DRAFT

Omnibus Essential Fish Habitat Amendment 2

Amendment 14 to the Northeast Multispecies FMP
Amendment 14 to the Atlantic Sea Scallop FMP
Amendment 4 to the Monkfish FMP
Amendment 3 to the Atlantic Herring FMP
Amendment 2 to the Red Crab FMP
Amendment 2 to the Skate FMP
Amendment 3 to the Atlantic Salmon FMP

Including a

Draft Environmental Impact Statement

Prepared by the
New England Fishery Management Council
In cooperation with the
National Marine Fisheries Service

September 13, 2013
September NEFMC Meeting

Includes the following sections: background and purpose, spatial management alternatives, considered and rejected spatial management alternatives

Blue shading indicates alternatives revised since September 5 in response to Joint Habitat/Groundfish Committee motions. These changes require final approval by the Council.

1 Executive summary

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3 Background and purpose

3.1 Need and purpose for action

There are several needs and purposes for developing Omnibus EFH Amendment 2 (Table 1).

Purposes include designating EFH (A) and minimizing adverse fishery effects on EFH (B). These actions are needed to meet requirements of the Magnuson Stevens Fishery Conservation and Management Act. Specific recommendations for EFH designation and adverse effects minimization are provided in the EFH regulatory guidelines, published in their final form in January 2002. The guidelines specify to meet Purpose A, the Councils should designate EFH for all managed species of finfish and shellfish, by life history stage, using both text descriptions and maps delimiting potential EFH areas. Although some designations, specifically skates, wolffish, and red crab, are more recent, many of the New England designations were developed for the 1998 Omnibus EFH Amendment and the new designations proposed in this action include additional years of distribution data as well as information about depth and temperature preferences. The species managed by the New England Fishery Management Council are listed in Table 2.

EFH designations help the Council identify habitats where adverse impacts should be minimized (Purpose B). Prior efforts to minimize the adverse effects of Council-managed fisheries on EFH have been largely developed and implemented plan by plan, although fishery effects on EFH are cumulative across FMPs because fish and fishery distributions are overlapping across species and plans. This action is needed to reevaluate and integrate habitat management measures across the fisheries managed by the Council, and to update these measures given new scientific information about habitat distributions and fishing impacts.

EFH designations also inform fisheries management decision making generally, helping the Council and its stakeholders to understand species' distributions and habitat requirements. Finally, EFH designations facilitate outside consultations between NMFS and other ocean users regarding non-fishing projects that may impact fish habitats. Habitat consultations help minimize impacts on EFH, particularly impacts of non-fishery activities. Purpose C of the amendment is to identify other actions to encourage conservation and enhancement of such habitat. One set of alternatives related to this purpose is to designate Habitat Areas of Particular Concern (HAPC). An HAPC is a subset of EFH that represents particularly unique, ecologically important, and/or vulnerable habitat types. This is action is needed to highlight these special areas, as HAPCs help inform and receive elevated consideration for both fishery management and EFH consultations. Another set of alternatives that relates to Purpose C is the designation of Dedicated Habitat Research Areas, which will help the Council to better understand how habitat management measures influence stock productivity, to allow for the design of more effective conservation measures in future actions.

Another purpose of this amendment is to review and consider revising the rolling closures and year round groundfish closed areas. This is needed to ensure that spatial management measures are contributing to the realization of optimum yield in the groundfish fishery. Spatial overlaps between habitat and groundfish management areas make the EFH amendment an appropriate venue for this review. Specifically, the Council was concerned that the continued existence of the

year-round groundfish closures could potentially undermine the practicality of new EFH management areas. In addition, changes to spatial management measure may be appropriate given substantial shifts in groundfish management strategy since the implementation of Amendment 16 to the Northeast Multispecies Fishery Management Plan, which implemented Annual Catch Limits in the fishery and significantly expanded the sector program.

There are two elements to this overall purpose. The first groundfish-specific purpose of this amendment is to increase protection for juvenile groundfish (Purpose D). Success at younger ages can have positive productivity benefits for managed resources, and therefore action is needed to protect juvenile groundfish, particularly for commercially valuable species. Scientific data indicate that the year-round habitat management areas and habitats most vulnerable to fishing are not optimally sited to encompass concentrations of juvenile groundfish. A second groundfish-specific purpose of this amendment is to identify seasonal closed areas in the NE Multispecies FMP that would reduce impacts on spawning groundfish and on the spawning activity of key groundfish species, since the protection of spawning fish is needed in order to sustainably manage stocks (Purpose E). Therefore additional alternatives were needed to meet this need.

Table 1 – Needs for action, with related purposes and management alternatives

Need	Purpose	Alternatives that address this purpose
Meet Magnuson Stevens Act EFH requirements	A. Designate EFH for each species and lifestage	Section 5.1
	B. Minimize the adverse effects of fishing on EFH to the extent practicable	Section 9.1
	C. Identify other actions to encourage conservation and enhancement of such habitat	Habitat Areas of Particular Concern (Section 5.2); Dedicated Habitat Research Areas (Section 0)
Achieve optimum yield from the groundfish fishery	D. Improve protection of habitats on which juvenile groundfish depend	Section 9.1
	E. Improve protection of spawning groundfish	Section 9.2

Table 2 - Species managed by the New England Fishery Management Council, by plan, with common names.

FMP	Species	Common Names
Multispecies	*Anarhichus lupus*	Atlantic wolffish
Multispecies	*Gadus morhua*	Atlantic cod (official), rock cod
Multispecies	*Glyptocephalus cynoglossus*	witch flounder (official), gray sole, Craig fluke, pole flounder
Multispecies	*Hippoglossus hippoglossus*	Atlantic halibut (official)
Multispecies	*Hippoglossoides platessoides*	American plaice (official), American dab, Canadian plaice, long rough dab

FMP	Species	Common Names
Multispecies	*Limanda ferruginea*	yellowtail flounder (official), rusty flounder
Multispecies	*Macrozoarces americanus*	ocean pout (official), eelpout, Congo eel, muttonfish
Multispecies	*Melanogrammus aeglefinus*	haddock (official)
Multispecies	*Merluccius bilinearis*	silver hake (official), whiting, New England hake
Multispecies	*Pollachius virens*	pollock (official), Boston bluefish, coalfish, green cod
Multispecies	*Pleuronectes americanus*	winter flounder (official), blackback, Georges Bank flounder, lemon sole, sole, flatfish, rough flounder, mud dab, black flounder
Multispecies	*Scophthalmus aquosus*	windowpane flounder (official), sand flounder, spotted flounder, New York plaice, sand dab, spotted turbot
Multispecies	*Sebastes spp.*	redfish (official), rosefish, ocean perch, red sea perch, red bream, Norway haddock
Multispecies	*Urophycis chuss*	red hake (official), squirrel hake
Multispecies	*Urophycis tenuis*	white hake (official), Boston hake, black hake, blue hake, mud hake, ling
Multispecies	*Merluccius albidus*	Offshore hake (official), blackeye whiting
Monkfish	*Lophius americanus*	monkfish (official), American goosefish, angler, allmouth, molligut, fishing frog
Sea Scallop	*Placopecten magellanicus*	Atlantic sea scallop (official), giant scallop, smooth scallop, deep sea scallop, Digby scallop, ocean scallop
Skates	*Amblyraja radiata*	Thorny skate (official), mud skate, starry skate, Spanish skate
Skates	*Dipturus laevis*	Barndoor skate (official)
Skates	*Leucoraja erinacea*	Little skate (official), common skate, summer skate, hedgehog skate, tobacco box skate
Skates	*Leucoraja garmani*	Rosette skate (official), leopard skate
Skates	*Malacoraja senta*	Smooth skate (official), smooth-tailed skate, prickly skate
Skates	*Leucoraja ocellata*	Winter skate (official), big skate, spotted skate, eyed skate
Skates	*Raja eglanteria*	Clearnose skate (official), brier skate
Deep-Sea Red Crab	*Chaceon quinquedens*	Deep-Sea red crab (official)
Atlantic Herring	*Clupea harengus*	Atlantic sea herring (official), Labrador herring, sardine, sperling, brit
Atlantic Salmon	*Salmo salar*	Atlantic salmon (official), sea salmon, silver salmon, black salmon

3.2 Goals and objectives

The Council adopted the following habitat and groundfish management goals and objectives to address the purpose and need for this action. The Council adopted goals 1-8 and objectives A-J in 2004, in relation to the EFH designation and adverse effects minimization requirements of the MSA. Much of the language of these goals and objectives is taken from the EFH regulations. In April 2011, the Council voted to expand the scope of Omnibus EFH Amendment 2 to include modification of groundfish closed areas. Specific goals and objectives related to this expansion of scope were approved in November 2012. These include goals 9 and 10 and objectives K-N.

GOALS:

1. Redefine, refine or update the identification and description of all EFH for those species of finfish and mollusks managed by the Council, including the consideration of HAPCs;
2. Identify, review and update the major fishing activities (MSA and non-MSA) that may adversely affect the EFH of those species managed by the Council;
3. Identify, review and update the major non-fishing activities that may adversely affect the EFH of those species managed by the Council;
4. Identify and implement mechanisms to protect, conserve, and enhance the EFH of those species managed by the Council to the extent practicable;
5. Define metrics for achieving the requirements to minimize adverse impacts to the extent practicable;
6. Integrate and optimize measures to minimize the adverse impacts to EFH across all Council managed FMPs;
7. Update research and information needs;
8. Review and update prey species information;
9. Enhance groundfish fishery productivity;
10. Maximize societal net benefits from the groundfish stocks while addressing current management needs

OBJECTIVES:

A. Identify new data sources and assimilate into the process to meet goals (state, federal and other data sources);
B. Implement review of existing HAPCs and consider modified or additional HAPCs (Goal 1);
C. Review EFH designations and refine or redefine where appropriate as improved data and analysis become available (Goal l);
D. Develop analytical tools for designation of EFH, minimization of adverse impacts, and monitoring the effectiveness of measures designed to protect habitat (Goal l, Goal 3 and Goal 5);
E. Modify fishing methods and create incentives to reduce the impacts on habitat associated with fishing (Goal 4);

F. Support restoration and rehabilitation of fish habitat which have already been degraded (by fishing and non-fishing activities) (Goal 4);
G. Support creation and development of fish habitat where appropriate and when increased fishery resources would benefit society (Goal 4);
H. Develop a strategy for prioritizing habitat protection (Goal 4);
I. Develop criteria for establishing and implementing dedicated habitat research areas (Goal 7);
J. Design a system for monitoring and evaluating the benefits of EFH management actions including dedicated habitat research areas (Goal 7);
K. Improved groundfish spawning protection; including protection of localized spawning contingents or sub-populations of stocks (Goals 9 and 10);
L. Improved protection of critical groundfish habitats (Goals 9 and 10);
M. Improved refuge for critical life history stages (Goals 9 and 10);
N. Improved access to both the use and non-use benefits arising from closed area management across gear types, fisheries, and groups. These benefits may arise from areas designed to address the other three groundfish closed area objectives. (Goals 9 and 10).

The Council also requested a mechanism for reviewing and updating spatial management areas.

3.3 Management background

The following sections outline major events in habitat and groundfish management, with a particular focus on seasonal and year-round area closure measures, especially current areas that are part of the No Action alternative for this amendment. In many cases, the general locations of management areas have remained consistent, but with adjustments over time to area boundaries, seasons, and prohibited vs. exempted gears. This summary is by no means a complete accounting of every area management measure, as the management system is fairly complex and has undergone many changes over time. The intent is to provide an overall sense of how the current measures were arrived at, as well as references to the original Council action so the reader can seek out additional details if desired. The dates listed in the following sections are typically the year in which the Council submitted an action, which is not necessarily the implementation date, which is generally 3-6 months later. All FMP documents are available from the Council, and most are posted online in PDF format by Amendment or Framework number.

3.3.1 EFH designations and habitat closed areas

Prior efforts to minimize the adverse effects of Council-managed fisheries on EFH have been largely developed and implemented plan by plan, although fishery effects on EFH are cumulative across FMPs because fish and fishery distributions are overlapping across species and plans. In proposing this omnibus action, NEFMC specified a desire to integrate adverse effects minimization measures across plans through actions that will apply to all New England Council-managed fishing activities.

Omnibus EFH Amendment 1 (OA1) identified and described EFH for all species managed by the Council at that time of its development through the following FMP amendments: Northeast Multispecies Amendment 11, Atlantic Sea Scallop Amendment 9, and Atlantic Salmon

Amendment 1. OA1 was completed around the same time as the original Atlantic Herring FMP. OA1 also identified the major threats to EFH from both fishing and non-fishing related activities and proposed conservation and enhancement measures. As the regulatory guidelines were not yet finalized, the Council relied on preliminary NMFS guidance when developing OA1. The Council approved the final amendment and environmental assessment in September 1998 and the MSA/NEPA document was submitted to NMFS in October 1998. The Secretary of Commerce approved the amendments to all FMPs, with the exception of the Monkfish FMP, on March 1999. The EFH requirements of FMPs that were not included in the Omnibus Amendment of 1998 were completed on the following schedule: Monkfish FMP (April 1999), Red Crab FMP (October 2002), and Skate FMP (July 2003). Amendment 16 (2010) added Atlantic wolffish to the NE Multispecies FMP and designated EFH for the species.

A ruling on a lawsuit brought by several environmental organizations (American Oceans Campaign et al. v. Daley et al.) prevented the Department of Commerce from enforcing the EFH amendments challenged in the suit, including OA1. The Council was required to perform "a new and thorough EA or EIS" for each of the EFH amendments, in compliance with NEPA. The Department of Commerce instructed the Councils to:

- Prepare EISs for all fisheries challenged in the lawsuit.
- Comply with the requirements of all applicable statues, including NEPA; the Council on Environmental Quality (CEQ) NEPA implementing regulations, 40 C.F.R. Parts 1500-1508; and the National Oceanic and Atmospheric Administration (NOAA) Administrative Order 216-6.
- Include analyses of environmental impacts of fishing on EFH, including direct and indirect effects, as defined in the EFH regulations at 50 C.F.R. 600.810, and analyses of the environmental impacts of alternatives for implementing the requirement of the M-S Act, that the FMP "minimize, to the extent practicable, adverse effects on [EFH] caused by fishing."
- Consider a range of reasonable alternatives for minimizing the adverse effects (as defined by the EFH regulations) of fishing on EFH, including potential adverse effects. This range of alternatives will include "no action" or status quo alternatives and alternatives set forth specifying fishery management actions that can be taken by NMFS under the M-S Act. The alternatives may include a suite of fishery management measures, and the same fishery management measures may appear in more than one alternative.
- Identify one preferred alternative, except that, in the draft EIS, NMFS may elect, if it deems appropriate, to designate a subset of the alternatives considered in the draft EIS, as the preferred range of alternatives, instead of designating only one preferred alternative.
- Present the environmental impacts of the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among the options, as set forth in CEQ regulation 40 C.F.R. 1502.14.

In response, the Council determined that the analysis and subsequent management alternatives required by the Court Order would be presented within separate NEPA documents currently being developed by NMFS and the Council for the Northeast Multispecies and Atlantic Sea Scallops FMPs. These documents were completed and submitted in 2004, and included extensive analyses of the adverse effects of fishing on EFH and a range of alternatives to address

such effects. These two amendments included descriptions of regional fishing gears and habitats, and summaries of the existing knowledge on the effects of fishing gears on habitats. Both documents included a gear effects evaluation to assess the vulnerability of each EFH designation, by species and life stage, to mobile bottom-tending gear. The amendments evaluated five criteria for each designation: shelter, food, reproduction, habitat sensitivity, and gear distribution. The Council determined that the following gear types could be having an adverse effect on specific EFH designations as follows (E=egg, L=larvae, J=juvenile, A=adult):

- Otter trawls: American plaice (J, A), Atlantic cod (J, A), Atlantic halibut (J, A), Atlantic sea scallop (J), haddock (J, A), ocean pout (E, L, J, A), red hake (J, A), redfish (J, A), white hake (J), silver hake (J), winter flounder (A), witch flounder (J, A), yellowtail flounder (J, A), red crab (J, A), black sea bass (J, A), scup (J), tilefish (J, A), barndoor skate (J, A), clearnose skate (J, A), little skate (J, A), rosette skate (J, A), smooth skate (J, A), thorny skate (J, A), and winter skate (J, A).
- New Bedford scallop dredge: Acadian redfish (J, A), American plaice (J, A), Atlantic cod (J, A), Atlantic halibut (J, A), Atlantic sea scallop (J), haddock (J, A), ocean pout (E, L, J, A), red hake (J, A), white hake (J), silver hake (J), winter flounder (J, A), yellowtail flounder (J, A), black sea bass (J, A), scup (J), barndoor skate (J, A), clearnose skate (J, A), little skate (J, A), rosette skate (J, A), smooth skate (J, A), thorny skate (J, A), and winter skate (J, A).
- Hydraulic clam dredges: Atlantic sea scallop (J), ocean pout (E, L, J, A), red hake (J), silver hake (J), winter flounder (A), yellowtail flounder (J, A), black sea bass (J, A), scup (J), clearnose skate (J, A), little skate (J, A), rosette skate (J, A), and winter skate (J, A).

Building on these conclusions, the documents proposed and evaluated a suite of measures designed to minimize the adverse effects of fishing on EFH. Specifically, they included the following management options:

- **Incidental benefits of other Amendment 10 and 13 measures:** Because management measures that were designed to reduce fishing mortality may also provide benefits to fish habitat, such management measures were explicitly considered as part of a formal strategy to reduce impacts on habitat.
- **Modification of current groundfish closed areas to protect habitat:** Modifications to the boundaries of the existing closed areas were proposed to better protect sensitive habitat. Some entirely new closed areas were proposed.
- **Identification of important habitat areas within current groundfish closures:** Areas within currently existing closed area containing important habitat were identified. Such areas may be subject to more severe restrictions in order protect the habitat.
- **Closed areas designed to protect habitat and minimize impact on fisheries:** This alternative was proposed to close areas with important habitat elements that are of low value to the multispecies, scallop, and monkfish fisheries in terms of productivity.
- **Current closed areas, with the exception of scallop access areas:** The then-current year round closed areas were considered for designation as habitat closures, with the exception of portions of those areas that have been made accessible to the scallop fishery through time-limited openings.

- **Expand list of prohibited gears in closed areas:** This alternative would have expanded the number of types of fishing gears that may not be used in the closed areas to include shrimp trawls, herring mid-water trawls, clam dredges, and pots and traps.
- **Restrictions on the use of rockhopper and roller gear:** This alternative was proposed to restrict the use of rockhopper and roller trawl gear. Various alternatives with respect to the maximum size of the gear allowed were evaluated.

To assess the impacts of management alternatives on fish habitats, Amendments 10 (Sea Scallop FMP) and 13 (Multispecies FMP) used a suite of different metrics to evaluate the management areas. Alternatives were ranked based primarily on various methods of summing the raw values provided by these metrics:

- Days at Sea use
- Days absent, as reported in the Vessel Trip Reports (VTRs)
- Percent overlap with areas designated EFH
- Biomass inside/outside area closure alternatives for five trophic guilds and five spatio-temporal species assemblages
- Biomass inside/outside area closure alternative for six species with high levels of association with benthic habitats: longhorn sculpin, sea raven, redfish, ocean pout, jonah crab and American lobster
- Sediment composition inside/outside area closure alternatives based on the Poppe et al. (1989) dataset

Ultimately, Amendment 13 to the Northeast Multispecies FMP adopted the following measures to minimize the adverse effects of fishing on EFH to the extent practicable:

- Effort reductions, by significantly reducing DAS reductions and including seasonal closures
- Area closure, by designating new areas both inside and outside then-existing year-round closures as “habitat closure areas” to reduce the effect of fishing on benthic habitats

Amendment 10 to the Atlantic Sea Scallop FMP adopted the following measures:

- Effort reductions, by significantly reducing DAS reductions and including seasonal closures
- Area closure, by designating new areas both inside and outside then-existing year-round closures as “habitat closure areas” to reduce the effect of fishing on benthic habitats
- Gear modifications that increased dredge ring size to 4” throughout fishery, which were shown through analysis to be more efficient than 3.5” rings and therefore minimized bottom contact time

The following year, Monkfish Amendment 2 was finalized, which implemented two EFH areas closed to vessels fishing on a monkfish DAS in Lydonia and Oceanographer canyons.

3.3.2 Groundfish management history, with a focus on area closures

Spatial management of groundfish fishing has a long and complicated history in New England. Seasonal and year round closed areas have been used to meet many objectives, including to protect spawning cod and haddock on Georges Bank, reduce discards of small yellowtail flounder in Southern New England, as a means to reduce mortality on certain overfished groundfish stocks and make day-at-sea management more effective, and in the Gulf of Maine to reduce discards caused by cod possession limits established to rebuild Gulf of Maine cod.

In 1974, the International Commission for Northwest Atlantic Fisheries (ICNAF), precursor to the Northwest Atlantic Fisheries Organization (NAFO), implemented bottom-trawling closures on Georges Bank to protect large mesh species, particularly cod and haddock (Halliday and Pinhorn, 1996). These restrictions at first applied to large vessels over 155 ft. and eventually to smaller 130 ft. vessels, reducing foreign factory trawl activity.

In 1977, the Council's Fishery Management Plan for Atlantic Groundfish was implemented via emergency secretarial action (42 FR 13998). This plan included two area closures on Georges Bank that were closed to fishing gears other than pelagic gears during March, April, and May (Map 1). Fishing with hook gear larger than 3 cm, scallop dredges, and lobster pots was exempted.

The 1981 Interim Fishery Management Plan for Atlantic Groundfish modified the boundaries of Closed Area I (Map 1). In 1985, the Council incorporated the Closed Area I and Closed Area II spawning closures with the 1981 boundaries into the Northeast Multispecies FMP. The CAI season started in February, a month earlier than under the interim plan, and extended into May, opening after April 30 at the RA's discretion. The season for the CAII spawning area was coordinated with Canada. The SNE Yellowtail Flounder closure (west of the current Nantucket Lightship Area, see Map 1) was also adopted in the 1985 amendment. This area was closed seasonally to provide reduced mortality and enhanced spawning opportunity for yellowtail flounder. Specifically, areas east of 71°30' W closed March 1, while areas west of 71°30' W closed April 1. The areas remained closed as far into May as the Council determined was appropriate to achieve objectives of FMP.

In 1987, the Council's Technical Monitoring Group (TMG) evaluated these spawning closures and removed the northwest corner of CAI, and recommended moving the area south and east via a subsequent action. This change was implemented via Amendment 1 (Map 1). For the SNE closed area, Amendment 1 added a prohibition on scallop dredge gear in the due to yellowtail bycatch concerns, and an exemption for hook and line fishing with zero possession of yellowtail.

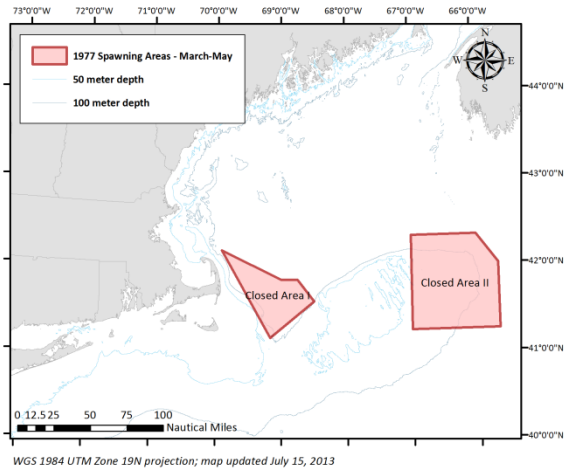
Amendment 2 (1989) established a seasonal large-mesh area on Nantucket Shoals to protect cod and excluded trawlers from Closed Area II during the closure to improve enforcement of the closure.

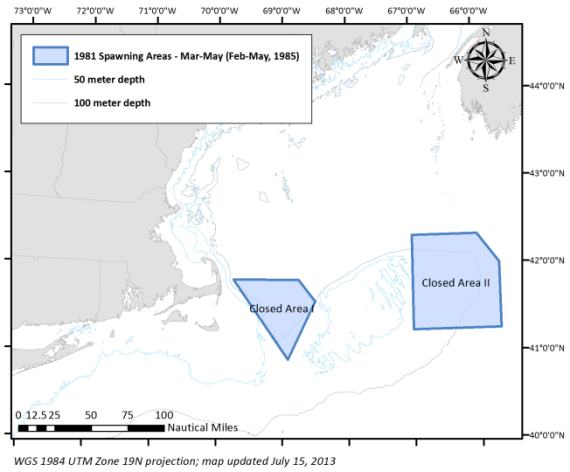
Amendment 3 (1989) implemented the Flexible Area Action System, designed to rapidly identify and implement spatial management in response to changing resource conditions. However, this management framework went largely unused and was eventually eliminated by Amendment 13 (2003). Amendment 4 (1990) implemented three areas related to juvenile groundfish protection,

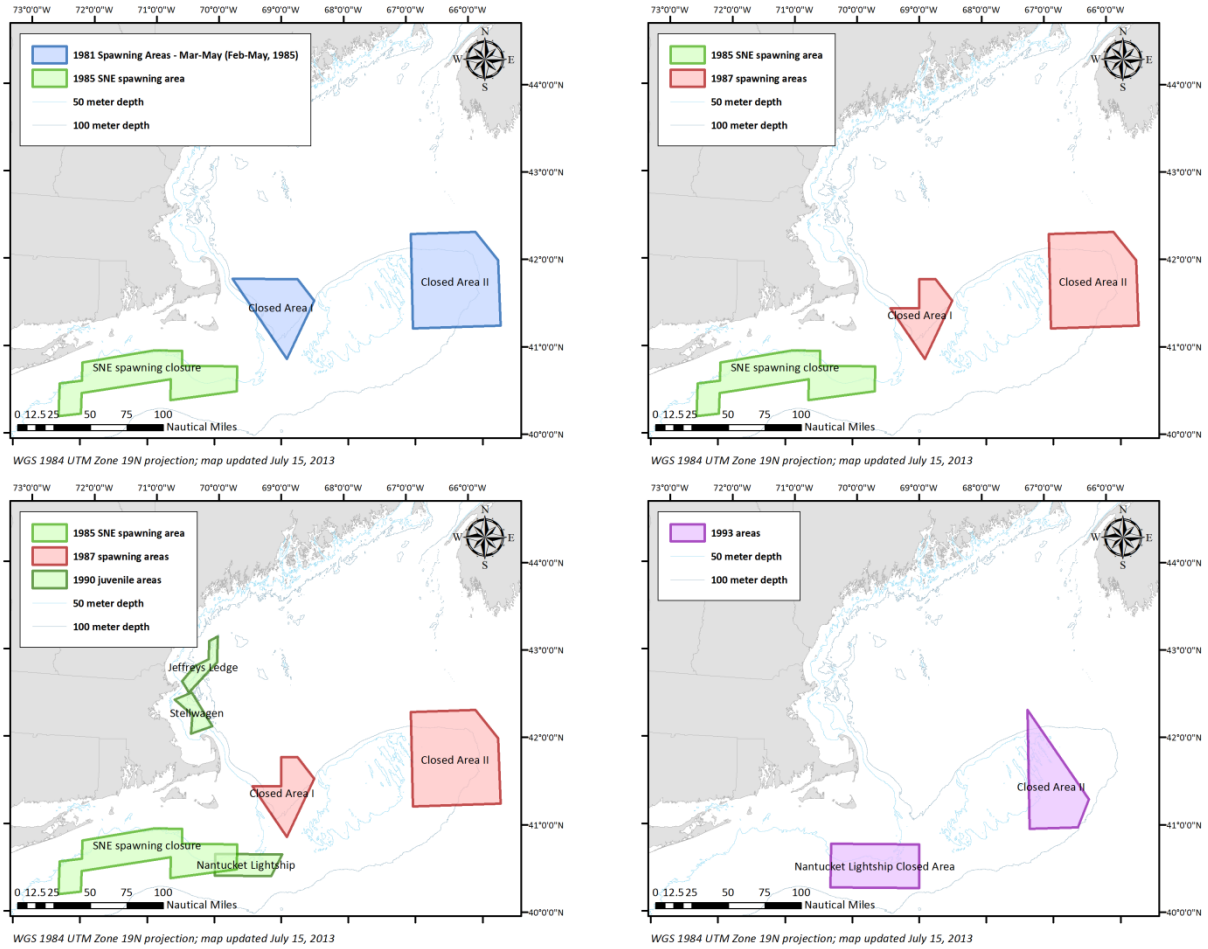
the Nantucket Lightship Area in SNE for yellowtail, and the Jeffreys Ledge and Stellwagen Bank areas for juvenile cod (Map 1). The Nantucket Lightship area closure was triggered by large concentrations of juvenile yellowtail in the sea sampling data. The Jeffreys and Stellwagen areas were triggered by high juvenile cod discard rates in the sea sampling data. Measures were taken in two stages, with large (at the time) 5.5 inch mesh required first, and a mobile bottom-tending gear closure if high discards persisted.

The Council developed Amendment 5 (submitted September 1993) to the NE Multispecies FMP to reduce fishing effort below overfishing limits with the introduction of limited access and day-at-sea limits. In the western Gulf of Maine, Amendment 5 implemented a six-inch square mesh requirement in the Jeffreys Ledge Juvenile Protection Area (fifth panel on Map 1). This L-shaped area extended from the northern-most part of Jeffreys Ledge, including the fingers, and down nearly to the state waters boundary off Cape Ann, Massachusetts. In addition, Amendment 5 suspended Closed Area I, expanded the size of Closed Area II to its current footprint, and created the Nantucket Lightship Closure as it exists today (Map 1). Secretarial action in late 1994 implemented all three areas year round on an emergency basis, modifying the boundaries of CAI to what they are today (Map 2). The Council adopted these areas year round via Framework 9 (1995) to rebuild Georges Bank fish stocks. Except for tightly defined special access programs to target healthy stocks (starting in 2004) and access programs for scallop fishing (starting in 1999), these areas have remained closed to gears capable of catching regulated groundfish. Currently, recreational and party/charter fishing for groundfish is prohibited in CAI and CAII but allowed in the Nantucket Lightship Closed Area.

Map 1 – Groundfish spatial management, 1977-1993







Amendment 7 (1996) recognized that area closures would eventually be developed in the GOM on a year round basis. As an interim measure, this amendment extended two seasonal closures that were previously to gillnets only for harbor porpoise protection to all vessels. These were the Massachusetts Bay closure during March and the Mid-Coast Closure during November and December. These were fairly unpopular and efforts to modify them began almost immediately. Framework 19 (October 1996) adopted a March closure of the two thirty-minute squares over Jeffreys Ledge; the plan was to revert to the Mid-Coast Closure during the 1998 fishing year, and change the dates to May, but the Western Gulf of Maine Closed Area was implemented instead, as described below.

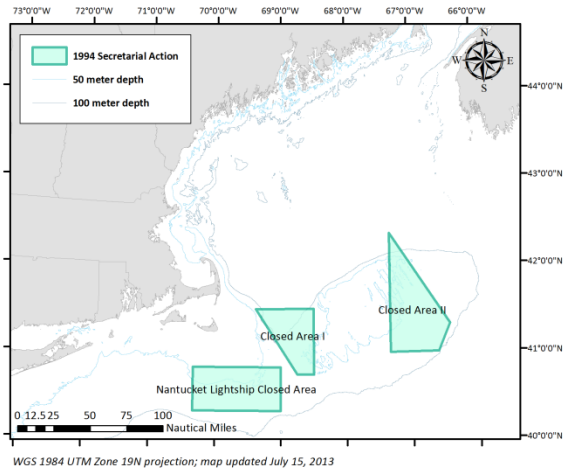
Up until 1998, there were no year-round groundfish closed areas in the Gulf of Maine. During the late 1990s, it became apparent that the Amendment 4 day-at-sea allocation to limited access groundfish vessels of 88 days was too high to prevent overfishing, particularly for cod. Fishermen were opposed to reducing day-at-sea allocations because it would limit their ability to target and catch healthier stocks. Therefore in addition to other measures like possession limits to reduce the incentive to target certain species, Framework Adjustment 25 (1998) included year-round closure of the Western Gulf of Maine Closed Area as it is currently configured (Map 2), as well as one month rolling closures during March and June. Most of the rolling closure blocks were inshore, but block 129 that overlaps Cashes Ledge was closed during June. The intent of

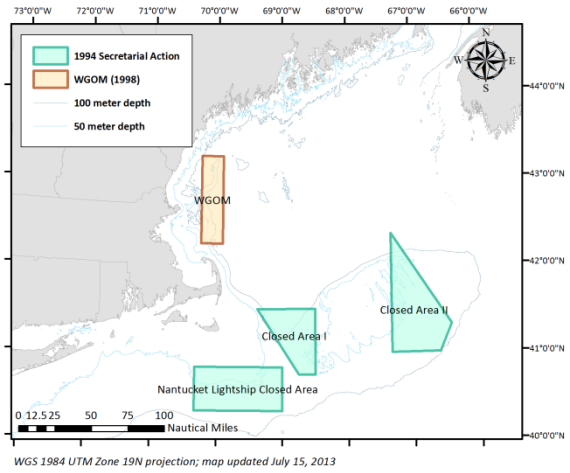
the rolling closures was to preserve a day-at-sea allocation to allow vessels to fish on healthy stocks and on Georges Bank, while reducing Gulf of Maine cod mortality and cod discards. Note that the Western Gulf of Maine area was originally intended as a temporary year-round closure; it was extended via various actions including Framework 33 (2000), a court order lawsuit filed in response to Framework 33, and finally indefinitely via Amendment 13 (2003). During Amendment 13 development, many alternate versions of the Western Gulf ofMaine closure were discussed, but none were formally analyzed in the DEIS.

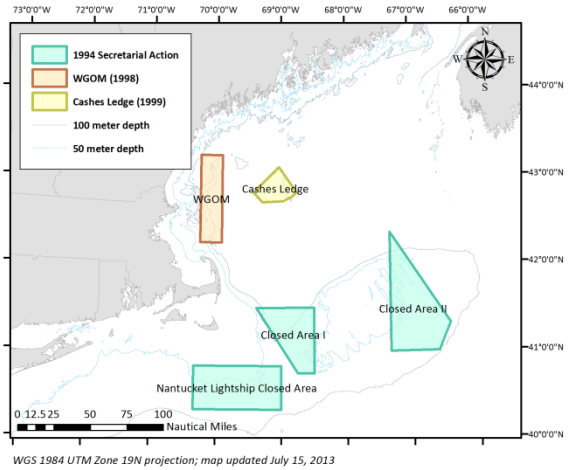
Framework 26 (1998) modified the months and blocks of the rolling closures, increasing the amount of area closed to groundfishing on a monthly basis. There was also a Northeast Closure area in effect in the eastern GOM during this time. In 1999, Framework 27 reconfigured block 129 to the current boundaries of the Cashes Ledge groundfish area (Map 2), and the closure period was expanded to four months (July-October). Framework 27 also enacted the 12 inch maximum roller gear size in the WGOM as a measure to reduce fishing effort on GOM cod, and to achieve some separation between offshore and inshore vessels. It was expected that the roller gear size limit would "limit the ability of mobile gear vessels to fish in hard bottom areas inshore, where cod and other species aggregate" (Framework 27, p 16).

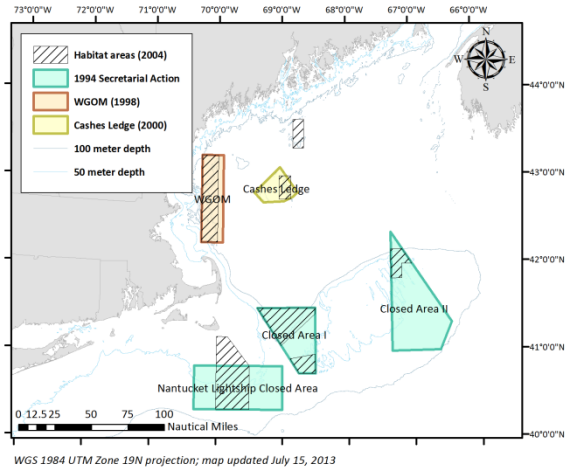
In 2000, Framework 33 added a November conditional closure for Cashes Ledge, which was triggered if 50% of the Target Total Allowable Catch (TTAC) for GOM cod was reached by July 31 of that year. Cashes Ledge was closed to groundfishing year-round by Secretarial action on May 1, 2002 as a result of a settlement agreement among certain parties in Conservation Law Foundation et al. v. Evans. The year-round closure was extended by the Council in 2003 as part of Amendment 13 to the NE Multispecies FMP. This action also designated the habitat closures described in the previous section, including one on Cashes Ledge. Like Closed Area I, Closed Area II, and the Nantucket Lightship Area, the Western Gulf of Maine and Cashes Ledge Closed Areas prohibit fishing by gears capable of catching groundfish. Recreational fishing for groundfish was and is allowed.

Map 2 – Groundfish spatial management, 1994-present. GOM rolling closures in effect from 1998 onward are not shown on these figures.









Despite (or because of) day-at-sea management, all these various restrictions became increasingly onerous to the groundfish fleet, reducing the flexibility to make sound fishing and business decisions. Day-at-sea leasing adopted under Amendment 13 helped, but did not resolve the conundrum and day-at-sea management was being seen as ineffective. In response, the Council developed and adopted a new form of catch share management in Amendment 16 (2010). Catch share management allocates specific percentages of allowable catch to individual limited access groundfish vessels, which are allowed to join together with other limited access groundfish vessels in "sectors". The sectors submit for approval operational plans that specify which vessels belong to each sector and how they would operate and monitor their vessels catch and landings. This form of management made the sectors accountable for their overages of groundfish catches, but also allowed them to pool groundfish allocations amongst member vessels.

Catch share management with accountability measures was seen as being more effective at keeping mortality below acceptable levels, thereby preventing overfishing. The sector vessels were also often exempted from cod possession limits and rolling closures were no longer as relevant to managing mortality. Thus, for sector vessels, Amendment 16 rolled back the size and temporal extent of the rolling closures to the most critical blocks during April, May, and June. Sectors were allowed to and many did apply for exemptions to these smaller areas, but to date no rolling closure exemption requests have been approved as part of a sector operations plan.

Low annual catch limits for certain groundfish stocks proposed for fishing year 2013 led the Council to consider measures that might mitigate economic and social impacts of such reductions. NE Multispecies Framework 48 (final Council action December 2012) included a measure that allows sector vessels to request exemptions from parts of the year round groundfish closed areas that are not within existing habitat closures or new habitat management areas proposed via OA2. As is the case with other types of sector exemption requests, requests to access these exemption areas are made and analyzed annually via sector operations plans. In July 2013, NMFS described the range of exemption requests they would grant and under what conditions.

3.4 Notices of intent, scoping, and the amendment development process

The Council published the original Notice of Intent to prepare EFH Omnibus Amendment 2 in February 2004, and in September 2005 the Council declared its intent to complete the Omnibus Amendment in two phases, due to issues of public clarity and management complexity. Phase 1 included a review and update of EFH designations and consideration of HAPCs (not including consideration of management measures or restrictions), an update of prey species list, an update of non-fishing impacts, and an update of research and information needs (since moved to Phase 2). The Phase 1 work was published as a draft Environmental Impact Statement in April 2007. The Council approved the preferred EFH and HAPC designations, as well as the prey species and non-fishing impacts summaries, in June 2007. An additional HAPC in the Great South Channel was approved in September 2007.

Phase 2 included a review and update of a gear effects evaluation and alternatives to optimize management measures for minimizing the adverse effects of fishing on EFH across all FMPs. In late 2007, the Habitat Committee and Plan Development Team commenced work on Phase 2. From late 2007 through early 2010, the group worked to develop an updated approach (the Swept Area Seabed Impact model) for estimating the magnitude and distribution of the adverse effects of fishing on EFH. In 2009, the Council clarified via an additional notice of intent that it would not publish a final version of the Phase I EIS, but would instead incorporate all Phase 1 elements in a single EIS covering both phases. In spring 2010, the committee used the model outputs and related information to begin development of alternatives to optimize and integrate adverse effects minimization measures across all Council-managed fisheries. These alternatives were substantially developed by August 2011, although additional modifications were made up until the Council approved the alternatives for analysis in June 2013. Dedicated habitat research areas were developed during 2011 and 2012. Minor adjustments to the EFH designations approved during Phase 1 were also completed between 2009 and 2011.

Meanwhile, mitigation of fishing impacts to deep-sea corals was added to the amendment shortly after the deep-sea coral discretionary authority was added to the MSA via the 2007 reauthorization. The range of alternatives for analysis was approved by the Council in April 2012, but removed into a separate omnibus plan amendment in September 2012. Work on this plan amendment will be completed once OA2 is submitted, although relevant data gathering efforts are ongoing.

In April 2011, the Council added evaluation of groundfish management areas, which have substantial spatial overlap with existing habitat management areas, to the scope of the amendment. A notice of intent seeking comments on this issue was published in June, 2011. Other Council priorities related to groundfish prevented significant progress on this evaluation and the development of new measures until a dedicated, ad hoc technical team (the Closed Area Technical Team) was convened in August 2012. The technical team drafted goals and objectives for the groundfish elements of the amendment. These were review by the Groundfish PDT and Committee and approved by the Council in November 2012. After completing analyses of the sector groundfish closed area exemption alternative for NE Multispecies Framework 48, the technical team turned its attention to development of OA2 measures in January 2013.

In May and June 2013, the habitat and groundfish technical teams and committees began meeting jointly to finalize a range of spatial management alternatives for Council approval. These alternatives were developed for spawning protection, adverse effects minimization, protection of juvenile groundfish habitats, and designation of dedicated habitat research areas.

In August 2013, Council staff convened a series of informational meetings to gather information and feedback on the alternatives from industry members, focusing on those who had not previously engaged in the process.

Additional information to be added later…

9 Spatial management alternatives

Essential Fish Habitat and Habitat Area of Particular Concern designations are more administrative in nature, identifying areas that provide habitat for particular species or groups of species but not carrying fishing restrictions. This section of the amendment outlines alternatives that designate spatial management areas within which fishing activities would be restricted, either on the basis of gear type or type of species targeted (Table 24). There are spatial overlaps between the three sets of areas, and there are various fishing restrictions possible within each type of area, so the final distribution of fishing effort restrictions will depend on which areas and measures are selected in combination.

Table 24 – Types of spatial management alternatives that effect fishing activities

Alternative type	Year round or seasonal	Which areas comprise the action alternatives?	Type of restrictions (generally)	Rationale
Habitat protection	Year round, long term	Modified versions of existing habitat management areas in groundfish and scallop FMPs, new areas developed through SASI analysis and groundfish hotspot analysis.	Mobile bottom-tending gears – prohibit their use, or allow dredges and require gear modifications for trawls only. Option to exclude hydraulic clam dredges from the restriction if all mobile bottom-tending gears are prohibited.	Minimize adverse effects of fishing on highly structured seafloor habitats to protect the areas ability to shelter fish and fish prey, some areas focus on encompassing habitats for juvenile large mesh multispecies in particular
Spawning protection	Seasonal, long term	Existing rolling and year round closures, redesignated as spawning areas	Closed to gears capable of catching groundfish, with exemptions as appropriate. Option to include recreational groundfishing in the restriction.	Avoid capture of fish during their spawning season, prevent disruption of spawning activity
Habitat research	Year round, triggered sunset provision	Subsets of existing habitat management areas, or new habitat management areas	At minimum, prohibit use of mobile bottom-tending gears. Stellwagen area maintains no-action restrictions and also includes a reference area that would further restrict recreational groundfish catch.	Create opportunity for research that investigates the relationship between habitat, fishing, and fish productivity

The amendment includes action alternatives designed to address specific goals and objectives, and related no action spatial management alternatives, which consist of combinations of current areas and measures that currently fulfill similar purposes to their corresponding action alternatives. The intent of the action alternatives in each category is explicit – either year round

protection of vulnerable habitats from fishing gear effects or seasonal protection of spawning fish. The action alternatives are not designed to reduce fishing mortality per se. The original rationales behind the areas that constitute the no action alternatives are often not as well defined. Furthermore, the existing management areas currently produce multiple benefits, which may not relate well to the original purpose of the designations.

The alternatives are organized in a way that clearly indicates the purpose of each management area or combination of areas moving forward, regardless of an area's existing rationale for existence or any benefits realized to date. However, the impacts analysis will attempt to capture as best as possible the multiple benefits arising from an area, focusing first on the primary function of an action alternative area (i.e. spawning, benthic habitat protection, research), and use this as the primary basis for evaluating the corresponding no action alternative. Other secondary benefits of the action and no action alternatives will also be evaluated. The Council should consider both the primary and secondary benefits of various areas and associated measures in its decision making. Table 25 outlines the relationship between the management alternatives, their associated purposes and objectives, and the attributes that will be evaluated during the impacts analysis.

Table 25 – Relationship between the alternatives and the impacts analysis

Work in progress – intended to illustrate complex relationship between alternatives structure and impacts analysis

	Omnibus EFH Amendment objectives				Previous objectives and possible incidental impacts	
Management objective:	***Protect spawning groundfish***	***Minimize adverse effects on EFH***	***Protect juvenile groundfish habitats***	***Facilitate research***	***Reduce groundfish mortality***	***Reduce gear conflict***
Sample questions to be addressed by impacts analysis:	*Which species spawn in the identified area during the relevant closure period? How well will the management measures selected protect identified spawning activity?*	*Are the vulnerable to impact? How will the measures selected protect the habitats from future impacts? What EFH designations (species/life stage) occur in the area?*	*Are the habitats vulnerable to impact? How will the measures selected protect the habitats from future impacts? What species of groundfish have high number of juveniles in the area?*	*Do the measures associated with the area serve as an effective control or treatment, thus creating conditions that facilitate specific types of research?*	*How does the area and associated measures influence the distribution of fishing effort? Is this effort displaced, such that mortality is shifted in space and time, or is effort eliminated such that mortality is reduced?*	*Do some of the fishing restrictions facilitate the use of the area by other fisheries or gear types, either seasonally or year round?*

Spawning alternatives	Year round groundfish areas	Primary objective of some areas when implemented, especially those first implemented seasonally. Primary objective for future management.	Not an objective when areas originally implemented. Incidental benefit in those portions of the areas where gear impacts are limited by restrictions on specific types of effort.	Secondary objective when areas initially implemented. Incidental benefit in those portions of the areas where gear impacts are limited by restrictions on specific types of effort.	Not an objective when areas originally designated. Incidental benefit.	Primary objective of these areas when they were implemented, but not an objective for future management	Not an objective. Possible incidental benefit.
	GOM rolling closures	Secondary objective of these areas when they were first implemented. Primary objective for future management.	Not an objective when areas originally implemented. Seasonal restrictions on fishing may protect more ephemeral habitat features.	Not an objective when areas originally implemented. Seasonal restrictions on fishing may protect more ephemeral habitat features.		Primary objective of these areas when they were implemented, but not an objective for future management	Not an objective. Possible incidental benefit.
	GOM spawning protection area	Primary objective for current and future management.	Not an objective when this area was first implemented, or for future management	Not an objective when this area was first implemented, or for future management	Not an objective when this area was first implemented, or for future management	Not an objective when this area was first implemented, or for future management	Not an objective. Possible incidental benefit.
Habitat protection alternatives	Habitat management areas	Not an objective. Possible incidental benefit.	Primary objective originally and for future management.	Indirect objective originally; primary objective for future management.	Not an objective when areas originally designated. Incidental benefit.		Not an objective. Possible incidental benefit.
Habitat research alternatives	Dedicated habitat research areas	Not an objective. Possible incidental benefit if measures restrict gears capable of catching groundfish.	Not an objective. Expected incidental benefit as mobile bottom tending gears should be excluded, at a minimum.	Not an objective. Expected incidental benefit as mobile bottom tending gears should be excluded, at a minimum.	Primary objective.	Not an objective. Expected incidental benefit as mobile bottom tending gears should be excluded, at a minimum.	Not an objective. Possible incidental benefit.

9.1 Alternatives to minimize the adverse effects of fishing on EFH and improve protection of juvenile groundfish habitats

The alternatives in this section include combinations of management areas designed to minimize the adverse effects of fishing on Essential Fish Habitats, a requirement of the MSA:

"Fishery Management Plans must describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 305(b)(1)(A), 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 Secretarial EFH guidelines (67 FR 2343) define 'adverse' as a combination of effects on habitat that are both 'more than minimal' and 'not temporary'. However, determinations about

what exactly is meant by minimal and temporary, and about what management measures are practicable, are left to the Council's discretion.

All of the habitat management areas described in this section would be defined on an indefinite, year-round basis, and the fishing restriction measures focus on minimizing impacts associated with mobile bottom-tending gears.

The alternatives in this section are grouped regionally and then sub-regionally. Alternative 1 for each sub-region (the No Action alternative) consists of mobile-bottom tending gear closures first identified via Northeast Multispecies Amendment 13 as well as the year-round groundfish closures, which were implemented at various times and for various purposes, but restrict some of the same gear types and provide some of the same benefits in terms of minimizing adverse effects on EFH. Alternative 2 for each sub-region is a "no closure" scenario. This was interpreted to mean no year-round habitat management areas; Alternative 2 does not preclude seasonal closures for spawning, or year-round management areas employed for other purposes (e.g. research). The exception to this is the Eastern Gulf of Maine sub-region, where the No Action and no closure alternatives are equivalent and therefore combined. Alternatives 3-7 for each sub-region (2-3 for Eastern GOM) consist of combinations of new or modified habitat management areas. In some cases, different alternatives in a subregion include smaller and larger versions of an area. These are named "Small XX HMA and "Large XX HMA" to distinguish between them; the associated maps clarify which area is included in a given alternative. The areas included in each alternative are summarized in Table 26.

With the exception of the Ammen Rock area (see below), the management measure for each area can be selected from the following four options. Different measures could be selected in each area.

- Year-round closure to mobile, bottom-tending gear types, without an exemption for hydraulic clam dredges, or
- Year-round closure to mobile, bottom-tending gear types, with an exemption for hydraulic clam dredges, or
- Year-round requirements that bottom trawls be operated without any ground cables and with a cap on bridle length of 30 fathoms, or
- Year-round requirement that bottom trawls be operated with modified ground cables that have elevating disks and a maximum length per side of 45 fathoms.

The Ammen Rock area is proposed as a closure to all fishing, with the exception of lobster trapping; this is the only habitat management area that would be managed in this way. This would include but is not limited to bottom trawls, including shrimp trawls, all types of dredges, demersal longlines, sink gillnets, and traps, with the exception of lobster traps, as well as midwater trawl gear and recreational gear.

Table 26 – Summary of areas included in the various habitat management alternatives

Sub-region	Alternative	Areas included	Notes

Sub-region	Alternative	Areas included	Notes
Eastern Gulf of Maine	1 (No Action, no closure)	None	Combined No Action/no closure
	2	Large Eastern Maine, Machias	Removed Jeffreys Bank 9/5/13
	3	Small Eastern Maine, Machias, Toothaker	Removed Jeffreys Bank 9/5/13
Central Gulf of Maine	1 (No Action)	Jeffreys Bank EFH, Cashes EFH, Cashes GF	Added Jeffreys Bank 9/5/13
	2 (no closure)	None	
	3	Mod Jeffreys Bank, Mod Cashes, Ammen Rock, Fippennies, Platts	Added Jeffreys Bank 9/5/13
	4	Mod Jeffreys Bank, Mod Cashes, Ammen Rock	Added Jeffreys Bank 9/5/13
Western Gulf of Maine	1 (No Action)	WGOM EFH, WGOM GF	
	2 (no closure)	None	
	3	Large Bigelow Bight, Large Stellwagen	
	4	Large Bigelow Bight, Small Stellwagen, Jeffreys Ledge	
	5	Small Bigelow Bight, Small Stellwagen, Jeffreys Ledge	
	6	Large Stellwagen	Added alternative 9/5/13
	7	Roller gear areas – current and modified options	
Georges Bank	1 (No Action)	CAI and CAII EFH, CAI and CAII GF	
	2 (no closure)	None	
	3	Northern Edge	
	4	Northern Edge and Small Georges Shoal gear modified area	
	5	Small Georges Shoal mobile gear closure and Large Georges Shoal gear modified area	
	6	Alternate version of the Northern Edge area as a mobile gear closure	Added 9/12/13 by staff
Great South Channel/Southern New England	1 (No Action)	NLCA EFH and NLCA GF	
	2 (no closure)	None	
	3	Extended Great South Channel and Cox Ledge	
	4	Great South Channel and Cox Ledge	
	5	Nantucket Shoals and Cox Ledge	
	6	Alternate version of Nantucket Shoals as a mobile gear closure, alternate version of Great South Channel as a gear modified area	

9.1.1 Gulf of Maine

The Gulf of Maine habitat management alternatives are presented separately for each of three sub-regions: Eastern GOM and the Scotian Shelf, Central GOM, and Western GOM.

9.1.1.1 Eastern GOM and the Scotian Shelf

The habitat management alternatives for the eastern Gulf of Maine and Scotian Shelf region include various combinations of four areas: Toothaker Ridge, Small Eastern Maine, Large Eastern Maine, and Machias. (No action Jeffreys Bank and modified Jeffreys Bank shifted to central GOM)

Table 27 – Coordinates for habitat management areas in eastern Maine

Toothaker Ridge HMA		
Point	N Latitude	W Longitude
1	43° 40.0’	69° 15.4’
2	43° 40.0’	69° 07.9’
3	43° 45.4’	69° 07.9’
4	43° 45.4’	69° 00.5’
5	43° 40.0’	69° 00.5’
6	43° 40.0’	68° 45.6’
7	43° 34.6’	68° 45.6’
8	43° 34.6’	68° 53.1’
9	43° 29.2’	68° 53.1’
10	43° 29.2’	69° 00.5’
11	43° 29.2’	69° 07.9’
12	43° 34.6’	69° 07.9’
13	43° 34.6’	69° 15.3’
Small Eastern Maine HMA, * see note B		
Point	N Latitude	W Longitude
1	44° 02.5’	68° 06.1’
2	43° 51.0’	68° 33.9’
3*	43° 56.6’	68° 38.1’
4*	44° 07.6’	68° 10.6’
Large Eastern Maine HMA, * see note B		
Point	N Latitude	W Longitude
1	44° 07.1’	68° 00.2’
2	43° 51.7’	68° 00.0’
3	43° 42.2’	68° 33.1’
4	43° 42.3’	-68° 46.0’
5*	43° 49.0’	-68° 45.9’
6*	43° 55.9’	-68° 41.0’
7*	43° 56.8’	-68° 39.3’
8*	44° 07.1’	-68° 10.8’
Machias HMA, see note A		
Point	N Latitude	W Longitude

1	44° 27.7’	-67° 08.9’
2	44° 28.0’	-67° 27.1’
3	44° 46.0’	-66° 54.8’
A. Western boundary state waters; eastern boundary state waters/EEZ *B. Landward boundary at state waters. Only endpoints provided.*		

9.1.1.1.1 Alternative 1 (No Action, no habitat management areas)

The no action habitat management alternative in the eastern Gulf of Maine and Scotian Shelf region does not include any habitat management areas. *(No action Jeffreys Bank shifted to central GOM)*

Note that while other sub-regions have a specific alternative for no habitat management areas, in the eastern GOM sub-region this scenario represents the status quo. So the Council can choose a no habitat management area strategy in this sub-region by selecting the no action alternative.

9.1.1.1.2 Alternative 2

The alternative (Map 90) would designate two new habitat management areas, the Large Eastern Maine Habitat Management Area and the Machias Habitat Management Area, in all FMPs. Measures for both of these areas could include:

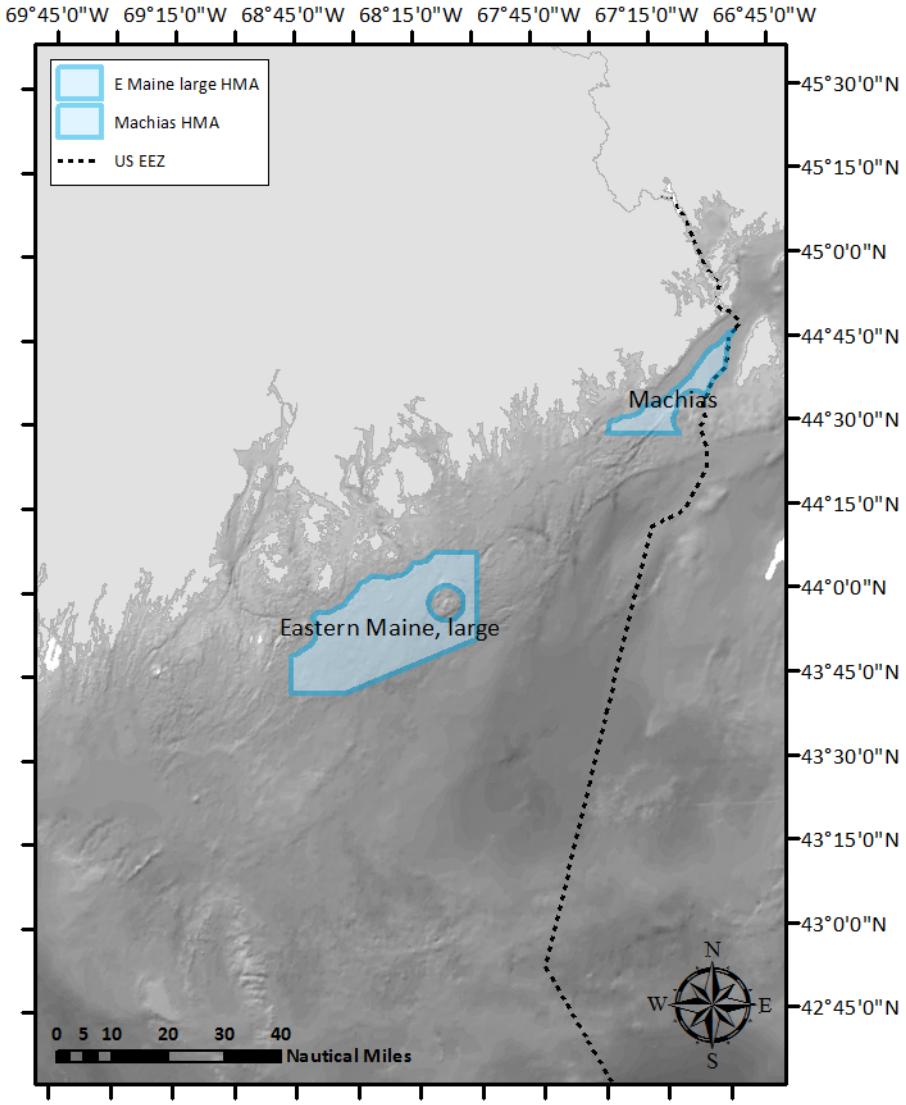
- complete restrictions on use of mobile bottom-tending gears, or
- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or
- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

The same management measure need not be applied to all three areas.

(Modified Jeffreys Bank shifted to central GOM)

Rationale: The Eastern Maine area was designed to minimize the adverse effects of fishing on habitats used by juvenile groundfish, including redfish, alewife, silver hake, white hake, windowpane flounder, winter flounder, and witch flounder. The larger version of the Eastern Maine area included in this alternative includes additional juvenile hotspots compared to the smaller area identified in Alterative 4. Habitats in the Eastern Maine area are vulnerable to fishing impacts, as indicated by the SASI spatial analysis. The Machias area was developed to minimize the adverse effects of fishing on juvenile cod, haddock, and halibut habitats.

Map 90 – Eastern Gulf of Maine/Scotian Shelf Habitat Management Alternative 2



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.1.1.3 Alternative 3

This alternative (Map 91) designates three new habitat management areas, the Small Eastern Maine Habitat Management Area, the Machias Habitat Management Area, and the Toothaker Ridge Habitat Management Area. All three areas would be designated in all NEFMC FMPs. Measures for all three of these areas could include:

- complete restrictions on use of mobile bottom-tending gears, or
- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or

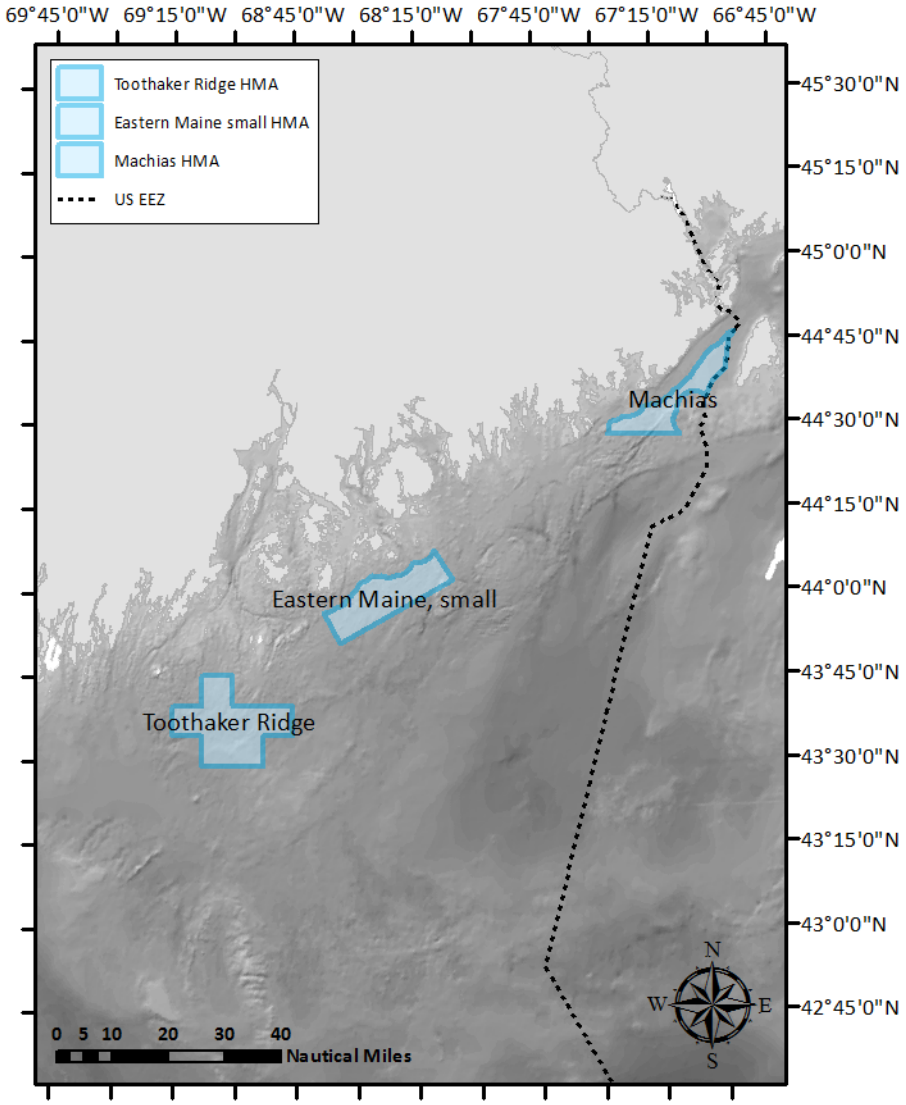
- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

The same management measure need not be applied to all three areas.

(No action Jeffreys Bank shifted to central GOM)

Rationale: The Toothaker Ridge area was developed specifically for juvenile groundfish habitat protection, and includes juvenile redfish and witch flounder habitat. The Small Eastern Maine area is expected to protect similar species and habitat types as compared to the larger area (i.e. redfish, alewife, silver hake, white hake, windowpane flounder, winter flounder, and witch flounder), but with fewer impacts to industry, which is why the smaller area was combined with the nearby Toothaker Ridge area. The Machias area is the same as in Alternative 3; it was developed to minimize the adverse effects of fishing on juvenile cod, haddock, and halibut habitats.

Map 91 – Eastern Gulf of Maine/Scotian Shelf Habitat Management Alternative 3



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.1.2 Central GOM

The habitat management alternatives for the central Gulf of Maine region include various combinations of eight areas: Jeffreys Bank (no action), Modified Jeffreys Bank, Cashes Ledge Habitat Closure Area (no action), Cashes Ledge Groundfish Closed Area (no action), Modified Cashes Ledge HMA, Ammen Rock HMA, Fippennies Ledge HMA, and Platts Bank HMA (which is comprised of two sub-areas that would be implemented together).

Table 28 – Coordinates for habitat management areas in the central Gulf of Maine

Jeffreys Bank Habitat Closure Area		
Point	N Latitude	W Longitude

JB1	43° 40′	68° 50′
JB2	43° 40′	68° 40′
JB3	43° 20′	68° 40′
JB4	43° 20′	68° 50′
Modified Jeffreys Bank HMA		
Point	N Latitude	W Longitude
1	43° 31′	68° 37′
2	43° 20′	68° 37′
3	43° 20′	68° 55′
4	43° 31′	68° 55′
Cashes Ledge Habitat Closure Area		
Point	N Latitude	W Longitude
CLH1	43° 01′	69° 03′
CLH2	43° 01′	68° 52′
CLH3	42° 45′	68° 52′
CLH4	42° 45′	69° 03′
Cashes Ledge Groundfish Closure Area		
Point	N Latitude	W Longitude
CL1	43°07′	69°02′
CL2	42°49.5′	68°46′
CL3	42°46.5′	68°50.5′
CL4	42°43.5′	68°58.5′
CL5	42°42.5′	69°17.5′
CL6	42°49.5′	69°26′
Modified Cashes Ledge HMA		
Point	N Latitude	W Longitude
1	43° 01.0′	69° 00.0′
2	43° 01.0′	68° 52.0′
3	42° 45.0′	68° 52.0′
4	42° 45.0′	69° 00.0′
Ammen Rock HMA		
Point	N Latitude	W Longitude
1	42° 55.5′	68° 57.0′
2	42° 52.5′	68° 55.0′
3	42° 52.5′	68° 57.0′
4	42° 55.5′	68° 59.0′
Fippennies Ledge HMA		
Point	N Latitude	W Longitude
1	42° 50.0′	69° 17.0′
2	42° 44.0′	69° 14.0′
3	42° 44.0′	69° 18.0′
4	42° 50.0′	69° 21.0′
Platts Bank HMA 1		

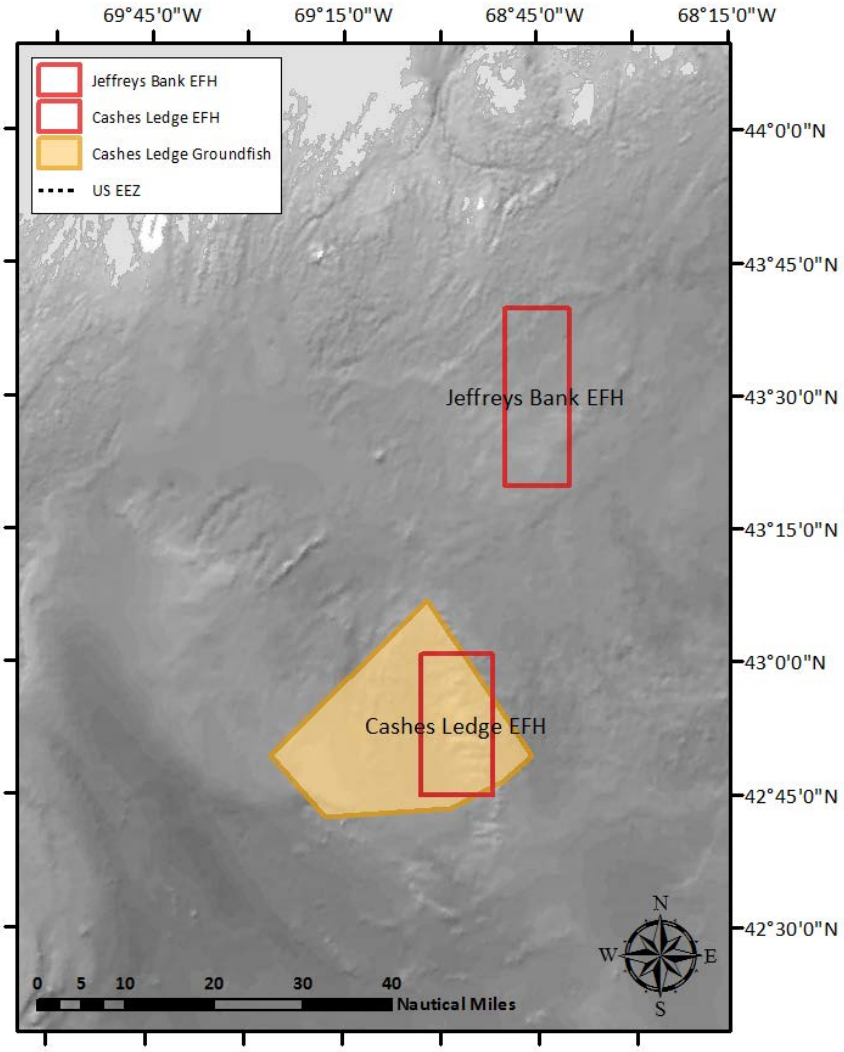
Point	N Latitude	W Longitude
1	43° 13.0’	69° 37.5’
2	43° 10.5’	69° 37.5’
3	43° 10.5’	69° 42.5’
4	43° 13.0’	69° 42.5’
Platts Bank HMA 2		
Point	N Latitude	W Longitude
1	43° 10.5’	69° 32.0’
2	43° 07.5’	69° 32.0’
3	43° 07.5’	69° 37.5’
4	43° 10.5’	69° 37.5’

9.1.1.2.1 Alternative 1 (No Action)

The no action habitat management alternative in the central Gulf of Maine region includes the Jeffreys Bank and Cashes Ledge habitat closure areas. These areas were initially implemented via Amendment 13 to the Northeast Multispecies FMP as areas closed to all mobile bottom-tending gears, regardless of the FMP under which that effort was managed. The areas were subsequently implemented via Atlantic Sea Scallop Amendment 15 as a closure to all vessels fishing for scallops. This alternative also includes the Cashes Ledge Closed Area, which was closed to groundfishing year-round by Secretarial action on May 1, 2002. See Table 32 for information about current restrictions in this area.

Rationale: The habitat closure areas, and also the groundfish closure area, restrict various types of fishing, including fishing with mobile gears, which reduce the adverse effects of EFH on the seabed in the central GOM region.

Map 92 – Central GOM Habitat Management Alternative 1 (No Action)



9.1.1.2.2 Alternative 2 (No habitat management areas)

This alternative would remove the current Cashes Ledge habitat closure area and would not designate any additional habitat management areas in the region.

Rationale: One way to reduce the impact of fishing on the seabed is to minimize area swept by bottom tending gears. The rationale behind this alternative is that eliminating area-based restrictions on fishing activity will enable vessels to optimize fishing efficiency, given limitations imposed by annual catch limits and other restrictions, which should reduce area swept and therefore impacts to the seabed.

9.1.1.2.3 Alternative 3

This alternative (Map 93) would modify the boundaries of the current Jeffreys Bank and Cashes Ledge habitat closures, and designate three new habitat management areas: Ammen Rock, Fippennies Ledge, and Platts Bank. All five of these areas would be designated in all NEFMC FMPs. The Ammen Rock area would be closed to all fishing gears and activities except for lobster trapping. Measures for the other four areas could include:

- complete restrictions on use of mobile bottom-tending gears, or
- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or
- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

The same management measure need not be applied to all three areas.

Rationale: The current Jeffreys Bank management area encompasses both shallower hard-bottom habitats on the bank (southern portion) and deeper, muddy habitats (northern portion). The modification would change the boundaries to focus on just the southern portion, with an expansion of the area to the east and to the west to incorporate the portion of Jeffreys Bank shallower than approximately 100 m. This better focuses the Jeffreys Bank area on more vulnerable habitat types in order to minimize the adverse effects of fishing on EFH.

Most of the hard-bottom, shallower habitats on Cashes Ledge are included in the modified, smaller area, including all features shallower than 100 meters. The PDT discussed that these are the most important habitats types on Cashes Ledge to protect from the adverse effects of fishing. The Ammen Rock pinnacle, which is the shallowest part of Cashes Ledge, represents a particularly unique and vulnerable kelp forest habitat type that would benefit from enhanced levels of protection. Although for an equal amount of area swept fixed gears were estimated to have substantially reduced adverse effects in comparison to trawls and dredges, for some types of benthic features, habitat impacts due to fixed gear use could be significant and long lasting ('adverse' effects are both 'more than minimal' and 'not temporary').

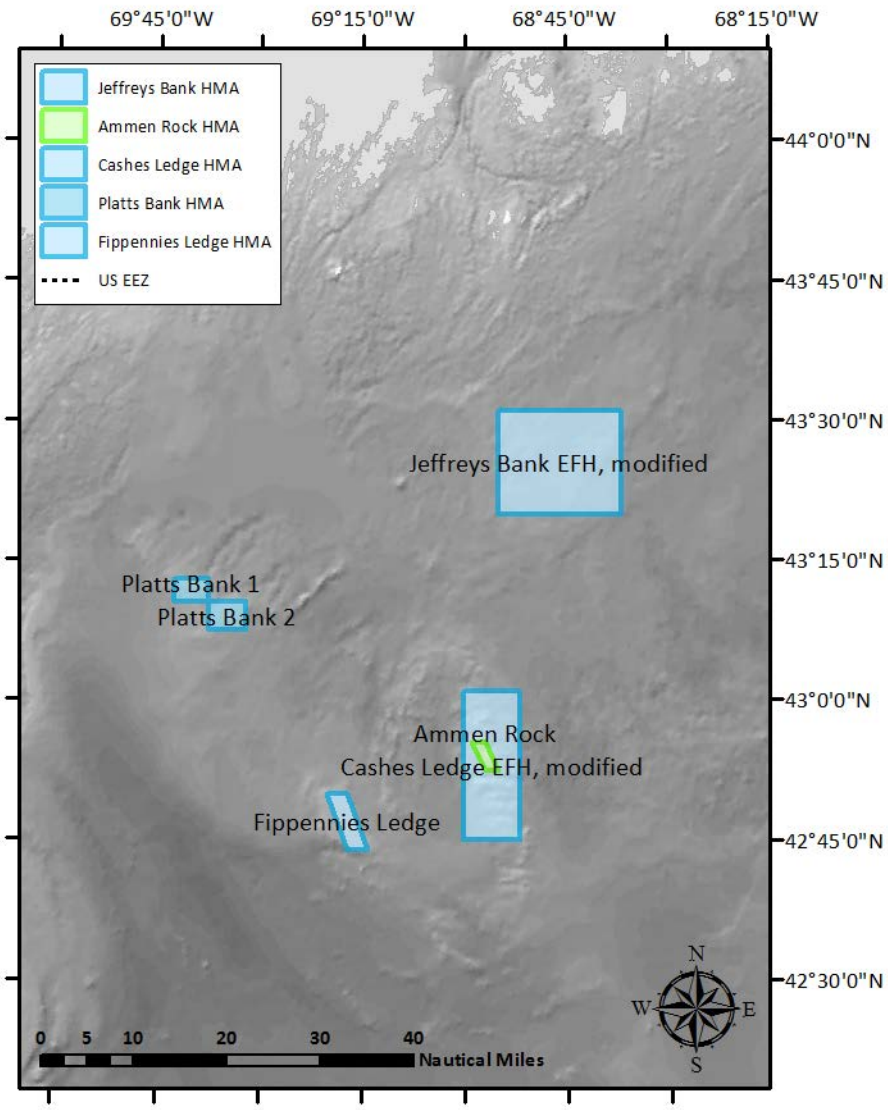
Fippennies Ledge and Platts Bank would be new habitat management areas, although Fippennies Ledge lies within the existing Cashes ledge groundfish closure. Each of these areas is designed to focus on the core, shallow portions of the features. The objective was to protect a representative array of substrate and habitat types while allowing fishing activity along the edges of the features.

None of these areas were identified through evaluation of juvenile groundfish distributions, although the areas contain habitats for redfish on Platts Bank, haddock on Fippennies Ledge, and redfish, plaice, haddock, and silver hake on Cashes Ledge. Designating this habitat management areas is expected to minimize fishing impacts on vulnerable habitats and improve groundfish

productivity. Survey sampling on Cashes and Fippennies ledges themselves is extremely limited, so the analysis may not reflect the importance of these habitats to juvenile fish.

This alternative removes the Cashes Ledge groundfish closed area, since many portions of that area not overlapping with habitat area proposals consist of mud habitat types estimated to be less vulnerable to accumulating adverse effects.

Map 93 – Central GOM Habitat Management Alternative 3



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.1.2.4 Alternative 4

This alternative (Map 94) would modify the boundaries of the current Jeffreys Bank and Cashes Ledge habitat closures, and designate a new habitat management area on Ammen Rock. The

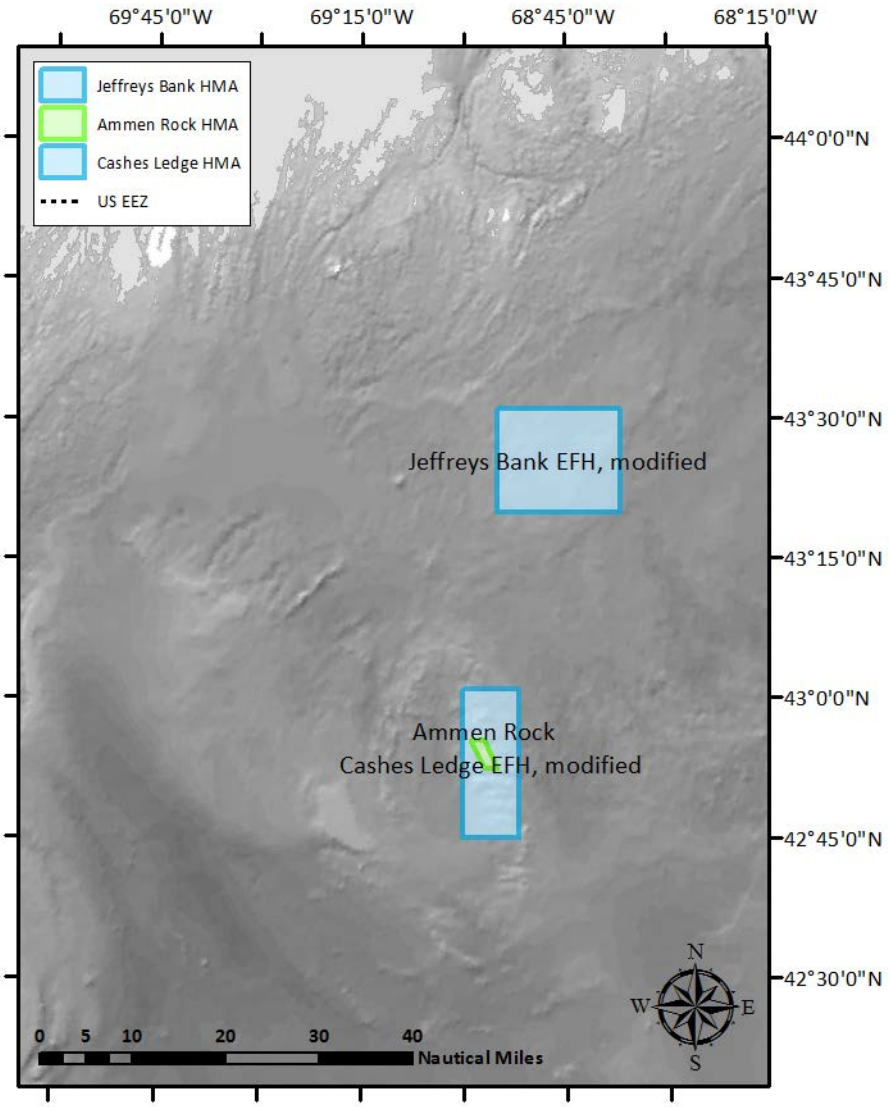
Ammen Rock area would be closed to all fishing gears and activities except for lobster trapping. Measures for the modified Jeffreys Bank and Cashes Ledge areas could include:

- complete restrictions on use of mobile bottom-tending gears, or
- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or
- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

The same management measure need not be applied to both areas.

Rationale: This alternative includes a subset of the areas proposed via alternative 3, and would not designate the Platts Bank and Fippennies Ledge Habitat Management Areas. This alternative would minimize adverse effects to EFH within some parts of the central GOM region, allowing fishing on other features including Platts Bank and Cashes Ledge. This alternative removes the Cashes Ledge groundfish closed area, since many portions of that area not overlapping with habitat area proposals consist of mud habitat types estimated to be less vulnerable to accumulating adverse effects.

Map 94 – Central GOM Habitat Management Alternative 4



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.1.3 Western GOM

The habitat management alternatives for the western Gulf of Maine region include various combinations of six areas: Western Gulf of Maine Habitat Closure Area (no action), Western Gulf of Maine Groundfish Closed Area (no action), Jeffreys Ledge HMA, Small Stellwagen HMA, Large Stellwagen HMA, Small Bigelow Bight HMA, and Large Bigelow Bight HMA.

Table 29 – Coordinates for habitat management areas in the western Gulf of Maine

Western Gulf of Maine Habitat Closure Area		
Point	N Latitude	W Longitude
WGM4	43° 15’	70° 15’

WGM1	42° 15′	70° 15′
WGM5	42° 15′	70° 00′
WGM6	43° 15′	70° 15′
Western Gulf of Maine Groundfish Closure Area		
Point	N Latitude	W Longitude
WGM1	42°15′	70°15′
WGM2	42°15′	69°55′
WGM3	43°15′	69°55′
WGM4	43°15′	70°15′
Small Stellwagen HMA		
Point	N Latitude	W Longitude
1	42° 38.0′	70° 07.0′
2	42° 31.0′	70° 07.0′
3	42° 31.0′	70° 02.0′
4	42° 15.0′	70° 02.0′
5	42° 15.0′	70° 15.0′
6	42° 38.0′	70° 15.0′
Small Bigelow Bight HMA		
Point	N Latitude	W Longitude
1*	43° 07.1′	70° 24.4′
2	42° 07.1′	70° 21.6′
3	42° 50.9′	70° 21.1′
4*	42° 50.6′	70° 44.6′
5*	42° 57.1′	70° 41.7′
6*	43° 03.4′	70° 35.9′
7*	43° 07.6′	70° 32.7′
Jeffreys Ledge HMA		
Point	N Latitude	W Longitude
1	43° 13.0′	70° 00.0′
2	42° 44.4′	70° 00.0′
3	42° 44.4′	70° 15.0′
4	42° 55.0′	70° 15.0′
5	42° 55.0′	70° 08.0′
6	43° 09.0′	70° 08.0′
7	43° 09.0′	70° 05.0′
8	43° 13.0′	70° 05.0′
Large Stellwagen HMA		
Point	N Latitude	W Longitude
1	42° 15.0′	70° 00.0′
2	42° 15.0′	70° 15.0′
3	42° 45.2′	70° 15.0′
4	42° 46.0′	70° 13.0′
5	42° 46.0′	70° 00.0′
Large Bigelow Bight HMA		

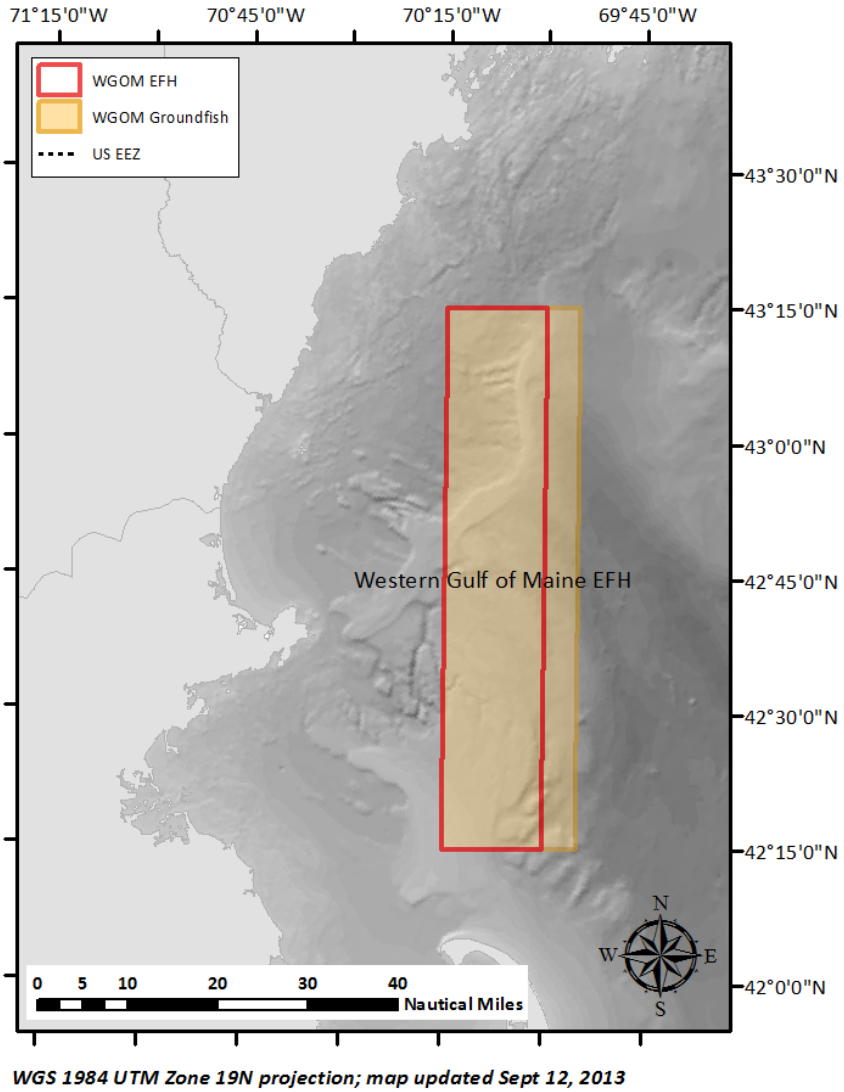
Point	N Latitude	W Longitude
1*	43° 39.2′	69° 45.1′
2	43° 29.1′	69° 45.0′
3	43° 28.9′	70° 07.3′
4	43° 18.1	70° 07.1′
5	43° 18.0′	70° 14.4′
6	43° 07.2′	70° 14.2′
7	43° 07.1′	70° 21.6′
8	42° 50.9′	70° 21.1′
9*	42° 50.6′	70° 44.6′
10*	42° 57.1′	70° 41.7′
11*	43° 03.4′	70° 35.9′
12*	43° 07.2′	70° 33.8′
13*	43° 07.6′	70° 32.7′
14*	43° 09.6′	70° 31.3′
15*	43° 17.3′	70° 29.3′

9.1.1.3.1 Alternative 1 (No Action)

The no action habitat management alternative in the western Gulf of Maine region includes the Western Gulf of Maine habitat closure area. This area was initially implemented via Amendment 13 to the Northeast Multispecies FMP as an area closed to all mobile bottom-tending gears, regardless of the FMP under which that effort was managed. The area was subsequently implemented via Atlantic Sea Scallop Amendment 15 as a closure to all vessels fishing for scallops. This alternative also includes the Western Gulf of Maine groundfish closed area, which was implemented year round in 1998. See Table 32 for information about current restrictions in this area.

Rationale: The habitat closure area, and also the groundfish closure area, restrict various types of fishing, including fishing with mobile gears, which reduce the adverse effects of EFH on the seabed in the central GOM region.

Map 95 – Western Gulf of Maine Habitat Management Alternative 1 (No Action).



9.1.1.3.2 Alternative 2 (No habitat management areas)

This alternative would remove the current Western Gulf of Maine habitat closure area and would not designate any additional habitat management areas in the region.

Rationale: One way to reduce the impact of fishing on the seabed is to minimize area swept by bottom tending gears. The rationale behind this alternative is that eliminating area-based restrictions on fishing activity will enable vessels to optimize fishing efficiency, given limitations imposed by annual catch limits and other restrictions, which should reduce area swept and therefore impacts to the seabed.

9.1.1.3.3 Alternative 3

This alternative (Map 96) would modify the boundaries of the current WGOM habitat closure to create the Large Stellwagen Habitat Management Area, and designate the Large Bigelow Bight Habitat Management Area. Measures for both of these areas could include:

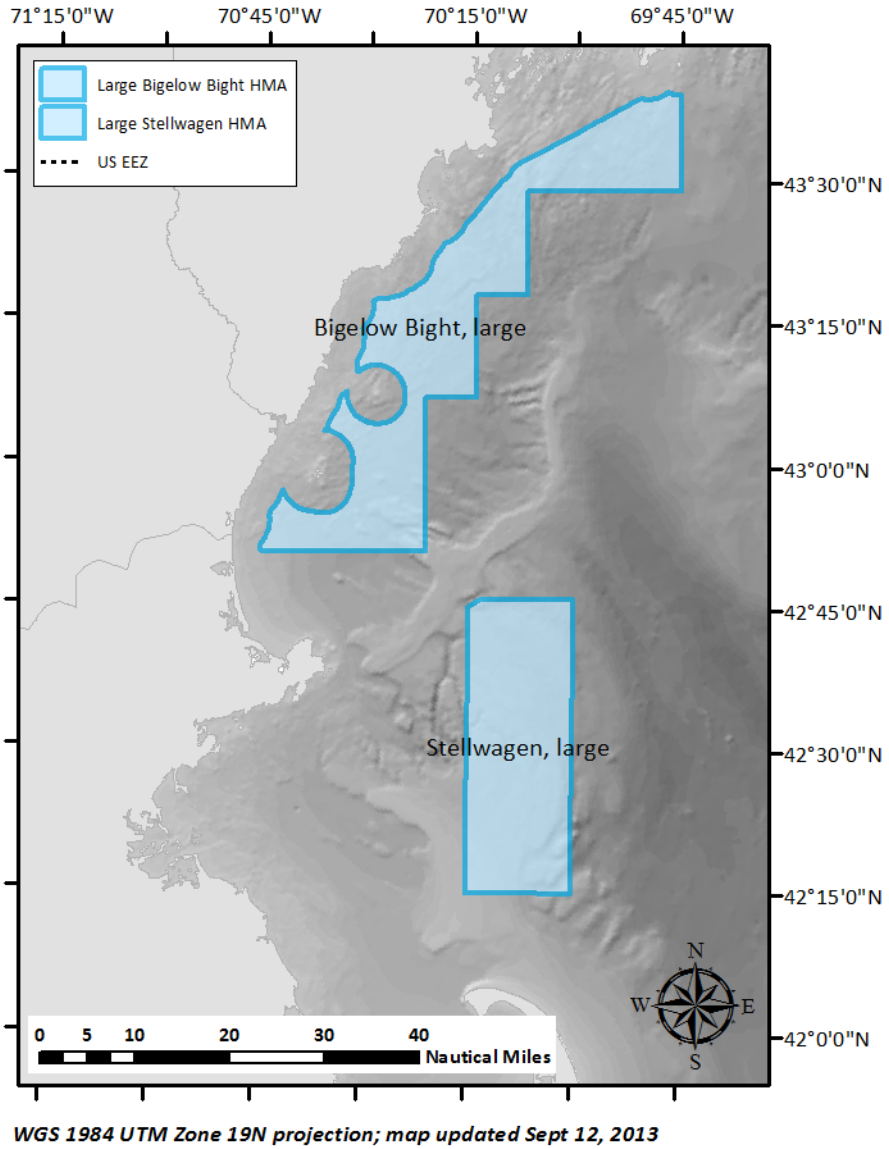
- complete restrictions on use of mobile bottom-tending gears, or
- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or
- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

The same management measure need not be applied to both areas.

Rationale: These areas in combination are intended to reduce the adverse effects of fishing on EFH, including EFH for juvenile groundfish, in the western GOM region. The Stellwagen HMA was designed to encompass areas with high-intensity backscatter values from multibeam, which represent coarse sand, gravelly sand, sandy gravel, gravel (including boulder ridges and piles of boulders), and bedrock outcrops (Valentine et al 2005a). Defining a habitat management area in this location and restricting the operation of mobile bottom-tending gears within it would be expected to reduce the accumulation of adverse effects in these particularly vulnerable habitats. The boulder ridges were identified using various types of information including topographic and backscatter data, terrain ruggedness index values, and thousands of video and photographic stations (Valentine et al 2005b). Some of the boulder ridges are quite large, with the largest tens of meters wide and hundreds of meters long, with a maximum height of 18 m (Valentine et al 2005b). The ridges are composed of cobbles and boulders interspersed with voids, and harbor an array of attached organisms as well as various fish species (Valentine et al 2005b, Auster and Lindholm 2005). The SASI vulnerability assessment indicates that cobble and boulder-dominated habitats and their associated geological and biological features have relatively high susceptibility to fishing gear impacts and relatively slow recovery.

The Bigelow Bight area was designed to protect juvenile redfish, alewife, plaice, cod, monkfish, haddock, pout, pollock, red hake, silver hake, white hake, winter flounder, witch flounder, and yellowtail flounder habitats. This alternative includes the Large Stellwagen HMA only and not the Jeffreys Ledge HMA in order to balance the potential economic impacts associated with the larger version of the Bigelow Bight HMA.

Map 96 – Western Gulf of Maine Habitat Management Alternative 3. The Platts Bank areas are not included in this alternative but are shown for reference because they are within the mapped area.



9.1.1.3.4 Alternative 4

This alternative (Map 97) would modify the boundaries of the current WGOM habitat closure to create the Small Stellwagen and Jeffreys Ledge Habitat Management Areas, and designate the Large Bigelow Bight Habitat Management Area. Measures for all three of these areas could include:

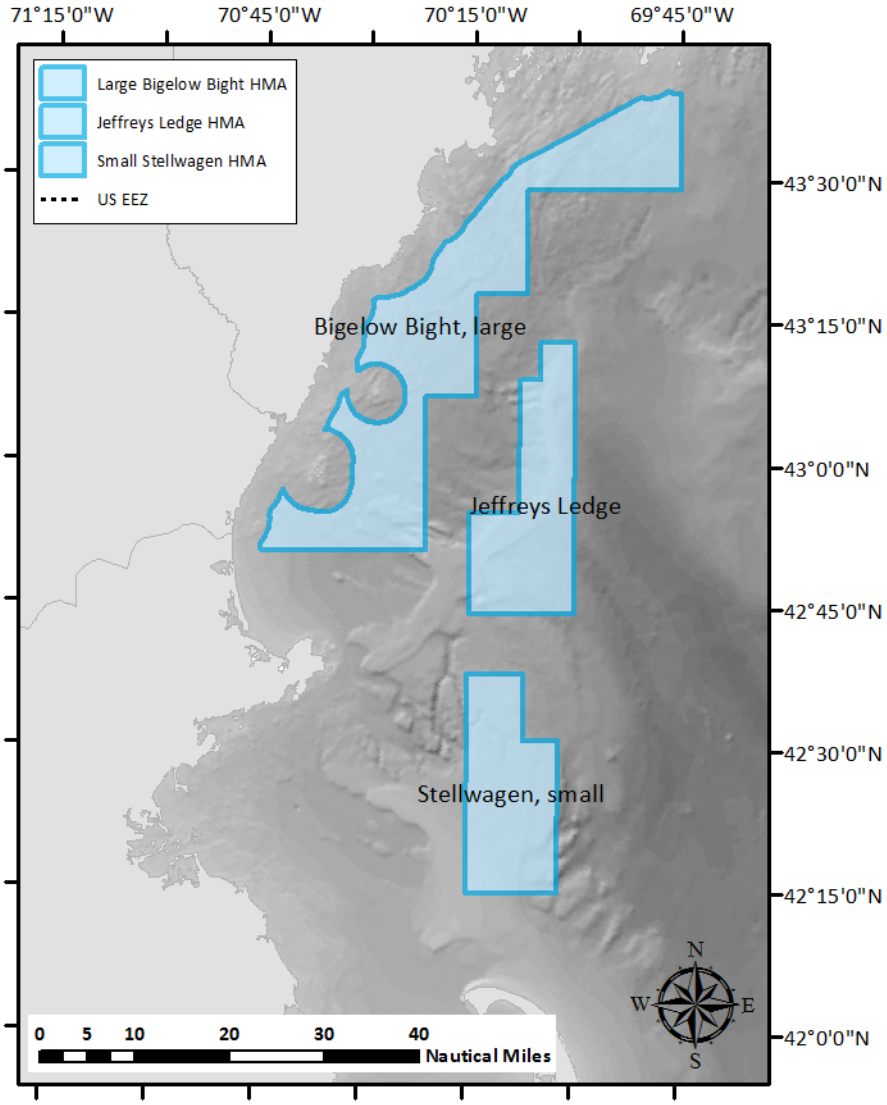
- complete restrictions on use of mobile bottom-tending gears, or
- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or

- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

The same management measure need not be applied to all three areas.

Rationale: These areas in combination are intended to reduce the adverse effects of fishing on EFH, including EFH for juvenile groundfish, in the western GOM region. In this alternative, the eastern boundary of the Stellwagen area extends only to the edge of the multibeam sampling area discussed above, not to the current habitat closure boundary, because the existence of vulnerable habitat types is best documented in the areas sampled with multibeam. The northern part of the WGOM habitat area was modified to remove the deeper, muddier habitats in the northwest corner to focus on protection of Jeffreys Ledge itself, which contains complex benthic habitats vulnerable to the impacts of fishing. The Bigelow Bight HMA is as described in Alternative 3.

Map 97 – Western Gulf of Maine Habitat Management Alternative 4.



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.1.3.5 Alternative 5

Similar to Alternative 4, this alternative would also modify the boundaries of the current WGOM habitat closure to create the Small Stellwagen and Jeffreys Ledge Habitat Management Areas, and designate the Small Bigelow Bight Habitat Management Area. Measures for all three of these areas could include:

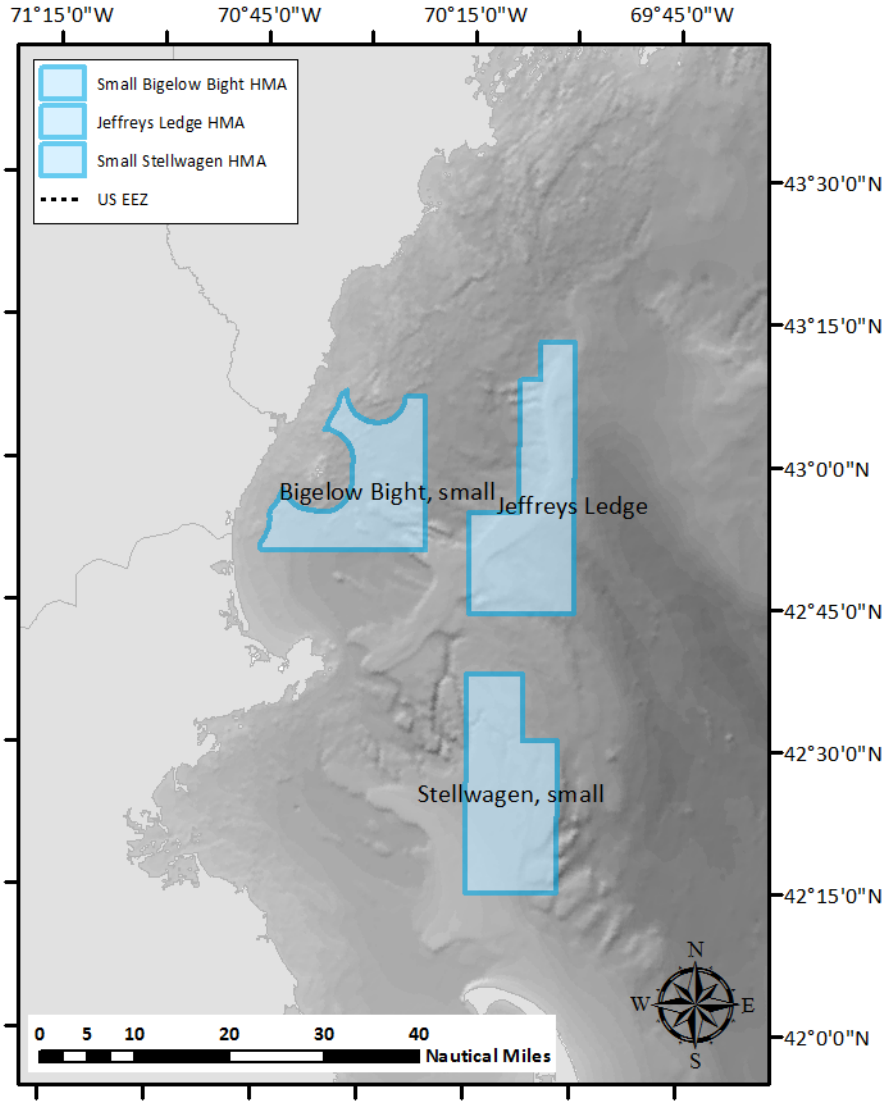
- complete restrictions on use of mobile bottom-tending gears, or
- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or

- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

The same management measure need not be applied to all three areas.

Rationale: These areas in combination are intended to reduce the adverse effects of fishing on EFH, including EFH for juvenile groundfish, in the western GOM region. Due to concerns about potential economic impacts associated with the full version of the Bigelow Bight HMA, an alternative, smaller area was developed.

Map 98 – Western Gulf of Maine Habitat Management Alternative 5.



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

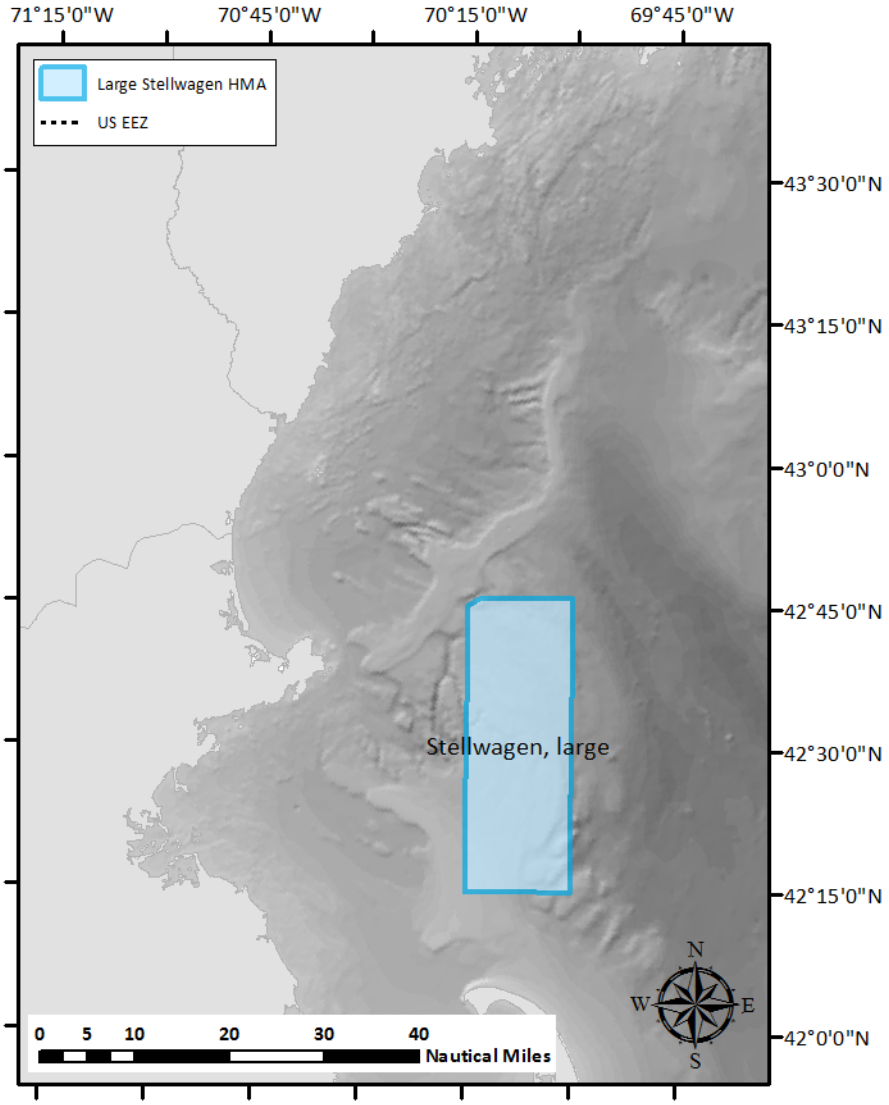
9.1.1.3.6 Alternative 6

This alternative (Map 99) would modify the boundaries of the current WGOM habitat closure to create the Large Stellwagen Habitat Management Area. Measures for this area could include:

- complete restrictions on use of mobile bottom-tending gears, or
- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or
- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

Rationale: This alternative is a subset of the areas proposed in Alternative 3 and was proposed due to concerns about economic impacts associated with Alternatives 3, 4, and 5. This alternative would minimize adverse effects to EFH within some parts of the western GOM region, but allow fishing in the inshore Bigelow Bight areas and on Jeffreys Ledge.

Map 99 – Western Gulf of Maine Habitat Management Alternative 6.



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.1.3.7 Alternative 7

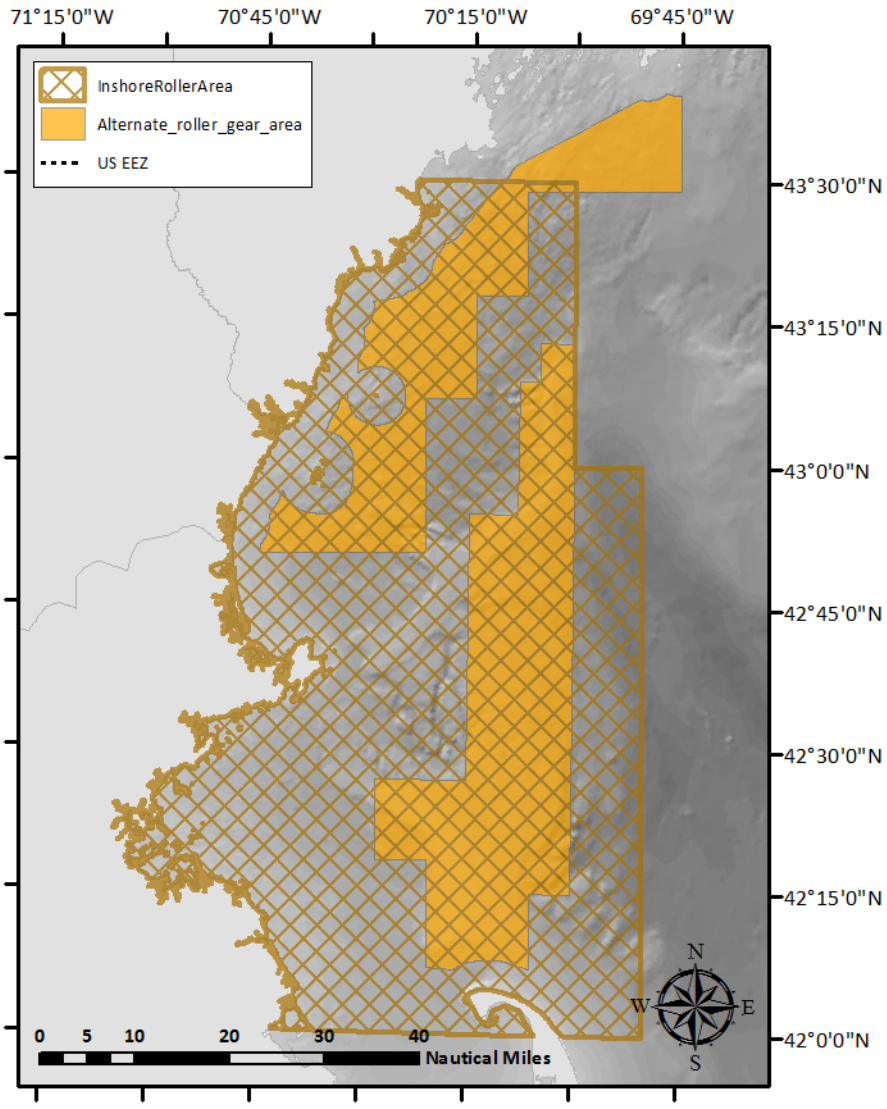
Alternative 7 would implement roller gear size restrictions as a habitat management measure in the WGOM. This alternative can be implemented in addition to any of the other six alternatives.

Option 1 would define the current Inshore Roller Gear Restricted Area, which limits trawl roller gear to a maximum diameter of 12 inches, as a habitat management measure.

Option 2 would apply this same restriction to a different set of areas representing the maximum extent of all habitat management areas proposed at the June 2013 Habitat/Groundfish Committee meeting. Both sets of areas are depicted on Map 100.

Rationale: When it was implemented via Framework Adjustment 27 to the NE Multispecies FMP, the Council discussed the inshore roller gear restriction as limiting trawl activity over complex habitat types. Option 1 would designate this restriction as an adverse effects minimization measure. Option 2 would implement the roller gear restriction as a habitat management measure within all of the WGOM areas identified for adverse effects minimization or juvenile groundfish habitat protection.

Map 100 – Western Gulf of Maine Habitat Management Alternative 7. Existing (hatched) and alternate (shaded) roller gear areas that could be implemented as habitat management measures in combination with any of the other WGOM alternatives.



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.2 Georges Bank, Great South Channel, and Southern New England

Habitat management alternatives for this area are grouped into two sub regions, Georges Bank and Great South Channel/Southern New England.

9.1.2.1 Georges Bank

The habitat management alternatives for the Georges Bank region include various combinations of eight areas: Closed Area II Habitat Closure Area (no action), Closed Area I N Habitat Closure Area (no action), Closed Area I S Habitat Closure Area (no action), Northern Edge HMA (two versions), Closed Area II Groundfish Closed Area (no action), Closed Area I Groundfish Closed Area (no action), Georges Shoal MBTG HMA, Small Georges Shoal Gear Modification Area, Large Georges Shoal Gear Modification Area.

Table 30 – Coordinates for habitat management areas on Georges Bank

Closed Area II Habitat Closure Area		
Point	N Latitude	W Longitude
CIIH1	42° 10’	67° 20’
CIIH2	42° 10’	67° 09.3’
CIIH3	42° 00’	67° 0.5’
CIIH4	42° 00’	67° 10’
CIIH5	41° 50’	67°10’
CIIH6	41° 50’	67° 20’
Closed Area I Habitat Closure Area N		
Point	N Latitude	W Longitude
CI1	41° 30’	69° 23’
CI4	41° 30’	68° 30’
CIH1	41° 26’	68° 30’
CIH2	41° 04’	69° 01’
Closed Area I Habitat Closure Area S		
Point	N Latitude	W Longitude
CIH3	40° 55’	68° 53’
CIH4	40° 58’	68° 30’
CI3	40° 45’	68° 30’
CI2	40° 45’	68° 45’
Closed Area I Groundfish Closure Area		
Point	N. Lat.	W. Long.
CI1	41˚ 30'	69˚ 23'
CI2	40˚ 45'	68˚ 45'
CI3	40˚ 45'	68˚ 30'
CI4	41˚ 30'	68˚ 30'
Closed Area II Groundfish Closure Area		
Point	N. Lat.	W. Long.
CII1	41˚ 00'	67˚ 20'
CII2	41˚ 00'	66˚ 35.8' (1)

G5	41˚ 18.6'	66˚ 24.8' (1)
CII3	42˚ 22'	67˚ 20'
(1) US – Canada maritime boundary		
Northern Edge HMA		
Point	N Latitude	W Longitude
1	42° 12.3’	67° 11.4’
2	42° 00.0’	67° 00.5’
3	42° 00.0’	67° 16.8’
4	42° 09.6’	67° 25.8’
5	42° 11.3’	67° 20.0’
6	42° 12.2’	67° 15.2’
Small Georges Shoal Gear Mod HMA		
Point	N Latitude	W Longitude
1	42° 40.0’	67° 20.0’
2	41° 40.0’	67° 56.0’
3	41° 56.0’	67° 56.0’
4	41° 56.0’	67° 39.7’
Large Georges Shoal Gear Mod HMA		
Point	N Latitude	W Longitude
1	41° 30.1’	66° 34.9’
2	41° 30.0’	68° 10.0’
3	41° 55.1’	68° 09.9’
4	42° 10.3’	67° 09.7’
Georges Shoal MBTG HMA		
Point	N Latitude	W Longitude
1	41° 30.0’	67° 20.0’
2	41° 30.0’	67° 56.0’
3	41° 40.0’	67° 56.0’
4	42° 40.0’	67° 20.0’
Northern Edge HMA version 2		
Point	N Latitude	W Longitude
1 (outer shape)	42° 12.0'	67° 11.1'
2 (outer shape)	41° 59.9'	67°0 0.5'
3 (outer shape)	42° 00.0'	67° 24.1'
4 (outer shape)	42° 06.5'	67° 31.4'
5 (outer shape)	42° 10.0'	67° 20.0'
6 (inner shape)	42° 09.4'	67° 10.7'
7 (inner shape)	42° 08.2'	67° 09.6'
8 (inner shape)	42° 06. 4'	67° 17.6'
9 (inner shape)	42° 06.0'	67° 17.6'
10 (inner shape)	42° 05.9'	67° 12.5'
11 (inner shape)	42° 03.0'	67° 12.5'
12 (inner shape)	42° 01.5'	67° 17.0'
13 (inner shape)	42° 01.5'	67° 20.5'
14 (inner shape)	42° 07.2'	67° 23.0'

15 (inner shape)	42° 09.1'	67° 15.1'

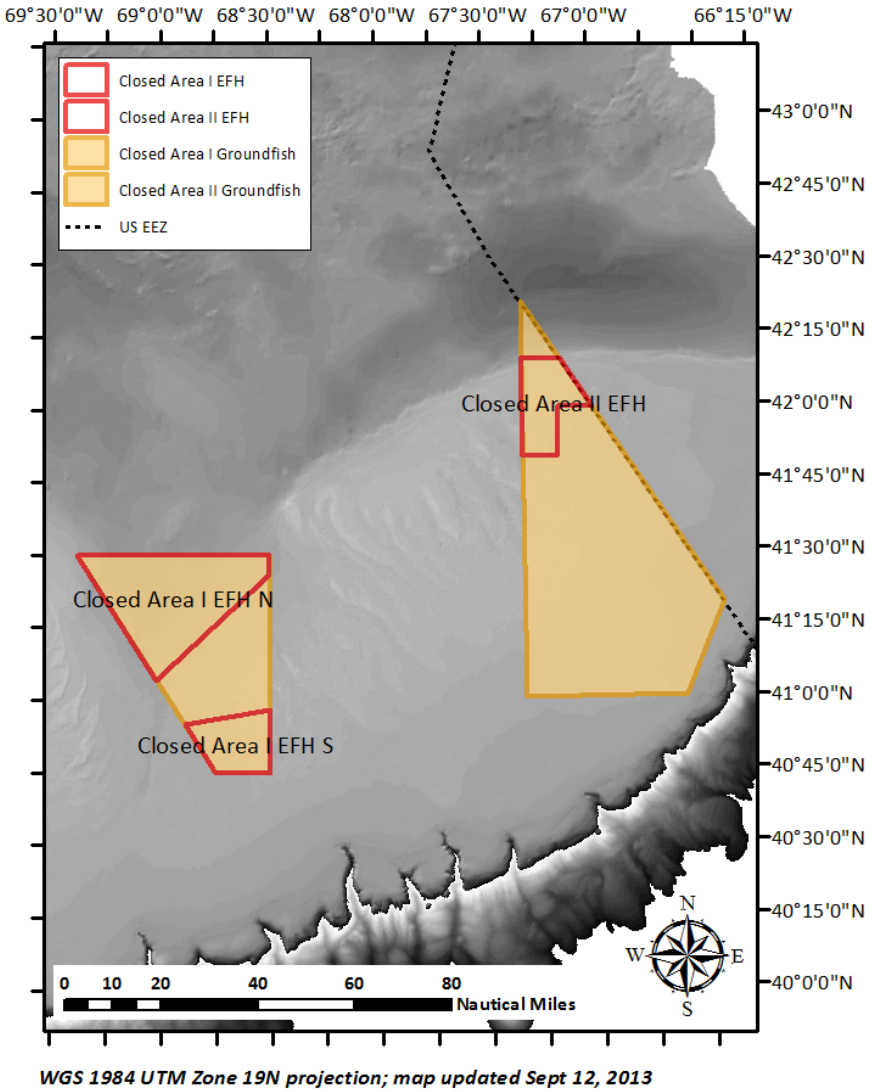
9.1.2.1.1 Alternative 1 (No Action)

The no action habitat management alternative in the Georges Bank region (Map 101) includes the Closed Area I and Closed Area II habitat closure areas. These areas were initially implemented via Amendment 13 to the Northeast Multispecies FMP as areas closed to all mobile bottom-tending gears, regardless of the FMP under which that effort was managed. The same areas were subsequently implemented via Atlantic Sea Scallop Amendment 15 as a closure to all vessels fishing for scallops. Note that between the implementation of Scallop Amendment 10 in 2004 and Amendment 15, a slightly different set of scallop EFH closures was in effect. Also note that the CAII habitat closure area was designated first as a Habitat Area of Particular Concern, a designation which carries no restrictions on fishing.

This alternative also includes the CAI and CAII groundfish closures, which were implemented year round in their present configuration in 1994. See Table 35 for information about current restrictions in these areas.

Rationale: The habitat closure areas, and also the groundfish closure areas, restrict various types of fishing, including fishing with mobile gears, which reduce the adverse effects of EFH on the seabed in the Georges Bank region. Note that some types of mobile gears are currently exempted from some portions of the groundfish closures.

Map 101 – Georges Bank Habitat Management Alternative 1 (No Action)



9.1.2.1.2 Alternative 2 (No habitat management areas)

This alternative would remove the current CAI and CAII habitat closure areas and would not designate any additional habitat management areas in the region. This alternative would not affect the HAPC designation.

Rationale: One way to reduce the impact of fishing on the seabed is to minimize area swept by bottom tending gears. The rationale behind this alternative is that eliminating area-based restrictions on fishing activity will enable vessels to optimize fishing efficiency, given limitations imposed by annual catch limits and other restrictions, which should reduce area swept and therefore impacts to the seabed.

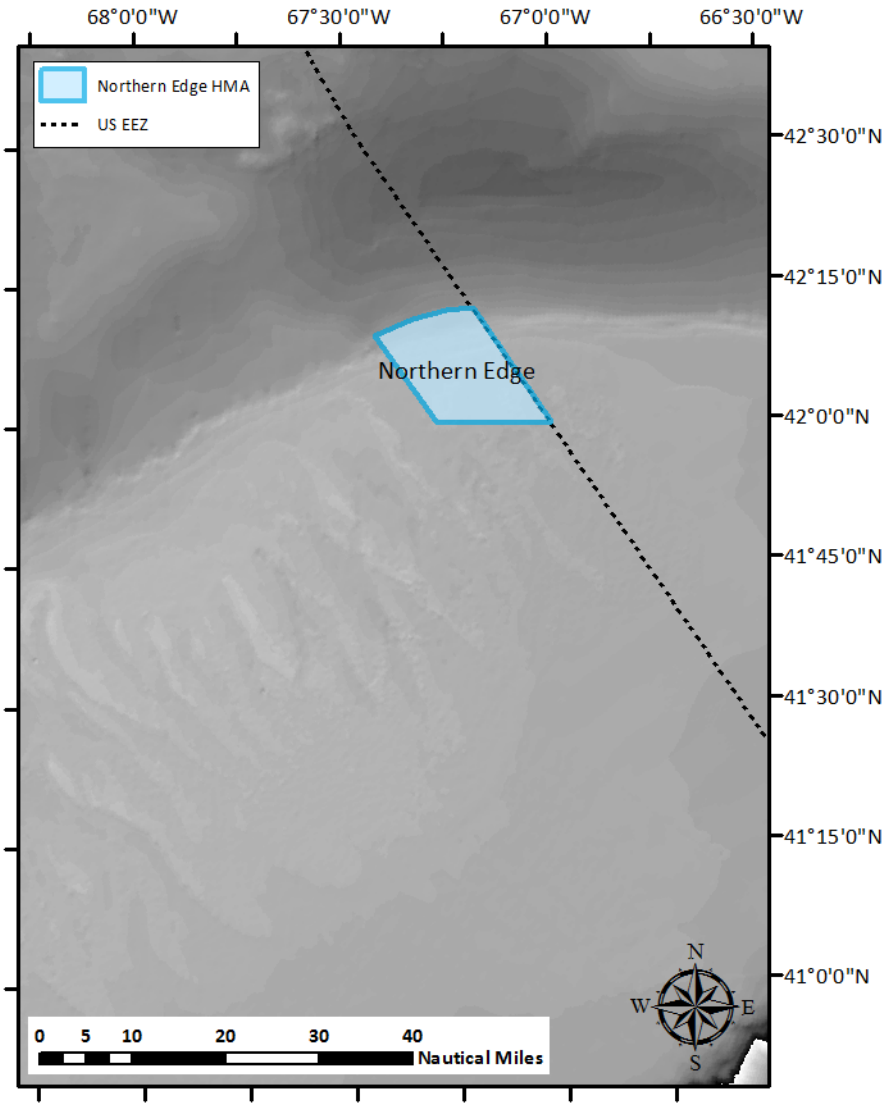
9.1.2.1.3 Alternative 3

This alternative (Map 102) would remove the current CAI habitat closure areas from the multispecies and sea scallop regulations and would modify the CAII habitat closure to create the Northern Edge Habitat Management Area, and implement it in all NEFMC FMPs. Measures for the Northern Edge area could include:

- complete restrictions on use of mobile bottom-tending gears, or
- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or
- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

Rationale: The Northern Edge HMA encompasses cobble habitats with associated epifauna that are vulnerable to the adverse effects of fishing, so designation of this area would minimize the adverse effects of fishing on EFH. The area and adjacent areas were identified is the LISA cluster analysis. The northern, deeper part of the area contains juvenile haddock and cod habitats, although high cod catches per tow in the area are more historic than recent. Thus, protection would be expected to increase productivity of these stocks. The proposed area is smaller than the current CAII habitat closure area and shifted to the north, so it could provide increased fishery access for the scallop fishery, if the CAII groundfish area is converted to a seasonal spawning area only.

Map 102 – Georges Bank Habitat Management Alternative 3.



9.1.2.1.4 Alternative 4

This alternative (Map 103) would remove the current CAI habitat closure areas from the multispecies and sea scallop regulations and would modify the CAII habitat closure to create the Northern Edge Habitat Management Area, and implement it in all NEFMC FMPs. Measures for the Northern Edge area could include:

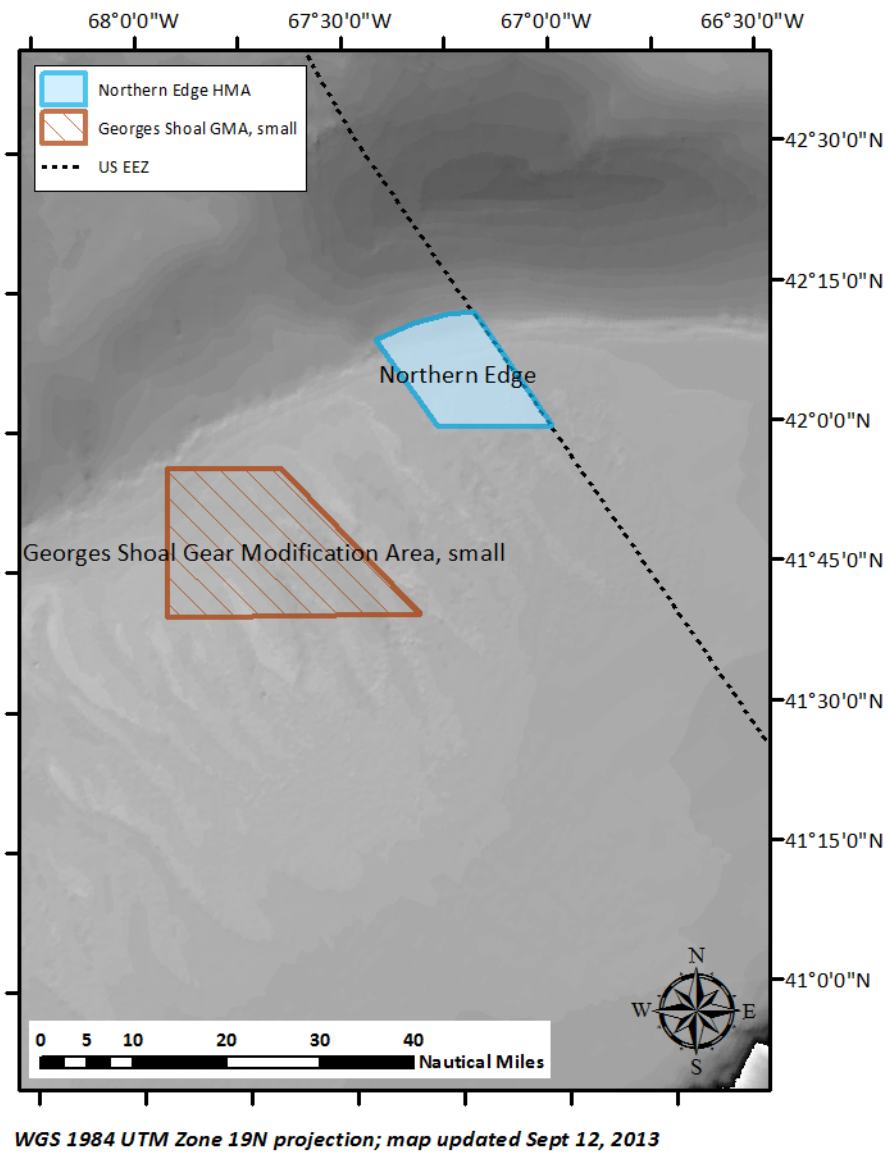
- complete restrictions on use of mobile bottom-tending gears, or
- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or

- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

In addition, this alternative would establish the Small Georges Shoal Gear Modification Area (GMA), which would mandate either the no ground cable or the raised ground cable trawl gear restrictions.

Rationale: The Northern Edge HMA is discussed above. The Small Georges Shoal GMA could provide additional habitat benefits via reduced area swept by requiring modified ground cables, although the size of this benefit would depend on tradeoffs between decreased catch rates and increased fishing time when using the modified gear.

Map 103 – Georges Bank Habitat Management Alternative 4. The hatched Georges Shoal GMA is only being considered for ground cable modifications.



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.2.1.5 Alternative 5

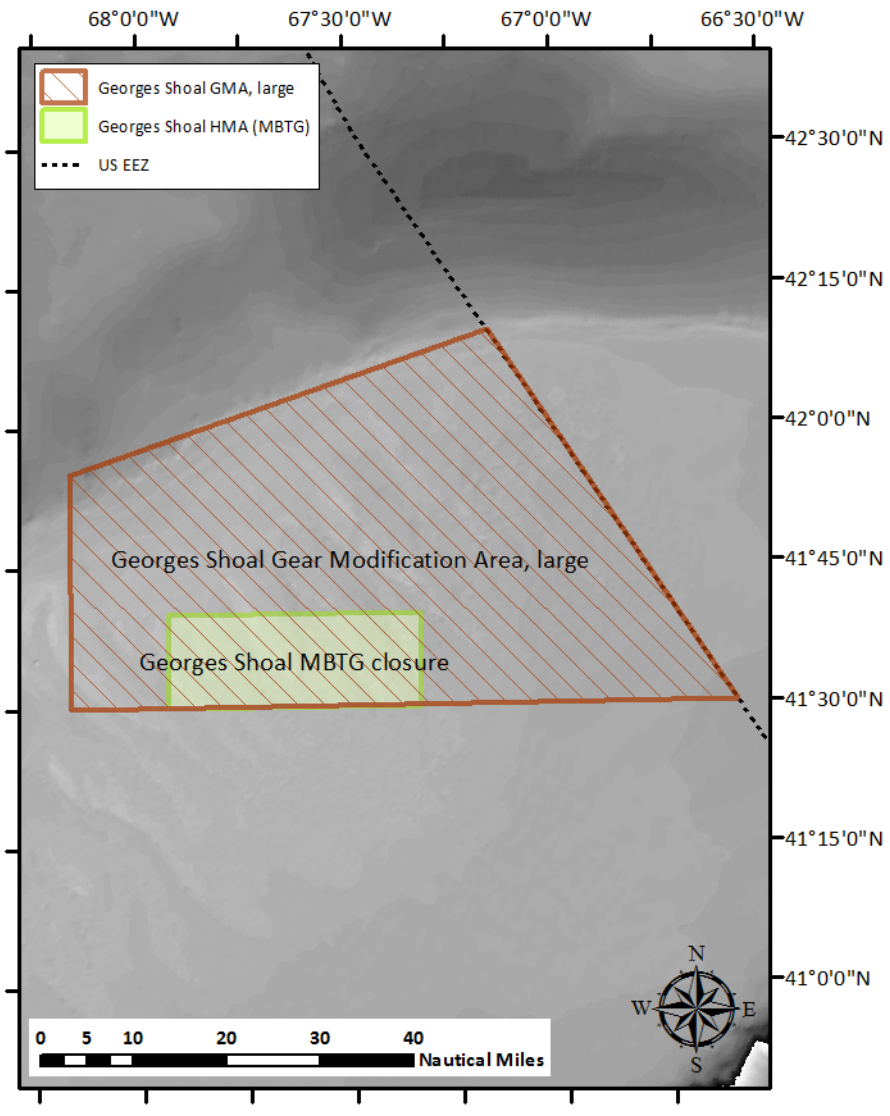
This alternative (Map 104) would remove the current CAI and CAII habitat closure areas from the multispecies and sea scallop regulations. This alternative would establish the Georges Shoal mobile-bottom tending gear HMA, and close it to mobile bottom-tending gears. In addition, this alternative would establish the Large Georges Shoal Gear Modification Area (GMA), which would mandate either the no ground cable or the raised ground cable trawl gear restrictions:

- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or

- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

Rationale: This alternative does not create a smaller habitat area on the northern edge, and therefore would provide the greatest flexibility in terms of access to fishing grounds, aside from Alternative 2. The larger Georges Shoal GMA could provide habitat benefits via reduced area swept by requiring modified ground cables, but as above, this size of this benefit would depend on tradeoffs between decreased catch rates and increased fishing time when using the modified gear.

Map 104 – Georges Bank Habitat Management Alternative 5. The hatched Georges Shoal GMA is only being considered for ground cable modifications, while the Georges Shoal HMA shown in green is only being considered as a mobile bottom-tending gear closure.



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.2.1.6 Alternative 6 (Developed by staff at the Committee's request and added on 9/12)

This alternative (Map 105) would remove the current CAI and CAII habitat closure areas. The CAI and CAII groundfish closure areas would also be removed, unless they are designated seasonally for spawning protection via another alternative (see section 9.2.2.2). This alternative would establish the Northern Edge HMA as shown below, and close it to mobile bottom-tending gears. This version of the Northern Edge area differs from the area included in Alternative 3.

The Committee requested development of this area by staff at their September 5 meeting, following discussion of correspondence received by the Regional Administrator. His letter communicated the Agency's concerns about the practicability of the Alternative 3 version of the Northern Edge HMA.

The technical teams will move forward with analysis of this area and other areas in the document while awaiting Council approval or disapproval for further analysis in the DEIS. If the Council finds that development of a different area is necessary, it will almost certainly be necessary to revisit the timeline for the action.

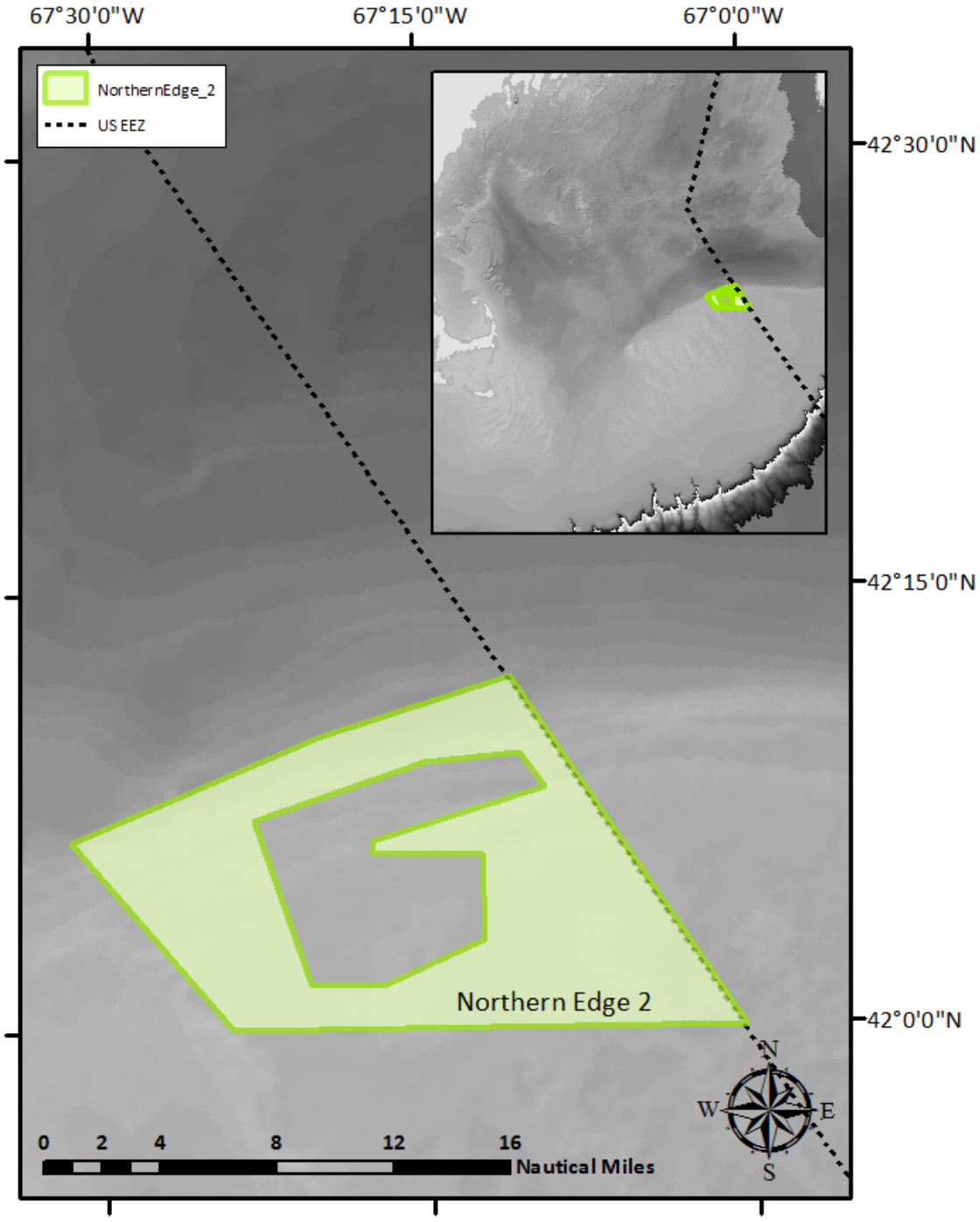
Rationale/development: This alternative would minimize the adverse effects of fishing on EFH in the Georges Bank region while allowing access to fishery resources, including dense concentrations of scallops that are currently within the CAII Habitat Closure Area. The proposed Northern Edge HMA encompasses areas of cobble habitat with complex epifauna, as well as areas where juvenile groundfish including cod and haddock are caught in fishery-independent surveys. This area is only proposed as a mobile bottom-tending gear closure, and not as a modified trawl area, because the area was designed explicitly to provide access for fishing while still protecting vulnerable habitat areas.

The shape of the area is irregular due to the distribution of habitats and fishery resources in this region. Other simpler areas along the edge of the bank or along the EEZ boundary compromised in both regards; without an irregular boundary, it was difficult to include complex habitat areas and juvenile groundfish habitats in the closed area without encompassing the densest aggregations of sea scallops.

Compliance and enforcement could be challenging for this configuration. For the sea scallop fishery, access to the inner area has been discussed in an access fishery context, although this remains to be developed in a future scallop action. Ways to ensure compliance with the area could be explored in that action, including observer coverage requirements. Staff also discussed groundfish fishery access to the inner area, but did not reach any conclusions as to what types of restrictions, if any, might be appropriate, if an open access area is not desired.

Additional information about habitat and resource distributions with respect to this area, as well as an overlay on a nautical chart and a comparison with other areas considered will be provided separately to the Council before the September meeting.

Map 105 - Georges Bank Habitat Management Alternative 6



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.2.2 Great South Channel and Southern New England

The habitat management alternatives for the Great South Channel and Southern New England region include various combinations of seven areas: Nantucket Lightship Habitat Closure Area

(no action), Great South Channel HMA, Extended Great South Channel HMA, Great South Channel Gear Modification Area, Nantucket Shoals HMA, Extended Nantucket Shoals HMA, and the Cox Ledge HMA (which is comprised of two sub-areas that would be implemented together).

Table 31 – Coordinates for habitat management areas in the Great South Channel and Southern New England

Nantucket Lightship Habitat Closure Area		
Point	N Latitude	W Longitude
NLH1	41° 10′	70° 00′
NLH2	41° 10′	69° 50′
NLH3	40° 50′	69° 30′
NLH4	40° 20′	69° 30′
NLH5	40° 20′	70° 00′
Nantucket Lightship Groundfish Closure Area		
Point	N. lat.	W. long.
G10	40°50′	69°00′
CN1	40°20′	69°00′
CN2	40°20′	70°20′
CN3	40°50′	70°20′
Great South Channel HMA		
Point	N Latitude	W Longitude
1	41° 30.3′	69° 31.0′
2	41° 0.00′	69° 18.5′
3	41° 51.7′	69° 18.5′
4	41° 51.6′	69° 48.9′
5	41° 30.2′	69° 49.3′
Extended Great South Channel HMA		
Point	N Latitude	W Longitude
1	41° 44.9′	69° 49.5′
2	41° 30.3′	69° 31.0′
3	41° 30.0′	69° 25.2′
4	40° 58.0′	69° 12.9′
5	40° 58.0′	69° 18.5′
6	40° 51.7′	69° 18.5′
7	40° 51.6′	69° 48.9′
Great South Channel Gear Mod HMA		
Point	N Latitude	W Longitude
1	41° 30.0′	69° 23.0′
2	41° 02.9′	69° 00.0′
3	40° 50.0′	69° 00.0′
4	40° 50.0′	69° 30.0′
5	41° 30.0′	69° 30.0′
Nantucket Shoals HMA		

Point	N Latitude	W Longitude
1	41° 30.2’	69° 30.0’
2	40° 51.5’	69° 30.0’
3	40° 51.5’	69° 53.5’
4	41° 30.2’	69° 53.5’
Extended Nantucket Shoals HMA		
Point	N Latitude	W Longitude
1	40° 50.0’	70° 00.0’
2*	41° 11.4’	69° 60.0’
3*	41° 25.7’	69° 60.0’
4*	41° 29.3’	69° 60.0’
5*	41° 29.5’	69° 60.0’
6*	41° 30.2’	69° 57.5’
7	41° 30.0’	69° 30.0’
8	40° 50.0’	69° 30.0’
**State waters boundary*		
Cox Ledge HMA 1		
Point	N Latitude	W Longitude
1	41° 05.0’	71° 03.0’
2	41° 00.0’	71° 03.0’
3	41° 00.0’	71° 14.0’
4	41° 05.0’	71° 14.0’
Cox Ledge HMA 2		
Point	Latitude	Longitude
1	41° 12.0’	70° 55.0’
2	41° 07.5’	70° 55.0’
3	40° 07.5’	71° 01.0’
4	41° 12.0’	71° 01.0’

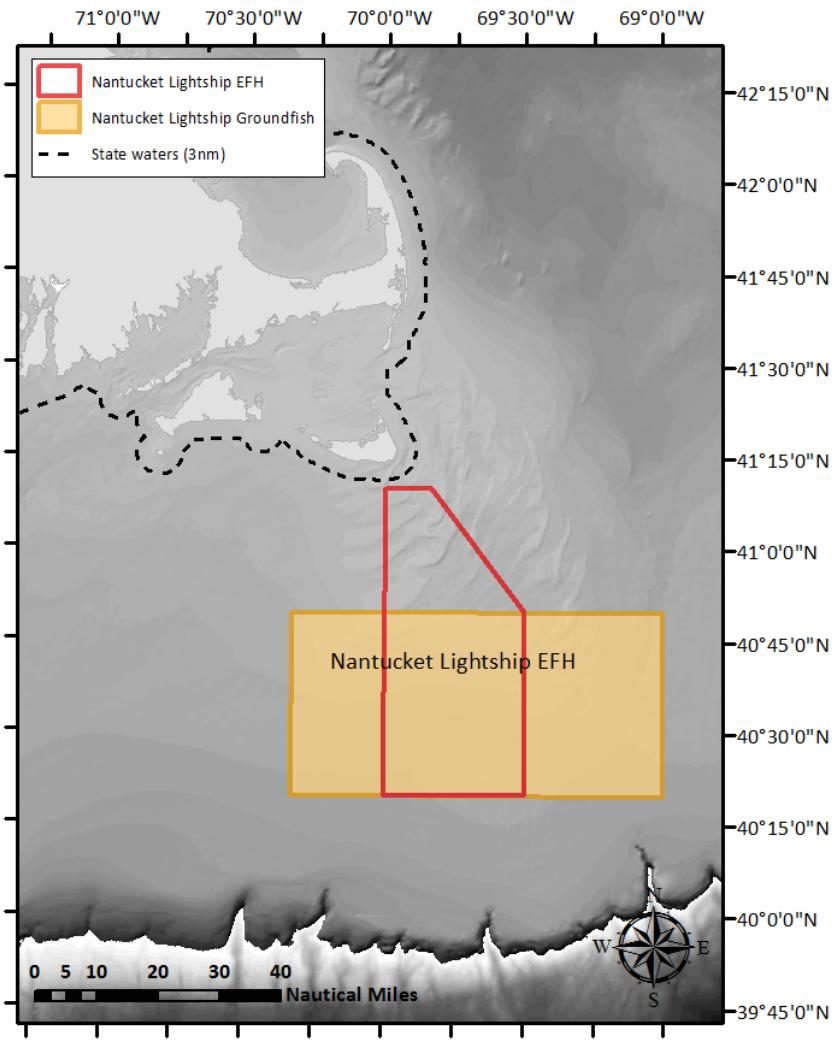
9.1.2.2.1 Alternative 1 (No Action)

The no action habitat management alternative in the Great South Channel/Southern New England region includes the Nantucket Lightship Habitat Closure Area (Map 106). This area was initially implemented via Amendment 13 to the Northeast Multispecies FMP as an area closed to all mobile bottom-tending gears, regardless of the FMP under which that effort was managed. The same areas were subsequently implemented via Atlantic Sea Scallop Amendment 15 as a closure to all vessels fishing for scallops. Note that between the implementation of Scallop Amendment 10 in 2004 and Amendment 15, a slightly different set of scallop EFH closures was in effect.

This alternative also includes the Nantucket Lightship Groundfish Closed Area, which was implemented year round in its current configuration in 1994. See Table 35 for information about current restrictions in this area.

Rationale: The habitat closure areas, and also the groundfish closure areas, restrict various types of fishing, including fishing with mobile gears, which reduce the adverse effects of EFH on the seabed in the Great South Channel/Southern New England region. Note that some types of mobile gears are currently exempted from the groundfish closure.

Map 106 – Great South Channel/SNE Habitat Management Alternative 1 (No Action).



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.2.2.2 Alternative 2 (No habitat management areas)

This alternative would remove the current Nantucket Lightship Habitat Closure Area and the Nantucket Lightship Groundfish Closed Area, and would not designate any additional habitat management areas in the region.

Rationale: One way to reduce the impact of fishing on the seabed is to minimize area swept by bottom tending gears. The rationale behind this alternative is that eliminating area-based

restrictions on fishing activity will enable vessels to optimize fishing efficiency, given limitations imposed by annual catch limits and other restrictions, which should reduce area swept and therefore impacts to the seabed.

9.1.2.2.3 Alternative 3

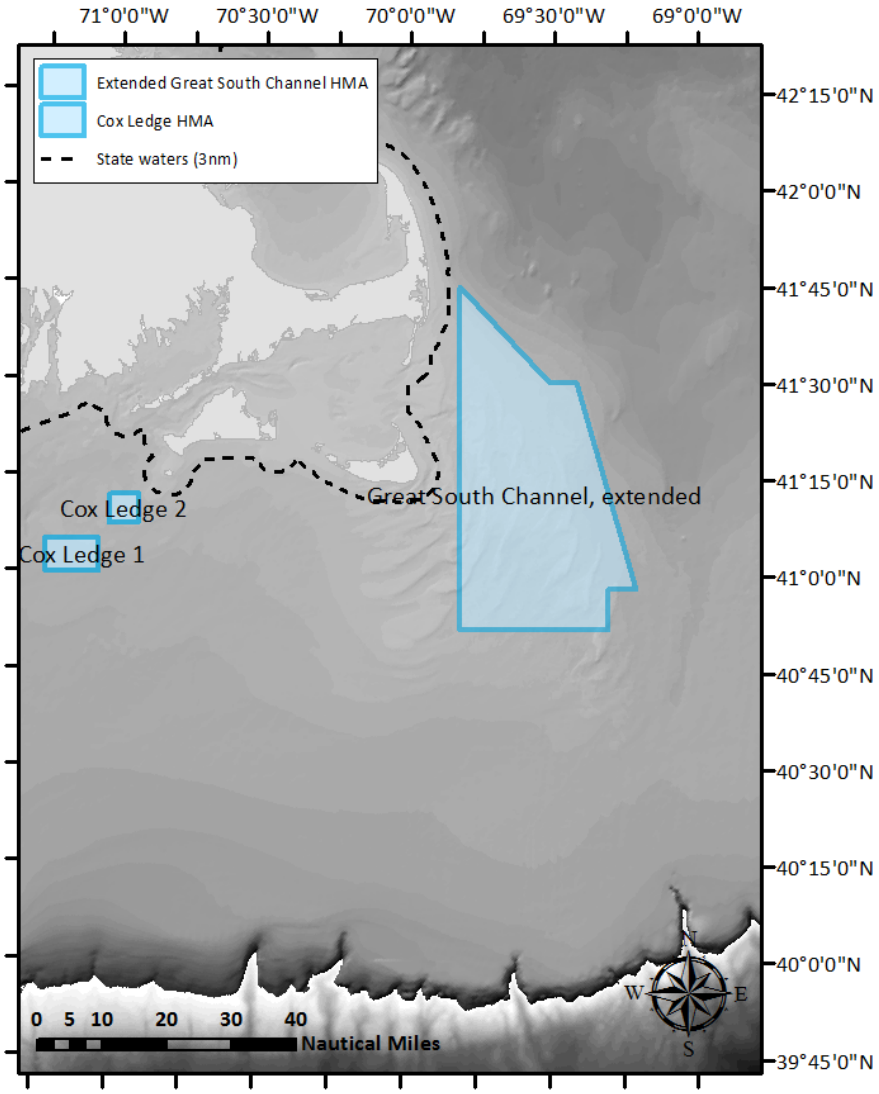
This alternative would remove the current Nantucket Lightship Habitat Closure Area and the Nantucket Lightship Groundfish Closed Area, and would designate a new habitat management area further north and east in the Great South Channel as shown in (Map 107), i.e. the Extended Great South Channel HMA. Two additional habitat management areas would also be designated on Cox Ledge. Measures for the Great South Channel and Cox Ledge areas could include:

- complete restrictions on use of mobile bottom-tending gears, or
- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or
- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

The same management measure need not be applied to both areas.

Rationale: The purpose of designating these areas is to minimize adverse fishery effects on EFH. The Extended Great South Channel HMA better encompasses cobble- and boulder-dominated habitat types and compared to the existing Nantucket Lightship habitat closure area. This version of the area in particular, which extends the furthest to the east of the any of the HMAs proposed for this region, would provide the best protection for juvenile cod. The central portion of this area was originally suggested by industry and evaluated by the Habitat PDT, which added some of the edge areas to efficiently encompass complex habitats. The easternmost portion was added by the Committee to encompass additional cod habitat. The Cox Ledge areas include vulnerable seabed habitat types.

Map 107 – Great South Channel/SNE Habitat Management Alternative 3.



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.2.2.4 Alternative 4

This alternative would remove the current Nantucket Lightship Habitat Closure Area and the Nantucket Lightship Groundfish Closed Area and would designate a new habitat management area further north and east in the Great South Channel as shown in (Map 108), which is a subset of the area proposed via Alternative 3. Two additional habitat management areas would also be designated on Cox Ledge. Measures for the Great South Channel and Cox Ledge areas could include:

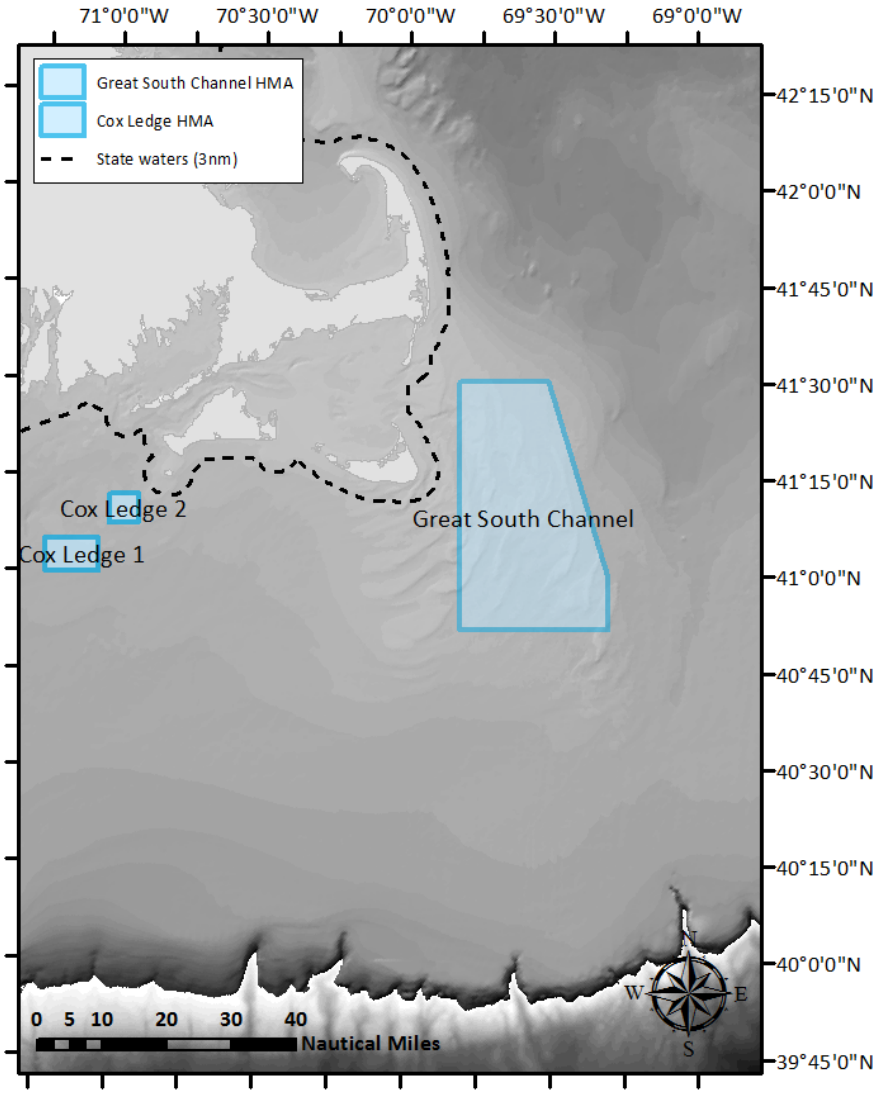
- complete restrictions on use of mobile bottom-tending gears, or

- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or
- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

The same management measure need not be applied to both areas.

Rationale: The purpose of designating these areas is to minimize adverse fishery effects on EFH. The Great South Channel area better encompasses cobble- and boulder-dominated habitat types and compared to the existing Nantucket Lightship habitat closure area. This version of the area does not include the northern and eastern portions of the area proposed via Alternative 3, and thus mitigates some concerns raised about fishery access. However, there is much less overlap with juvenile cod. The central portion of this area was originally suggested by industry and evaluated by the Habitat PDT, which added some of the edge areas to efficiently encompass complex habitats. The Cox Ledge areas include vulnerable seabed habitat types.

Map 108 – Great South Channel/SNE Habitat Management Alternative 4.



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.1.2.2.5 Alternative 5

This alternative would remove the current Nantucket Lightship Habitat Closure Area and the Nantucket Lightship Groundfish Closed Area and would designate a new habitat management area further north on Nantucket Shoals as shown in (Map 109). This Nantucket Shoals area overlaps with the areas proposed via Alternatives 3 and 4, but is generally further to the west. Two additional habitat management areas would also be designated on Cox Ledge. Measures for the Nantucket Shoals and Cox Ledge areas could include:

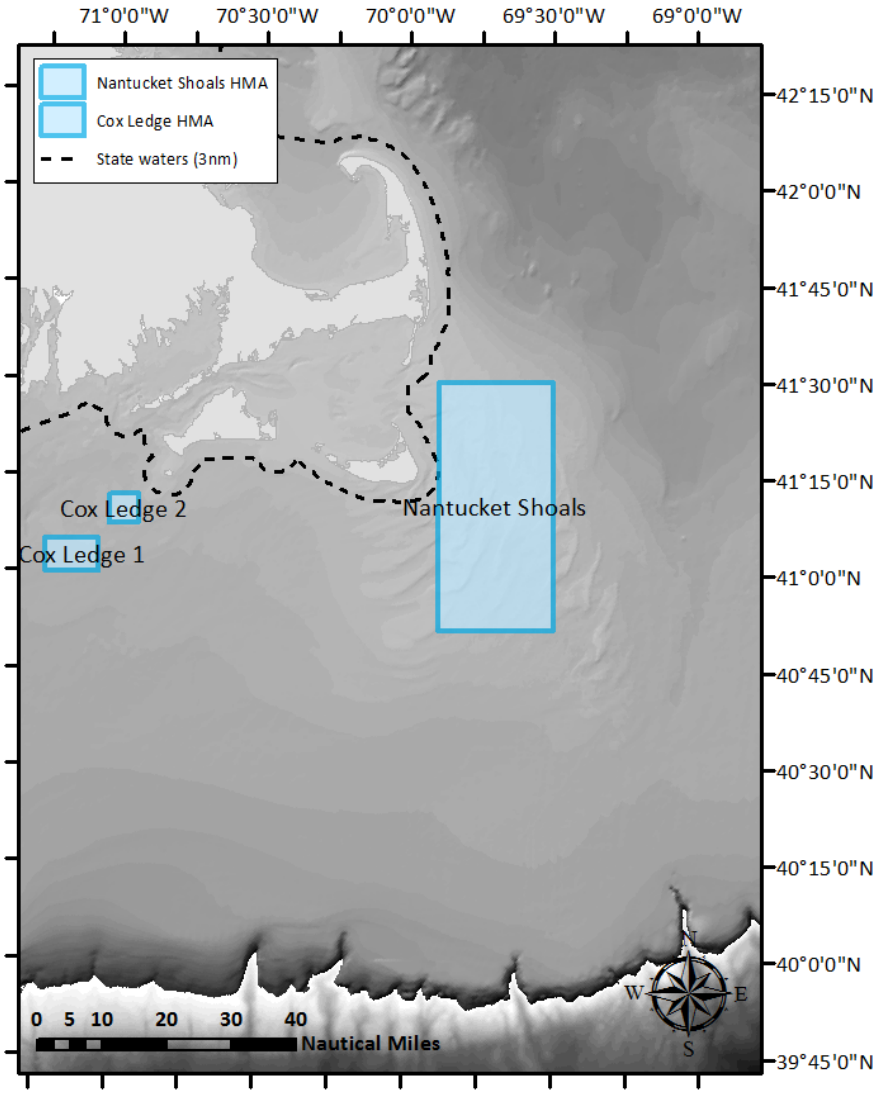
- complete restrictions on use of mobile bottom-tending gears, or

- restrictions on the use of mobile bottom-tending gear with an exemption for hydraulic clam dredges, or
- a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or
- a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

The same management measure need not be applied to both areas.

Rationale: The purpose of designating these areas is to minimize adverse fishery effects on EFH. The Nantucket Shoals area better encompasses cobble- and boulder-dominated habitat types and compared to the existing Nantucket Lightship habitat closure area, although the western and southern parts are generally sand dominated. This version of the area was suggested by the Committee and developed through discussions with industry, and thus mitigates some concerns raised about fishery access, even as compared to the Great South Channel HMA in Alternative 4. The Cox Ledge areas include vulnerable seabed habitat types.

Map 109 – Great South Channel/SNE Habitat Management Alternative 5.



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

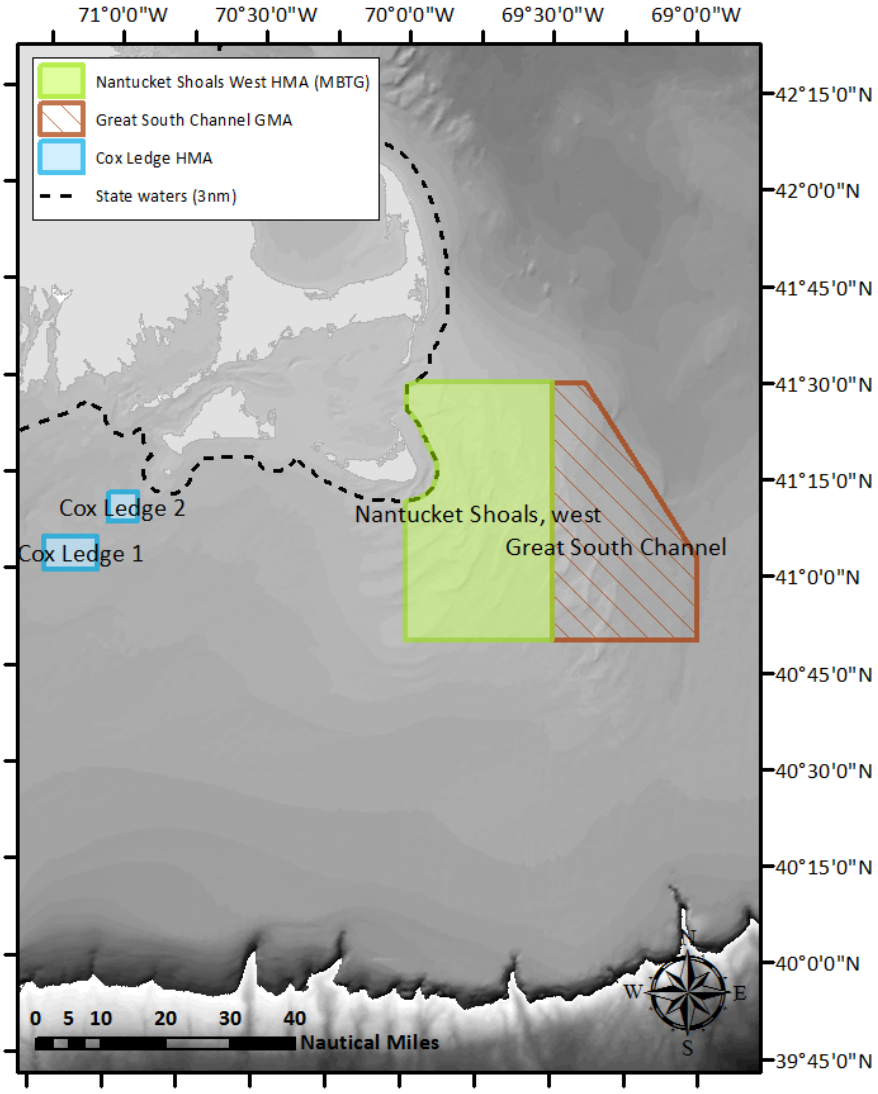
9.1.2.2.6 Alternative 6

This alternative (Map 110) would remove the current Nantucket Lightship Habitat Closure Area and the Nantucket Lightship Groundfish Closed Area and would designate a new habitat management area further north on Nantucket Shoals, which is similar to the area proposed via Alternative 5. This area would be a mobile bottom-tending gear closure (with or without an exemption for hydraulic dredge gears). An additional area further east in the Great South Channel would be designated as a gear modification area, with a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side. Two additional habitat management areas would also be designated on Cox Ledge. Measures for the Cox Ledge areas could include complete restrictions

on use of mobile bottom-tending gears (with or without an exemption for hydraulic dredge gears), or a requirement that bottom trawl vessels use ground cables modified with elevating disks with a length per side capped at 45 fathoms, or a requirement that bottom trawl vessels eliminate ground cables entirely and cap bridle lengths at 30 fathoms per side.

Rationale: The purpose of designating these areas is to minimize adverse fishery effects on EFH. The western area proposed in this alternative is very similar to the Nantucket Shoals area described in Alternative 5, but extends further west to state waters and slightly further south, and it would definitely be designated as a closure to mobile bottom-tending gears. Most of these additional areas are likely sand dominated, although they are not especially well sampled from a habitat type or fish distribution standpoint. The eastern area, which includes deeper waters and complex cobble and boulder habitats, would be designated as a gear modification area. As with the Georges Shoal Gear Modification Areas, this area could provide additional habitat benefits via reduced area swept by requiring modified ground cables, although this would depend on tradeoffs between decreased catch rates and increased fishing time. The distribution of juvenile cod in the region overlaps mainly with the eastern gear modification area. The Cox Ledge areas include vulnerable seabed habitat types.

Map 110 – Great South Channel/SNE Habitat Management Alternative 6. The hatched GSC GMA is only being considered for ground cable modifications, while the Nantucket Shoals HMA shown in green is only being considered as a mobile bottom-tending gear closure.



WGS 1984 UTM Zone 19N projection; map updated Sept 12, 2013

9.2 Alternative to improve groundfish spawning protection

This section describes alternatives designed to meet the following objectives:

- Improved groundfish spawning protection; including protection of localized spawning contingents or sub-populations of stocks
- Improved access to both the use and non-use benefits arising from closed area management across gear types, fisheries, and groups.

These objectives reflect the Council's intent to shift the focus of groundfish area management designations based on mortality reduction to those based on protection of specific attributes that contribute to stock productivity, such as spawning. Similarly, the habitat management spatial alternatives focus in part on protection of habitats that contain concentrations of juvenile groundfish, in order to improve stock productivity.

All of the spawning protection areas described in this section would be defined on an indefinite, seasonal basis, and the measures focus on limiting the use of gears that are capable of catching groundfish within these areas during the closed seasons.

9.2.1 Gulf of Maine

9.2.1.1 Alternative 1 (No Action)

No Action would retain (1) the Western Gulf of Maine Closure Area and the Cashes Ledge Closure Area, (2) the GOM Rolling Closures Areas that apply to sector and common pool vessels, and (3) the GOM Cod Spawning Protection Area, also known as the Whaleback area (Map 111). Measures for the areas are listed in Table 32, and the coordinates for these areas are listed in Table 33.

Rationale: In addition to the original intended effects related to fishing mortality reduction, these year round and seasonal closures have incidental effects that provide protection for spawning groundfish. The Western Gulf of Maine area was intended to provide incidental protection to spawning cod and haddock in the Gulf of Maine. The Cashes Ledge year round groundfish closed area was intended to provide protection to spawning and resident cod.

Table 32 – Restrictions in the year round and seasonal closed areas in the Gulf of Maine

Area name	Prohibitions	Exemptions
Western Gulf of Maine and Cashes Ledge Closure Areas	Closed year round to all fishing vessels	• Charter and party vessels with a letter of authorization • Vessels fishing with exempted gears: spears, rakes, diving gear, cast nets, tongs, harpoons, weirs, dip nets, stop nets, pound nets, pots and traps, purse seines, surfclam/quahog dredge gear, pelagic hook and line, pelagic longline, single pelagic gillnets, and shrimp trawls • Vessels participating in the mid-water trawl exempted fishery
Rolling Closure Areas I-V	Closed to all fishing vessels during the following months: • I – March • II – April* • III – May* • IV – June* • V – October/November *Smaller inshore version is closed to sector vessels	• Charter and party vessels with a letter of authorization • Vessels fishing with exempted gears: spears, rakes, diving gear, cast nets, tongs, harpoons, weirs, dip nets, stop nets, pound nets, pots and traps, purse seines, surfclam/quahog dredge gear, pelagic hook and line, pelagic longline, single pelagic gillnets, and shrimp trawls • Vessels participating in the mid-water trawl exempted fishery • Vessels fishing under a scallop DAS or in a scallop dredge exemption area • Vessels participating in the raised footrope trawl exempted whiting fishery • Sector vessels can fish in areas I and V, and also in the

Area name	Prohibitions	Exemptions
		offshore portions of areas II, III, and IV.
GOM Cod Spawning Protection Area	From April through June of each year, no fishing vessel or person on a fishing vessel may enter, fish in, or be in the area, and no fishing gear capable of catching NE multispecies may be used on, or be on board a vessel in the area.	• Vessels that have not been issued a NE multispecies permit and that are fishing exclusively in state waters • Vessels that are fishing with or using exempted gears • Charter/party or recreational fishing vessels, provided that pelagic hook and line gear is used, and there is no retention of regulated species • Vessels that are transiting

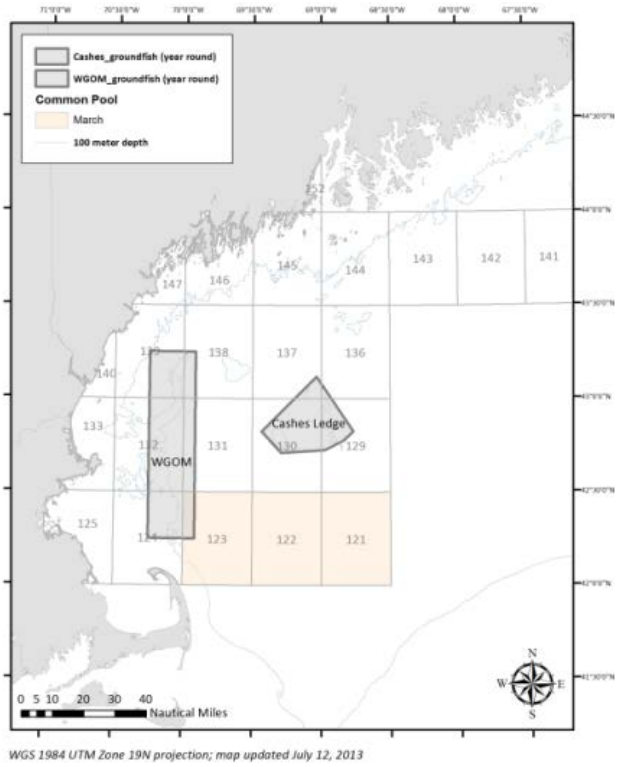
Table 33 – Coordinates for Gulf of Maine year round and seasonal closed areas

Area	Point	Latitude	Longitude
Western Gulf of Maine Closure Area	WGM1	42°15′	70°15′
	WGM2	42°15′	69°55′
	WGM3	43°15′	69°55′
	WGM4	43°15′	70°15′
Cashes Ledge Closure Area	CL1	43°07′	69°02′
	CL2	42°49.5′	68°46′
	CL3	42°46.5′	68°50.5′
	CL4	42°43.5′	68°58.5′
	CL5	42°42.5′	69°17.5′
	CL6	42°49.5′	69°26′
[Common Pool] Rolling closure Area I – March	GM3	42°00′	Cape Cod shoreline on the Atlantic Ocean
	GM5	42°00′	68°30′
	GM6	42°30′	68°30′
	GM23	42°30′	70°00′
[Common Pool] Rolling closure Area II - April	GM1	42°00′	Massachusetts shoreline
	GM2	42°00′	Cape Cod shoreline on Cape Cod Bay
	GM3	42°00′	Cape Cod shoreline on the Atlantic Ocean
	GM5	42°00′	68°30′
	GM13	43°00′	68°30′
	GM10	43°00′	New Hampshire shoreline
Sector Rolling Closure Area II – April	GM1	42°00′	MA shoreline
	GM2	42°00′	Cape Cod, MA shoreline on Cape Cod Bay
	GM3	42°00′	Cape Cod, MA shoreline on the Atlantic Ocean
	SGM1	42°00′	70°00′
	SGM2	43°00′	70°00′
	SGM3	43°00′	New Hampshire shoreline
[Common Pool] Rolling Closure Area III - May	GM1	42°00′	Massachusetts shoreline
	GM2	42°00′	Cape Cod shoreline on Cape Cod Bay
	GM3	42°00′	Cape Cod shoreline on the Atlantic Ocean
	GM4	42°00′	70°00′
	GM23	42°30′	70°00′
	GM6	42°30′	68°30′
	GM14	43°30′	68°30′
	GM18	43°30′	Maine shoreline
Sector Rolling Closure	SGM4	42°30′	Massachusetts shoreline

Area III - May	SGM5	42°30′	70°00′
	SGM6	43°00′	70°00′
	SGM7	43°00′	69°30′
	SGM8	43°30′	69°30′
	GM18	43°30′	Maine shoreline
[Common Pool] Rolling closure Area IV – June	GM9	42°30′	Massachusetts shoreline
	GM23	42°30′	70°00′
	GM17	43°30′	70°00′
	GM19	43°30′	67°32′ or U.S.-Canada maritime boundary
	GM20	44°00′	67°21′ or U.S.-Canada maritime boundary
	GM21	44°00′	69°00′
	GM22	Maine shoreline	69°00′
Sector Rolling Closure Area IV - June	SGM9	43°00′	New Hampshire shoreline
	SGM6	43°00′	70°00′
	SGM10	43°30′	70°00′
	SGM11	43°30′	69°00′
	GM22	Maine shoreline	69°00′
[Common Pool] Rolling closure area V – October and November	GM1	42°00′	Massachusetts shoreline
	GM2	42°00′	Cape Cod shoreline on Cape Cod Bay
	GM3	42°00′	Cape Cod shoreline on the Atlantic Ocean
	GM4	42°00′	70°00′
	GM8	42°30′	70°00′
	GM9	42°30′	Massachusetts shoreline
GOM Cod Spawning Protection Area (April, May, and June)	CSPA1	42°50.95′	70°32.22′
	CSPA2	42°47.65′	70°35.64′
	CSPA3	42°54.91′	70°41.88′
	CSPA4	42°58.27′	70°38.64′
	CSPA1	42°50.95′	70°32.22′

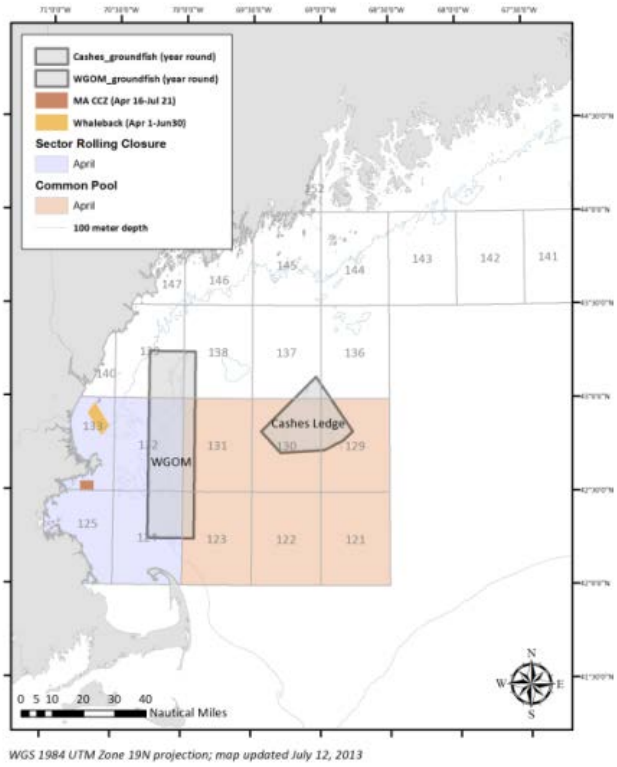
Map 111 – Gulf of Maine Spawning Alternative 1 (No Action)

March



WGS 1984 UTM Zone 19N projection; map updated July 12, 2013

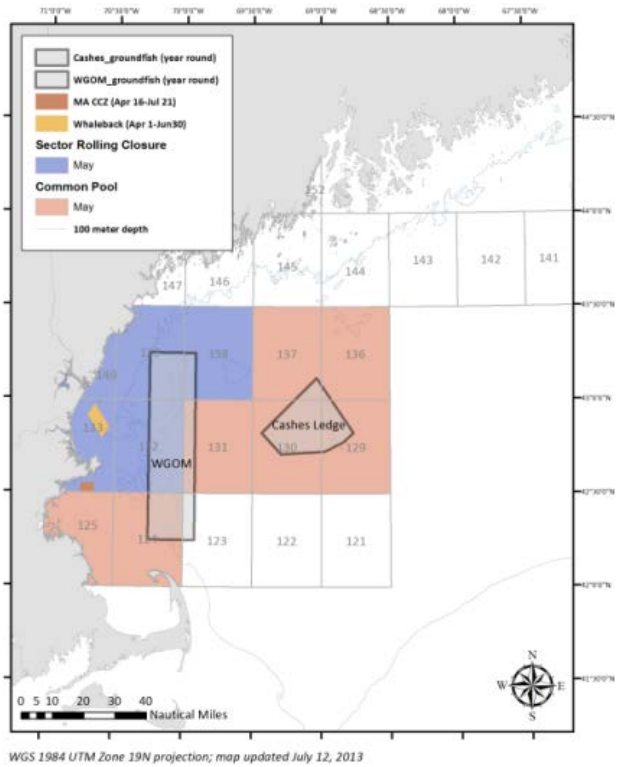
April



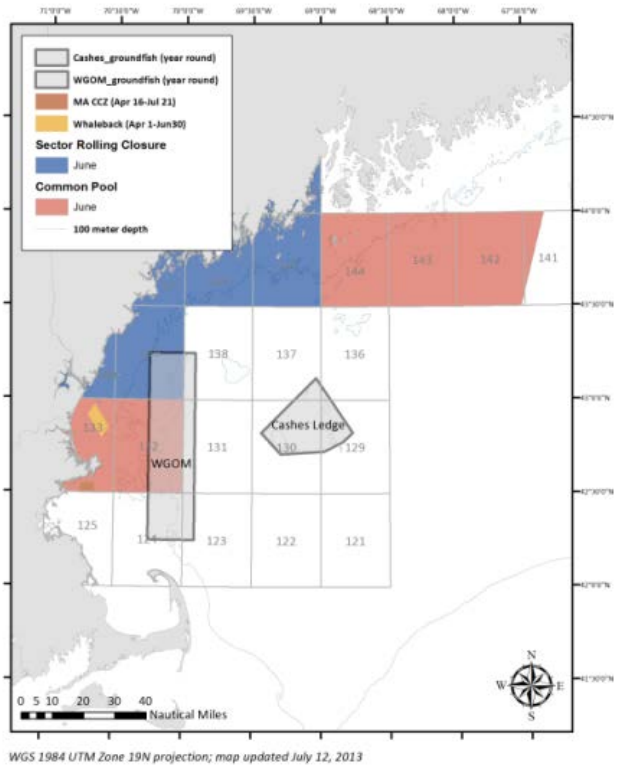
WGS 1984 UTM Zone 19N projection; map updated July 12, 2013

May

June

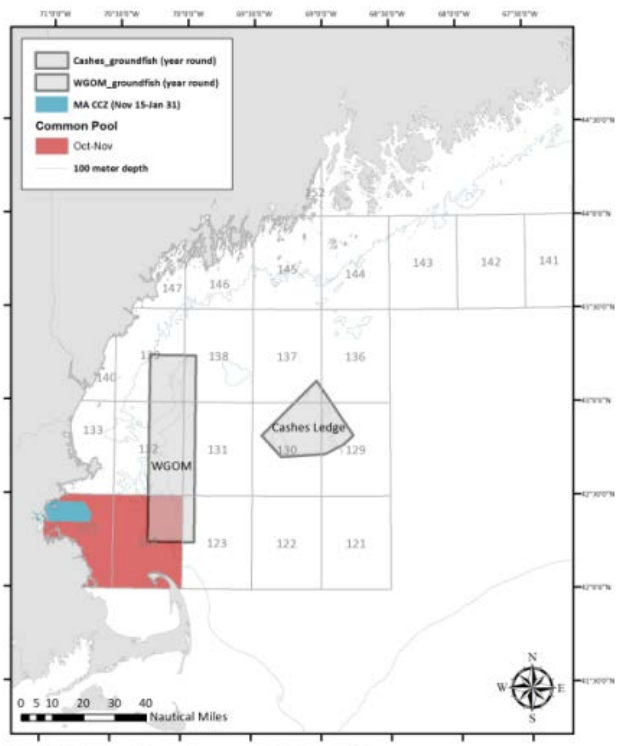


WGS 1984 UTM Zone 19N projection; map updated July 12, 2013



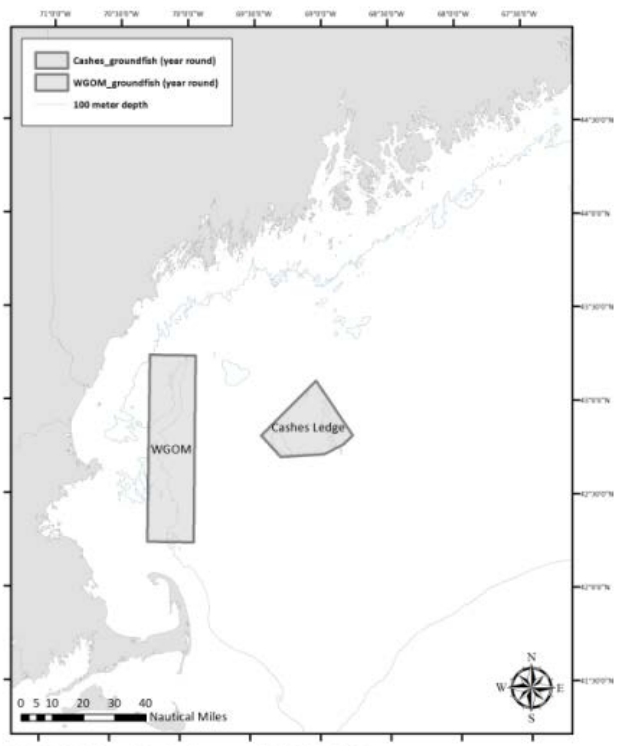
WGS 1984 UTM Zone 19N projection; map updated July 12, 2013

Oct-Nov



WGS 1984 UTM Zone 19N projection; map updated July 12, 2013

Jan, Feb, July, Aug, Sept, Dec



WGS 1984 UTM Zone 19N projection; map updated July 12, 2013

9.2.1.2 Alternative 2 Spawning Protection Areas based on Sector Rolling Closures

This alternative (Map 112) would redesignate the existing rolling closures that currently apply to sector enrolled vessels during April, May, and June as seasonal groundfish spawning protection areas. These closed areas would apply from April to June to all vessels capable of catching groundfish, whether the vessel is in the common pool or enrolled in a sector, with possible exemptions as identified in the options below.

This alternative would also designate the Massachusetts Bay Cod Spawning Protection Area. This area is a subset of the existing October-November common pool rolling closure area, and would be closed from November 1 through January 31 with the same restrictions as the GOM Cod Spawning Protection (Whaleback) Area.

Under this alternative, the March-June common pool rolling closures would be eliminated. The Western Gulf of Maine and the Cashes Ledge groundfish closed areas would be eliminated unless maintained for habitat protection purposes. Overlapping habitat management areas for this region are proposed in section 9.1.1. The GOM Cod Spawning Protection (Whaleback) Area would be maintained as is.

Two options are proposed; option 1 would exempt recreational groundfish fishing from the April, May, and June closures, while option 2 would restrict recreational fishing for groundfish in these areas.

Rationale: New science and published research show a large degree of overlap between the sector rolling closures and groundfish spawning, particularly for cod and haddock. The Council had anticipated developing more precise spawning closure areas based on these data and analyses, but rejected novel area closure boundaries in favor of using a modification of the existing system of areas to meet spawning objectives in the Gulf of Maine. The rolling closures largely overlap identified concentrations of large groundfish and are appear to be sufficiently broad to capture variability in the timing and geographical range of annual spawning activity.

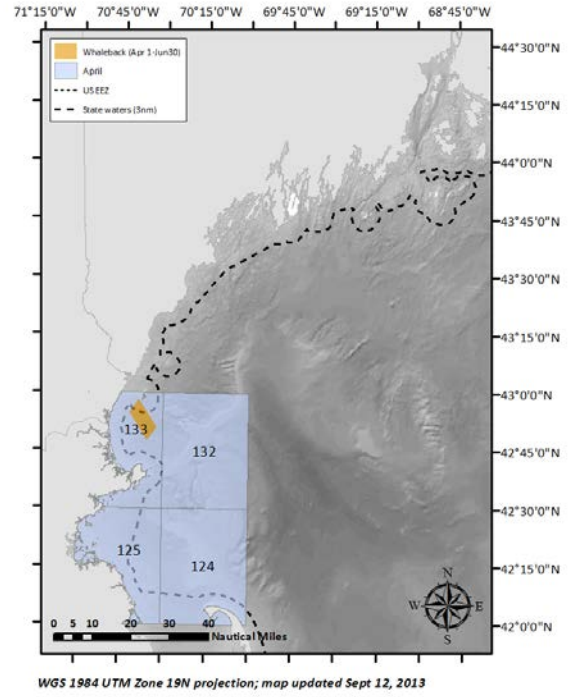
The Massachusetts Bay Cod Spawning Protection Area would protect known aggregations of winter spawning cod, in order to improve productivity of the GOM cod stock.

Table 34 – Latitude and longitude coordinates of proposed Gulf of Maine groundfish spawning protection areas. The April, May, and June coordinates are identical to the existing coordinates to seasonal rolling closures that apply to sector-enrolled groundfish vessels.

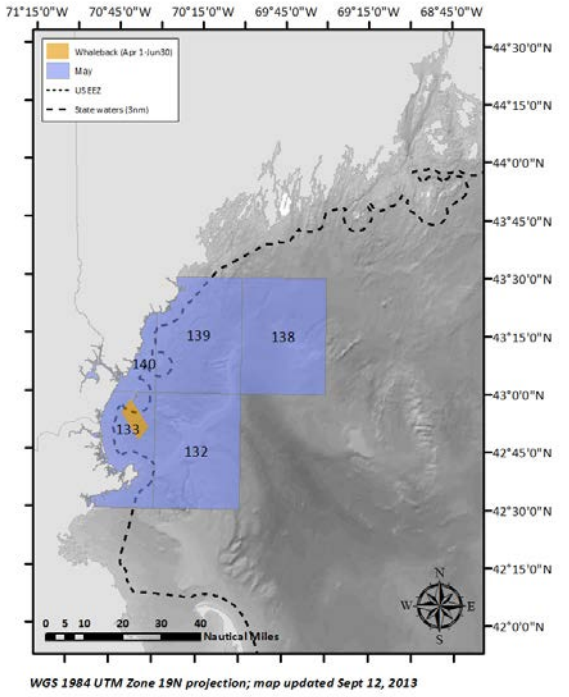
	April 1 – April 30		May 1 – May 31		June 1 – June 30		Nov. 1 – Jan. 31 (6)	
Point	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude
1	42˚ 00'	(1)	42˚ 30'	(1)	43˚ 00'	(4)	42° 23.6’	70° 39.2’
2	42˚ 00'	(2)	42˚ 30'	70˚ 00’	43˚ 00'	70˚ 00'	42° 07.7’	70° 26.8’
3	42˚ 00'	(3)	43˚ 00'	70˚ 00’	43˚ 30'	70˚ 00'		
4	42˚ 00'	70˚ 00'	43˚ 00'	69˚ 30’	43˚ 30'	69˚ 00’		
5	43˚ 00'	70˚ 00'	43˚ 30'	69˚ 30’	(5)	69˚ 00’		
6	43˚ 00'	(4)	43˚ 30'	(5)				
(1) Massachusetts shoreline								
(2) Cape Cod shoreline on Cape Cod Bay								
(3) Cape Cod shoreline on the Atlantic Ocean								
(4) New Hampshire shoreline								
(5) Maine shoreline								
(6) Western boundary at Massachusetts state waters								

Map 112 – Gulf of Maine Spawning Alternative 2. Shaded areas would be closed seasonally as shown. Note difference in scale on the fourth panel; inset map provided for reference.

April 1 – April 30

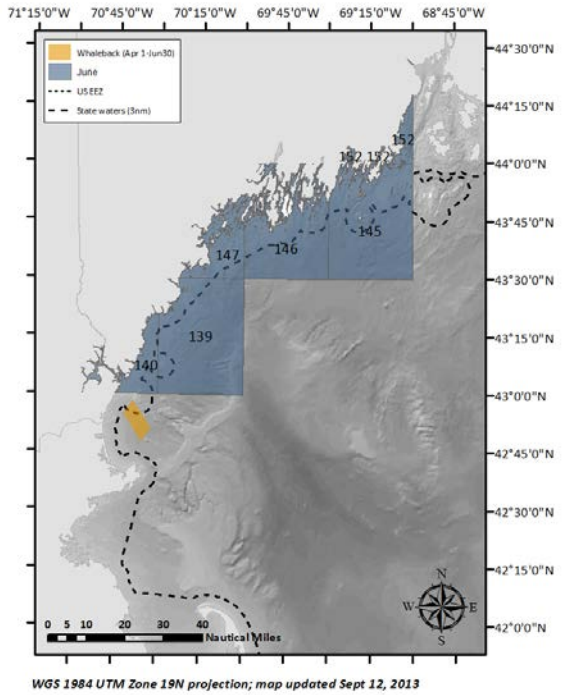


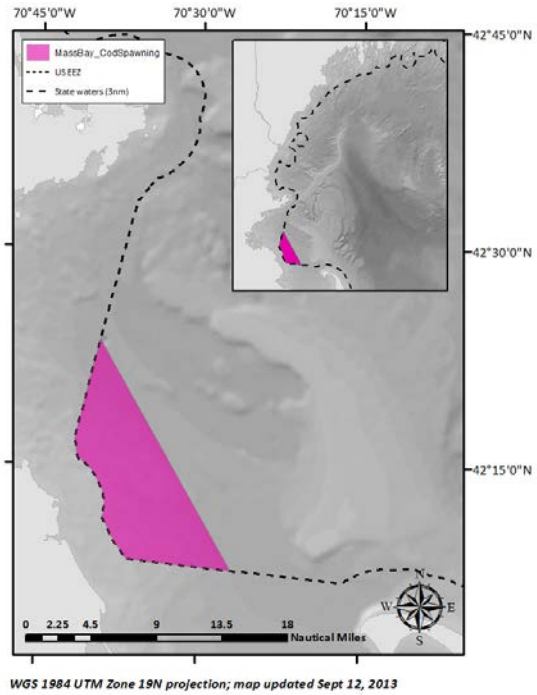
May 1 – May 31



June 1 – June 30

November 1-January 31





9.2.1.2.1 Option 1: Areas closed to selected commercial fishing gears capable of catching groundfish, with specified exemptions

The April, May, and June spawning areas identified in this alternative (Map 112) would be sequentially closed for one-month periods to all fishing vessels with the following exemptions, which are the exemptions currently in effect for the GOM rolling closure areas:

- Vessels that are transiting
- Vessels that do not have a Federal NE multispecies permit and are fishing exclusively in state waters
- Charter and party vessels[51]
- Recreational vessels
- Vessels fishing with exempted gears (spears, rakes, diving gear, cast nets, tongs, harpoons, weirs, dip nets, stop nets, pound nets, pots and traps, purse seines, surf clam/quahog dredge gear, pelagic hook and line, pelagic longlines, single pelagic gillnets, shrimp trawls (with properly configured grates)
- Vessels participating in the mid-water trawl exempted fishery
- Sea scallop dredge gear when under a scallop day-at-sea
- Vessels lawfully in a scallop dredge exemption area
- Vessels participating in the Raised Footrope Trawl Exempted Whiting Fishery

[51] Charter and party vessels may fish in the GOM RCAs provided they have a Letter of Authorization (LOA) from the Regional Administrator to enter or fish in these areas (additional requirements also apply).

The smaller November 1 – January 31 spawning area would be closed to all fishing vessels with the following exemptions, which are the exemptions associated with the Whaleback Area:

- Vessels that are transiting
- Vessels that do not have a Federal NE multispecies permit and are fishing exclusively in state waters
- Charter/party or recreational fishing vessels, provided that pelagic hook and line gear is used, and there is no retention of regulated species or ocean pout
- Vessels fishing with exempted gears (spears, rakes, diving gear, cast nets, tongs, harpoons, weirs, dip nets, stop nets, pound nets, pots and traps, purse seines, surf clam/quahog dredge gear, pelagic hook and line, pelagic longlines, single pelagic gillnets, shrimp trawls with properly configured grates

This option would not preempt or change any overlapping state closures in Massachusetts, New Hampshire, or Maine state waters. The GOM Cod Spawning Protection Area (Whaleback Area) (Map 112) would continue to be closed to commercial and recreational fishing vessels between April 1 and June 30.

Rationale: More specific concentrations of spawning cod have been identified in Massachusetts Bay and the Whaleback Spawning Protection Area, and cod spawning in these areas would be disrupted if the areas are open to recreational fishing. However, other portions of the rolling closures have cod spawning, but specific areas have not yet been identified and it is not clear that recreational fishing would disturb more widely distributed spawning activity, so recreational fishing would be allowed in the larger April, May, and June closures.

9.2.1.2.2 Option 2: Areas closed to selected commercial fishing gears capable of catching groundfish, with specified exemptions, and recreational groundfish fishing

The April, May, and June spawning areas identified in this alternative would be sequentially closed for one-month periods to all fishing vessels with the following exemptions, which are the exemptions currently in effect for the GOM rolling closure areas:

- Vessels that are transiting
- Vessels that do not have a Federal NE multispecies permit and are fishing exclusively in state waters
- Vessels fishing with exempted gears (spears, rakes, diving gear, cast nets, tongs, harpoons, weirs, dip nets, stop nets, pound nets, pots and traps, purse seines, surf clam/quahog dredge gear, pelagic hook and line, pelagic longlines, single pelagic gillnets, shrimp trawls with properly configured grates
- Vessels participating in the mid-water trawl exempted fishery
- Sea scallop dredge gear when under a scallop day-at-sea
- Vessels lawfully in a scallop dredge exemption area
- Vessels participating in the Raised Footrope Trawl Exempted Whiting Fishery

The smaller November 1 – January 31 spawning area would be closed to all fishing vessels with the following exemptions, which are the exemptions associated with the Whaleback Area:

- Vessels that are transiting
- Vessels that do not have a Federal NE multispecies permit and are fishing exclusively in state waters
- Charter/party or recreational fishing vessels, provided that pelagic hook and line gear is used, and there is no retention of regulated species or ocean pout
- Vessels fishing with exempted gears (spears, rakes, diving gear, cast nets, tongs, harpoons, weirs, dip nets, stop nets, pound nets, pots and traps, purse seines, surf clam/quahog dredge gear, pelagic hook and line, pelagic longlines, single pelagic gillnets, shrimp trawls with properly configured grates

Similar to Option 1, this option would not preempt or change any overlapping state closures in Massachusetts, New Hampshire, or Maine state waters. The GOM Cod Spawning Protection Area (Whaleback Area) (Map 112) would continue to be closed to commercial and recreational fishing vessels between April 1 and June 30

Rationale: Groundfish spawning protection areas should be closed to all gears and fisheries capable of catching and in particular targeting groundfish. In addition to commercial vessels, recreational fishermen can quickly target concentrations of spawning cod and haddock, which if there are enough vessels is likely to disrupt spawning and remove actively spawning fish before they have had the opportunity to successfully reproduce.

9.2.2 Georges Bank and Southern New England

9.2.2.1 No Action

No Action would retain the existing year round closed areas on Georges Bank and in Southern New England, specifically Closed Area I, Closed Area II, and the Nantucket Lightship Closed Area, and the May Georges Bank Seasonal Closure Area (Map 113). Measures for these areas are summarized in Table 35 and coordinates for these areas are shown in Table 36.

Rationale: In addition to the original intended effects, these year round and seasonal closures have incidental effects that provide protection for spawning groundfish. Closed Area I and Closed Area II in particular were originally designed to protect cod and haddock spawning activity, although year round protection is unnecessary for this purpose.

Table 35 – Restrictions in the year round and seasonal closed areas on Georges Bank and in Southern New England

Area name	Prohibitions	Exemptions
Nantucket Lightship Closure Area	No fishing vessel or person on a fishing vessel may enter, fish, or be in the area	• Pot gear for lobsters or hagfish • Pelagic longline gear or pelagic hook-and-line gear, or harpoon gear • Pelagic midwater trawl gear, with bycatch limits • Tuna purse seine gear; review to ensure no impacts on regulated multispecies • Classified as charter, party or recreational vessel, provided that: (A) LOA, (B) Fish species managed by the NEFMC or MAFMC are not sold, (C) no gear other than rod and reel or handline gear on board, (D) vessel does

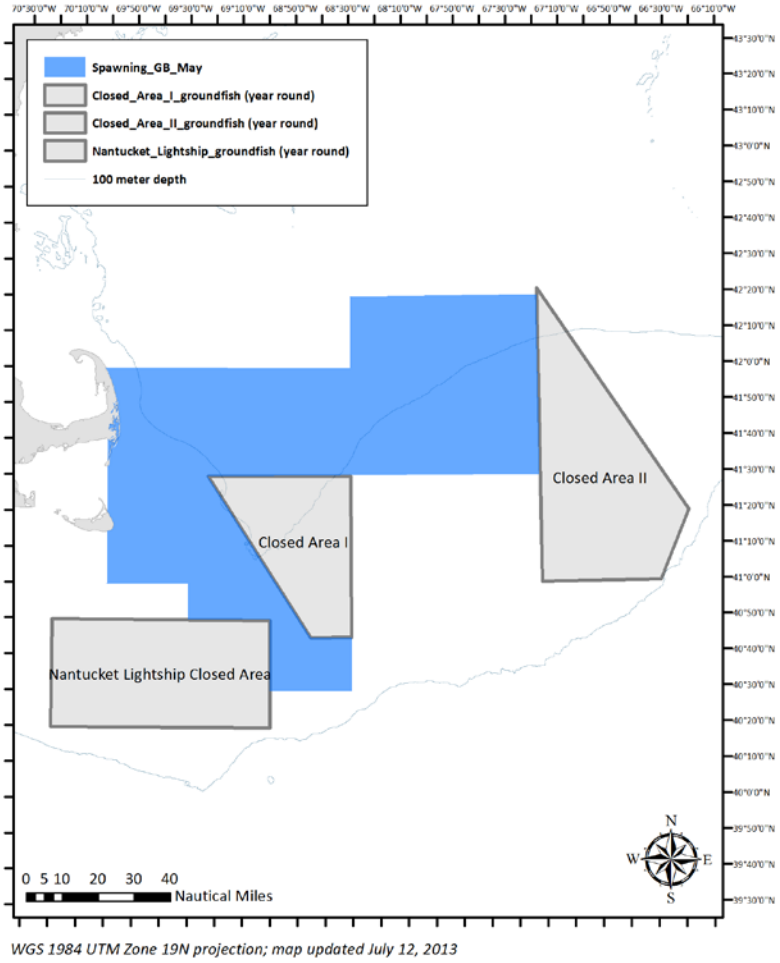
Area name	Prohibitions	Exemptions
		not fish outside the Nantucket Lightship Closed Area during the period specified by the LOA • Fishing with or using dredge gear designed and used to take surfclams or ocean quahogs • Fishing for scallops within the Nantucket Lightship Access Area
Closed Area I	No fishing vessel or person on a fishing vessel may enter, fish, or be in the area	• Pot gear for lobsters or hagfish • Pelagic longline gear or pelagic hook-and-line gear, or harpoon gear • Pelagic midwater trawl gear, with bycatch limits • Tuna purse seine gear; review to ensure no impacts on regulated multispecies • Fishing in a Special Access Program • Fishing for scallops within the Closed Area I Access Area
Closed Area II	No fishing vessel or person on a fishing vessel may enter, fish, or be in the area	• Pot gear for lobsters or hagfish • Pelagic longline gear or pelagic hook-and-line gear, or harpoon gear • Pelagic midwater trawl gear, with bycatch limits • Fishing in a Special Access Program • Tuna purse seine gear outside of the portion of CA II known as the Habitat Area of Particular Concern • Fishing in the CA II Yellowtail Flounder/Haddock SAP or the Eastern U.S./Canada Haddock SAP Program • Transiting the area, provided the vessel's fishing gear is stowed and there is a compelling safety reason • The vessel has declared into the Eastern U.S./Canada Area and is transiting CA II • Fishing for scallops within the Closed Area II Access Area
GB Seasonal Closure	From May 1-May 31, no fishing vessel or person on a fishing vessel may enter, fish, or be in the area	• Exempted gears - spears, rakes, diving gear, cast nets, tongs, harpoons, weirs, dip nets, stop nets pound nets, pots and traps, purse seines, midwater trawls, surfclam/quahog dredge gear, pelagic hook and line, pelagic longline, single pelagic gillnets, shrimp trawls • Charter/party or recreational vessels; • Fishing with dredge gear under a scallop DAS, and provided that the vessel complies with the NE multispecies possession restrictions for scallop vessels, or when lawfully fishing in the Scallop Dredge Fishery Exemption Areas • Fishing in the CA I Hook Gear Haddock Access Area • Fishing under the restrictions and conditions of an approved sector operations plan • Fishing under the provisions of a Northeast multispecies Handgear A or B permit

Table 36 - Latitude and longitude coordinates of areas included in the no action Georges Bank groundfish spawning alternative.

Closed Area I - Year round		
Point	N. Lat.	W. Long.
CI1	41˚ 30'	69˚ 23'
CI2	40˚ 45'	68˚ 45'
CI3	40˚ 45'	68˚ 30'
CI4	41˚ 30'	68˚ 30'

Closed Area II - Year round		
Point	N. Lat.	W. Long.
CII1	41˚ 00'	67˚ 20'
CII2	41˚ 00'	66˚ 35.8' (1)
G5	41˚ 18.6'	66˚ 24.8' (1)
CII3	42˚ 22'	67˚ 20'
Nantucket Lightship Closed Area - Year round		
Point	N. lat.	W. long.
G10	40°50′	69°00′
CN1	40°20′	69°00′
CN2	40°20′	70°20′
CN3	40°50′	70°20′
Georges Bank Seasonal Closure - May 1 – May 31		
Point	N. Lat.	W. Long.
1	42˚ 00'	(2)
2	42˚ 00'	68˚ 30'
3	42˚ 20'	68˚ 30'
4	42˚ 20'	67˚ 20'
5	41˚ 30'	67˚ 20'
6	41˚ 30'	69˚ 23'
7	40˚ 45'	68˚ 45'
8	40˚ 45'	68˚ 30'
9	40˚ 30'	68˚ 30'
10	40˚ 30'	69˚ 00'
11	40˚ 50'	69˚ 00'
12	40˚ 50'	69˚ 30'
13	41˚ 00'	69˚ 30'
14	41˚ 00'	70˚ 00'
15	(2)	70˚ 00'
(1) US – Canada maritime boundary		
(2) Northward to its intersection with the shoreline of Massachusetts		

Map 113 – Georges Bank Spawning Alternative 1 (No Action). Areas are closed year-round (grey) and seasonally (blue) to gears capable of catching groundfish, with various exemptions.



9.2.2.2 Alternative 2 Spawning Protection Areas using Closed Area I and Closed Area II

This alternative would retain as spawning closures Closed Area I and Closed Area II during the months of February, March, and April (Map 114). Under this alternative, the Nantucket Lightship groundfish closed area would be eliminated and the Georges Bank Seasonal Closures Area would be eliminated. The options consider closures to just commercial gears (options 1A and 1B) or commercial and recreational gears (options 2A and 2B), as well as closure all of CAI (options 1A and 2A) or just the northern part of CAI, i.e. the boundaries of the existing habitat closure (options 1B and 2B).

9.2.2.2.1 Option 1A: Areas closed to selected commercial fishing gears capable of catching groundfish, full extent of CAI

Closed Areas I and II would be closed during February, March, and April to all fishing vessels with the following exemptions:

- Vessels that are transiting

- Vessels that do not have a Federal NE multispecies permit and are fishing exclusively in state waters
- Charter and party vessels
- Recreational vessels
- Vessels fishing with exempted gears (spears, rakes, diving gear, cast nets, tongs, harpoons, weirs, dip nets, stop nets, pound nets, pots and traps, purse seines, surfclam/quahog dredge gear, pelagic hook and line, pelagic longlines, single pelagic gillnets, shrimp trawls with properly configured grates
- Vessels participating in the mid-water trawl exempted fishery
- Vessels participating in the Cultivator Shoals or Raised Footrope Exempted Whiting Fishery

The Georges Bank Seasonal Closure Area (May) was eliminated from the action alternative on 9/5.

Rationale: This alternative would exempt charter, party, and recreational vessels. Although cod spawn in these areas, specific locations have not yet been identified and it is not clear that recreational fishing would disturb more widely distributed spawning activity. Scallop dredge vessels would be restricted under this alternative as they catch various species of groundfish and could disrupt spawning activity. Whiting vessels are exempted from these restrictions because they fish in specific exemption areas that are narrowly defined spatially and temporally.

9.2.2.2.2 Option 1B: Areas closed to selected commercial fishing gears capable of catching groundfish, northern part of CAI only

The northern part of Closed Area I and all of Closed Area II would be closed during February, March, and April to all fishing vessels with the following exemptions:

- Vessels that are transiting
- Vessels that do not have a Federal NE multispecies permit and are fishing exclusively in state waters
- Charter and party vessels
- Recreational vessels
- Vessels fishing with exempted gears (spears, rakes, diving gear, cast nets, tongs, harpoons, weirs, dip nets, stop nets, pound nets, pots and traps, purse seines, surfclam/quahog dredge gear, pelagic hook and line, pelagic longlines, single pelagic gillnets, shrimp trawls with properly configured grates
- Vessels participating in the mid-water trawl exempted fishery
- Vessels participating in the Cultivator Shoals or Raised Footrope Exempted Whiting Fishery

The Georges Bank Seasonal Closure Area (May) was eliminated from the action alternative on 9/5.

Rationale: This alternative would exempt charter and party and recreational vessels. Although cod spawn in these areas, specific locations have not yet been identified and it is not clear that

recreational fishing would disturb more widely distributed spawning activity. Scallop dredge vessels would be restricted under this alternative as they catch various species of groundfish and could disrupt spawning activity. Whiting vessels are exempted from these restrictions because they fish in specific exemption areas that are narrowly defined spatially and temporally. As compared to Option 1A, Option 1B closes only the northern part of CAI during February, March, and April, rather than the entire area. This CAI north only sub-option was recommended by the Council in June.

9.2.2.2.3 Option 2A: Areas closed to selected commercial fishing gears capable of catching groundfish and recreational groundfish fishing, full extent of CAI

Closed Areas I and II would be closed during February, March, and April to all fishing vessels with the following exemptions:

- Vessels that are transiting
- Vessels that do not have a Federal NE multispecies permit and are fishing exclusively in state waters
- Vessels fishing with exempted gears (spears, rakes, diving gear, cast nets, tongs, harpoons, weirs, dip nets, stop nets, pound nets, pots and traps, purse seines, surfclam/quahog dredge gear, pelagic hook and line, pelagic longlines, single pelagic gillnets, shrimp trawls with properly configured grates
- Vessels participating in the mid-water trawl exempted fishery
- Vessels participating in the Cultivator Shoals or Raised Footrope Exempted Whiting Fishery

The Georges Bank Seasonal Closure Area (May) was eliminated from the action alternative on 9/5.

Rationale: Groundfish spawning protection areas should be closed to all gears and fisheries capable of catching and in particular targeting groundfish. In addition to commercial vessels, recreational fishermen can quickly target concentrations of spawning cod and haddock, which if there are enough vessels is likely to disrupt spawning and remove actively spawning fish before they have had the opportunity to successfully reproduce. Scallop dredge vessels would be restricted under this alternative as they catch various species of groundfish and could disrupt spawning activity. Whiting vessels are exempted from these restrictions because they fish in specific exemption areas that are narrowly defined spatially and temporally.

9.2.2.2.4 Option 2B: Areas closed to selected commercial fishing gears capable of catching groundfish and recreational groundfish fishing, northern part of CAI only

The northern part of Closed Area I and all of Closed Area II would be closed during February, March, and April to all fishing vessels with the following exemptions:

- Vessels that are transiting
- Vessels that do not have a Federal NE multispecies permit and are fishing exclusively in state waters

- Vessels fishing with exempted gears (spears, rakes, diving gear, cast nets, tongs, harpoons, weirs, dip nets, stop nets, pound nets, pots and traps, purse seines, surfclam/quahog dredge gear, pelagic hook and line, pelagic longlines, single pelagic gillnets, shrimp trawls with properly configured grates
- Vessels participating in the mid-water trawl exempted fishery
- Vessels participating in the Cultivator Shoals or Raised Footrope Exempted Whiting Fishery

The Georges Bank Seasonal Closure Area (May) was eliminated from the action alternative on 9/5.

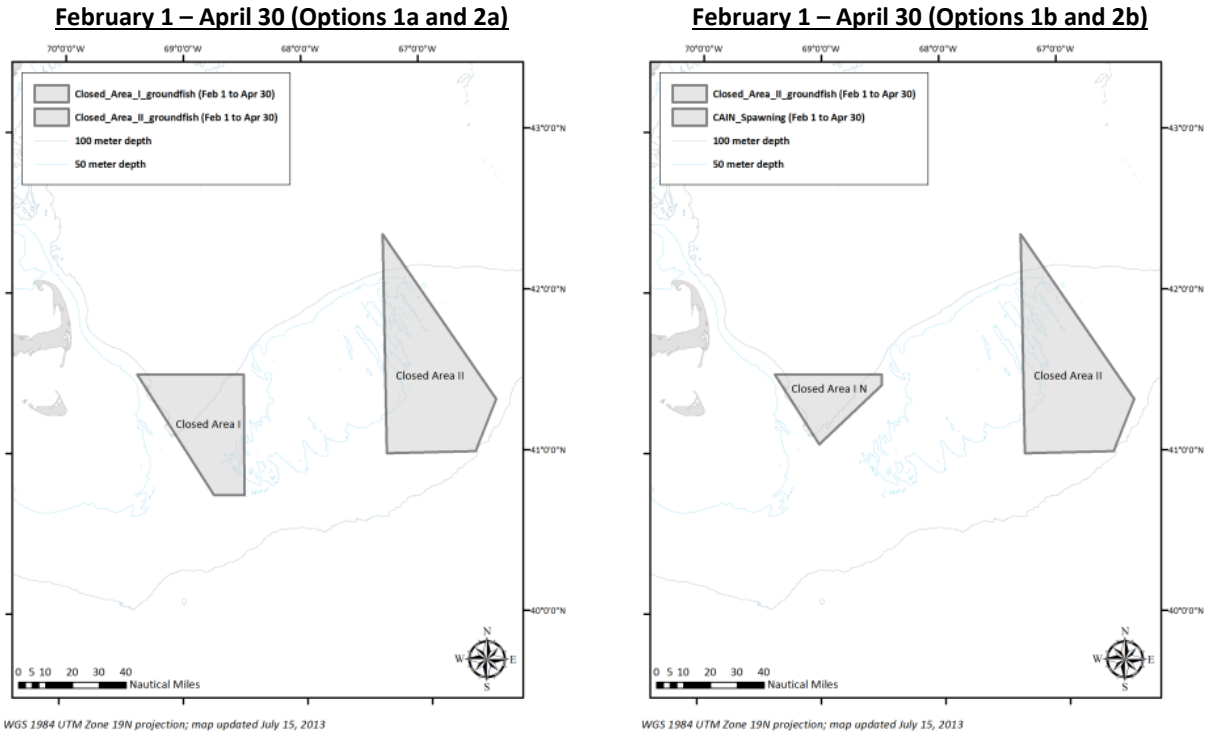
Rationale: Groundfish spawning protection areas should be closed to all gears and fisheries capable of catching and in particular targeting groundfish. In addition to commercial vessels, recreational fishermen can quickly target concentrations of spawning cod and haddock, which if there are enough vessels is likely to disrupt spawning and remove actively spawning fish before they have had the opportunity to successfully reproduce. Scallop dredge vessels would be restricted under this alternative as they catch various species of groundfish and could disrupt spawning activity. Whiting vessels are exempted from these restrictions because they fish in specific exemption areas that are narrowly defined spatially and temporally. As compared to Option 2A, Option 2B closes only the northern part of CAI during February, March, and April, rather than the entire area. This CAI north only sub-option was recommended by the Council in June.

Table 37 - Latitude and longitude coordinates of proposed Georges Bank groundfish spawning protection areas. These coordinates are identical to the existing coordinates for CAI and CAII.

	Closed Area I February 1 – April 30		Closed Area II February 1 – April 30	
Point	N. Lat.	W. Long.	N. Lat.	W. Long.
1	41˚ 30'	69˚ 23'	41˚ 00'	67˚ 20'
2	40˚ 45'	68˚ 45'	41˚ 00'	66˚ 35.8' (1)
3	40˚ 45'	68˚ 30'	41˚ 18.6'	66˚ 24.8' (1)
4	41˚ 30'	68˚ 30'	42˚ 22'	67˚ 20'
5	41˚ 30'	69˚ 23'	41˚ 00'	67˚ 20'

(1) US – Canada maritime boundary

Map 114 – Georges Bank Spawning Alternative 2. Areas closed seasonally to vessels using gears capable of catching groundfish.



9.3 Alternatives to designate Dedicated Habitat Research Areas

The Habitat PDT was tasked with evaluating how to redesign habitat closures in the Northwest Atlantic to minimize adverse effects to essential fish habitat to the extent practicable as part of EFH Omnibus Amendment 2. To date, existing knowledge from the region as well as from across the world has been used to develop general ecological assumptions about designating EFH as well as produce specific management measures to minimize adverse effects.

In order to better inform managers about trade-offs associated with minimization of adverse effects, the PDT developed the Swept Area Seabed Impact (SASI) approach, including a spatial model combining habitat maps, habitat vulnerability estimates, and fishing effort data. This approach was intended to aid in identifying areas throughout the region that are most vulnerable to each type of commercial fishing gear. While a clear step beyond previous efforts, the model rests on a set of general assumptions that are not necessarily equally applicable in all habitats and in all sub-regions. There is a clear need to test these assumptions and to improve the utility of the model with empirical studies from across the region. Further, there is a critical need to improve our understanding of the linkages between habitat and the productivity of managed species (and their prey) in order to better target management and conservation actions.

One approach to address information needs is to designate Dedicated Habitat Research Areas (DHRAs) in concert with Habitat Management Areas. These DHRAs would be the focus of

research activities to provide information to managers, improve understanding of the ecological effects of fishing across a range of habitats, and ultimately improve model forecasts and inform future habitat management. An important aspect about DHRAs is that they would allow coordinated research and build upon past studies and baselines. The current ad hoc nature of fish habitat and gear effects research has minimized potential synergies and potentially reduced the amount of information of use to managers.

Under DHRA Alternative 1 (No Action), no DHRAs would be designated. If selected, the action alternatives in this section (Alternatives 2, 3, and 4) would designate up to three separate DHRAs in Gulf of Maine and Georges Bank locations. Any combination of these alternatives could be selected. In all cases, the DHRA areas overlap with other management areas that currently exist or are proposed in this amendment as detailed below. The structure of the alternatives in this document implies that DHRA designations would be considered as separate but overlapping management area designations, potentially with different restrictions on fishing activity than the habitat or spawning areas that they overlap with. Alternative 5, if selected, would implement a sunset provision for all of the designated DHRAs, and presumably for any future DHRAs as well.

All of the dedicated habitat research areas described in this section would be defined on a year-round basis, with the possibility of a sunset provision after three years. The measures restrict certain types of fishing to create appropriate reference conditions in the research area, in order to facilitate scientific study.

Research agenda for designated DHRAs

The PDT has identified and the Habitat Committee has approved a set of priority research questions that the DHRAs should address. Identifying the questions is a critical first step in designing research areas in appropriate habitats with a statistically valid range of treatments. The questions are based on four broad focus areas: gear impacts, habitat recovery, natural disturbance, and productivity.

- **Impacts:** These questions address the differential susceptibility and recovery of habitats by gear type, and gear contact with the seabed.
- **Recovery:** These questions focus on recovery models, patch size effects, and effort-response issues.
- **Natural disturbance**: These questions address the difference between natural and fishing disturbance.
- **Productivity:** These questions address productivity by habitat type.

Gear impacts

How do different types of bottom tending fishing gear (e.g., trawl nets, dredges, hook and line, traps, gillnets, longlines) affect the susceptibility and recovery of physical and biological characteristics of seabed habitat, and how do these impacts collectively influence

key elements of habitat including spatial complexity, functional groups, community state, and recovery rates and dynamics?

In order to study the impact of different fishing gears and variable intensities of fishing on biological and geologic characteristics of habitat, it is necessary to design management experiments. The potential redesign of the existing closures in the region provides an ideal opportunity to examine this question because the existing habitat closures most likely approach habitat undisturbed by fishing impacts in the region. Thus, allowing prescriptive fishing efforts inside a portion of these closures and comparing effects to undisturbed control areas will provide insight into how each gear type impacts the susceptibility and recovery of habitat features. In order to design ideal habitat impact studies, it is important to have adequate replication of areas, in other words, a number of areas that can be studied simultaneously to understand variation in processes across space and time. This will require characterization of key habitat components in order to identify sub-areas that are appropriate to incorporate into a study design. Having a number of areas available for study also allows for a before-after-control-impact (BACI) design, which is important in order to prove with high statistical power that any particular effect is due to fishing activity, rather than other sources of habitat disturbance (e.g. storms).

Each DHRA would therefore ideally include: (1) previously closed areas that are opened to fishing under controlled circumstances, (2) previously open areas that close to fishing (3) previously open areas that remain open, and (4) previously closed areas that remain closed. This design will allow researchers to study both susceptibility to specific fishing activities and recovery dynamics when fishing disturbance is removed.

These questions aim in part to address some key assumptions in the SASI model and outstanding questions about habitat impacts:

- How accurate are the susceptibility and recovery scores for biological and geological components derived in the SASI model?
- How accurate are the assumptions in SASI model about the cumulative impacts of each gear type (e.g. multiple passes)?
- Has SASI correctly identified the most vulnerable habitats?
- Are the differences in magnitude of impact among gear types correct?
- Have we significantly over- or under-estimated the impacts of particular gear types?

Are our estimates of gear contact with the bottom accurate? Can we develop trawl gear that minimizes contact on the bottom, thereby reducing the potential for gear impacts?

SASI 'rewards' fishing gear types that have less contact with the seabed by assigning a lower contact index value to those gear types. This results in lower area swept estimates that enter the model in each time step and thus lower estimates of adverse effects that result from that type of fishing. For example, imagine two vessels fishing with the same size trawl and doors but one fishes with a raised footrope sweep and the other fishes with a rockhopper sweep. While the contact of the doors and ground cables are assumed to be similar for both types of gear, seabed

contact of the sweep was assumed to be much lower for the raised footrope gear. Thus, if the vessels fish for the same amount of time/distance in the same area, the adverse effects associated with the raised footrope are estimated to be less by the model.

Clearly, this example is an oversimplification, and different types of fish occur on different habitats with varying vulnerability to fishing gear. However, if contact indices can be better specified, SASI provides a way to estimate the magnitude reduction in adverse effects to EFH that would be associated with substitution of reduced impact gears for those gears currently in use. Further research in this subject area could also improve estimates of fixed gear seabed contact, which are presently highly uncertain.

Evaluating gear contact with the seabed and developing lower impact gears will require gear technology scientists to work with fishermen.

Habitat Recovery

What recovery models (e.g., successional vs. multiple-stable states) are operant in the region and how resilient are seafloor habitats to disturbance? In other words, how do seafloor habitats recover, and are there thresholds after which habitats have achieved an alternate state and are no longer capable of recovering to their previous undisturbed condition?

This critical question addresses our underlying assumptions about fishing effects. We often assume that seafloor communities recover in a successional manner; i.e., if we stop the impacts, the habitat recovers to a previously unimpacted state. Although we know this happens in some areas, there are research results that suggest that other community models are at play in other areas. In terms of measuring 'success' of management measures intended to promote habitat recovery, it is important to be able to distinguish between habitats that have experienced some recovery but require more time to achieve full recovery, vs. habitats that have experienced some recovery, but look different ecologically than they did prior to disturbance. Habitats that have recovered to a different state than they were in originally may nonetheless provide similar functional value for managed and ecosystem component species.

Do "small" fishing-caused disturbances surrounded by unimpacted habitat recover more quickly and exhibit greater resilience in contrast to "large" fishing-caused disturbances embedded with small unimpacted patches?

In other words, how does the size of a habitat management area vs. the intensity of fishing influence habitat recovery and resilience (see Auster and Langton 1999 for a discussion of this issue)? Answers to this question relate directly to understanding how management strategies focused on maximizing CPUE relate to habitat impacts.

When a particular area is fished for the first time vs. subsequent efforts, are these impacts equal per unit effort? Or, is the first pass over an area much more detrimental? Conversely, is there a tipping point beyond which the habitat is no longer capable of recovering?

Answers to this question can help define management strategies for the region. If first pass impacts are most critical in some habitat types, there is a stronger argument for setting areas aside entirely in order to protect habitats from damage. If long-term, cumulative effects are the bigger issue, than the management strategy might be different, and be aimed at controlling but not eliminating fishing in vulnerable habitats. This question will require setting up research areas in the closures and controlling the level of fishing allowed in each to examine the impacts of the first versus subsequent units of effort on the susceptibility and recovery of key habitat components.

Natural Disturbance

In the absence of fishing, what are the dynamics of natural disturbance (e.g., major storm events) on seafloor habitat (especially biological components) across five major grain size classes (mud, sand, coarse sand-granule, pebble-cobble, boulder) and across oceanographic regimes? In areas where natural disturbance is high, are signals of the impacts of fishing masked?

This requires reference areas closed to all fishing, and spatially replicated within each major oceanographic setting (Gulf of Maine, Georges Bank, Southern New England, Southern Mid-Atlantic). We need to know what seafloor habitat and communities look like in the absence of any fishing impacts in order to evaluate the role of natural disturbance combined with fishing effects.

Productivity

How does the productivity of managed species (and prey species) vary across habitat types nested within the range of oceanographic and regional settings? And how does this productivity change when habitats are impacted by fishing gear? Do durable mobile bottom tending gear closures increase fish production? Why are highly productive areas (e.g. Stellwagen Bank) so productive?

This is probably the most important habitat-related question from a fisheries management standpoint. This question extends beyond the current modeling capacity of SASI, but addresses a key limitation of SASI, specifically that it only addresses impacts to habitat and assumes that all habitat is EFH. Integrating SASI-derived habitat vulnerability with a better understanding of which habitats influence the productivity of managed species will greatly enhance management efforts. Without this integrated effort, management actions based solely on reducing impacts may actually focus efforts on habitats that are more vulnerable but less important as EFH.

A gradient of impacts to particular habitat types, focused in impact treatment areas, allows assessment of variation in the role of habitat in population responses. In other words, comparisons of fished to unfished areas will reveal how fished species respond to changes in biological and geological components of habitat. Addressing these questions requires comparisons of closed areas that are opened vs. closed areas that remain closed.

Design and implementation elements common to all DHRAs

Dedicated Habitat Research Areas would be a new type of management area designation for the Council, so there are a number of design and implementation elements to think through.

Area design

A before-after control-impact design was recommended as the ideal. This type of design requires an area that is currently closed for the before treatments, as well as an area that would be newly designated for management for the after treatments. Sequential closing of parts of the open to closed 'recovery' area could address temporal effects on recovery trajectories. In practice, none of the three DHRAs identified conform to this design.

A control-impact design has more limited utility, but was recommended in cases where an existing closed area is to remain closed, and there is no desire to manage fishing or research activities outside of the existing area. Alternatively, this could apply to an area where currently there is no management for habitat purposes to constitute a 'before' treatment. **The three DHRAs proposed in this amendment would be control-impact designs.**

Table 38 – Comparison between before-after control-impact and control-impact designs

A before-after control-impact design could produce results that:	**A control-impact design will:**
• Will separate the effects of fishing from environmental variability and species interactions. • Address effects of timing (season) and size (spatial footprint) of impacts. • Address the potential for multiple states of recovery • Identify the effects of particular types of gear and levels of effort on habitats in multiple states of recovery. • Determine how fish production is affected by seafloor habitats in multiple states and different trajectories of recovery.	• Limit all comparisons of recovery to the single state existing within the current closed areas • Address effects of timing (season) and size (spatial footprint) of impacts • Identify the effects of particular types of gear and levels of effort • Determine how fish production is affected by seafloor habitats • The control-impact approach would fail to take advantage of a unique opportunity to advance our knowledge of the potential benefits of closed areas (recovery dynamics, gear specific impacts and relationships to fish productivity).

Fishing impact treatments

Another consideration related to DHRA design is how fishing impacts treatments will be implemented. Three approaches were discussed during development of the amendment:

1. General closure of research areas with all impact treatments as research fishing,
2. General closure of research areas with impacts coming from some kind of limited access fishery in specified fishing treatment areas, or

3. Open fishery access specified fishing treatment areas.

The Habitat Committee recommended the first approach, research fishing within a general closure, and the PDT concurred with this recommendation. Specifically, fishing effort would be contracted or arranged specifically by project scientists to occur in particular areas using specific gears. This decision means that the Council would not need to specify treatment areas within a particular DHRA at the time of DHRA designation, but rather, that the location of study sites and treatments would be determined by researchers using the DHRA. This approach also helps to ensure that fishing effort occurs in the locations desired and at the magnitude desired. There would be lower administrative costs at the front end because specification of levels of fishing activity is left to the researchers. However, this requires researchers to invest the greatest amount of resources in designing the fishing impact.

One potential cost of a research fishing approach is that it might be hard to generate effort that is of sufficient magnitude to replicate a commercial fishery impacts. There might be gaps in impacts if funding is limited, which could be an issue in long-term impacts studies. Also, researchers would need to figure out how to fund the activities and whether the fish could be landed and if so they would need to come out of the fishery's overall allocation, or if vessels would need to agree to use DAS or quota to cover the trips.

Oversight and coordination

It will be important for the Council to understand how the DHRAs are being used. Coordination and oversight will probably need to happen at the Council level on an ongoing basis. NERO and SBNMS, in the case of the SERA II DHRA, will be involved jointly with coordination and oversight to determine where research treatment sites are located and to assure there are no conflicts that would bias results. Details on permitting and management of the SERA II DHRA will be determined in consultation between NMFS/NERO and NOS/ONMS prior to implementation. The Council may wish to request that researchers obtain letters of acknowledgement before conducting research in a DHRA.

9.3.1 Alternative 1 (No Action) – No DHRA designations

Currently there are no DHRAs designated in the region. Under No Action, this would continue and DHRAs would not be designated as part of this amendment.

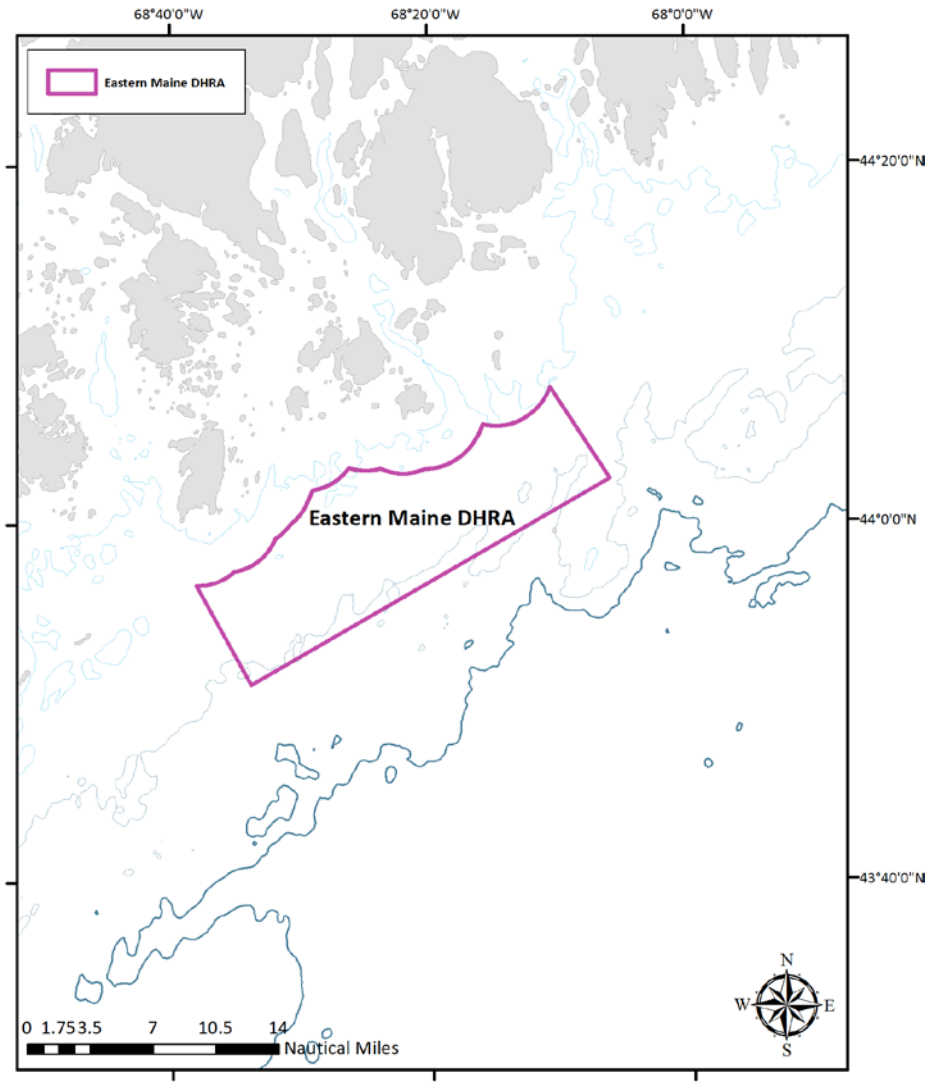
9.3.2 Alternative 2 – Eastern Maine Dedicated Habitat Research Area

This alternative would designate a Dedicated Habitat Research Area in the eastern Gulf of Maine as shown in Map 115. Measures for this area would be closure to all mobile bottom-tending gear on a year round basis.

Rationale: At their December 2012 meeting, the Committee asked the PDT to develop an option for a DHRA within the boundaries of an area identified by the SASI model (specifically, within a group of high vulnerability grid cells that clustered in the Local Indicators of Spatial Association cluster analysis that extend from offshore of Mt. Desert Island southeast down the coast to Isle au Haut Bay). Through the Penobscot East Resource Center, industry members in eastern Maine had expressed interest in some type of management for an area off of the Maine Coast,

referencing the LISA cluster. The intent of the motion was to have the PDT design a research area based on this cluster, in collaboration with PERC. It was discussed that aside from lobster trapping, that there is relatively little fishing effort in this area in comparison to historical effort.

Map 115 – Eastern Maine Dedicated Habitat Research Area



WGS 1984 UTM Zone 19N projection; map updated July 19, 2013

9.3.3 Alternative 3 – Stellwagen Dedicated Habitat Research Area

This alternative would designate a Dedicated Habitat Research Area in the western Gulf of Maine as shown in Map 116. Measures for the entire area would be closure to mobile bottom-tending gear, gillnet gear, and demersal longline gear on a year round basis. This alternative includes a reference area closed to recreational and party/charter groundfish fishing.

A sub-option to designate the DHRA without the reference area was removed on 9/5.

Rationale: This DHRA would represent a control-impact style design as it lies completely within the existing WGOM habitat closed area. This is consistent with a Habitat Committee recommendation to constrain the boundaries of a research area in this location to the boundaries of existing or proposed habitat management areas. The specific area boundaries identified for the area (also known as SERA II) were recommended by an independent ad-hoc working group of fishermen and scientists that are involved with both SBNMS and the Council Habitat Omnibus process.

Aside from the Ammen Rock HMA, the most restrictive Habitat Management Area designations proposed in this amendment would prohibit the use of all mobile bottom-tending gear, allowing all other forms of fishing. While logical in regards to minimizing adverse effects on EFH based on the assumptions and direction inherent to this OA2 process, this prohibition alone greatly constrains the utility of DHRA designations in regards to developing knowledge of use in future fishery management decisions. Note that existing time series of recovery dynamics in this area are ongoing (after 12 years of continuous monitoring) with no obvious ecological endpoint as yet to understand the dynamics of seafloor habitat recovery in the Gulf of Maine region. The current management regime in WGOM limits bottom tending mobile gear as well as fixed gear capable of significant catch of groundfish (i.e., gillnet, longline). Changing the fishing regime in the research area would confound our understanding of this ecological process that is fundamental to our assumptions about recovery used in the SASI model and in a qualitative fashion throughout the EFH management process. In addition, there is no opportunity in such a regime to assess and compare impacts of fixed gears with mobile gears under a range of effort and across habitats (or the synergistic effects of different gears in particular habitats) or assess the effects of removal of species that exert effects on seafloor communities in regards to habitat and prey. Fixed gear impacts, and the effects of fish removals, can be significant based on general understanding from current research, at least at small spatial scales. Research that parses effects to particular gears, levels of effort and linked responses would produce relatively unambiguous results for use in decision-making in regards to habitat conservation for fisheries objectives. Allowing significant removals only by fixed gears and recreational catch would greatly impede work to link habitat condition to productivity of managed species. Despite more than 15 years since the passage of the EFH provisions under Magnuson, we have not significantly improved our knowledge linking the state of seafloor habitats to the productivity of managed species.

Due to its close proximity to shore, a diversity of habitat types and marine species, and designation as the Stellwagen Bank National Marine Sanctuary, there have been numerous geologic and ecological studies to serve as a baseline for future work. With funding support from the Sanctuary, USGS has mapped the area with continuous coverage multibeam acoustics (Valentine et al 2005a) and identified boulder ridges using various types of information including topographic and backscatter data, terrain ruggedness index values, and thousands of video and photographic stations (Valentine et al 2005b). Some of the boulder ridges are quite large, with the largest tens of meters wide and hundreds of meters long, with a maximum height of 18 m (Valentine et al 2005b). The ridges are composed of cobbles and boulders interspersed with voids, and harbor an array of attached organisms as well as various fish species (Valentine et al 2005b).

Other studies have focused on the ecology of fishes, their relation to variation in habitat, patterns and variation in biological diversity and the ecological effects of fishing (Auster et al. 1996, 1998; Auster and Lindholm 2005; Grannis 2005, Kropp et al. 2000, Lindholm et al. 2001, 2007, Lindholm and Auster 2003, Nenadovic 2009, Tamsett et al. 2010). In summary, fishes of a diversity of species, including those managed by NEFMC, exhibit associations with habitat features at multiple spatial scales (i.e., biologic and geologic structural features of the environment from short lived hydroids to long lived sponges as well as textural elements in fine grain mud and sand to boulders, sediment types based on grain size, and regions and seasons defined by temperature and depth). Direct observation demonstrated that in general, the impacts of fishing gear reduce the structural complexity of biologic and geologic habitats and smooth sedimentary bedforms. Removal of habitat features reduce survival of juvenile fishes in laboratory experiments and can have population level effects if such results are scalable to larger areas. Further, these observations suggest the potential for match-mismatch dynamics between short-lived species that function as habitat for juvenile fishes or principal prey may be of particular importance in fine-grain sedimentary habitats. While a good deal is known in regards to habitat associations of fish in this area compared to others in the Northeast Shelf Large Marine Ecosystem, actual linkages between habitat attributes and survivorship, growth and productivity of managed species at the scale that management operates remain to be conducted.

Grannis (2005), Nenadovic (2009) and Tamsett et al. (2010) contain detailed results from the Seafloor Habitat Recovery Monitoring Program (SHRMP) that began in 1998 at the time of designation of the Western Gulf of Maine Closure (WGOMC). Time series photographic observations of emergent and epifaunal species in mud, sand, gravel and boulder reef habitats, as well as grab samples of infaunal species in fine grain sediments, from inside and outside the WGOMC were collected (infaunal samples 1998-2004, imagery 1998-2010). Overall, species composition was dynamic across years, habitats and fishing treatments (i.e., inside and outside WGOMC). That is, while community composition was dynamic due to natural variation, the effects of fishing remain clear. While communities inside the closed area are recovering from disturbance due to fishing, the recovery is not progressing as expected from studies conducted elsewhere. Communities to date have not reached a stable "climax" community state, so it is unclear if communities exhibit succession, like old farm fields returning to forest on land, or are stochastic such that disturbances produce recovery to a new or different state. In regard to fine grained sedimentary habitats, sand infauna appeared to be most resilient to fishing disturbance in contrast to mud infauna, although both mud and sand epifaunal community structure was statistically different between fished and unfished sites. This project has been (and continues to be) funded by SBNMS, which is planning on the project's long-term implementation.

Benthic habitats in this area have also been surveyed with still and video imagery using various ROVs and submersibles from 1984-2010 (NURTEC video archive), the USGS SEABOSS system, the SMAST video and still camera pyramid, and the WHOI HabCam system (Howland et al. 2006). Coverage from these image sets and associated data sets varies but these can establish baseline conditions across a diverse set of habitats and over time.

An initial SERA proposal was developed by SBNMS but not considered by the NEFMC (SERA draft proposal at http://stellwagen.noaa.gov), although the research objectives were viewed as synergistic with NEFMC research needs. The current SERA proposal addresses the research

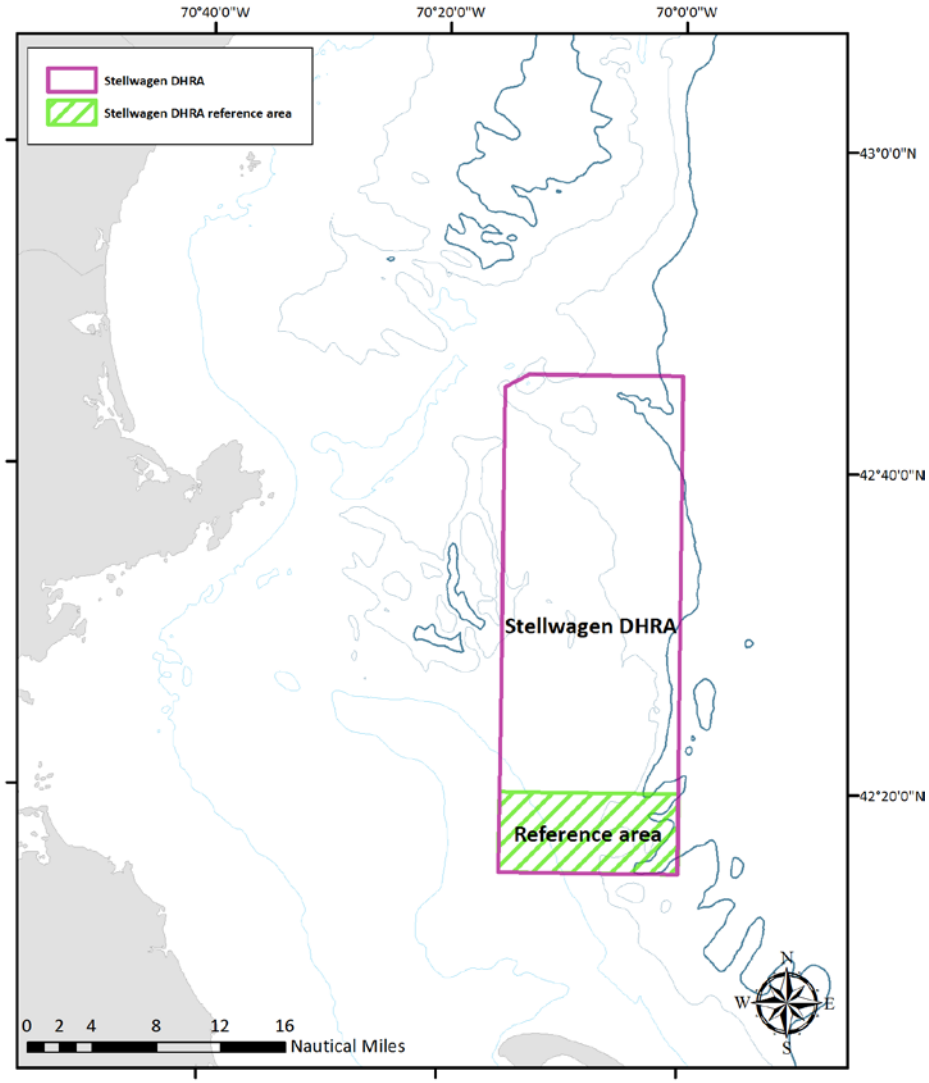
objectives of the NEFMC DHRA initiative and the original SBNMS proposal (Table 39). This synergy of research needs presents a unique collaborative opportunity between the Council, NEFSC and the SBNMS in regards to research coordination, support and application of results.

Table 39 – Relationship between DHRA agenda and SERA proposal objectives

Topic	Questions from PDT's DHRA agenda	SERA objectives and questions
Gear effects	How do different types of bottom tending fishing gear (e.g., trawl nets, dredges, hook and line, traps, gillnets, longlines) affect the susceptibility and recovery of physical and biological characteristics of seabed habitat, and how do these impacts collectively influence key elements of habitat including spatial complexity, functional groups, community state, and recovery rates and dynamics?	How does variation in the direct impacts of fishing (e.g., using nets and dredges vs. hook and line vs. fixed fishing gear) affect elements of biodiversity (species richness, size, abundance, functional groups, community state, recovery dynamics, etc.) across taxonomic levels of diversity (including microbes, invertebrates, fish, seabirds and marine mammals)?
Gear effects	Are our estimates of gear contact with the bottom accurate? Can we develop trawl gear that minimizes contact on the bottom, thereby reducing the potential for gear impacts?	What strategies can mitigate for particular types of human impacts (e.g., live-release of species of concern such as cusk and wolffish in order to reduce fishing mortality, use of fixed versus mobile fishing gear to reduce mortality of vulnerable invertebrate species)?
Recovery dynamics	What recovery models (e.g., successional vs. multiple-stable states) are operant in the region and how resilient are seafloor habitats to disturbance? In other words, how do seafloor habitats recover, and are there thresholds after which habitats have achieved an alternate state and are no longer capable of recovering to their previous undisturbed condition?	Do communities across disturbance regimes exhibit predictable shifts in state, or are changes stochastic, especially as species distributions shift under climate change? How do the drivers of change in marine communities (e.g. physical forcing, competition, predation) vary across habitats and disturbance regimes?
Recovery dynamics	Do "small" fishing-caused disturbances surrounded by unimpacted habitat recover more quickly and exhibit greater resilience in contrast to "large" fishing-caused disturbances embedded with small unimpacted patches?	What are patterns of connectivity between habitats and how are these influenced by variation in disturbance regimes?
Recovery dynamics	When a particular area is fished for the first time vs. subsequent efforts, are these impacts equal per unit effort? Or, is the first pass over an area much more detrimental? Conversely, is there a tipping point beyond which the habitat is no longer capable of recovering?	How do variations in drivers of change influence diversity, recovery, and ecological resilience? What are the relationships between disturbance regime and persistence of rare species?

Topic	Questions from PDT's DHRA agenda	SERA objectives and questions
Natural disturbance	In the absence of fishing, what are the dynamics of natural disturbance (e.g., major storm events) on seafloor habitat (especially biological components) across five major grain size classes (mud, sand, coarse sand-granule, pebble-cobble, boulder) and across oceanographic regimes? In areas where natural disturbance is high, are signals of the impacts of fishing masked?	What are the spatial patterns of diversity and do they vary in phase with increasing levels of disturbance (i.e., both natural and human-caused)? What is the relationship between biodiversity (e.g., species diversity, trophic diversity) and ecological resilience?
Productivity	How does the productivity of managed species (and prey species) vary across habitat types nested within the range of oceanographic and regional settings? And how does this productivity change when habitats are impacted by fishing gear? Do durable mobile bottom tending gear closures increase fish production? Why are highly productive areas so productive?	Do changes in community state alter the provision of ecosystem goods and services from specific habitat types? What are the differences in primary (benthic microalgae) and secondary production across habitats and disturbance regimes (e.g., reference compared to fished areas)?

Map 116 – Stellwagen Dedicated Habitat Research Area



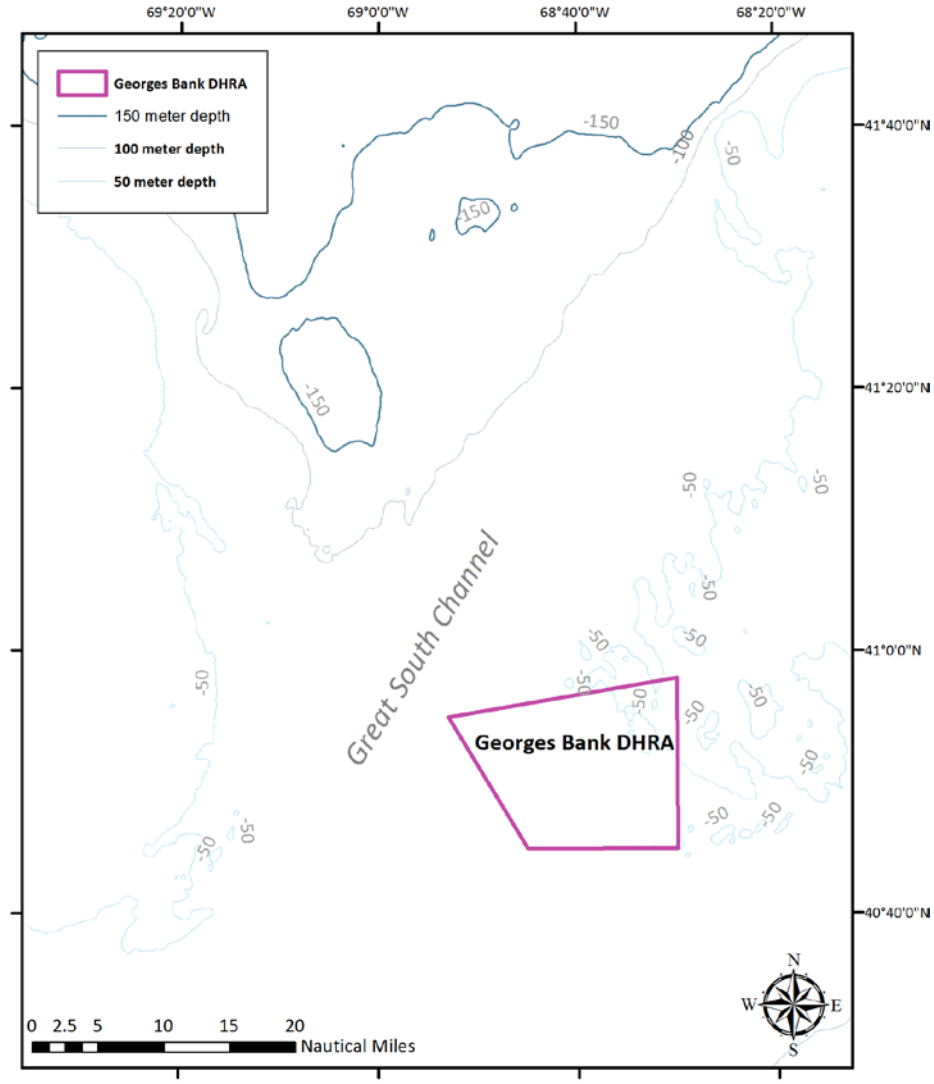
WGS 1984 UTM Zone 19N projection; map updated July 19, 2013

9.3.4 Alternative 4 – Georges Bank Dedicated Habitat Research Area

This alternative would designate a Dedicated Habitat Research Area on Georges Bank as shown in Map 117. Measures for this area would be closure to all mobile bottom-tending gear on a year round basis.

Rationale: This DHRA would represent a control-impact style design as it lies completely within the existing CAI habitat closed area. This area was suggested by the scallop industry and approved by the Committee for further analysis in December 2012. Video survey data with substrate, scallop, and epifaunal information are available as baseline information. Research in this DHRA would focus on scallop productivity research in particular.

Map 117 – Georges Bank Dedicated Habitat Research Area



WGS 1984 UTM Zone 19N projection; map updated July 19, 2013

9.3.5 Alternative 5 – DHRA sunset provision

This alternative would create a sunset provision for DHRAs that would allow administrative removal without further Council action three years after DHRA implementation, if no research had been initiated. This alternative would apply to all DHRAs designated via OA2. Removal would be accomplished by NOAA via rulemaking or some kind of notice, and would be coordinated by the Northeast Regional Office. The following criteria must be met in order for the DHRA to continue after the three-year review (***DRAFT, to be developed further)***:

- ***Documentation of active and ongoing research in the DHRA area, in the form of data records, cruise reports or inventory of samples with analytical objectives focused on DHRA topics outlined in section 0.***

- ***Documentation of pending or approved proposals or funding requests (including ship time requests) with objectives focused on DHRA topics outlined in section 0.***

Rationale: The Habitat Committee first recommended this alternative at their December 2012 meeting in response to concerns that DHRAs might be designated and then remain unused, thereby causing economic hardship to the fishing industry without improving habitat science. This scenario is possible because although the Council has the ability to designate DHRAs and enact fishing restrictions within them, as well as the ability to set research priorities, it does not directly conduct or fund research activities. The Committee's intent was that the three year review would evaluate whether appropriate research activities were either ongoing or imminent. Allowing for research activities to be in the planning stage but not yet on the water at the three year mark acknowledges the fact that proposal development, submission, review, and allocation of funds can be a lengthy process.

Previously, the PDT had recommended a review after a minimum of five years to assess progress towards meeting general and site specific goals, revision of goals based on lessons learned, adverse impacts to the fishery, and future status of the DHRA. The expectation was that after five years, initial research results would be available that would allow for evaluation of the utility of the DHRA designation. For this administrative sunset provision to be effective, the PDT recommends that a clear and unambiguous procedure will need to be developed in order to make this assessment possible and clear to those involved in research such that review materials are submitted on time. The procedure should not become a post hoc assessment of research value based on choice of topic but simply link research to the priority topics described above.

9.4 Framework adjustments

9.4.1 No Action

There is extensive language in the fishery management plans developed by NEFMC, and in their implementing regulations, related to framework adjustments and measures that can be implemented or changed via framework adjustment. Generally speaking, the framework-related regulations document procedures for analyzing and implementing annual/biennial/triennial fishery specifications, but other measures are specifically identified in the regulations as candidates for implementation via framework (Table 40).

Table 40 – Measures related to types of alternatives analyzed in OA2 that may be implemented via framework action, by fishery management plan. All citations are from 50 CFR Part 648.

Fishery Management Plan and CFR section	Frameworkable measures (only the subset of measures relevant to measures discussed in OA2 are included in this table)
Northeast multispecies (§648.90)	As part of biennial review, the groundfish PDT may include **any of the management measures in the FMP**, including but not limited to: **gear restrictions**, **closed areas**, recreational fishing measures, **describing and identifying EFH, fishing gear management measures to protect EFH, and designating HAPCs within EFH**. In addition, the following conditions and measures may be adjusted through future framework adjustments: **gear requirements to reduce impacts of the fishery on EFH**.
Atlantic sea scallop (§648.55)	The Council's recommendations on adjustments or additions to management measures must include measures to prevent overfishing of the available biomass of

	scallops and ensure that OY is achieved on a continuing basis, and must come from one of the following categories: modifications to the opening dates of closed areas, size and configuration of rotational management areas, controlled access seasons to minimize bycatch and maximize yield, limits on number of area closures, area specific gear limits and specifications, **adjusting EFH closed area management boundaries or other associated measures**, and **any other management measures currently included in the FMP**.
Atlantic herring (§648.206)	Measures that may be changed or implemented through framework action include: gear restrictions or requirements, **measures to describe and identify EFH, fishing gear management measures to protect EFH, and designation of HAPCs within EFH**, and **any other measure currently included in the FMP**.
Skate complex (§648.321)	Measures that may be changed or implemented through framework action, provided that any corresponding management adjustments can also be implemented through a framework adjustment, include **description and identification of EFH, description and identification of HAPCs, measures to protect EFH**.
Monkfish (§648.96) and deep-sea red crab (§648.261)	No measures in framework regulations specifically related to OA2 issues.

9.4.2 Designation or adjustment of groundfish spawning protection areas

This alternative would allow groundfish spawning protection areas to be implemented or modified via framework adjustment. This measure would be appropriate to include in the Northeast Multispecies regulations, although vessels operating in a broad range of fisheries could be affected by the regulations. Implementation would include the definition of area boundaries and identification of specific gears and seasons within which spawning closures would apply.

Rationale: This alternative would help to facilitate quick implementation or adjustment of spawning closures via future framework adjustment actions. The Groundfish Committee and Council discussed the ideal spawning closure area as being limited in spatial and temporal scale and targeted towards protection of known concentrations of spawning fish. The Closed Area Technical Team developed spawning closure proposals using the groundfish hotspot analysis, but the jointly convened Habitat and Groundfish Committees did not forward these proposals to the Council for further approval. Given that much of the relevant scientific information has already been evaluated and contemplated in this action, further development of spawning areas is appropriate as a frameworkable item.

9.4.3 Designation or adjustment of juvenile groundfish habitat management areas

This alternative would allow habitat management areas designed to protect juvenile groundfish to be implemented or modified via framework adjustment. This measure would be appropriate to include in the Northeast Multispecies regulations, although vessels operating in a broad range of fisheries could be affected by the regulations.

This framework provision should perhaps relate to any habitat management area, as it is likely that all of these areas will have juvenile groundfish protection benefits, even if that was not the primary basis for their identification in this amendment.

Rationale: This alternative would help to facilitate quick implementation or adjustment of habitat management areas focused on juvenile groundfish protection via future framework adjustment actions. The Closed Area Technical Team developed juvenile groundfish habitat management area proposals using the groundfish hotspot analysis, but only a few of these were forwarded to the Council by the jointly convened Habitat and Groundfish Committees. Given that much of the relevant scientific information has already been evaluated and contemplated in this action, further development of these areas is appropriate as a frameworkable item.

9.4.4 Changes to fishing restrictions within habitat management areas

This alternative would allow fishing restrictions within habitat management areas to be changed via framework adjustment. This measure would be appropriate to include in the regulations for all NEFMC FMPs because habitat management areas will be designated across all FMPs.

Rationale: Interest in gear modifications to minimize fishery effects on habitats appears to be growing, and ongoing research may confirm the usefulness of various habitat management measures or suggest new ones in relatively short order. The intent of this alternative is facilitate quick adjustment of the fishing restrictions operant within various habitat management areas, given updated scientific information.

9.5 Monitoring program

This section to be completed later.

10 Considered and rejected spatial management options and alternatives

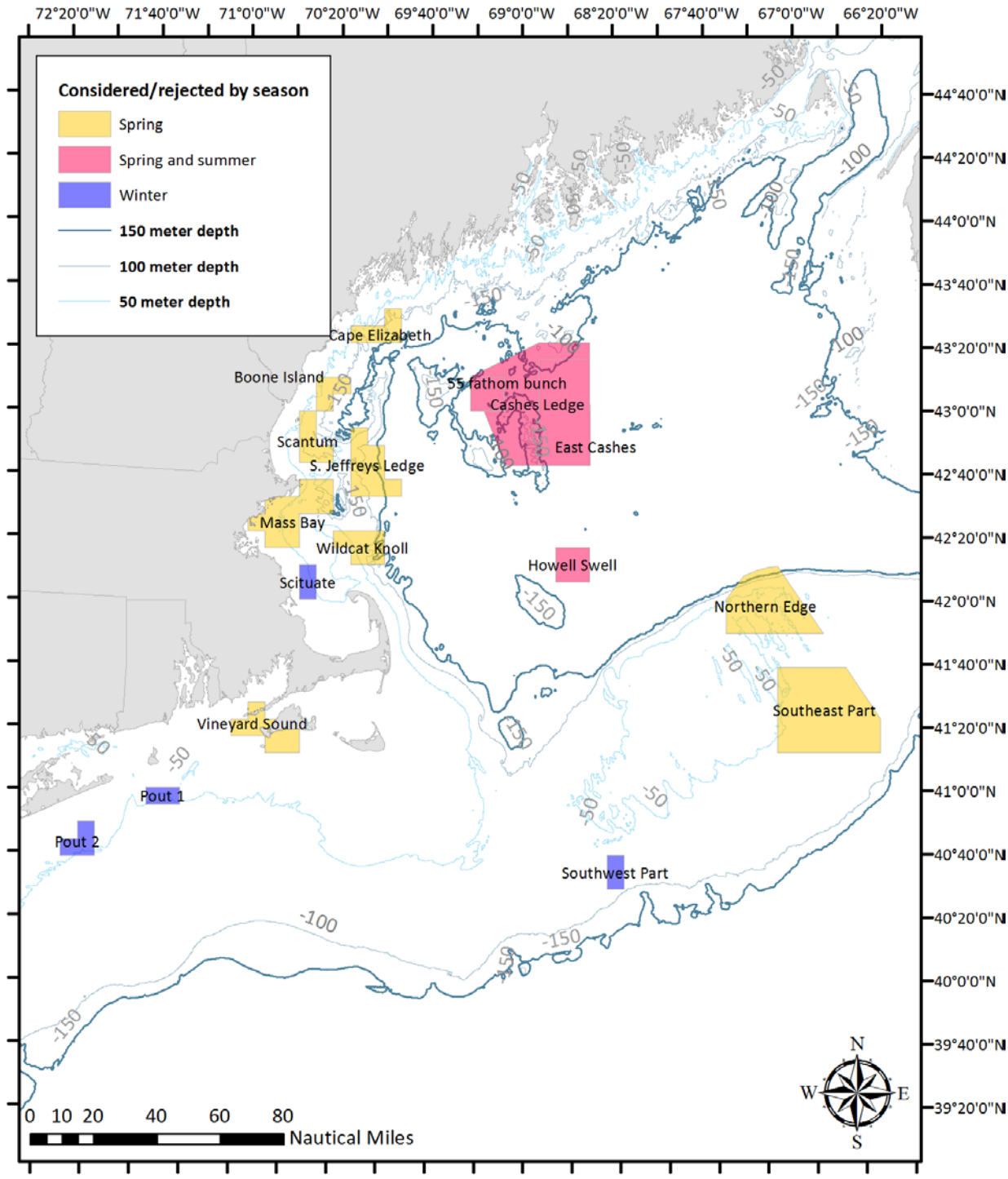
10.1 Spawning

During the development of alternatives for this amendment, the Council's Closed Area Technical Team (CATT) reviewed relevant literature and conducted several types of analysis (see Appendix 6) to identify concentrations of large mature groundfish. It also examined the consistency of these areas with maturity condition of regulated groundfish caught on seasonal surveys. Using this information, the CATT proposed consideration of several areas in the Gulf of Maine and on Georges Bank for closure during seasons when groundfish were known to spawn (Map 118). The information was integrated over all regulated groundfish species based on several relevant factors, heavily weighted toward those species that were at low abundance, overfished, and therefore deemed to be vulnerable to reductions in productivity through fishing on spawning fish.

Many areas were rejected by the Council due to practicality concerns and belief that the areas identified by concentrations (or hotspots) of large mature fish in the survey data were not representative of spawning locations. The Council intends to collect and examine more information about spawning timing and locations to develop new spawning protection areas in a future NE Multispecies FMP management action.

Inclusion of the Georges Bank Seasonal Closure Area (May) in the action spawning alternative was rejected on 9/5/13 by the Habitat/Groundfish Committee.

Map 118 – Areas of 100 km^2 blocks identified by the CATT as having concentrations of large mature groundfish to be considered as seasonal spawning closures.



WGS 1984 UTM Zone 19N projection; map updated July 19, 2013

10.2 Adverse effects minimization and juvenile groundfish

The Habitat Committee, and later in the process, the jointly convened Habitat and Groundfish Committees, considered a large range of area management options to minimize the adverse effects of fishing on EFH and protect juvenile groundfish habitats before arriving at the set of areas analyzed in this document. This section briefly describes the areas considered but rejected, expanding on the discussion provided at the beginning of section 9.1. Map 119 depicts the areas developed mainly within the Habitat PDT and Committee process as adverse effects minimization areas. Map 120 depicts the areas developed by the CATT as juvenile groundfish habitat areas.

Eastern/Central Gulf of Maine

Habitat areas on offshore banks and ledges in the Gulf of Maine were identified based on the presence of complex seabed habitats, but boundaries were generally defined using the 100 m contour. This was done because the entirety of the features was not mapped with a sampling device capable of detecting cobble and boulder substrates, so 100 meters and shallower was used a proxy for areas expected to contain more complex and vulnerable seabed habitat types. The Committee requested that the Fippennies Ledge and Platts Bank areas be made smaller to allow for fishing opportunities other than on the most complex habitat areas on the tops of the features.

Based on the juvenile groundfish hotspot analysis, the CATT initially identified a somewhat different set of 100 km^2 grids in the Eastern Maine region, specifically additional areas further east. As development of this area continued, the Committee focused on the western parts of the area that had been identified in the SASI LISA analysis and discussed as a dedicated habitat research area.

Western Gulf of Maine

In February 2012, the PDT developed a range of proposals covering complex habitat areas in the western Gulf of Maine. Four options were presented from which the Committee selected the smaller of the two Stellwagen areas. The original options (SWGOM 2-4) included an extension off the northwestern corner to include Tillies Bank, and an eastern extension to cover Wildcat Knoll. The PDT also identified Gloucester Bank and New Scantum off Jeffreys Ledge. Earlier, in August 2011, the PDT recommended extending the Jeffreys Ledge area to the southwest to cover the part of the ledge feature outside of the existing Western Gulf of Maine closure. In general, the Committee preferred to work with refinements to areas already managed, as opposed to additional areas.

The CATT developed a number of proposals in the western Gulf of Maine as many juvenile groundfish hotspots occurred in this sub-region. The original version of the Bigelow Bight area was more extensive than what is currently included in Alternatives 3-5 for this region, and including some areas in state waters and some additional 100 km^2 grids. The Habitat and Groundfish Committees were extremely concerned about the potential economic impacts associated with designation of this area as an HMA, and they rejected it at their May 2013 meeting. The CATT and PDT refined this area for a subsequent joint Habitat and Groundfish Committee meeting, and the updated versions (larger and smaller) were forwarded to the Council

after further review. Two areas in Massachusetts Bay and Cape Cod Bay were also developed by the CATT, and rejected by the joint Habitat and Groundfish Committees due to concerns about economic impacts. A subset of the grids in the Massachusetts Bay area were presented to the Habitat and Groundfish Committees as an extension of the larger of the two Stellwagen areas, but it was not approved for Council consideration. In addition, the committees rejected a large area in the inshore Gulf of Maine, which extended to either 90 meters depth or 15 nm offshore, whichever was less. There were concerns about economic impacts of such an area, and also the Committees determined not to recommend year round habitat management area designations in state waters as a general rule.

Georges Bank

In August 2011 the PDT recommended as an alternative a subset of the existing CAII habitat closure (referred to at the time as the Northern Edge area), but the Committee chose not to move forward with analysis of the option. West of the existing closure, a range of proposals were developed to encompass the various shoals, including Georges Shoal. Part of the Georges Shoal East area was included in a new version of the Northern Edge area, which was approved for analysis as part of Alternatives 3 and 4. Given the development of the new area, Georges Shoal east was no longer necessary. A larger version of the Northern Edge area encompassing more Georges Shoal East area and the existing habitat closure in CAII was rejected by the Committee. Similarly, the Committee recommended an area further to the wet as a gear modification area in May 2013. This area, referred to in Alternative 4 as the Georges Shoal GMA, replaced the Georges Shoal West and Georges Shoal Large Areas.

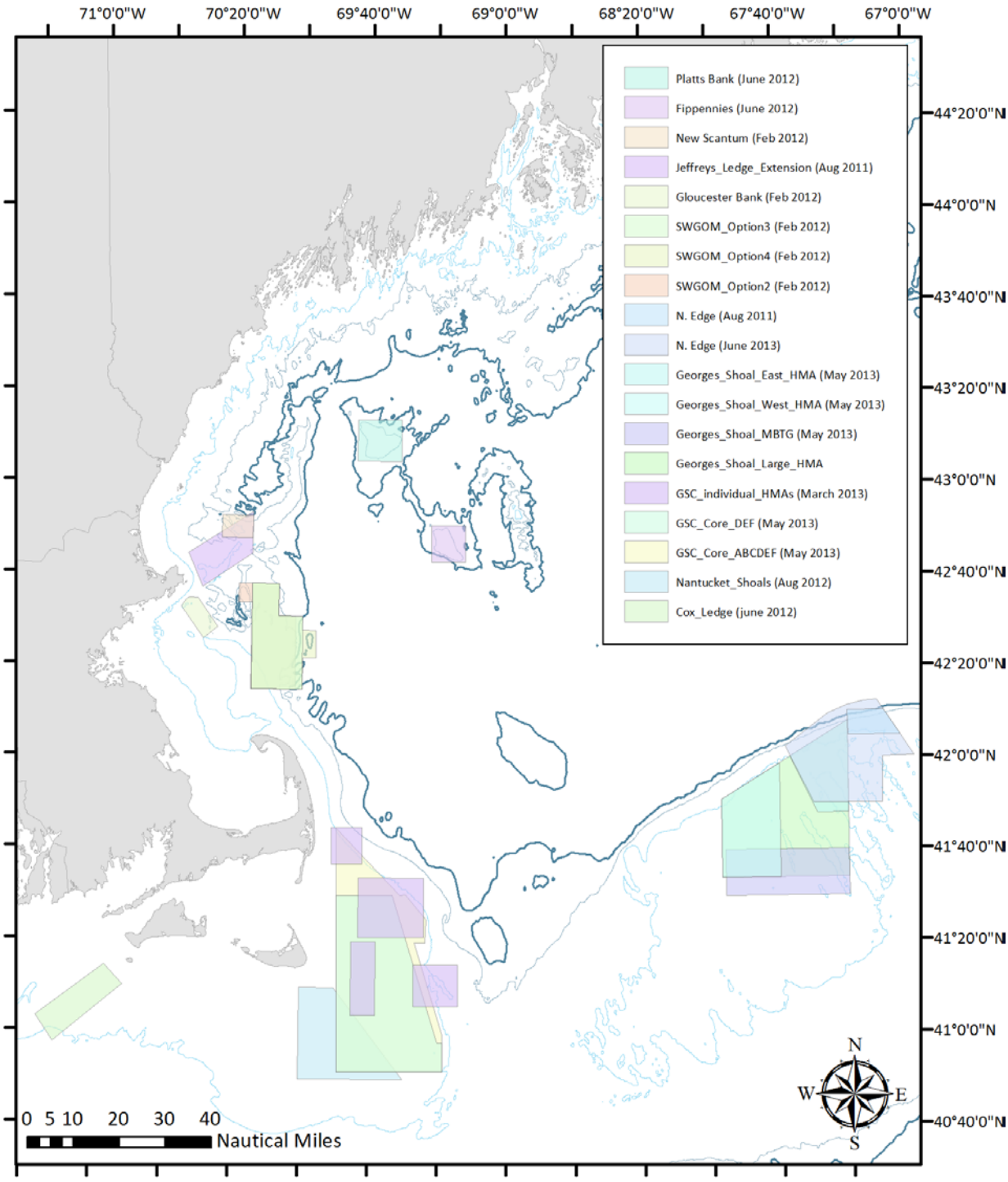
The CATT also developed an area on the northern edge, in deeper water along the edge of the bank. This area was identified on the basis of juvenile haddock. The area was combined with the new version of the Northern Edge area, which was approved for analysis as part of Alternatives 3 and 4. The CATT also developed the Southeast Parts HMA based on the distribution of juvenile haddock hotspots. The joint Habitat and Groundfish Committees rejected this area due to concerns over economic impacts, and based on a discussion of the lower habitat vulnerability of the area such that there is less of a need to minimize fishing impacts on the habitat.

Great South Channel

In the Great South Channel, the PDT originally identified four discrete habitat management areas corresponding with concentrations of cobble habitat. A larger area combining all four boxes was also suggested, but it was probably too extensive in size to be practicable, and the Habitat Committee did not give it much consideration. Later in the process, the Committee requested development of a single area that provided similar protection for cobble and boulder habitats. A number of variations were recommended in March 2013. Two of those approved by the Committee for further analysis (GSC core + ABCDEF and GSC core + DEF) were later rejected and substantially similar areas were included in the range of alternatives approved for analysis by the Council in June 2013 (see Great South Channel Alternatives 3 and 4).

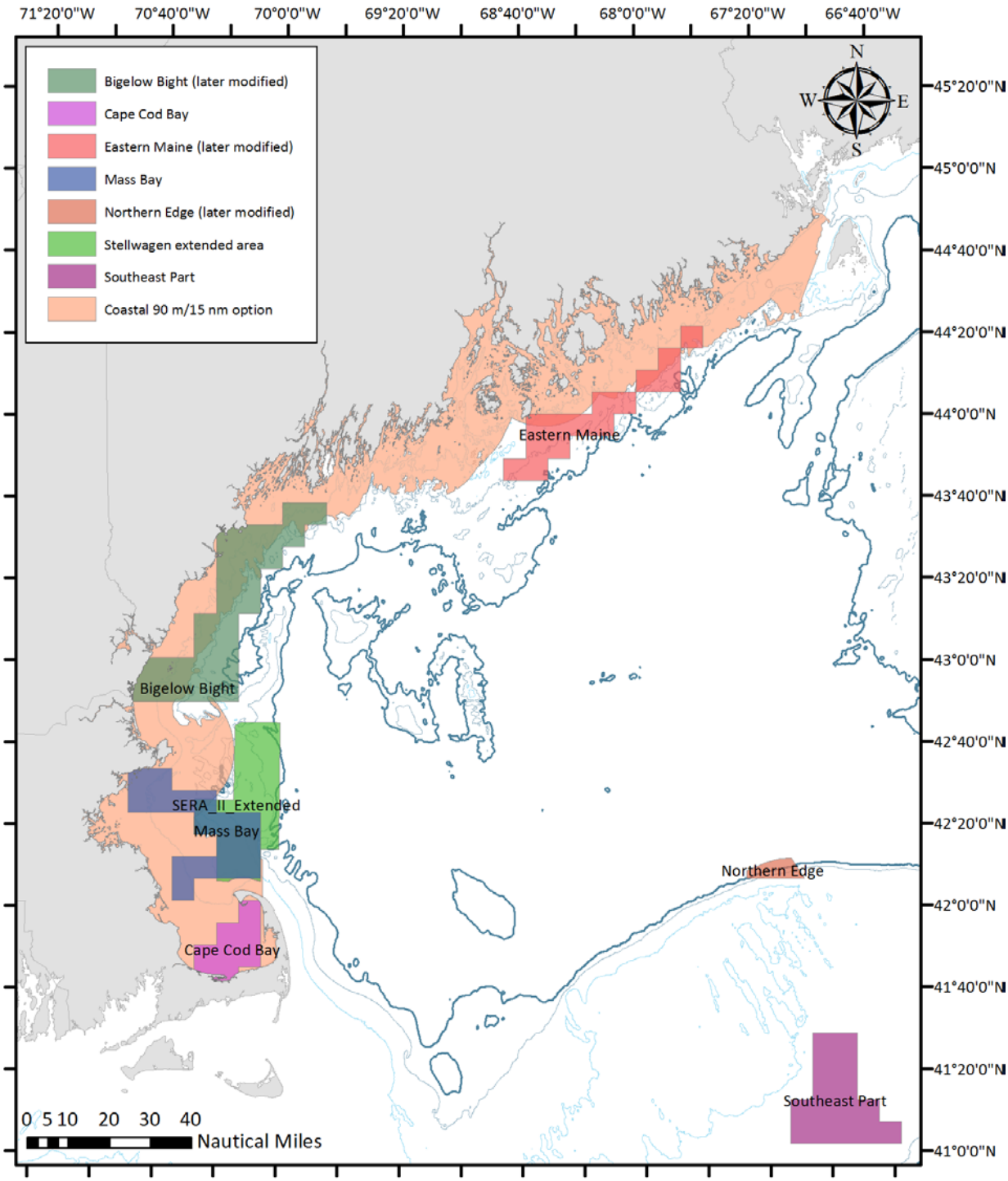
In a similar fashion to the revisions of the original Fippennies and Platts areas, the original Cox Ledge area was reduced in size to focus on areas with documented cobble habitat.

Map 119 – Considered and rejected adverse effects minimization habitat management areas



WGS 1984 UTM Zone 19N projection; map updated July 19, 2013

Map 120 - Considered and rejected juvenile groundfish habitat management areas



WGS 1984 UTM Zone 19N projection; map updated July 19, 2013

10.3 Dedicated Habitat Research Areas

The PDT discussed DHRAs as a system of areas, with multiple designations per region. This would have allowed for comparison of research results among areas, to confirm ecological patterns and allow for stronger inferences to be made and applied to other similar habitats. However, the Habitat Committee felt that a much smaller number of areas should be designated. One of their objectives was to base DHRA designations on habitat management area boundaries, so some areas were not forwarded on to them for that reason.

The PDT discussed the following areas as potential DHRAs, but did not develop them in detail or recommend them to the Committee for the reasons noted:

- Fippennies Ledge and Platts Bank - both are relatively small in size. This meant that the treatment areas associated with fishing impact research would likely include much of the HMA, which runs counter to the objective of minimizing adverse effects within the HMA boundaries.
- Wilkinson and Jordan Basins - there is no nexus to current or proposed management areas, with the exception of small coral zones under development in Jordan Basin as part of the deep-sea coral amendment.
- The southeast parts of Georges Bank – this area has been fished since 1999 by scallop dredge vessels as part of a rotational access program.
- Nantucket Shoals, i.e. the northern part of the Nantucket Lightship habitat closure - at the time, it appeared unlikely to continue as a habitat management area.
- Georges Bank canyons – not appropriate to some of the objectives, such as fishing impact studies, or comparisons of high vs. low energy habitats
- Fingers area (Southern New England) - no nexus to proposed or current management areas.
- Cox Ledge - not recommended because the proposed HMAs on Cox Ledge and 19 Fathom Bank are approximately 27 mi^2 and 55 mi^2, so the treatments areas associated with fishing impact studies would likely impact much of the HMA. In addition, Cox Ledge and 19 Fathom Bank are currently open to all types of fishing, so there is not the possibility for a currently closed and reopened to fishing disturbance treatment, or a closed-closed reference area.
- The New York Bight - there is no nexus to current or proposed NEFMC habitat management areas. Also, at their June 2012 meeting, the NEFMC Habitat Committee discussed forwarding any recommendations about Southern New England/Mid-Atlantic areas that are within the MAFMC region to the MAFMC for their consideration.

These areas were forwarded to the Committee by the PDT but were rejected at the Habitat Committee level. As noted above, the Committee felt that a smaller set of areas was more appropriate, so they focused their recommendations on the three areas with industry support

- Jeffreys Bank
- Cashes Ledge – relatively further offshore, less practical
- Jeffreys Ledge
- Great South Channel

- Northern Edge – relatively further offshore, less practical. Concern about fishery impacts.