AGENDA C-2
JUNE 2012

MEMORANDUM

TO: Council, SSC, and AP Members

FROM: Chris Oliver
Executive Director

ESTIMATED TIME
4 HOURS

DATE: May 30, 2012

SUBJECT: Habitat Areas of Particular Concern (HAPC) – Areas of Skate Egg Concentration

ACTION REQUIRED:

Initial review of proposed skate egg concentration HAPC sites EA/RIR/IRFA.

BACKGROUND:

Habitat Areas of Particular Concern (HAPC) are geographic sites of special importance within the distribution of Essential Fish Habitat (EFH) for the Council's managed species that may require additional protection from fishing activity and adverse fishing effects. HAPCs must be rare and may be ecologically important, sensitive to human disturbance, or stressed by development activities. The Council has a formalized process within its Fishery Management Plans for selecting HAPCs, and periodically selects habitat priority types and issues a request for proposals (RFP).

In 2010, the Council set a habitat priority type—"skate nurseries"—and issued an RFP in conjunction with completion of its EFH five-year review. Council staff initially screened proposals, and the joint groundfish Plan Teams reviewed the HAPC proposals for rarity and ecological merit. The Council selected a HAPC proposal from the Alaska Fisheries Science Center (AFSC) for further analysis. In February and March/April 2012, the Council made initial reviews of an analysis of alternatives and options to identify and conserve six areas of skate egg concentration as HAPCs in the eastern Bering Sea. The Council refined its alternatives based on the recommendations of the Enforcement Committee and requested further analysis. Additionally, at the request of NMFS, option e was added to address a housekeeping issue for the BSAI Groundfish FMP. The draft initial review was mailed to you on May 18, 2012, and the Executive Summary is attached as **Item C-2(1)**.

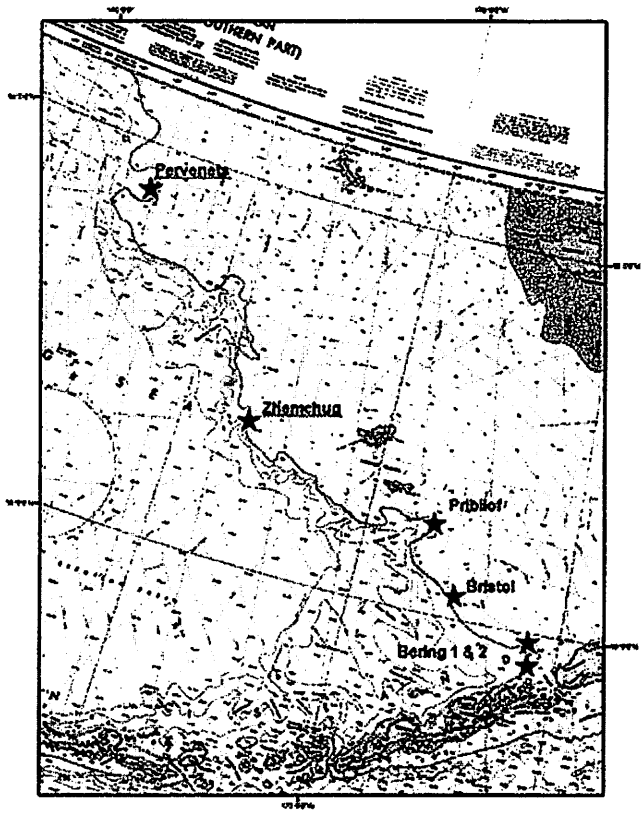
At this meeting, the Council will make another initial review of the analysis. The Enforcement Committee is scheduled to discuss the analysis and alternatives, and will summarize its discussion for the Council at this meeting.

1.0 EXECUTIVE SUMMARY

Habitat Areas of Particular Concern (HAPC) are geographic sites that fall within the distribution of essential fish habitat (EFH) for federally managed species. HAPCs are areas of special importance that may require additional protection from adverse fishing effects. EFH provisions provide a means for the North Pacific Fishery Management Council (Council) to identify HAPCs (50 C.F.R. 600.815(a)(8)) within Fishery Management Plans (FMP). Specific to fishery actions, HAPCs are areas within EFH that are rare and are either ecologically important, sensitive to disturbance, or may be stressed.

The Council has a formalized process identified within its FMPs for selecting HAPCs. Under this process, the Council periodically considers whether to set a priority habitat type (or types). If so, the Council initiates a request for proposals (RFP) for HAPC candidate areas that meet the specific priority habitat type. Members of the public, non-governmental organizations, and Federal, State, and other agencies may submit HAPC proposals. Sites proposed under this process are then sent to the Council's plan teams for scientific review and to determine ecological merit. Council and agency staff also reviewed proposals for socioeconomic, management, and enforcement impacts. This combined information is then presented to the Scientific and Statistical Committee (SSC), the Advisory Panel (AP), the Enforcement and Ecosystem Committees if necessary, and to the Council, which may choose to select HAPC proposals for a full analysis and subsequent implementation. The Council may also modify proposed HAPC sites and management measures during its review, or request additional stakeholder input and technical review.

In April 2010, the Council set a habitat priority type—"skate nurseries"—and issued an RFP in conjunction with the completion of its EFH five-year review process. Council staff initially screened the proposals received to determine consistency with the Council's habitat priority type, compliance with the Council's HAPC criteria, and for general adequacy and completeness. At its fall 2010 meeting, the Joint Groundfish Plan Teams reviewed HAPC proposals for rarity and ecological merit, and in October 2010, the Council selected a HAPC proposal from the Alaska Fisheries Science Center (AFSC) to forward on for further analysis. In February 2011, the Council received a discussion paper on the AFSC's HAPC proposal and selected alternatives and options for conservation and management through gear type prohibitions to forward on for full analysis. In February and March, 2012, the Council made initial review of the analysis, and further refined the alternatives, options, and conservation and management.



Three alternatives for the identification of skate egg concentration HAPCs and two options (b and c) for gear type prohibitions within those HAPCs are analyzed within this document and listed below. Consideration of areas of skate egg concentration is limited to the six candidate sites from the AFSC proposal. Additional sites, if or when discovered, are not considered part of this action. Further, the Council has the option to request that NMFS monitor HAPCs for the effects of fishing and that industry support those efforts (Option a). In addition, the Council has the options

of recommending research and monitoring of skates be added to its research priority list (Option d) and adopting an FMP housekeeping amendment to standardize federal descriptions of Bering Sea habitat conservation measures (Option e).

1.1 Alternatives and Options

In order to address the issues described in its statement of purpose and need, the Council identified three alternatives and five options for analysis, shown below. In addition, a BSAI Groundfish FMP housekeeping option has been added to the analysis (Option e). Alternatives 2 and 3 would amend the BSAI Groundfish FMP, the BSAI Crab FMP, the Alaska Salmon FMP, and the Alaska Scallop FMP to identify HAPC areas in the Bering Sea. Alternative 3 would also implement regulatory changes for Bering Sea groundfish and scallop fisheries.

Alternative 1: Status quo; no action:
No measures would be taken to identify, or to identify and conserve, areas of skate egg concentration as HAPCs.

Alternative 2: Identify skate egg concentration HAPC(s):
The Council may select to identify – individually, severally, or all six of the areas of skate egg concentration as HAPCs.[1] At each of the six areas of skate egg concentration, the spatial extent of research bottom trawls containing more than 1,000 egg cases per kilometer squared (km^2) have been established. Boundary lines are then snapped outward to the nearest minute of latitude or longitude. The intent of Alternative 2 is to identify these areas as HAPCs, and to "discourage fishing in these areas" of skate egg concentration with gear that makes contact with the sea floor.

Table 1. The six areas of skate egg concentration proposed for identification as a HAPC under Alternative 2.

Site name[a]	Predominant skate species	Depth of max. egg density (m)	Maximum egg density (eggs/km^2)	Area of HAPC nm^2	Boundaries of HAPC (°N latitude or °W longitude)			
					North	South	West	East
1. Bering 1	Alaska	145	800,406	18.4	54°53′	54°49′	165°46′	165°38′
2. Bering 2	Aleutian	380	62,992	17.5	54°38′	54°33′	165°45′	165°34′
3. Bristol	Bering	156	6,188	13.7	55°21′	55°17′	167°40′	167°34′
4. Pribilof	Alaska	205	16,473	1.2	56°11′	56°10′	168°28′	168°26′
5. Zhemchug	Alaska	217	610,064	3.2	56°57′	56°54′	173°23′	173°21′
6. Pervenets	Alaska, Bering, Aleutian	316	334,163	27.7	59°28′	59°22′	177°43′	177°34′
Total area of the eastern Bering Sea proposed as HAPCs under Alternative 2 = 81.7 nm^2								

[a] Counterintuitively, the Bering 2 site is south of the Bering 1 site. Sites 3 through 6 run south to north.

This alternative also includes an option that would require monitoring of these HAPC areas for potential effects.

> **Option a:** *NMFS would monitor HAPCs for changes in egg density and other potential effects of fishing and the Council would request that industry support collection of data in evaluation of monitoring and management efforts relative to those HAPCs.*

Alternative 3: Identify and conserve skate egg concentration HAPC(s):

[1] 50 C.F.R. 600.815(a)(8). Essential Fish Habitat (EFH) provisions provide a means by which the Council may identify HAPCs within FMPs.

The Council may select to identify – individually, severally, or all six of – the areas of skate egg concentration as HAPCs – and, the Council may select different conservation and management options for any area identified as a skate egg concentration HAPC. To achieve effective enforcement of these areas, Alternative 3 establishes a minimum size threshold for the core concentration areas to be protected of at least 5 nm to a side and are then, where appropriate, enlarged with a buffer of 1 nm beyond the boundary of Alternative 2. Boundaries are then snapped outward to the nearest minute of latitude and longitude.

Table 2. The six areas of skate egg concentration proposed for identification as a HAPC under Alternative 3.

Site name[a]	Predominant skate species	Depth of max. egg density (m)	Maximum egg density (eggs/km^2)	Area of HAPC (nm^2)	Boundaries of HAPC (°N latitude or °W longitude)			
					North	South	West	East
1. Bering 1	Alaska	145	800,406	41.8	54°54′	54°48′	165°48′	165°36′
2. Bering 2	Aleutian	380	62,992	40.9	54°39′	53°32′	165°47′	165°37′
3. Bristol	Bering	156	6,188	34.4	55°22′	55°16′	167°42′	167°32′
4. Pribilof	Alaska	205	16,473	28	56°13′	56°08′	168°32′	168°22′
5. Zhemchug	Alaska	217	610,064	27.4	56°58′	56°53′	173°27′	173°17′
6. Pervenets	Alaska, Bering, Aleutian	316	334,163	53.3	59°29′	59°21′	177°45′	177°36′
Total area in the eastern Bering Sea proposed as HAPCs under Alternative 3 = 225.8 nm^2								

[a] Counterintuitively, the Bering 2 site is south of the Bering 1 site. Sites 3 through 6 run south to north.

This alternative includes two options relative to what gears would be prohibited from use in the areas of skate egg concentrations designated as HAPC.

> ***Option b:*** *Prohibit within skate egg concentration HAPC(s) the use of "mobile bottom contact"[2] fishing gear: nonpelagic (i.e., bottom) trawl, dredge, and dinglebar gear.*
>
> ***Option c:*** *Prohibit within skate egg concentration HAPC(s) the use of "mobile bottom contact" and pelagic trawl fishing gear: nonpelagic and pelagic trawl, dredge, and dinglebar gear.*[3]

Additional Options:

The following options are applicable to ALL of the alternatives, in any combination of skate egg concentration HAPCs, and with any combination of conservation and management measures the Council selects:

> **Option d:** *Suggest adding research and monitoring of areas of skate egg concentration to the Council's research priority list.*

The Council may suggest incorporating the research and monitoring of skate species into the Council's annual research priority list, to evaluate skate populations, skate egg concentration areas, and their ecology and habitat.

> **Option e:** *Adopt formatting standards as stated in the final rule implementing Amendment 89 to*

[2] 50 C.F.R. 679.2.
[3] See 50 C.F.R. 679.2 for the particular and intricate components defining "pelagic trawl" fishing gear.

the BSAI Groundfish FMP.

This option is a housekeeping amendment to the BSAI Groundfish FMP. The Council may approve the consolidation of figures and tables that describe areas in Amendment 89 to the BSAI Groundfish FMP, which establishes Bering Sea habitat conservation measures. Color Figures 70-73 in Appendix B describe the Bering Sea Habitat Conservation Area, the Northern Bering Sea Research Area and Saint Lawrence Island Habitat Conservation Area (HCA), and the Nunivak Island, Etolin Strait, and Kuskokwim Bay Habitat Conservation Area, respectively.

1.2 Summary of Environmental Impacts

The analysis of direct, indirect, and cumulative effects for the proposed action indicate no significant impacts on the human environment from the three alternatives and any of the possible options for conservation and management. Environmental effects of this proposed action are considered insignificant under all alternatives. These sites are small and discrete areas that have had either little fishing effort in them in the past or some limited trawling for groundfish, including for pollock, in some areas, in some years. No changes in catch effort are anticipated. As such, any effects on habitat, target species, non-target resources, protected species, or the ecosystem would be considered insignificant. The effects on skates are unknown but are expected to provide some positive benefit.

Alternative 1, the status quo or no action alternative, involves no measures to identify or conserve areas of skate egg concentration as HAPCs. Thus Alternative 1 is not likely to result in any significant effects regarding habitat, target species, non-target resources, protected species, or the ecosystem. The Council may, however, choose Option d under Alternative 1, which would add areas of skate egg concentration to the Council's annual research priority list. The Council could also choose Option e under Alternative 1, a housekeeping amendment to the Bering Sea Aleutian Island (BSAI) Fishery Management Plan (FMP)

Alternative 2 provides some degree of protection for vulnerable benthic skate egg habitat by identifying areas of skate egg concentration as HAPCs. The identification of these sites as an HAPC highlights the importance of this essential fish habitat for conservation and consultation on activities such as: drilling, dredging, laying cables, and dumping, as well as fishing activities. The impacts of Alternative 2 would be similar in magnitude to Alternative 1 because under Alternative 2 fishing activities are not restricted. However, fishing activities in these areas could be more closely monitored through the Economic Stock Assessment and Fishery Evaluation (SAFE) and the essential fish habitat (EFH) five-year review.

Alternative 3 provides for both the identification of skate egg concentration HAPCs and for the conservation of these areas through prohibitions on gear types within HAPCs. The impacts of Alternative 3 depend on the option for conservation and management (b and c) selected for each HAPC. The Council may select, in combination with any skate egg concentration designated as a HAPC, to limit fishing activities that make contact with the sea floor in these areas by prohibiting the use of "mobile bottom contact," pelagic, "bottom contact," or all fishing gear. Options that prohibit trawling in these areas would provide the most protection from potential direct impacts (bury or crush) and indirect impacts (dislodgement, movement, bycatch mortality) on egg cases. Other gear types likely have less potential to impact skate egg cases, so a prohibition on these gears may offer only marginal benefits. The potential effects of the options on skate populations remains unknown but are likely beneficial.

1.3 Summary of Economic Impacts

Economic impacts are expected to be minor under Alternatives 2 and 3, as the proposed HAPC sites are small areas overall and have low levels of fishing effort, particularly the four more northern sites. The

most costly option (Alternative 3, Option c) would close these six areas to all trawl gear, encompassing a total area of 225.8 nm^2.

The economic effects of prohibiting trawling in these sites under Alternative 3 were examined by the amount and value of catches within these sites. Data indicated that the catch (and ex-vessel value of the catch) varies considerably by site and across the years examined. Two of these sites (Bering 1 and Pervenets) had pollock catches valued at over $1 million in at least one of the years examined. Bering 1 site had highest catches of Pacific cod and pollock in 2004, but catches in this area have been very low since. Bering 2 had the highest catches of pollock in 2004, 2006, and 2007, and highest catches of other groundfish (arrowtooth flounder) in 2008 and 2009, with almost no catches in other years. In the Bristol site, catches of pollock were made in 2003 and 2004, but almost no catch in other years, and no catch with bottom trawls. Small catches of arrowtooth and pollock have been made in a few years at the Pribilof site. Similarly, small catches of pollock have been made at the Zhemchug site during 2004-2006; otherwise it has not been trawled. The Pervenets site had catches of Pacific cod and flathead sole in 2004 and 2008, and pollock from 2007-2010. In 2011, the only site that had catches of pollock was Bering 1, and only Bering 2 and Pribilof sites had catches of other groundfish (arrowtooth flounder).

On average, analysis suggests that a closure to pelagic and bottom trawling of these sites (Alternative 3, option c) would result in a maximum foregone catch of approximately $1,599,000 per year. Of this total, pelagic trawling in the areas would generate a forgone catch of $1,102,000 per year, and bottom trawling of $497,000, which is the total ex-vessel value divided by the nine years (2003 through 2011) of catch data examined. For comparison, BSAI trawl fisheries ex-vessel value was averaged at $515,840,000 over 2006-2010 (from the 2011 Economic SAFE, for all trawl species). The average of $1,102,000 per year of estimated forgone pelagic catch equates to approximately 0.21% of an average (2006 through 2010) annual gross value of the BSAI trawl groundfish ($515,840,000). It is likely, however, that the catch would be taken in other nearby areas, so costs to the fleet would be incurred through increased operational costs (increased fuel, lower CPUE, etc.), rather than forgone catch. Anecdotal reports have indicated that in addition to these costs, the Bering 2 site may cause crowding of the pollock fleet in years when the fish are holding deeper, potentially resulting in additional costs, gear conflicts, and other effects.

There would be no economic impacts on other fisheries. Although Alternative 3 options include prohibition on the use of dredge gear and dinglebar gear in the proposed HAPC areas, these gear types have not been used in these areas to date. Other fisheries using pot gear or longline gear would continue to be allowed to fish in these areas, and thus would be unaffected by the action.

PUBLIC TESTIMONY SIGN-UP SHEET

Agenda Item: C-2 HAPC Skate Egg Sites

	NAME *(PLEASE PRINT)*	TESTIFYING ON BEHALF OF:
1	Merrick Burden	Marine Conservation Alliance
2	Donna Parker	Arctic Storm
3	SOTHO GAUVIN	AK Seafood Cooperative
4	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.

Marine Conservation Alliance

promoting sustainable fisheries to feed the world

Seattle Office
4005 20th Avenue W, Suite 115
Seattle, WA 98199

Juneau Office
2 Marine Way, Suite 227
Juneau, AK 99801

(907) 523-0731 phone
(206) 260-3639 fax

June 2, 2012

Mr. Eric Olson, Chairman
North Pacific Fishery Management Council
605 West 4th, Suite 306
Anchorage, Alaska 99501

RE: Agenda Item C-2, Initial Review of Bering Sea HAPC skate egg sites.

Dear Mr. Olson,

The Marine Conservation Alliance (MCA) appreciates the opportunity to comment on Agenda Item C-2, Initial Review of Bering Sea HAPC skate egg sites. We appreciate the efforts of Council and NMFS staff in developing the Environmental Assessment (EA) and, in particular, the recent updates to the document that have been included since the last Council meeting. We also would like to recognize the significant contribution that Dr. Gerald Hoff has made in advancing our understanding of skate biology and life history.

While there are some areas of the EA that we believe could be improved and made more factually accurate, we believe the document is now at a state where it can be released to the public. We also believe it would be appropriate for the Council to develop a preliminary preferred alternative (PPA) at this meeting. We have provided our recommendations to this effect in this letter.

1. Summary Recommendations and Rationale

MCA recommends that the Council adopt Alternative 2 as the PPA for this action. This would designate these areas as HAPCs but would not include fishing restrictions.

Available information indicates that these areas are important spawning and rearing grounds for skates which justifies their designation as HAPC. We do not question the fact that these areas are important habitat for skates. Our comments and rationale focus on the narrower issue of whether and to what degree fishing impacts this habitat. In this regard, available information indicates that the physical habitat features associated with these areas are not the type of habitat that tends to be significantly impacted by fishing gear. For instance, the EA itself characterizes these sites as low relief areas made up of sand, mud, and silt and that temperature and depth may be other important variables. These are the types of characteristics that are not prone to "more than minimal and not temporary" impact from fishing gear, this being the appropriate standard for EFH based on the implementing regulations.

Secondly, the EA and supporting research documents describe one of the main impacts of fishing in these areas as being the mortality of skates which have not yet hatched from their egg casings. This occurs by catching skate eggs, by scattering skate eggs (which then makes them more prone to predation), or similar. At its core, this type of an impact is a population dynamics issue, not a habitat issue. In other words, if fishing in these areas causes skate mortality, the policy questions are "how much skate mortality is okay?" and "what is the current status of skate populations?" These are different policy questions than one associated with habitat where the focus is on the physical features that make these areas attractive spawning sites and the impact that fishing has upon those features.

There are substantial degrees of uncertainty concerning why these areas are important habitat and what impact fishing has upon them. Fishing, by its very definition, has an impact on the natural environment. The draft EA utilizes a construct of the precautionary principle in justifying restrictions by stating that because fishing has an impact of some kind, then restricting fishing in these areas would be beneficial. The EA goes further in stating that the use of the precautionary principle is consistent with accepted standards and is consistent with the goals of the FMP. Use of the precautionary principle is certainly appropriate in some cases, however utilizing the precautionary principle to the degree to which it is utilized to support fishing restrictions in this case effectively voids the need for meaningful rationale and voids the need for considering the weight of evidence. It is incumbent upon the analysis to first draw conclusions based upon the available information and secondly to caveat those conclusions or inferences based upon uncertainties and what may not be known. Drawing conclusions based upon what is not known cannot be considered analysis.

Based upon information currently available in the EA and elsewhere, the evidence suggests that fishing causes minimal amounts of disruption to the habitat in these areas. While there are uncertainties regarding this information, the fact that A) fishing has been occurring in these areas for several decades, B) that fishing gear advancements have resulted in a lower impact on benthic habitat compared to several years ago, C) that skate populations are generally considered to be healthy, and D) other skate egg deposition sites are thought to exist which have not been identified yet would seem to provide comfort in light of these uncertainties.

2. Policy History and Context

Habitat Areas of Particular Concern are a subset of Essential Fish Habitat (EFH). To understand the purpose of this tool it is helpful to review the policy history and context, starting with the Magnuson-Stevens Act. This Act has several references to EFH, but it was not until subsequent regulatory guidelines developed by NMFS which were intended to help the Councils develop EFH measures that the term HAPC became used.

a. MSA EFH Policy

The MSA defines EFH as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. FMPs are required to describe and identify EFH, to minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat. The Act also includes rather extensive language describing consultation processes between the Secretary of Commerce and other agencies. For instance:

- The Act calls for the Secretary of Commerce to coordinate with and provide information to other Federal agencies to further the conservation and enhancement of EFH.
- It calls on other Federal agencies to consult with the Secretary of Commerce with respect to any action that may adversely affect any essential fish habitat that has been identified.
- Councils may comment on any activity that may affect the habitat, including essential fish habitat, of a fishery resource under its authority

b. NMFS EFH Regulatory Guidelines

The NMFS regulatory guidelines state that "each FMP must minimize to the extent practicable adverse effects from fishing on EFH, including EFH designated under other Federal FMPs. Councils must act to prevent, mitigate, or minimize any adverse effects from fishing, to the extent practicable, if there is evidence that a fishing activity adversely affects EFH in a manner that is more than minimal and not temporary in nature..."

When contemplating the effects of fishing on EFH, and in particular, upon HAPCs, those same regulatory guidelines state "The evaluation should give special attention to adverse effects on habitat areas of particular concern and should identify for possible designation as habitat areas of particular concern any EFH that is particularly vulnerable to fishing activities."

c. The Application of HAPCs

The manner in which HAPCs have been applied differs across regions. In the North Pacific, HAPCs have been tied to fishing restrictions. Other Councils have used HAPCs differently. In the Pacific region for instance, HAPCs were designated for several different areas, such as sea grass, canopy kelp, and estuaries. These designations were not complimented with fishing restrictions. The logic behind this action was to first identify particularly important areas of EFH as HAPC, but the question regarding whether and to what degree fishing affects those areas was differentiable from that designation. In cases where fishing did not appear to pose a threat to that habitat, HAPC designation still serves as a point of leverage in agency to agency consultations. The figures at the end of the NWR's ROD are helpful for visualizing the point that HAPC areas are different from areas restricted from fishing: http://www.nwr.noaa.gov/Groundfish-Halibut/Groundfish-Fishery-Management/NEPA-Documents/upload/EFH-ROD.pdf

d. Following the Policy Guidance

The policy history surrounding EFH, and HAPCs in particular, provide a useful framework for considering whether skate egg sites deserve designation as HAPCs and whether the degree of impact that fishing has on these areas is acceptable. The following main themes and questions arise from EFH policy documents:

i. Do these areas deserve designation as HAPCs?
ii. Does fishing impact these areas to a degree that warrants fishing restrictions?
iii. How do we monitor the effectiveness of measures put in place to protect these areas?

In considering whether fishing activity impacts areas to an unacceptable degree, the policy documents provide a couple of helpful principles. For instance:

iv. Is the impact "more than minimal and not temporary"?

v. Is the habitat "particularly vulnerable to fishing"?

Each of these questions contains an important underlying context and that is the point that some impact from fishing is acceptable. Indeed, some impact from fishing is expected. In cases where EFH and HAPC designation comes in to play, the policy guidance indicates that minimal and temporary affects are okay, and that in considering whether fishing restrictions are necessary Councils should consider whether habitats are particularly vulnerable to the effects of fishing gear.

3. Description of the Habitat Type

The EA describes the habitat in these skate egg areas as occurring *over a narrow depth range (from 150m to 375m) on generally flat sandy to muddy bottom, with little bottom structure or attached biota. Sites are associated with major undersea canyons and are generally located in the upper portion of canyon heads.* (Skate EA: page 18).

These areas appear to be sought out by skates, at least in part, due to the temperatures that exist at these sites. Temperature appears to play an important role in the development time of the skate embryo and skates may be seeking relatively warmer areas which minimize that development (Skate EA: Figure 54, Figure 61, page 42, page 43).

Habitat features characterizing skate egg sites	• Low relief • "Muddy" • "Sandy" • Certain temperatures • Depth of 150m to 375m • Located at heads of canyon features

Source: Adapted from Skate Egg Sites Environmental Assessment (May 2012 version)

While the habitat can generally be described in this manner (low relief, flat sandy to muddy bottom) the habitat does appear to differ somewhat across these sites, meaning it may be inappropriate to compare one site to another. Page 37 of the EA states that habitat at the Bering 1 site is comprised of different sediment that is more "fluffy" than the more lightly fished sites that are further to the north. What is implied by this comparison is that areas that are fished more heavily experience a change in habitat to a more "silty" and "fluffy" state. This implication simply cannot be made based upon a comparison of one site to another. The benthic habitat differs across the Bering Sea and it is highly likely that the habitat in each of these areas started out differently. Available mapping exercises from other EFH efforts clearly show differing habitat across the Bering Sea, including differences that appear to overlap with skate egg sites.

4. Effect of Fishing on the Physical Habitat Found at Skate Egg Sites

Any fishing gear will affect the benthic habitat of a given location to some degree. The magnitude and duration of the effect depends on several factors, including gear configuration, towing speed, water depth, and the substrate over which the tow occurs. (Auster and Langton, 1999 as found in NRC 2002). The effect of fixed gear at these skate egg sites seems minimal due to its configuration and utilization, so we have focused our comments in this section on trawl gear.

The draft EA relies on various sources of information to describe the effect of fishing gear on benthic habitat. The authors of the EA are commended for including an up to date description of fishing gear that is used in the Bering Sea as this information is directly relevant to understanding the impact that Bering Sea fishing activity will have upon these sites. It is therefore unfortunate that the draft EA does not appear to consider this information when analyzing the impacts of the alternatives, and how these different gear configurations should be viewed in light of the literature that is cited in the draft EA that was apparently used to analyze the alternatives. What is also lacking is the fact that the substrate in these skate egg sites is different from the substrate that is present in many of the studies that were utilized in the draft EA to examine the implications of fishing gear on benthic habitat.

When considering the type of gear used in the Bering Sea and the type of habitat that exists at these skate egg sites, the implication is that much of the literature utilized in the EA to describe the effects of fishing upon habitat is only weakly applicable at best, and may be wholly inapplicable in some cases. For example, the EA now includes information about the requirement for modified trawl sweeps for flatfish trawls and points out that this likely reduces impacts on invertebrates and epifauna commonly found on sand/mud substrates of the Bering Sea. Furthermore, trawl gear has evolved toward increased spacing between bobbins to reduce drag, reduce catches of invertebrates, and increase towing efficiency. This increased spacing reduces the contact of the trawl footrope on the substrate. Put in an aggregate sense, the use of increased bobbin spacing and modified sweeps has resulted in a substantial reduction in the impact of trawl gear upon the muddy and sandy habitat found at these skate egg sites. This is in direct contrast with many pieces of literature used as support in the draft EA which studied the effect of trawls using bottom contact doors in areas of high relief substrate. Without characterizing the implications of this gear and habitat nexus that exists in the Bering Sea and how this differs from other pieces of available literature, the reader is led to an erroneous conclusion regarding the degree of impact that fishing activities have upon these skate egg sites.

To remedy this oversight, the EA can draw upon and actually bring into the analytical process the substantial amount of data on reduced effects on substrates in the reference material which describes this gear evolution and the effects of this gear, including studies done by Dr. Craig Rose at the AFSC, and the rationale used to develop regulations which implemented trawl sweep modifications, among others.

Fortunately, if the information in the EA is used appropriately, conclusions can be drawn regarding the impact of fishing gear upon the habitat in these areas. The EA characterizes skate egg sites as low relief, being in sandy or muddy areas, occurring at a certain depth range, being located at the heads of canyons, and having a certain water temperature. When contemplating the impact that trawling may have to these areas, it would not seem that fishing gear would adversely affect the utility of these areas as habitat for skate eggs, especially since all pollock and most flatfish and cod trawl vessels no longer use bottom contact doors. However, it is not difficult to imagine another type of non-fishing activity that could impact this habitat in a relatively permanent manner.

5. The Biological Effect of Fishing at these Skate Egg Sites

The draft EA provides a significant amount of information on skate life history and, in particular, the life histories of skates while they are present at the proposed HAPC sites. The literature indicates that skates rely on a relatively high survival rate of a small number of offspring, and that skate embryos may develop over the course of three years and are vulnerable during this developmental period. Once hatched, however, juvenile skates move rapidly out of this area, possibly as a survival strategy (see Hoff 2010). This means that the importance of these areas is limited to embryonic development and spawning activity, but it does not serve as preferred habitat for juveniles.

Concern over these skate egg sites was articulated in 2008 in the context of the Alaska skate. Here the authors make note of the fact that the *distribution pattern and accessibility in relatively shallow waters make the species a likely candidate in target fisheries, and its life history characteristics make it susceptible to population decreases* (Matta, 2006; Matta and Gunderson, 2007 as found in Hoff 2008). In other words, the authors were concerned about the possibility of fisheries targeting skates and the fear that skate populations would not hold up well to such fishing pressure. This rationale supported the idea that protecting skates during the embryonic stage was an important hedge against the possibility of a target fishery developing. This was followed with a policy recommendation from the AFSC to invoke HAPC designation and associated fishing restrictions in areas where these skate eggs are found.

While not all skates have been assessed, Bering Sea skate populations are generally considered healthy. In fact, there was an overall increase in skate biomass in the Aleutian Islands and eastern Bering Sea in recent years (Skate EA, page 80). Furthermore, Bering Sea fisheries do not currently target skates. Considering that protection of skates during the embryonic stage should lead to greater survival of skate species, the expected effect of closing these areas to fishing would be an increase in the populations of skate species which are already deemed healthy. This consideration has some validity; however the question that is relevant to this consideration is whether skate mortality needs to be reduced for some reason and/or whether skate populations need to be bolstered. It is important to note that this consideration is a different one from an impact to the physical habitat that makes these sites viable for skate embryo development.

6. Policy Recommendations

The research and policy documents developed by staff at the NMFS and the NPFMC are a significant contribution and have greatly improved our understanding of Bering Sea skates. Several sites have been identified which serve as skate spawning and embryonic development areas and these areas are clearly important if we wish to sustain healthy populations of skates in the Bering Sea.

The recommendations articulated here do not question the fact that these areas do serve as important habitat. These recommendations also do not question the fact that some types of human activities could affect skate habitat and fishing in these areas will indeed have some impact skate populations by inducing mortality on skate embryos, as well as juvenile and adult skates which are present at the same time that fishing gear is present in that area. However, the available information suggests that skate populations have been and are doing reasonably well in

spite of this and available information indicates that fishing will not impact the physical habitat in these areas in a meaningful fashion. It is this latter point that is most important when considering whether and how to invoke EFH protections at these sites.

For those reasons, we believe that HAPC designation is warranted for these areas because they do appear to serve as important habitat for these managed species. However, it does not appear necessary to compliment HAPC designation with fishing restrictions as the available information does not indicate that fishing activity would impact the important features of these habitat areas. HAPC designation should, however, provide leverage in agency to agency consultation in the future if the need arises. Finally, while we have largely remained silent on the issue of monitoring, we believe that monitoring is an important activity in regards to EFH and those areas designated as HAPCs. One sub-option to Alternative 2 would ask the industry to assist in monitoring efforts. While we are not necessarily opposed to helping to monitor these sites, at this time it is difficult to envision how the industry could contribute to monitoring efforts in a meaningful and effective fashion.

7. Specific Recommendations Regarding Changes to EA

In this section we've provided some suggested changes to the Purpose and Need statement and to the description of the intent of Alternative 2. Suggested changes are intended to be consistent with our recommendations and analysis regarding the reasons for EFH protection, the role of these areas in supporting skate species, and the effect that human activities may have on these sites.

The Purpose and Need Statement is included below. Suggested changes are either in CAPS or are in strikethrough font.

HAPCs are geographic sites that fall within the distribution of Essential Fish Habitat for the Council's managed species. The Council has a formalized process, identified in its FMPs, for selecting HAPCs that begins with the Council identifying habitat priorities—here, areas of skate egg concentration. Candidate HAPCs must be responsive to the Council priority, must be rare (defined as uncommon habitat that occurs in discrete areas within only one or two Alaska regions), and must meet one of three other considerations: provide an important ecological function; be sensitive to human-induced degradation; or be stressed by development activities.

*The candidate HAPCs identify sites of egg concentration by skate species (*Rajidae*) in the eastern Bering Sea. Skates are elasmobranch fish that are long-lived, slow to mature, and produce few young. Skates deposit egg cases in soft substrates on the sea floor in small, distinct sites. A reproducing skate deposits only several egg cases during each reproductive season. Depending on the species, a single egg case can hold from one to four individual skate embryos, and development can take up to three years. Thus, a single egg case site will hold several year classes and species, and eggs growing at different rates.*

Distinct skate egg deposition sites have been highlighted by skate stock experts while assessing skate information from research survey and catch locations. The scientists noted repeated findings of distinct sites where egg cases recruit to sampling or fishing gear contacting the sea floor: egg case prongs (or horns) entangle in or cases recruits into the gear. ~~The eggs and~~

~~*embryos are highly susceptible during their lengthy development to disturbance, damage, or destruction from fishing gear that contacts the sea floor. Fishing activities within these sites can also disrupt recently hatched juveniles and reproductive adult skates depositing new eggs in these*~~
~~*sites. It is therefore important to protect areas of skate egg concentration and limit the loss of skates during its early life stages.*~~ *THESE SITES ARE DISCRETE AREAS NEAR THE SHELF/SLOPE BREAK THAT SERVE AS IMPORTANT SPAWNING AND EMBRYONIC DEVELOPMENT AREAS FOR SKATE SPECIES. IT IS THEREFORE IMPORTANT TO CONSIDER 1) DESIGNATING THESE SITES AS HAPCs, 2) TO CONSIDER RESTRICTING ACTIVITIES WHICH IMPACT THE HABITAT AT THESE SITES, AND 3) TO MONITOR THE CONTINUED UTILITY OF THESE SITES FOR SKATE SPAWNING AND EMBRYONIC DEVELOPMENT, AND FURTHER STUDY THE RELATIONSHIP BETWEEN THE HABITAT FEATURES OF THESE SITES AND SITE SELECTION FOR SKATE EGG DEPOSITION.*

Text contained on page 33 of the Draft EA is contained below. We have struck out language that we believed should be modified to be consistent with our overall policy recommendations.

Alternative 2 would identify areas of skate egg concentration as HAPCs without any associated conservation or management measures. The Council may select individually, severally, or all of the six
areas identified as potential skate egg concentration HAPCs. Under Alternative 2, the Council would not
limit fishing activities or prohibit gear types that make contact with the sea floor. ~~*Alternative 2 is intended, however, to "discourage fishing in these areas" of skate egg concentration with gear that makes contact with the sea floor.*~~ *However, under Option a, the Council may request that NMFS monitor HAPCs for any effects of fishing and for industry to support those efforts.*

8. References:

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Sincerely,

Merrick Burden
Executive Director