46.0′	28	Ugak I.	32
GOA	56° 40.0′	152° 09.0′	16	Cape Barnabas	37
GOA	56° 20.0′	152° 26.0′	49	Cape Sitkinak I.	50
GOA	56° 01.0′	153° 41.0′	34	Sitkinak I.	32

Table 2: Seamounts in the Gulf of Alaska

NAME	DEPTH (m)	LAT (dec. degrees)	LONG (dec. degrees)
UNIMAK	-1335	53.670	-162.500
DERICKSON	-2890	52.830	-161.250
SIRIUS	-1930	52.000	-160.830
PUTNAM	-3383	51.550	-160.420
STEVENS	-3349	48.150	-158.000
CHIRIKOF	-2561	54.930	-152.830
MARCHAND	-1671	54.924	-151.363
HECHT	-3453	53.750	-151.330
PATTON	-188	54.590	-150.448
ODESSEY	-1657	54.500	-149.750
KODIAK	-2176	56.830	-149.250
WYER	-1968	54.420	-148.670
GIACOMINI	-732	56.500	-146.330
ELY	-2196	56.250	-145.670
DALL	-2579	58.170	-145.580
QUINN	-659	56.250	-145.250
WELKER	-710	55.120	-140.330
BROWN	-1390	55.000	-138.500
DENSON	-927	54.000	-137.250
DICKINS	-476	54.500	-137.000
PIERCE	-1809	53.730	-136.530

Map

Overview of Oceana Gulf of Alaska HAPC Proposal



Map 1: Gulf of Alaska pinnacles and seamounts

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):

Data Acquisition and Assumptions:
The following section describes the information and process Oceana used to develop proposed HAPC designations and associated management measures.

The precision and accuracy of our analyses is necessarily limited by the precision and accuracy of the underlying information. Our requests to the Fisheries Service for observer data were provided in aggregated 10x10 km blocks. The blocks, or "grids" are referenced by a master gridcode. Blocks displayed in figures in this proposal can be referenced to latitude/longitude coordinates on navigational charts. We used these data to analyze fishing effort and the approximate economic value of fishing areas. Data at this resolution covered approximately 90% of groundfish fishery effort (Ren Narita, AFSC pers. comm.). A necessary assumption for the analysis was that fishing effort was uniform across a given block. For example, a closed area within a block would have an economic impact proportional to the percentage of the block that was closed. As such, an area of 25 km^2 closed to a certain gear type within a 100 km^2 fishing block where $1 million ex-vessel fish value was caught would result in an economic impact of $250,000 of lost revenue. Another assumption is that unobserved vessels fished in the same blocks as observed vessels.

In addition to using observer data, we also incorporated information from the NOAA RACEBASE trawl survey database. Trawl survey end points were plotted as point locations and the catch per unit effort for coral species or species groups was noted. Catch per unit effort in kilograms per square kilometer was calculated by dividing sample weight by area swept. Area swept was calculated as the net width multiplied by trawl distance.

A database of pinnacle locations was obtained from NOAA's Alaska Regional Office. Locations of seamounts were obtained from MCBI's oceanographic data CD-rom (MCBI, 2003).

Methods:
Pinnacles, and seamounts were plotted on the map as point locations and compared to patterns of trawl effort. Fifty four pinnacles and nineteen seamounts were identified in the Gulf of Alaska region.

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HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSALS

Please check applicable box (es):
- ☐ GOA Groundfish FMP
- ☒ BSAI Groundfish FMP
- ☐ Scallop FMP
- ☒ BSAI Crab FMP
- ☐ Salmon FMP

Name of Proposer: Jim Ayers Date: January 10, 2004

Address: 175 S. Franklin Street, Suite 418
Juneau, AK 99801
(907) 586-4050

Affiliation: Oceana

Title and Brief Statement of Proposal:

Aleutian Islands Special Management Area: Coral Gardens

The Aleutian Islands ecosystem is one of the most vibrant, dynamic, productive and rare ocean environments in the world. With over 450 species of fish, more than 50 species of seabirds that migrate from all seven continents around the world, and 25 species of marine mammals, this rich and unique sea world is an international treasure. It is a rare and wondrous place on the planet deserving of special protections. NOAA Fisheries submersible dives in 2002 and 2003 revealed exquisite cold water coral gardens with the greatest diversity and abundance of cold water corals in Alaska and perhaps the world (Stone 2003). As such, the Aleutian Islands should be managed as a special management area, and specific fishery mitigation measures are necessary to protect the rare and fragile benthic habitat on the Aleutian Islands seafloor. In an ecosystem as biodiverse, productive, and rare as the Aleutians Islands marine environment, destructive bottom trawling should be permitted as the exception, not the rule, and only in areas where it is scientifically proven to not harm the ancient living seafloor.

Objectives of Proposal:
(Identification of the habitat and FMP species the HAPC proposal is intended to protect.)

This proposal will protect the **coral gardens** HAPC of the **Aleutian Islands** from impacts from any commercial fishing gear that advertently or inadvertently touches the bottom.

Coral gardens are dense aggregations of corals, sponges, and other important living seafloor habitat that support a myriad of marine life.

Oceana's Aleutian Islands Coral Gardens HAPC proposal is completely contained within the designated essential fish habitat areas of the following FMP managed species: Shortraker rockfish, rougheye rockfish, northern rockfish, sharpchin rockfish, dusky rockfish, Atka mackerel, Pacific cod, Pacific ocean perch, and Golden king crab.

Statement of purpose and need:

The seafloor of the Aleutian Islands is unique. It is also an economic gold mine as part of Alaska fisheries that provide more than half of the nation's seafood. However, indiscriminate destructive bottom trawling in delicate living seafloor habitat like corals, sponges, and other living substrates is irreversibly marring this unique, pristine environment.

From 1990 to 2002, U.S. federal fishery observers reported over 1,500 metric tons of coral and sponge bycatch from the Aleutian Islands, of which approximately 90% was caused by bottom trawling (NMFS 2002). Corals and sponges have already been identified as HAPC by NOAA fisheries in Amendment 55 to the Groundfish FMPs (1998). As such, it is prudent and necessary to mitigate the impacts of this destructive bottom trawling on these known HAPCs.

Such mitigation is not unprecedented. Protection of deep sea corals and sponges was cited as a rationale for the Sitka Pinnacles Marine Reserve and the no-trawl zone in Southeast Alaska (Witherell and Coon 2000).

Additionally, world fisheries have a documented geographic and depth expansion (Pauly et al., 2003). It is important to protect unexploited areas from future expansion to deeper, previously unfishable areas until there is better understanding of deepwater communities (Koslow et al., 2000).

A description of how the proposed HAPC addresses the four considerations set out in the final EFH regulations:

NOAA Fisheries has identified corals and sponges in Alaska as HAPC as indicated in Amendment 55 to the Groundfish FMPs (1998). Additionally, in a letter from Dr. William Hogarth to Mr. Jim Ayers dated September 9, 2002, Dr. Hogarth stated, "Corals, sponges, and other living substrate in waters off Alaska are already classified by NOAA Fisheries as Habitat Areas of Particular Concern deserving of special protection because of their importance as habitat and their vulnerability to human impacts."

1. **Ecological importance: does the habitat perform an important ecological function?**

Deep water corals and sponges provide high quality fish habitat. The vertical structure formed by these coral colonies provides relief on the seafloor, increases habitat complexity, increases niche breadth, and increases biodiversity. Sessile epifauna increase habitat complexity and play an important factor in structuring benthic communities (Bradshaw et al. 2003). The coral garden areas described below support a rich diversity of species in a small area and are worthy of special protection.

Corals, sponges, and other living seafloor are habitat that provides nurseries, places to feed, shelter from currents and predators, and spawning areas for many species of marine life including rockfish, Pacific Ocean perch, flatfish, Atka mackerel, golden king crab, shrimp, Pacific cod, pollock, greenling, greenland turbot, and sablefish. Perhaps the oldest animals on the planet, these long-lived corals have evolved in one of the most stable habitats on earth, too deep to be affected by tides and waves or sunlight. Consequently, they are extremely vulnerable to disturbance and are easily destroyed by a variety of fishing gears.

2. **Sensitivity: the extent to which the habitat is sensitive to human induced environmental degradation**

Areas characterized by low natural disturbance and long lived species are the most sensitive to anthropogenic disturbance (NRC, 2002). The seafloor of the Aleutians epitomizes the type of habitat that is most sensitive to disturbance and takes the longest to recover, if ever. Deep-water corals are the oldest and slowest growing types of epifauna. Gorgonian coral colonies are long-lived and slow-growing. A colony of *Primnoa resedaeformis* was aged to 112 years in the Gulf of Alaska (Andrews et al. 2002). Larger colonies formed from multiple settlement events may be 500 years old or more (Risk et al, 2000). Between 1990 and 2002, 175 metric tons of coral and bryozoans were removed by commercial bottom trawls at a depth of approximately ~500 m (NORPAC data, unpublished). The depth distribution of corals species Paragorgia and Primnoa in the Aleutians falls within depths currently exploited by the trawl fleet.

3. **Exposure: whether, and to what extent, development activities are, or will be stressing the habitat**

From 1990 to 2002, U.S. federal fishery observers reported over 1,500 metric tons of coral and sponge bycatch from the Aleutian Islands, of which approximately 90% was caused by bottom trawling (NMFS 2002).

Bottom trawling alters the physical structure of the seafloor, reduces habitat complexity, and changes the composition of benthic communities. Bottom trawling removes epifauna, thereby reducing habitat complexity and species diversity of the benthic community (Collie et al. 2000, Kaiser et al. 2000). According to the National Academy of Sciences, if disturbance from trawling exceeds the resiliency threshold, then irrevocable long-term ecological effects will occur. Gravel pavement substrate disturbed by bottom trawling on Georges Bank in the Northeast Atlantic, for example, had significantly less emergent epifauna, shrimp, polychaetes, brittlestars, and small fish than undisturbed sites (Collie et al., 2000). Scavenging organisms tended to dominate communities in areas of high dredging disturbance while long-lived organisms and fragile taxa disappeared (Collie et al. 1997).

Bottom trawling decreases benthic productivity. Trawled areas of the North Sea, off the coast of Ireland, were significantly less productive when compared to untrawled areas of similar habitat type (Jennings et al. 2001). Areas disturbed by mobile fishing gear on Georges Bank had lower levels of benthic production (both biomass and energy) when compared to undisturbed areas (Hermsen et al. 2003).

Research conducted in Alaska confirms research in other regions indicating that bottom trawling gear damages sensitive benthos. When bottom trawling occurs in coral habitat, up to 30% of coral colonies can be removed (Krieger, 1999). During a submersible study in the Gulf of Alaska, it was reported that 50% of the coral had been removed or broken by a single pass of a research bottom trawl (Krieger, 2002). The corals at the site had not recovered seven years later (Krieger, 2002).

In Seguam Pass in the Aleutian Islands, gorgonian corals, which 20 years ago were a major component of the bycatch of the Atka mackerel fishery, steadily declined thereafter (NMFS 2001). This suggests that after years of bottom fishing, there were significantly fewer of these habitat-forming species left to catch. Video observation of some areas in Seguam Pass show completely destroyed coral habitats with only fragments of coral skeletons and rubble on the bottom (Zenger, 1999).

4. **Rarity: the rarity of the habitat type**

Aleutian Islands benthic habitat is unique and has been recorded nowhere else in Alaska or in the world. Hard corals in the genera *Paragorgia, Fanellia, Callogorgia, Primnoa, Calcigorgia, Thouarella*, and *Arthrogorgia* are present in dense aggregations. Such bioherms, described as deep-sea coral gardens, are unique to the Aleutian Islands.

Proposed management measures and their specific objectives, if appropriate:

Given its unique status on the planet, we propose the entire Aleutian Islands region be designated as a **Special Management Area** with categories of HAPC and respective management approaches. Management measures for coral gardens should prohibit all commercial bottom contact in the five known coral gardens described below. This protection should also be applied to any coral garden discovered in the future.

Consistent with the Council and agency's discussion, this HAPC proposal assumes that currently closed or restricted areas would remain closed or restricted. For example, current management measures to protect Steller sea lions and their habitat would remain in place.

Proposed solutions to achieve these objectives: (*how might the problem be solved?*) Include concepts of methods of measuring progress towards those objectives.

The pristine coral gardens of the Aleutians deserve special protection. We propose the five known and identified coral gardens be protected by prohibiting all commercial bottom contact within 3nm from the center point of each coral garden documented by submersible dive.

Expected benefits to the FMP species of the proposed HAPC, and supporting information/data:

Oceana's Aleutian Islands Coral Gardens HAPC proposal is completely contained within the designated essential fish habitat areas of the following FMP managed species: Shortraker rockfish, rougheye rockfish, northern rockfish, Atka mackerel, Pacific cod Pacific ocean perch, and Golden king crab.

The areas described in this proposal are ecologically important for many reasons, including as habitat for commercially exploited groundfish species. Corals provide essential habitat for a variety of marine species including several species of rockfish, king crab, Atka mackerel, shrimp, Pacific cod, walleye pollock, Greenland turbot, greenlings, and other flatfish (Krieger 1999). Rockfish and Atka mackerel are associated with gorgonian coral, hydrocoral and cup corals (Heifetz 2002). Soft corals in the Bering Sea were found to be in close association with gadids (e.g. Pacific Cod and Walleye Pollock), Greenland turbot, greenlings, and other flatfish (Heifetz 2002). Krieger (1993) noted that juvenile Pacific ocean perch exhibit a preference for rugged areas containing cobble-boulder and epifaunal cover and that shortraker rockfish strongly prefer rugged, high-profile habitat interspersed with boulders. Carlson and Straty (1981), Straty (1987), and Pearcy et al. (1989) found that juvenile rockfish exhibit a preference for high-relief habitat. Juvenile and adult *Sebastes sp.* were often found in association with *Primnoa spp.* during underwater video surveys of rockfish habitat in southeast Alaska (Bizzarro, 2002). Corals may be important for growth to maturity for demersal slope rockfish (EFH EIS).

Research from around the world indicates the destruction of living seafloor negatively impacts fish populations. Destruction of bryozoan growths by trawling in Tasman Bay, New Zealand resulted in a marked reduction in numbers of associated juvenile fish (Turner et al. 1999). Predation rate on juvenile Atlantic cod (*Gadus morhua*) increases with decreasing habitat complexity (Walters & Juanes 1993). Case studies in New Zealand and Australia suggested that loss of habitat structure through removal of large epibenthic organisms by fishing had negative effects on associated fish species (Turner et al. 1999). Removal of epifaunal organisms like corals may lead to the degradation of habitat such that it is no longer suitable for associated fish species (Auster et al. 1996).

Protecting habitat areas from fishing impacts has positive effects. In an area of the Irish Sea, for example, an 11 year closure to scallop dredging increased hydroid colonies (Bradshaw et al. 2003). Hydroid colonies increased diversity and abundance of benthic fauna as well as recruitment of juvenile scallops (Bradshaw et al. 2003). A model of trawl closures around locations where trawl "hangs" occurred showed that prohibiting trawling in areas with structural complexity had positive effects on juvenile Atlantic cod (Link & Demerest, 2003).

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:

The approximate area of a coral garden closure is 92 km^2. The total area of the five coral garden closures is approximately 380 km^2 due to considerable overlap of buffers of two of the gardens. These areas are outside of the core bottom trawling area. The coral garden areas cover a very small percentage of the fishing area available to the longline and golden king crab fleets. The economic impact of these small scale closures to the fishing industry is expected to be minimal. Further economic assessments may be conducted in the HAPC National Environmental Policy Act process.

Clear geographic delineation for proposed HAPC (example written latitude and longitude reference points and/or delineation on an appropriately scaled NOAA chart):

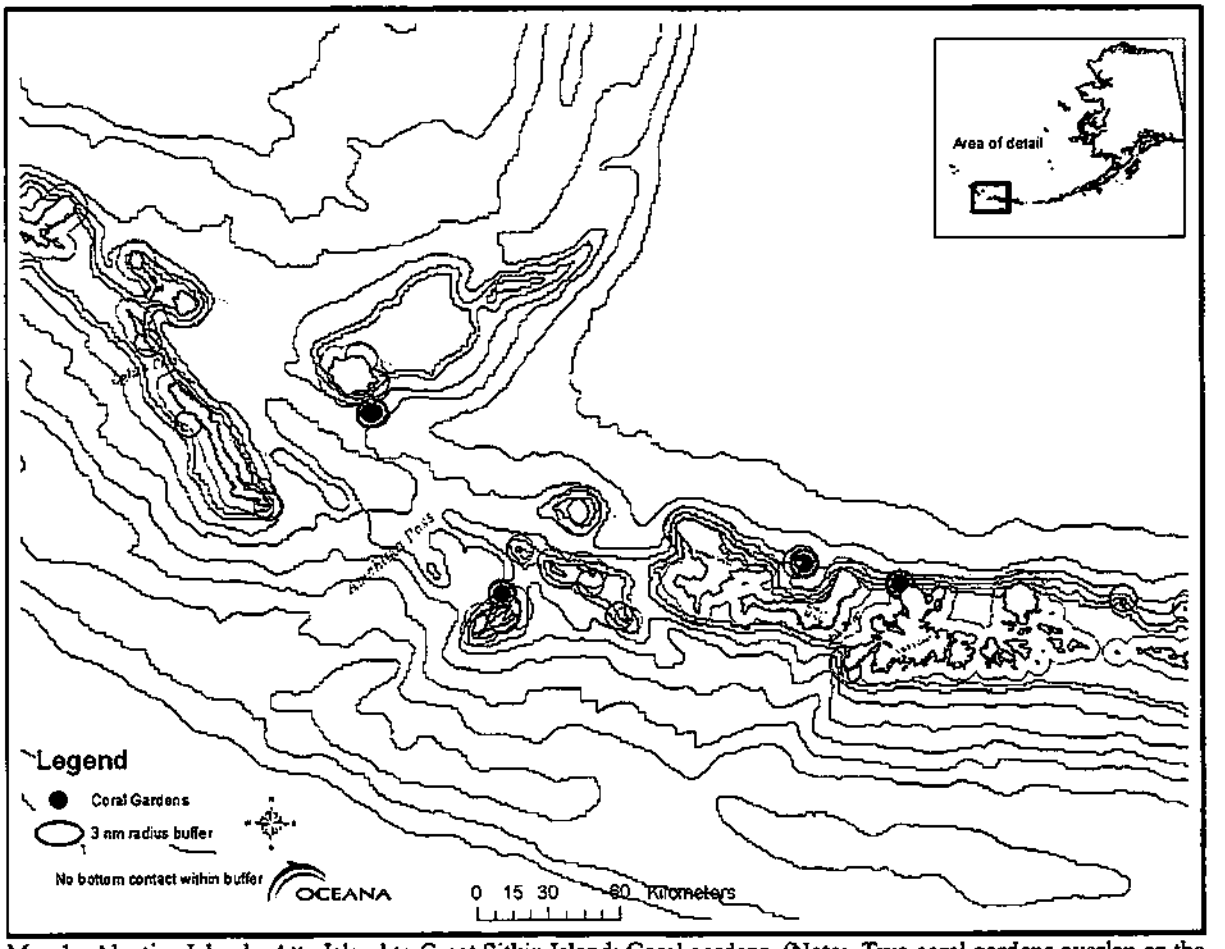
A database of start and end points of submersible dive tracks in the Aleutians by NOAA scientists of Auke Bay Lab was used to identify the locations of Aleutian coral gardens. The dives listed in Table 1 showed complex coral communities or coral gardens (Stone, 2003). One of the gardens is located on a pinnacle formed by an undersea volcano off Semispochnoi Island. Point locations of the coral gardens were determined as the midpoint of the submersible dive track.

Table 1: Coral Gardens in the Aleutians

NOAA Dive #	Latitude	Longitude	Buffer
5594	51.9654	-176.8284	3 nm radius
5596	51.9100	-177.4095	3 nm radius
5605	51.8500	179.8304	3 nm radius
5607	51.3996	-179.0371	3 nm radius
6000	51.8441	179.8195	3 nm radius

Map

Coral Gardens Known in the Aleutians



Map 1: Aleutian Islands, Attu Island to Great Sitkin Island: Coral gardens (Note: Two coral gardens overlap on the map)

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):

Data Acquisition and Assumptions:
The following section describes the information and process Oceana used to develop proposed HAPC designations and associated management measures.

The precision and accuracy of our analyses is necessarily limited by the precision and accuracy of the underlying information. Our requests to the Fisheries Service for observer data were provided in aggregated 10x10 km blocks. The blocks, or "grids" are referenced by a master gridcode. Blocks displayed in figures in this proposal can be referenced to latitude/longitude coordinates on navigational charts. We used these data to analyze fishing effort and the approximate economic value of fishing areas. Data at this resolution covered approximately 90% of groundfish fishery effort (Ren Narita, AFSC pers. comm.). A necessary assumption for the analysis was that fishing effort was uniform across a given block. For example, a closed area within a block would have an economic impact proportional to the percentage of the block that was closed. As such, an area of 25 km^2 closed to a certain gear type within a 100 km^2 fishing block where $1 million ex-vessel fish value was caught would result in an economic impact of $250,000 of lost revenue. Another assumption is that unobserved vessels fished in the same blocks as observed vessels.

In addition to using observer data, we also incorporated information from the NOAA RACEBASE trawl survey database. Trawl survey end points were plotted as point locations and the catch per unit effort for coral species or

species groups was noted. Catch per unit effort in kilograms per square kilometer was calculated by dividing sample weight by area swept. Area swept was calculated as the net width multiplied by trawl distance.

The location of areas described from submersible dives as coral gardens (Stone, 2003) was obtained from NOAA scientists.

Methods:
Coral gardens were plotted on the map as point locations.

Relevant Literature:
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HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSALS

Please check applicable box (es):
- ☐ GOA Groundfish FMP
- ☒ BSAI Groundfish FMP
- ☐ Scallop FMP
- ☒ BSAI Crab FMP
- ☐ Salmon FMP

Name of Proposer: Jim Ayers Date: January 10, 2004

Address: 175 S. Franklin Street, Suite 418
Juneau, AK 99801
(907) 586-4050

Affiliation: Oceana

Title and Brief Statement of Proposal:

Aleutian Islands Special Management Area: Pinnacles and Seamounts

The Aleutian Islands ecosystem is one of the most vibrant, dynamic, productive and rare ocean environments in the world. With over 450 species of fish, more than 50 species of seabirds that migrate from all seven continents around the world, and 25 species of marine mammals, this rich and unique sea world is an international treasure. It is a rare and wondrous place on the planet deserving of special protections. In this rare and unique ecosystem, there are 82 documented pinnacles and 3 documented seamounts. Pinnacles and seamounts are rare and exceptional formations that are essential fish habitat rich with the formation of living seafloor such as corals and sponges. According to NMFS Researchers, the Aleutians harbor the greatest diversity and abundance of cold water corals in Alaska and perhaps the world (Stone 2003). As such, the Aleutian Islands should be managed as a special management area, and specific fishery mitigation measures are necessary to protect the rare and fragile benthic habitat on the Aleutian Islands seafloor. In an ecosystem as biodiverse, productive, and rare as the Aleutians Islands marine environment, destructive bottom trawling should be permitted as the exception, not the rule, and only in areas where it is scientifically proven to not harm the ancient living seafloor.

Objectives of Proposal:
(Identification of the habitat and FMP species the HAPC proposal is intended to protect.)

This proposal will protect the living seafloor of the **pinnacles and seamounts** HAPCs of the **Aleutian Islands** from impacts from bottom trawls, pelagic trawls that contact the bottom, and other commercial fishing gear that touches the bottom.

There are 82 documented pinnacles and 3 documented seamounts in the Aleutian Islands region. Pinnacles and seamounts rise up from ocean floor providing habitat for a wide variety of species in a concentrated area. One of the known coral gardens in the Aleutian Islands occurs on a pinnacle.

Corals, sponges, and other living seafloor are habitat that provides nurseries, places to feed, shelter from currents and predators, and spawning areas for many species of marine life including rockfish, Pacific Ocean perch, flatfish, Atka mackerel, golden king crab, shrimp, Pacific cod, pollock, greenling, greenland turbot, and sablefish. Perhaps the oldest animals on the planet, these long-lived corals have evolved in one of the most stable habitats on earth, too deep to be affected by tides and waves or sunlight. Consequently, they are extremely vulnerable to disturbance and are easily destroyed by a variety of fishing gears.

Oceana's Aleutian Islands Pinnacles and Seamounts HAPC proposal is completely contained within the designated essential fish habitat areas of the following FMP managed species: Shortraker rockfish, rougheye rockfish, northern rockfish, sharpchin rockfish, dusky rockfish, Atka mackerel, Pacific cod, Pacific ocean perch, and Golden king crab.

Statement of purpose and need:

The seafloor of the Aleutian Islands is unique. It is also an economic gold mine as part of Alaska fisheries that provide more than half of the nation's seafood. However, indiscriminate destructive bottom trawling in delicate living seafloor habitat like corals, sponges, and other living substrates is irreversibly marring this unique, pristine

environment. In 1999, a single pass of a bottom trawl removed 21 metric tons of coral and bryozoans from a pinnacle 27 nm offshore of Agattu Island. With such dire impacts of destructive bottom trawling, it is imperative to protect the HAPC invertebrates on other pinnacles from this kind of decimation.

From 1990 to 2002, U.S. federal fishery observers reported over 1,500 metric tons of coral and sponge bycatch from the Aleutian Islands, of which approximately 90% was caused by bottom trawling (NMFS 2002). Corals and sponges have already been identified as HAPC by NOAA fisheries in Amendment 55 to the Groundfish FMPs (1998). As such, it is prudent and necessary to mitigate the impacts of this destructive bottom trawling on these known HAPCs.

Such mitigation is not unprecedented. In 2000, NOAA Fisheries established the Sitka Pinnacles Marine Reserve in Southeast Alaska. Protection of deep sea corals and sponges was cited as a rationale for the Sitka Pinnacles Marine Reserve and the no-trawl zone in Southeast Alaska (Witherell and Coon 2000). Further, the rationale for closing the Sitka pinnacles to groundfish fishing acknowledged "the pinnacles habitat is fragile, and the concentration of fishes in a relatively small, compact space can lend itself to overfishing of certain species, particularly lingcod, at sensitive life stages" (Federal Register, Vol. 65, No. 218). The Sitka reserve boasts fantastic aggregations of marine life including lingcod, rockfish, corals and sponges, among others.

Additionally, world fisheries have a documented geographic and depth expansion (Pauly et al., 2003). It is important to protect unexploited areas from future expansion to deeper, previously unfishable areas until there is better understanding of deepwater communities (Koslow et al., 2000).

A description of how the proposed HAPC addresses the four considerations set out in the final EFH regulations:

NOAA Fisheries has identified corals and sponges in Alaska as HAPC as indicated in Amendment 55 to the Groundfish FMPs (1998). Additionally, in a letter from Dr. William Hogarth to Mr. Jim Ayers dated September 9, 2002, Dr. Hogarth stated, "Corals, sponges, and other living substrate in waters off Alaska are already classified by NOAA Fisheries as Habitat Areas of Particular Concern deserving of special protection because of their importance as habitat and their vulnerability to human impacts."

1. **Ecological importance: does the habitat perform an important ecological function?**
Pinnacles and seamounts provide an obstacle to water flow that creates upwelling of currents and consequently nutrients. This nutrient rich water flow promotes complex and dense ecosystems on these undersea structures which include corals and sponges. Deep water corals and sponges provide high quality fish habitat. The vertical structure formed by these coral colonies provides relief on the seafloor, increases habitat complexity, increases niche breadth, and increases biodiversity. Sessile epifauna increase habitat complexity and play an important factor in structuring benthic communities (Bradshaw et al. 2003). Pinnacles and seamounts support a rich diversity of species in a small area and are worthy of special protection.

2. **Sensitivity: the extent to which the habitat is sensitive to human induced environmental degradation**
Areas characterized by low natural disturbance and long lived species are the most sensitive to anthropogenic disturbance (NRC, 2002). The seafloor of the Aleutians, including pinnacles and seamounts, epitomizes the type of habitat that is most sensitive to disturbance and takes the longest to recover, if ever. Deep-water corals are the oldest and slowest growing types of epifauna. Gorgonian coral colonies are long-lived and slow-growing. A colony of *Primnoa resedaeformis* was aged to 112 years in the Gulf of Alaska (Andrews et al. 2002). Larger colonies formed from multiple settlement events may be 500 years old or more (Risk et al, 2000). Between 1990 and 2002, 175 metric tons of coral and bryozoans were removed by commercial bottom trawls at a depth of approximately -500 m (NORPAC data, unpublished). The depth distribution of corals species Paragorgia and Primnoa in the Aleutians falls within depths currently exploited by the trawl fleet.

3. **Exposure: whether, and to what extent, development activities are, or will be stressing the habitat**
From 1990 to 2002, U.S. federal fishery observers reported over 1,500 metric tons of coral and sponge bycatch from the Aleutian Islands, of which approximately 90% was caused by bottom trawling (NMFS 2002). In 1999, a single pass of a bottom trawl removed 21 metric tons of coral and bryozoans from a pinnacle 27 nm offshore of Agattu

Island. With such dire impacts of destructive bottom trawling, it is imperative to protect the HAPC invertebrates on other pinnacles from this kind of decimation.

Bottom trawling alters the physical structure of the seafloor, reduces habitat complexity, and changes the composition of benthic communities. Bottom trawling removes epifauna, thereby reducing habitat complexity and species diversity of the benthic community (Collie et al. 2000, Kaiser et al. 2000). According to the National Academy of Sciences, if disturbance from trawling exceeds the resiliency threshold, then irrevocable long-term ecological effects will occur. Gravel pavement substrate disturbed by bottom trawling on Georges Bank in the Northeast Atlantic, for example, had significantly less emergent epifauna, shrimp, polychaetes, brittlestars, and small fish than undisturbed sites (Collie et al., 2000). Scavenging organisms tended to dominate communities in areas of high dredging disturbance while long-lived organisms and fragile taxa disappeared (Collie et al. 1997).

Bottom trawling decreases benthic productivity. Trawled areas of the North Sea, off the coast of Ireland, were significantly less productive when compared to untrawled areas of similar habitat type (Jennings et al. 2001). Areas disturbed by mobile fishing gear on Georges Bank had lower levels of benthic production (both biomass and energy) when compared to undisturbed areas (Hermsen et al. 2003).

Research conducted in Alaska confirms research in other regions indicating that bottom trawling gear damages sensitive benthos. When bottom trawling occurs in coral habitat, up to 30% of coral colonies can be removed (Krieger, 1999). During a submersible study in the Gulf of Alaska, it was reported that 50% of the coral had been removed or broken by a single pass of a research bottom trawl (Krieger, 2002). The corals at the site had not recovered seven years later (Krieger, 2002).

In Seguam Pass in the Aleutian Islands, gorgonian corals, which 20 years ago were a major component of the bycatch of the Atka mackerel fishery, steadily declined thereafter (NMFS 2001). This suggests that after years of bottom fishing, there were significantly fewer of these habitat-forming species left to catch. Video observation of some areas in Seguam Pass show completely destroyed coral habitats with only fragments of coral skeletons and rubble on the bottom (Zenger, 1999).

4. **Rarity: the rarity of the habitat type**

Aleutian Islands benthic habitat is unique and has been recorded nowhere else in Alaska or in the world. Hard corals in the genera *Paragorgia, Fanellia, Callogorgia, Primnoa, Calcigorgia, Thouarella,* and *Arthrogorgia* are present in dense aggregations. Such bioherms, described as deep-sea coral gardens, are unique to the Aleutian Islands. There are 82 pinnacles and 3 seamounts in the Aleutians.

Proposed management measures and their specific objectives, if appropriate:

Given its unique status on the planet, we propose the entire Aleutian Islands region be designated as a **Special Management Area** with categories of HAPC and respective management approaches. In order to protect exquisite and rare benthic habitat the following measures should be taken:

For pinnacles, there should be no bottom trawling and other commercial bottom contact should be limited. This management measure would apply to all pinnacles except the three pinnacles noted in Table 1, excluded from HAPC protection because they fall within the core bottom trawl fishing area.

For seamounts, there should be a moratorium on commercial fishing.

Proposed solutions to achieve these objectives: (*how might the problem be solved?*) Include concepts of methods of measuring progress towards those objectives.

The pinnacles and seamounts of the Aleutians deserve special protection. Management measures should prohibit bottom trawling within a two mile radius around the charted least depth of known pinnacles. Any other commercial bottom contact should be limited and permitted only upon determination by NOAA Fisheries that the fishery can be conducted without habitat destruction.

For seamounts, as a precautionary measure, there should be a moratorium on commercial fishing in these areas until they can be explored, the benthic habitat mapped, populations of seamount species estimated, and until NOAA Fisheries determines that a fishery can be conducted without habitat destruction.

Consistent with the Council and agency's discussion, this HAPC proposal assumes that currently closed or restricted areas would remain closed or restricted. For example, current management measures to protect Steller sea lions and their habitat would remain in place.

Expected benefits to the FMP species of the proposed HAPC, and supporting information/data:

Oceana's Aleutian Islands Pinnacles and Seamounts HAPC proposal is completely contained within the designated essential fish habitat areas of the following FMP managed species: Shortraker rockfish, rougheye rockfish, northern rockfish, Atka mackerel, Pacific cod Pacific ocean perch, and Golden king crab.

The areas described in this proposal are ecologically important for many reasons, including as habitat for commercially exploited groundfish species. Pinnacles and seamounts are home to many species of corals, sponges, and other important living seafloor substrates. Corals provide essential habitat for a variety of marine species including several species of rockfish, king crab, Atka mackerel, shrimp, Pacific cod, walleye pollock, Greenland turbot, greenlings, and other flatfish (Krieger 1999). Rockfish and Atka mackerel are associated with gorgonian coral, hydrocoral and cup corals (Heifetz 2002). Soft corals in the Bering Sea were found to be in close association with gadids (e.g. Pacific Cod and Walleye Pollock), Greenland turbot, greenlings, and other flatfish (Heifetz 2002). Krieger (1993) noted that juvenile Pacific ocean perch exhibit a preference for rugged areas containing cobble-boulder and epifaunal cover and that shortraker rockfish strongly prefer rugged, high-profile habitat interspersed with boulders. Carlson and Straty (1981), Straty (1987), and Pearcy et al. (1989) found that juvenile rockfish exhibit a preference for high-relief habitat. Juvenile and adult *Sebastes sp.* were often found in association with *Primnoa spp.* during underwater video surveys of rockfish habitat in southeast Alaska (Bizzarro, 2002). Corals may be important for growth to maturity for demersal slope rockfish (EFH EIS).

Research from around the world indicates the destruction of living seafloor negatively impacts fish populations. Destruction of bryozoan growths by trawling in Tasman Bay, New Zealand resulted in a marked reduction in numbers of associated juvenile fish (Turner et al. 1999). Predation rate on juvenile Atlantic cod (*Gadus morhua*) increases with decreasing habitat complexity (Walters & Juanes 1993). Case studies in New Zealand and Australia suggested that loss of habitat structure through removal of large epibenthic organisms by fishing had negative effects on associated fish species (Turner et al. 1999). Removal of epifaunal organisms like corals may lead to the degradation of habitat such that it is no longer suitable for associated fish species (Auster et al. 1996).

Protecting habitat areas from fishing impacts has positive effects. In an area of the Irish Sea, for example, an 11 year closure to scallop dredging increased hydroid colonies (Bradshaw et al. 2003). Hydroid colonies increased diversity and abundance of benthic fauna as well as recruitment of juvenile scallops (Bradshaw et al. 2003). A model of trawl closures around locations where trawl "hangs" occurred showed that prohibiting trawling in areas with structural complexity had positive effects on juvenile Atlantic cod (Link & Demerest, 2003).

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:

The proposed pinnacle bottom trawl closures and those NOAA may determine appropriate and necessary of other fisheries would encompass approximately 3,216 km^2. Economic impacts to the bottom trawl fleet from the proposed management measure are minimal as the pinnacle closures fall outside of most of the core fishing area. Further it is likely that NOAA Fisheries will find that other bottom contact fisheries do have habitat damaging impact. Appropriate prohibitions of bottom contact by these other fisheries may result in permissible shifts in location or change of technique but minimal loss of revenue.

Atka seamount, Adak seamount, and Bowers seamount are far offshore and deep. As such, they currently experience very low or no fishing pressure from the fishing industry. The proposed seamount commercial fishing closures would have no economic impact since the seamounts are far offshore and are currently not fished. Further economic assessments may be conducted in the HAPC National Environmental Policy Act process.

Clear geographic delineation for proposed HAPC (example written latitude and longitude reference points and/or delineation on an appropriately scaled NOAA chart):

There are 3 documented seamounts and 82 documented pinnacles in the Aleutian Islands region. This proposal includes all three of the documented seamounts and 79 of the documented pinnacles. Three pinnacles, as noted in Table 1, were excluded from HAPC protection because they fall within the core fishing area.

Data

Table 1: Pinnacles in the Aleutians

Latitude N	Longitude W	Charted Least Depth (Fathoms)	Reference to Nearest Shore	Distance from Reference (nm)	
53° 51.5′	165° 57.0′	9	Sedanka I.	5	
53° 15.5′	168° 51.0′	65	Umnak I.	6	
53° 41.0′	167° 11.0′	13	Unalaska I.	4	
53° 32.5′	167° 20.0′	15	Unalaska I.	4	
53° 26.0′	167° 44.0′	9	Unalaska I.	3	
52° 46.0′	168° 52.0′	20	Umnak I.	7	
52° 51.0′	169° 15.5′	14	Umnak I.	5	
52° 57.0′	169° 35.5′	15	Kagamil I.	4	
52° 41.0′	169° 40.0′	13	Chuginadak I.	5.5	
52° 29.0′	169° 52.0′	38	Herbert I.	17	
52° 19.5′	171° 48.0′	93	Seguam I.	23	
52°25.5′	172° 09.0′	55	Seguam I.	7	
52° 31.5′	172° 10.0′	63	Seguam I.	11.5	
52° 40.0′	172° 03.0′	87	Seguam I.	21.5	
52° 36.5′	172° 41.0′	98	Seguam I.	16	
51° 58.0′	173° 05.0′	14	Amilia I.	6	
54° 17.0′	165° 18.0′	3	Akun I.	6	
54° 19.5′	165° 59.5′	48	Akun I.	6	
53° 39.0′	168° 23.0′	286	Umnak I.	9	
53° 13.0′	169° 46.0′	53	Uliaga I.	8	
52° 57.0′	169° 29.0′	89	Kagamil I.	8	
52° 49.0′	170° 13.0′	38	Herbert I.	3	
52° 49.0′	170° 29.0′	106	Yunaska I.	8	
52° 17.0′	170° 42.0′	72	Yunaska I.	16	
52° 06.0′	171° 51.0′	67	Seguam I.	21	Core fishing, not included
52° 35.0′	172° 20.0′	85	Seguam I.	12	
52° 35.0′	173° 15.0′	109	Amlia I.	28	
52° 32.0′	173° 26.0′	93	Atka I.	24	
52° 28.0′	173° 36.0′	99	Atka I.	17	
51° 56.0′	174° 14.0′	47	Atka I.	8.5	
51° 56.0′	174° 22.0′	45	Atka I.	7.5	
52° 16.0′	175° 07.0′	129	Koniuji I.	3	
51° 34.0′	178° 13.0′	96	Ilak I.	6	
51° 24.0′	178° 33.0′	41	Ilak I.	10	
51° 08.0′	179° 00.0′	55	Amatignak I.	7	
51° 23.0′	179° 31.0′	49	Amatignak I.	15	
51° 29.0′	179° 52.0′	58	Amchitka I	25	
52° 28.0′	179° 45.0′	38	Semisopochnoi I.	35	
53° 51.0′	179° 56.0′	24	SE Bowers Bank	23	
54° 10.0′	179° 55.0′	33	SE Bowers Bank	6	

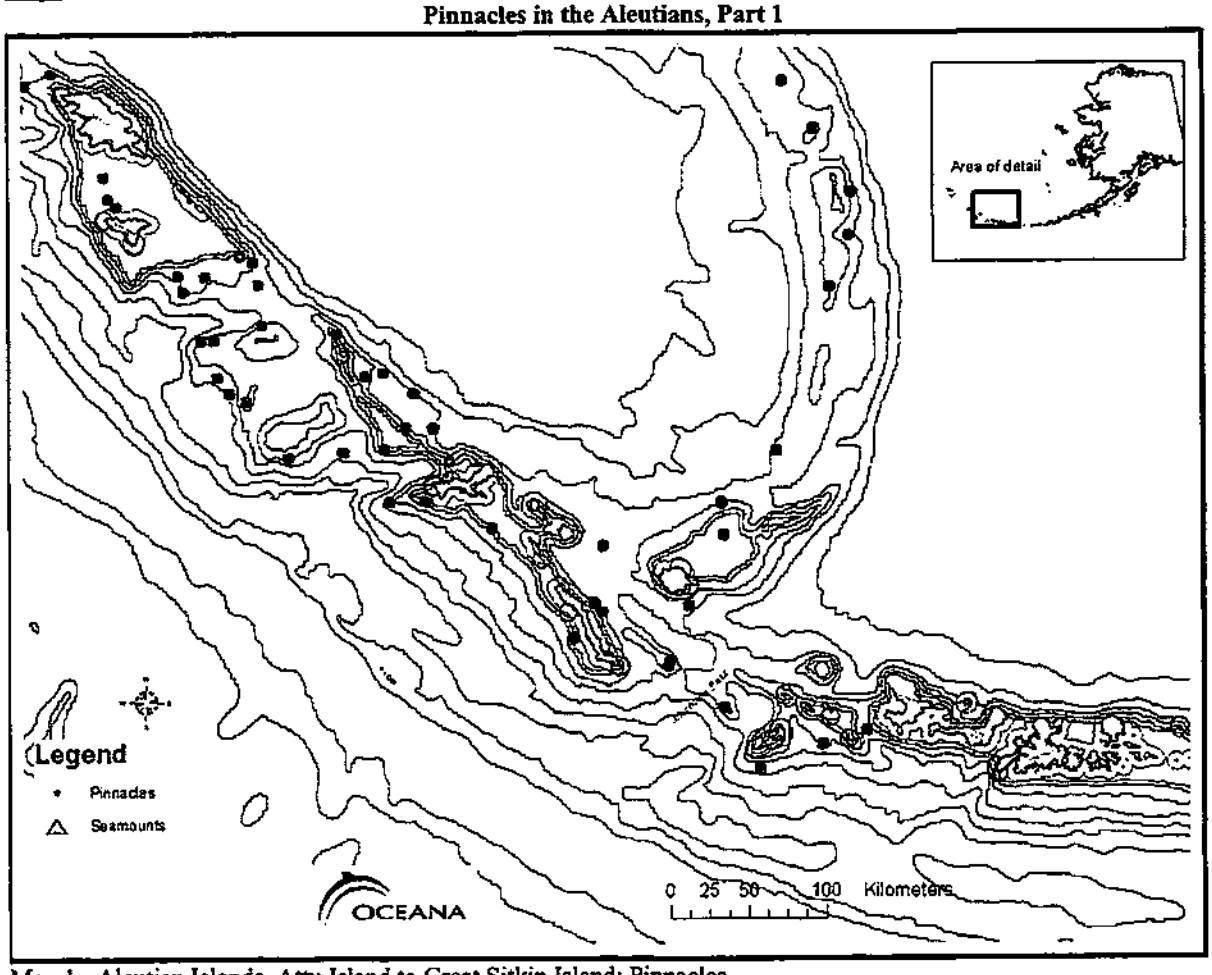
54° 24.0′	179° 47.0′	6	Bowers Bank		
54° 39.0′	179° 11.0′	99	NW Bowers Bank	17	
54° 50.0′	178° 43.0′	120	NW Bowers Bank	37	
51° 31.0′	179° 52.0′	78	Amchitka I.	16	
51° 51.0′	179° 50.0′	69	Semisopochnoi I.	5	
52° 52.0′	179° 57.0′	28	Semisopochnoi I.	17	
52° 18.0′	179° 53.0′	21	Semisopochnoi I.	15	
51° 25.0′	178° 58.0′	5	Amchitka I.	5	
51° 37.0′	179° 07.0′	81	Amchitka I.	6	
51° 39.0′	179° 01.0′	65	Amchitka I.	4	
51° 58.0′	178° 53.0′	106	Little Sitkia I.	11	
51° 48.0′	177° 52.0′	36	Kiska I.	13	
51° 47.0′	177° 12.0′	49	Kiska I.	5	
52° 03.0′	177° 15.0′	17	Kiska I.	6	Core fishing, not included
51° 41.0′	176° 54.0′	62	Kiska I.	16	
52° 11.0′	176° 59.0′	58	Kiska I.	19	
52° 07.0′	176° 45.0′	2	Kiska I.	21	
52° 19.0′	176° 41.0′	182	Buldir I.	26	
51° 57.0′	176° 39.0′	14	Kiska I.	20	
51° 50.0′	176° 19.0′	90	Kiska I.	33	
52° 17.0′	176° 12.0′	29	Buldir I.	10	
52° 21.0′	176° 20.0′	76	Buldir I.	13	
51° 40.0′	175° 53.0′	67	Buldir I.	39	
52° 26.0′	175° 47.0′	36	Buldir I.	5	
51° 51.0′	175° 18.0′	60	Buldir I.	37	
51° 51.0′	175° 08.0′	86	Buldir I.	39	
51° 54.0′	174° 58.0′	79	Buldir I.	43	
52° 17.0′	175° 07.0′	83	Buldir I.	28	
52° 03.0′	174° 41.0′	84	Agattu I.	40	
52° 05.0′	174° 47.0′	52	Agattu I.	42	
52° 29.0′	174° 55.0′	87	Buldir I.	36	
52° 35.0′	174° 47.0′	61	Agattu I.	36	
52° 35.0′	174° 39.0′	12	Agattu I.	33	Core fishing, not included
52° 23.0′	174° 27.0′	88	Agattu I.	26	
52° 15.0′	174° 20.0′	64	Agattu I.	23	
52° 19.0′	174° 13.0′	62	Agattu I.	18	
52° 30.0′	173° 24.0′	47	Agattu I.	4	
52° 31.0′	173° 18.0′	34	Agattu I.	6	
52° 37.0′	173° 10.0′	10	Attu I.	10	
53° 00.0′	172° 16.0′	138	Attu I.	9	
52° 52.0′	172° 06.0′	81	Attu I.	14	
53° 04.0′	170° 57.0′	18	Attu I.	56	
52° 57.0′	170° 52.0′	34	Attu I.	59	

Table 2: Seamounts in the Aleutians

NAME	DEPTH (m)	LAT (dec. degrees)	LONG (dec. degrees)
ADAMS	-3045	50.020	-176.230
ATKA	-4517	50.270	-175.170
BOWERS	-2250	54.080	-174.780

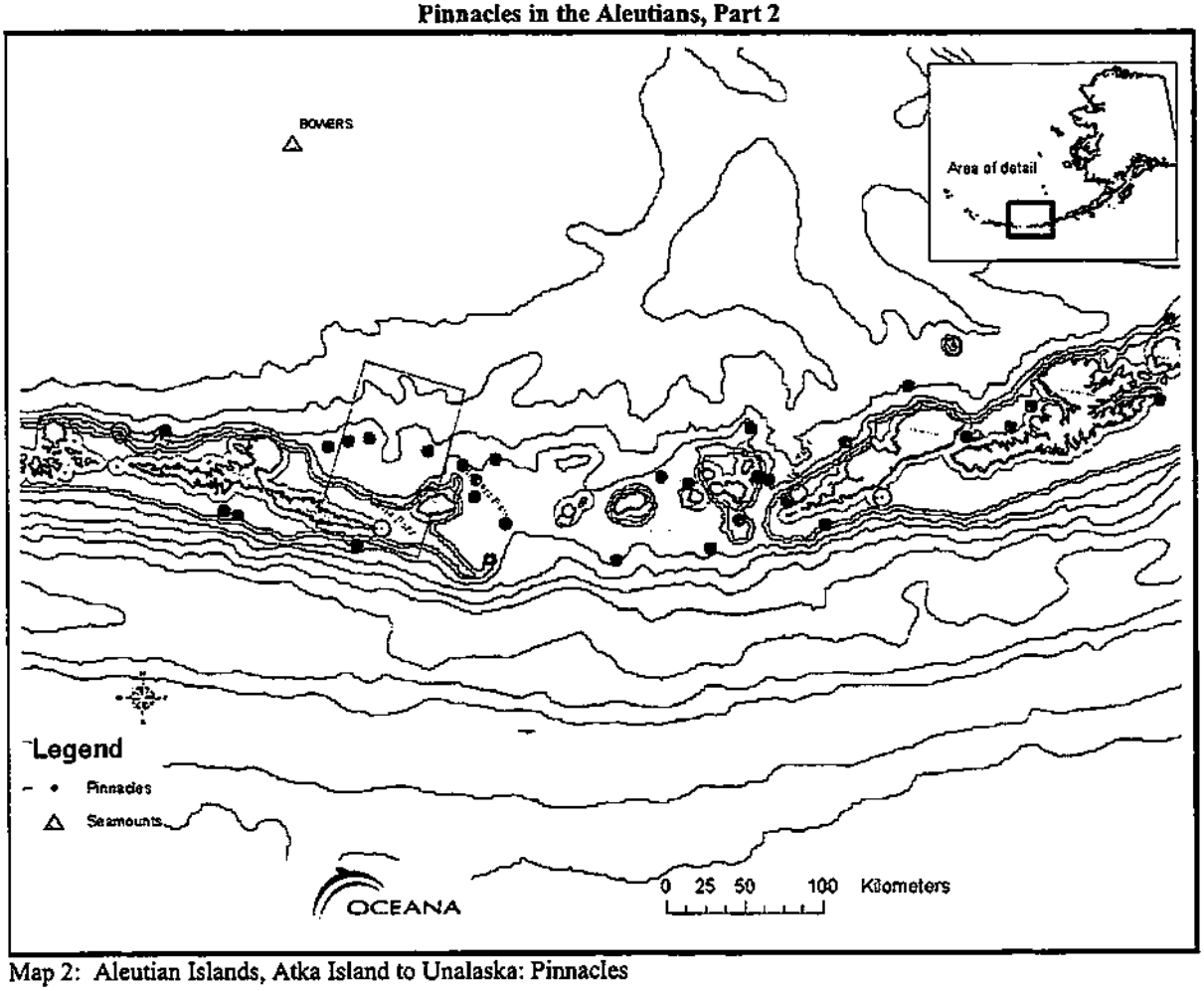
Maps

Pinnacles in the Aleutians, Part 1



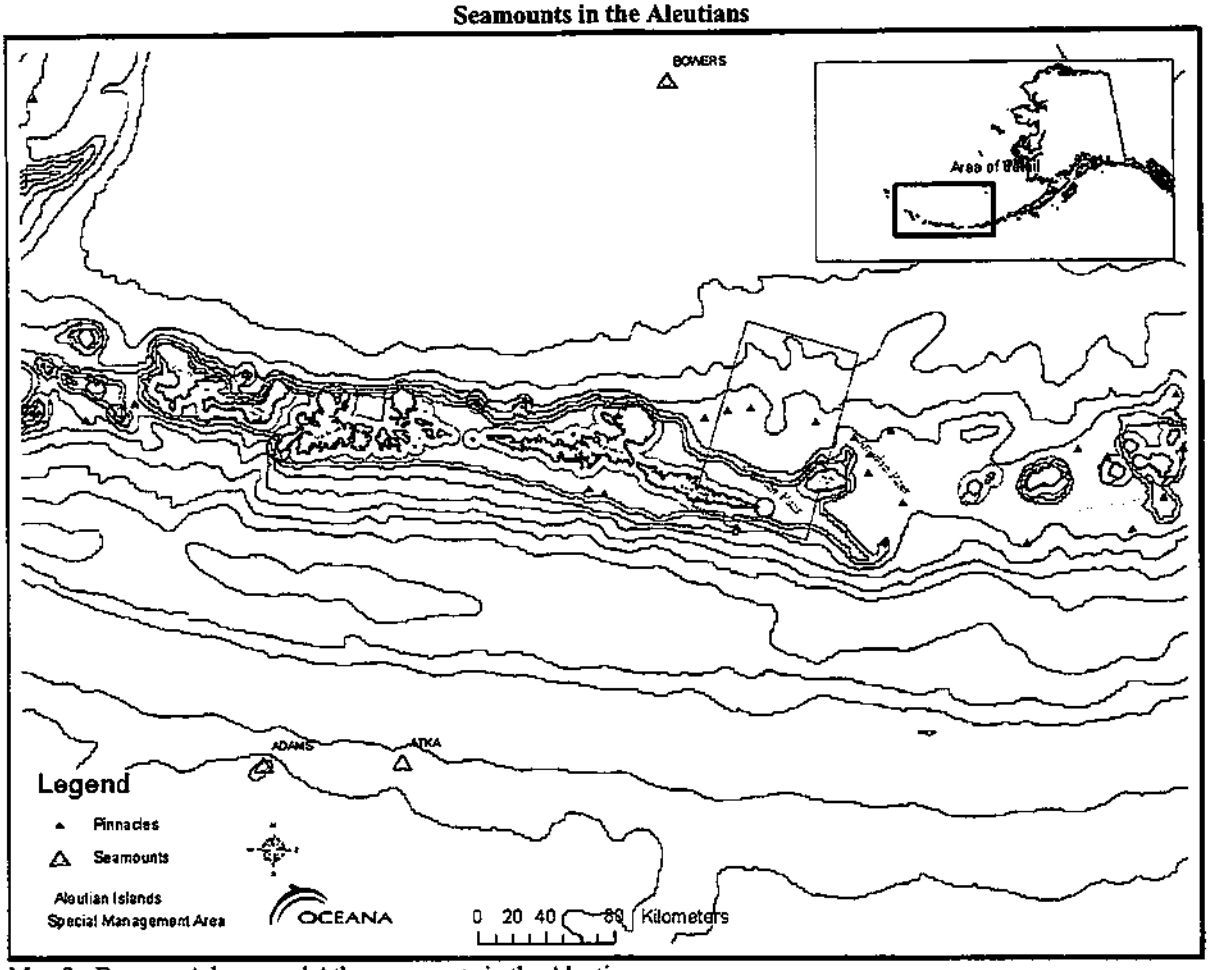
Map 1: Aleutian Islands, Attu Island to Great Sitkin Island: Pinnacles

Pinnacles in the Aleutians, Part 2



Map 2: Aleutian Islands, Atka Island to Unalaska: Pinnacles

Seamounts in the Aleutians



Map 3: Bowers, Adams, and Atka seamounts in the Aleutians.

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):

Data Acquisition and Assumptions:
The following section describes the information and process Oceana used to develop proposed HAPC designations and associated management measures.

The precision and accuracy of our analyses is necessarily limited by the precision and accuracy of the underlying information. Our requests to the Fisheries Service for observer data were provided in aggregated 10x10 km blocks. The blocks, or "grids" are referenced by a master gridcode. Blocks displayed in figures in this proposal can be referenced to latitude/longitude coordinates on navigational charts. We used these data to analyze fishing effort and the approximate economic value of fishing areas. Data at this resolution covered approximately 90% of groundfish fishery effort (Ren Narita, AFSC pers. comm.). A necessary assumption for the analysis was that fishing effort was uniform across a given block. For example, a closed area within a block would have an economic impact proportional to the percentage of the block that was closed. As such, an area of 25 km^2 closed to a certain gear type within a 100 km^2 fishing block where $1 million ex-vessel fish value was caught would result in an economic impact of $250,000 of lost revenue. Another assumption is that unobserved vessels fished in the same blocks as observed vessels.

In addition to using observer data, we also incorporated information from the NOAA RACEBASE trawl survey database. Trawl survey end points were plotted as point locations and the catch per unit effort for coral species or species groups was noted. Catch per unit effort in kilograms per square kilometer was calculated by dividing sample weight by area swept. Area swept was calculated as the net width multiplied by trawl distance.

The location of areas described from submersible dives as coral gardens (Stone, 2003) was obtained from NOAA scientists. A database of pinnacle locations was obtained from NOAA's Alaska Regional Office. Locations of seamounts were obtained from MCBI's oceanographic data CD-rom (MCBI, 2003).

Methods:
To identify core bottom trawl fishing areas, we analyzed twelve years of fishery observer data of the bottom trawl fleet to identify the most important and heavily trawled areas. Fishing blocks within Seguam Pass, where fishing activity has significantly changed due to Steller sea lion mitigation measures, were excluded from the analysis. Of the remaining blocks, from 1990 to 2002, 276 blocks (27,600 km^2) in the Aleutians had observed bottom trawl activity. We found that from 1990 to 2002, 55 fishing blocks (5,500 km^2) accounted for 82% of the observed total catch, 74% of the observed total hauls, and 81% of the observed total ex-vessel value.

Data collected by fishery observers do not give a complete picture of bottom trawl effort in the Aleutian Islands. However, the areas encompassed in the map cover a large percentage of bottom trawl catch in the Aleutians. For example, the 2002 observer data covers 100% of the Atka mackerel catch, 70% of the rockfish catch, and 60% of the Pacific cod catch when compared to total recorded catches in the 2003 SAFE report.

Pinnacles, and seamounts were plotted on the map as point locations and compared to patterns of trawl effort. Eighty two pinnacles and three seamounts were identified in the Aleutian Islands region. Three pinnacles in the core fishing area were excluded to provide for fishing opportunities.

Consistent with the Council and agency's discussion, our HAPC proposals assume that currently closed or restricted areas would remain closed or restricted. For example, current management measures to protect Steller sea lions and their habitat would remain in place.

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Please check applicable box (es):
☐ GOA Groundfish FMP
☒ BSAI Groundfish FMP
☐ Scallop FMP
☒ BSAI Crab FMP
☐ Salmon FMP

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSALS

Name of Proposer: Jim Ayers Date: January 10, 2004

Address: 175 S. Franklin Street, Suite 418
Juneau, AK 99801
(907) 586-4050

Affiliation: Oceana

Title and Brief Statement of Proposal:

Aleutian Islands Special Management Area: Core Bottom Trawling Open Permit Area

The Aleutian Islands ecosystem is one of the most vibrant, dynamic, productive and rare ocean environments in the world. With over 450 species of fish, more than 50 species of seabirds that migrate from all seven continents around the world, and 25 species of marine mammals, this rich and unique sea world is an international treasure. It is a rare and wondrous place on the planet deserving of special protections. NOAA Fisheries submersible dives in 2002 and 2003 revealed exquisite cold water coral gardens with the greatest diversity and abundance of cold water corals in Alaska and perhaps the world (Stone 2003). As such, the Aleutian Islands should be managed as a special management area, and specific fishery mitigation measures are necessary to protect the rare and fragile benthic habitat on the Aleutian Islands seafloor. In an ecosystem as biodiverse, productive, and rare as the Aleutians Islands marine environment, destructive bottom trawling should be permitted as the exception, not the rule, and only in areas where it is scientifically proven to not harm the ancient living seafloor.

Objectives of Proposal:
(Identification of the habitat and FMP species the HAPC proposal is intended to protect.)

This proposal will protect the **corals, sponges, other living substrates, pinnacles, and seamounts** HAPCs of the **Aleutian Islands** from destructive bottom trawling.

Corals, sponges, and other living seafloor are habitat that provides nurseries, places to feed, shelter from currents and predators, and spawning areas for many species of marine life including rockfish, Pacific Ocean perch, flatfish, Atka mackerel, golden king crab, shrimp, Pacific cod, pollock, greenling, greenland turbot, and sablefish. Perhaps the oldest animals on the planet, these long-lived corals have evolved in one of the most stable habitats on earth, too deep to be affected by tides and waves or sunlight. Consequently, they are extremely vulnerable to disturbance and are easily destroyed by a variety of fishing gears.

Oceana's Aleutian Islands Core Bottom Trawling Open Permit Areas HAPC proposal is completely contained within the designated essential fish habitat areas of the following FMP managed species: Shortraker rockfish, rougheye rockfish, northern rockfish, sharpchin rockfish, dusky rockfish, Atka mackerel, Pacific cod, Pacific ocean perch, and Golden king crab.

Statement of purpose and need:

The seafloor of the Aleutian Islands is unique. It is also an economic gold mine as part of Alaska fisheries that provide more than half of the nation's seafood. However, indiscriminate destructive bottom trawling in delicate living seafloor habitat like corals, sponges, and other living substrates is irreversibly marring this unique, pristine environment.

From 1990 to 2002, U.S. federal fishery observers reported over 1,500 metric tons of coral and sponge bycatch from the Aleutian Islands, of which approximately 90% was caused by bottom trawling (NMFS 2002). Corals and sponges have already been identified as HAPC by NOAA fisheries in Amendment 55 to the Groundfish FMPs

(1998). As such, it is prudent and necessary to mitigate the impacts of this destructive bottom trawling on these known HAPCs.

Such mitigation is not unprecedented. Protection of deep sea corals and sponges was cited as a rationale for the Sitka Pinnacles Marine Reserve and the no-trawl zone in Southeast Alaska (Witherell and Coon 2000).

Additionally, world fisheries have a documented geographic and depth expansion (Pauly et al., 2003). It is important to protect unexploited areas from future expansion to deeper, previously unfishable areas until there is better understanding of deepwater communities (Koslow et al., 2000).

A description of how the proposed HAPC addresses the four considerations set out in the final EFH regulations:

NOAA Fisheries has identified corals and sponges in Alaska as HAPC as indicated in Amendment 55 to the Groundfish FMPs (1998). Additionally, in a letter from Dr. William Hogarth to Mr. Jim Ayers dated September 9, 2002, Dr. Hogarth stated, "Corals, sponges, and other living substrate in waters off Alaska are already classified by NOAA Fisheries as Habitat Areas of Particular Concern deserving of special protection because of their importance as habitat and their vulnerability to human impacts."

1. **Ecological importance: does the habitat perform an important ecological function?**

Deep water corals and sponges provide high quality fish habitat. The vertical structure formed by these coral colonies provides relief on the seafloor, increases habitat complexity, increases niche breadth, and increases biodiversity. Sessile epifauna increase habitat complexity and play an important factor in structuring benthic communities (Bradshaw et al. 2003). These coral garden areas support a rich diversity of species in a small area and are worthy of special protection.

2. **Sensitivity: the extent to which the habitat is sensitive to human induced environmental degradation**

Areas characterized by low natural disturbance and long lived species are the most sensitive to anthropogenic disturbance (NRC, 2002). The seafloor of the Aleutians epitomizes the type of habitat that is most sensitive to disturbance and takes the longest to recover, if ever. Deep-water corals are the oldest and slowest growing types of epifauna. Gorgonian coral colonies are long-lived and slow-growing. A colony of *Primnoa resedaeformis* was aged to 112 years in the Gulf of Alaska (Andrews et al. 2002). Larger colonies formed from multiple settlement events may be 500 years old or more (Risk et al, 2000). Between 1990 and 2002, 175 metric tons of coral and bryozoans were removed by commercial bottom trawls at a depth of approximately -500 m (NORPAC data, unpublished). The depth distribution of corals species Paragorgia and Primnoa in the Aleutians falls within depths currently exploited by the trawl fleet.

3. **Exposure: whether, and to what extent, development activities are, or will be stressing the habitat**

From 1990 to 2002, U.S. federal fishery observers reported over 1,500 metric tons of coral and sponge bycatch from the Aleutian Islands, of which approximately 90% was caused by bottom trawling (NMFS 2002).

Bottom trawling alters the physical structure of the seafloor, reduces habitat complexity, and changes the composition of benthic communities. Bottom trawling removes epifauna, thereby reducing habitat complexity and species diversity of the benthic community (Collie et al. 2000, Kaiser et al. 2000). According to the National Academy of Sciences, if disturbance from trawling exceeds the resiliency threshold, then irrevocable long-term ecological effects will occur. Gravel pavement substrate disturbed by bottom trawling on Georges Bank in the Northeast Atlantic, for example, had significantly less emergent epifauna, shrimp, polychaetes, brittlestars, and small fish than undisturbed sites (Collie et al., 2000). Scavenging organisms tended to dominate communities in areas of high dredging disturbance while long-lived organisms and fragile taxa disappeared (Collie et al. 1997).

Bottom trawling decreases benthic productivity. Trawled areas of the North Sea, off the coast of Ireland, were significantly less productive when compared to untrawled areas of similar habitat type (Jennings et al. 2001). Areas disturbed by mobile fishing gear on Georges Bank had lower levels of benthic production (both biomass and energy) when compared to undisturbed areas (Hermsen et al. 2003).

Research conducted in Alaska confirms research in other regions indicating that bottom trawling gear damages sensitive benthos. When bottom trawling occurs in coral habitat, up to 30% of coral colonies can be removed

(Krieger, 1999). During a submersible study in the Gulf of Alaska, it was reported that 50% of the coral had been removed or broken by a single pass of a research bottom trawl (Krieger, 2002). The corals at the site had not recovered seven years later (Krieger, 2002).

In Seguam Pass in the Aleutian Islands, gorgonian corals, which 20 years ago were a major component of the bycatch of the Atka mackerel fishery, steadily declined thereafter (NMFS 2001). This suggests that after years of bottom fishing, there were significantly fewer of these habitat-forming species left to catch. Video observation of some areas in Seguam Pass show completely destroyed coral habitats with only fragments of coral skeletons and rubble on the bottom (Zenger, 1999).

4. **Rarity: the rarity of the habitat type**

Aleutian Islands benthic habitat is unique and has been recorded nowhere else in Alaska or in the world. Hard corals in the genera *Paragorgia, Fanellia, Callogorgia, Primnoa, Calcigorgia, Thouarella,* and *Arthrogorgia* are present in dense aggregations. Such bioherms, described as deep-sea coral gardens, are unique to the Aleutian Islands.

Proposed management measures and their specific objectives, if appropriate:

Given its unique status on the planet, we propose the entire Aleutian Islands region be designated as a **Special Management Area** with categories of HAPC and respective management approaches. We propose establishing an Aleutian Islands Core Bottom Trawling Open Permit Area to protect the Aleutian Islands' rare and unique corals, sponges, and other important living substrates from destruction. Management measures would permit bottom trawling in the Core Bottom Trawling Open Permit Area unless data and other information indicate HAPC destruction.

Proposed solutions to achieve these objectives: (*how might the problem be solved?*) Include concepts of methods of measuring progress towards those objectives.

The benthic habitat of the Aleutians deserves special protection. We propose that bottom trawling be permitted in the 55 10x10km blocks that have historically provided the majority of bottom trawl fishing success in last twelve years. These 55 blocks make up the Aleutian Islands Core Bottom Trawling Open Permit Area.

Coral gardens, pinnacles, and seamounts would be managed as described in the *Aleutian Islands Special Management Area: Pinnacles and Seamounts* and *Aleutian Islands Special Management Area: Coral Gardens* HAPC Proposals by Oceana.

All other areas would be closed to bottom trawling until such time that NOAA Fisheries can conduct comprehensive research and mapping to determine that bottom trawling would not negatively impact HAPCs including rare, fragile, essential fish habitat of corals, sponges, and other living seafloor structures.

Consistent with the Council and agency's discussion, this HAPC proposal assumes that currently closed or restricted areas would remain closed or restricted. For example, current management measures to protect Steller sea lions and their habitat would remain in place.

Expected benefits to the FMP species of the proposed HAPC, and supporting information/data:

Oceana's Aleutian Islands Core Bottom Trawling Open Permit Areas HAPC proposal is completely contained within the designated essential fish habitat areas of the following FMP managed species: Shortraker rockfish, rougheye rockfish, northern rockfish, Atka mackerel, Pacific cod Pacific ocean perch, and Golden king crab.

The areas protected in this proposal are ecologically important for many reasons, including as habitat for commercially exploited groundfish species. Corals provide essential habitat for a variety of marine species including several species of rockfish, king crab, Atka mackerel, shrimp, Pacific cod, walleye pollock, Greenland turbot, greenlings, and other flatfish (Krieger 1999). Rockfish and Atka mackerel are associated with gorgonian coral, hydrocoral and cup corals (Heifetz 2002). Soft corals in the Bering Sea were found to be in close association with gadids (e.g. Pacific Cod and Walleye Pollock), Greenland turbot, greenlings, and other flatfish (Heifetz 2002).

Krieger (1993) noted that juvenile Pacific ocean perch exhibit a preference for rugged areas containing cobble-boulder and epifaunal cover and that shortraker rockfish strongly prefer rugged, high-profile habitat interspersed with boulders. Carlson and Straty (1981), Straty (1987), and Pearcy et al. (1989) found that juvenile rockfish exhibit a preference for high-relief habitat. Juvenile and adult *Sebastes sp.* were often found in association with *Primnoa spp.* during underwater video surveys of rockfish habitat in southeast Alaska (Bizzarro, 2002). Corals may be important for growth to maturity for demersal slope rockfish (EFH EIS).

Research from around the world indicates the destruction of living seafloor negatively impacts fish populations. Destruction of bryozoan growths by trawling in Tasman Bay, New Zealand resulted in a marked reduction in numbers of associated juvenile fish (Turner et al. 1999). Predation rate on juvenile Atlantic cod (*Gadus morhua*) increases with decreasing habitat complexity (Walters & Juanes 1993). Case studies in New Zealand and Australia suggested that loss of habitat structure through removal of large epibenthic organisms by fishing had negative effects on associated fish species (Turner et al. 1999). Removal of epifaunal organisms like corals may lead to the degradation of habitat such that it is no longer suitable for associated fish species (Auster et al. 1996).

Protecting habitat areas from fishing impacts has positive effects. In an area of the Irish Sea, for example, an 11 year closure to scallop dredging increased hydroid colonies (Bradshaw et al. 2003). Hydroid colonies increased diversity and abundance of benthic fauna as well as recruitment of juvenile scallops (Bradshaw et al. 2003). A model of trawl closures around locations where trawl "hangs" occurred showed that prohibiting trawling in areas with structural complexity had positive effects on juvenile Atlantic cod (Link & Demerest, 2003).

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:

The proposed Aleutian Islands Core Bottom Trawling Open Permit Area provides the fleet of the respective target fisheries options to maintain existing revenue opportunities. In the event that the Council decides a proportional TAC reduction is in the best interest of the ecosystem and long-term sustainability for the Aleutians, a buyout program should be considered to minimize impacts of effects of the management measure. Further economic assessments may be conducted in the HAPC National Environmental Policy Act process.

Clear geographic delineation for proposed HAPC (example written latitude and longitude reference points and/or delineation on an appropriately scaled NOAA chart):

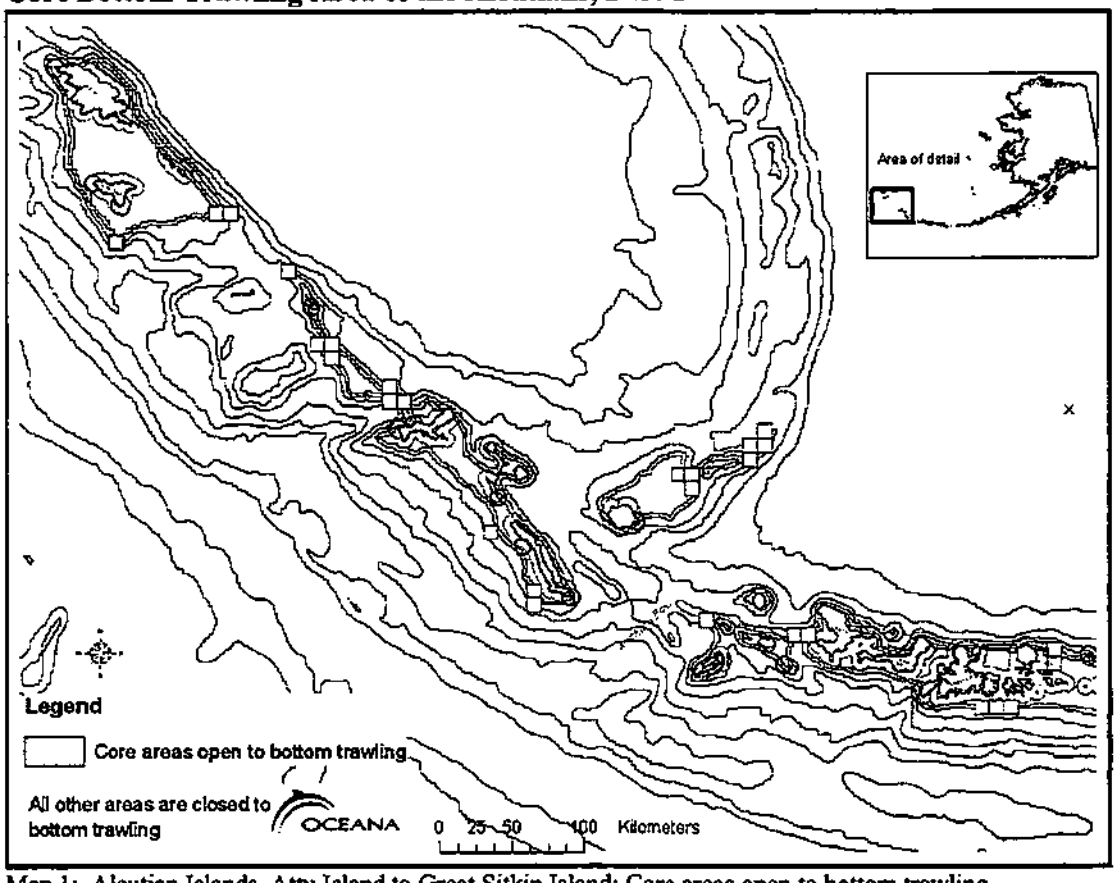
To identify core bottom trawl fishing areas, we analyzed twelve years of fishery observer data of the bottom trawl fleet to identify the most important and heavily trawled areas. We found that from 1990 to 2002, 55 blocks (10x10 km each, or 5,500 km^2) accounted for 82% of the observed total catch, 74% of the observed total hauls, and 81% of the observed total ex-vessel value. Under this proposal, those 5,500 km^2 would remain open to bottom trawling.

Table 1: 1990-2002 Observed Bottom Trawl Activity in Aleutian Islands Region

Observed bottom trawl activity	Area	Observed hauls	Observed catch (thousand mt)	Observed ex-vessel value (millions)
All Aleutians	27,600 km^2	30,824	979	208
Core areas	5,500 km^2	23,028	801	169
Core areas (% of total)	20%	75%	82%	81%

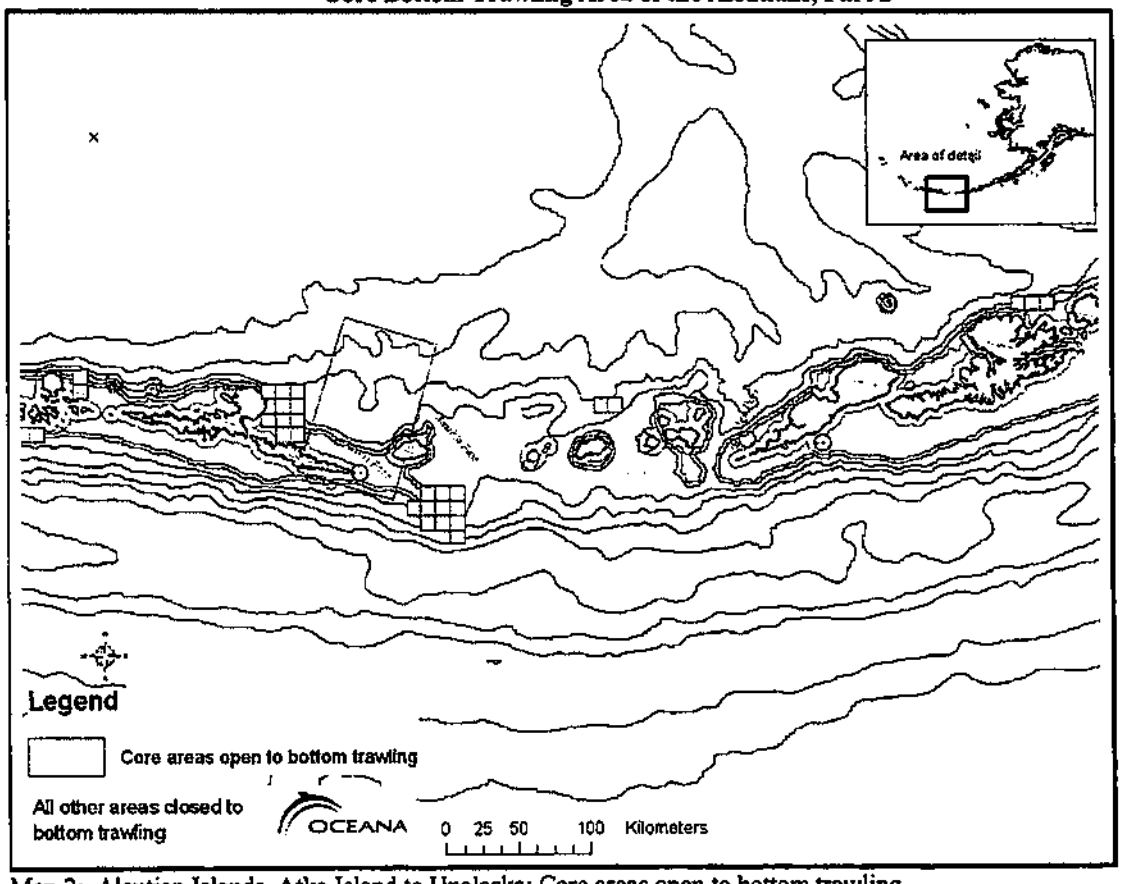
Maps

Core Bottom Trawling Area of the Aleutians, Part 1



Map 1: Aleutian Islands, Attu Island to Great Sitkin Island: Core areas open to bottom trawling

Core Bottom Trawling Area of the Aleutians, Part 2



Map 2: Aleutian Islands, Atka Island to Unalaska: Core areas open to bottom trawling

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):

Data Acquisition and Assumptions:
The following section describes the information and process Oceana used to develop proposed HAPC designations and associated management measures.

The precision and accuracy of our analyses is necessarily limited by the precision and accuracy of the underlying information. Our requests to the Fisheries Service for observer data were provided in aggregated 10x10 km blocks. The blocks, or "grids" are referenced by a master gridcode. Blocks displayed in figures in this proposal can be referenced to latitude/longitude coordinates on navigational charts. We used these data to analyze fishing effort and the approximate economic value of fishing areas. Data at this resolution covered approximately 90% of groundfish fishery effort (Ren Narita, AFSC pers. comm.). A necessary assumption for the analysis was that fishing effort was uniform across a given block. For example, a closed area within a block would have an economic impact proportional to the percentage of the block that was closed. As such, an area of 25 km^2 closed to a certain gear type within a 100 km^2 fishing block where $1 million ex-vessel fish value was caught would result in an economic impact of $250,000 of lost revenue. Another assumption is that unobserved vessels fished in the same blocks as observed vessels.

In addition to using observer data, we also incorporated information from the NOAA RACEBASE trawl survey database. Trawl survey end points were plotted as point locations and the catch per unit effort for coral species or species groups was noted. Catch per unit effort in kilograms per square kilometer was calculated by dividing sample weight by area swept. Area swept was calculated as the net width multiplied by trawl distance.

Methods:
To identify core bottom trawl fishing areas, we analyzed twelve years of fishery observer data of the bottom trawl fleet to identify the most important and heavily trawled areas. Fishing blocks within Seguam Pass, where fishing activity has significantly changed due to Steller sea lion mitigation measures, were excluded from the analysis. Of the remaining blocks, from 1990 to 2002, 276 blocks (27,600 km^2) in the Aleutians had observed bottom trawl activity. We found that from 1990 to 2002, 55 fishing blocks (5,500 km^2) accounted for 82% of the observed total catch, 74% of the observed total hauls, and 81% of the observed total ex-vessel value.

Data collected by fishery observers do not give a complete picture of bottom trawl effort in the Aleutian Islands. However, the areas encompassed in the map cover a large percentage of bottom trawl catch in the Aleutians. For example, the 2002 observer data covers 100% of the Atka mackerel catch, 70% of the rockfish catch, and 60% of the Pacific cod catch when compared to total recorded catches in the 2003 SAFE report.

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Please check applicable box (es):
☐ GOA Groundfish FMP
☒ BSAI Groundfish FMP
☐ Scallop FMP
☒ BSAI Crab FMP
☐ Salmon FMP

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSALS

Name of Proposer: Jim Ayers Date: January 10, 2004

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Juneau, AK 99801
(907) 586-4050

Affiliation: Oceana

Title and Brief Statement of Proposal:

Bering Sea Soft Corals and Seamounts

The Bering Sea is home to the biggest flatfish fishery in the United States. It is also the only known place in Alaska waters to have incredibly dense aggregations of *Gersemia sp.*, also known as sea raspberries. These delicate living seafloor creatures are soft corals that provide essential fish habitat for a myriad of marine life. Yet they and other important living seafloor substrate are removed in alarming numbers by destructive bottom trawling. These essential fish habitat HAPCs need further study and protection to ensure we maintain a healthy Bering Sea Ecosystem. The Bering Sea is also home to the MEDNYY Seamount.

Objectives of Proposal:
(Identification of the habitat and FMP species the HAPC proposal is intended to protect.)

The objectives of Oceana's Bering Sea HAPC Proposal are to protect benthic habitat characterized by dense aggregations of *Gersemia sp* and other important living seafloor habitat from destruction by bottom trawling, and to protect the MEDNYY Seamount.

Corals, sponges, and other living seafloor are habitat that provides nurseries, places to feed, shelter from currents and predators, and spawning areas for many species of marine life including rockfish, Pacific Ocean perch, flatfish, Atka mackerel, golden king crab, shrimp, Pacific cod, pollock, greenling, greenland turbot, and sablefish. Corals have evolved in one of the most stable habitats on earth, too deep to be affected by tides and waves or sunlight. Consequently, they are extremely vulnerable to disturbance and are easily destroyed by a variety of fishing gears.

Seamounts are rare and exceptional formations that are essential fish habitat rich with the formation of living seafloor such as corals and sponges.

Oceana's Bering Sea Soft Corals and Seamounts proposal is completely contained within the designated essential fish habitat areas of the following FMP managed species: Pacific cod, yellowfin sole, flathead sole, rex sole, arrowtooth flounder, and walleye pollock.

Statement of purpose and need:

The eastern Bering Sea has experienced rapid and intensive development of commercial bottom trawl fisheries (McConnaughey et al. 2000). The expansion of the bottom trawl flatfish fleet has moved the industry into a region characterized by soft sediments with abundant sessile epifauna. Sea raspberries, *Gersemia sp.* are recorded in dense aggregations in the central Bering Sea. These dense aggregations of *Gersemia* have been noted nowhere else in Alaska.

Seamounts provide rich, concentrated, biodiverse ecosystems. However, indiscriminate destructive bottom trawling in delicate living seafloor habitat like corals, sponges, and other living substrates can irreversibly mar this unique environment. As an example, in 1999, a single pass of a bottom trawl removed 21 metric tons of coral and bryozoans from a pinnacle 27 nm offshore of Agattu Island in the Aleutians. With such dire impacts of destructive

bottom trawling, it is imperative to protect the HAPC invertebrates on other pinnacles, and on seamounts, from this kind of decimation.

Protection of pinnacles is not unprecedented. In 2000, NOAA Fisheries established the Sitka Pinnacles Marine Reserve in Southeast Alaska. Protection of deep sea corals and sponges was cited as a rationale for the Sitka Pinnacles Marine Reserve and the no-trawl zone in Southeast Alaska (Witherell and Coon 2000). Further, the rationale for closing the Sitka pinnacle to groundfish fishing acknowledged "the pinnacles habitat is fragile, and the concentration of fishes in a relatively small, compact space can lend itself to overfishing of certain species, particularly lingcod, at sensitive life stages" (Federal Register, Vol. 65, No. 218). The Sitka reserve boasts fantastic aggregations of marine life including lingcod, rockfish, corals and sponges, among others.

Additionally, world fisheries have a documented geographic and depth expansion (Pauly et al., 2003). It is important to protect unexploited areas from future expansion to deeper, previously unfishable areas until there is better understanding of deepwater communities (Koslow et al., 2000).

A description of how the proposed HAPC addresses the four considerations set out in the final EFH regulations:

NOAA Fisheries has identified corals and sponges in Alaska as HAPC as indicated in Amendment 55 to the Groundfish FMPs (1998). Additionally, in a letter from Dr. William Hogarth to Mr. Jim Ayers dated September 9, 2002, Dr. Hogarth stated, "Corals, sponges, and other living substrate in waters off Alaska are already classified by NOAA Fisheries as Habitat Areas of Particular Concern deserving of special protection because of their importance as habitat and their vulnerability to human impacts."

1. **Ecological importance: does the habitat perform an important ecological function?**

Gersemia are soft corals that provide structure on the soft substrates of the central Bering Sea. *Gersemia* provide vertical relief and habitat structure on the generally low topographic structure of the eastern Bering Sea. Removal of habitat structure in soft sediments significantly decreases biodiversity (Thrush et al. 2001). Commercial bottom trawling can significantly change community structure of benthic communities (Thrush et al. 1998). Juvenile halibut and rock sole exhibit strong preference for benthic habitat structure (Stoner and Titgen 2003). Habitat choice was significantly influenced by density of structures. Field observations of juvenile halibut and rock sole with tows supported affinity for biogenic structure (Stoner and Titgen 2003).

Pinnacles and seamounts provide an obstacle to water flow that creates upwelling of currents and consequently nutrients. This nutrient rich water flow promotes complex and dense ecosystems on these undersea structures which includes corals and sponges. Deep water corals and sponges provide high quality fish habitat. The vertical structure formed by these coral colonies provides relief on the seafloor, increases habitat complexity, increases niche breadth, and increases biodiversity. Sessile epifauna increase habitat complexity and play an important factor in structuring benthic communities (Bradshaw et al. 2003). Pinnacles and seamounts support a rich diversity of species in a small area and are worthy of special protection.

2. **Sensitivity: the extent to which the habitat is sensitive to human induced environmental degradation**

Areas characterized by low natural disturbance and long lived species are the most sensitive to anthropogenic disturbance (NRC, 2002). The seafloor of the Bering sea has rich aggregations of soft corals that are easily destroyed by bottom trawling.

3. **Exposure: whether, and to what extent, development activities are, or will be stressing the habitat**

The abundance of soft corals in the Bering Sea may be due to the fact that the area was relatively lightly fished until recently. Intensive bottom trawling in the area is resulting in high bycatch of *Gersemia* which may be beyond sustainable limits. From 1990 to 2002, over 87 metric tons of soft corals were removed from the area east of the Pribilofs and 20 metric tons were removed from the area northwest of Unimak.

Bottom trawling alters the physical structure of the seafloor, reduces habitat complexity, and changes the composition of benthic communities. Bottom trawling removes epifauna, thereby reducing habitat complexity and species diversity of the benthic community (Collie et al. 2000, Kaiser et al. 2000). According to the National Academy of Sciences, if disturbance from trawling exceeds the resiliency threshold, then irrevocable long-term

ecological effects will occur. Gravel pavement substrate disturbed by bottom trawling on Georges Bank in the Northeast Atlantic, for example, had significantly less emergent epifauna, shrimp, polychaetes, brittlestars, and small fish than undisturbed sites (Collie et al., 2000). Scavenging organisms tended to dominate communities in areas of high dredging disturbance while long-lived organisms and fragile taxa disappeared (Collie et al. 1997).

Bottom trawling decreases benthic productivity. Trawled areas of the North Sea, off the coast of Ireland, were significantly less productive when compared to untrawled areas of similar habitat type (Jennings et al. 2001). Areas disturbed by mobile fishing gear on Georges Bank had lower levels of benthic production (both biomass and energy) when compared to undisturbed areas (Hermsen et al. 2003).

4. **Rarity: the rarity of the habitat type**

Dense aggregations of Gersemia sp. are unique and have been recorded nowhere else in Alaska.

There is only one seamount in the Bering Sea.

Proposed management measures and their specific objectives, if appropriate:

We have identified two areas of dense aggregations of Gersemia sp., described below.

The dense aggregations of soft corals need further research. NOAA Fisheries should make a determination to the extent to which bottom trawling damages these HAPC invertebrates. Appropriate mitigation measures and restrictions should be taken.

For the seamount, there should be a moratorium on commercial fishing.

Proposed solutions to achieve these objectives: (*how might the problem be solved?*) Include concepts of methods of measuring progress towards those objectives.

NOAA Fisheries should design an experiment of appropriate size and duration to assess the effects and recovery if any of bottom trawling on these HAPC invertebrates, compared to a control area which is closed to commercial bottom trawling. This research should not delay or replace immediate mitigation measures and protection.

Consistent with the Council and agency's discussion, this HAPC proposal assumes that currently closed or restricted areas would remain closed or restricted.

For the seamount, as a precautionary measure, there should be a moratorium on commercial fishing in these areas until they can be explored, the benthic habitat mapped, populations of seamount species estimated, and until NOAA Fisheries determines that a fishery can be conducted without habitat destruction.

Expected benefits to the FMP species of the proposed HAPC, and supporting information/data:

Oceana's Aleutian Bering Sea Soft Corals and Seamounts HAPC proposal is completely contained within the designated essential fish habitat areas of the following FMP managed species: Shortraker rockfish, rougheye rockfish, northern rockfish, Atka mackerel, Pacific cod Pacific ocean perch, and Golden king crab.

The areas protected in this proposal are ecologically important for many reasons, including as habitat for commercially exploited groundfish species. Soft corals in the Bering Sea were found to be in close association with gadids (e.g. Pacific Cod and Walleye Pollock), Greenland turbot, greenlings, and other flatfish (Heifetz 2002). Corals provide essential habitat for a variety of marine species including several species of rockfish, king crab, Atka mackerel, shrimp, Pacific cod, walleye pollock, Greenland turbot, greenlings, and other flatfish (Krieger 1999). Rockfish and Atka mackerel are associated with gorgonian coral, hydrocoral and cup corals (Heifetz 2002). Krieger (1993) noted that juvenile Pacific ocean perch exhibit a preference for rugged areas containing cobble-boulder and epifaunal cover and that shortraker rockfish strongly prefer rugged, high-profile habitat interspersed with boulders. Carlson and Straty (1981), Straty (1987), and Pearcy et al. (1989) found that juvenile rockfish exhibit a preference for high-relief habitat. Juvenile and adult *Sebastes sp.* were often found in association with *Primnoa spp.* during

underwater video surveys of rockfish habitat in southeast Alaska (Bizzarro, 2002). Corals may be important for growth to maturity for demersal slope rockfish (EFH EIS).

Research from around the world indicates the destruction of living seafloor negatively impacts fish populations. Destruction of bryozoan growths by trawling in Tasman Bay, New Zealand resulted in a marked reduction in numbers of associated juvenile fish (Turner et al. 1999). Predation rate on juvenile Atlantic cod (*Gadus morhua*) increases with decreasing habitat complexity (Walters & Juanes 1993). Case studies in New Zealand and Australia suggested that loss of habitat structure through removal of large epibenthic organisms by fishing had negative effects on associated fish species (Turner et al. 1999). Removal of epifaunal organisms like corals may lead to the degradation of habitat such that it is no longer suitable for associated fish species (Auster et al. 1996).

Protecting habitat areas from fishing impacts has positive effects. In an area of the Irish Sea, for example, an 11 year closure to scallop dredging increased hydroid colonies (Bradshaw et al. 2003). Hydroid colonies increased diversity and abundance of benthic fauna as well as recruitment of juvenile scallops (Bradshaw et al. 2003). A model of trawl closures around locations where trawl "hangs" occurred showed that prohibiting trawling in areas with structural complexity had positive effects on juvenile Atlantic cod (Link & Demerest, 2003).

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:

We have identified two areas of dense Gersemia sp. The first area, east of the Pribilofs encompasses approximately 88 fishing blocks, or 8,800 km^2 where bottom trawling was observed from 1990-2002. The primary target of the trawl fleet in this area was flatfish. The second area, northwest of Unimak encompasses 20 fishing blocks, or 2,000 km^2 where bottom trawling was observed from 1990-2002. If NOAA Fisheries were to close an experimental area to bottom trawling, the economic impacts would likely be minimal.

Further economic assessments may be conducted in the HAPC National Environmental Policy Act process.

The proposed seamount commercial fishing closures would have no economic impact.

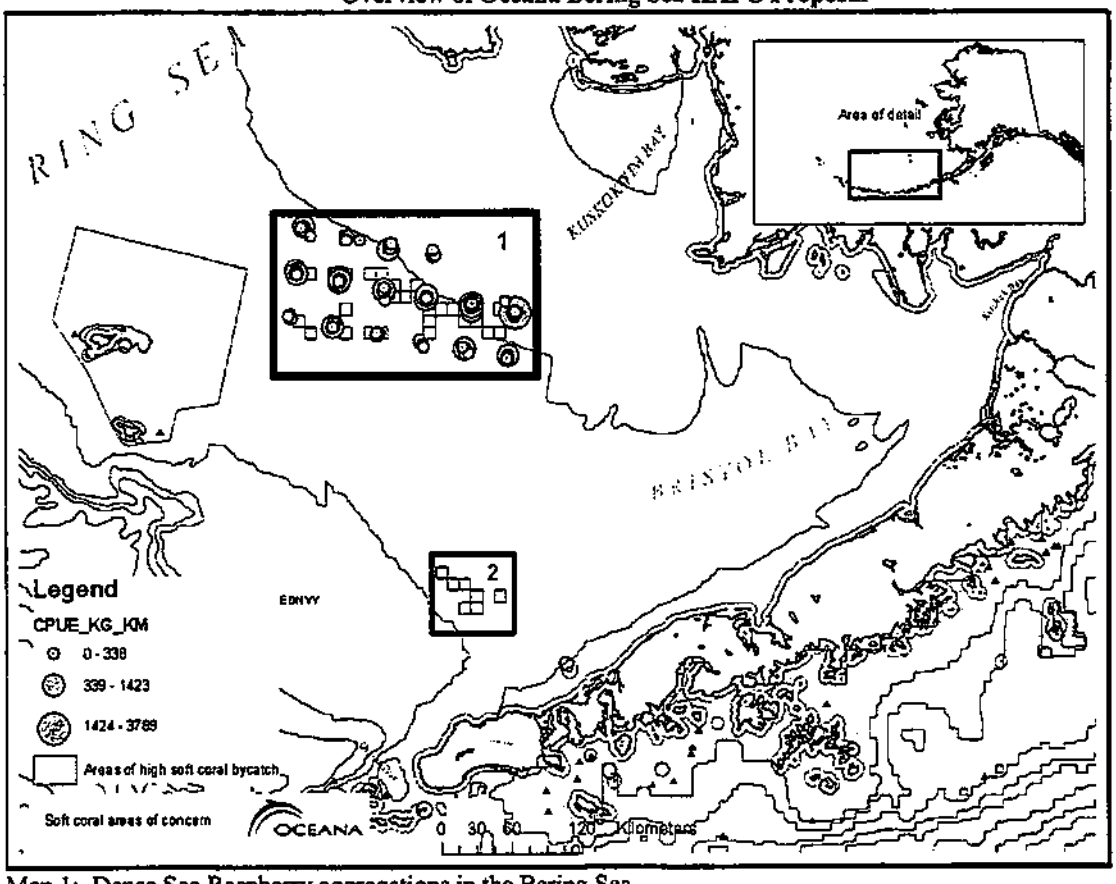
Clear geographic delineation for proposed HAPC (example written latitude and longitude reference points and/or delineation on an appropriately scaled NOAA chart):

Map 1 identifies two areas of dense aggregations of Gersemia sp.

Map 2 identifies the MEDNYY seamount. Table 1 provides the latitude and longitude reference points for the MEDNYY seamount.

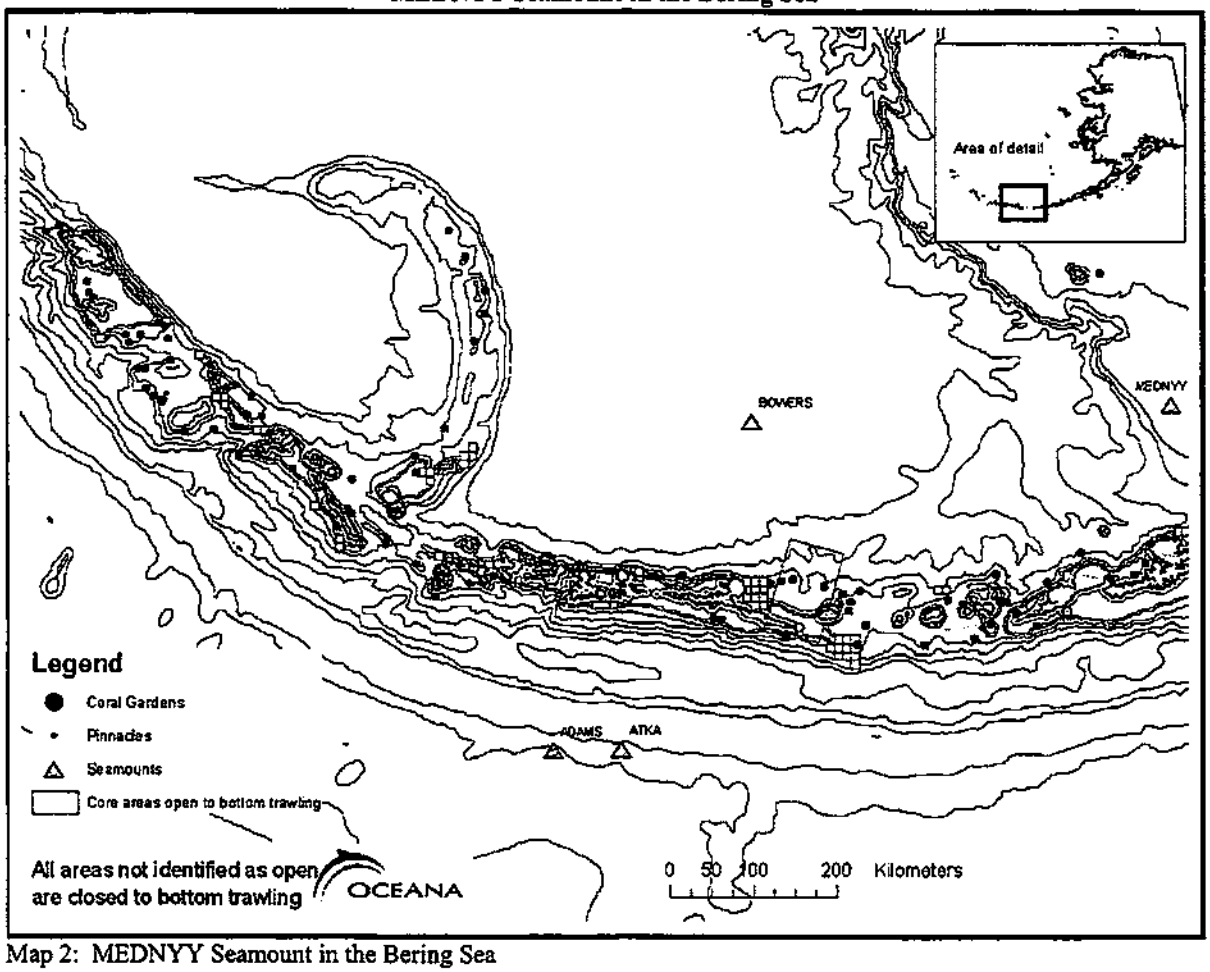
Map

Overview of Oceana Bering Sea HAPC Proposal



Map 1: Dense Sea Raspberry aggregations in the Bering Sea

MEDNYY Seamount in the Bering Sea



Map 2: MEDNYY Seamount in the Bering Sea

Table 1: Seamounts in the Bering Sea

NAME	DEPTH (m)	LAT (dec. degrees)	LONG (dec. degrees)
MEDNYY	-526	55.420	-167.280

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):

Data Acquisition and Assumptions:
The following section describes the information and process Oceana used to develop proposed HAPC designations and associated management measures.

The precision and accuracy of our analyses is necessarily limited by the precision and accuracy of the underlying information. Our requests to the Fisheries Service for observer data were provided in aggregated 10x10 km blocks. The blocks, or "grids" are referenced by a master gridcode. Blocks displayed in figures in this proposal can be referenced to latitude/longitude coordinates on navigational charts. We used these data to analyze fishing effort and the approximate economic value of fishing areas. Data at this resolution covered approximately 90% of groundfish fishery effort (Ren Narita, AFSC pers. comm.). A necessary assumption for the analysis was that fishing effort was uniform across a given block. For example, a closed area within a block would have an economic impact proportional to the percentage of the block that was closed. As such, an area of 25 km^2 closed to a certain gear type within a 100 km^2 fishing block where $1 million ex-vessel fish value was caught would result in an economic impact of $250,000 of lost revenue. Another assumption is that unobserved vessels fished in the same blocks as observed vessels.

In addition to using observer data, we also incorporated information from the NOAA RACEBASE trawl survey database. Trawl survey end points were plotted as point locations and the catch per unit effort for coral species or species groups was noted. Catch per unit effort in kilograms per square kilometer was calculated by dividing sample weight by area swept. Area swept was calculated as the net width multiplied by trawl distance.

The location of the seamount was obtained from MCBI's oceanographic data CD-rom (MCBI, 2003).

Methods:
We analyzed twelve years of fishery observer data of the bottom trawl fleet to identify the most important and heavily trawled areas.

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January 9, 2004

Ms. Stephanie Madsen, Chair
North Pacific Fishery Management Council
605 W 4th Ave, Suite 306
Anchorage, AK 99501

Dear Ms. Madsen:

The Marine Conservation Alliance (MCA) is pleased to present, for consideration by the North Pacific Fishery Management Council (Council), the attached proposals for Habitat Areas of Particular Concern (HAPC). The 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, shellfish, and crab fisheries. The coalition members have joined together to support science-based policy that protects both the marine environment and the North Pacific fishing community. The MCA appreciates the work and effort both the Council and the National Marine Fisheries Service (NMFS) have put into the Essential Fish Habitat (EFH) and HAPC issues, as well as the deliberative and science-driven manner in which the Council has consistently approached habitat issues over the years. The MCA urges the Council to continue this tradition as this HAPC process unfolds.

The Council and the public are being asked to participate in a truncated HAPC proposal review and designation process. Therefore, the MCA believes it is important to put these proposals and, in fact, the entire HAPC review process into perspective at the outset of this first proposal cycle. Following passage of the Sustainable Fisheries Act, the Council embarked on a process to identify and designate EFH, including HAPCs. As has become the custom of the day, litigation in the form of *AOC v. Daley* followed. The practical effect of the lawsuit was to stall efforts to identify and designate EFH/HAPC for several years while the Council and the NMFS developed an Environmental Impact Statement (EIS).

Ironically, we now find ourselves five years after the Council began the EFH/HAPC process, attempting to complete -- within a compressed time frame -- work the Council initiated prior to the litigation. A joint stipulation and court order established the present timeline, which does not allow for the Council's typical full deliberative process. While the MCA recognizes the requirements of the stipulation and order, we also believe strongly the process to identify and possibly designate HAPCs must be deliberative, transparent, and driven by sound scientific information. Rushing to

completion on a set of inappropriate designations solely to accommodate artificial deadlines would be a disservice to all. However, the MCA supports efforts to identify legitimate HAPC sites that meet the Request For Proposal's specific requirements within the court-ordered deadline.

It is also imperative HAPC designations fit into the Council's long-range, ecosystem-based management approach to fishery management. The MCA believes an integral component of this HAPC program is ongoing research and monitoring to determine the efficacy of any such designations in meeting management goals. The necessity of periodic evaluation and adaptation as conservation and management programs evolve cannot be overstated. With this in mind, the MCA proposes the following approach to HAPC identification, evaluation, and designation:

1. MCA Proposals and the Council's Criteria for Evaluation

The Council has specified four criteria for evaluating HAPC proposals: 1) importance of ecological function; 2) sensitivity; 3) vulnerability; and 4) rarity. Proposals must meet at least two of the four criteria specified, one of which necessarily being rarity. In October 2003, the Council invited proposals based on several priority areas, including seamounts in the Exclusive Economic Zone and high-relief, long-lived coral beds, with particular attention to the AI, which provide habitat for certain life stages of rockfish or other important managed species. Proposals are limited to sites 1) with likely or documented presence of FMP rockfish species and 2) largely undisturbed and outside core fishing areas.

The MCA reviewed these specifications and developed the attached proposals for the Council's consideration for further analysis and evaluation. These proposals are for HAPCs in the AI, and are intended to address the Council's priorities for proposals encompassing undisturbed high-relief, long–lived, hard coral beds which provide habitat for certain life stages of rockfish. We believe these proposals meet the Council's specifications, and are based on the best scientific and industry information presently available. In developing these proposals, MCA used a variety of data sources including information from NMFS dive surveys, rockfish catch data, and information from the EFH EIS analysis as well as practical "on the ground" information from the fleet. For example, it is well known stock assessment survey locations in the Aleutian Islands management area are not determined randomly, because survey gear would often be damaged by the rocky and complex bathymetry on the Aleutian shelf. For this reason, survey data were not used for MCA's proposals. Research dives, however, indicate some areas have high concentrations of high-relief hard corals. For other AI areas, trawl skippers with extensive experience in the AI believe certain unique areas meet the NPFMC's HAPC priority. MCA used this information in fashioning the AI proposals.

As we understand the Council's intent, this first round of HAPC designations would be to identify, study, and potentially protect largely undisturbed coral areas and provide improved conservation benefits to important rockfish species. We perceive this as, in part, a preventative step and we support the Council in this endeavor. Because of data limitations, as well as the compressed manner in which these initial designations are being reviewed and considered, the MCA is proposing the Council maintain maximum flexibility in this first round of designations, and include an adaptive approach to HAPC management. Under our proposals, the Council would:

1. Designate HAPC in accordance with the Council's priorities;

2. Prioritize mapping via submersible exploration and rockfish abundance evaluations; and

3. Develop appropriate restrictions on bottom trawling to protect high-relief hard coral rockfish areas within the AI HAPC sites while preserving fishing opportunities to the extent practicable.

The MCA believes this approach will meet the goals and priorities of the Council, and maintain the flexibility to adapt management as better information is obtained.

2. The MCA Recommends an Initial Baseline Evaluation and On-going Monitoring Program

The MCA believes effective management measures are necessarily based on thorough on-site information and tailored to address real impacts, not perceived or speculative fishing effects. Any program to designate HAPCs should include plans for baseline evaluation of sites prior to recommending and implementing specific management measures. Some HAPC proposals offered by MCA are geographically extensive, and it is virtually certain important coral habitats are not uniformly distributed within the boundaries of the proposed sites. Baseline information is crucial to future assessment of effects of mitigation and to determine whether or not HAPCs are meeting the purposes for which they are designated.

It is also vital that an ongoing monitoring program measure the efficacy of management measures adopted to achieve the purposes of the HAPC. Because sustainable fisheries depend on healthy fish habitat, the MCA supports the identification and designation of HAPCs. However, the MCA also believes designations of areas must be for specifically stated purposes, supported by solid scientific information, and regularly evaluated to ensure management goals are being met. Designations simply for designations' sake are ill-advised and unacceptable. In our opinion, the only way to meet these challenges is to perform baseline surveys at the time of designation, followed by thorough scientific programs over the life of the designations to

monitor and evaluate any effects of management measures. This is consistent with the way other management programs are addressed; habitat protection should be no exception.

3. Sunset provisions

The MCA suggests HAPC designations, especially those established under this initial round, undergo periodic review and withstand a regular sunset reauthorization process. We suggest the Council review HAPCs every five years, with designations automatically repealed after 10 years, unless renewed. If HAPC designations are meeting their purposes and management goals, they may be renewed prior to the sunset date.

The MCA places a high priority on this aspect of the EFH/HAPC program. It ties in closely with the research and monitoring programs identified above. The MCA strongly suggests, as part of the designation process, the Council and NMFS develop a proposed research and monitoring program, including an adequate budget. Such a demonstration by the Council and NMFS to follow through with a commitment to an ongoing research and monitoring program should be well-received within both the fishing industry and the environmental community, and will help assure all parties the HAPC process is a legitimate part of the Council's adaptive management approach.

Thank you for considering our comments and the proposals attached to this letter. We will be pleased to work closely with the Council as you move forward in this process to consider HAPC designations.

Sincerely yours,

Ronald G. Clarke
Executive Director
Marine Conservation Alliance

Attachments

cc: Chris Oliver, NPFMC
Cathy Coon, NPFMC

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

Name of Proposer: Marine Conservation Alliance

Address: P.O. Box 20676
Juneau, AK 99802
(907) 523-0731

Please check applicable box (es):
☐ GOA Groundfish FMP
x BSAI Groundfish FMP
☐ Scallop FMP
☐ BSAI Crab FMP

Title of Proposal. South Amlia/Atka coral and rockfish HAPC in the eastern Aleutian Islands

HAPC Site Location. The proposed HAPC site is south of Amlia and Atka Islands, extending to 174 degrees 30 minutes West Longitude. The proposed HAPC site is delineated in light red on NOAA chart 16480 in Figure P1-1.

Habitat Type and Species Information. This proposed HAPC was identified by trawl skippers who possess a wealth of experience and knowledge of the bathymetry of the Aleutian Islands (AI). These captains believe the proposed site has extensive high-relief hard coral stands and is good rockfish habitat. Although trawling has occurred around the margins, the core of this area has not been extensively trawled, at least since domestic fishing commenced. Figure P1-2, taken from the Essential Fish Habitat (EFH) Environmental Impact Statement (EIS) Alternative 5b analysis, indicates a portion of the proposed site (shaded in blue) has been trawled in recent years. Sections of the proposed area on the western and eastern margins are not outlined in blue this indicating that they would have been closed under Alternative 5b.

Overall, we believe only a small amount of trawl catch has actually come from the delineated area, and catches in adjacent areas, which are not geographically distinct under Alternative 5b's use of 5 x 5 kilometer blocks, are the main reason the actual delineated area is listed as open (blue). Additionally, the eastern portion of the proposed site would have been part of the "closed" area, but this did not result from the area being untrawled. Undoubtedly, this outcome was based on extrapolated coral bycatch calculations done for EFH EIS Alternative 5b analysis (see note, Figure P1-2). Data suggest this area has high abundance of rockfish according to the historical Catch Per Unit Effort (CPUE) study of Fritz, *et al.* (Figure P1-3), where the highest 25% of rockfish CPUEs are plotted for trawl and longline rockfish hauls. Additionally, rockfish catch data prepared by NMFS for Oceana's Freedom of Information Act (FOIA) request suggest the proposed HAPC has an abundance of rockfish, to the extent it has been fished in the 1990-2002 period (Figure P1-4). While there are no survey data to establish that the area has abundant stands of hard corals, knowledgeable fishermen who have fished around the margins of this area believe the area likely has significant stands of hard corals. Some fishermen have stated that they can apparently identify high-relief coral habitat in portions of the western extension by "down sounders" alone although not everyone agrees that corals can be seen in this manner.

Summary Statement of the Proposal. An area south of Atka and Amlia Islands extending west to 174 degrees, 30 minutes West Longitude as delineated in Figure P1-1 is proposed for HAPC designation based on information from captains that the area likely contains high-relief hard coral stands and rockfish habitat. A set of steps is proposed to map the area and develop restrictions on bottom trawling while preserving fishing opportunities in this area, to the extent practicable, once the geographic extent of any vulnerable high-relief hard coral areas that are rockfish habitat have been established. Any fishing restrictions should incorporate an experimental design to increase understanding of how rockfish use habitat and how fishing affects the productivity of hard coral habitat.

Statement of Purpose and Need. The purpose of this proposal is to address the North Pacific Fishery Management Council's (NPFMC) HAPC priority of identifying high-relief hard coral stands that are habitat for rockfish. Trawlers with extensive experience in the Aleutian Islands believe this area meets the NPFMC's HAPC priority. The purpose of the proposal is to 1) designate the area as HAPC in accordance with the Council's priorities; 2) prioritize mapping via submersible exploration and rockfish abundance evaluations to identify the exact locations of high-relief hard coral stands within the area designated; and 3) develop appropriate restrictions on bottom trawling to protect high-relief hard coral rockfish areas within the AI HAPC sites while preserving fishing opportunities to the extent practicable, while at the same time designing and conducting applied research to increase understanding of how rockfish use habitat and how fishing affects the productivity of that habitat.

Objectives of the Proposal. The objective of this proposal is to address the NPFMC's HAPC priority. The proposed area fits the NPFMC's 2003-04 HAPC priority based on available data because it is relatively unfished (Figure P1-2), and based on trawl catches of rockfish before 1990 and in recent years, appears to have an abundance of rockfish and good habitat for rockfish and other demersal managed species (Figures P1-3 and P1-4). Once the area is mapped to demonstrate concentrations of hard corals and rockfish occur within sites and establish the level of existing fishing and non-fishing effects within these sites, the sites would lend themselves well to zoning for fishing and control areas to evaluate the effects of fishing as well as habitat associations of rockfish with fished and un-fished habitat.

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.

[X] The extent to which the habitat is **SENSITIVE** to human-induced degradation.
Research has shown fishing can modify high-relief coral habitat but the implications of such modifications as they occur from the fishing gears used in Alaska and the low intensity of fishing effort as it occurs off Alaska are not known.

[X] Whether, and to what extent, the activity **STRESSES** the habitat type.
The sites in this proposal meet the 2003 HAPC priority it is largely untrawled and the bottom appears suitable for concentrations of hard corals and rockfish abundance. Some groundfish longline and pot fishing likely occurs within these sites, but the extent of this is not known at this time.

[X] The **RARITY** of the habitat type. (*Mandatory requirement*).
Fishermen believe this site is likely unique because the western portion has very high-relief bathymetry and fishing around the margins of that area has occasionally encountered large hard corals. Additionally, the area is believed to have an abundance of adult and juvenile rockfish.

Describe any Proposed Solutions to Achieve These Objectives. The site should be prioritized for submersible mapping so any appropriate restrictions on bottom trawling can be developed to protect the high-relief coral habitat that may occur within these designated HAPC sites. Once the area is mapped to establish existence of high-relief hard coral abundance areas used by rockfish, and once the level of existing fishing and non-fishing effects on the area are observed and categorized, these areas should be zoned to protect coral/rockfish habitat from bottom trawling while preserving fishing opportunities to the extent practicable. Protection measures should incorporate experimental designs to increase our understanding of how rockfish use hard coral habitat and how fishing affects the productivity of that habitat. This area is large and encompasses varied habitat, so might lend itself well to studies of fishing

and non-fishing areas within the HAPC, so as to increase understanding of how fishing affects the productivity of managed species.

Describe any Proposed Management Measures for the HAPC. 1. Designation of HAPC, meeting NPFMC's 2003 priority. 2. Prioritization for submersible mapping and rockfish abundance evaluation within HAPC sites. 3. Eventual development of appropriate restrictions on bottom trawling to protect high-relief hard coral and rockfish areas within these proposed sites, while preserving fishing opportunities to the extent practicable. 4. Development of controlled research to learn more about how rockfish and other managed demersal species associate with and use habitat, how fishing affects that use and productivity, how different levels of fishing intensity and gear effects influence productivity of high-relief hard coral habitats.

Identify any Expected Benefits to Habitat or FMP species. This area may be an important hard coral abundance area with rockfish habitat and, although portions of it have been trawled, the portions with the most varied bathymetry likely have not been trawled extensively. If the steps outlined in this proposal are implemented, rockfish and other Fishery Management Plan (FMP) species could benefit with only minimal impacts on groundfish trawlers and communities dependent on trawling.

Identify Fishery, Stakeholders, and/or Communities, which may Benefit from the Proposed HAPC. Proposed sites may be important hard coral abundance areas with excellent rockfish habitat that has not received much trawl effort in recent years. If the steps outlined in this proposal (mapping, zoning of trawling within HAPC, research on habitat use, and how fishing affects productivity) are implemented, rockfish and other FMP species could benefit with only small direct impacts on trawl fishermen and communities that depend on trawling. The portion of this proposed HAPC that falls within the Seguam Foraging area (a sea lion protection zone) is presently closed to fishing for pollock, cod, and Atka mackerel. The only known trawl activity that might be affected by future management measures in that area is the fishery for Pacific Ocean Perch. Impacts on fixed gear fisheries are not known. Data (such as EFH EIS 5b analysis) are not available to evaluate effects on fixed gear fisheries if restrictions developed for these were eventually applied to fixed gear fisheries.

Support Data or Information Sources. NOAA chart 16480; knowledge and information volunteered at November and December 2003 meetings by trawl captains who target cod, Atka mackerel, and rockfish in the Aleutian Islands, Portions of NMFS' analysis of AI proposal 5b in 2003 EFH EIS; Fritz, *et al.*'s CPUE study, 1998 (NOAA Technical Memorandum NMFS-AFSC-88); rockfish catch data prepared by NMFS for Oceana (2003 FOIA).

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

Name of Proposer: Marine Conservation Alliance

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Juneau, AK 99802
(907) 523-0731

Please check applicable box (es):
☐ GOA Groundfish FMP
x BSAI Groundfish FMP
☐ Scallop FMP
☐ BSAI Crab FMP

Title of Proposal. Adak and Kanaga area coral/rockfish HAPCs

HAPC Site Location. NOAA charts 16460 and 16471. HAPC sites are delineated in Figure P2-1 at Cape Moffett, Great Sitkin, Adak South, Kanaga Volcano, and Kanaga

Habitat Type and Species Information. Some of the sites in this proposed HAPC are simply boxes and lines drawn around the National Marine Fisheries Service's (NMFS) submersible dive track lines for dives where "coral gardens" or high-relief hard coral stands were identified. These data came from NMFS' Auke Bay Laboratory (Bob Stone) and the Alaska Fisheries Science Center (AFSC) (Rebecca Reuter and Paul Spencer) based on submersible dives in the central Aleutian Islands. Where submersible dive information was available, knowledgeable captains used their experience to delineate the likely geographical extent of the coral gardens and high-relief hard coral stands, based on continuations and extensions in bathymetric features and transitions from very rocky, high current areas to adjacent areas where these conditions do not exist. To the best of our knowledge, other sites in this proposal have not been mapped. These unmapped sites were selected by trawl skippers who have a wealth of experience and knowledge of the Aleutian Islands based on the criteria in North Pacific Fishery Management Council's (NPFMC) HAPC priority for high-relief hard coral stands that are good rockfish habitat. Trawling has occurred around the margins of some of these areas, but the grounds within the actual sites are mostly considered untrawlable, due to the high-relief bathymetric and rock pile features. Figure P2-2 is taken from the Essential Fish Habitat (EFH) Environmental Impact Statement (EIS) Alternative 5b analysis to evaluate the degree to which trawling has occurred in the proposed sites. The blue highlighting in Figure P2-2 depicts areas that would have been "open" under 5b because significant catches had historically been taken there. Although the 5b analysis is limited by the spatial scale of the 5x5 blocks used for the analysis, it appears from the figure that much of the proposed area is lightly or not fished. Based on the highest 25th percentile of rockfish Catch Per Unit Effort (CPUE) from Fritz, *et al.*'s CPUE study (Figure P2-3) it appears that portions of these sites have had some high rockfish catch rates in the past to the degree that they have been fished by trawls and longlines. Rockfish catch data prepared by NMFS for Oceana's Freedom of Information Act (FOIA) request also suggest the proposed HAPC sites contain rockfish to the extent that peripheral areas have been fished in the 1990-2002 period (Figure P2-4).

In the case of the Cape Moffett site, there are important trawl grounds adjacent to the proposed HAPC site. Figure P2-2 overlays the Oceana 5b proposal and shows this area was left open as an actively trawled area (blue shading), because that proposal did not have a fine enough scale to separate out trawled and untrawled sites within the area. Data suggest that all of these sites have high abundance of rockfish, according to the Fritz, *et al.* historical Catch Per Unit Effort (CPUE) study (Figure P2-3) where the highest 25% of rockfish CPUEs are plotted for trawl and longline rockfish hauls.

Summary Statement of the Proposal. A set of HAPC sites is proposed around Adak and Kanaga islands based on extensions around NMFS' submersible dive locations in the areas where coral gardens

were found. Other sites within this proposal are based on information from trawl skippers that the area contains high-relief hard coral stands and rockfish habitat. A set of steps is proposed to map the area and develop any appropriate restrictions on bottom trawling while incorporating an experimental design to increase understanding of how rockfish use habitat.

Statement of Purpose and Need. The purpose of this proposal is to address the NPFMC's HAPC priority of identifying high-relief hard coral stands that are habitat for rockfish. Research dives indicate some areas have high concentrations of high-relief hard corals, and for other areas, trawlers with extensive experience in the Aleutian Islands believe certain unique areas meet the NPFMC's HAPC priority. The purpose of the proposal is to 1) designate the area as HAPC in accordance with the Council's priorities; 2) prioritize mapping via submersible exploration and rockfish abundance evaluations to identify the exact locations of high-relief hard coral stands within the HAPC site; and 3) develop appropriate restrictions on bottom trawling to protect high-relief hard coral rockfish areas within the AI HAPC sites while preserving fishing opportunities to the extent practicable, while at the same time designing and conducting applied research to increase understanding of how rockfish use habitat and how fishing affects the productivity of that habitat.

Objectives of the Proposal. The objective of this proposal is to meet the NPFMC's HAPC priority as per the 2003 Request For Proposals (RFP). The unmapped portions of these sites should receive a high priority for submersible mapping so any appropriate restrictions on bottom trawling can be developed to protect the high-relief coral habitat within the designated HAPC while allowing fishing opportunities in areas that are not high-relief hard coral stands that are habitat for rockfish. We feel these sites are ideal for controlled studies of how fish use habitat and how fishing affects that use. Once the sites are mapped to establish where concentrations of hard corals and rockfish occur and determine the level of existing fishing and non-fishing effects, these sites lend themselves well to zoning for fishing and control areas to evaluate the effects of fishing gears as well as habitat associations of rockfish with fished and un-fished habitat.

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.

[X] The extent to which the habitat is **SENSITIVE** to human-induced degradation.
Research has shown fishing can modify high-relief coral habitat but the implications of such modifications as they occur from the fishing gears used in Alaska and the low intensity of fishing effort as it occurs off Alaska are not known.

[X] Whether, and to what extent, the activity **STRESSES** the habitat type.
The sites in this proposal meet the 2003 HAPC priority because trawling occurs around the periphery but the core area is very rough bottom and is generally not trawled. Some groundfish longline and pot fishing probably occurs within these sites but the extent of this is not known at this time.

[X] The **RARITY** of the habitat type.
Submersible dives have shown that some of the sites in this HAPC proposal are unique because they are dense coral gardens. In other cases, fishermen believe that the as yet unmapped sites in this proposal are some of the most concentrated reefs with hard corals in the vicinity of Adak and Kanaga, and are thus unique and potentially important.

Describe any Proposed Solutions to Achieve These Objectives. The proposed sites fit the NPFMC 2003-04 HAPC priority based on available data because they are relatively unfished and, based on rockfish CPUEs at the periphery areas, likely to contain habitat for rockfish and other demersal fishes (see Figures P2-3 & P2-4). The area within this HAPC proposal should be high priority for submersible mapping so high-relief coral stands thought to be rockfish habitat can be delineated and appropriate bottom trawling restrictions can be developed to protect the high-relief coral habitat within these HAPC sites. These sites are numerous and extensive and thus ideal for controlled studies of how fish use habitat and how fishing affects that use. Once these sites are completely mapped to establish that they do, in fact, contain high-relief hard coral areas used by rockfish, and once the level of existing fishing and non-fishing effects on the area are observed and categorized, these areas should be zoned for fishing and control areas to evaluate the effects of fishing gears as well as habitat associations of rockfish with fished and un-fished habitat.

Describe any Proposed Management Measures for the HAPC. 1. Designation of HAPC, meeting NPFMC's 2003 priority. 2. Prioritization for submersible mapping and rockfish abundance evaluation. 3. Eventual development of appropriate protections for high-relief hard coral/ rockfish sub-areas within these proposed sites. 4. Development of controlled research to learn more about how rockfish associate with and use habitat, how fishing affects that use and productivity, how different levels of fishing intensity and gear effects influence productivity of high-relief hard coral habitats.

Identify any Expected Benefits to Habitat or FMP species. Sites within this proposal may contain important areas of high-relief hard coral abundance with excellent rockfish habitat that have not been trawled extensively. If the steps outlined in this proposal are implemented, rockfish and other Fishery Management Plan (FMP) species could benefit with only minimal impacts on trawl fisheries and communities that depend on trawling.

Identify Fishery, Stakeholders, and/or Communities, which may Benefit from the Proposed HAPC. Proposed sites may be important hard coral abundance areas with excellent rockfish habitat that has not been trawled extensively. If the steps outlined in this proposal (mapping, zoning of appropriate fishing activities within HAPC, research on habitat use and how fishing affects productivity) are implemented, rockfish and other FMP species could benefit with only small direct impacts on trawl fisheries and communities that depend on trawling. Of specific concern here is the careful delineation of the borders of the HAPC site around Cape Moffett so as to adequately cover the coral garden area while not affecting the adjacent fishing areas to the south and west. These established cod trawling areas are important to the Aleutian Islands cod fishery, particularly to small vessels that deliver cod to Adak. Some of the sites within this proposal fall within sea lion rookery and haulout areas and are thus closed to trawling and to some fixed gear fishing for cod, pollock, and Atka mackerel. In these areas, the only trawl fishery potentially affected is for Pacific Ocean Perch. Impacts on fixed gear fisheries in these areas are not known because data (such as EFH EIS 5b analysis) are not available to evaluate effects, but impacts can be expected to be larger than for trawlers.

Support Data or Information Sources. NOAA charts 16460 and 16470; NMFS' Auke Bay (Bob Stone) and AFSC (Rebecca Reuter) data on submersible dive sites where "coral gardens"or "high-relief hard coral stands" were identified. Additionally, this proposal is based upon knowledge and information volunteered by trawl captains who target cod, Atka mackerel, and rockfish in the Aleutian Islands, portions of NMFS' analysis of AI proposal 5b in 2003 EFH EIS; Fritz, *et al.* CPUE study, 1998 (NOAA Technical Memorandum NMFS-AFSC-88); rockfish catch data prepared by NMFS for Oceana (2003 FOIA).

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

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Please check applicable box (es):
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x BSAI Groundfish FMP
☐ Scallop FMP
☐ BSAI Crab FMP

Title of Proposal. Amatignak/Ulak Islands and Tanaga West coral/rockfish HAPCs

HAPC Site Location. NOAA charts 16460. These proposed HAPC sites in the central Aleutian Islands (AI) are delineated in Figure P3-1 at the 10 mile sea lion rookeries around Amatignak/Ulak Islands, and at the southwest side of Tanaga Bay on the west side of Tanaga Island.

Habitat Type and Species Information. These sites were selected by trawl skippers who possess a wealth of experience and knowledge of the Aleutian Islands. Captains selected these sites because they meet the North Pacific Fishery Management Council's (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 exchanges. Captains are confident there are stands of high-relief hard corals within these sites. Trawling for rockfish has occurred within these areas during foreign and Joint Venture (JV) fishing but the extent to which that fishing occurred within these areas is not known. The proposed site at Amatignak/Ulak would not have been part of the "open area" under Essential Fish Habitat (EFH) Environmental Impact Statement (EIS) Alternative 5b for the AI because no significant trawling has occurred there since 1990. The site at Tanaga West, however, would have been open (Figure P3-2). Despite this latter finding from the 5b analysis, the proposed site on the west side of Tanaga has not been an important area for trawl fisheries because the grounds are largely untrawlable. In all likelihood, the area received an "open" designation in the EFH EIS 5b analysis because the 5 x 5 kilometer blocks lacked sufficient specificity as to the actual areas where fishing occurred. Data suggest these sites have had a high abundance of rockfish in the past according to the historical CPUE study by Fritz, *et al.* (Figure P3-3) where the highest 25% of rockfish CPUEs are plotted for trawl and longline rockfish hauls. For trawlers, however, these catches likely occurred before 1990; little is known about present rockfish abundance at these sites, and none of the sites within NMFS trawl or longline surveys. Rockfish catch data prepared by the National Marine Fisheries Service (NMFS) for Oceana's Freedom of Information Act (FOIA) request do not indicate any trawl rockfish catches from 1990-2002 but this result likely occurs from a lack of trawl effort within the area.

Summary Statement of the Proposal. A set of HAPC sites is proposed for the 10 mile sea lion rookeries around Amatignak/Ulak islands and for a portion of a small bay on the west side of Tanaga island. A set of steps is proposed to map the area and develop appropriate restrictions on bottom trawling to protect coral habitat and rockfish within the area while preserving fishing opportunities to the extent possible. Any restrictions on fishing should incorporate an experimental design to increase understanding of how rockfish use habitat and how fishing may affect productivity of FMP species.

Statement of Purpose and Need. The purpose of this proposal is to address the NPFMC's HAPC priority. The purpose of the proposal is to 1) designate the area as HAPC in accordance with the Council's priorities; 2) prioritize mapping via submersible exploration and rockfish abundance evaluations to identify the exact locations of high-relief hard coral stands within the area; and 3) develop appropriate restrictions on bottom trawling to protect high-relief hard coral rockfish areas within the AI HAPC sites while preserving fishing opportunities to the extent practicable, while at the same time designing and

conducting applied research to increase understanding of how rockfish use habitat and how fishing affects the productivity of that habitat.

Objectives of the Proposal. The objective of this proposal is to address the NPFMC's HAPC priority. The proposed HAPC sites around Amatignak/Ulak and west of Tanaga fit the NPFMC's 2003-04 priority based on available data because they are relatively unfished (Figure P3-2) and, based on trawl catches of rockfish before 1990, thought to be good habitat for rockfish and other managed demersal species. Once the sites are mapped to establish locations of any concentrations of hard corals and rockfish within sites and determine the level of existing fishing and non-fishing effects within these sites, they may be zoned for no bottom trawling at high-relief hard coral/rockfish sites and fishing areas. Research should be conducted within these HAPC sites to evaluate the effects of fishing as well as habitat associations of rockfish with fished and un-fished habitat. Once the sites are fully mapped and fishing and non-fishing effects established, they would lend themselves well to zoning for fishing and control areas to evaluate the effects of fishing gears as well as habitat associations of rockfish with fished and un-fished habitat.

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.

[X] The extent to which the habitat is **SENSITIVE** to human-induced degradation.
Research has shown fishing can modify high-relief coral habitat but the implications of such modifications as they occur from the fishing gears used in Alaska and the low intensity of fishing effort as it occurs off Alaska are not known.

[X] Whether, and to what extent, the activity **STRESSES** the habitat type.
The sites in this proposal meet the 2003 HAPC priority because they are largely untrawled and the bottom appears to be high-relief bathymetry with strong tidal flows that have been associated with known concentrations of hard corals and rockfish abundance. Some groundfish longline and pot fishing likely occurs within these sites, but the extent of this is not known at this time.

[X] The **RARITY** of the habitat type.
Fishermen believe these sites may have high concentrations of hard corals and an abundance of juvenile and adult rockfish.

Describe any Proposed Solutions to Achieve These Objectives. These sites should be prioritized for submersible mapping so any appropriate restrictions on bottom trawling may be developed to protect high-relief coral habitat within this designated HAPC sites while preserving fishing opportunities. Once these sites are mapped to establish they in fact contain high-relief hard coral abundance areas used by rockfish, and once the level of existing fishing and non-fishing effects on the area are observed and categorized, they should be zoned for no bottom trawling where there are high-relief hard coral habitats for rockfish, while maintaining trawling and other fishing opportunities to the extent possible where these hard coral areas do not occur.

Describe any Proposed Management Measures for the HAPC. 1. Designation of HAPC meeting NPFMC's 2003 priority. 2. Prioritization for submersible mapping and rockfish abundance evaluation within the HAPC site. 3. Eventual development of appropriate bottom trawling restrictions for high-relief hard coral/ rockfish areas within these proposed sites. 4. Development of controlled research to learn more

about how rockfish associate with and use habitat, how fishing affects that use and productivity, and how different levels of fishing intensity and gear effects influence productivity of high-relief hard coral habitats.

Identify any Expected Benefits to Habitat or FMP species. Sites within this proposal may be important hard coral abundance areas with rockfish habitat that have not been trawled extensively at least since 1990. If the steps outlined in this proposal are implemented, rockfish and other Fishery Management Plan (FMP) species could benefit with only minimal impacts on groundfish trawlers and communities dependent on trawling.

Identify Fishery, Stakeholders, and/or Communities, which may Benefit from the Proposed HAPC. Proposed sites may be important hard coral abundance areas with rockfish habitat that has not been trawled extensively. If the steps outlined in this proposal (mapping, zoning of appropriate fishing activities within HAPC, research on habitat use and how fishing affects productivity) are implemented, rockfish and other FMP species could benefit with only small direct impacts on groundfish trawl fishermen and communities that depend on trawling. The sites at Amatignak/Ulak Islands are presently closed to trawling for pollock, cod, and Atka mackerel, so the only known trawl activity potentially affected by future management measures is the fishery for Pacific Ocean Perch. Impacts on fixed gear fisheries are not known because data (such as EFH EIS 5b analysis) are not available to evaluate effects, but impacts can be expected to be larger than for trawlers.

Support Data or Information Sources. NOAA chart 16460; knowledge and information volunteered at November and December 2003 meetings by trawl captains who target cod, Atka mackerel, and rockfish in the Aleutian Islands, Portions of NMFS' analysis of AI proposal 5b in 2003 EFH EIS; Fritz, *et al*. CPUE study, 1998 (NOAA Technical Memorandum NMFS-AFSC-88); rockfish catch data prepared by NMFS for Oceana (2003 FOIA).

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

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Please check applicable box (es):
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x BSAI Groundfish FMP
☐ Scallop FMP
☐ BSAI Crab FMP

Title of Proposal. Semisopochnoi and Bowers Ridge coral/rockfish HAPCs

HAPC Site Location. NOAA charts 16012. Proposed HAPC sites are delineated in Figure P4-1. These sites consist of the 10 mile sea lion rookery around Semisopochnoi Island and a second large site northeast of the first site comprising the upper depth strata on Bowers Ridge.

Habitat Type and Species Information. The sites for this proposal were selected by trawl skippers who have a wealth of experience and knowledge of Aleutian Islands (AI). Captains feel these sites meet the North Pacific Fishery Management Council's (NPFMC) priority for high-relief hard coral stands likely to be good rockfish habitat. Trawl captains believe hard corals may be abundant in within the sea lion rookery around Semisopochnoi Island and in portions of delineated area at Bowers Ridge. In the case of Semisopochnoi, scientists from the National Marine Fisheries Service's (NMFS) Auke Bay Laboratory have conducted submersible dives on a small pinnacle within the 10 mile circle at the island and reportedly found abundant hard corals in high-relief areas. Captains also believe the extensive proposed area on Bowers Ridge has high abundance of juvenile rockfish and Atka mackerel. Trawling for rockfish in portions of these sites occurred during foreign and Joint Venture (JV) fishing, but the extent to which that fishing occurred within these areas is not known. These areas would not have been part of the "open area" under Essential Fish Habitat (EFH) Environmental Impact Statement (EIS) Alternative 5b for the Aleutian Islands because no significant trawling has occurred since 1990 (Figure P4-2). Data suggest that Bowers Ridge had high abundance of rockfish according to Fritz, *et al*'s. study of historical Catch Per Unit Effort (CPUE) (Figure P4-3), where the highest 25% of rockfish CPUEs were plotted for trawl and longline rockfish hauls. The Semisopochnoi area has only a few high CPUE blocks in the Fritz, *et al.* study, but this may result from the fact that most of the area is untrawlable and trawling was not attempted, even during the foreign and JV fishing era. Little is known about present rockfish abundance within the sites, as they do not fall within NMFS trawl or longline surveys. Rockfish catch data prepared by NMFS for Oceana's Freedom of Information Act (FOIA) request do not indicate much trawl rockfish catch from 1990-2002 with the exception of one block that appears to overlap with the northeastern portion of the Semisopochnoi site (see Figure P4-4).

Summary Statement of the Proposal. A set of HAPC sites is proposed for the 10 mile sea lion rookeries around Semisopochnoi and for most of the relatively shallow depth strata (fishable depths) on of Bowers Bank and Ridge. A set of steps is proposed to map the area and develop appropriate restrictions on bottom trawling while preserving fishing opportunities in portions of the area that are not high-relief hard coral areas used by rockfish. Any management measures should incorporate an experimental design to increase understanding of how rockfish use habitat.

Statement of Purpose and Need. The purpose of the proposal is to address the NPFMC's HAPC priority in its 2003 RFP. Trawlers with extensive experience in the Aleutian Islands believe these sites meet the NPFMC's HAPC priority. The purpose of the proposal is to 1) designate the area as HAPC in accordance with the Council's priorities; 2) prioritize mapping via submersible exploration and rockfish abundance evaluations to identify the exact locations of high-relief hard coral stands within the HAPC site; and 3) develop appropriate restrictions on bottom trawling to protect high-relief hard coral rockfish areas within

the AI HAPC sites while preserving fishing opportunities to the extent practicable, while at the same time designing and conducting applied research to increase understanding of how rockfish use habitat and how fishing affects the productivity of that habitat.

Objectives of the Proposal. The objective of this proposal is to address the NPFMC's HAPC priority. The proposed HAPC sites around the 10 mile rookery at Semisopochnoi and the delineated area at Bowers Ridge fit the NPFMC's 2003-04 HAPC priority based on available data because they are relatively unfished (Figure P4-2) and, based on trawl catches of rockfish before 1990, thought to be good habitat for adult rockfish, juvenile rockfish, and other managed demersal species. Once the sites are mapped to establish where the concentrations of hard corals and rockfish might occur within sites and the level of existing fishing and non-fishing effects within these sites is determined, they should be zoned for no bottom trawling at hard coral/rockfish sites and fishing areas. Research should be conducted within these HAPC sites to evaluate the effects of fishing as well as habitat associations of rockfish with fished and un-fished habitat.

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.

[X] The extent to which the habitat is **SENSITIVE** to human-induced degradation.
Research has shown fishing can modify high-relief coral habitat but the implications of such modifications as they occur from the fishing gears used in Alaska and the low intensity of fishing effort as it occurs off Alaska are not known.

[X] Whether, and to what extent, the activity **STRESSES** the habitat type.
The sites in this proposal meet the 2003 HAPC priority because they are largely untrawled and the bottom appears to hold concentrations of hard corals and rockfish abundance. Some groundfish longline and pot fishing likely occurs within these sites, but the extent of this is not known at this time.

[X] The **RARITY** of the habitat type.
Fishermen believe these sites are unique because they have high-relief bathymetry, likely possess concentrations of hard corals in some portions of the area, and probably contain an abundance of juvenile rockfish and Atka mackerel.

Describe any Proposed Solutions to Achieve These Objectives. These sites should be prioritized for submersible mapping so any appropriate restrictions on bottom trawling may be developed to protect the high-relief coral habitat that may occur within these designated HAPC sites while preserving fishing opportunities in other portions of the HAPC that are not that type of habitat. Once these sites are mapped to identify any high-relief hard coral abundance areas used by rockfish, and once the level of existing fishing and non-fishing effects on the area are observed and categorized, no bottom trawling zones may be delineated to protect stands of hard coral rockfish habitat while preserving trawling and other fishing opportunities to the extent practicable. These sites should be used for research on habitat use by rockfish and effects of fishing studies. The site at Bowers Ridge is very extensive and would likely lend itself well to studies of fishing and non-fishing areas within the site so as to increase understanding of how fishing affects the productivity of managed species.

Describe any Proposed Management Measures for the HAPC. 1. Designation of HAPC meeting NPFMC's 2003 priority. 2. Prioritization for submersible mapping and rockfish abundance evaluation. 3. Eventual development of appropriate restrictions on bottom trawling to protect high-relief hard coral and juvenile rockfish areas within these proposed sites. 4. Development of controlled research to learn more about how rockfish and other managed demersal species associate with and use habitat, how fishing affects that use and productivity, how different levels of fishing intensity and gear effects influence productivity of high-relief hard coral habitats.

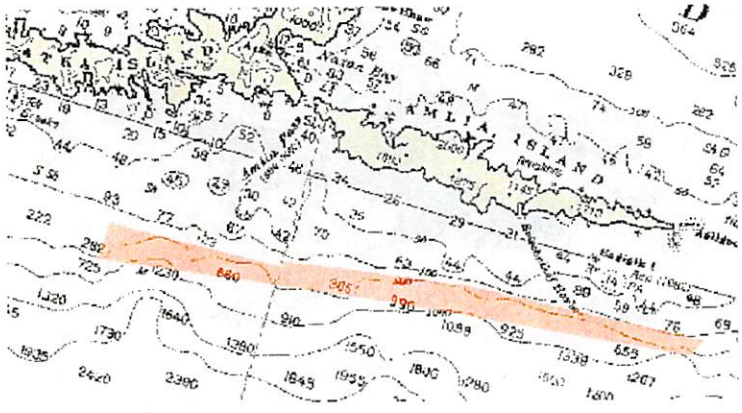
Identify any Expected Benefits to Habitat or FMP species. Sites within this proposal may be important hard coral abundance areas with rockfish habitat that have not been trawled extensively at least since 1990. If the steps outlined in this proposal are implemented, rockfish and other Fishery Management Plan (FMP) species could benefit with only minimal impacts on groundfish trawlers and communities dependent on trawling.

Identify Fishery, Stakeholders, and/or Communities, which may Benefit from the Proposed HAPC. Proposed sites may be important hard coral abundance areas with excellent rockfish habitat that has not been trawled in recent years. If the steps outlined in this proposal (mapping, zoning of appropriate fishing activities within HAPC, research on habitat use and how fishing affects productivity) are implemented, rockfish and other FMP species could benefit with only small direct impacts on groundfish trawl fishermen and communities that depend on trawling. The site at Semisopochnoi is presently closed to trawling for pollock, cod, and Atka mackerel, so the only known trawl activity that might be affected by future management measures is the Pacific Ocean Perch fishery. The extent of fishing by fixed gears in the proposed sites is not known, but could be potentially large (especially for Aleutian Islands crab fisheries at Semisopochnoi). Data (such as EFH EIS 5b analysis) are not available to evaluate effects on fixed gear fisheries if restrictions developed for these were eventually applied to fixed gear fisheries.

Support Data or Information Sources. NOAA charts 16012 and NMFS' Auke Bay submersible dive data indicating coral gardens. Additionally, this proposal is based upon knowledge and information volunteered at November and December 2003 meetings by trawl captains who target cod, Atka mackerel, and rockfish in the Aleutian Islands, portions of NMFS' analysis of AI proposal 5b in 2003 EFH EIS; Fritz, *et al.*'s CPUE study, 1998 (NOAA Technical Memorandum NMFS-AFSC-88); rockfish catch data prepared by NMFS for Oceana (2003 FOIA).

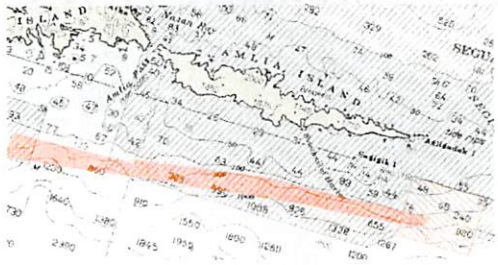
Figures P1-P4 for south Amlia-Atka proposed HAPC

Figure P1-1: South Amlia/Atka proposed HAPC



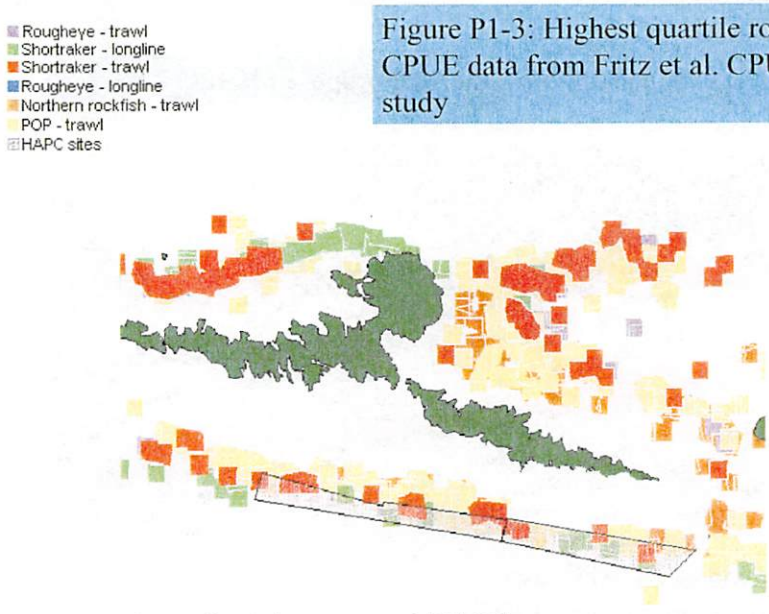
Proposed HAPC area
overlaid on NOAA chart
16480

Figure P1-2: Use of EFH Alt. 5b open area analysis to evaluate if proposed South **Amlia/Atka HAPC** is a core fishing area.



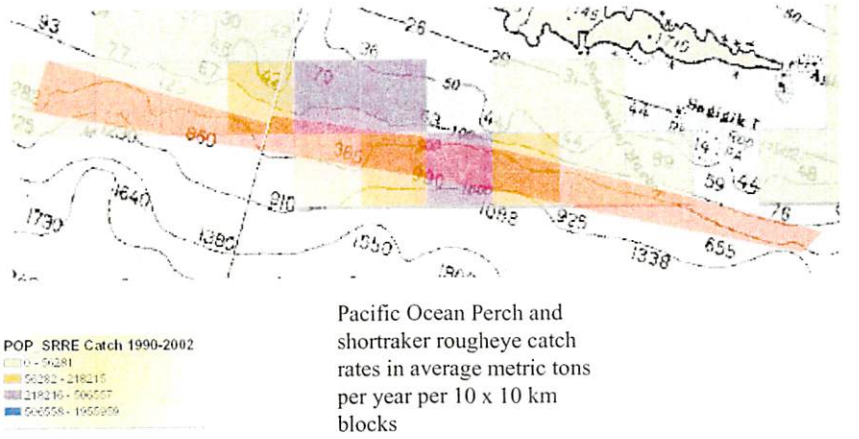
Explanation: Areas indicated in black marks were "open areas" in the 5b analysis because substantial trawling occurred during 1990-2001. Note also that eastern portion of proposed area (in red hash marks) is a fished area but would have been omitted from the set of "open areas" in 5b due to coral bycatch rates (in particular, we think due to one tow with a high extrapolated coral bycatch)

Figure P1-3: Highest quartile rockfish CPUE data from Fritz et al. CPUE study



South Amlia Atka proposed HAPC

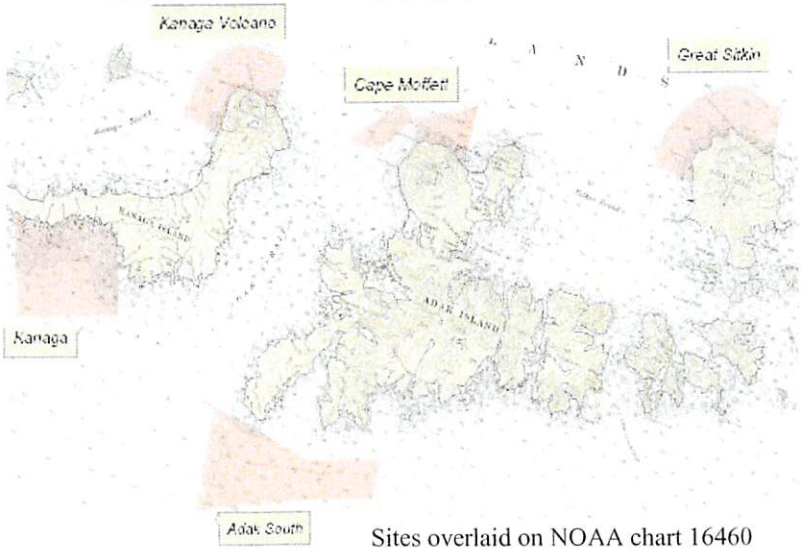
Figure P1-4: Rockfish CPUE data for Amlia-Atka HAPC from Oceana FOIA request data set



Pacific Ocean Perch and shortraker rougheye catch rates in average metric tons per year per 10 x 10 km blocks

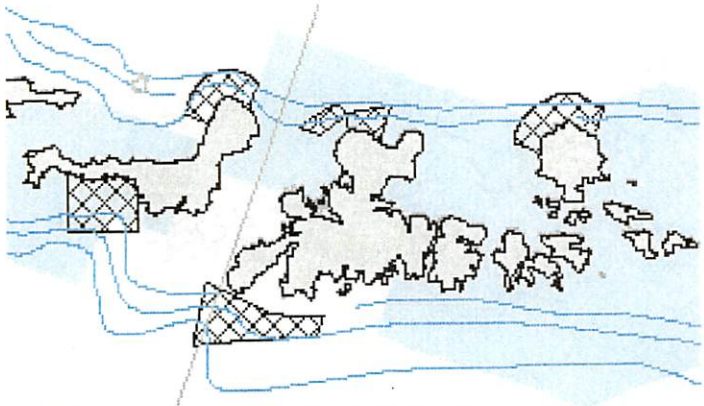
Figures P2-1 through P2-4 for Adak and Kanaga proposed HAPC sites

Figure P2-1 Adak Kanaga HAPC Sites



Sites overlaid on NOAA chart 16460

Figure P2-2: EFH Alternative 5b Open areas analysis applied to Adak-Kanaga proposed HAPC Sites



Areas in blue were "open areas" under alt. 5b. Note that some of the proposed sites fall within the area that would have been closed (relatively untrawled 1990-2001) while others would have been open under 5b (Cape Moffett and Kanaga) due mainly, we think to lack of geographic resolution in 5b 5x5 kilometer blocks used for the data analysis)

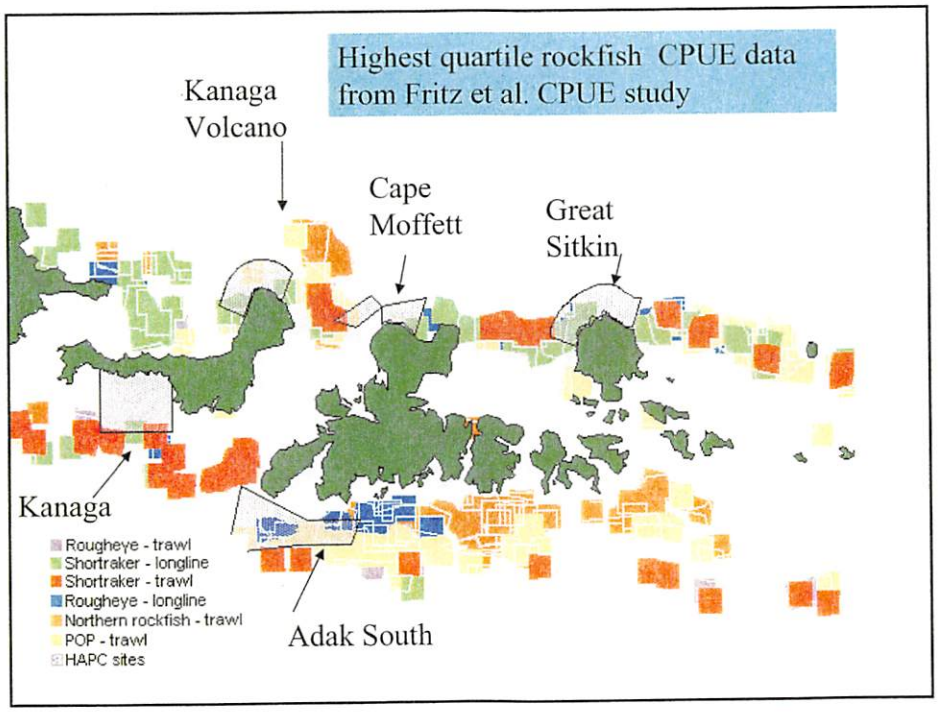
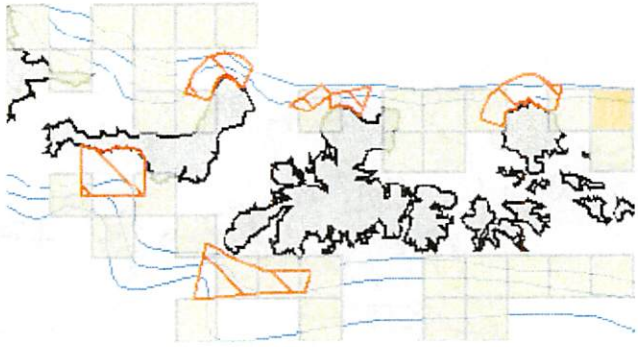
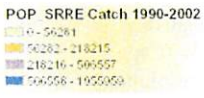


Figure P2-4: Rockfish catch rates for Adak-Kanaga sites (average mt rockfish catch per year per 10 x 10 km blocks) from Oceana FOIA data set

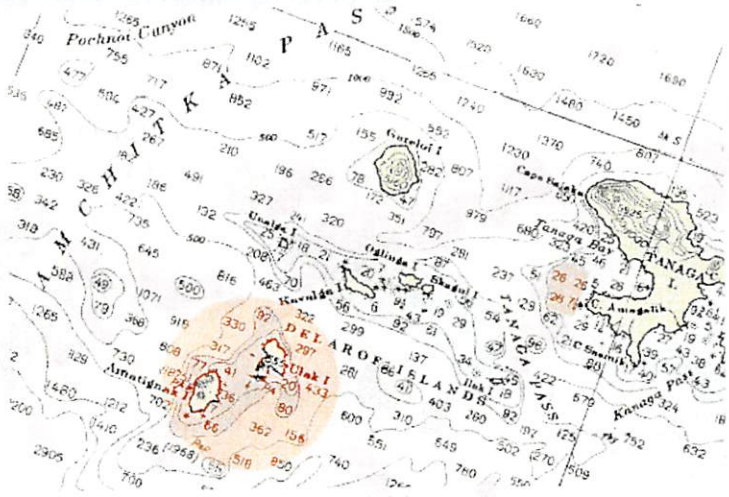




Note: most sites fall into lowest average annual catch rate for Pacific Ocean Perch and Shortraker/rougheye. One explanation for this may be that little fishing effort has occurred due to rough bottom features and strong currents associated with tide rips.

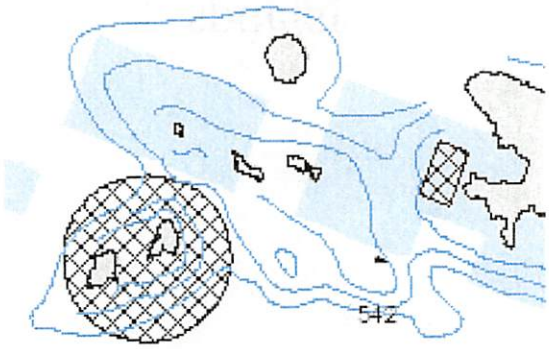
Figures P3-1 through P3-4 for Tanaga and Amatignak/Ulak Islands

Figure P3-1Amatignak/Ulak Islands and Tanaga West



Proposed HAPC sites overlaid on NOAA chart 16460

Figure P3-2: EFH EIS 5b Aleutian Islands analysis for Amatignak/Ulak and Tanaga



Areas where significant trawl catches have occurred are indicated in blue. Note that under the 5b analysis, Amatignak/Ulak would not have been open while the proposed HAPC site at Tanaga would have been open. This likely resulted from the use of large area blocks for the analysis relative to the geographical scale of fishing in this area.

Highest quartile rockfish CPUE data from Fritz et al. CPUE study (cont.)

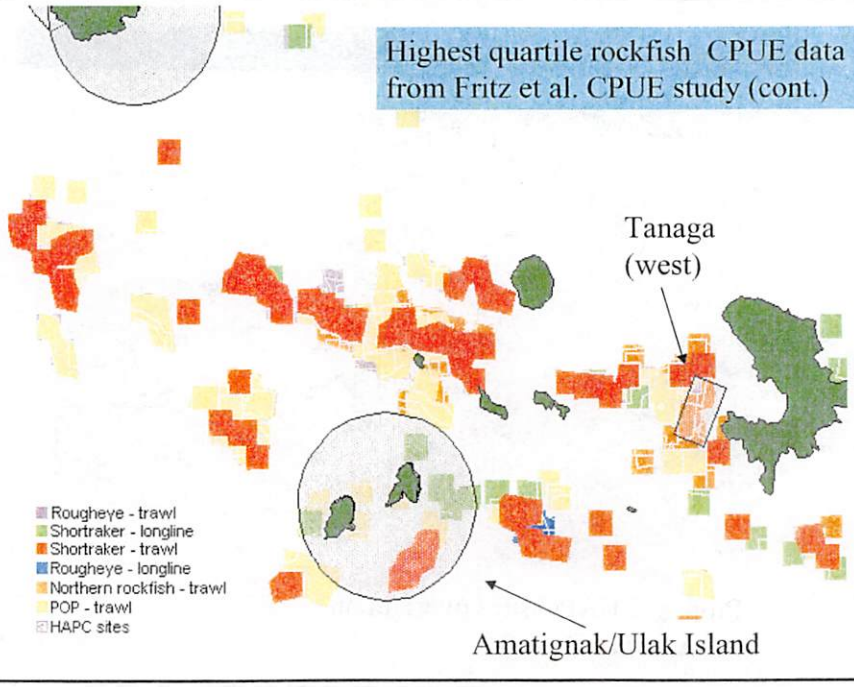
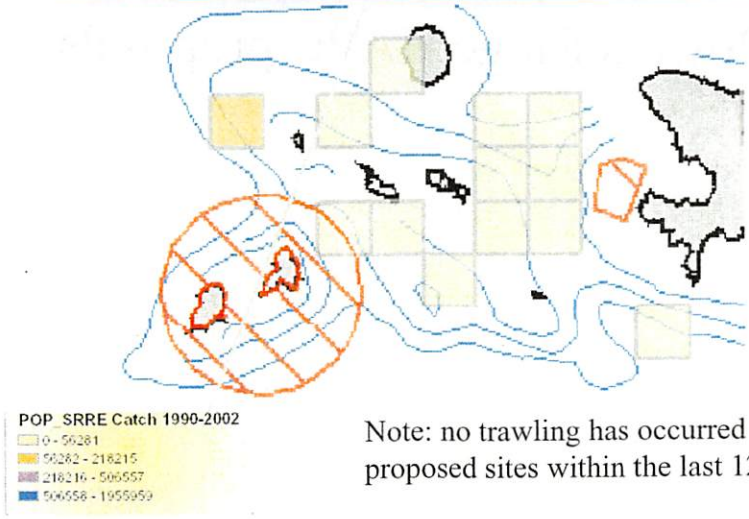


Figure P3-4: Rockfish catches (average annual catch per 10 x 10 block according to 1990-2002 data from Oceana's FOIA request



Note: no trawling has occurred in the proposed sites within the last 12 years

Figures P4-1 through P4-4 for Semisopochnoi Island and Bowers Ridge HAPC proposals

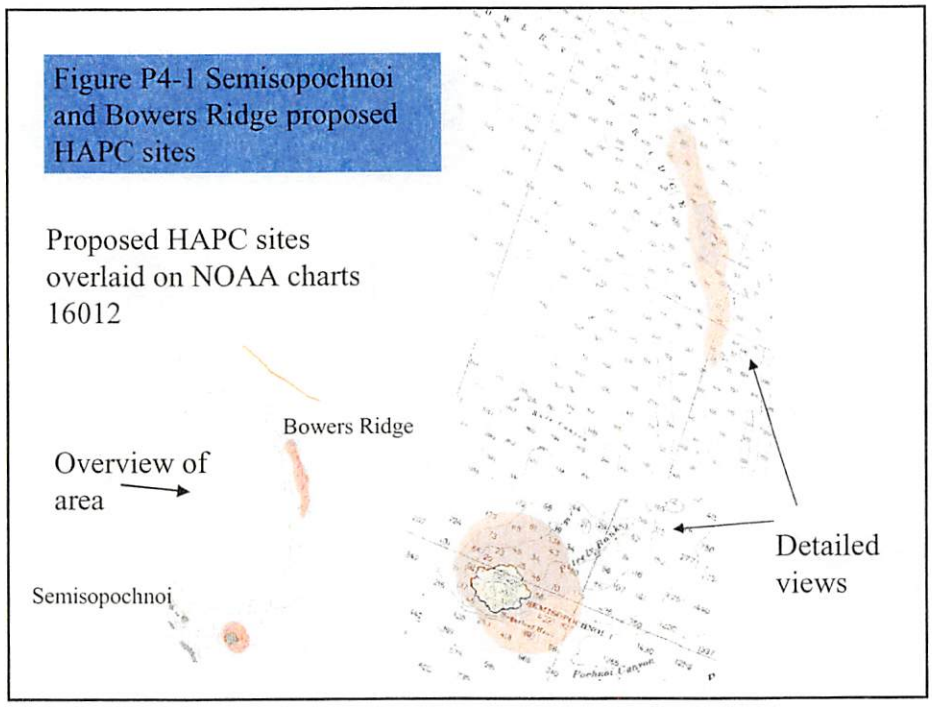
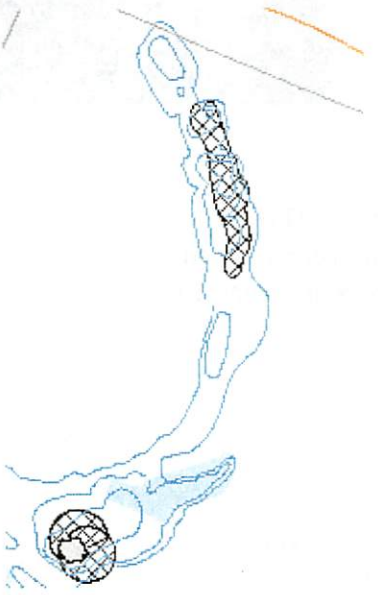


Figure P4-2: EFH EIS 5b Aleutian Islands analysis for Semisopochnoi and Bowers Ridge



Note that neither area would have been "open" under the 5b analysis because significant trawling has not occurred in these areas since 1990.

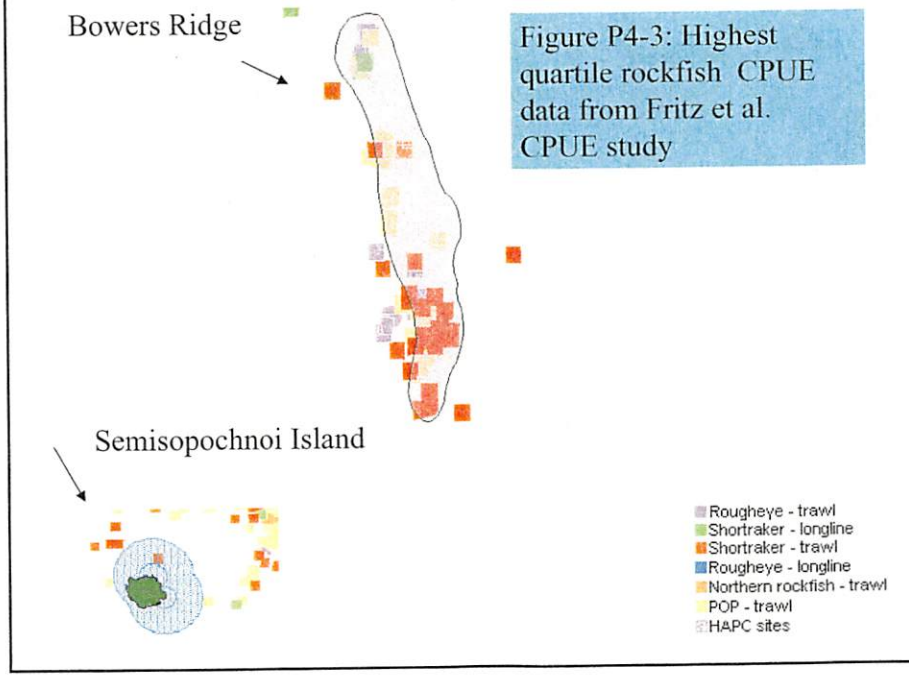
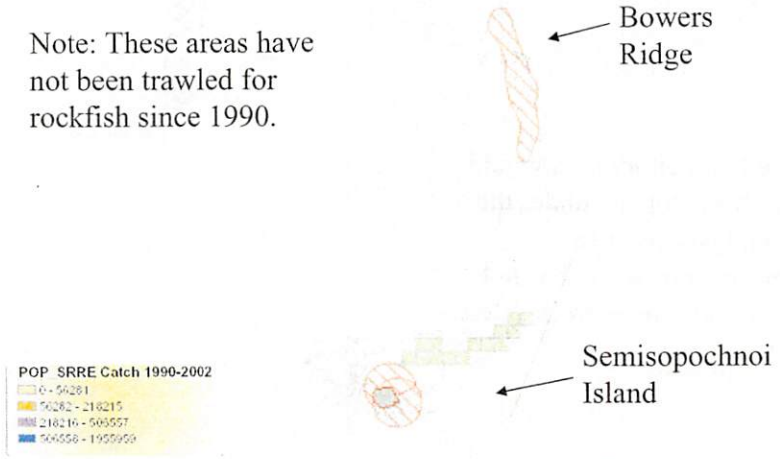


Figure P4-3: Highest quartile rockfish CPUE data from Fritz et al. CPUE study

Figure P4-4: Rockfish catch rates (annual average 1990-2002 for 10x 10 kilometer blocks) based on Oceana's FOIA request data

Note: These areas have not been trawled for rockfish since 1990.



January 10, 2004

Ms. Stephanie Madsen, Chair
North Pacific Fishery Management Council
605 W 4th Ave, Suite 306
Anchorage, AK 99501

Dear Ms. Madsen:

The Alaska Draggers Association, Alaska Groundfish Data Bank and the Groundfish Forum are pleased to present to the North Pacific Fishery Management Council (Council) for their consideration the attached proposals for Habitat Areas of Particular Concern (HAPC). Our respective groups are economically dependent on bottom trawl fisheries that occur in the Gulf of Alaska. We support science-based fishery management and research that protect and maintain marine resources, which we depend. Both the Council and the National Marine Fisheries Service (NMFS) have put a tremendous amount of energy into the Essential Fish Habitat (EFH) and HAPC issues. We appreciate your efforts and know that a science-driven process will continue as the Council begins the selection of HAPCs in the Council's proposal process.

An integral component of our HAPC proposals are ongoing research and monitoring. Periodic evaluation and adaptation as conservation and management programs evolve must be considered as well. The Council's long-range, ecosystem-based management approach to fishery management is imperative when designating HAPCs. The process to identify and possibly designate HAPCs must be deliberative, transparent, and driven by sound scientific information.

HAPC Proposals

The Council RFP specified four criteria for evaluating HAPC proposals -- importance of ecological function, sensitivity, vulnerability and rarity. Proposals must meet at least two of the four criteria specified, one of which is rarity. The Council invited proposals based on several priority areas, including seamounts in the Exclusive Economic Zone and high-relief, long-lived coral beds, with particular attention to the AI, which provide habitat for certain life stages of rockfish or other important managed species. Proposals are limited to sites with likely or documented presence of FMP rockfish species and largely undisturbed and outside core fishing areas.

Our organizations reviewed these specifications and developed the attached proposals for the Council's consideration. These proposals are for three HAPCs in the GOA, and are intended to address the Council's priorities for proposals. The proposed HAPCs sites are areas on the GOA slope feature, with one HAPC site in each regulatory area of the GOA. These areas are believed to provide habitat for certain life stages of rockfish and are the appropriate bottom type that may encompass undisturbed high-relief, long–lived, hard coral beds as well. We believe these proposals meet the Council's specifications, and are based on the best scientific and industry information presently available.

In developing these proposals, we used a variety of data sources including information from rockfish catch data, and information from the EFH EIS analysis as well as practical "on the ground" information from the fleet. In the Gulf of Alaska, our experience during the EFH EIS process, showed survey data detailing habitat features is very limited and incomplete. This results from the generally smaller size of vessels that fish in the area and hence the lower levels of observer coverage that makes the utility of fishery data to ascertain locations with slope rockfish species that are "relatively un-fished" rather limited. For this reason, we focused on the GOA slope sites identified by trawlers through stakeholder meetings

conducted during the development of the EFH EIS alternatives. Available data was then used to evaluate the degree to which there was evidence that these areas held concentrations of rockfish. Please note that two pieces of data that were deemed inappropriate and hence were not used for delineating these HAPC sites were trawl and longline assessment surveys and vessel observer coral bycatch data. Neither of these pieces of information is appropriate since the assessment survey locations in the GOA are not random since survey gear would often be damaged by the rocky and complex bathymetry in the GOA. Vessel observer data does not reflect areas with the highest concentrations of corals since vessels avoid these "unfishable areas".

As we understand the Council's intent, this first round of HAPC designations would be to identify, study, and provide improved conservation benefits to important rockfish species. We want to emphasize that there are real and significant limitations on the data available on coral distributions as well as rockfish dependence on these habitats thus both mapping and research are key elements of these HAPC proposals. Any program to designate HAPCs should include plans for baseline evaluation of sites prior to recommending and implementing specific management measures. Baseline information is crucial to future assessment of effects of mitigation to measure the effects of fishing, not perceived or speculative fishing effects. Under our proposals once a HAPC is designated, mapping via submersibles and evaluation of rockfish abundance would occur before fishing restrictions would be implemented.

It is vital that an ongoing monitoring program measure the efficacy of management measures adopted to achieve the purposes of the HAPC. Thus designations of areas must be for specifically stated purposes, supported by solid scientific information, and regularly evaluated to ensure management goals are being met. Designations simply for designations' sake are ill-advised and unacceptable.

We suggest the Council review HAPCs every five years, with designations automatically repealed after 10 years, unless renewed. If HAPC designations are meeting their purposes and management goals, they may be renewed prior to the sunset date.

Thank you for considering the proposals attached to this letter.

Sincerely yours,

Al Burch
Alaska Draggers Assn.

Julie Bonney
Alaska Groundfish Data Bank

John Gauvin
Groundfish Forum

Attachments – 7 pages

cc: Chris Oliver, NPFMC
Cathy Coon, NPFMC
Dave Witherell, NPFMC

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: 1/10/04

Please check applicable box:
X GOA Groundfish FMP
☐ BSAI Groundfish FMP
☐ Scallop FMP
☐ BSAI Crab FMP

Name of Proposer: Alaska Draggers Association, Alaska Groundfish Data Bank, & Groundfish Forum

Affiliation: Trawl associations with member companies that fish the GOA

Address: ADA P.O. Box 9 Kodiak, AK 99615
AGDB P.O. Box 788 Kodiak, AK 99615
GFF 4241 21st Ave West, Suite 200 Seattle, WA 98199

Title of Proposal. Sanak Island rockfish HAPC in the Western Gulf of Alaska

HAPC Site Location. The proposed HAPC site is south of Sanak Island. The proposed HAPC site is delineated in light red on NOAA chart 500 in Figure P1-3 and is the most Westerly red block on that figure. This area is identical to one of the proposed closure areas that were delineated in alternative 5a for the Essential Fish Habitat EIS.

Habitat Type and Species Information. This proposed HAPC was identified by trawl skippers who possess a wealth of experience and knowledge of the bathymetry of the Gulf of Alaska. These captains believe the proposed site is good rockfish habitat. This HAPC site is located on the GOA slope area, one of the GOA bottom type features considered important for rockfish. Bottom trawling has occurred in this area but not extensively, at least since domestic fishing commenced. GOA Figure P1-2 data suggest that this area has high abundance or rockfish according to historical Fritz et al. CPUE study where the highest 25% of rockfish CPUEs are plotted for trawl and longline rockfish hauls. Additionally, rockfish catch data prepared by NMFS for Oceana's Freedom of Information Act request also suggest that the proposed HAPC site has an abundance of rockfish to the extent that it has been fished in the 1990-2002 period (GOA Figure P1-3). We know of no information to demonstrate whether high-relief hard coral stands exist at this proposed site, however, the relatively rocky and rough bottom found at this site makes it a relatively good candidate for finding hard corals and rockfish habitat.

Summary Statement of the Proposal.
An area south of Sanak Island as delineated in Figure P1-3. The HAPC designation is proposed based on information from trawl captains that the area is likely rockfish habitat and relatively unfished. A set of steps is proposed to map the area and develop restrictions on bottom trawling while preserving fishing opportunities in this area once the geographic extent of rockfish habitat and the presence of high-relief hard coral stands has been established. Any fishing restrictions should incorporate an experimental design to increase our understanding of how rockfish use habitat and how fishing affects their productivity.

Statement of Purpose and Need.
The purpose of this proposal is to address the NPFMC's HAPC priority. The Council is interested in proposals identifying habitat for rockfish and high relief hard coral stands in areas that are relatively unfished. Trawlers with extensive experience in the GOA believe this area meets the NPFMC's HAPC priority. The purpose of the proposal is to designate the area as HAPC, prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist, and evaluate the benthic features in this section of the GOA slope. Appropriate fishing restrictions on bottom trawling to protect rockfish habitat within the area while allowing fishing to continue where appropriate, and lastly to design and conduct applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat.

Objectives of the Proposal.
The objective of this proposal is to address the NPFMC's HAPC priority. The proposed HAPC site is an area south of Sanak Island. The area fits the NPFMC's 2003-04 HAPC priority based on available data because it is relatively unfished and based on trawl catches of rockfish before 1990 and in recent years, the area appears to have an abundance of rockfish and good habitat for rockfish and other demersal managed species (GOA Figures P1-2 and P1-3). Once the sites are mapped to establish where the concentrations of hard corals and rockfish occur within sites and the level of existing fishing and non-fishing effects within these sites, the sites would lend itself well to zoning for fishing and control areas to evaluate the effects of fishing as well as habitat associations of rockfish with fished and un-fished habitat.

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.

[X] The extent to which the habitat is **SENSITIVE** to human-induced degradation.
Research has shown that fishing can modify bottom substrate but the implications of such modifications as they occur from the fishing gears used in Alaska and the low intensity of fishing effort as it occurs off Alaska are not known.

[X] Whether, and to what extent, the activity **STRESSES** the habitat type.
The site in this proposal meets the 2003 HAPC priority. It is largely untrawled and the bottom appears to be suitable for concentrations of hard corals and rockfish abundance. Some groundfish longline and pot fishing likely occurs within these sites but the extent of this is not known at this time. The slope area of the GOA was determined to have the highest fishing intensity of any bottom feature in the GOA. It is unknown how fishing as it occurs off Alaska affects the productivity of FMP species. Designating a GOA slope area that is relatively unfished that is thought to have an abundance of adult rockfish would allow experimentation regarding these issues.

[X] The **RARITY** of the habitat type.
The EFH EIS analysis concluded that GOA slope is a relatively heavily fished feature in the GOA. The proposed HAPC site is thus relatively rare as it is relatively unfished by trawls despite the fact that data suggest that it has concentrations of rockfish. Additionally, the trawl industry believes this area has relatively rocky and high- relief bathymetry. Some scientists believe hard corals can be abundant in areas with these characteristics.

Describe any Proposed Solutions to Achieve These Objectives.
The site should be prioritized for submersible mapping so that appropriate restrictions on bottom trawling can be developed to protect the high-relief hard coral habitat (if any) that may occur within this designated HAPC site. Once the site is mapped to establish habitat type and areas used by rockfish, and once the level of existing fishing and non-fishing effects on the area are observed and categorized, these areas should be zoned to protect coral/rockfish habitat from bottom trawling while preserving fishing opportunities to the extent practical. Protection measures should incorporate experimental designs to increase our understanding of how rockfish use hard coral habitat and other habitats and how fishing affects the productivity of that habitat.

Describe any Proposed Management Measures for the HAPC.
1. Designation of HAPC meeting NPFMC's 2003 priority. 2. Prioritization for submersible mapping and rockfish abundance evaluation. 3. Eventual development of restrictions on bottom trawling to protect high-relief hard coral and rockfish areas within these proposed sites while preserving fishing opportunities to the extent practical. 4. Development of controlled research to learn more about how rockfish and other managed demersal species associate with and use habitat, how fishing affects that use and productivity, how different levels of fishing intensity and gear effects influence productivity of habitats.

Identify any Expected Benefits to Habitat or FMP species.
This site may be important rockfish habitat that may meet the North Pacific Council's HAPC priority. If the steps outlined in this proposal are implemented, we believe that rockfish and other FMP species could benefit with only minimal impacts on groundfish bottom trawlers and communities dependent on trawling.

Identify Fishery, Stakeholders, and/or Communities, which may Benefit from the Proposed HAPC.
Proposed sites may be excellent rockfish habitat that has not received much bottom trawl effort in recent years. If the steps outlined in this proposal (mapping, zoning of trawling within HAPC, research on habitat use and how fishing affects productivity) are implemented, we believe that rockfish and other FMP species could benefit with only small direct impacts on bottom trawl fishermen and communities that depend on trawling.

Support Data or Information Sources
(List data sources, information resource, literature, and any traditional knowledge for the proposal.)
NOAA chart 500; knowledge and information volunteered by trawl captains who target rockfish and deep flatfish in the GOA at stakeholder meetings in 2001/2002 for the development of EFH alternatives; Fritz et al. CPUE study 1998 (NOAA Technical Memorandum NMFS-AFSC-88); rockfish catch data prepared by NMFS for Oceana (2003 FOIA).

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: 1/10/04

Please check applicable box:
X GOA Groundfish FMP
☐ BSAI Groundfish FMP
☐ Scallop FMP
☐ BSAI Crab FMP

Name of Proposer: Alaska Draggers Association,
Alaska Groundfish Data Bank, & Groundfish Forum

Affiliation: Trawl associations with member companies that fish the GOA

Address: ADA P.O. Box 9 Kodiak, AK 99615
AGDB P.O. Box 788 Kodiak, AK 99615
GFF 4241 21st Ave West, Suite 200 Seattle, WA 98199

Title of Proposal. Albatross rockfish HAPC in the Central Gulf of Alaska

HAPC Site Location. The proposed HAPC site is on Albatross Bank south of the eight ball pinnacle on the GOA slope. The proposed HAPC site is delineated in light red on NOAA chart 500 in Figure P1-3 and is the middle light red block. This area is identical to one of the proposed closure areas that were delineated in alternative 5a for the Essential Fish Habitat EIS.
(Specific latitude/longitude or geographic reference. Include NOAA Chart number, if known.)

Habitat Type and Species Information. This proposed HAPC was identified by trawl skippers who possess a wealth of experience and knowledge of the bathymetry of the Gulf of Alaska. These captains believe the proposed site is good rockfish habitat. This HAPC site is located on the GOA slope area, one of the GOA bottom type features considered important for rockfish. Bottom trawling has occurred in this area but not extensively, at least since domestic fishing commenced. GOA Figure P2-2 data suggest that this area has high abundance or rockfish according to historical Fritz et al. CPUE study where the highest 25% of rockfish CPUEs are plotted for trawl and longline rockfish hauls. Additionally, rockfish catch data prepared by NMFS for Oceana's Freedom of Information Act request also suggest that the proposed HAPC site has an abundance of rockfish to the extent that it has been fished in the 1990-2002 period (GOA Figure P2-3). We know of no information to demonstrate whether high-relief hard coral stands exist at this proposed site, however, the relatively rocky and rough bottom found at this site makes it a relatively good candidate for finding hard corals and rockfish habitat.

Summary Statement of the Proposal.
The proposed HAPC site is an area on Albatross Bank south of the eight ball pinnacle on the GOA slope as delineated in Figure P1-3. The HAPC designation is proposed based on information from trawl captains that the area is likely rockfish habitat and relatively unfished. A set of steps is proposed to map the area and develop restrictions on bottom trawling while preserving fishing opportunities in this area once the geographic extent of rockfish habitat and the presence of high-relief hard coral stands has been established. Any fishing restrictions should incorporate an experimental design to increase our understanding of how rockfish use habitat and how fishing affects their productivity.

Statement of Purpose and Need.
The purpose of this proposal is to address the NPFMC's HAPC priority. The Council is interested in proposals identifying habitat for rockfish and high relief hard coral stands in areas that are relatively unfished. Trawlers with extensive experience in the GOA believe this area meets the NPFMC's HAPC priority. The purpose of the proposal is to designate the area as HAPC, prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist, and evaluate the benthic features in this section of the GOA slope. Appropriate fishing restrictions on bottom trawling to protect rockfish habitat within the area while allowing fishing to continue where appropriate, and lastly to design and conduct

applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat.

Objectives of the Proposal.
The objective of this proposal is to address the NPFMC's HAPC priority. The proposed HAPC site is an area on Albatross Bank south of the eight ball pinnacle on the GOA slope. The area fits the NPFMC's 2003-04 HAPC priority based on available data because it is relatively unfished and based on trawl catches of rockfish before 1990 and in recent years, the area appears to have an abundance of rockfish and good habitat for rockfish and other demersal managed species (GOA Figures P2-2 and P2-3). Once the sites are mapped to establish where the concentrations of hard corals and rockfish occur within sites and the level of existing fishing and non-fishing effects within these sites, the sites would lend itself well to zoning for fishing and control areas to evaluate the effects of fishing as well as habitat associations of rockfish with fished and un-fished habitat.

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.

[X] The extent to which the habitat is **SENSITIVE** to human-induced degradation.
Research has shown that fishing can modify bottom substrate but the implications of such modifications as they occur from the fishing gears used in Alaska and the low intensity of fishing effort as it occurs off Alaska are not known.

[X] Whether, and to what extent, the activity **STRESSES** the habitat type.
The site in this proposal meets the 2003 HAPC priority. It is largely untrawled and the bottom appears to be suitable for concentrations of hard corals and rockfish abundance. Some groundfish longline and pot fishing likely occurs within these sites but the extent of this is not known at this time. The slope area of the GOA was determined to have the highest fishing intensity of any bottom feature in the GOA. It is unknown how fishing as it occurs off Alaska affects the productivity of FMP species. Designating a GOA slope area that is relatively unfished that is thought to have an abundance of adult rockfish would allow experimentation regarding these issues.

[X] The **RARITY** of the habitat type.
The EFH EIS analysis concluded that GOA slope is a relatively heavily fished feature in the GOA. The proposed HAPC site is thus relatively rare as it is relatively unfished by trawls despite the fact that data suggest that it has concentrations of rockfish. Additionally, the trawl industry believes this area has relatively rocky and high- relief bathymetry. Some scientists believe hard corals can be abundant in areas with these characteristics.

Describe any Proposed Solutions to Achieve These Objectives.
The site should be prioritized for submersible mapping so that appropriate restrictions on bottom trawling can be developed to protect the high-relief hard coral habitat (if any) that may occur within this designated HAPC site. Once the site is mapped to establish habitat type and areas used by rockfish, and once the level of existing fishing and non-fishing effects on the area are observed and categorized, these areas should be zoned to protect coral/rockfish habitat from bottom trawling while preserving fishing opportunities to the extent practical. Protection measures should incorporate experimental designs to increase our understanding of how rockfish use hard coral habitat and other habitats and how fishing affects the productivity of that habitat.

Describe any Proposed Management Measures for the HAPC.
1. Designation of HAPC meeting NPFMC's 2003 priority. 2. Prioritization for submersible mapping and rockfish abundance evaluation. 3. Eventual development of restrictions on bottom trawling to protect high-relief hard coral and rockfish areas within these proposed sites while preserving fishing opportunities to the extent practical. 4. Development of controlled research to learn more about how rockfish and other managed demersal species associate with and use habitat, how fishing affects that use and productivity, how different levels of fishing intensity and gear effects influence productivity of habitats.

Identify any Expected Benefits to Habitat or FMP species.
This site may be important rockfish habitat that may meet the North Pacific Council's HAPC priority. If the steps outlined in this proposal are implemented, we believe that rockfish and other FMP species could benefit with only minimal impacts on groundfish bottom trawlers and communities dependent on trawling.

Identify Fishery, Stakeholders, and/or Communities, which may Benefit from the Proposed HAPC.
Proposed sites may be excellent rockfish habitat that has not received much bottom trawl effort in recent years. If the steps outlined in this proposal (mapping, zoning of trawling within HAPC, research on habitat use and how fishing affects productivity) are implemented, we believe that rockfish and other FMP species could benefit with only small direct impacts on bottom trawl fishermen and communities that depend on trawling.

Support Data or Information Sources
(List data sources, information resource, literature, and any traditional knowledge for the proposal.)
NOAA chart 500; knowledge and information volunteered by trawl captains who target rockfish and deep flatfish in the GOA at stakeholder meetings in 2001/2002 for the development of EFH alternatives; Fritz et al. CPUE study 1998 (NOAA Technical Memorandum NMFS-AFSC-88); rockfish catch data prepared by NMFS for Oceana (2003 FOIA).

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: 1/10/04

Please check applicable box:
X GOA Groundfish FMP
☐ BSAI Groundfish FMP
☐ Scallop FMP
☐ BSAI Crab FMP

Name of Proposer: Alaska Draggers Association, Alaska Groundfish Data Bank, & Groundfish Forum

Affiliation: Trawl associations with member companies that fish the GOA

Address: ADA P.O. Box 9 Kodiak, AK 99615
AGDB P.O. Box 788 Kodiak, AK 99615
GFF 4241 21st Ave West, Suite 200 Seattle, WA 98199

Title of Proposal. Middleton Island rockfish HAPC in the West Yakutat regulatory area of the Gulf of Alaska

HAPC Site Location. The proposed HAPC site is south of Middleton Island. The proposed HAPC site is delineated in light red on NOAA chart 500 in Figure P1-3 and is the most Easterly red block. This area is identical to one of the proposed closure areas that were delineated in alternative 5a for the Essential Fish Habitat EIS.

Habitat Type and Species Information. This proposed HAPC was identified by trawl skippers who possess a wealth of experience and knowledge of the bathymetry of the Gulf of Alaska. These captains believe the proposed site is good rockfish habitat. This HAPC site is located on the GOA slope area, one of the GOA bottom type features considered important for rockfish. Bottom trawling has occurred in this area but not extensively, at least since domestic fishing commenced. GOA Figure P3-2 data suggest that this area has high abundance or rockfish according to historical Fritz et al. CPUE study where the highest 25% of rockfish CPUEs are plotted for trawl and longline rockfish hauls. Additionally, rockfish catch data prepared by NMFS for Oceana's Freedom of Information Act request also suggest that the proposed HAPC site has an abundance of rockfish to the extent that it has been fished in the 1990-2002 period (GOA Figure P3-3). We know of no information to demonstrate whether high-relief hard coral stands exist at this proposed site, however, the relatively rocky and rough bottom found at this site makes it a relatively good candidate for finding hard corals and rockfish habitat.

Summary Statement of the Proposal.
An area is south of Middleton Island as delineated in Figure P1-3. The HAPC designation is proposed based on information from trawl captains that the area is likely rockfish habitat and relatively unfished. A set of steps is proposed to map the area and develop restrictions on bottom trawling while preserving fishing opportunities in this area once the geographic extent of rockfish habitat and the presence of high-relief hard coral stands has been established. Any fishing restrictions should incorporate an experimental design to increase our understanding of how rockfish use habitat and how fishing affects their productivity.

Statement of Purpose and Need.
The purpose of this proposal is to address the NPFMC's HAPC priority. The Council is interested in proposals identifying habitat for rockfish and high relief hard coral stands in areas that are relatively unfished. Trawlers with extensive experience in the GOA believe this area meets the NPFMC's HAPC priority. The purpose of the proposal is to designate the area as HAPC, prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist, and evaluate the benthic features in this section of the GOA slope. Appropriate fishing restrictions on bottom trawling to protect rockfish habitat within the area while allowing fishing to continue where appropriate, and lastly to design and conduct

applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat.

Objectives of the Proposal.
The objective of this proposal is to address the NPFMC's HAPC priority. The proposed HAPC site is an area is south of Middleton Island. The area fits the NPFMC's 2003-04 HAPC priority based on available data because it is relatively unfished and based on trawl catches of rockfish before 1990 and in recent years, the area appears to have an abundance of rockfish and good habitat for rockfish and other demersal managed species (GOA Figures P3-2 and P3-3). Once the sites are mapped to establish where the concentrations of hard corals and rockfish occur within sites and the level of existing fishing and non-fishing effects within these sites, the sites would lend itself well to zoning for fishing and control areas to evaluate the effects of fishing as well as habitat associations of rockfish with fished and un-fished habitat.

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.

[X] The extent to which the habitat is **SENSITIVE** to human-induced degradation.
Research has shown that fishing can modify bottom substrate but the implications of such modifications as they occur from the fishing gears used in Alaska and the low intensity of fishing effort as it occurs off Alaska are not known.

[X] Whether, and to what extent, the activity **STRESSES** the habitat type.
The site in this proposal meets the 2003 HAPC priority. It is largely untrawled and the bottom appears to be suitable for concentrations of hard corals and rockfish abundance. Some groundfish longline and pot fishing likely occurs within these sites but the extent of this is not known at this time. The slope area of the GOA was determined to have the highest fishing intensity of any bottom feature in the GOA. It is unknown how fishing as it occurs off Alaska affects the productivity of FMP species. Designating a GOA slope area that is relatively unfished that is thought to have an abundance of adult rockfish would allow experimentation regarding these issues.

[X] The **RARITY** of the habitat type.
The EFH EIS analysis concluded that GOA slope is a relatively heavily fished feature in the GOA. The proposed HAPC site is thus relatively rare as it is relatively unfished by trawls despite the fact that data suggest that it has concentrations of rockfish. Additionally, the trawl industry believes this area has relatively rocky and high- relief bathymetry. Some scientists believe hard corals can be abundant in areas with these characteristics.

Describe any Proposed Solutions to Achieve These Objectives.
The site should be prioritized for submersible mapping so that appropriate restrictions on bottom trawling can be developed to protect the high-relief hard coral habitat (if any) that may occur within this designated HAPC site. Once the site is mapped to establish habitat type and areas used by rockfish, and once the level of existing fishing and non-fishing effects on the area are observed and categorized, these areas should be zoned to protect coral/rockfish habitat from bottom trawling while preserving fishing opportunities to the extent practical. Protection measures should incorporate experimental designs to increase our understanding of how rockfish use hard coral habitat and other habitats and how fishing affects the productivity of that habitat.

Describe any Proposed Management Measures for the HAPC.
1. Designation of HAPC meeting NPFMC's 2003 priority. 2. Prioritization for submersible mapping and rockfish abundance evaluation. 3. Eventual development of restrictions on bottom trawling to protect high-relief hard coral and rockfish areas within these proposed sites while preserving fishing opportunities to the extent practical. 4. Development of controlled research to learn more about how rockfish and other managed demersal species associate with and use habitat, how fishing affects that use and productivity, how different levels of fishing intensity and gear effects influence productivity of habitats.

Identify any Expected Benefits to Habitat or FMP species.
This site may be important rockfish habitat that may meet the North Pacific Council's HAPC priority. If the steps outlined in this proposal are implemented, we believe that rockfish and other FMP species could benefit with only minimal impacts on groundfish bottom trawlers and communities dependent on trawling.

Identify Fishery, Stakeholders, and/or Communities, which may Benefit from the Proposed HAPC.
Proposed sites may be excellent rockfish habitat that has not received much trawl effort in recent years. If the steps outlined in this proposal (mapping, zoning of trawling within HAPC, research on habitat use and how fishing affects productivity) are implemented, we believe that rockfish and other FMP species could benefit with only small direct impacts on bottom trawl fishermen and communities that depend on trawling.

Support Data or Information Sources
(List data sources, information resource, literature, and any traditional knowledge for the proposal.)
NOAA chart 500; knowledge and information volunteered by trawl captains who target rockfish and deep flatfish in the GOA at stakeholder meetings in 2001/2002 for the development of EFH alternatives; Fritz et al. CPUE study 1998 (NOAA Technical Memorandum NMFS-AFSC-88); rockfish catch data prepared by NMFS for Oceana (2003 FOIA).

Figure P1-P3: Proposed GOA HAPC sites displayed on NOAA chart 500

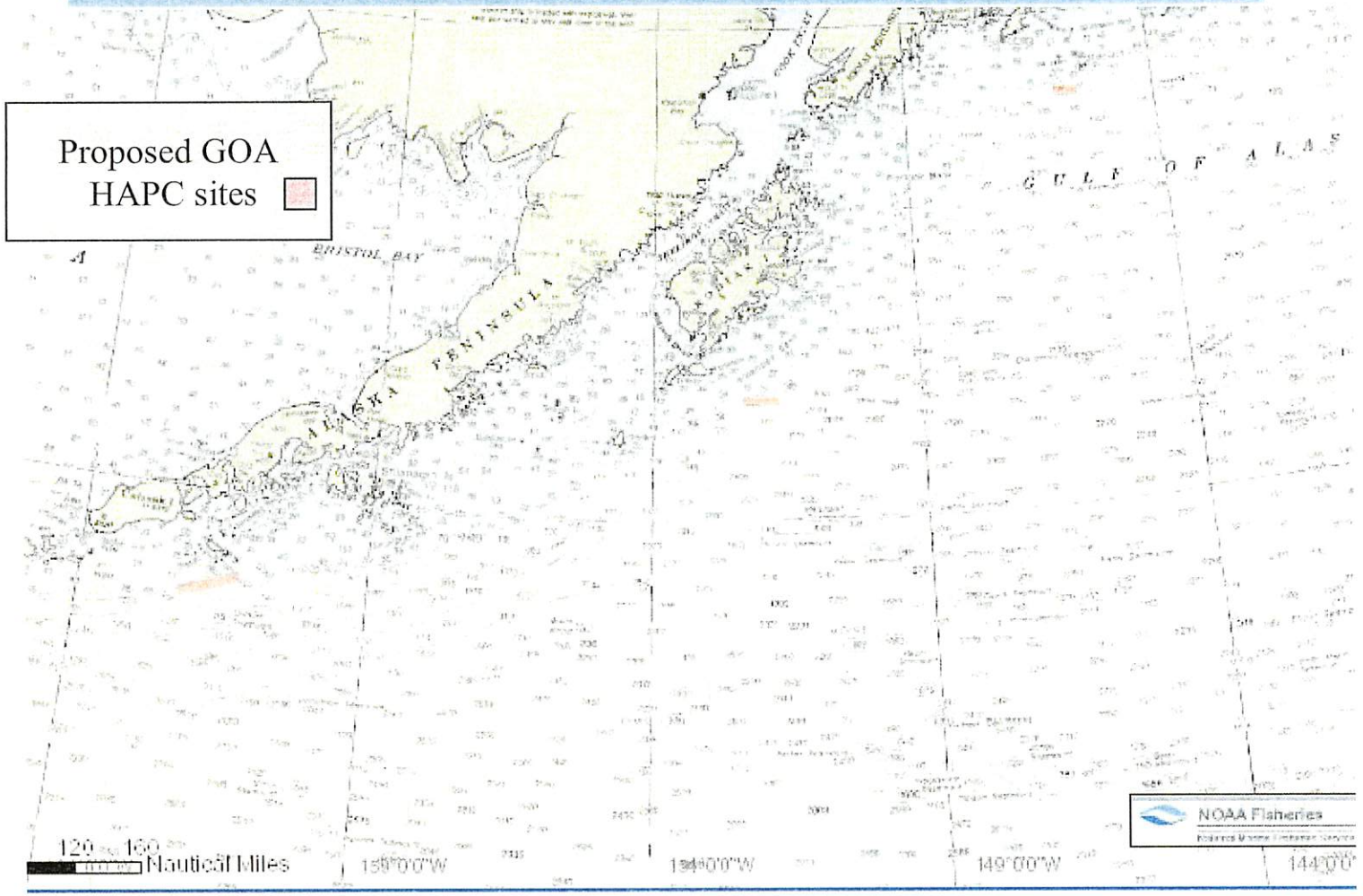


Figure GOA P1-2 Highest quartile rockfish CPUE data from Fritz et al. CPUE study for Sanak Island HAPC site

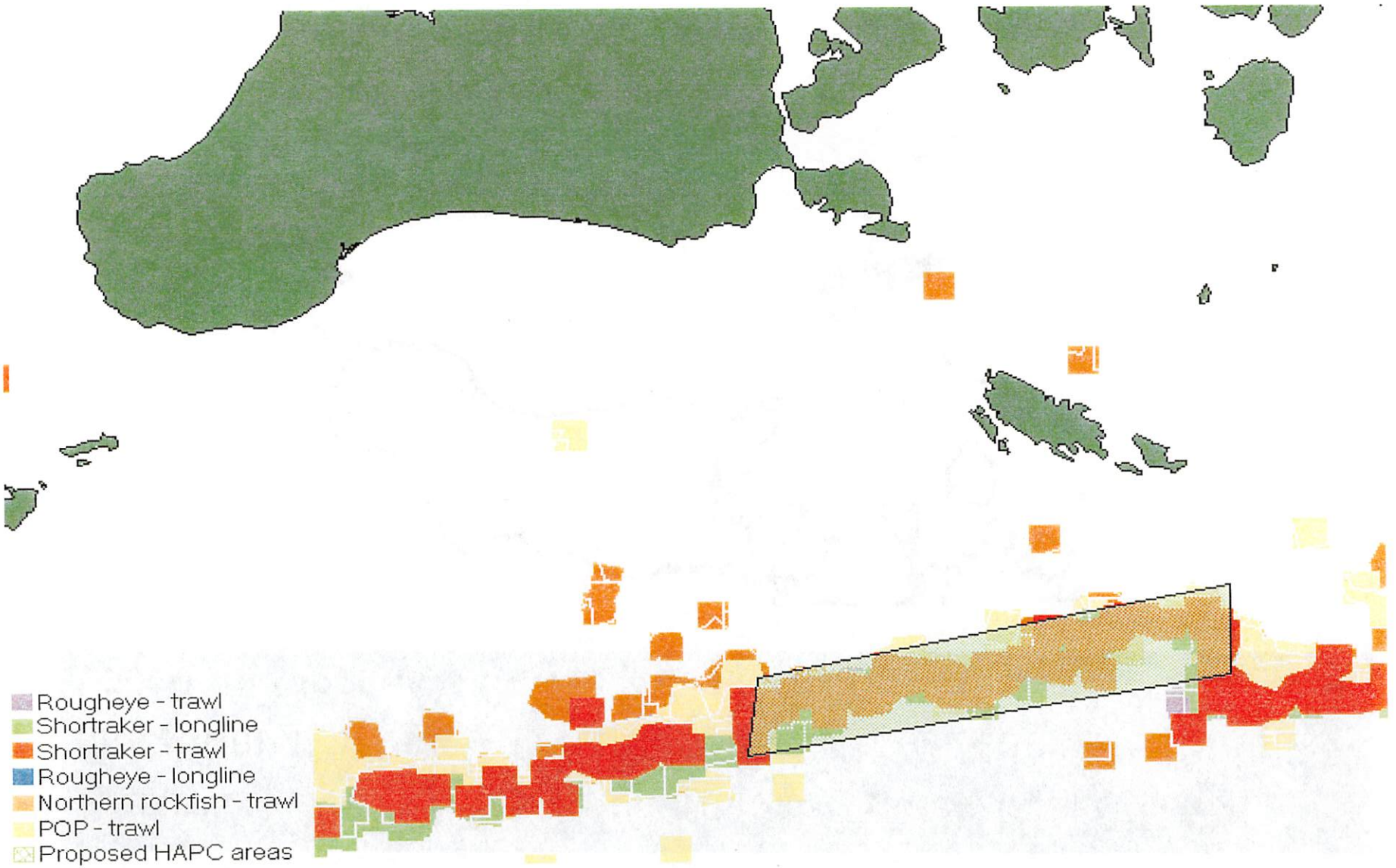


Figure P1-3: Rockfish catch rates for Sanak Island HAPC site (annual average 1990-2002 for 10x 10 kilometer blocks) based on Oceana's FOIA request data

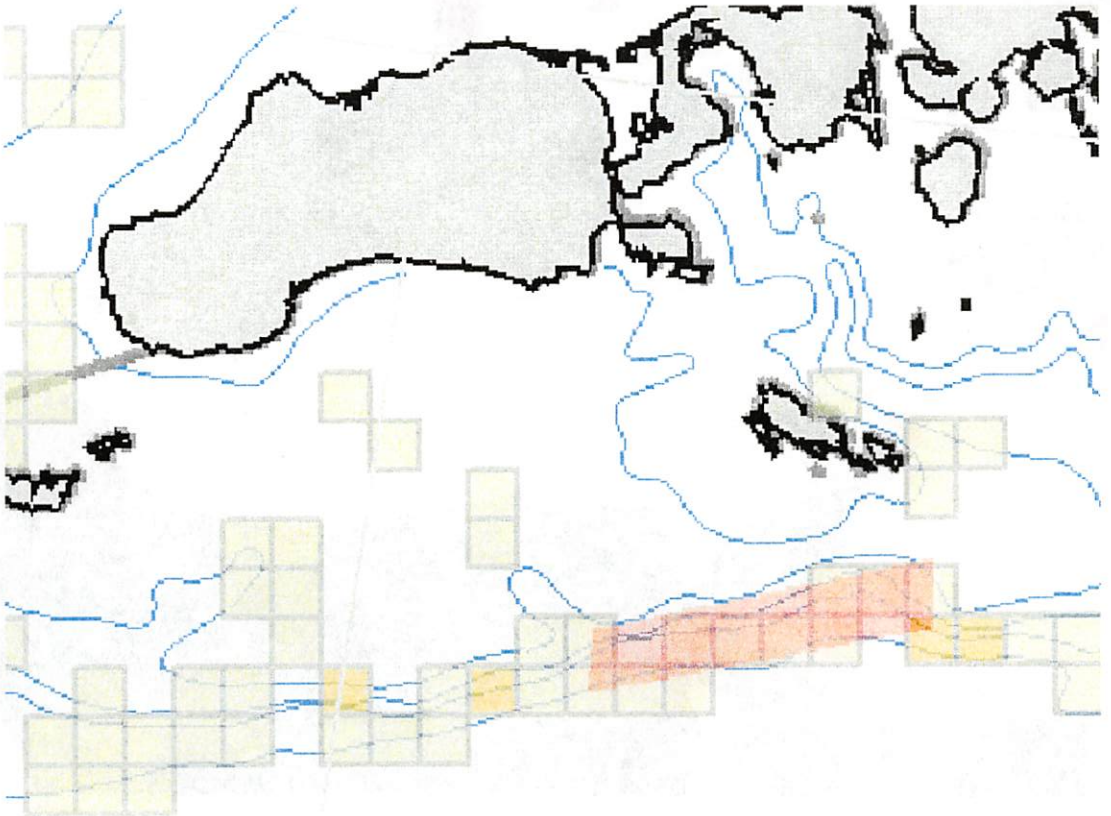


Figure GOA P2-2 Highest quartile rockfish CPUE data from Fritz et al. CPUE study for Albatross HAPC site

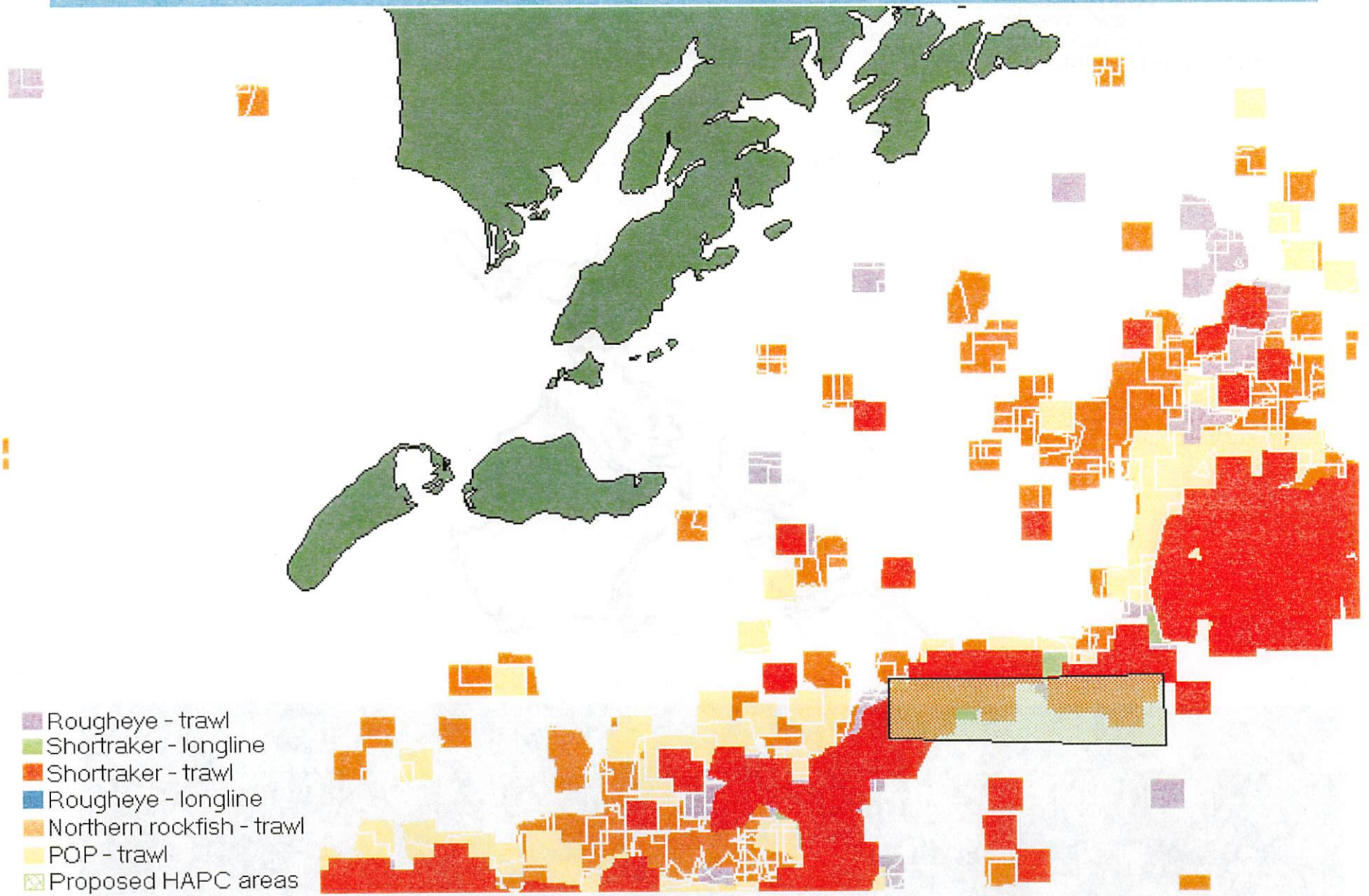


Figure P2-3: Rockfish catch rates for Albatross HAPC site (annual average 1990-2002 for 10x 10 kilometer blocks) based on Oceana's FOIA request data

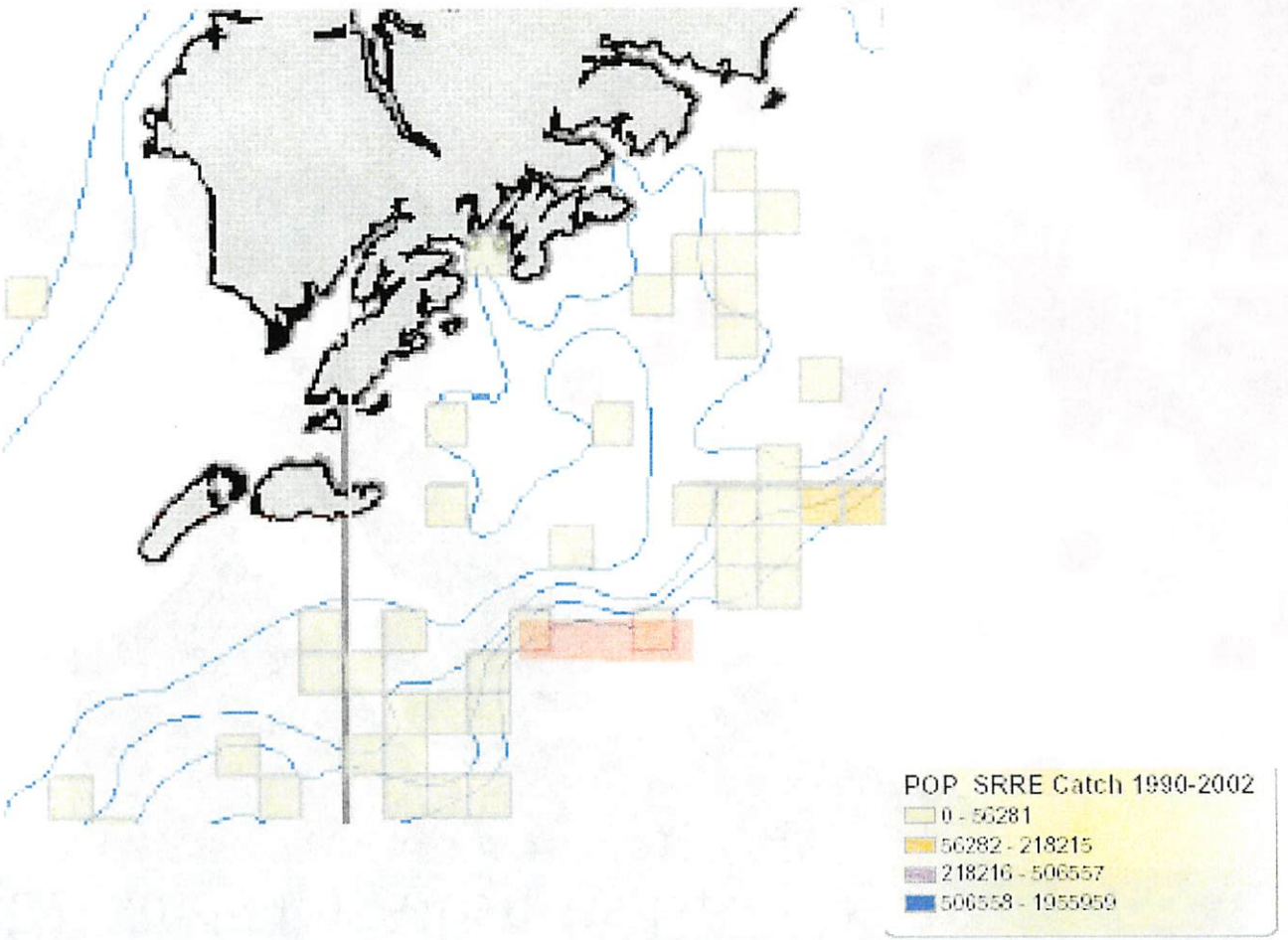


Figure GOA P3-2 Highest quartile rockfish CPUE data from Fritz et al. CPUE study for Middleton Island HAPC site

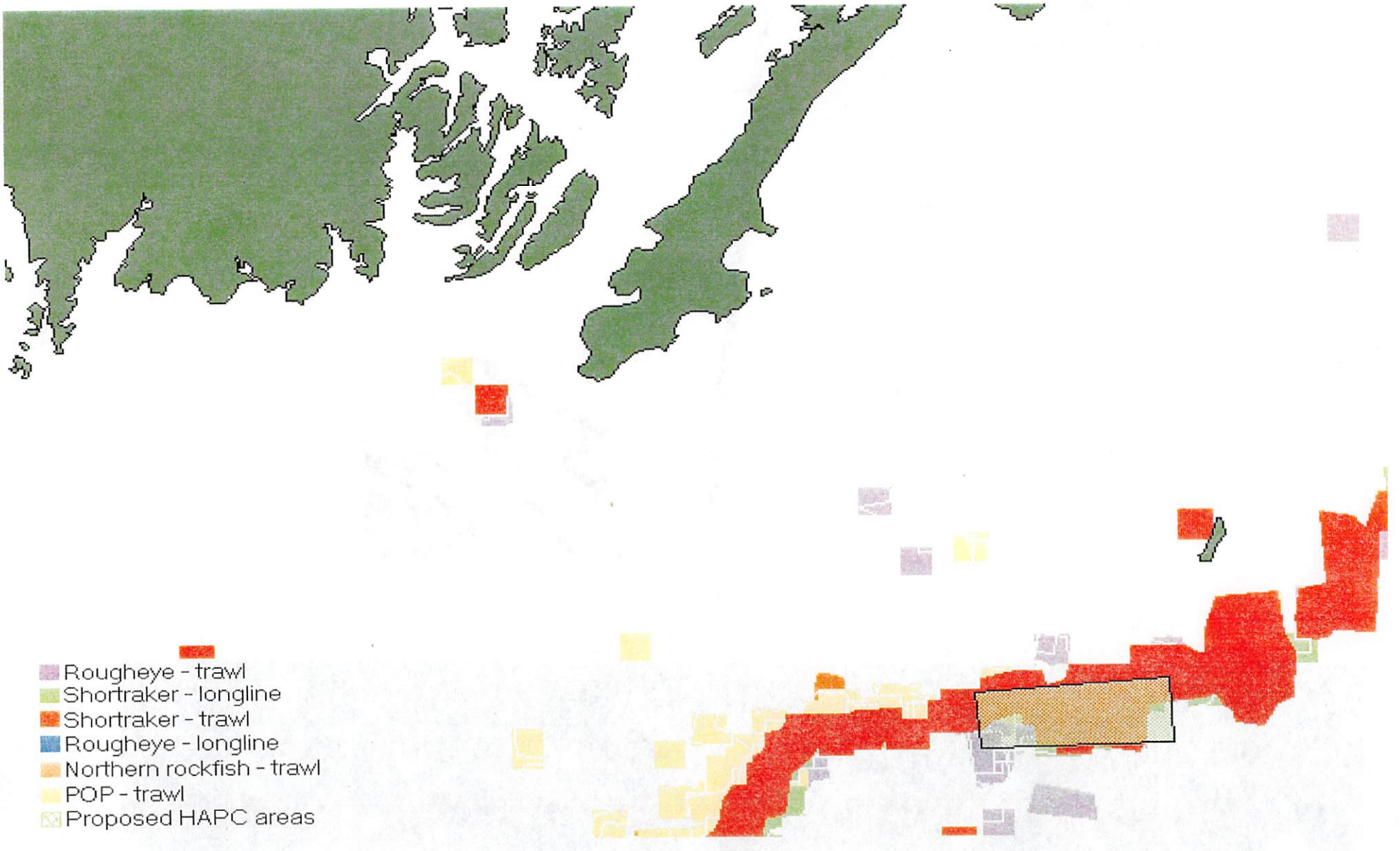
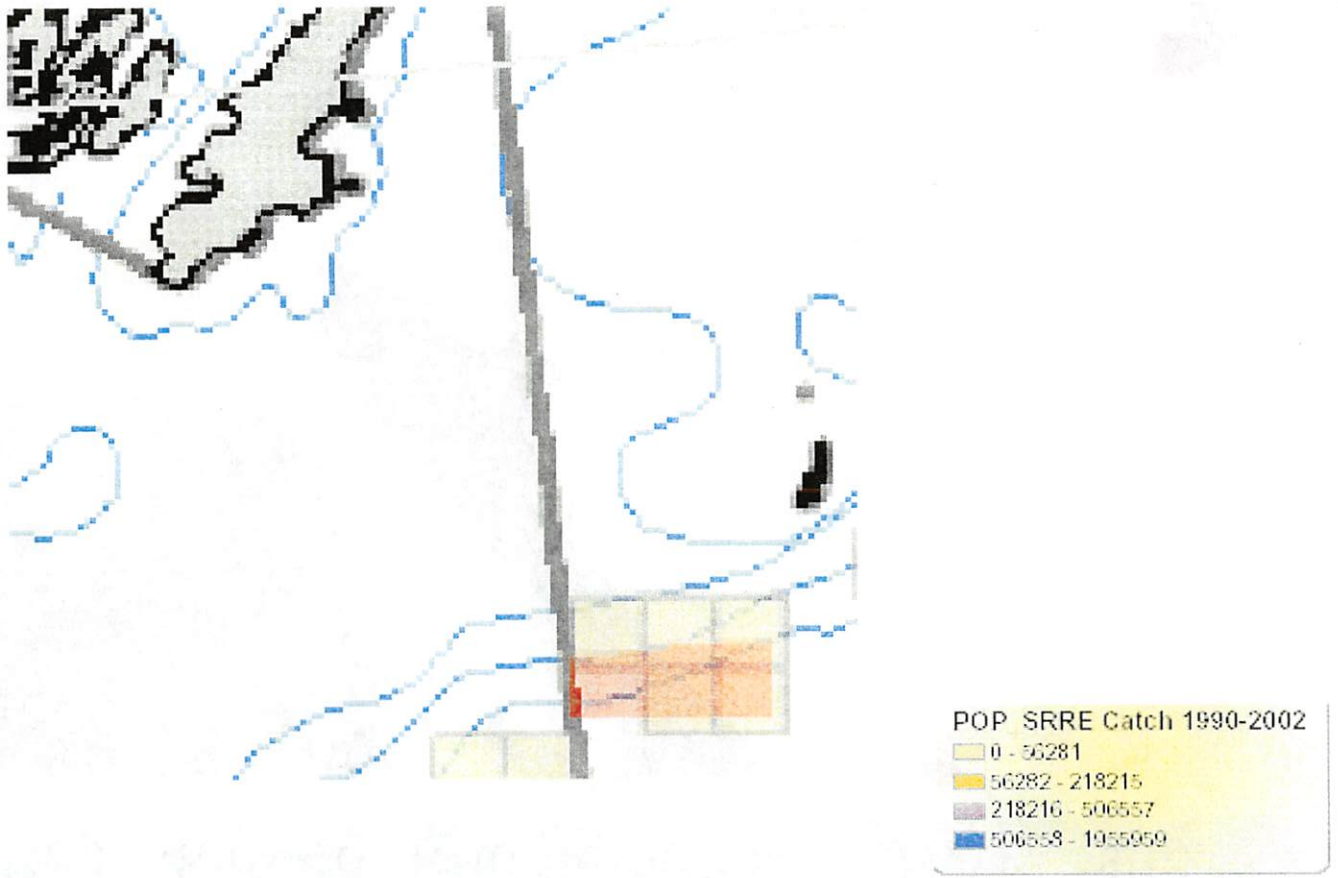


Figure P3-3: Rockfish catch rates for Middleton Island HAPC site (annual average 1990-2002 for 10x 10 kilometer blocks) based on Oceana's FOIA request data



HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: 1/10/04

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X GOA Groundfish FMP
☐ BSAI Groundfish FMP
☐ Scallop FMP
☐ BSAI Crab FMP

Name of Proposer: Alaska Draggers Association, Alaska Groundfish Data Bank, & Groundfish Forum

Affiliation: Trawl associations with member companies that fish the GOA

Address: ADA P.O. Box 9 Kodiak, AK 99615
AGDB P.O. Box 788 Kodiak, AK 99615
GFF 4241 21st Ave West, Suite 200 Seattle, WA 98199

Title of Proposal. Sanak Island rockfish HAPC in the Western Gulf of Alaska

HAPC Site Location. The proposed HAPC site is south of Sanak Island. The proposed HAPC site is delineated in light red on NOAA chart 500 in Figure P1-3 and is the most Westerly red block on that figure. This area is identical to one of the proposed closure areas that were delineated in alternative 5a for the Essential Fish Habitat EIS.

Habitat Type and Species Information. This proposed HAPC was identified by trawl skippers who possess a wealth of experience and knowledge of the bathymetry of the Gulf of Alaska. These captains believe the proposed site is good rockfish habitat. This HAPC site is located on the GOA slope area, one of the GOA bottom type features considered important for rockfish. Bottom trawling has occurred in this area but not extensively, at least since domestic fishing commenced. GOA Figure P1-2 data suggest that this area has high abundance or rockfish according to historical Fritz et al. CPUE study where the highest 25% of rockfish CPUEs are plotted for trawl and longline rockfish hauls. Additionally, rockfish catch data prepared by NMFS for Oceana's Freedom of Information Act request also suggest that the proposed HAPC site has an abundance of rockfish to the extent that it has been fished in the 1990-2002 period (GOA Figure P1-3). We know of no information to demonstrate whether high-relief hard coral stands exist at this proposed site, however, the relatively rocky and rough bottom found at this site makes it a relatively good candidate for finding hard corals and rockfish habitat.

Summary Statement of the Proposal.
An area south of Sanak Island as delineated in Figure P1-3. The HAPC designation is proposed based on information from trawl captains that the area is likely rockfish habitat and relatively unfished. A set of steps is proposed to map the area and develop restrictions on bottom trawling while preserving fishing opportunities in this area once the geographic extent of rockfish habitat and the presence of high-relief hard coral stands has been established. Any fishing restrictions should incorporate an experimental design to increase our understanding of how rockfish use habitat and how fishing affects their productivity.

Statement of Purpose and Need.
The purpose of this proposal is to address the NPFMC's HAPC priority. The Council is interested in proposals identifying habitat for rockfish and high relief hard coral stands in areas that are relatively unfished. Trawlers with extensive experience in the GOA believe this area meets the NPFMC's HAPC priority. The purpose of the proposal is to designate the area as HAPC, prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist, and evaluate the benthic features in this section of the GOA slope. Appropriate fishing restrictions on bottom trawling to protect rockfish habitat within the area while allowing fishing to continue where appropriate, and lastly to design and conduct applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat.

Objectives of the Proposal.
The objective of this proposal is to address the NPFMC's HAPC priority. The proposed HAPC site is an area south of Sanak Island. The area fits the NPFMC's 2003-04 HAPC priority based on available data because it is relatively unfished and based on trawl catches of rockfish before 1990 and in recent years, the area appears to have an abundance of rockfish and good habitat for rockfish and other demersal managed species (GOA Figures P1-2 and P1-3). Once the sites are mapped to establish where the concentrations of hard corals and rockfish occur within sites and the level of existing fishing and non-fishing effects within these sites, the sites would lend itself well to zoning for fishing and control areas to evaluate the effects of fishing as well as habitat associations of rockfish with fished and un-fished habitat.

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.

[X] The extent to which the habitat is **SENSITIVE** to human-induced degradation.
Research has shown that fishing can modify bottom substrate but the implications of such modifications as they occur from the fishing gears used in Alaska and the low intensity of fishing effort as it occurs off Alaska are not known.

[X] Whether, and to what extent, the activity **STRESSES** the habitat type.
The site in this proposal meets the 2003 HAPC priority. It is largely untrawled and the bottom appears to be suitable for concentrations of hard corals and rockfish abundance. Some groundfish longline and pot fishing likely occurs within these sites but the extent of this is not known at this time. The slope area of the GOA was determined to have the highest fishing intensity of any bottom feature in the GOA. It is unknown how fishing as it occurs off Alaska affects the productivity of FMP species. Designating a GOA slope area that is relatively unfished that is thought to have an abundance of adult rockfish would allow experimentation regarding these issues.

[X] The **RARITY** of the habitat type.
The EFH EIS analysis concluded that GOA slope is a relatively heavily fished feature in the GOA. The proposed HAPC site is thus relatively rare as it is relatively unfished by trawls despite the fact that data suggest that it has concentrations of rockfish. Additionally, the trawl industry believes this area has relatively rocky and high- relief bathymetry. Some scientists believe hard corals can be abundant in areas with these characteristics.

Describe any Proposed Solutions to Achieve These Objectives.
The site should be prioritized for submersible mapping so that appropriate restrictions on bottom trawling can be developed to protect the high-relief hard coral habitat (if any) that may occur within this designated HAPC site. Once the site is mapped to establish habitat type and areas used by rockfish, and once the level of existing fishing and non-fishing effects on the area are observed and categorized, these areas should be zoned to protect coral/rockfish habitat from bottom trawling while preserving fishing opportunities to the extent practical. Protection measures should incorporate experimental designs to increase our understanding of how rockfish use hard coral habitat and other habitats and how fishing affects the productivity of that habitat.

Describe any Proposed Management Measures for the HAPC.
1. Designation of HAPC meeting NPFMC's 2003 priority. 2. Prioritization for submersible mapping and rockfish abundance evaluation. 3. Eventual development of restrictions on bottom trawling to protect high-relief hard coral and rockfish areas within these proposed sites while preserving fishing opportunities to the extent practical. 4. Development of controlled research to learn more about how rockfish and other managed demersal species associate with and use habitat, how fishing affects that use and productivity, how different levels of fishing intensity and gear effects influence productivity of habitats.

Identify any Expected Benefits to Habitat or FMP species.
This site may be important rockfish habitat that may meet the North Pacific Council's HAPC priority. If the steps outlined in this proposal are implemented, we believe that rockfish and other FMP species could benefit with only minimal impacts on groundfish bottom trawlers and communities dependent on trawling.

Identify Fishery, Stakeholders, and/or Communities, which may Benefit from the Proposed HAPC.
Proposed sites may be excellent rockfish habitat that has not received much bottom trawl effort in recent years. If the steps outlined in this proposal (mapping, zoning of trawling within HAPC, research on habitat use and how fishing affects productivity) are implemented, we believe that rockfish and other FMP species could benefit with only small direct impacts on bottom trawl fishermen and communities that depend on trawling.

Support Data or Information Sources
(List data sources, information resource, literature, and any traditional knowledge for the proposal.)
NOAA chart 500; knowledge and information volunteered by trawl captains who target rockfish and deep flatfish in the GOA at stakeholder meetings in 2001/2002 for the development of EFH alternatives; Fritz et al. CPUE study 1998 (NOAA Technical Memorandum NMFS-AFSC-88); rockfish catch data prepared by NMFS for Oceana (2003 FOIA).

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: 1/10/04

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☐ Scallop FMP
☐ BSAI Crab FMP

Name of Proposer: Alaska Draggers Association,
Alaska Groundfish Data Bank, & Groundfish Forum

Affiliation: Trawl associations with member companies that fish the GOA

Address: ADA P.O. Box 9 Kodiak, AK 99615
AGDB P.O. Box 788 Kodiak, AK 99615
GFF 4241 21st Ave West, Suite 200 Seattle, WA 98199

Title of Proposal. Albatross rockfish HAPC in the Central Gulf of Alaska

HAPC Site Location. The proposed HAPC site is on Albatross Bank south of the eight ball pinnacle on the GOA slope. The proposed HAPC site is delineated in light red on NOAA chart 500 in Figure P1-3 and is the middle light red block. This area is identical to one of the proposed closure areas that were delineated in alternative 5a for the Essential Fish Habitat EIS.
(Specific latitude/longitude or geographic reference. Include NOAA Chart number, if known.)

Habitat Type and Species Information. This proposed HAPC was identified by trawl skippers who possess a wealth of experience and knowledge of the bathymetry of the Gulf of Alaska. These captains believe the proposed site is good rockfish habitat. This HAPC site is located on the GOA slope area, one of the GOA bottom type features considered important for rockfish. Bottom trawling has occurred in this area but not extensively, at least since domestic fishing commenced. GOA Figure P2-2 data suggest that this area has high abundance or rockfish according to historical Fritz et al. CPUE study where the highest 25% of rockfish CPUEs are plotted for trawl and longline rockfish hauls. Additionally, rockfish catch data prepared by NMFS for Oceana's Freedom of Information Act request also suggest that the proposed HAPC site has an abundance of rockfish to the extent that it has been fished in the 1990-2002 period (GOA Figure P2-3). We know of no information to demonstrate whether high-relief hard coral stands exist at this proposed site, however, the relatively rocky and rough bottom found at this site makes it a relatively good candidate for finding hard corals and rockfish habitat.

Summary Statement of the Proposal.
The proposed HAPC site is an area on Albatross Bank south of the eight ball pinnacle on the GOA slope as delineated in Figure P1-3. The HAPC designation is proposed based on information from trawl captains that the area is likely rockfish habitat and relatively unfished. A set of steps is proposed to map the area and develop restrictions on bottom trawling while preserving fishing opportunities in this area once the geographic extent of rockfish habitat and the presence of high-relief hard coral stands has been established. Any fishing restrictions should incorporate an experimental design to increase our understanding of how rockfish use habitat and how fishing affects their productivity.

Statement of Purpose and Need.
The purpose of this proposal is to address the NPFMC's HAPC priority. The Council is interested in proposals identifying habitat for rockfish and high relief hard coral stands in areas that are relatively unfished. Trawlers with extensive experience in the GOA believe this area meets the NPFMC's HAPC priority. The purpose of the proposal is to designate the area as HAPC, prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist, and evaluate the benthic features in this section of the GOA slope. Appropriate fishing restrictions on bottom trawling to protect rockfish habitat within the area while allowing fishing to continue where appropriate, and lastly to design and conduct

applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat.

Objectives of the Proposal.
The objective of this proposal is to address the NPFMC's HAPC priority. The proposed HAPC site is an area on Albatross Bank south of the eight ball pinnacle on the GOA slope. The area fits the NPFMC's 2003-04 HAPC priority based on available data because it is relatively unfished and based on trawl catches of rockfish before 1990 and in recent years, the area appears to have an abundance of rockfish and good habitat for rockfish and other demersal managed species (GOA Figures P2-2 and P2-3). Once the sites are mapped to establish where the concentrations of hard corals and rockfish occur within sites and the level of existing fishing and non-fishing effects within these sites, the sites would lend itself well to zoning for fishing and control areas to evaluate the effects of fishing as well as habitat associations of rockfish with fished and un-fished habitat.

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.

[X] The extent to which the habitat is **SENSITIVE** to human-induced degradation.
Research has shown that fishing can modify bottom substrate but the implications of such modifications as they occur from the fishing gears used in Alaska and the low intensity of fishing effort as it occurs off Alaska are not known.

[X] Whether, and to what extent, the activity **STRESSES** the habitat type.
The site in this proposal meets the 2003 HAPC priority. It is largely untrawled and the bottom appears to be suitable for concentrations of hard corals and rockfish abundance. Some groundfish longline and pot fishing likely occurs within these sites but the extent of this is not known at this time. The slope area of the GOA was determined to have the highest fishing intensity of any bottom feature in the GOA. It is unknown how fishing as it occurs off Alaska affects the productivity of FMP species. Designating a GOA slope area that is relatively unfished that is thought to have an abundance of adult rockfish would allow experimentation regarding these issues.

[X] The **RARITY** of the habitat type.
The EFH EIS analysis concluded that GOA slope is a relatively heavily fished feature in the GOA. The proposed HAPC site is thus relatively rare as it is relatively unfished by trawls despite the fact that data suggest that it has concentrations of rockfish. Additionally, the trawl industry believes this area has relatively rocky and high- relief bathymetry. Some scientists believe hard corals can be abundant in areas with these characteristics.

Describe any Proposed Solutions to Achieve These Objectives.
The site should be prioritized for submersible mapping so that appropriate restrictions on bottom trawling can be developed to protect the high-relief hard coral habitat (if any) that may occur within this designated HAPC site. Once the site is mapped to establish habitat type and areas used by rockfish, and once the level of existing fishing and non-fishing effects on the area are observed and categorized, these areas should be zoned to protect coral/rockfish habitat from bottom trawling while preserving fishing opportunities to the extent practical. Protection measures should incorporate experimental designs to increase our understanding of how rockfish use hard coral habitat and other habitats and how fishing affects the productivity of that habitat.

Describe any Proposed Management Measures for the HAPC.
1. Designation of HAPC meeting NPFMC's 2003 priority. 2. Prioritization for submersible mapping and rockfish abundance evaluation. 3. Eventual development of restrictions on bottom trawling to protect high-relief hard coral and rockfish areas within these proposed sites while preserving fishing opportunities to the extent practical. 4. Development of controlled research to learn more about how rockfish and other managed demersal species associate with and use habitat, how fishing affects that use and productivity, how different levels of fishing intensity and gear effects influence productivity of habitats.

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This site may be important rockfish habitat that may meet the North Pacific Council's HAPC priority. If the steps outlined in this proposal are implemented, we believe that rockfish and other FMP species could benefit with only minimal impacts on groundfish bottom trawlers and communities dependent on trawling.

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Title of Proposal. Middleton Island rockfish HAPC in the West Yakutat regulatory area of the Gulf of Alaska

HAPC Site Location. The proposed HAPC site is south of Middleton Island. The proposed HAPC site is delineated in light red on NOAA chart 500 in Figure P1-3 and is the most Easterly red block. This area is identical to one of the proposed closure areas that were delineated in alternative 5a for the Essential Fish Habitat EIS.

Habitat Type and Species Information. This proposed HAPC was identified by trawl skippers who possess a wealth of experience and knowledge of the bathymetry of the Gulf of Alaska. These captains believe the proposed site is good rockfish habitat. This HAPC site is located on the GOA slope area, one of the GOA bottom type features considered important for rockfish. Bottom trawling has occurred in this area but not extensively, at least since domestic fishing commenced. GOA Figure P3-2 data suggest that this area has high abundance or rockfish according to historical Fritz et al. CPUE study where the highest 25% of rockfish CPUEs are plotted for trawl and longline rockfish hauls. Additionally, rockfish catch data prepared by NMFS for Oceana's Freedom of Information Act request also suggest that the proposed HAPC site has an abundance of rockfish to the extent that it has been fished in the 1990-2002 period (GOA Figure P3-3). We know of no information to demonstrate whether high-relief hard coral stands exist at this proposed site, however, the relatively rocky and rough bottom found at this site makes it a relatively good candidate for finding hard corals and rockfish habitat.

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An area is south of Middleton Island as delineated in Figure P1-3. The HAPC designation is proposed based on information from trawl captains that the area is likely rockfish habitat and relatively unfished. A set of steps is proposed to map the area and develop restrictions on bottom trawling while preserving fishing opportunities in this area once the geographic extent of rockfish habitat and the presence of high-relief hard coral stands has been established. Any fishing restrictions should incorporate an experimental design to increase our understanding of how rockfish use habitat and how fishing affects their productivity.

Statement of Purpose and Need.
The purpose of this proposal is to address the NPFMC's HAPC priority. The Council is interested in proposals identifying habitat for rockfish and high relief hard coral stands in areas that are relatively unfished. Trawlers with extensive experience in the GOA believe this area meets the NPFMC's HAPC priority. The purpose of the proposal is to designate the area as HAPC, prioritize submersible mapping efforts to identify whether high-relief hard coral stands exist, and evaluate the benthic features in this section of the GOA slope. Appropriate fishing restrictions on bottom trawling to protect rockfish habitat within the area while allowing fishing to continue where appropriate, and lastly to design and conduct

applied research to increase our understanding of how rockfish use habitat and how fishing affects the productivity of that habitat.

Objectives of the Proposal.
The objective of this proposal is to address the NPFMC's HAPC priority. The proposed HAPC site is an area is south of Middleton Island. The area fits the NPFMC's 2003-04 HAPC priority based on available data because it is relatively unfished and based on trawl catches of rockfish before 1990 and in recent years, the area appears to have an abundance of rockfish and good habitat for rockfish and other demersal managed species (GOA Figures P3-2 and P3-3). Once the sites are mapped to establish where the concentrations of hard corals and rockfish occur within sites and the level of existing fishing and non-fishing effects within these sites, the sites would lend itself well to zoning for fishing and control areas to evaluate the effects of fishing as well as habitat associations of rockfish with fished and un-fished habitat.

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.

[X] The extent to which the habitat is **SENSITIVE** to human-induced degradation.
Research has shown that fishing can modify bottom substrate but the implications of such modifications as they occur from the fishing gears used in Alaska and the low intensity of fishing effort as it occurs off Alaska are not known.

[X] Whether, and to what extent, the activity **STRESSES** the habitat type.
The site in this proposal meets the 2003 HAPC priority. It is largely untrawled and the bottom appears to be suitable for concentrations of hard corals and rockfish abundance. Some groundfish longline and pot fishing likely occurs within these sites but the extent of this is not known at this time. The slope area of the GOA was determined to have the highest fishing intensity of any bottom feature in the GOA. It is unknown how fishing as it occurs off Alaska affects the productivity of FMP species. Designating a GOA slope area that is relatively unfished that is thought to have an abundance of adult rockfish would allow experimentation regarding these issues.

[X] The **RARITY** of the habitat type.
The EFH EIS analysis concluded that GOA slope is a relatively heavily fished feature in the GOA. The proposed HAPC site is thus relatively rare as it is relatively unfished by trawls despite the fact that data suggest that it has concentrations of rockfish. Additionally, the trawl industry believes this area has relatively rocky and high- relief bathymetry. Some scientists believe hard corals can be abundant in areas with these characteristics.

Describe any Proposed Solutions to Achieve These Objectives.
The site should be prioritized for submersible mapping so that appropriate restrictions on bottom trawling can be developed to protect the high-relief hard coral habitat (if any) that may occur within this designated HAPC site. Once the site is mapped to establish habitat type and areas used by rockfish, and once the level of existing fishing and non-fishing effects on the area are observed and categorized, these areas should be zoned to protect coral/rockfish habitat from bottom trawling while preserving fishing opportunities to the extent practical. Protection measures should incorporate experimental designs to increase our understanding of how rockfish use hard coral habitat and other habitats and how fishing affects the productivity of that habitat.

Describe any Proposed Management Measures for the HAPC.
1. Designation of HAPC meeting NPFMC's 2003 priority. 2. Prioritization for submersible mapping and rockfish abundance evaluation. 3. Eventual development of restrictions on bottom trawling to protect high-relief hard coral and rockfish areas within these proposed sites while preserving fishing opportunities to the extent practical. 4. Development of controlled research to learn more about how rockfish and other managed demersal species associate with and use habitat, how fishing affects that use and productivity, how different levels of fishing intensity and gear effects influence productivity of habitats.

Identify any Expected Benefits to Habitat or FMP species.
This site may be important rockfish habitat that may meet the North Pacific Council's HAPC priority. If the steps outlined in this proposal are implemented, we believe that rockfish and other FMP species could benefit with only minimal impacts on groundfish bottom trawlers and communities dependent on trawling.

Identify Fishery, Stakeholders, and/or Communities, which may Benefit from the Proposed HAPC.
Proposed sites may be excellent rockfish habitat that has not received much trawl effort in recent years. If the steps outlined in this proposal (mapping, zoning of trawling within HAPC, research on habitat use and how fishing affects productivity) are implemented, we believe that rockfish and other FMP species could benefit with only small direct impacts on bottom trawl fishermen and communities that depend on trawling.

Support Data or Information Sources
(List data sources, information resource, literature, and any traditional knowledge for the proposal.)
NOAA chart 500; knowledge and information volunteered by trawl captains who target rockfish and deep flatfish in the GOA at stakeholder meetings in 2001/2002 for the development of EFH alternatives; Fritz et al. CPUE study 1998 (NOAA Technical Memorandum NMFS-AFSC-88); rockfish catch data prepared by NMFS for Oceana (2003 FOIA).

Figure P1-P3: Proposed GOA HAPC sites displayed on NOAA chart 500

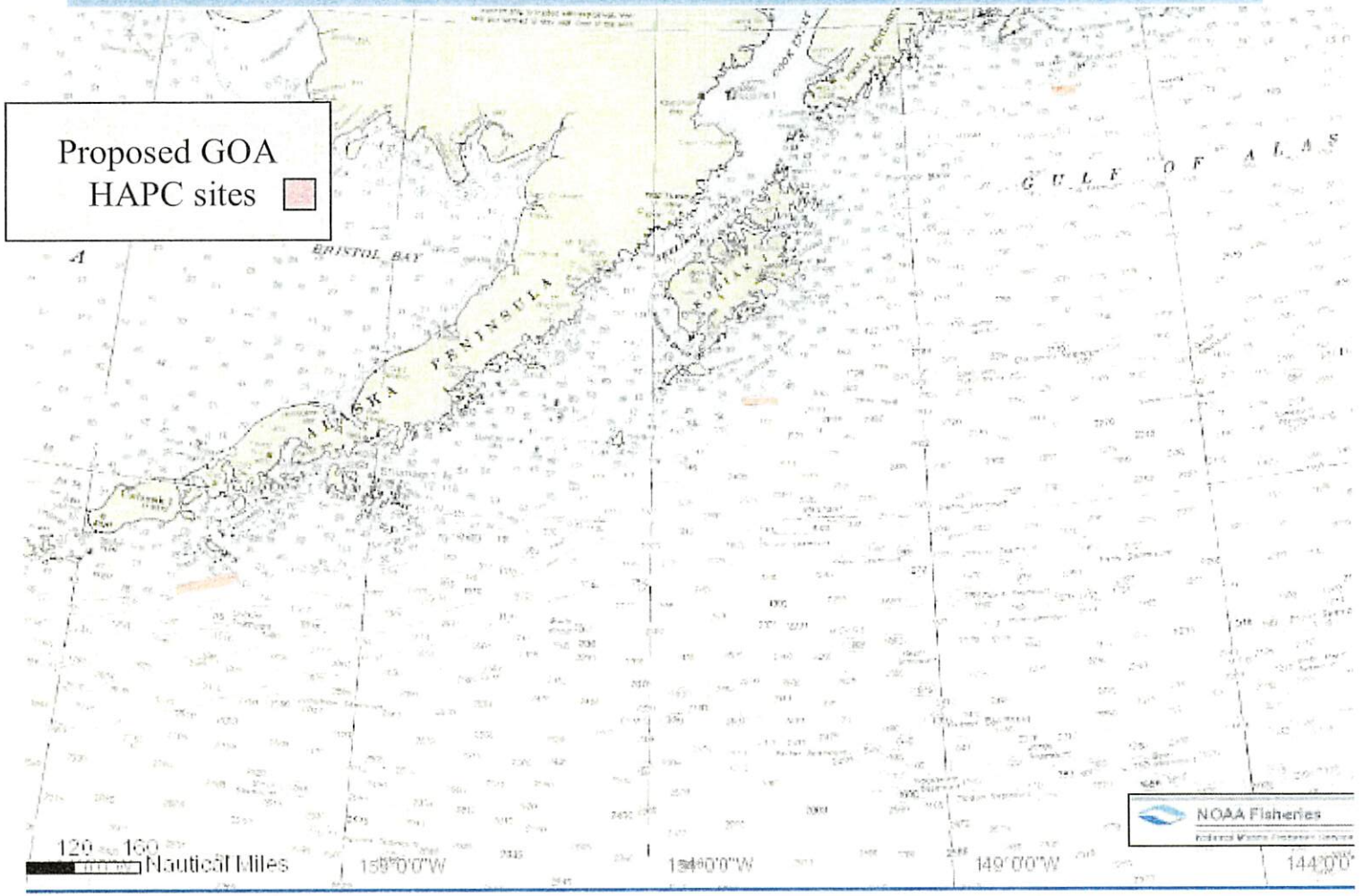


Figure GOA P1-2 Highest quartile rockfish CPUE data from Fritz et al. CPUE study for Sanak Island HAPC site

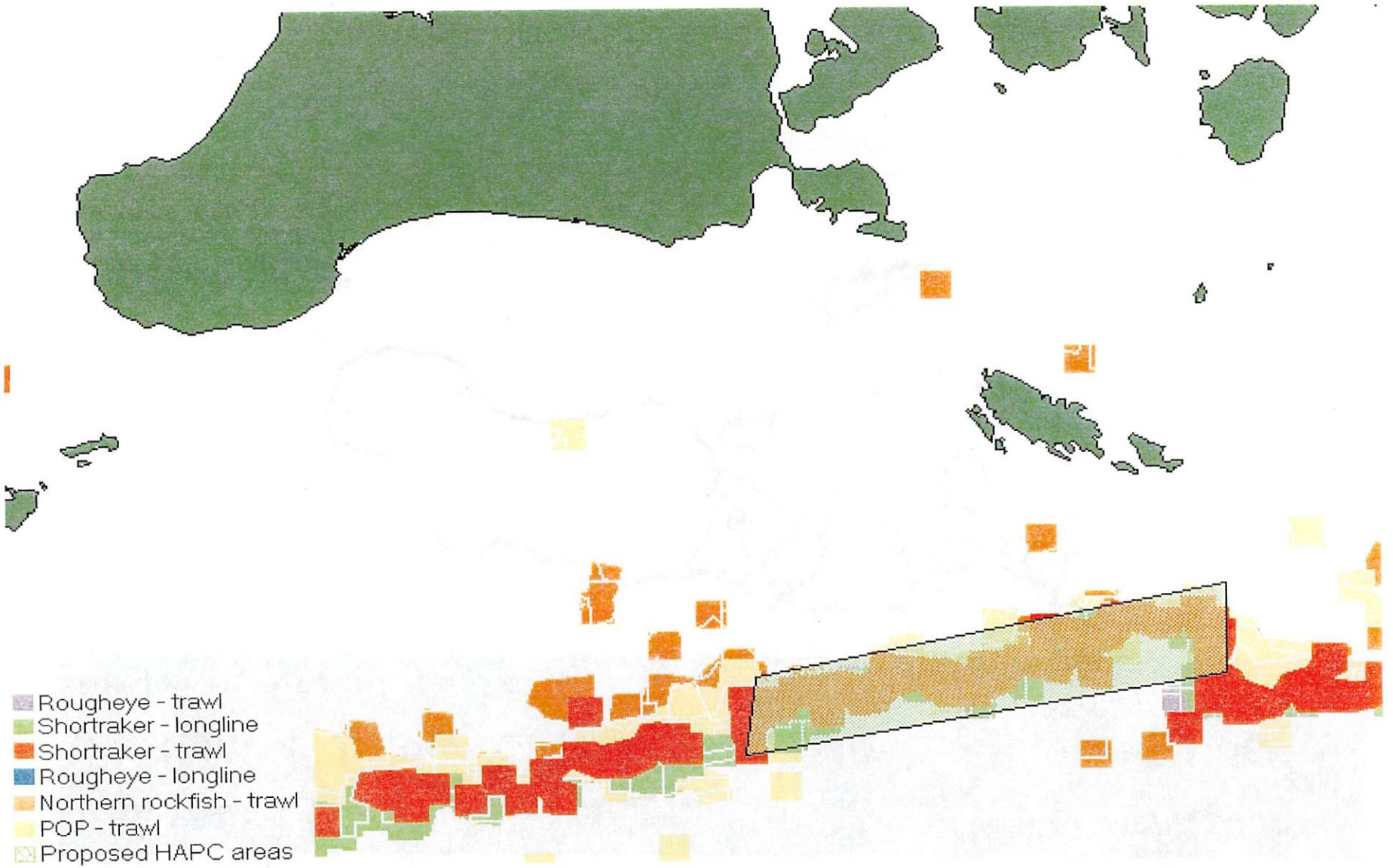


Figure P1-3: Rockfish catch rates for Sanak Island HAPC site (annual average 1990-2002 for 10x 10 kilometer blocks) based on Oceana's FOIA request data

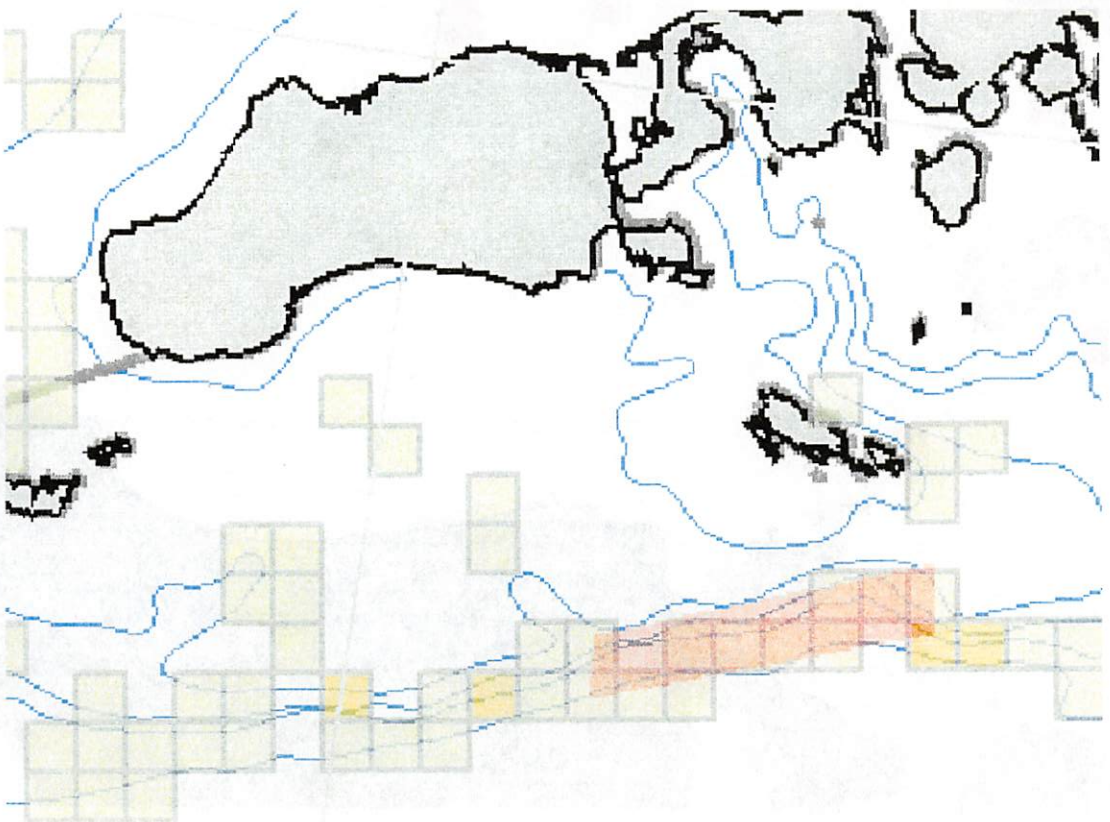


Figure GOA P2-2 Highest quartile rockfish CPUE data from Fritz et al. CPUE study for Albatross HAPC site

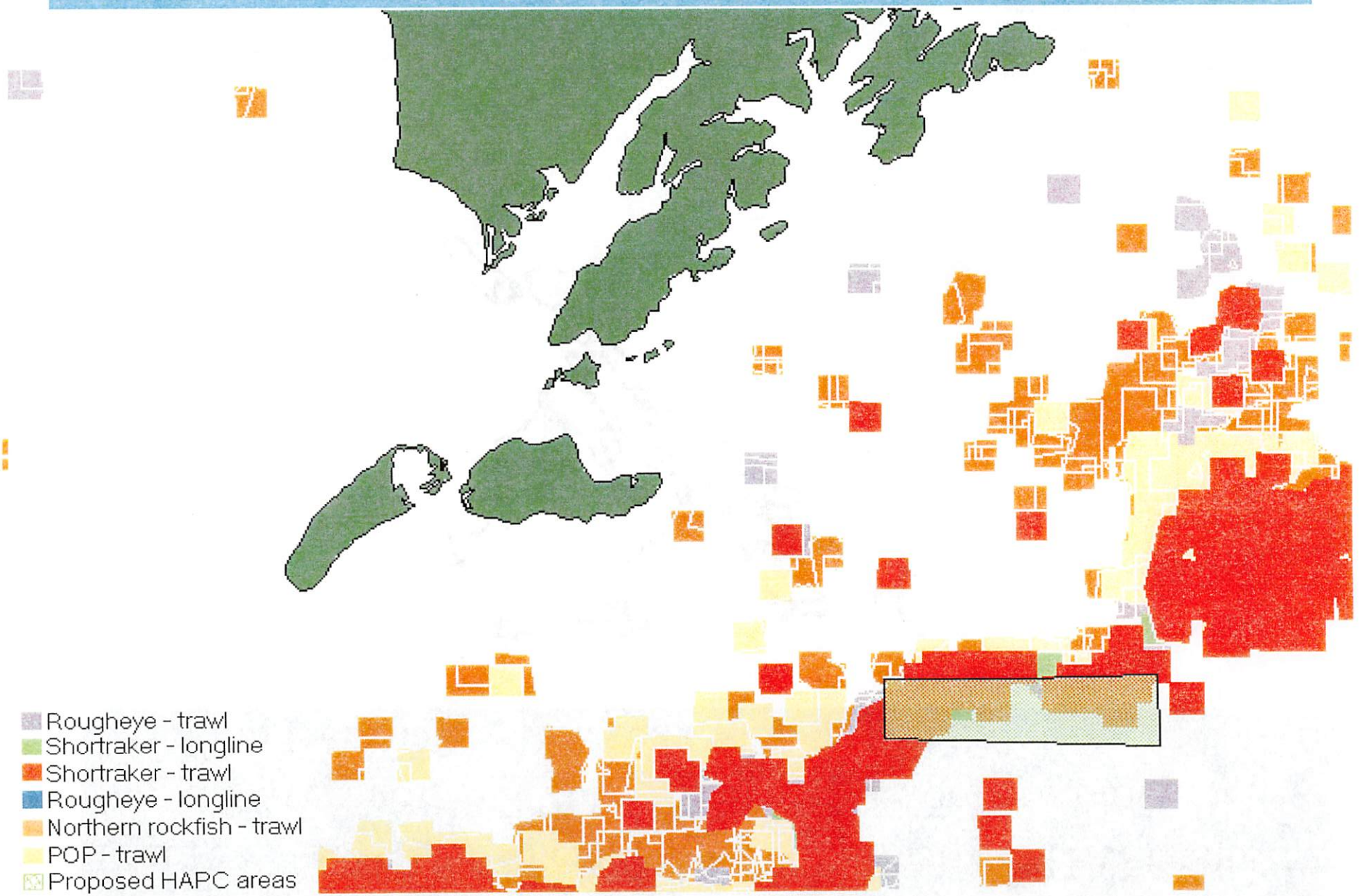


Figure P2-3: Rockfish catch rates for Albatross HAPC site (annual average 1990-2002 for 10x 10 kilometer blocks) based on Oceana's FOIA request data

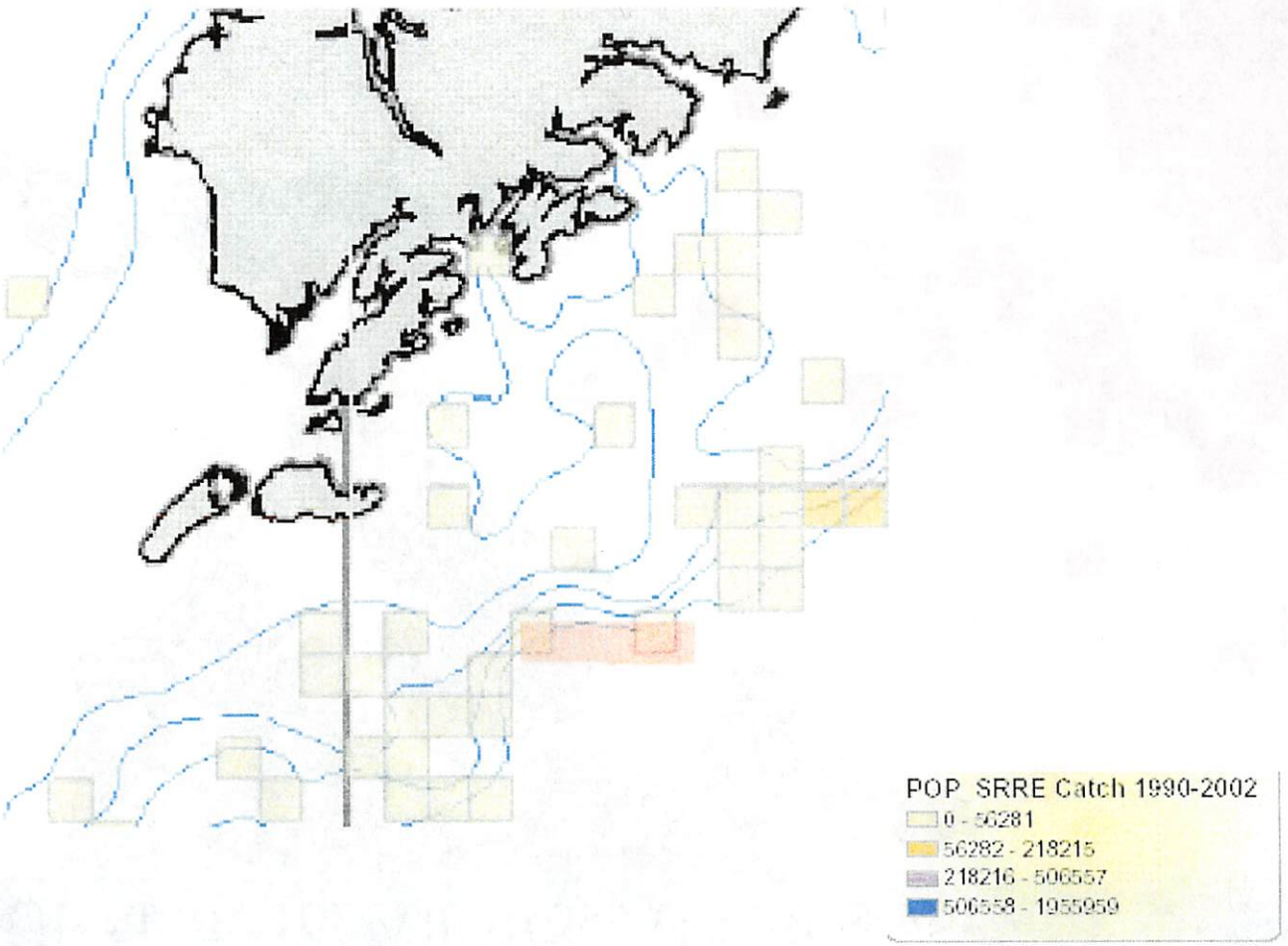


Figure GOA P3-2 Highest quartile rockfish CPUE data from Fritz et al. CPUE study for Middleton Island HAPC site

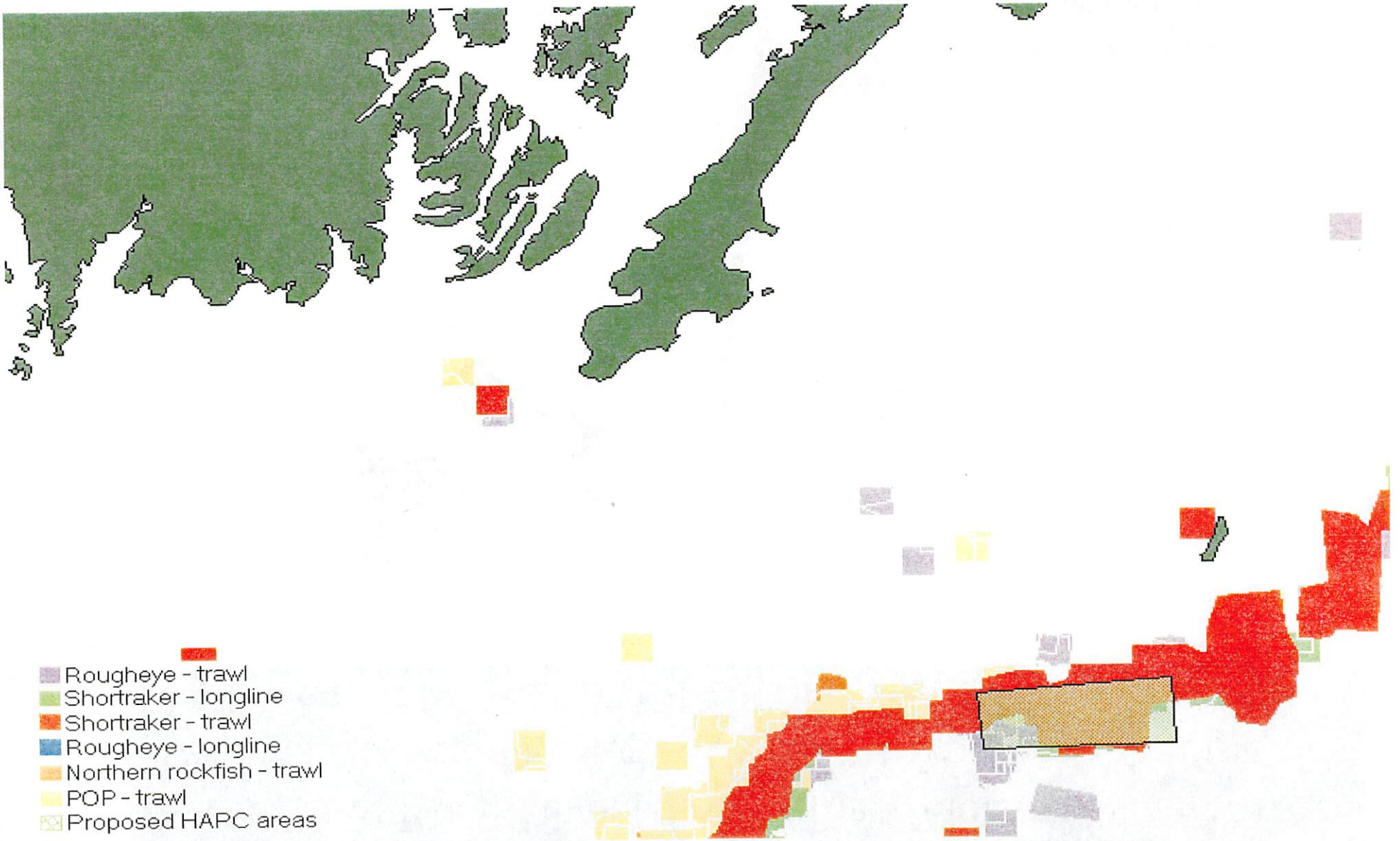
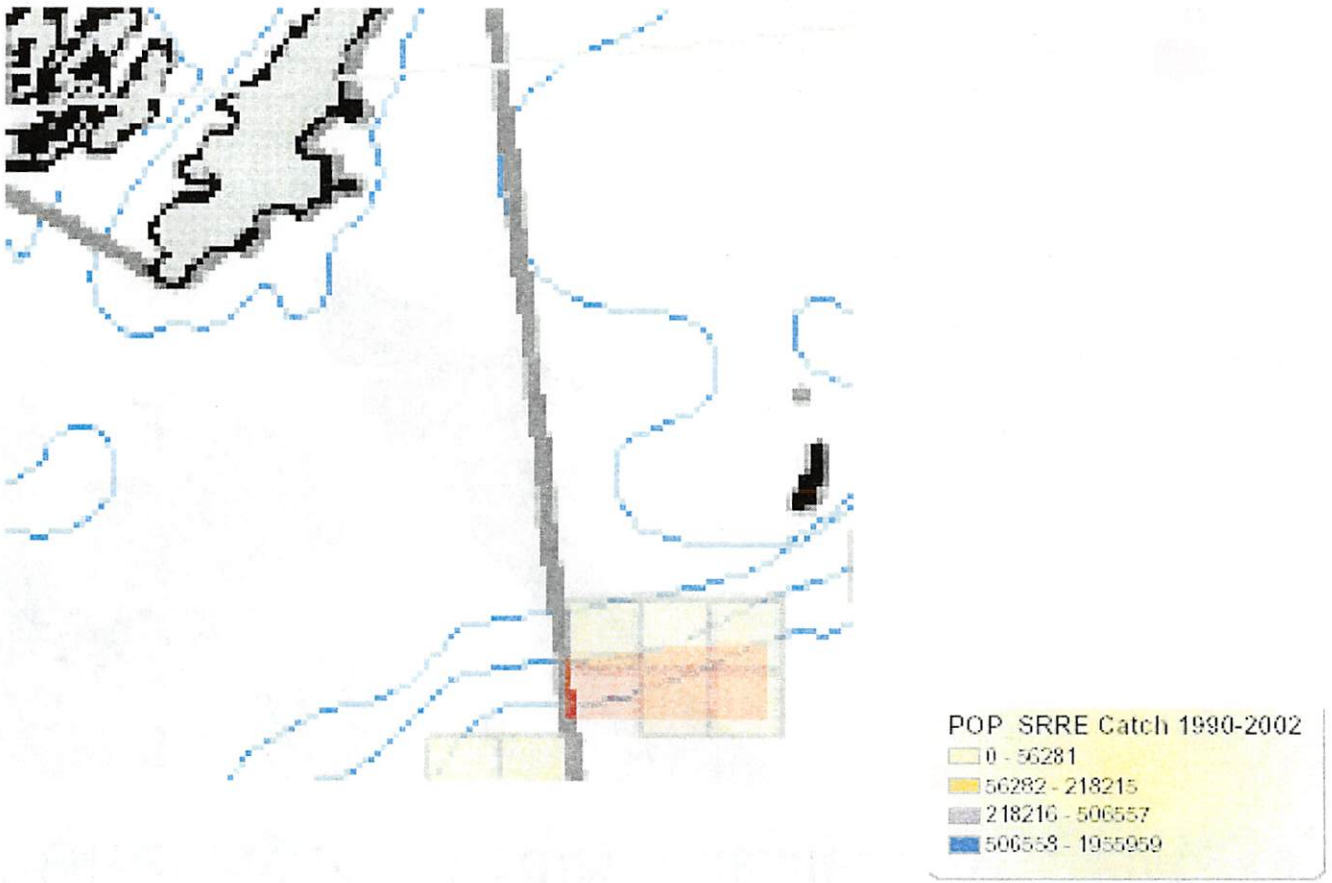


Figure P3-3: Rockfish catch rates for Middleton Island HAPC site (annual average 1990-2002 for 10x 10 kilometer blocks) based on Oceana's FOIA request data



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

January 9, 2004

Stephanie Madsen, Chair
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, Alaska 99501-2252

Dear Ms. Madsen:

The National Marine Fisheries Service (NOAA Fisheries) offers four Habitat Area of Particular Concern (HAPC) proposals for the Council's consideration in response to the recent call for proposals. Three of the proposals address the priorities articulated by the Council: named seamounts in the Economic Exclusive Zone (EEZ) and largely undisturbed, high relief coral areas that provide habitat for rockfish and other managed species. The fourth proposal concerns an unusual pinnacle feature in the Gulf of Alaska. Specifically, the enclosed proposals include:

- Sixteen named seamounts in the EEZ;
- Six coral garden areas in the Aleutian Islands;
- Four high density *Primnoa* coral areas in the Gulf of Alaska; and
- The "Eight Fathom Pinnacle" in the Gulf of Alaska.

These proposals were developed by a team comprised of staff from the NOAA Fisheries Alaska Regional Office and Alaska Fisheries Science Center as well as a representative from your staff. We limited our proposals to relatively unique areas where physical observations have documented unusual habitat features and/or especially high densities of sensitive marine organisms that appear to provide very high quality habitat for managed species. The proposals do not fully account for socioeconomic impacts or enforceability issues. These issues, along with other environmental consequences and management implications, would need to be analyzed in detail if the Council chooses to examine our proposals for possible implementation.

We look forward to working with the Council to evaluate all of the HAPC proposals you receive and to determine what management measures may be appropriate to conserve especially valuable and/or vulnerable habitats. Please contact Jon Kurland, Assistant Regional Administrator for Habitat Conservation, at (907) 586-7638 if you have any questions regarding our proposals.

Sincerely,

James W. Balsiger
Administrator, Alaska Region

Enclosures (4)

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

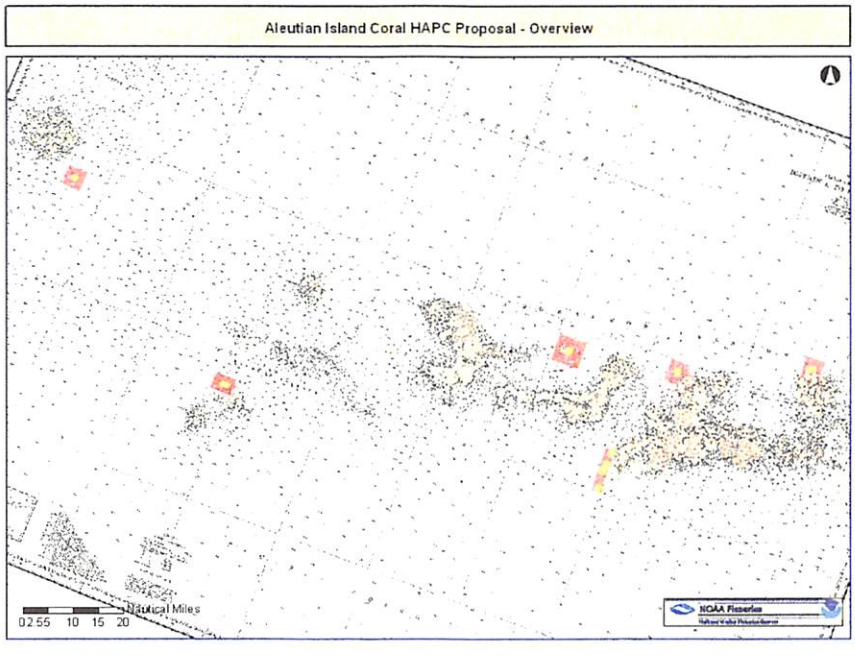
Name of Proposer: NOAA Fisheries
P.O. Box 21668
Juneau, Alaska 99802

Please check applicable box (es):
- ☐ GOA Groundfish FMP
- ☒ BSAI Groundfish FMP
- ☐ Scallop FMP
- ☒ BSAI Crab FMP
- ☐ Salmon FMP

Title of Proposal:
Aleutian Island Coral Gardens

Summary Statement of the Proposal.
(*Provide a brief paragraph concisely describing the HAPC.*)
In 2002, NMFS/AFSC scientists discovered unique habitat in the central Aleutian Islands (AI) 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 and 365 m and can be distinguished from other coral habitat in that the seafloor is completely covered (100%) by sedentary invertebrates including hydrocorals, gorgonian corals, alcyonacean corals, and sponges (predominantly demosponges). 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. This HAPC proposal recommends 6 areas of unique coral garden habitat in the AI for consideration. Each area warrants consideration as an HAPC based on the specific characteristics of each site. The proposal suggests management measures to lessen impacts to coral gardens within the HAPC area.

HAPC Site Location.
(*Specific latitude/longitude or geographic reference. Include NOAA Chart number, if known.)*
Six HAPC Proposal Areas in the Central Aleutian Islands. (*Note:* Attached to the end of the proposal are six AI Coral Garden HAPC areas.)



HAPC Site	Latitude	Longitude	NOAA Chart Number
Adak Canyon	51.6500° N 51.6500° N 51.5000° N 51.5000° N	177.0500° W 177.0000° W 177.0000° W 177.0500° W	16471
Bobrof Island	51.9600° N 51.9600° N 51.8600° N 51.8600° N	177.4900° W 177.3300° W 177.3300° W 177.4900° W	16467
Cape Moffet	51.9300° N 51.9300° N 51.9700° N 52.0000° N 52.0000° N	176.8800° W 176.8100° W 176.7800° W 176.7800° W 176.8800° W	16767
Great Sitkin	52.1600° N 52.1600° N 52.1100° N 52.0800° N	176.2100° W 176.1000° W 176.1000° W 176.2100° W	16741
Semisopochnoi Island	51.8900° N 51.8900° N 51.8100° N 51.8100° N	179.8900° W 179.7800° W 179.7800° W 179.8900° W	16460
Ulak Island	51.3700° N 51.4300° N 51.3700° N 51.4300° N	178.9800° W 179.1000° W 179.1000° W 178.9800° W	16460

Habitat Type and Species Information.
(Identify of any habitat type(s) and FMP species of the HAPC.)

Habitat types for each proposed HAPC site are described in the table below.

HAPC site	General habitat features
Adak Canyon	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 about 150m and 300m in depth.
Bobrof Island	Area contains series of small coral gardens on the island arc slope between 150-250 m depth.
Cape Moffet	Area contains series of small coral gardens on the island arc slope between 150-250 m depth.
Great Sitkin	Area contains series of small coral gardens on the island arc slope between 300-365 m depth.
Semisopochnoi Island	Submarine volcano, Amchixtam Chaxsxii, whose summit is at ~115 m MLLW, with an overall height of 580 m. 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. AFSC 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.
Ulak Island	Area contains series of small coral gardens on the island arc slope between 150-250 m depth.

The following FMP species were observed *in situ* at each proposed HAPC location.

Common name	Scientific name	Adak Canyon	Bobrof Island	Cape Moffet	Great Sitkin	Semisopochnoi Island	Ulak Island
Pacific cod, adults	*Gadus macrocephalus*	✓	✓	✓		✓	✓
Atka mackerel, adults	*Pleurogrammus monopterygius*	✓	✓	✓		✓	✓
Rougheye rockfish, adults	*Sebastes aleutianus*	✓	✓	✓	✓	✓	✓
Rougheye rockfish, adult gravid females	*Sebastes aleutianus*	✓	✓	✓		✓	✓
Rougheye rockfish, juvenile	*Sebastes aleutianus*				✓		
Northern rockfish, adults	*Sebastes polyspinis*	✓	✓	✓		✓	✓
Northern rockfish, juveniles	*Sebastes polyspinis*	✓	✓	✓		✓	✓
Sharpchin rockfish, juveniles	*Sebastes zacentrus*	✓	✓	✓		✓	✓
Pacific ocean perch, adults	*Sebastes alutus*	✓	✓	✓	✓	✓	✓
Pacific Ocean Perch, juveniles	*Sebastes alutus*	✓	✓	✓		✓	✓
Dusky rockfish, adults	*Sebastes ciliatus*	✓	✓	✓		✓	✓
Shortraker rockfish, adults	*Sebastes borealis*	✓	✓	✓	✓	✓	✓
Shortraker rockfish, juveniles	*Sebastes borealis*				✓		
Shortspine thornyhead, adults	*Sebastolobus alascanus*	✓	✓	✓	✓	✓	✓
Sablefish, adults	*Anoplopoma fimbria*				✓		
Golden king crab, adults	*Lithodes aequispina*	✓	✓	✓		✓	✓
King crab	*(Unidentified)*				✓		
Skate	*(Unidentified)*	✓	✓	✓	✓	✓	✓
Sculpin	*(Unidentified)*	✓	✓	✓	✓	✓	✓
Squid	*(Unidentified)*	✓	✓	✓	✓	✓	✓

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.**
Detailed ecological studies have yet to be conducted, but coral gardens likely serve many important ecological functions. Several FMP species, at a variety of life stages have been observed in coral gardens. Gardens likely provide important structural habitat for many of these species, including refuge for juvenile life stages of several species. The presence of gravid females may indicate that the habitat may provide important breeding or spawning habitat for at least one FMP species. Additionally, these gardens provide an elevated feeding platform for many sessile invertebrates and may provide a source of prey for species of fish that aggregate there. Furthermore, coral gardens may play an important role in meso-scale nutrient cycling due to the presence of large numbers of filter feeding corals and sponges.

☑ **The extent to which the habitat is SENSITIVE to human-induced degradation.**
Many of the species that comprise garden habitat are fragile, long-lived, and slow-growing. Some species are very susceptible to damage from anything that contacts them and will likely require long periods of time to recover from disturbance. The proposed HAPCs would protect known coral garden habitats from disturbance to ensure their continued availability as refuge habitat for rockfish and other species.

☑ **Whether, and to what extent, the activity STRESSES the habitat type.**
Garden habitat is generally located on high relief bedrock and coarse talus in areas where mobile bottom-contact fishing gear (e.g. otter trawls) is seldom used. There was evidence, however, of disturbance consistent with that caused by longlining and pot longlining. Some derelict longline gear was observed in garden habitat.

☑ **The RARITY of the habitat type. (*Mandatory requirement*).**
Garden habitat is uncommon and may be unique to the Aleutian Islands. Prior to its discovery during the 2002 Aleutian submersible surveys coral gardens had not been documented during hundreds of submersible dives conducted by AFSC scientists in Alaskan waters. It has not previously been reported in the North Pacific Ocean and was observed at only 9 of 40 dive locations in the central Aleutian Islands during the 2002 surveys. Coral gardens may be a unique habitat for high latitudes.

Statement of Purpose and Need.
(Provide a specific purpose as why the HAPC needs to be identified.)
Coral gardens are a new discovery to the North Pacific Ocean and may be a unique habitat in high latitude marine ecosystems. Many of the species that comprise coral garden habitat are fragile, long-lived, and slow-growing. Some species are very susceptible to damage from anything that contacts them and will likely require long periods of time to recover from disturbance.

Objectives of the Proposal.
(List objectives specific to the identification of the HAPC.)
The objective of this proposal is to conserve the integrity of coral gardens, protect them from incidental disturbance caused by bottom contact fishing gear, and to provide sanctuary to FMP species documented in these areas.

Describe any Proposed Solutions to Achieve These Objectives.
(How might the problem be solved? Include concepts of methods of measuring progress towards those objectives.)
Protection of these six sites should include restrictions for unnatural sources of disturbance (such as bottom tending fishing gear and anchorage). Currently, these sites have been minimally affected by fishing disturbance. Protection of these coral gardens from disturbance by bottom contact gear will provide sanctuary for the corals, invertebrates, and FMP species that use that habitat. Archived submersible video documentation will allow scientists to monitor the establishment of new colonies and recovery of damaged habitat, and document changes in the abundance of FMP species over time.

Describe any Proposed Management Measures for the HAPC.
(Include specific objectives, if appropriate.)
All Council-managed fishing would be prohibited within the proposed HAPCs. The NOAA Fisheries Office of Law Enforcement notes that management measures will be much easier to enforce if all fishing is prohibited in the proposed HAPCs. Other potential management options might include requiring VMS on all vessels, or prohibiting vessels from carrying bottom contact gear in these areas.

The spatial configuration and size of the proposed buffer area at each site is based on the need to protect documented, coral garden areas from stray fishing gear. Note that *in situ* observations were not made throughout the entire proposed buffer area to confirm the overall extent of the gardens. However, adjacent areas are likely to contain similar coral garden habitats given similarity in depth strata, substrate type, and current regime in those areas.

HAPC Site	Latitude	Longitude	NOAA Chart Number	Area*
Adak Canyon	51.6500° N 51.6500° N 51.5000° N 51.5000° N	177.0500° W 177.0000° W 177.0000° W 177.0500° W	16471	9 nm by 2 nm (18 nm^2)
Bobrof Island	51.9600° N 51.9600° N 51.8600° N 51.8600° N	177.4900° W 177.3300° W 177.3300° W 177.4900° W	16467	5.5 nm by 5.5 nm (30.2 nm^2)
Cape Moffet	51.9300° N 51.9300° N 51.9700° N 52.0000° N 52.0000° N	176.8800° W 176.8100° W 176.7800° W 176.7800° W 176.8800° W	16767	4.2 nm by 3.8 nm (16.0 nm^2)
Great Sitkin	52.1600° N 52.1600° N 52.1100° N 52.0800° N	176.2100° W 176.1000° W 176.1000° W 176.2100° W	16741	4.0 nm by 4.0 nm (16 nm^2)
Semisopochnoi Island	51.8900° N 51.8900° N 51.8100° N 51.8100° N	179.8900° W 179.7800° W 179.7800° W 179.8900° W	16460	4.0 nm by 4.0 nm (16.0 nm^2)
Ulak Island	51.3700° N 51.4300° N 51.3700° N 51.4300° N	178.9800° W 179.1000° W 179.1000° W 178.9800° W	16460	4.5 nm by 3.4 nm (15.3 nm^2)

*Details of HAPC Areas:
- Area will ensure protection of observed coral gardens and possibly protect extensions of these gardens not observed.
- Areas will also protect the habitat from stray fishing gear and siltation caused by gear coming into contact with soft sediments in adjacent areas.
- AFSC scientists suspect that the entire island arc slope of Bobrof Island is rich in corals and sponges given their *in situ* observations and the steep bathymetry.
- The larger Adak Canyon area is necessary to encompass four submersible dives with observed garden habitat.

The proposed HAPC buffer areas overlap with Steller sea lion critical habitat (listed rookeries and haulouts), and therefore are subject to existing restrictions on fishing. The proposed HAPC areas are based on the presence of unique coral garden habitat, and not because they are already subject to existing fishery closures.

The proposed HAPC's include habitats in state waters. For these proposed HAPC's to be effective, any new management measures developed by the Council would need to be coordinated with the Board of Fisheries to develop corresponding state regulations.

The proposal identifies the HAPC's as rectangular areas to facilitate management and enforcement. Circles or other shapes are possible for the buffer areas around the identified habitat features, but NOAA Fisheries Office of Law Enforcement recommended using rectilinear areas to facilitate enforcement.

Identify any Expected Benefits to Habitat or FMP species.
(Include specific information regarding a species life history stage, if known.)
These proposed areas would be protected from existing or potential degradation from bottom fishing activities. These thick, living substrate areas are highly diverse in species composition, vulnerable to damage, provide complex habitat features for several FMP species in various life history stages.

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.)

Observer records indicate that a moderate amount of long line and bottom trawl fishing occurs in the immediate area of the proposed closure areas. Additionally, some pot long lining for golden king crab (*Lithodes aequispina*) occurs in the vicinity of a few of the proposed HAPC's. Fisherman presently using these gear types within the proposed HAPC will be displaced from these small areas, but presumably they would benefit in future years by enhanced recruitment of targeted species within the HAPC's.

Support Data or Information Sources
(List data sources, information resource, literature, and any traditional knowledge for the proposal.)

Heifetz, J. 2002. Coral in Alaska: distribution, abundance, and species associations. Hydrobiologia 471: 19-27.

Witherall, D. and C. Coon. 2001. Protecting gorgonian corals from fishing impacts. Pages 117-125 In: J. H. Willison et al. (eds.) 2001. Proceedings of the First International Symposium on Deep-Sea Corals,Ecology Action Centre and Nova Scotia Museum, Halifax, Nova Scotia.

Unpublished Data and Reports in Progress

Stone, R. P. and P. W. Malecha. 2003. Deep-sea coral habitat in the Aleutian Islands of Alaska. In: 2nd International Symposium on Deep-Sea Corals, Abstracts Volume. Erlangen, Germany. p.81.

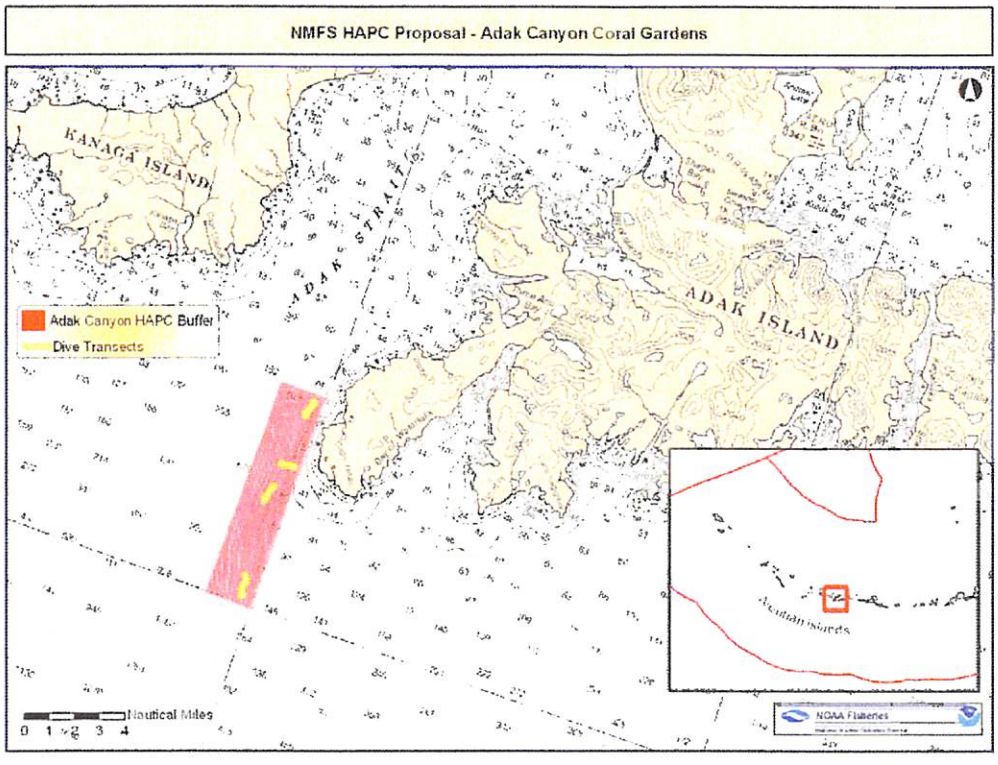
Stone, R. P. In preparation. Depth distribution, fisheries interactions, and habitat of deep-sea corals in the Aleutian Islands of Alaska.

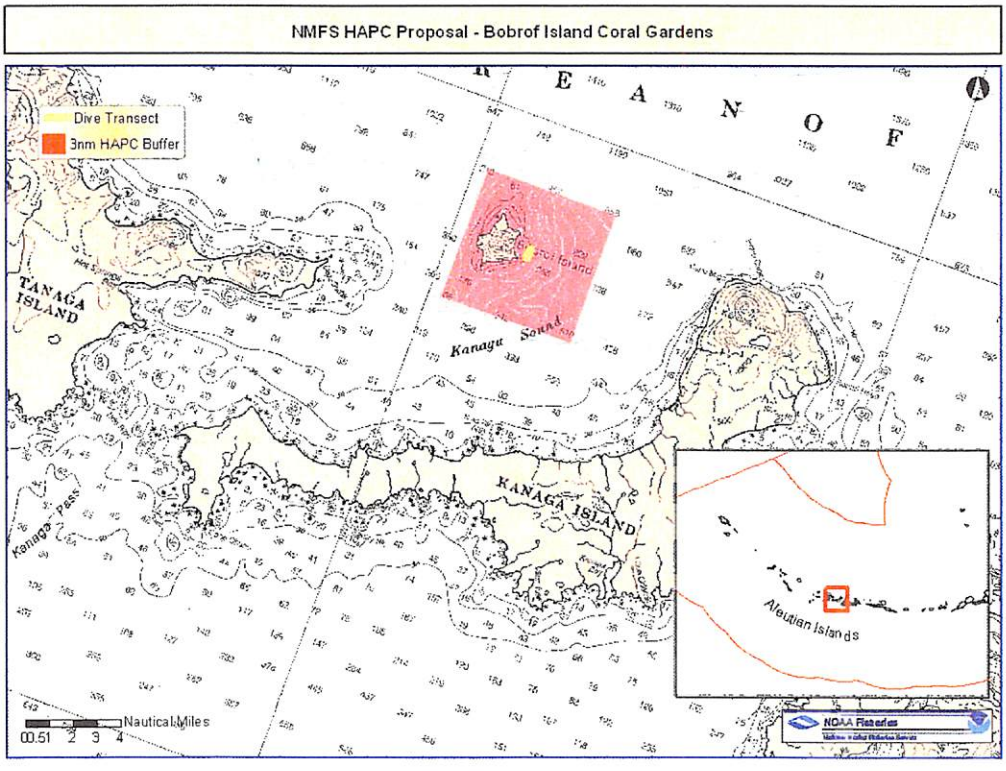
Reuter, Rebecca and Spencer, Paul. 2002 Rockfish Slope Habitat Investigations in the Aleutian Islands. Alaska Fisheries Science Center, Resource Ecology and Fisheries Management, Seattle, Washington. (206) 526-4249.

Send Completed Proposals to or Request Further Information from:

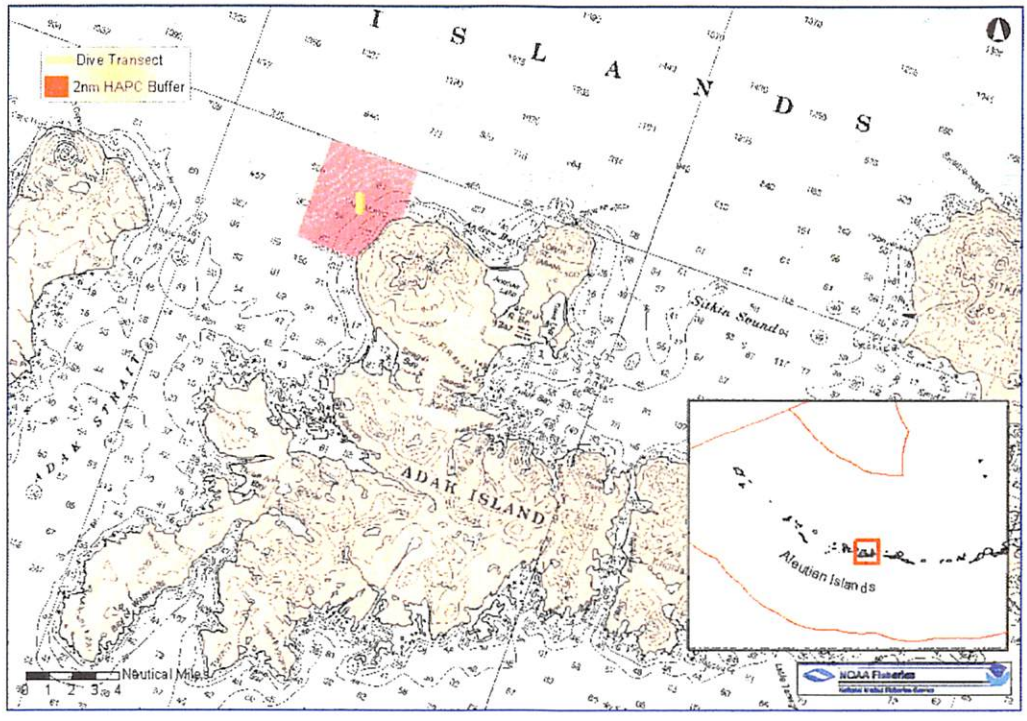
North Pacific Fishery Management Council *(http://www.fakr.noaa.gov/npfmc/default.htm)*
Attn: Cathy Coon
605 W 4th Ave Suite 306
Anchorage AK 99501-2282
(907) 271-2809

AI Coral Garden HAPC Sites

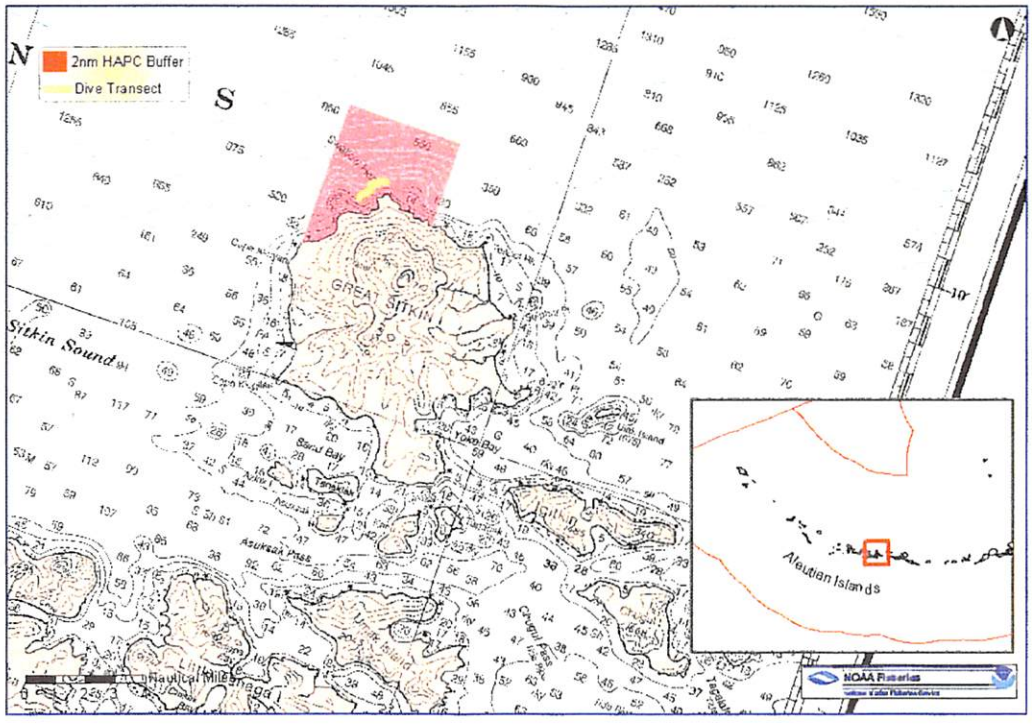




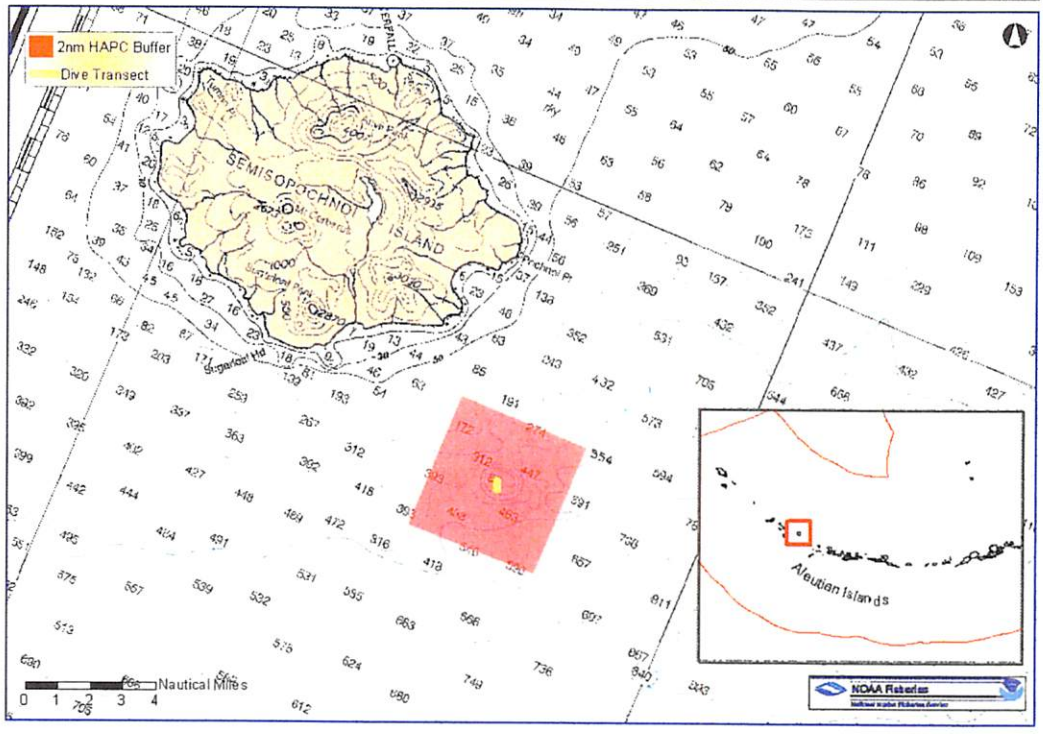
NMFS HAPC Proposal - Cape Moffett Coral Gardens



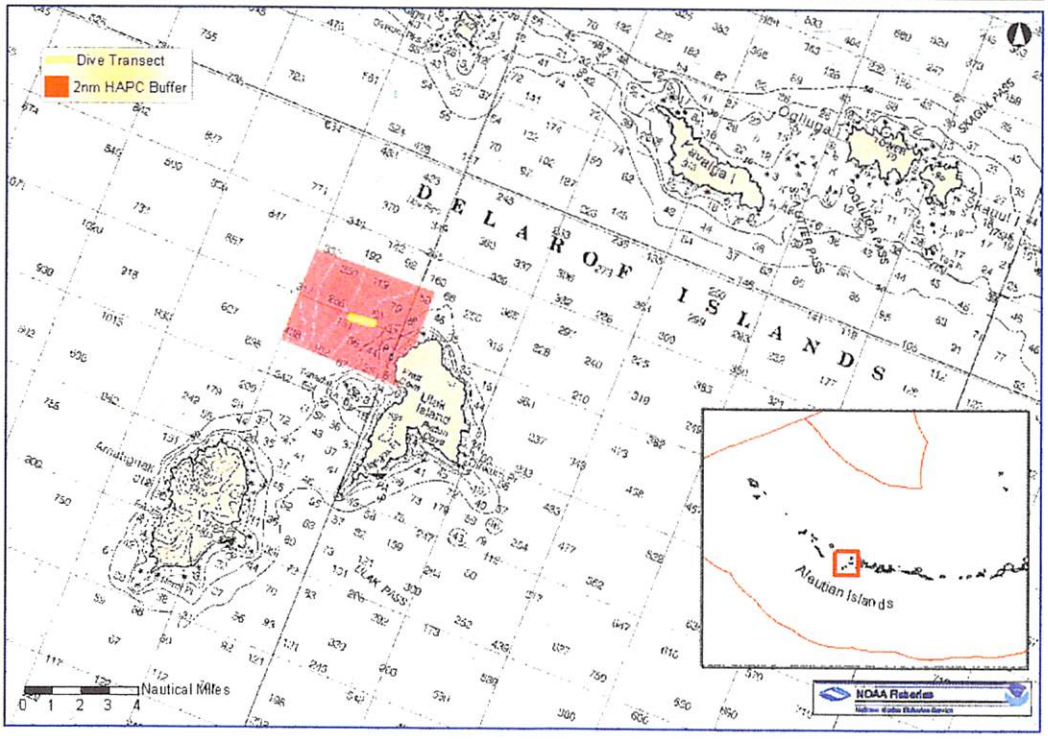
NMFS HAPC Proposal - Great Sitkin Coral Gardens



NMFS HAPC Proposal - Semisopochnoi Island Coral Gardens



NMFS HAPC Proposal - Ulak Island Coral Gardens



HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

Name of Proposer: NOAA Fisheries
P.O. Box 21668
Juneau, Alaska 99802

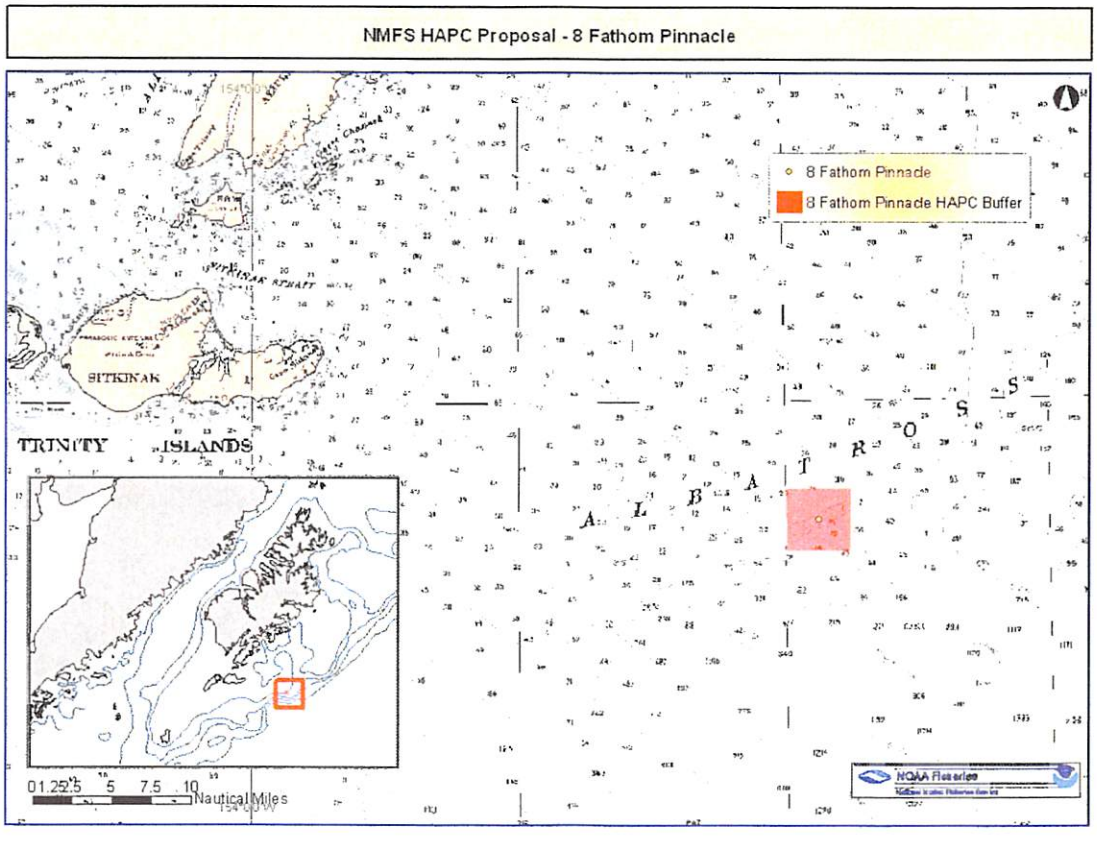
Please check applicable box (es):

X	GOA Groundfish FMP
	BSAI Groundfish FMP
	Scallop FMP
	BSAI Crab FMP
	Salmon FMP

Title of Proposal.
Eight Fathom Pinnacle in the Gulf of Alaska

Summary Statement of the Proposal.
(*Provide a brief paragraph concisely describing the HAPC.*)
This proposal identifies a near surface pinnacle located offshore in the central Gulf of Alaska (GOA) as a HAPC because of its rare features. The pinnacle is located 30 miles offshore on Albatross Bank and within 5 miles of the continental slope. The pinnacle rises to 15m (8 fathoms) from surrounding areas of 46m (25 fathoms). The pinnacle is forested with kelp that provides cover and refugia for large schools of rockfish. The pinnacle was observed using the DSV *Delta* submersible. The pinnacle is within current fishing areas.

HAPC Site Location.
(*Specific latitude/longitude or geographic reference. Include NOAA Chart number, if known.)*
56.3698 N 152.9398 W
NOAA Chart 16580



Habitat Type and Species Information.
(Identify of any habitat type(s) and FMP species of the HAPC.)

The "8-fathom" pinnacle in the central Gulf of Alaska is the shallowest offshore pinnacle within the U.S. Exclusive Economic Zone in the Gulf of Alaska. The pinnacle rises to a depth of 15 m (8 fathoms) and surrounding areas are considerably deeper. The pinnacle has been observed in situ with the DSV *Delta* submersible. The summit of the pinnacle is within the euphotic zone and covered with *Laminaria* sp. and *Agarum* sp. Dense concentrations of the anemone *Metridium farcimen* are common throughout the area. The geological origin of the pinnacle is unknown. However, the boulders observed *in situ* do not appear to be of glacial origin, but possibly associated with a hydrocarbon seep.

The following species and life stages have been observed *in situ* on the 8-fathom pinnacle:

Common Name	Species
Black rockfish adults	*Sebastes melanops.*
Kelp greenling adults	*Hexagrammos decagrammus*
Ling cod adults	*Ophiodon elongatus*
Pacific Halibut adults	*Hippoglossus stenolepis*

Additionally, EFH has been described as General Distribution for the following FMP species within the Eight fathom pinnacle HAPC area: walleye pollock; Pacific cod; arrowtooth flounder; yellowfin, rock, rex, dover and flathead sole; shortraker, rougheye, northern, thornyhead, yelloweye and dusky rockfish; sculpins; skates; sharks; and squid.

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.**
Detailed ecological studies have not been conducted. The area appears to be ecologically important providing shallow-structural habitat for large numbers of adult black rockfish, ling cod, halibut, and kelp greenling. Black rockfish are very abundant on the pinnacle and are typically associated with shallow nearshore habitat. The pinnacle may therefore support rare offshore populations of these species.

[√] **The extent to which the habitat is SENSITIVE to human-induced degradation.**
The pinnacle is sensitive to fishing activities that may remove or damage vegetated and biotic structures associated with the pinnacle. The pinnacle is a rough feature that is usually avoided by fisherman since gear may be lost to hang-ups. Stray fishing gear could remove kelp and sedentary invertebrates that provide structural habitat.

[√] **Whether, and to what extent, the activity STRESSES the habitat type.**
The pinnacle is located within existing fishing areas. Fishing may pose a threat to the kelp forest and biogenic structures. Should the area be stressed, juvenile rockfish may not be afforded protection from the cover habitat and would be more susceptible to predation.

[√] **The RARITY of the habitat type. (*Mandatory requirement*).**
This pinnacle is rare and unique as it is kelp forested, some 30 miles offshore, and within 5 miles of the continental slope. There are numerous pinnacle formations throughout Alaska waters, however, this pinnacle supports the farthest offshore kelp forest in the Gulf of Alaska.

Statement of Purpose and Need.
(Provide a specific purpose as why the HAPC needs to be identified.)
The proposed 8-fathom pinnacle HAPC recognizes an unusual habitat feature that may be vulnerable to disturbance from fishing. More intensive management of this area would provide greater protection, and potentially enhanced recruitment, for rockfish.

Objectives of the Proposal.
(List objectives specific to the identification of the HAPC.)
The objective of this proposal is to identify the 8-fathom pinnacle as a rare feature and to project this feature from fishing disturbance.

Describe any Proposed Solutions to Achieve These Objectives.
(How might the problem be solved? Include concepts of methods of measuring progress towards those objectives.)
This HAPC is proposed by NOAA Fisheries to protect a documented rare pinnacle feature in the central Gulf of Alaska. Protection of the feature and kelp forest habitat from disturbance by bottom contact gear will provide sanctuary for the species that use the habitat. Archived submersible video documentation will allow scientists to monitor the density of the kelp forest and temporal changes in the abundance of those species utilizing the HAPC area.

Describe any Proposed Management Measures for the HAPC.
(Include specific objectives, if appropriate.)
All Council-managed fishing would be prohibited within the boundary of the HAPC buffer area (see table below). The buffer offers protection of the nearby surrounding area and acts as a precautionary zone to safeguard the pinnacle and sensitive vegetation from fishing activities.

HAPC Site	Latitude	Longitude	NOAA Chart Number	Area
8-Fathom Pinnacle	56.4100° N 56.4100° N 56.3400° N 56.3400° N	152.9900° W 152.8700° W 152.9900° W 152.8700° W	16580	4 nm by 4 nm (16 nm^2)

The proposal identifies the HAPC as a rectangular area to facilitate management and enforcement. A circle or other shape is possible for the buffer area around the identified habitat feature, but the NOAA Fisheries Office of Law Enforcement recommended using rectilinear areas to facilitate enforcement. Other potential management options might include requiring VMS on all vessels, or prohibiting vessels from carrying bottom contact gear in these areas.

Identify any Expected Benefits to Habitat or FMP species.
(Include specific information regarding a species life history stage, if known.)
This pinnacle feature is believed to be the furthest offshore, kelp-forested pinnacle in the EEZ of the GOA. The kelp forest is dense and supports large schools of rockfish. Protection of this feature will safeguard sensitive and rare fisheries habitat. The area would be protected from disturbance and rockfish may experience increased survival to maturity as a result of the closure.

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.)
Fishing activity presently occurs within the boundaries of the proposed closure and near the pinnacle feature. The pinnacle is known to be rugged and gear is known to hang on rugged areas. Fishermen from Kodiak, Homer, Sand Point, Sitka, Juneau, and Seattle would be displaced from the small buffer area, but presumably they would benefit in future years by the protection of rockfish and other species.

Support Data or Information Sources
(List data sources, information resource, literature, and any traditional knowledge for the proposal.)

Observation and Professional Opinions: Robert Stone, Jon Heifetz, and J. Linc Freese, NOAA Fisheries, Alaska Fisheries Science Center, Auke Bay Laboratory, Juneau, Alaska. (907) 789-6005.

Sent Completed Proposals to or Request Further Information from:

North Pacific Fishery Management Council ***(http://www.fakr.noaa.gov/npfmc/default.htm)***
ATTN: Cathy Coon
605 W 4th Ave Suite306
Anchorage AK 99501-2282
(907) 271-2809

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

Name of Proposer: NOAA Fisheries
P.O. Box 21668
Juneau, Alaska 99802

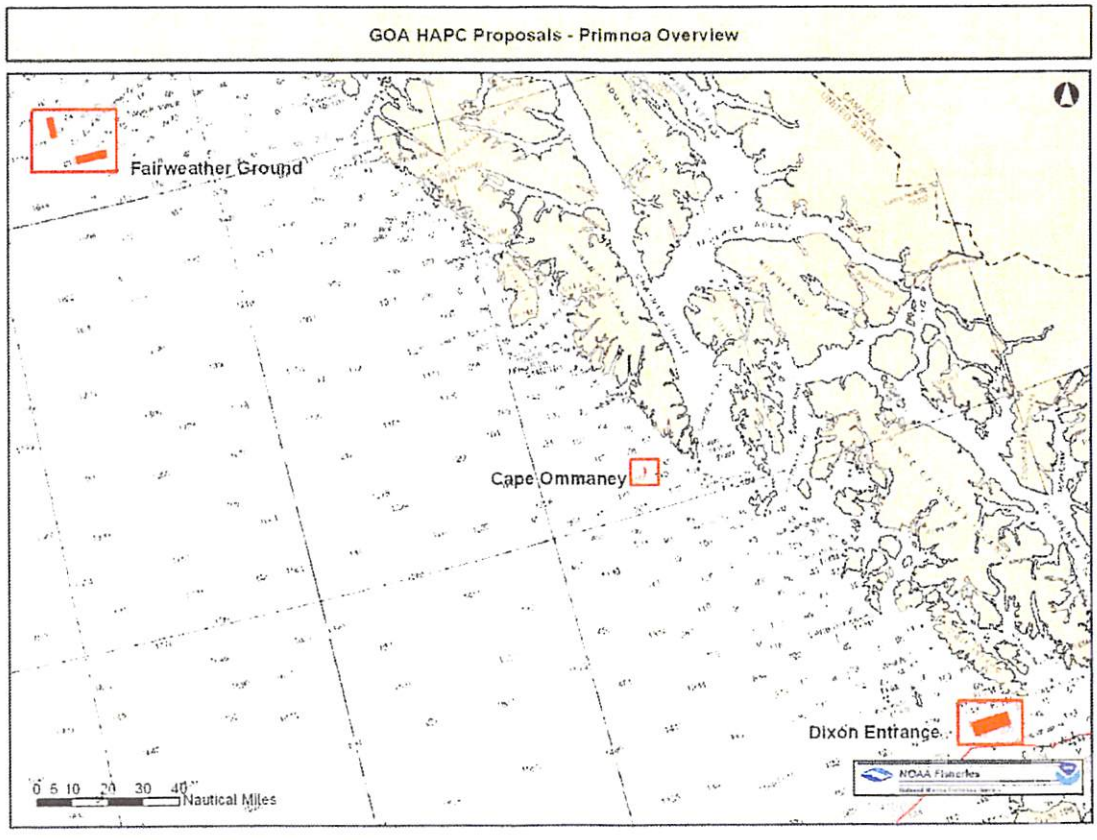
Please check applicable box (es):

X	GOA Groundfish FMP
	BSAI Groundfish FMP
	Scallop FMP
	BSAI Crab FMP
X	Salmon FMP

Title of Proposal.
Gulf of Alaska High Relief Corals, *Primnoa* species

Summary Statement of the Proposal.
(*Provide a brief paragraph concisely describing the HAPC.*)
NMFS/AFSC/Auke Bay Laboratory scientists have conducted submersible dives in the Gulf of Alaska (GOA) with the DSV *Delta* in areas where concentrations of *Primnoa* have previously been documented during submersible groundfish surveys in the 1990s. During these investigations, commercial fish species have been observed in association with high relief corals. Disturbance to these fragile corals was observed *in situ*. Often this disturbance is evident, since fishing gear contacting the coral is sometimes lost, or derelict. This HAPC proposal identifies 3 discrete areas with known densities of *Primnoa* sp. Each area warrants considerations as an HAPC based on the specific characteristics of each site. The proposal suggests management measures to lessen impacts to corals within the HAPC area.

Overview of HAPC Proposal Areas in the Gulf of Alaska. (*Note:* Attached to the end of the proposal are individual chartlets for each of the GOA *Primnoa* sp. HAPC areas.)



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

HAPC Areas are within the following geographic coordinates:

HAPC Area	Latitude	Longitude	NOAA Chart Number
Cape Ommaney	56.2100N 56.1600N 56.1600N 56.2100N	135.1300W 135.1300W 135.0900W 135.0900W	17320
Dixon Entrance	54.6300N 54.5600N 54.6300N 54.5600N	133.1800W 133.1800W 132.8700W 132.8700W	17400
Fairweather Ground NW Area	58.4700N 58.3700N 58.3700N 58.4700N	139.3300W 139.3300W 139.2600W 139.2600W	16760
Fairweather Ground Southern Area	58.2600N 58.2600N 58.2200N 58.2200N	138.8600W 139.1500W 139.1500W 138.8600W	16760

Habitat Type and Species Information.
(Identify of any habitat type(s) and FMP species of the HAPC.)

Cape Ommaney Site Summary
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, however.

Dixon Entrance Summary
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.

Fairweather Grounds Summary

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.

All three areas contain *Primnoa* sp. colonies and associated sedentary invertebrates. High *Primnoa* sp. concentrations were also associated with small pinnacles.

The following FMP species and life stages have been observed *in situ* in association with *Primnoa* sp. (red tree) for the each proposed HAPC:

Common Name	Scientific name	Cape Ommaney	Dixon Entrance	Fairweather Grounds
Juvenile rockfish, (unidentified)	*Sebastes* sp.	✓	✓	✓
Yelloweye rockfish adults	*Sebastes ruberrimus*	✓	✓	✓
Rougheye rockfish adults	*Sebastes aleutianus*	✓	✓	✓
Dusky rockfish adults	*Sebastes ciliatus*	✓	✓	
Redbanded rockfish adults, including gravid females	*Sebastes babcocki*	✓	✓	✓
Sharpchin rockfish adults, including gravid females	*Sebastes zacentrus*	✓	✓	
Sharpchin rockfish adults	*Sebastes zacentrus*			✓
Pacific ocean perch adults	*Sebastes alutus*	✓	✓	
Rosethorn rockfish adults	*Sebastes helvomaculatus*			✓
Silvergray rockfish adults	*Sebastes brevispinis*	✓	✓	✓
Shortraker rockfish adults	*Sebastes borealis*			✓
Skate	*(Unidentified)*			✓
Sculpin	*(Unidentified)*			✓

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.**

Detailed ecological studies have not been conducted yet. However, *Primnoa* colonies likely serve several important ecological functions. FMP species have been observed in these high concentration *Primnoa* areas. Colonies provide important structural habitat for many species including refuge for juvenile rockfish and golden king crab and mating golden king crab. (Golden king crab is not a GOA FMP species. These observations are the first documented observations of juvenile golden king crab aggregations and mating pairs of adult golden king crab in the GOA.) The presence of gravid females may indicate that the habitat provides important breeding or spawning habitat for at least two species of rockfish, dusky and yelloweye. Red tree coral colonies provide elevated feeding platforms for many sessile invertebrates and may provide a source of prey for some species of fish that aggregate in colonies. Also, observations noted invertebrates feeding on the *Primnoa* sp., thereby improving knowledge about the importance of this fragile habitat structure and its relationship to the ecosystem.

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

Primnoa spp. are fragile, long-lived, and slow-growing. Damaged colonies require long periods of time to recover from disturbance. Submersible observations and fishery bycatch records indicate that *Primnoa* sp. colonies are easily damaged or detached from the seafloor if contacted by fishing gear.

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

Colonies tend to be located on moderate relief bedrock and course talus in areas where both mobile bottom-contact fishing gear and set gear such as longlines are used. Some derelict longline gear and evidence of damage from that gear was observed from the submersible. Commercial longlining occurs in each area and *Primnoa* sp. is a common species in research long line surveys conducted in the GOA.

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

The abundance and distribution of *Primnoa* sp. is unknown. However, FMP species have been documented in association with high relief corals. Dense concentrations of Primnoa sp. are uncommon and *Primnoa* sp. corals are patchy in distribution. In 2001, Auke Bay Laboratory scientists used the DSV *Delta* to verify the presence of colonies at several locations where bycatch of *Primnoa* sp. was reportedly high in research survey efforts. Remnants of colonies (i.e. skeletons) or no *Primnoa* sp. were observed at sites, indicating fishing gear has already disturbed some *Primnoa* sp. concentrations. These sites are a small subset of the total survey effort area.

Statement of Purpose and Need.

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

Red tree coral (*Primnoa* sp.) may be the most common gorgonian observed in fished areas of the eastern GOA and *Primnoa* sp. colonies are rare and an important habitat type. Submersible observations and fishery bycatch records document that *Primnoa* sp. colonies are easily damaged or dislodged from the seafloor if contacted by fishing gear. The proposed HAPC's would protect known high-density *Primnoa* sp.areas from disturbance to ensure their continued availability as refuge habitat for rockfish and other species.

Objectives of the Proposal.
(List objectives specific to the identification of the HAPC.)
The objective of this proposal is to protect the incidental mortality of *Primnoa* sp. corals from fishing gear in documented and concentrated areas in the eastern Gulf of Alaska.

Describe any Proposed Solutions to Achieve These Objectives.
(How might the problem be solved? Include concepts of methods of measuring progress towards those objectives.)
This HAPC is one of three proposals by NOAA Fisheries to protect documented concentrations of *Primnoa* sp. in the eastern Gulf of Alaska. Protection of these concentrations from disturbance by bottom contact gear will provide sanctuary for the corals, invertebrates, and FMP species that use that habitat. Archived submersible video documentation will allow scientists to monitor the establishment of new colonies and temporal changes in the abundance of FMP species.

Describe any Proposed Management Measures for the HAPC.
(Include specific objectives, if appropriate.)
All Council-managed fishing except for near-surface salmon trolling would be prohibited within the proposed HAPCs (see table below). The spatial configuration and size of the proposed buffer area at each site is based on the need to protect documented concentrations of *Primnoa* sp. from stray fishing gear. Note that *in situ* observations were not made throughout the entire proposed buffer area to confirm the presence of corals throughout the site. However, adjacent areas may likely contain some *Primnoa* sp. colonies given the contagious distribution of red tree coral and the similarity in depth strata, substrate type, and current regime in those areas.

HAPC Area	Latitude	Longitude	NOAA Chart number	Area
Cape Ommaney	56.2100N 56.1600N 56.1600N 56.2100N	135.1300W 135.1300W 135.0900W 135.0900W	17320	3.3 nm x 1.2 nm (4.0 nm^2)
Dixon Entrance	54.6300N 54.5600N 54.6300N 54.5600N	133.1800W 133.1800W 132.8700W 132.8700W	17400	10.9 nm x 4.2 nm (45.8 nm^2)
Fairweather Ground NW Area	58.4700N 58.3700N 58.3700N 58.4700N	139.3300W 139.3300W 139.2600W 139.2600W	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	16760	9.3 nm x 2.5 nm (23.3 nm^2)

The proposal identifies the HAPCs as rectangular areas to facilitate management and enforcement. Circles or other shapes are possible for the buffer areas around the identified habitat features, but the NOAA Fisheries Office of Law Enforcement recommended using rectilinear areas to facilitate enforcement. Other potential management options might include requiring VMS on all vessels, or prohibiting vessels from carrying bottom contact gear in these areas.

Identify any Expected Benefits to Habitat or FMP species.
(Include specific information regarding a species life history stage, if known.)

HAPC Area	Expected Benefit
Cape Ommaney	One of the largest and densest known *Primnoa* sp. concentrations in the eastern Gulf of Alaska would be protected from further degradation and FMP species (listed above) would benefit from the closure.
Dixon Entrance	A series of large and dense *Primnoa* sp. concentrations in central Dixon Entrance would be protected from further degradation and FMP species (listed above) would benefit from the closure.
Fairweather Ground	A series of large and dense *Primnoa* sp. concentrations along the western and southern flank of the Fairweather Ground would be protected from further degradation and FMP species (listed above) would benefit from the closure.

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.)
Some long line fishing presently occurs within the boundaries of the proposed closures. These long line fishermen, mostly from SE Alaska ports, would be displaced. A regulatory impact review would need to be completed to evaluate costs and benefits. In the long term, fishers may benefit from enhanced recruitment of targeted species resulting from closure areas.

Support Data or Information Sources
(List data sources, information resource, literature, and any traditional knowledge for the proposal.)

Heifetz, J. 2002. Coral in Alaska: distribution, abundance, and species associations. Hydrobiologia 471: 19-27.

Witherall, D. and C. Coon. 2001. Protecting gorgonian corals from fishing impacts. Pages 117-125 In: J. H. Willison et al. (eds.) 2001. Proceedings of the First International Symposium on Deep-Sea Corals,Ecology Action Centre and Nova Scotia Museum, Halifax, Nova Scotia.

Cape Ommaney Proposal

Robert Stone, Jon Heifetz, and J. Lincoln Freese, NOAA Fisheries, Alaska Fisheries Science Center, Auke Bay Laboratory, Juneau, Alaska.

Dixon Entrance Proposal

Robert Stone and Chris Lunsford, NOAA Fisheries, Alaska Fisheries Science Center, Auke Bay Laboratory, Juneau, Alaska.

Krieger, K. J. 2001. Coral (*Primnoa*) impacted by fishing gear in the Gulf of Alaska. *In* Proceedings of the First International Symposium on Deep-Sea Corals. *Edited by* J. H. M. Willison *et al.* Ecology Action Centre and Nova Scotia Museum, Halifax. pp. 106-116.

Krieger, K. J. and B. L. Wing. 2002. Megafauna associations with deepwater corals (*Primnoa* spp.) in the Gulf of Alaska. Hydrobiologia 471: 83-90.

Fairweather Grounds Proposal

Jon Heifetz and Robert Stone, NOAA Fisheries, Alaska Fisheries Science Center, Auke Bay Laboratory, Juneau, Alaska.

Victoria O'Connell, ADF&G, Commercial Fisheries Division, Sitka, Alaska.

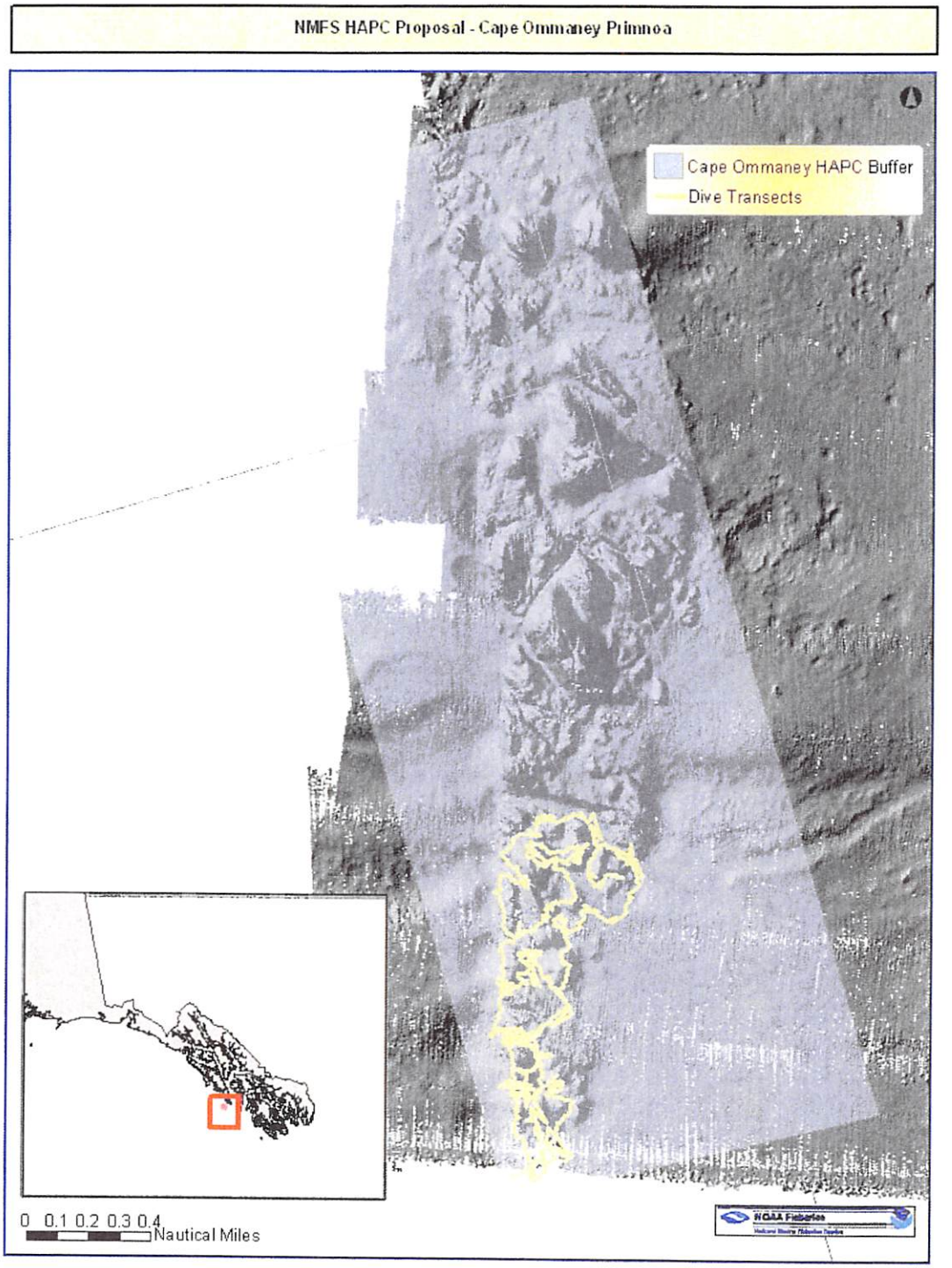
Krieger, K. J. 2001. Coral (*Primnoa*) impacted by fishing gear in the Gulf of Alaska. *In* Proceedings of the First International Symposium on Deep-Sea Corals. *Edited by* J. H. M. Willison *et al.* Ecology Action Centre and Nova Scotia Museum, Halifax. pp. 106-116.

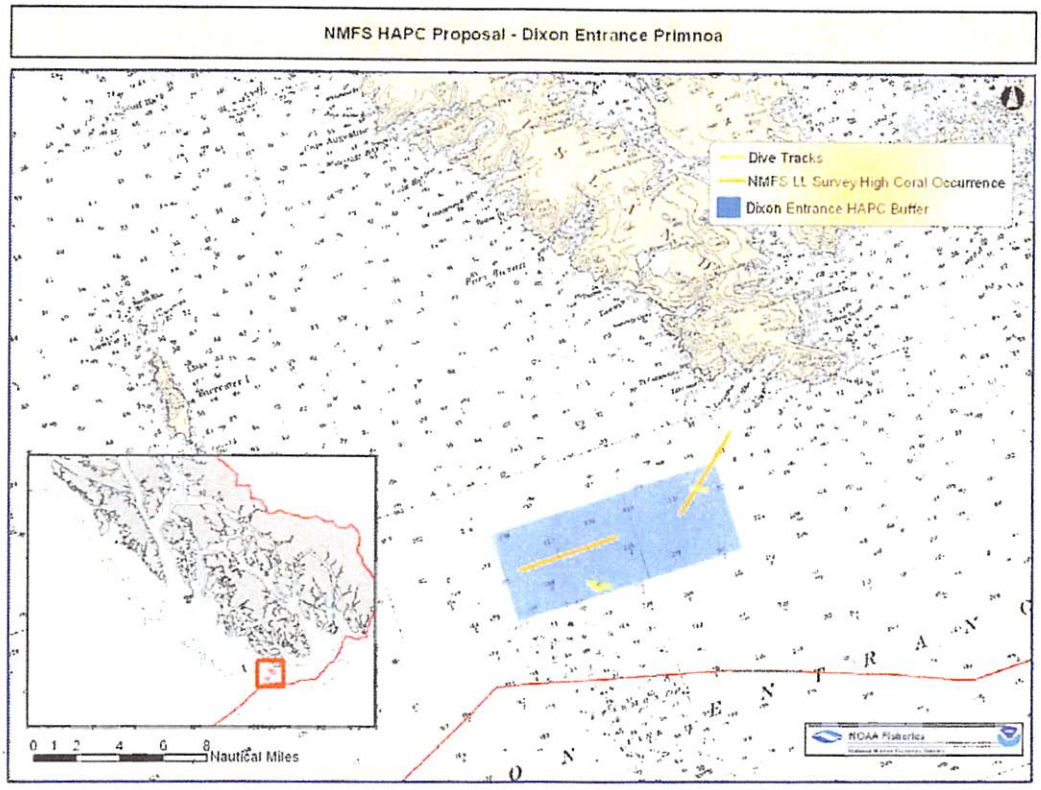
Krieger, K. J. and B. L. Wing. 2002. Megafauna associations with deepwater corals (*Primnoa* spp.) in the Gulf of Alaska. Hydrobiologia 471: 83-90.

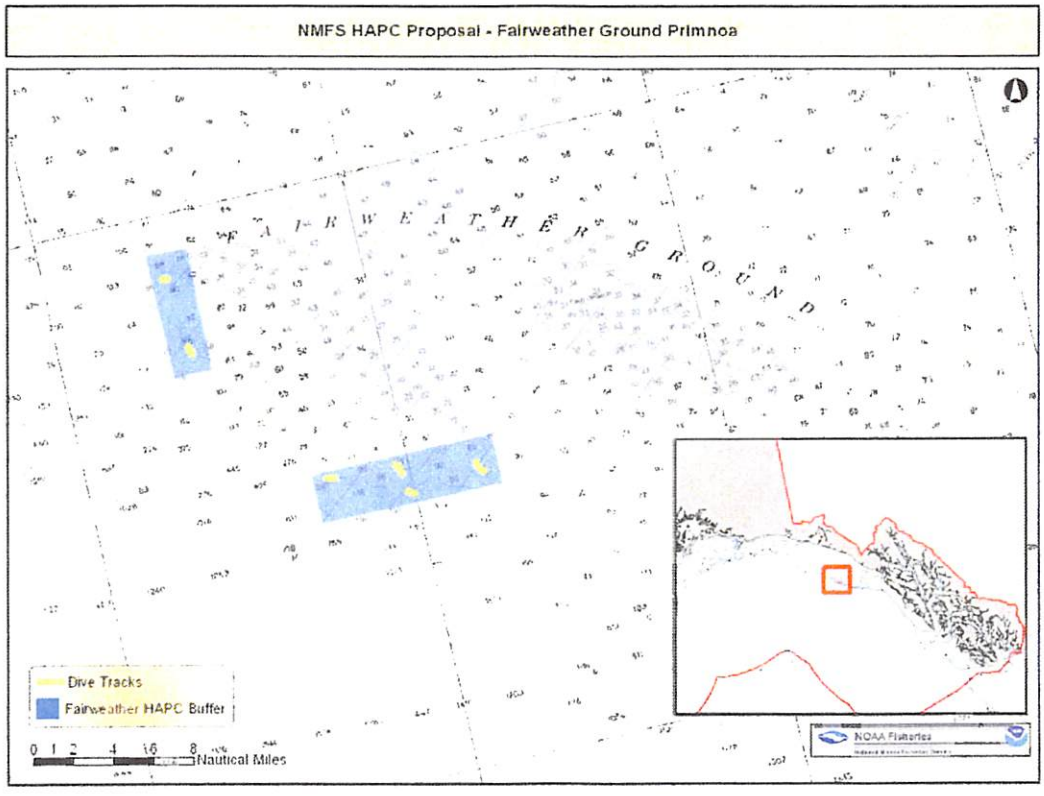
Sent Completed Proposals to or Request Further Information from:

North Pacific Fishery Management Council *(http://www.fakr.noaa.gov/npfmc/default.htm)*
ATTN: Cathy Coon
605 W 4th Ave Suite306
Anchorage AK 99501-2282
(907) 271-2809

GOA Primnoa HAPC Sites




NMFS HAPC Proposal - Dixon Entrance Primnoa
Dive Tracks
NMFS Lt. Survey High Coral Occurrence
Dixon Entrance HAPC Buffer
0 1 2 4 6 8
Nautical Miles
NOAA Fisheries


NMFS HAPC Proposal - Fairweather Ground Primnoa
Dive Tracks
Fairweather HAPC Buffer
0 1 2 4 6 8
Nautical Miles
NOAA Fisheries

HABITAT AREAS OF PARTICULAR CONCERN (HAPC) PROPOSAL

Date: January 9, 2004

Name of Proposer: NOAA Fisheries
P.O. Box 21668
Juneau, Alaska 99802

Please check applicable box (es):

X	GOA Groundfish FMP
X	BSAI Groundfish FMP
	Scallop FMP
X	BSAI Crab FMP
X	Salmon FMP

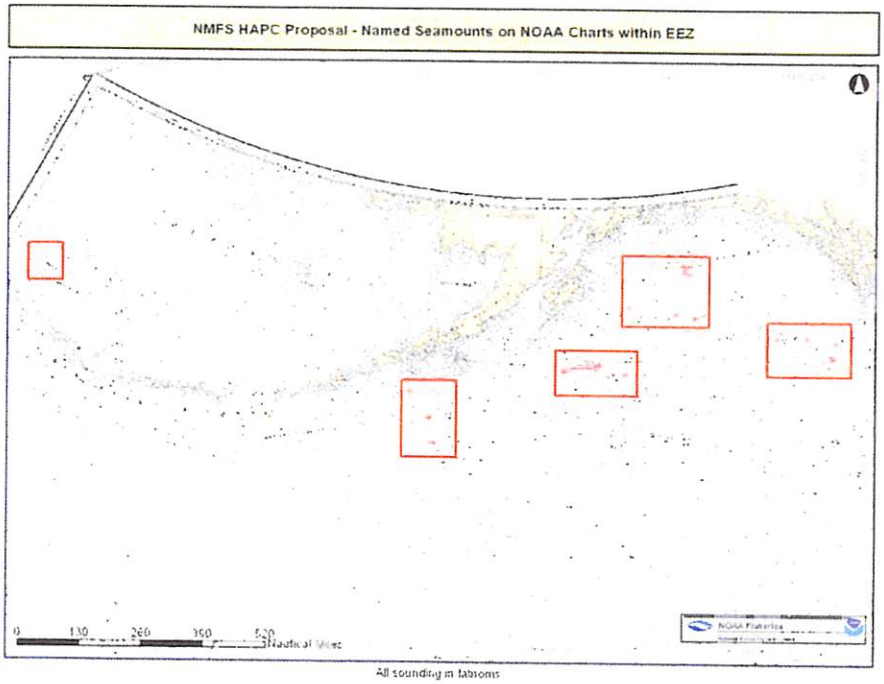
Title of Proposal. Named Seamounts on NOAA Charts.

Summary Statement of the Proposal.
(*Provide a brief paragraph concisely describing the HAPC.*)

The HAPC proposal identifies named seamounts on the NOAA Charts where FMP species have been documented and proposes specific management measures to conserve these rare undersea features. The proposal is limited to only those named seamounts on NOAA Charts within the Economic Exclusive Zone (EEZ) of the Alaska Region and within the documented range of an FMP species. The HAPC proposal recommends 16 named seamounts for consideration. The proposal suggests management measures to lessen impacts to named seamounts as features within the HAPC area.

Of the approximately 140 named seamounts in waters of the North Pacific and Bering Sea, only 24 named seamounts are within EEZ waters managed and regulated by the NPFMC and NMFS Alaska Region. Further, of the 24 named seamounts in the EEZ, only 16 are within the deepest recorded depth range for an FMP species. This depth limit is established at 3,000m. Records indicate sablefish and deep sea sole range to depths of 2,750m and 2,950m, respectively. Other FMP species documented on or above seamounts include rockfish, salmon, crab, sculpin, and squid.

HAPC Site Locations.
(*Specific latitude/longitude or geographic reference. Include NOAA Chart number, if known.)*
Locator Map for 16 Named Seamounts. Note: Individual named seamount chartlets are attached to the end of the proposal.



Geographic Coordiantes and Depth for Sixteen Named Seamounts on NOAA Charts

#	Named Seamount	Latitude	Longitude	Depth (m)	Depth (fm)	NOAA Chart
1	Bowers Seamount	54.1500 N	174.7000 E	2268	1230	531
		54.0700 N	174.7000 E			
		54.0700 N	174.8700 E			
		54.1500 N	174.8700 E			
2	Brown Seamount	55.0000 N	138.8000 W	1390	760	531
		55.0000 N	138.4000 W			
		54.8000 N	138.8000 W			
		54.8000 N	138.4000 W			
3	Chirikof &	55.1000 N	153.7000 W	2560	1400	531
4	*Marchand*	55.1000 N	151.0000 W	*2524*	*1380*	*531*
	Seamounts	54.7000 N	153.7000 W			
		54.7000 N	151.0000 W			
5	Dall Seamount	58.3000 N	145.8000 W	2507	1410	531
		58.3000 N	144.9000 W			
		57.7500 N	145.8000 W			
		57.7500 N	144.9000 W			
6	Denson Seamount	54.2200 N	137.6000 W	927	504	531
		54.2200 N	137.1000 W			
		53.9500 N	137.6000 W			
		53.9500 N	137.1000 W			
7	Derickson Seamount	53.0000 N	161.5000 W	2890	1580	531
		53.0000 N	161.0000 W			
		52.8000 N	161.5000 W			
		52.8000 N	161.0000 W			
8	Dickins Seamount	54.6500 N	137.1500 W	427	234	531
		54.6500 N	136.8000 W			
		54.4500 N	137.1500 W			
		54.4500 N	136.8000 W			
9	Giacomini Seamount	56.6200 N	146.5300 W	618	338	531
		56.6200 N	146.1200 W			
		56.4200 N	146.5300 W			
		56.4200 N	146.1200 W			
10	Kodiak Seamount	57.0000 N	149.5000 W	2176	1190	531
		57.0000 N	149.1000 W			
		56.8000 N	149.5000 W			
		56.8000 N	149.1000 W			
11	Odessey Seamount	54.7000 N	150.0000 W	1657	906	531
		54.7000 N	149.5000 W			
		54.5000 N	150.0000 W			
		54.5000 N	149.5000 W			
12	Patton Seamount	54.7200 N	150.6000 W	168	92	531
		54.7200 N	150.3000 W			
		54.5700 N	150.6000 W			
		54.5700 N	150.3000 W			
13	Quinn Seamount	56.4500 N	145.4000 W	658	360	531
		56.4500 N	145.0000 W			
		56.2000 N	145.4000 W			
		56.2000 N	145.0000 W			
14	Sirius Seamount	52.1000 N	161.1000 W	1929	1055	531
		52.1000 N	160.6000 W			
		51.9500 N	161.1000 W			
		51.9500 N	160.6000 W			
15	Unimak Seamount	53.8000 N	162.7000 W	1308	715	531
		53.8000 N	162.3000 W			
		53.6500 N	162.7000 W			
		53.6500 N	162.3000 W			
16	Welker Seamount	55.2300 N	140.5500 W	618	388	531
		55.2300 N	140.1600 W			
		55.0300 N	140.5500 W			
		55.0300 N	140.1600 W			

Habitat Type and Species Information.
(Identify of any habitat type(s) and FMP species of the HAPC.)

Seamounts are undersea features that rise 1000 meters above the surrounding seafloor. Seamounts features consist of a summit, which may be smooth or rough, consist of hard and soft substrates ranging from bedrock to mud, and create a slack water condition over the seamount, as compared to its flanks. The flanks are steep, usually consist of harder substrates such as bedrock, and experience higher currents. These features provide habitats for many FMP groundfish species. Seamounts can be grouped in a chain or isolated.

Due to the drastic change in surrounding depths and their distance from shore, seamounts may serve as stepping-stones for migratory fish species and also stand alone as unique ecosystems. Currents transport and deposit egg and juvenile life stages on seamounts, which may serve as rearing habitats for these species. Migratory species take advantage of these features and feeding opportunities.

Scientists, using various methods of research, have investigated 5 of the 16 seamounts included in this proposal. These methods include using bottom sampling grabs, submersibles, remote cameras, traps, longlines, trawls, and pots. These surveys identified basic features and species of each seamount.

Geographic features of the 5 studied seamounts are summarized below:

Named Seamount	General Features
Dickins	Area consists of soft and hard substrates, which are distributed patchily across the feature. The seamount is scattered with rock pinnacles.
Giacomini	Area is relatively flat and consists of soft substrates with few scattered, less prominent rock pinnacles.
Patton	Area is rough in feature. Harder substrates of rock create a series of pinnacles across the summit.
Quinn	Area consists of soft substrates with a notable absence of pinnacles. The flanks are shallow sloped.
Welker	Area consists of hard and soft substrates, with softer substrates between numerous, scattered rock pinnacles.

The FMP species identified below have been documented on the 5 surveyed seamounts (listed above) and represent the current knowledge of species that associate with seamounts in Alaska waters. Site-specific information for the remaining seamounts included in this proposal does not exist. Therefore, the following species list is presumably representative of all seamounts included in this proposal.

FMP Species		FMP Species	
Sablefish adults, including gravid females and larger males	*Anaplopoma fimbria*	Shortraker rockfish adults	*Sebastes borealis*
Deep sea sole	*Embassichthys bathybius*	Aurora rockfish adults	*Sebastes aurora*
Sockeye salmon adults	*Oncorhynchus nerka*	Golden king crab	*Lithodes aequispina*
Pink salmon adults	*Oncorhynchus gorbuscha*	Scarlet red king crab	*Lithodes couesi*
Chum salmon adults	*Oncorhynchus keta*	Grooved tanner crab	*Chionoecetes tanneri*
Longspine thoryhead rockfish, adults	*Sebastolobus altivelis*	Squid	*(Unidentified)*
Shortspine thoryhead rockfish, adults	*Sebastolobus alascanus*	Sculpins	*Cottidae*
Rougheye rockfish adults	*Sebastes aleutianus*		

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.

Seamounts are ecologically significant features. Offshore currents transport egg and juvenile life stages of fish species. Some of these are deposited on seamounts, where depth and substrate may be preferred by the particular species. Less migratory species may take residence. Slack water above the seamount summit (as compared to the higher current flank areas) concentrates diurnal migrations of plankton, which then begin to settle and may concentrate fish above and on summit of the seamount.

Seamounts may attract migratory species, such as sablefish, if preferred habitats are present and feeding opportunities exist. Spawning may also occur. Directed fishery research has documented large adult male and gravid female sablefish on Alaska seamounts, while noting the absence of any juvenile sablefish. (This absence is not attributed to selectivity of the research gear, since the same gear has recruited juvenile life stages in similar research efforts.) These seamounts may serve as a stepping-stone for a migratory species or a species may establish a resident reproductive stock on the seamount.

[√] **The extent to which the habitat is SENSITIVE to human-induced degradation.**
Alaska seamount habitats are sensitive to disturbances from certain human-induced activities, such as those used in bottom contact gear fisheries. Alaska fishermen have shown limited interest in these seamounts for several reasons including distance from port and depth. However, the 16 seamounts in this proposal are within the range of current fishing techniques that use bottom contact gear.

[N/A] **Whether, and to what extent, the activity STRESSES the habitat type.**
Very little fishing activity has occurred on these seamounts.

[√] **The RARITY of the habitat type. (*Mandatory requirement*).**
Seamounts are rare features that rise at least 1000 meters in depth from surrounding depths. This limits the feature to deeper waters off the slope. Given the expanse of the North Pacific and Bering Sea and the limited number of named seamounts within the EEZ of this expanse, the 16 seamounts included in this proposal are rare features consisting of isolated habitats far from contiguous shelf and slope habitat features.

Statement of Purpose and Need.
(Provide a specific purpose as why the HAPC needs to be identified.)
The proposed HAPC's are rare features that serve as unique ecosystems; are vulnerable to stress caused by human induced activities, such as fishing with bottom contact gear; and addresses one of the NPFMC priorities for HAPC's. The purpose of this proposal is to protect the seamounts from potential disturbance from fishing activities, and therefore to ensure the continued productivity of these habitats for managed species.

Objectives of the Proposal.
(List objectives specific to the identification of the HAPC.)
Management measures should conserve the unique features of the seamount and a portion or zone of the water column above each seamount summit. An objective of the management measure is to allow protection of the summit and the areas above the summit. This provides protection of high relief habitat and structure attached to the seamount and concentrations of fish within these features.

Describe any Proposed Solutions to Achieve Objectives.
(How might the problem be solved? Include concepts of methods of measuring progress towards those objectives.)
Management measures are proposed to protect each seamount, associated habitat features, and the area directly above the seamount summit.

Describe any Proposed Management Measures for the HAPC.
(Include specific objectives, if appropriate.)
All Council-managed fishing would be prohibited within the proposed HAPC's (see table below). Bottom contact fishing (trawls, pots, long lines) has the greatest potential to affect the identified habitat features, but little if any mid-water trawling or trolling occurs in these areas, and the NOAA Fisheries Office of Law Enforcement notes that management measures will be much easier to enforce if all fishing is prohibited in the proposed HAPC's. Other potential management options might include requiring VMS on all vessels, or prohibiting vessels from carrying bottom contact gear in these areas.

Named Seamounts HAPC Geographic Coordinates and Area.

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

The proposal identifies the HAPCs as rectangular areas to facilitate management and enforcement. Circles or other shapes are possible for the buffer areas around the identified habitat features, but NOAA Fisheries Office of Law Enforcement recommended using rectilinear areas to facilitate enforcement.

Identify any Expected Benefits to Habitat or FMP species.

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

Management measures that prohibit the use of bottom contact gear would conserve those species and habitats within the seamount management area. Specifically, benthic substrates would remain relatively undisturbed from bottom fishing activities. Also, any removal of mature adults by bottom gear, would be eliminated, potentially enhancing recruitment in surrounding areas and those areas where eggs and larvae may be transported by currents.

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.)

Fishers, communities, and the public may benefit from any enhanced productivity resulting for the protection of the 16 seamounts. No fisheries currently target these areas due to the location and depths of the 16 seamounts. Fisherman presently using these gear types within the proposed HAPC will be displaced from these small areas, but presumably they would benefit in future years by enhanced recruitment of targeted species within the HAPC's.

Support Data or Information Sources
(List data sources, information resource, literature, and any traditional knowledge for the proposal.)

Alton, S.M. 1986. Fish and crab populations of the Gulf of Alaska seamounts. In Richard N. Uchida, Sigeiti Hayasi, and George W. Boehlet (eds.), Environment and resources of seamounts in the North Pacific, p. 45-51. U.S. Dep. Commer., NOAA Tech. Rep. NMFS 43.

Gubbay, S. Seamounts of the North East Atlantic. 38 pgs. World Wildlife Foundation. OASIS, Hamburg & WWF Germany, Frankfurt am Main, November 2003.

Hughes, S.E. 1981. Initial U.S. exploration of nine Gulf of Alaska seamounts and their associated fish and shellfish resources. Mar. Fish. Rev. 42(1):26-33.

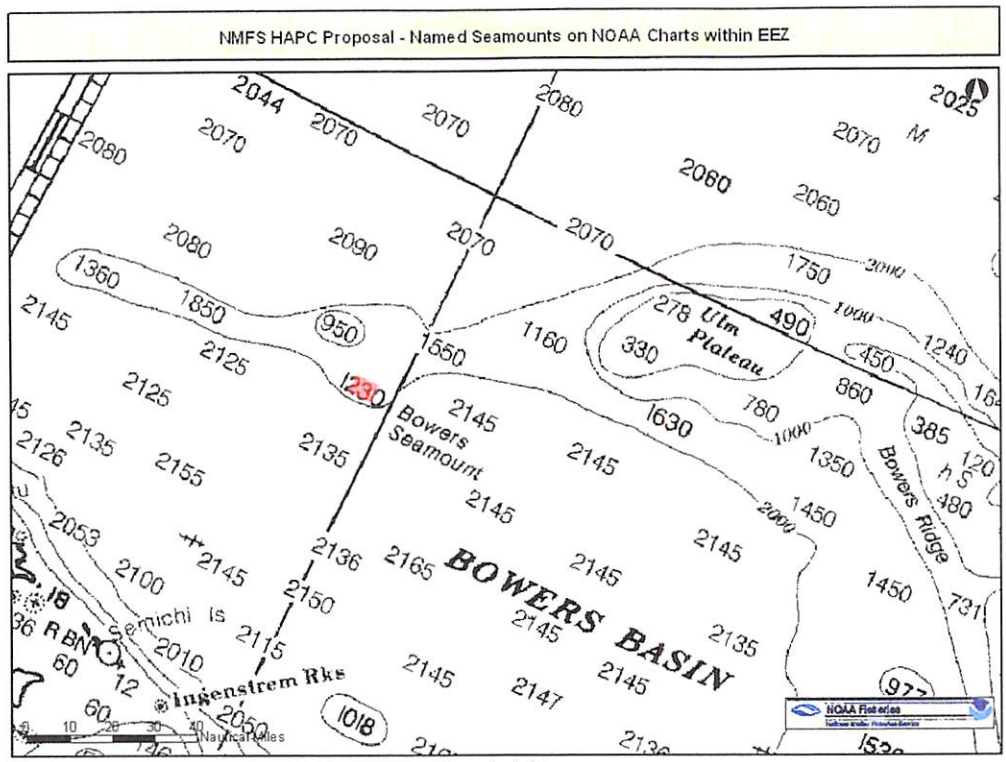
Maloney, N. December 10, 2003. (*Personal comm.*) Fish species from unpublished records collected during 1999-2002 long line surveys targeting Gulf of Seamounts aboard NOAA contract vessel. Alaska Fisheries Science Center, Auke Bay Laboratory, Juneau, Alaska. (907) 789-6060.

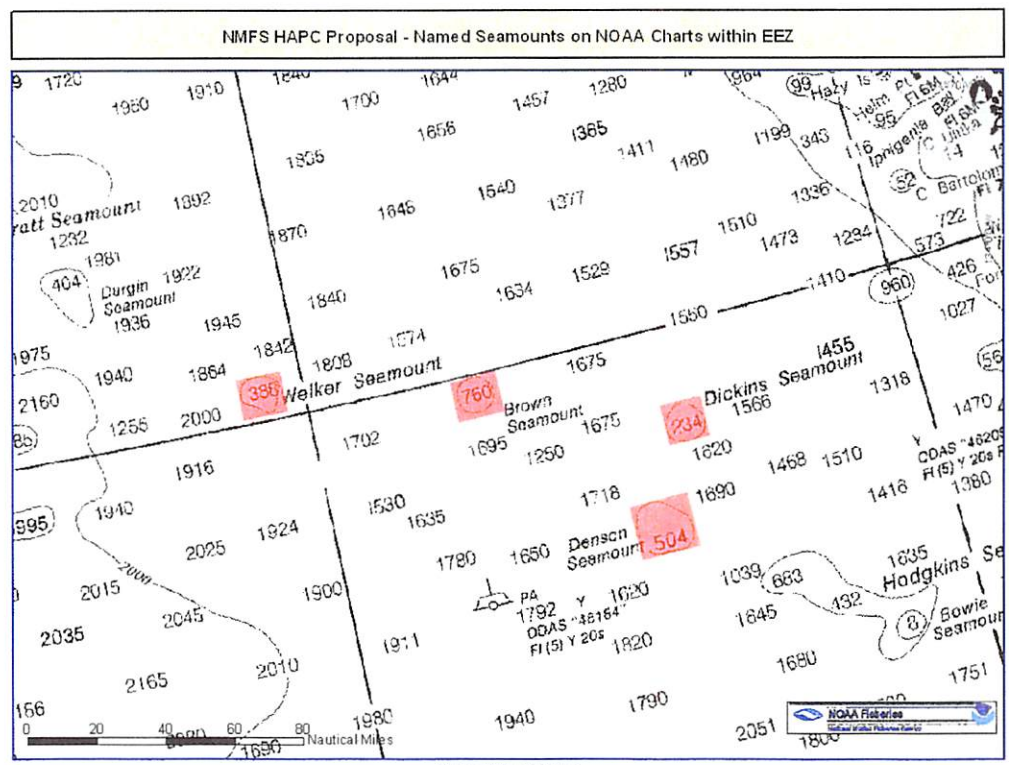
Matthew Eagleton and John Olson, NOAA Fisheries, Alaska Region, Habitat Conservation Division, Anchorage, Alaska.

Sent Completed Proposals to or Request Further Information from:

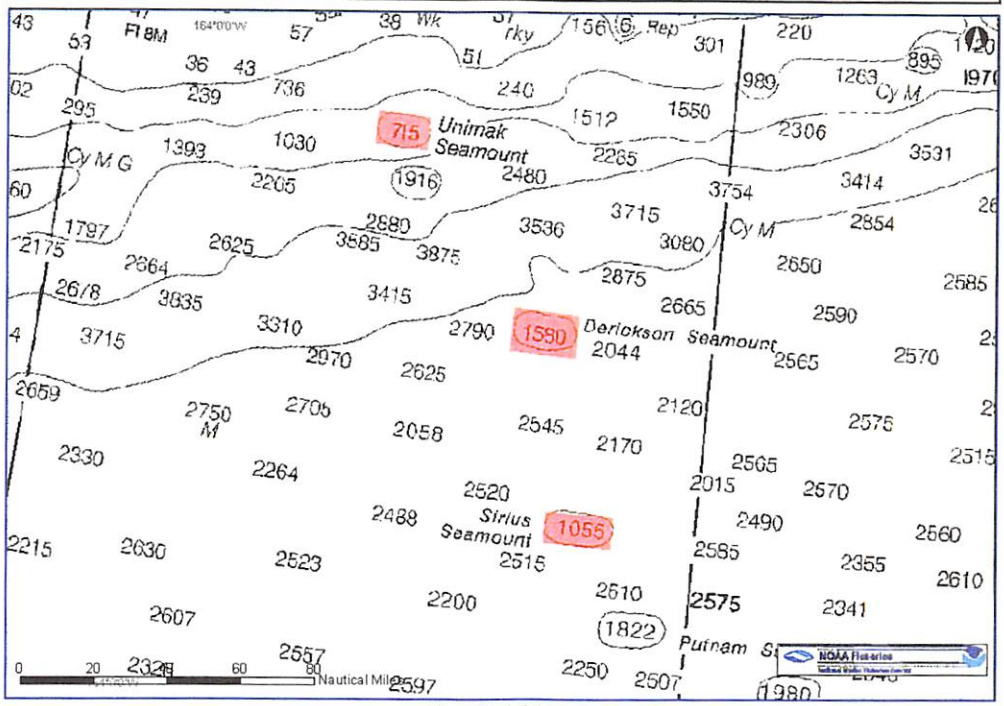
North Pacific Fishery Management Council *(http://www.fakr.noaa.gov/npfmc/default.htm)*
Attn: Cathy Coon
605 W 4th Ave Suite306
Anchorage AK 99501-2282 (907) 271-2809

Named Seamounts on NOAA Charts



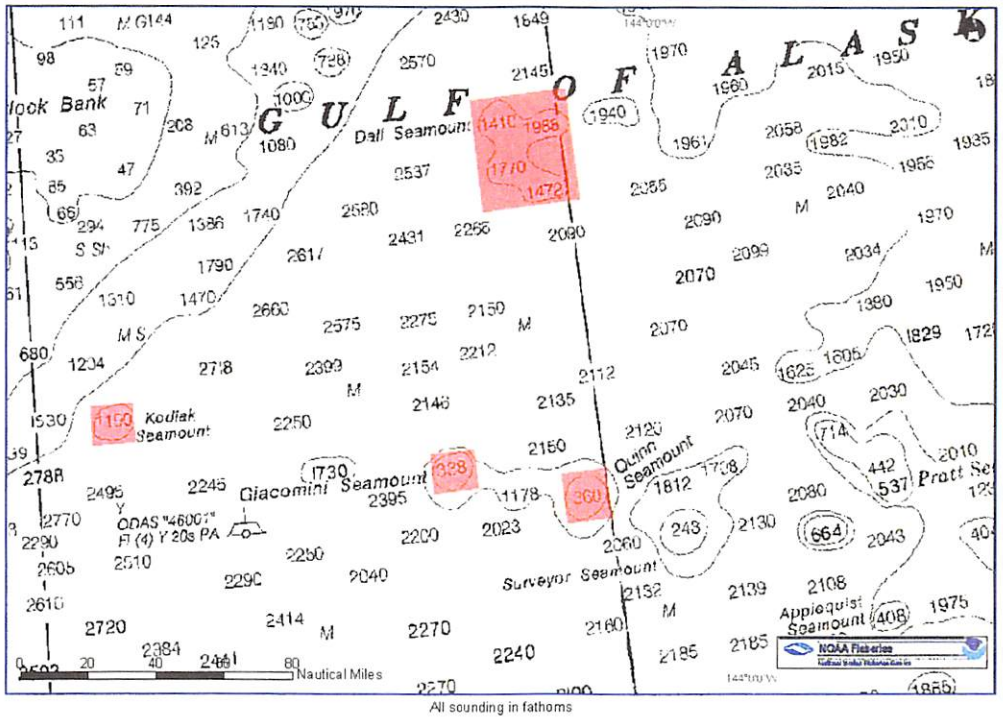


NMFS HAPC Proposal - Named Seamounts on NOAA Charts within EEZ



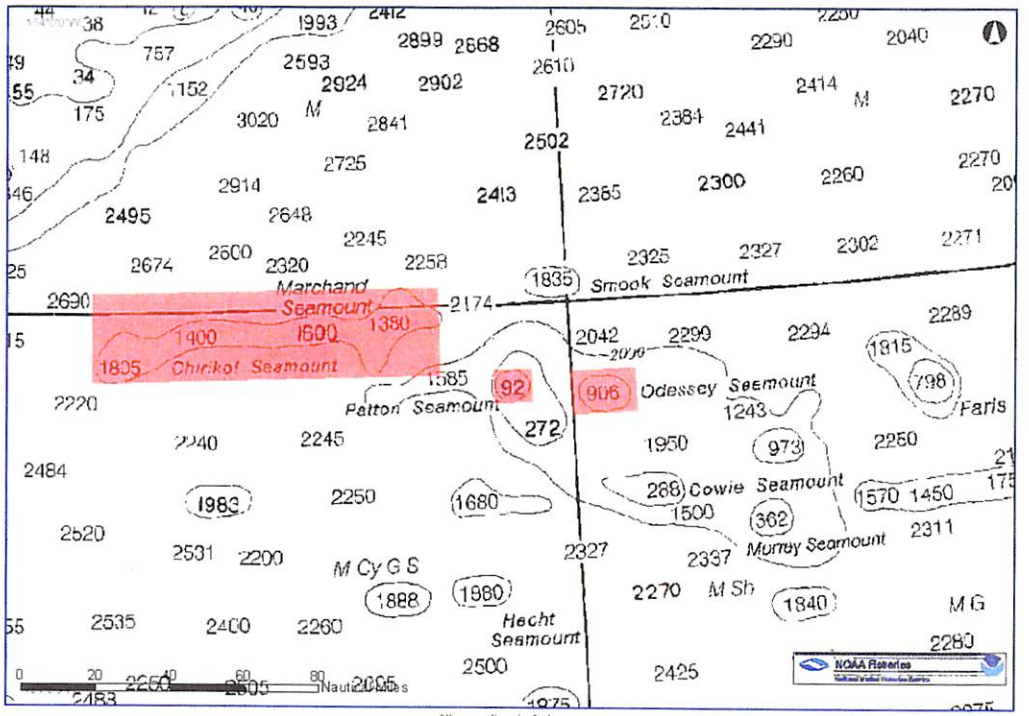
All sounding in fathoms

NMFS HAPC Proposal - Named Seamounts on NOAA Charts within EEZ



All sounding in fathoms

NMFS HAPC Proposal - Named Seamounts on NOAA Charts within EEZ



All sounding in fathoms