

Errata sheet – HAPC analysis dated January 2013.

Latitude/Longitude corrections

Alternative 2 – page 7 Table 1; page 29 Table 6; page 73 Table 22 - change Bering 2 east longitude to read 165 39'

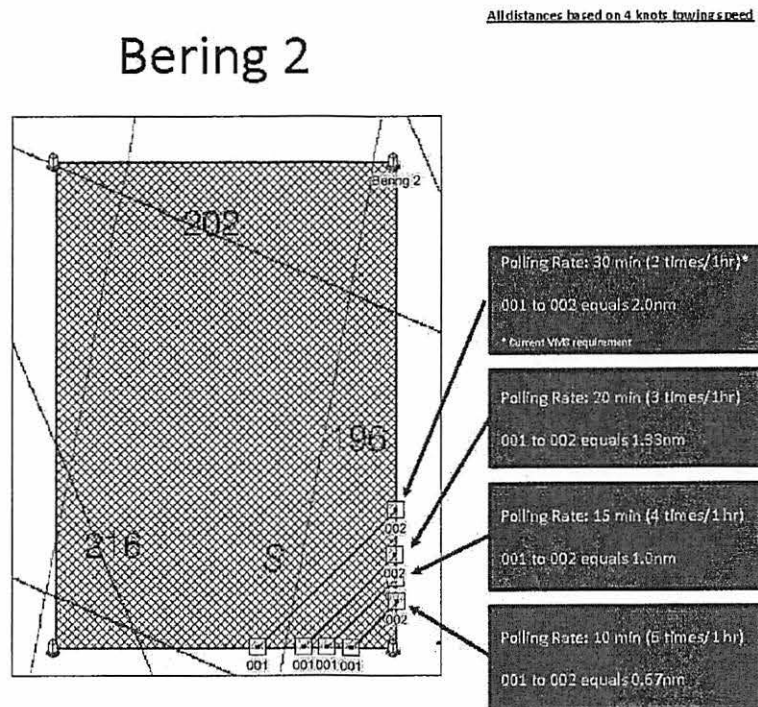
Alternative 3 – page 8 Table 2; page 29 Table 7; page 74 Table 23 - change Bering 2 South latitude to 54 32' and change Pervenets East longitude to 177 32'

*Note that these are typos in the tables only; the calculations of total area and analysis of fishing effects used the correct points.

Text omissions

page 92 - add in text *Bering 2* into 1st sentence and then read *The Bering 1, Bering 2, and Bristol HAPCs are medium in size.*

Figure 5 on Page 90 should be replaced with the following:

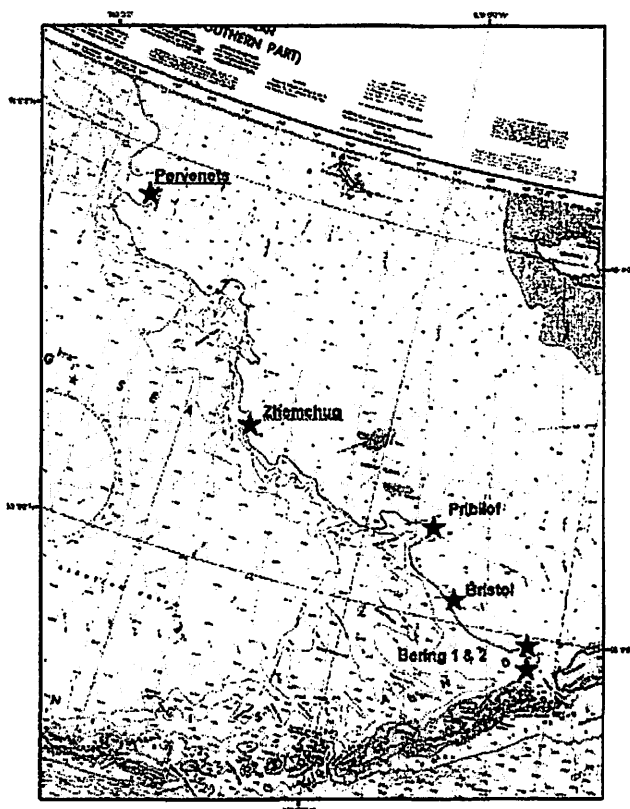


1.0 EXECUTIVE SUMMARY

Habitat Areas of Particular Concern (HAPC) are geographic sites within the distribution of essential fish habitat (EFH) for federally managed species. Specific to fishery actions, HAPCs are areas within EFH that are rare and are either ecologically important, sensitive to disturbance, or may be stressed.

In April 2010, the Council set a habitat priority type (skate nurseries) and issued a request for HAPC proposals in conjunction with the completion of its EFH five-year review process. In October 2010, the Council selected a HAPC proposal from the Alaska Fisheries Science Center (AFSC) to forward on for further analysis. The Council reviewed several versions of the analysis and refined the alternatives options. In June 2012, the Council identified a preliminary preferred alternative (Alternative 2, with Options a, d, e).

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 Action Alternatives and Options

The problem statement for this action is as follows:

HAPC 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 HAPC 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. 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 areas 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 for the relationship between the habitat features of these sites and site selection for skate egg deposition.

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 areas as HAPC: (Preliminary preferred alternative)

The Council may select to identify (individually, severally, or all six) areas of skate egg concentration as HAPC. 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 (km²) 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.

Under Alternative 2, the six proposed areas of skate egg concentration will be identified as HAPC:

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°39'
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 The Bering 2 site is south of the Bering 1 site. Sites 3 through 6 run south to north.

Option a: (Preliminary preferred option) NMFS would monitor HAPCs for changes in egg density and other potential effects of fishing and the Council would request that industry support in

collection of data in evaluation of monitoring and management efforts relative to those HAPCs.

Alternative 3: Identify and conserve skate egg concentration HAPC(s): The Council may select to identify (individually, severally, or all six) 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'	54°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°32'
Total area in the eastern Bering Sea proposed as HAPCs under Alternative 3 = 225.8 nm ²								

^a 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”¹ 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.²

Additional Options

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

Option d: (Preliminary preferred option) 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.

¹ 50 C.F.R. 679.2.

² See 50 C.F.R. 679.2 for the particular and intricate components defining “pelagic trawl” fishing gear.

Option e: (Preliminary preferred option) Adopt formatting standards as stated in the final rule implementing Amendment 89 to 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 substantial changes in effort re-distribution 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 skate egg concentration areas would likely continue to persist under the current level of fishing effort and distribution. The Council may choose Option d under Alternative 1, which would suggest adding 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 a 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 under Option a, fishing activities in these areas could be more closely monitored through the Ecosystem 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 certain fishing gears: bottom trawls, scallop dredges, dinglebar gear, and pelagic trawl gear. Options that prohibit trawling in these areas would potentially provide the most protection from potential direct impacts (e.g., bury or damage egg cases in some way) and indirect impacts (e.g., dislodgement, movement, siltation, bycatch mortality) on egg cases. The potential effects of the options on skate populations remains unknown but are likely beneficial to some degree.

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 nm².

The economic effects of prohibiting trawling in these sites under Alternative 3 were examined by the amount and value of catches within these sites, based on VMS track lines from observed tows. 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 value of approximately \$1,599,000 per year. Of this total, pelagic trawling in the areas would generate a forgone value 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 value 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. Testimony from fishermen has indicated that in addition to these costs, a closure of the Bering 2 site may cause crowding of the pollock fleet in years when the fish are holding deeper, potentially resulting in substantial 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.