

6.6 Cumulative Effects

The purpose of this section is to summarize the incremental impact of the proposed action on the environment resulting when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes them.

6.6.1 Background

The National Environmental Policy Act (NEPA) requires that cumulative effects of “past, present, and reasonably foreseeable future actions” (40 CFR § 1508.7) be evaluated along with the direct effects and indirect effects of each proposed alternative. Cumulative impacts result from the combined effect of the proposed action’s impacts and the impacts of other past, present, and reasonably foreseeable future actions. These impacts can result from individually minor but collectively significant actions taking place over a period of time. The Council on Environmental Quality (CEQ) directs federal agencies to determine the significance of cumulative effects by comparing likely changes to the environmental baseline. On a more practical note, the CEQ (1997) states that the range of alternatives considered must include the “no-action alternative as a baseline against which to evaluate cumulative effects.” Therefore, the analyses in this document, referenced in the following cumulative impacts discussion, compare the likely effects of the proposed actions to the effects of the no-action alternative.

CEQ Guidelines state that cumulative effects include the effects of all actions taken, no matter who (federal, non-federal or private) has taken the actions, but that the analysis should focus on those effects that are truly meaningful in terms of the specific resource, ecosystem and human community being affected. Thus, this section will contain a summary of relevant past, present and reasonably foreseeable future actions to which the proposed alternatives may have a cumulative effect. This analysis has taken into account, to the extent possible, the relationship between historical (both pre- and post-FMP) and present condition of the monkfish population and fishery, although significantly less is known about the population and the fishery prior to the implementation of the FMP and other management actions affecting the fishery (particularly Multispecies Amendments 5 and 7 and Sea Scallop Amendment 4). The time frame for this analysis, therefore, is primarily the 1980’s and 1990’s for historical information, although trawl survey data extending to the 1960’s is considered, and approximately 5-10 years for reasonably foreseeable future actions affecting the fishery. The geographic scope of the analysis is the range of the monkfish fishery in the EEZ and adjacent fishing communities, from the U.S.-Canada border to, and including North Carolina.

The cumulative effects analysis focuses on five Valued Environmental Components (VEC’s):

1. target species (monkfish)
2. non-target species (incidental catch and bycatch)
3. protected species
4. habitat, and

5. communities.

The cumulative effects determination on these VEC's is based on the following analyses: (1) the discussion in this section of non-fishing actions occurring outside the scope of this FMP; (2) the analysis of direct and indirect impacts contained in the Environmental Consequences section of this SEIS (Section 6.0) and summarized in this section (Sections 6.6.4 and 6.6.5); (3) the summary of past, present and future actions affecting the monkfish fishery; and (4) the cumulative effects of the alternatives provided in Table Table 124 of this section.

NOAA Fisheries staff determined that the 5 VECs (target species, non-target species, protected species, habitat and communities) are appropriate for the purpose of evaluating cumulative effects of the proposed action based on the environmental components that have historically been impacted by fishing, and statutory requirements to complete assessments of these factors under the Magnuson-Stevens Act, Endangered Species Act, Marine Mammal Protection Act, Regulatory Flexibility Act, and several Executive Orders. The VECs are intentionally broad (for example, there is one devoted to protected species, rather than just marine mammals, and one on habitat, rather than Essential Fish Habitat) to allow for flexibility in assessing all potential environmental factors that are likely to be impacted by the action. While subsistence fishing would ordinarily fall under the "communities" VEC, no subsistence fishing or Indian treaty fishing take place in the area managed under this FMP.

The vessels participating in the monkfish fishery must comply with all federal air quality (engine emissions) and marine pollution regulations, and, therefore, do not significantly affect air or marine water quality. Consequently, the management measures contained in Amendment 2 would not likely result in any additional impact to air or marine water quality.

6.6.2 Overview of the proposed action alternatives

This amendment is designed to achieve a number of goals and objectives as outlined in Section 3.0, consistent with the monkfish stock-rebuilding goals established by the FMP, adopted in 1999 and amended in Framework 2 in 2003. The purpose and need for this amendment is summarized in Section 2.12. The proposed action and alternatives considered but not adopted are outlined in Section 4.0, and the direct and indirect impacts on the environment are analyzed and discussed in Section 6.0. A summary of the alternatives (proposed and non-preferred) and associated impacts and issues as presented in the DSEIS is provided in Appendix I.

In summary, as stated in the Goals and Objectives, the proposed actions are primarily designed to address management problems and issues that have arisen since implementation of the FMP, and to comply with applicable laws such as NEPA and the Magnuson-Stevens Act. In some instances, such as Essential Fish Habitat and bycatch minimization requirements, courts have found the FMP to be out of compliance with some elements of applicable law, and have ordered the Councils to remedy the situation which they are doing in this amendment. This amendment also addresses problems and

issues raised the public during the amendment scoping process. In addition, some proposals address NMFS strategic objectives of streamlining the management process and reducing administrative burdens on the agency and public. These actions do not modify the stock rebuilding elements of the original FMP, as modified in Framework 2.

6.6.3 Summary of non-fishing actions and their effect

Following is an assessment of non-fishing impacts on fish habitat and fishery resources. For fish habitat, non-fishing effects have been reviewed in the Essential Fish Habitat Amendment for Monkfish prepared by the NEMFC (Amendment 1 to the Monkfish FMP). Table 122 below, taken from that document, represents the review of the EFH Technical Team of the potential effects of numerous chemical, biological and physical effects to riverine, inshore and offshore fish habitats. Table 122 exhibits twelve representative classes of chemicals, three categories of biological and nineteen types of physical threats, which are categorized as low, moderate or high threats to habitat, based on their geographic location—riverine, inshore and offshore. In general, the closer the proximity to the coast, i.e., close to pollution sources and habitat alternations, the greater the potential for impact.

Riverine and inshore habitats were generally categorized as moderate to high threats whereas the offshore areas were low to moderate. For the offshore area, with the exception of events such as oil spills and algae blooms, which can spread over large areas, moderate effects were generally localized to a well-defined and relatively small impact area such as oil/gas mining and dredged material disposal. Thus, only small portions of fish stocks would potentially use these sparsely located areas and would be adversely affected. For example, dredged material disposal sites, usually about 1 nm² in size, are managed by the U.S. Army Corps of Engineers and the U.S. EPA to minimize physical effect to the defined disposal area and allow no chemical effects at the site based on stringent sediment testing.

THREATS	RIVERINE	INSHORE	OFFSHORE
Chemical			
oil	M	M	M
heavy metals	M	M	M
nutrients	H	H	L
pesticides	M	M	L
herbicides / fungicide	M	M	L
acid	H	M	
chlorine	M	M	
thermal	M	M	
metabolic & food wastes	M	M	
suspended particles	M	M	L
radioactive wastes	L	M	M
greenhouse gases	M	M	M
Biological			
nonindigenous / reared species	M	M	M
nuisance / toxic algae	M	H	M
pathogens	M	M	M
Physical			
channel dredge	M	H	
dredge and fill	H	H	
marina / dock construction	M	H	
vessel activity	M	H	L
erosion control			
bulkheads	M	M	
seawalls		M	
jetties		M	
groins		M	
tidal restriction	M	H	
dam construction / operation	H	M	
water diversion			
water withdrawal	H	M	
irrigation	M	M	
deforestation	H	M	
mining			
gravel/mineral mining	M	M	M
oil/gas mining	L	M	M
peat mining	L		
debris	M	M	M
dredged material disposal	L	M	M
artificial reefs	L	M	M

Table 122- Potential non-fishing threats to fish habitat in the New England region prioritized within regions (H = high; M = moderate; L = low)²

¹ From NEFMC (1998)

² Prioritization developed by compilation of *EFH Technical Team* survey

For fishery resources, there are several non-fishing threats that could have a direct and/or indirect impact on monkfish stocks. Several of the items identified as non-fishing threats to fish habitat, identified in Table 122 could also pose a threat, such as the oil spills, pesticides, and radioactive wastes. Generally the closer the proximity of monkfish stocks to the coast, the greater the potential for impact (although predation, a non-fishing impact, would be one threat that would occur everywhere). Monkfish reside or migrate through both inshore and offshore areas at different stages of their lives and during different seasons throughout the year. In the offshore areas, effects of non-fishing activities would likely be low because the localized nature of the effects would minimize exposure to organisms in the immediate area.

An additional inshore threat of note would be the effect on fishery resources presented by power plants. The operations of power plants are thought to be especially of consequence to fish eggs, larvae and juveniles. Entrainment, or intake of cooling seawater for the purposes of cooling power plant reactors, is known to draw in eggs and larvae and, therefore, could have a negative impact on some fishery resources that spawn in areas in close proximity to active power plants. An additional threat associated with power plants is the discharge of warm water. This thermal discharge is believed to have a negative impact on reproduction capability and recruitment of affected fishery resources. Since monkfish spawning and larval stages occur primarily in the offshore environment, this threat is not as significant as it is for other fish stocks, such as winter flounder.

Other future non-fishing threats to fishery resources could include global warming and siting of wind farms in the coastal or offshore environment. The effects of global warming and rising sea temperature on the life cycles and distribution of fishery stocks are uncertain and, therefore, could not be incorporated into this assessment. The possibility of windmill construction in marine waters for the purposes of harnessing alternative means of energy could also have an impact on fishery resources, especially as it relates to disruption of habitat. This is the subject of a forthcoming EIS being prepared by the Army Corps of Engineers. The impacts of this project to the fisheries are yet to be determined but are likely to be localized to the vicinity of the projects.

6.6.4 Summary of fishing gear effects on fish habitat

Appendix II contains the gear effects and adverse impacts determination analysis, based on the results of the Councils' Gear Effects Workshop and information provided by the NEFMC Habitat Technical Team, as well as a report from the National Research Council on the "Effects of Trawling and Dredging on Seafloor Habitat". This latter study determined that repeated use of trawls/dredges reduce the bottom habitat complexity by the loss of erect and sessile epifauna, smoothing sedimentary bedforms and bottom roughness. Such activity, when repeated over a long term also results in discernable changes in benthic communities, which involve a shift from larger bodied long-lived benthic organisms for smaller shorter-lived ones. This shift also can result in loss of benthic productivity and thus biomass available for fish predators.

Thus, such changes in bottom structure and loss of productivity can reduce the value of the bottom habitat for demersal fish. These effects varied with sediment type with lower level of impact to sandy communities, where there is a high natural dynamic nature to these bedforms, to a high degree of impact to hardbottom areas such as bedrock, cobble and coarse gravel, where the substrate and attached epifauna are more stable. Table 39 in Appendix II indicates for all demersal life stages, monkfish inhabit bottom habitats with substrates of sand-shell mix, algae covered rocks, hard sand, pebbly gravel or mud. Fishermen in most areas report that their monkfish effort is predominately directed in mud-bottomed areas.

Use of trawls and dredges are common in inshore and offshore areas and somewhat less common in riverine areas. Appendix II of this document discusses the numerous types of gear used in estuarine and offshore habitats. This section indicates that mobile bottom-tending gears are commonly used in most inshore and offshore habitats. In the Northeast, otter trawls are used to prosecute most managed fisheries including: Northeast Multispecies; Sea Scallops; Monkfish; Mackerel, squid and butterfish; Summer flounder, scup and black seabass; Bluefish; and Spiny dogfish. Scallop dredges are used in the sea scallop fishery and hydraulic clam dredges are used in the surf clam and ocean quahogs fisheries. Smaller trawls are used in inshore areas and lower estuaries, which are managed by states and not subject to the Magnuson-Stevens Act. In addition, some states allow smaller dredges are used for harvesting oysters, bay scallops, sea urchins, quahogs, and mussels. Hydraulic dredging for softshell clams and bottom trawling for shrimp is also accomplished in certain nearshore and riverine habitats. It is assumed for this analysis that the effects of gear are generally moderate to high in the riverine, inshore and offshore areas, depending upon the type of bottom and the frequency of fishing.

6.6.5 Summary of existing threats to protected resources

Six large whale species (right, humpback, fin, sei, blue and sperm whales) and three sea turtles (leatherback, Kemp's ridley and green turtles) found in the region are listed as "endangered" under the Endangered Species Act. The loggerhead turtle is listed as threatened, and two other species, harbor porpoise and barndoor skates, are candidates for listing. The remaining mammal species are protected under the Marine Mammal Protection Act. The right whale continues to be at the highest risk for extinction because of its low numbers and low reproductive status. Table 123 summarizes the past and current threats for the whale species that have a special status because of threats to their continued sustainability.

Ship strikes and fishing gear entanglement continue to be the most likely sources of injury or mortality for the right, humpback, fin and minke whales. Gear entanglement occurs in the vertical buoy lines of sink gillnet and pot/trap gear, the groundlines of pot/trap gear, and also in the net panels of gillnet gear. Sei, blue and sperm whales are also vulnerable, but fewer ship strikes or entanglements have been recorded. During 1996-2000 in U.S. Atlantic waters, an average of 3.2 whales (right, humpback, fin, sei, sperm, blue and minke, combined) were killed annually by ship strikes, and 7.8 were killed or suffered injuries likely to cause death as a result of gear entanglements (Waring, et al., 2002). Mobile bottom trawls are less of a concern for the large whale species.

Other marine mammals, such as harbor porpoise, dolphins and seals, are also at risk to be entangled in net gear (including seines, gillnets and drift nets). Turtles have been entangled in shrimp trawls, pound nets, bottom trawls and sink gillnets. Shrimp trawls are required to use turtle excluder devices.

Protected species are also affected by habitat alteration or destruction. Species such as turtles may be more prone to such impacts because their nests are particularly vulnerable to disturbance or predation. The impacts of pelagic habitat alteration on protected species are less known. Water quality in coastal areas is particularly vulnerable to coastal pollution from nutrients, which can alter the phytoplankton and the food of species such as the right whale. Toxic contaminants, such as PCBs and DDT which are suspected of causing reproductive failure in many vertebrates including marine mammals (Reijnders and Aguilar, 2002), can also accumulate through the prey species and cause adverse effects to a predator that is higher in the food web. The potential impact of pollution is more likely problematic in nearshore areas closer to the source, such as agricultural and urban runoff and sewer outfalls. Nutrients can also promote toxic phytoplankton blooms, which have been known or suspected in killing whales and other marine mammals (Geraci, et al., 1990; Harwood, 2002).

Low frequency sonar may pose an additional threat, although the extent of its continued use by the U.S. military is unclear at this writing. A successful lawsuit brought by environmental groups limited the use of such sonar following a number of marine mammal deaths in the vicinity of naval exercises in several places around the world. Federal legislation being debated in Congress at this time could override the lawsuit settlement agreement and exempt the military from the “harassment” provisions of the MMPA, easing the restrictions on the limited deployment of low frequency sonar.

The factors discussed above, and other factors, potentially have had cumulative adverse effects on all protected species to varying degrees. Because of a lack of cause-effect data, little is known about the magnitude and scope of these factors and how they have contributed to the species’ special listing. The direct and indirect effects of the alternatives in this amendment are discussed in Section 6.0, and summarized in Appendix I. Table 124 summarizes the cumulative effects of the alternatives in the context of the discussion above.

Species	Status	Threats			
		Ship Strikes	Gear Entanglement	Habitat	Other
Right Whale	Endang Highest risk	High Potential	High potential due sink gillnets, pots, traps	Unknown: Water Quality: Nutrients; Toxic contaminants; Biotoxins; Noise	Unknown: Low Genetic diversity; Low reproductive rates; Reduction/ Competition of prey; Harassment
Humpback	Endang	High Potential	High potential	Unknown: Water Quality: Nutrients; Toxic contaminants; Biotoxins; Noise	Unknown: Reduction/ Competition of prey; Harassment
Fin	Endang	High Potential Mortality Less Certain	High potential Mortality Less Certain	Unknown: Water Quality: Nutrients; Toxic contaminants; Biotoxins; Noise	Unknown: Reduction/ Competition of prey; Harassment
Sei	Endang	Potential but few recorded instances	Potential but no recorded instances	Offshore Species Less likely but still vulnerable to Offshore Development	Unknown: Reduction/ Competition of prey; Harassment
Blue	Endang	Potential but few recorded instances	Potential but few recorded instances	Offshore Species Less likely but still vulnerable to Offshore Development	Unknown (no data): Ice entrapment
Sperm	Endang	Potential but few recorded instances	Potential but few recorded instances	Offshore Species Less likely but still vulnerable to Offshore Development	
Minke	Protected under MMPA	Potential but few recorded instances	Sink Gillnets known threat; Pot/Trap Gear	Unknown: Water Quality: Nutrients; Toxic contaminants; Biotoxins; Noise	Aboriginal subsistence whaling on West Greenland stock (non-U.S. stock)

Table 123- Summary of Threats to Protected Species Potentially Affected by Amendment 2 to the Monkfish Plan.

6.6.6 Summary of past, present and future actions affecting the monkfish fishery

6.6.6.1 Past and present actions

The current condition of the monkfish fishery (in the context of the five VECs) is the result of the cumulative effect of the Monkfish FMP, implemented in 1999, and regulations under other FMPs in the region that impact vessels catching monkfish as well as measures adopted under other laws, particularly the Endangered Species Act and the Marine Mammal Protection Act. The status of the fishery, its stocks, human component and the biological and physical environment, is discussed in the Affected Environment section of this document, Section 5.0. Sections 2.1 - 2.9 contain a discussion of past actions that have cumulatively, and in most cases positively affected the VECs of the monkfish fishery, including regulatory and judicial actions.

In summary, the directed monkfish fishery is relatively young, having emerged over the past three decades and coming under regulation only in 1999 with the adoption of the FMP. The Councils developed the FMP in response to industry and scientific concerns that the increased market demand for monkfish caused landings to increase to unsustainable levels and the stocks were showing symptoms of significant declines (falling survey indices and declining average size of fish in the catch). Since the FMP was implemented in 1999, the northern stock biomass index (3-yr. Average) increased from 0.82 kg/tow to 2.23 kg/tow by the fall, 2002 but declined to 2.03 kg/tow in 2003. The stock is not overfished and is less than 20 percent below Btarget (Btarget=2.50 kg/tow). During the same period, the southern stock index average has risen from 0.47 kg/tow to 0.93 kg/tow, which is the minimum biomass threshold for determining when the stock is overfished (0.93 kg/tow). Since the stock is not below the threshold, the MMC recommended that NMFS declare the stock no longer overfished.

The original FMP called for a three-year effort reduction program and a plan review to set subsequent management targets and measures. The FMP also included default measures for Year 4 that would have eliminated the directed fishery and only allowed monkfish to be landed under incidental catch limits. Framework 1, in 2002, delayed the default measures one year to allow the Councils to complete the review process which included a Stock Assessment Workshop (SAW 34). Based on that review, the Councils implemented Framework 2, which revised the overfishing definition reference points and established an index- and landings-based method for setting annual harvest targets (TAC's) to achieve optimum yield and biomass rebuilding goals, as well as eliminating the default measures.

The two FMP's that have had the greatest impact on monkfish fishery VECs, other than the Monkfish FMP, are the Sea Scallop and Northeast Multispecies FMP's because of the spatial overlap of the fisheries, the relatively high level of incidental catch of monkfish in those fisheries, and the fact that more than 90 percent of the monkfish limited access permit holders are also permitted in one or the other of those two fisheries (evenly split). Both Multispecies and Sea Scallop fisheries have undergone a series of major actions since 1994 to reduce fishing effort and rebuild overfished stocks. These include Multispecies Amendments 5 –13 and 39 framework adjustments (with two pending), and

Sea Scallop Amendments 4-10 and 16 framework adjustments (with one pending). These actions have reduced overall fishing effort significantly since 1994, and have imposed other restrictions such as year-round and seasonal closed areas, and gear restrictions that have affected both the directed and incidental catch monkfish fishery. Cumulatively, these actions have likely had a positive effect on monkfish, contributing to the increasing stock abundance observed over the past five years. Additional action in both FMP's is pending, and will be discussed below (Section 6.6.6.2).

Other FMPs that likely have had an impact on the fishery VECs include those managing other demersal species in the region, such as the Skate FMP (implemented 2003), Spiny Dogfish FMP (implemented 2000), and the Summer Flounder, Scup, Black Sea Bass FMP (1996 and amendments). To varying degrees, these management plans, as well as others in the region, have directly or indirectly affected the monkfish fishery by causing effort to shift among fisheries and by changes to the levels of incidental catch of monkfish. It is not possible within this document to analyze all of the inter-relationships of these management plans with the monkfish fishery because in most cases these relationships are not well understood and vary widely for individual vessels and areas.

In addition to FMPs implemented by the Councils, other actions that have directly and cumulatively affected the monkfish fishery VEC's include three federal court decisions, two marine mammal take reduction plans, and a final rule implemented by NMFS under authority of the Endangered Species Act to protect sea turtles (see Section 2.8). Cumulatively, these actions have limited areas open to fishing on a seasonal basis, specifically to gillnet gear, and have prescribed gear restrictions, including the mandatory use of acoustic deterrent devices in some areas, net limits and buoy line specifications.

Actions and orders by the federal courts have had a cumulative effect on the VECs of the monkfish fishery. In particular, three cases described in Section 2.5.2 have affected the monkfish fishery, *Hall v. Evans*, *AOC v. Daley*, and *CLF v. Evans*. In the case of *Hall v. Evans* the court found that the gear-based differential trip limit in the original FMP was violated three of the national standards in the Magnuson-Stevens Act, and ordered that the gillnet limit be increased to the level the trawl limit. As a result, of this action, the Councils had to reduce the trip limits for both gear sectors in order to meet the target TAC when it set the limits in Framework 1. *AOC v. Daley* was the case in which the court determined that the environmental assessments prepared for the EFH provisions of the FMP did not adequately consider a range of alternatives as required under NEPA. As a result of this determination, the Councils have undertaken in this amendment to consider broader range of alternatives that would minimize the impact of the fishery on the EFH of all managed species. Thirdly, the case of *CLF v. Evans* focused on the Multispecies FMP rebuilding plans and resulted in an interim rule significantly reducing fishing effort, and a negotiated settlement under which the NEFMC is developing Multispecies Amendment 13. Since approximately half of the monkfish limited access permit holders also hold multispecies permits, the court's action have already affected fisheries and communities directly (reduced effort and landings) and indirectly (displaced effort). The cumulative effect of these past actions cannot be individually assessed,

however, the current state of the fishery is the result of the synergistic effect of all of the actions described above.

6.6.6.2 Reasonably foreseeable future actions

Future actions considered in this section include actions taken under this FMP, actions taken under other FMPs that affect vessels catching monkfish, and actions taken to protect marine mammals or threatened and endangered species. Given that monkfish fishing occurs in relative isolation from other (than fishing) spatially co-occurring activities (for example, shipping and recreational boating), it is unlikely that any regulatory action or other changes in those activities will have an impact on the fishery, or vice versa.

Other activities that could potentially have an impact on monkfish fishing, such as development of offshore energy facilities or offshore aquaculture projects, are not likely to occur in the reasonably foreseeable future (over the next ten years). Although a few offshore aquaculture proposals have been developed in the past, and feasibility studies are currently underway, these projects face a number of technical and environmental obstacles that reduce the likelihood these projects will actually become commercially viable within the next five to seven years.

Included in the reasonably foreseeable future actions that may have an impact on the monkfish fishery are other FMP amendments in various stages of development or implementation, the most notably Multispecies Amendment 13 and Sea Scallop Amendment 10, both of which have been adopted this year, and several follow-up framework adjustments. Both Amendments 13 and 10 will have direct and indirect impacts on monkfish vessels since most monkfish vessels are also permitted in one of those other fisheries and are directly affected by the cumulative effect of the proposed action and those other amendments.

How, and to what magnitude, the effort reductions and area closures or other management measures in Amendments 10 and 13, or subsequent Multispecies or Scallop FMP actions, affect monkfish effort cannot be reliably predicted. On the one hand, if overall effort is reduced, presumably overall monkfish incidental catch levels will also decline (positive). On the other hand, management restrictions in those other fisheries could cause some vessels to redirect their effort toward monkfish (possibly negative, mitigated by the monkfish effort management program implemented by Framework 2). For example, Multispecies Framework 40A (see Section 2.9.2) establishes a pilot program that enables vessels to use their multispecies B Regular DAS to target monkfish while having a minimal impact on groundfish species of concern.

Even vessels not directly impacted by virtue of having a scallop or multispecies permit could be affected by the displacement of effort resulting from restrictions imposed on those fisheries, and by any measures, such as area closures to protect EFH, that restrict the operation of all fishing with specific gear types. The alternatives under consideration to address the conservation and EFH objectives in those other amendments are likely to have a short-term adverse impact on most monkfish vessels that may be somewhat mitigated by actions proposed in this amendment, particularly the establishment of an offshore monkfish fishery program.

Other potential future actions whose effects would be cumulative to the proposed action include actions taken to protect marine mammals, endangered and threatened species. Current measures in effect are discussed in Section 2.8. These could be modified in the future under either a fishery management plan, marine mammal take reduction plan, or regulation promulgated under authority of the Endangered Species Act. Specifically, known or anticipated future actions include: short-term closures to sink gillnets under the Atlantic Large Whale Take Reduction Plan Dynamic Area Management (DAM) system; changes to the Harbor Porpoise Take Reduction Plan; and measures adopted under the NMFS final rule implementing large-mesh gillnet closures off the North Carolina/Virginia coast to protect sea turtles. Since the specific nature of those potential changes are not known at this time, their effect on the monkfish VECs cannot be determined at this time.

Additionally, NOAA Fisheries is currently preparing an Environmental Impact Statement for the ALWTRP to solicit comments on the management measures and provisions in the plan and possible modifications to reduce interactions of right, humpback and fin whales with commercial fisheries. The agency is also preparing to publish a proposed rule for a Bottlenose Dolphin Take Reduction Plan. Both of these actions may affect the operations of the monkfish fishery.

In the more distant future, two other actions outside the fisheries arena could potentially affect the monkfish fishery VEC's due to their geographic overlap: offshore windfarms and offshore oil and gas exploration/drilling. In the case of the windfarm project, the current proposal under consideration would site the facility in Nantucket Sound, which would not likely have a significant effect on the monkfish fishery because it does not overlap. That proposal is controversial, however, and the Army Corps of Engineers is currently preparing an Environmental Impact Statement that may include alternatives that would site the facility further offshore. In that case, there is a potential, but unknown impact on the monkfish fishery, depending on the exact location and other parameters of the project. In the case of offshore oil and gas exploration, a current federal moratorium is preventing any such activities. According the recent media reports, discussions have begun in Washington on reconsidering the moratorium, in which case the potential exists for such activities to have an effect on the monkfish fishery VEC's, since one of the primary areas of interest is Georges Bank. As with the windfarm proposal, however, insufficient detail is available to determine the potential effects of such activities with any reasonable certainty or specificity.

With advances in fishing technology and ongoing restrictions in traditional fisheries, some vessels may begin to develop deepwater fisheries, much like what occurred in Europe over the past two decades. Not much is known at this time about the potential for such fisheries in the northwest Atlantic, nor about how such fisheries would interact, directly or indirectly, with deepwater components of the monkfish fishery or its essential fish habitat. Furthermore, such fisheries would likely have an impact on deepwater coral habitat whose role in the life stages of monkfish and other deepwater species currently being harvested, such as red crab, is not well known. The deepwater fisheries do not have management plans in place at this time, although such plans would likely be implemented

if such fisheries were to begin. The cumulative effect of the development of deepwater fisheries and the associated FMP's is not ascertainable at this time.

6.6.7 Cumulative effects of the proposed action

The following table Table 124 summarizes the anticipated cumulative effects of the proposed action on each of the five VECs compared to taking no action. The cumulative effects determination is based on the preceding analysis of non-fishing activities, fishing gear effects, direct and indirect impacts in the context of the past, present and reasonably foreseeable future actions discussed in the preceding section, as well as the analysis of the direct and indirect impacts in Sections 6.2 - 6.5.

In summary, the proposed measures viewed together, are not likely to have a significant cumulative effect on the environment. As a whole, these measures are likely to have a slightly positive effect on communities, since they address a number of issues identified by the affected public, such as regulatory discards and the inability to profitably conduct a traditional offshore fishery. The measures proposed to minimize impacts of the fishery on EFH (SFMA roller restriction and canyon closures) are also positive, but since they are effectively preventative, rather than restrictive on current fishing activities, the impacts are also not significant. The impact of the proposals on the other VECs is essentially neutral compared to no action.

Proposal	Cumulative Effects on Valued Environmental Components (VECs) compared to no action				
	Target Species	Non-target Species	Protected Species	Habitat	Communities
Incidental Catch – 50 lbs./day, 150 max.	No Impact. Incidental catch accounted for in calculation of annual trip limits/DAS for directed fishery. Reduces bycatch of small monkfish. Improved catch data.	No Impact. Incidental catch accounted for in calculation of annual trip limits/DAS for directed fishery. Reduces bycatch of small monkfish. Improved catch data.	No Impact. Incidental catch accounted for in calculation of annual trip limits/DAS for directed fishery. Reduces bycatch of small monkfish. Improved catch data.	No Impact. Incidental catch accounted for in calculation of annual trip limits/DAS for directed fishery. Reduces bycatch of small monkfish. Improved catch data.	Slightly positive due to reduced discards and improved profitability.
Incidental Catch – GC scallop and surf clam dredge vessels	No Impact. Incidental catch accounted for in calculation of annual trip limits/DAS for directed fishery. Reduces bycatch of small monkfish. Improved catch data.	No Impact. Incidental catch accounted for in calculation of annual trip limits/DAS for directed fishery. Reduces bycatch of small monkfish. Improved catch data.	No Impact. Incidental catch accounted for in calculation of annual trip limits/DAS for directed fishery. Reduces bycatch of small monkfish. Improved catch data.	No Impact. Incidental catch accounted for in calculation of annual trip limits/DAS for directed fishery. Reduces bycatch of small monkfish. Improved catch data.	Slightly positive due to reduced discards and improved profitability.
Incidental Catch – Summer flounder vessels west of 72°30'W	No Impact. Incidental catch accounted for in calculation of annual trip limits/DAS for directed fishery. Reduces bycatch of small monkfish. Improved catch data.	No Impact. Incidental catch accounted for in calculation of annual trip limits/DAS for directed fishery. Reduces bycatch of small monkfish. Improved catch data.	No Impact. Incidental catch accounted for in calculation of annual trip limits/DAS for directed fishery. Reduces bycatch of small monkfish. Improved catch data.	No Impact. Incidental catch accounted for in calculation of annual trip limits/DAS for directed fishery. Reduces bycatch of small monkfish. Improved catch data.	Slightly positive due to reduced discards and improved profitability.
Minimum Fish Size	Could negatively impact yield-per-recruit if vessels target smaller monkfish in SFMA. No impact if measure simply converts discards to landings.	No Impact.	No Impact.	No Impact.	Slightly positive due to reduced discards and improved profitability.
Closed Season	No Impact. Spawning area closure (no action) has no apparent biological benefit.	No Impact. Spawning area closure (no action) has no apparent biological benefit.	Could negatively impact protected species, but not clearly or significantly, since varying amounts of gear is still deployed during this period under no action.	No Impact. Short time of closure period under no action is not significantly different, in terms of habitat impacts than proposed elimination of closed season.	Slightly positive due to increased flexibility.

Proposal	Cumulative Effects on Valued Environmental Components (VECs) compared to no action				
	Target Species	Non-target Species	Protected Species	Habitat	Communities
Offshore SFMA Fishery Program	Could result in effort shift from inshore to offshore with no overall increase (neutral), but could result in re-activation of monkfish effort (negative), mitigated by DAS pro-rating, gear requirements and other program elements (positive).	Could reduce impact on inshore and multispecies stocks by vessels shifting effort offshore where catch of other species is minimal. Monkfish/multispecies vessels will use multispecies DAS while fishing in the program and, therefore, not have those DAS available to target multispecies).	Would likely have a positive impact, or at least mitigate impacts on protected species since overall effort (DAS) is reduced under proposed action, and vessels must use VMS which will improve information regarding protected species interactions, to the extent they occur offshore.	No impact, or slightly negative. May affect deep water benthic habitats at continental margin as vessels return to traditional areas. Potential exists for some interaction if vessels expand the range of their operations beyond historical areas. EFH Alt. 5AB, roller gear restriction and pro-rated DAS on enrolled vessels may mitigate these effects.	Positive for larger vessels able to fish offshore due to higher profitability, and restores a pre-FMP fishery
Modification of Permit Qualification – South of 38°N	May shift effort from inshore (state waters) to offshore grounds with no overall effort increase. May also result in some effort increase compared to no action if vessels participate who are not currently active in MF fishery (<5 vessels expected). Overall potential effort limited by season/area.	No Impact.	Impact expected to be minimal due to small number of affected vessels, seasonal availability of monkfish in the area, area restriction of the proposed action, and established sea turtle closures.	Impact expected to be minimal due to small number of affected vessels, seasonal availability of monkfish in the area, area restriction of the proposed action, and established sea turtle closures. Most, if not all affected vessels use gillnets.	Positive for the small number of affected vessels due to increased opportunity and value of vessel permit, and their communities.
Modify the Framework Adjustment Procedure	No impact. This is an administrative change.	No impact. This is an administrative change.	No impact. This is an administrative change.	No impact. This is an administrative change.	No impact. This is an administrative change.
NAFO Regulated Area Exemption Program	No direct impact on domestic stocks. Could result in increase in effort on NAFO Area stocks, limited greatly by logistical considerations.	No Impact.	No Impact.	No Impact.	Likely positive due to increased flexibility, but cannot be quantified.

Proposal	Cumulative Effects on Valued Environmental Components (VECs) compared to no action				
	Target Species	Non-target Species	Protected Species	Habitat	Communities
EFH – SFMA Roller Gear Restriction	No impact. Vessels targeting monkfish already use this gear, which is intended to prevent expansion of the fishery into complex bottom types, especially offshore canyons.	No direct impact but could be positive on species inhabiting complex habitats, particularly offshore canyons by limiting ability to trawl in those areas.	No Impact.	Positive but not significant – sets maximum roller gear diameter equivalent to size currently in use in the area; prevents expansion of trawl effort into complex bottom areas and canyons.	Slightly negative for vessels not already using this gear, otherwise neutral.
EFH – Canyon Area closures	No immediate or direct impact. Vessels targeting monkfish do not fish in these areas currently, but this proposal will prevent expansion into these areas.	No immediate or direct impact. Vessels targeting monkfish do not fish in these areas currently, but this proposal will prevent expansion into these areas.	No immediate or direct impact. Vessels targeting monkfish do not fish in these areas currently, but this proposal will prevent expansion into these areas.	Positive but not a significant impact since minimal monkfish fishing occurs in those areas.	No impact likely. Vessels targeting monkfish do not fish in these areas.
Cooperative Research – DAS set aside	No direct impact. DAS set aside is taken from existing allocation. Indirectly could be positive if research results in reduced bycatch, or habitat effects, or improves scientific understanding of monkfish.	No direct impact. DAS set aside is taken from existing allocation. Indirectly could be positive if research results in reduced bycatch, or habitat effects, or improves scientific understanding of monkfish.	No direct impact. DAS set aside is taken from existing allocation. Indirectly could be positive if research results in reduced bycatch, or habitat effects, or improves scientific understanding of monkfish.	No direct impact. DAS set aside is taken from existing allocation. Indirectly could be positive if research results in reduced bycatch, or habitat effects, or improves scientific understanding of monkfish.	Negligible social impact, except that cooperative research has improved science/industry relationship, and fosters industry “buy-in” to science supporting management.
Cooperative Research – DAS exemption	No direct impact. DAS exemption is taken from existing allocation. Indirectly could be positive if research results in reduced bycatch, or habitat effects, or improves scientific understanding of monkfish.	No direct impact. DAS exemption is taken from existing allocation. Indirectly could be positive if research results in reduced bycatch, or habitat effects, or improves scientific understanding of monkfish.	No direct impact. DAS exemption is taken from existing allocation. Indirectly could be positive if research results in reduced bycatch, or habitat effects, or improves scientific understanding of monkfish.	No direct impact. DAS exemption is taken from existing allocation. Indirectly could be positive if research results in reduced bycatch, or habitat effects, or improves scientific understanding of monkfish.	Negligible social impact, except that cooperative research has improved science/industry relationship, and fosters industry “buy-in” to science supporting management.
Clarification of Vessel Baseline	No impact. This is an administrative change.	No impact. This is an administrative change.	No impact. This is an administrative change.	No impact. This is an administrative change.	Unknown social impact, or slightly positive since any adjustment is at vessel owner’s request only.

Table 124 – Summary of cumulative effects of Amendment 2 proposed action compared to taking no action

6.6.8 Cumulative effects of non-preferred alternatives

The following Table 125 shows the cumulative effects of non-preferred alternatives.

Alternative	Details	Impacts/issues	Cumulative effects
DAS Alternative 1	<ol style="list-style-type: none"> 1. Two alternatives (see Alt. 1a and 1b below) 2. Annual declaration – vessels may elect to fish under Alt. 2 (no action) rules 3. Enrolled vessels may combine DAS usage on trip-by-trip basis 4. When on MF-only DAS, Category C & D vessels would fish as Category A & B 5. Applicable measures under MF only, Multispecies only, or combined DAS summarized in Table 1. 	<ol style="list-style-type: none"> 1. Allows for MF specific gear requirements on directed trips – minimize bycatch and EFH impacts 2. Could result in overall increase in fishing effort (vessels could fish MF and Scallop or Multispecies DAS allocations separately) 3. Reduces opportunity cost for vessels targeting monkfish 4. Requires establishment of trawl exempted fishery in NFMA for MF only DAS – or vessels may shift to SFMA to use MF only DAS 5. Economic impact likely to be positive or neutral on affected vessels (Category C & D) 6. Goal II, Objectives 2 & 3; Goals III & V 	<ol style="list-style-type: none"> 1. Target species: Neutral. TACs/trip limits adjusted annually to achieve rebuilding. Reduced MS and scallop effort (A13 and A10) will likely reduce incidental catch. 2. Non-target species: Positive. Reduced bycatch under large mesh on MF only DAS. 3. Protected species: Neutral or negative, depending on how vessels respond to restrictions in other fisheries, and protection measures adopted outside of the FMP process. 4. Habitat: Positive. Gear requirement on MF only DAS, combined with Amendment 10 and 13 measures will reduce impact on EFH. 5. Communities: Positive. Provides opportunity for vessels facing restrictions in other fisheries.

Alternative	Details	Impacts/Issues	Cumulative Effects
DAS Alternative 1a – Area-based de-coupled DAS (SFMA only) by annual declaration	<ol style="list-style-type: none"> 1. Category C & D vessels annual declaration to have option of MF only DAS in the SFMA 2. Vessel not declaring could fish for monkfish in either area on combined DAS only 3. Vessels declaring may only fish for monkfish in the SFMA, and under incidental limit in NFMA (could not be issued NFMA exemption letter) 	<ol style="list-style-type: none"> 1. Vessels declared in may retain the option to fish MF-only or combined DAS in the SFMA 2. Applicable measures under MF only, Multispecies only, or combined DAS summarized in Table 1, SFMA section only 3. Options below for gear requirement on MF only or combined DAS 	Unable to discern the difference between the two alternatives, in terms of cumulative effects, except that Alternative 1b provides greater flexibility since it does not restrict the ability to separate DAS to one area. These alternatives are a subset of DAS Alternative 1, discussed above.
DAS Alternative 1b – Annual declaration for de-coupled DAS, not area based	<ol style="list-style-type: none"> 1. Category C & D vessels annual declaration to have option of MF only DAS (not limited by area) 	<ol style="list-style-type: none"> 1. Applicable measures under MF only, Multispecies only, or combined DAS summarized in Table 1. 2. Requires establishment of trawl exempted fishery in NFMA for MF only DAS – or vessels may shift to SFMA to use MF only DAS 3. Options below for gear requirement on MF only or combined DAS 	

Alternative	Details	Impacts/Issues	Cumulative Effects
DAS Alternative 1 Option 1a – Fleet MF DAS (MAFMC preferred alternative)	<ol style="list-style-type: none"> 1. 40 DAS to all limited access permit holders 2. Trip limits/DAS based on current (Framework 2) formula 	<ol style="list-style-type: none"> 1. Same allocations as under original FMP 2. Inherent allocation of latent MF effort 3. Option to have variable Fleet DAS and uniform trip limits not practicable 	Unable to discern the difference between the two alternatives, in terms of cumulative effects on target species, non-target species, habitat, protected species. Option 1a may have positive cumulative effect on communities where vessel's monkfish activity has been lower during the Option 1b qualification period but may face restrictions in other fisheries in the future. These alternatives are a subset of DAS Alternative 1, discussed above.
DAS Alternative 1 Option 1b – Individual MF DAS	<ol style="list-style-type: none"> 1. Vessels would have individual share of a pool of DAS based on relative proportion of monkfish landings 1997-2001 2. Allocation based on individual share X total DAS pool 3. Total DAS pool based on portion of TAC available to directed fishery divided by average catch per DAS 	<ol style="list-style-type: none"> 1. DAS allocations range from 0 (145 vessels) to more than 145 (average on 40 vessels holding 20% of the total pool) 2. Vessels would have 40 DAS pending appeal of individual allocation 3. Effort allocations based on past performance (minimize latent effort) 4. Some vessels that qualify for a limited access permit would not have DAS allocation but could lease DAS (if adopted) 	

Alternative	Details	Impacts/Issues	Cumulative Effects
<p>DAS Alternative 1 Option 2a – Implement transferable MF only DAS under Amendment 2 rule</p>	<ol style="list-style-type: none"> 1. Program would take effect upon implementation of Amendment 2 2. DAS transfer program to be based on Multispecies Amendment 13 program with monkfish specific consideration 3. Two options, plus no action, for lease or sale of DAS (see Decision 1d, below) 	<ol style="list-style-type: none"> 1. Uncertainty about outcome of Amendment 13 decisions and final program details 2. Would allow for potential activation of latent effort under Fleet DAS (Option 1a above) 	<p>Both alternatives are a subset of DAS Alternative 1, discussed above. Both alternatives would allow for transferable DAS, either upon implementation or in the future. Transferable DAS could have a negative cumulative effect on target species, non-target species habitat and protected species if the program results in increased effort, otherwise neutral. Could have a positive cumulative effect on those communities where such programs would promote more efficient use of capital especially where vessels can accumulate DAS and effort is being restricted under other FMP actions. Could have a negative cumulative effect on communities where vessels sell or lease DAS outside of the community and reduce or terminate fishing activity.</p>
<p>DAS Alternative 1 Option 2b – Include transferable DAS in list of possible actions under framework adjustment process</p>	<ol style="list-style-type: none"> 1. Program details and implementation would take place under a future Council action 	<ol style="list-style-type: none"> 1. Would allow for development of DAS transfer consistent with program (if) adopted in Multispecies Amendment 13 with monkfish-specific considerations 	

Alternative	Details	Impacts/Issues	Cumulative Effects
Transferable DAS Option 1 – No action	1. Transfer of DAS prohibited	1. No impact compared to current program under Fleet DAS 2. Under Individual DAS, if adopted, inactive vessels would have no DAS or reduced DAS allocations and be unable to activate	These alternatives are a subset of DAS Alternative 1, discussed above. The NEFMC has adopted both a leasing and a sale provision in Multispecies Amendment 13, but not in Scallop Amendment 10. Provisions for conservation neutrality and/or capacity reduction through transfer “tax” would be positive for VECs, unless total active effort increases in spite of those protections.
Transferable DAS Option 2 – DAS Leasing	1. Based on alternatives under consideration in Amendment 13, with MF specific considerations 2. Options for conservation equivalency, limitations on number of DAS leased, and program expiration.	1. Could result in activation of latent effort under Fleet DAS 2. Would enable vessels with low individual DAS allocations (if adopted) to increase effort to profitable levels, at a cost, while providing high allocation vessels with flexibility to use or lease DAS 3. Effectiveness of conservation neutrality provisions are uncertain	
Transferable DAS Option 3 – Sale of DAS	1. Based on Multispecies Amendment 13 proposals 2. Options for restricting proportion of transferable DAS and reactivation of sold DAS.	1. Could result in activation of latent effort unless safeguards are developed to maintain conservation neutrality. 2. Amendment 13 formula for defining active/effective effort not directly applicable to monkfish fishery 3. Practicability may depend on outcome of Amendment 13 decision regarding permit splitting.	

Decision 2	Details	Impacts/Issues	Cumulative Effects
Incidental Catch Alternative 1 – No action	1. 50 lbs. tails per trip (possession limit) on small mesh trips	1.	No cumulative effect on non-target species, protected species and habitat. Alternatives 2 and 3 would reduce already insignificant discards on target species and have a proportionally positive effect on communities where fisheries covered under this incidental limit operate due to modestly increased landings allowed.
Incidental Catch Alternative 3 –	1. 50 lbs. tails/day; 500 lbs. maximum	1. Intended to reduce discards 2. Would benefit small mesh trips up to 10 days (freezer boats) 3. Would have minimal impact on total incidental catch of monkfish	

Alternative	Details	Impacts/Issues	Cumulative Effects
GC Scallop/clam dredge Alternative 1 – No action	1. Prohibited from possessing monkfish	1. No evidence these vessels are discarding monkfish	No cumulative effect on non-target species, protected species and habitat. Preferred alternative would reduce already insignificant discards on target species and have a proportionally positive effect on communities where fisheries covered under this incidental limit operate due to modestly increased landings allowed.

Alternative	Details	Impacts/Issues	Cumulative Effects
Incidental catch limit west of 72°30' Alternative 1 – No action	1. Incidental limit on fluke vessels east of 74° is 50 lbs. possession limit (tail wt.)	1. Multispecies interim rule changed monkfish limit from 5% of total wt. on board as a result of shifting Mid-Atlantic Reg. Mesh Area boundary	No cumulative effect on non-target species, protected species and habitat. Preferred alternative would reduce discards on target species and have a proportionally positive effect on Mid-Atlantic communities where fisheries covered under this incidental limit operate due to landings allowed.

Alternative	Details	Impacts/Issues	Cumulative Effects
Minimum trawl mesh size Alternative 2 –	1. 12" sq. codend; 12' dia. belly and wings 2. Apply on Category A & B, and Scallop C & D vessels on scallop/MF DAS. Option to require on multispecies/MF DAS	1. Reduces bycatch of regulated species and small monkfish, but selectivity characteristics not quantified 2. Increases yield per recruit 3. Regulation to be based on nearest metric equivalent of stock mesh size	1. Target species: Alt. 2 & 3 will result in reduced discards and increased yield per recruit (not quantified) 2. Non-target species: Alt. 2 & 3. will result in reduced bycatch (not quantified). 3. Protected species: Neutral 4. Habitat:: Positive. Lower incidental catch of other species reduces incentive to fish in areas where those species are caught, lowering fishery impact on such habitat. 5. Communities: unknown, but likely positive if yield per recruit is increased and bycatch reduced. Cost of gear upgrading not expected to be significant since nets, codends replaced regularly.
Minimum trawl mesh size Alternative 3 –	1. 12" sq. codend; multispecies mesh in body and wings. 2. Apply on Category A & B, and Scallop C & D vessels on scallop/MF DAS. Option to require on multispecies/MF DAS	1. Reduces bycatch of regulated species and small monkfish, but selectivity characteristics not quantified 2. Increases yield per recruit 3. Regulation to be based on nearest metric equivalent of stock mesh size	

Alternative	Details	Impacts/Issues	Cumulative Effects
Minimum fish size Alternative 1 – No action	<ol style="list-style-type: none"> 1. 11" tail or 17" whole, NFMA 2. 14" tail or 21" whole, SFMA 	<ol style="list-style-type: none"> 1. Minimum size cited as primary reason for MF discards in trawl and scallop fishery 	Neutral for all VEC's except target species and communities. Moderately negative due to discards.
Minimum fish size Alternative 2, Option 2–	<ol style="list-style-type: none"> 1. Uniform size both areas 2. 10" tail/15" whole 	<ol style="list-style-type: none"> 1. Reduces discards of small monkfish in the SFMA 2. Does not eliminate regulatory discards due to minimum size 3. Goal II; Goal III; Goal IV, Objective 2; Goal VII 	Moderately positive for target species and communities due to reduced discards and improved landings data.
Minimum fish size Alternative 3 –	<ol style="list-style-type: none"> 1. No minimum size 	<ol style="list-style-type: none"> 1. Eliminates regulatory discards due to minimum size (not market cull) 2. PDT recommendation 3. Improves data on commercial catch-at-age used in assessments 	
Minimum fish size Alternative 4 –	<ol style="list-style-type: none"> 1. Applies only on monkfish-only DAS, if DAS are decoupled. Councils would select from options above for multispecies/monkfish DAS 2. 14" tail/21" whole in both areas 	<ol style="list-style-type: none"> 1. Works in conjunction with increased minimum mesh size on monkfish-only DAS; allows for retention of smaller monkfish caught with groundfish gear on combined multispecies/monkfish DAS 2. Selectivity characteristics of large mesh not quantified; impact on reducing discards uncertain 	Cumulative effects fall between those discussed in Alternatives 1 & 2 above

Alternative	Details	Impacts/Issues	Cumulative Effects
Closed Season Alternative 1 – No action	<ol style="list-style-type: none"> 1. Category A & B vessels: 20-day block out of the fishery April – June; Category C & D/Multispecies vessels: 20-day block March-May; Category C & D/Scallop vessels: no requirement 2. Option to include Category C & D/Scallop vessels, if DAS are de-coupled 	<ol style="list-style-type: none"> 1. Not effective at shifting effort away from spawning period due to relatively short closure 	No cumulative effect expected on the five VECs.
Closed Season Alternative 3 –	<ol style="list-style-type: none"> 1. Increase time out requirement to 40-day block 2. Option to include Category C & D/Scallop vessels, if DAS are de-coupled 	<ol style="list-style-type: none"> 1. May provide improved spawning protection, although benefits not certain or well understood for monkfish 	Could have a negative cumulative effect on vessels/communities in other fisheries if the additional time out requirement is during periods of high activity or profit. Would have a positive cumulative effect on non-target species that spawn during this period (multispecies) and on protected species if vulnerable to the gear during this period. Cumulative effect on habitat or target species unknown.

Alternative	Details	Impacts/Issues	Cumulative Effects
Offshore SFMA Fishery Alternative 1 – No action	<ol style="list-style-type: none"> 1. All SFMA vessels within gear and permit categories treated equally 	<ol style="list-style-type: none"> 1. Offshore fishery not profitable for most vessels due to trip limits and, for some vessels, requirement to use multispecies or scallop DAS 	Would continue the negative cumulative effect of the FMP on those vessels/communities that had a dependence on the offshore fishery prior to FMP implementation, and on the target and non-target species to which those vessels re-directed their effort. Neutral or negative on habitat, depending on where those vessels have redirected their effort. Neutral on protected species.

Alternative	Details	Impacts/Issues	Cumulative Effects
Modification of permit qualification for vessels fishing south of 38°N. Landings criteria are the same in all alternatives as current permit requirements. Four alternatives differ on qualification period, four years prior to date shown below . If sea turtle closures severely restrict fishing opportunity, area may be expanded to 38°20'N. All other regulations applicable to vessels fishing in the SFMA would apply. Preliminary estimate of number of new permits is given; all would be in Category B & D (lower landings threshold)			
Permit Qualification Alternative 1	1. June 15, 1998, full year landings	1. est. new permits: 7	All alts., including no action, essentially the same with neutral or unknown cumulative effects on all VECs except communities. Alts. 1-4 could have a positive cumulative effect on communities where vessels would qualify for ltd. access permit, but not expected to be significant due to small number of vessels and limited fishery season.
Permit Qualification Alternative 2	1. June 15, 1997, full year landings	1. est. new permits: 3	
Permit Qualification Alternative 4	1. June 15, 1997, landings during March 15 –June 15	1. est. new permits: 3	
Permit Qualification Alternative 5 – no action	1. vessels that have not qualified under original FMP would not be issued limited access permit	1. est. new permits: 0	

Alternative	Details	Impacts/Issues	Cumulative Effect
NAFO Area Exemption Alternative 2 – no action	1. no exemption, must use DAS and comply with trip limits and other FMP regulations.	1.	No cumulative effect expected.

Alternative	Details	Impacts/Issues	Cumulative Effect
EFH Alternative 1 - no action	1. Measures that would be in effect if the Councils took no action on this or other (Multispecies, Scallop) amendments	1. Monkfish trawl fishery has a low impact on monkfish EFH but high impact on vulnerable EFH of some other species	Taking no action would result in continued adverse effects on habitat and other negative impacts of current levels of fishing on target species, non-target species and protected resources. Cumulative effect of no action on communities is unknown.
EFH Alternative 2	1. No specific action on EFH	1. Other actions in Amendment 2 to be analyzed for EFH benefits	The cumulative effect of other actions in Amendment 2 is discussed in other sections of this table under each measure.
EFH Alternative 3	1. Actions taken under Multispecies Amendment 13 and Scallop Amendment 10, in FSEIS incorporated into Alt. 1 since those amendments were implanted after DSEIS publication.	1. Action taken under other FMPs to be analyzed for EFH benefits	Effort reductions and habitat protection measures in these amendments will have a positive cumulative effect on all VECs, except the near-term effect on communities which is expected to be negative.
EFH Alternative 4, Option 2	1. Includes six elements that could be taken together or separately.	1. Designed to minimize ability and incentive to fish in complex bottom. Would also minimize bycatch of regulated species. 2. As a package not tested and not in commercial use. Could be part of trawl experimental fishery adopted under this amendment	Would have a positive cumulative effect on all VECs, except protected resources which is unknown. Would reduce bycatch of target and non-target species, minimize fishery effect on complex habitat, and have a positive effect on communities due to the reduction in discards and the increased opportunity to target monkfish in a clean, directed fishery.
EFH Alternative 5c – Major steep-walled canyons closure	1. Up to twelve identified canyons from Norfolk Canyon to Heezen Canyon (at the Hague Line) 2. Two options: close to trawl gear or all gears, on a MF DAS 3. Closure of waters deeper than 200 m. (~100 fathoms)	1. some overlap with reported monkfish effort, particularly Atlantis, Oceanographer and Hudson Canyons	Would have an unknown or positive cumulative effect on the VECs, particularly habitat and non-target species (coral) due to precautionary action to protect these areas from reasonably foreseeable future development of deepwater fisheries. Avoid future economic cost of managing such fisheries after they become established. Would also have a positive, but indirect effect on essential fish habitat of species that are currently found in adjacent areas.

Alternative	Details	Impacts/Issues	Cumulative Effect
Cooperative Research programs funding. Two alternatives, not including no action, could both be adopted. Four options for DAS set aside/exemptions under consideration: 50, 100, 200, or 500 DAS. Research could be to minimize bycatch, minimize impacts on EFH or other habitat, research to establish exempted fisheries, biology or population dynamics of monkfish, cooperative surveys and gear efficiency, among others.			
Research Alternative 3 – no action	1. Vessels conducting research under EFP or NMFS' RFP may not land monkfish unless they complete an Environmental Assessment to analyze the impacts of a DAS exemption	1.	Research projects <i>per se</i> not likely to have a significant cumulative effect. If research results in improvements to management program and scientific understanding, effects would be positive for all VECs, depending on the specific results and follow-on actions.

Alternative	Details	Impacts/Issues	Cumulative Effect
Vessel Upgrading Baseline Alternative 1 – no action	1. Vessel has baseline of vessel when issued its limited access permit; may have two different baselines for permits issued under different FMPs if permit was transferred between issuance	1. Vessels with dual baselines may have to forego a limited access permit in order to upgrade or transfer another limited access permit..	The no action and proposed alternative are neutral with respect to all VECs, except communities. The proposed action would have a positive effect on those communities where vessel upgrading is limited by the more restrictive monkfish permit limitations (no action).

Alternative	Details	Impacts/Issues	Cumulative Effect
NFMA trawl experimental fishery Alternative 2	<ol style="list-style-type: none"> Vessels would operate under a Letter of Authorization from NMFS. Vessels could operate under the DAS set aside or exemption, if adopted under the previous section Three area/seasons identified in the GOM 	<ol style="list-style-type: none"> Primary purpose is to determine if a trawl exempted fishery can be established (under the 5% multispecies bycatch rule), and under what gear/area/season restrictions Would also provide opportunity to test the proposed trawl configuration under commercial conditions for reducing bycatch and EFH impacts. Goal II, Objective 3; Goal III; Goal V, Objectives 1 & 2 	Experimental fishery would be of relatively short duration 1-3 years, therefore, cumulative effect would not likely be significant compared to no action, except , perhaps for the fishing opportunity for vessels facing restrictions in other fisheries (positive on communities). Any action taken as a result of the experimental fisheries, however, could have a positive or negative cumulative effect on one or all of the VECs, depending on the specific actions taken.

Alternative	Details	Impacts/Issues	Cumulative Effect
Change the fishing year. Three alternatives plus no action. Based on alternatives under consideration in Multispecies Amendment 13, but Councils could choose independently from what is adopted in Amendment 13. Would require prorating of DAS during transition period; alternatives provided in next section.			
Fishing Year Alternative 2	1. Jan. – Dec.	1. Aligns fishing year with stock assessment data 2. Not as important in monkfish as in multispecies. 3. Could create staff/administrative workload issues if many plans start simultaneously	These alternatives are administrative in function and would not have a cumulative effect on the VECs.
Fishing Year Alternative 3	1. Oct. – Sept.	1. Fishing year would start at the beginning of the peak monkfish landings and price cycle	
Fishing Year Alternative 4	1. July - June	1. Fishing year would start at the low point in monkfish landings and price cycle	

Alternative	Details	Impacts/Issues	Cumulative Effect
DAS Prorating alternatives. One of the following two alternatives is only necessary if the Councils select a different fishing year under the previous set of alternatives. They do not apply if the Councils take no action on the fishing year question.			
DAS Prorating Alternative 1	1. Transition period is from May 1, 2005 to start of new fishing year. 2. Allocations based on # months in transition period divided by 12, times Amendment 2 DAS allocations	1. Shorter transition period	These alternatives are a subset of the alternatives to modify the fishing year discussed above. They are administrative in function and have no cumulative effect on any of the VECs.
DAS Prorating Alternative 2	1. Transition period is from May 1, 2005 through the next full fishing year 2. Allocations based on # months from May 1, 2005 to new fishing year start date divided by 12 times the Amendment 2 DAS allocations, plus Amendment 2 DAS allocations	1. Longer transition period, may provide greater flexibility for vessels	

Table 125 – Summary of cumulative effects of Amendment 2 non-preferred alternatives

6.7 Impact on Stellwagen Bank National Marine Sanctuary

The Gerry Studds Stellwagen Bank National Marine Sanctuary, established in 1992, is the only such area in the northeast to be so designated under the Marine Protection, Research and Sanctuaries Act (see Figure 87). The designation does not prohibit fishing, although it prohibits mining of sand and gravel and the transfer of petroleum products in the area, and it protects cultural resources (shipwrecks), and requires federal agencies considering any action in the vicinity of the Sanctuary to consult with the Secretary of Commerce.

Monkfish fishing occurs within the Sanctuary boundaries, mostly on trips using gillnets. Based on 2001 data, 5.9 percent of all directed monkfish trips were taken within the Sanctuary boundaries, of which almost 90 percent were gillnet trips (316 trips out of about 360 trips). Monkfish landings on directed trips in the Sanctuary were about 0.6 million pounds, or about three percent of all directed trip landings. (See Figure 88.)

The alternatives under consideration in this amendment are not likely to have a significant effect on the sanctuary, even if DAS are separated, considering that fishing is not an activity regulated by the Sanctuary and already occurs both inside and outside the area. The areas under consideration for a trawl experimental fishery (that could result in establishment of an exempted fishery) are outside of the Sanctuary boundary.

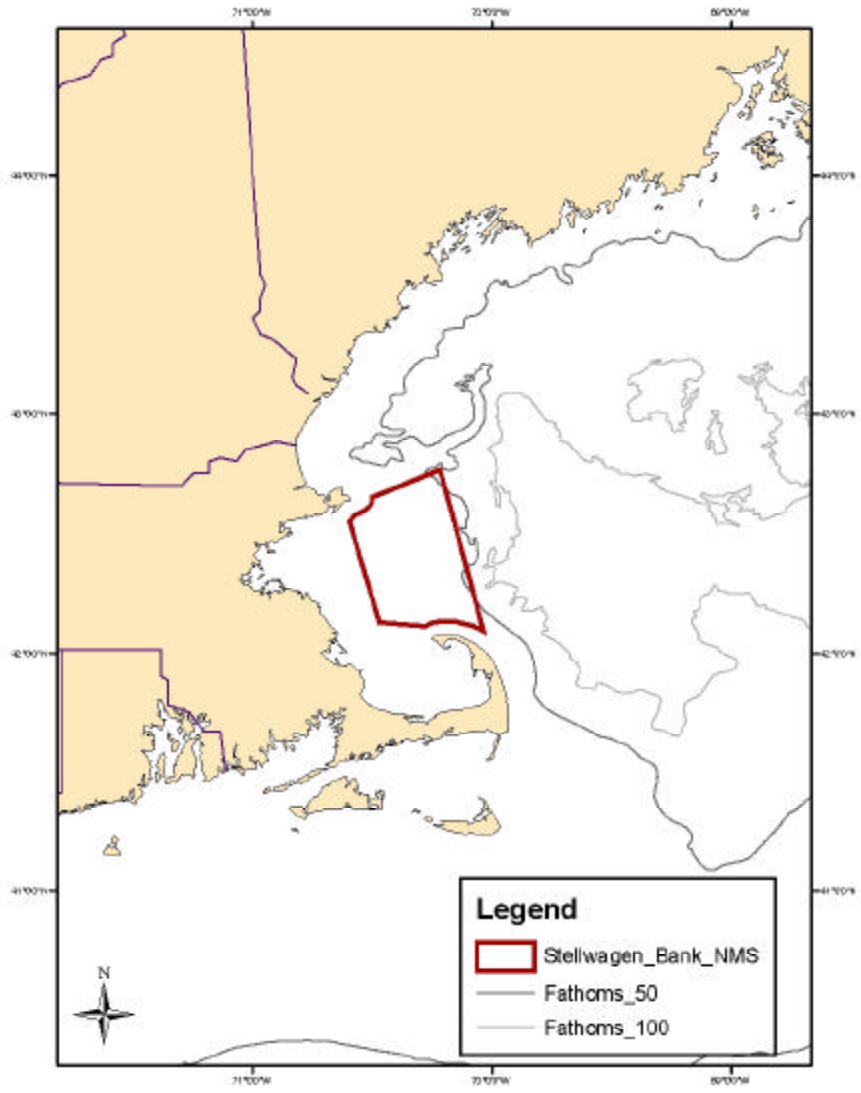


Figure 87 Location of Stellwagen Bank National Marine Sanctuary

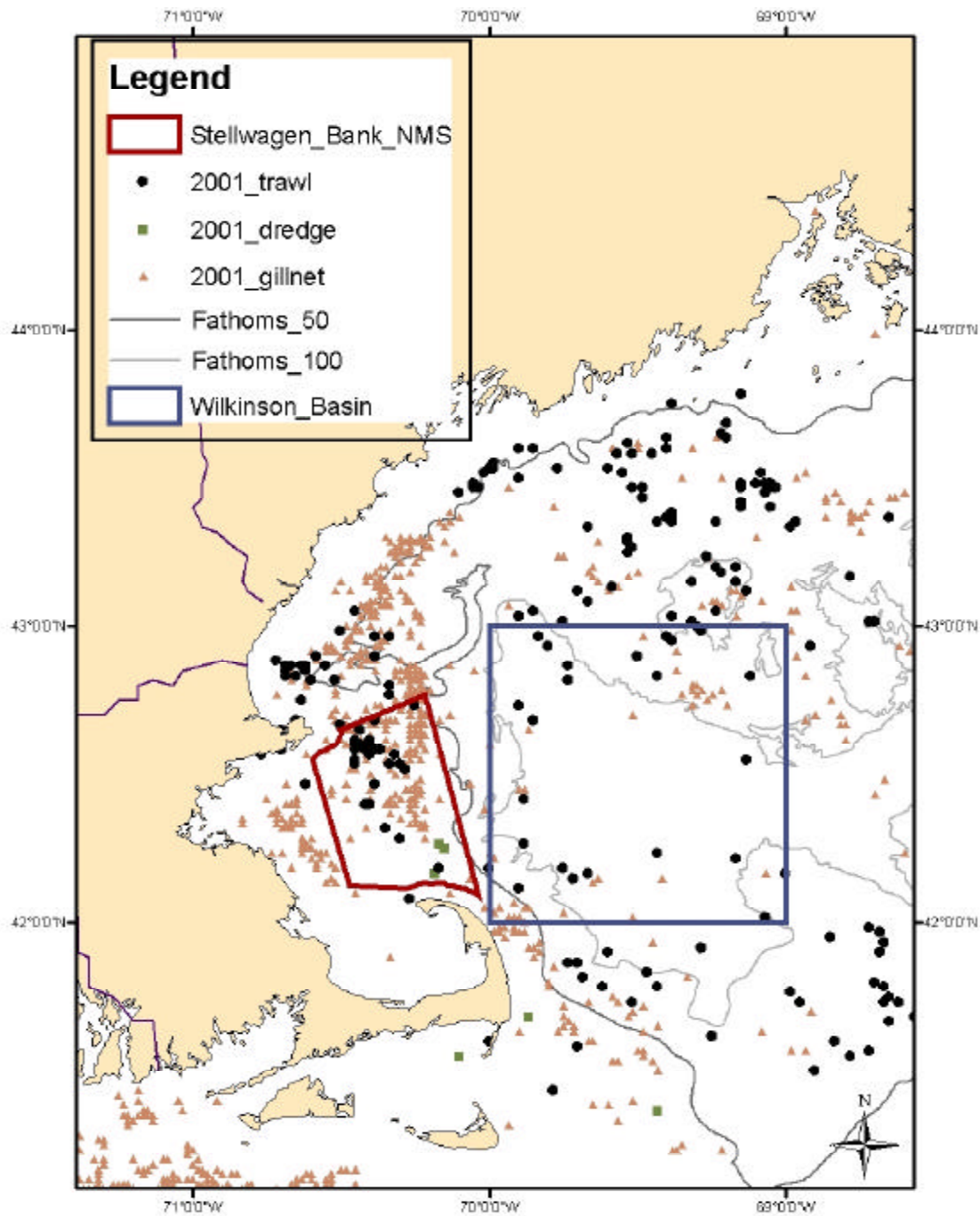


Figure 88 Directed monkfish fishing effort in the vicinity of the Stellwagen Bank National Marine Sanctuary.

Also shown is the proposed Wilkinson Basin experimental fishery area that could be designated a monkfish trawl exempted area pending the results of research.