

4.0 COMPLIANCE WITH NATIONAL STANDARDS

4.1 National Standard 1 – Optimum Yield

“Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the OY from each fishery for the U.S. fishing industry.”

This FMP includes all elements of optimum yield as defined by the Sustainable Fisheries Act and the final guidelines, published on May 1, 1998. Optimum yield, a definition of overfishing, and a rebuilding schedule are described in Sections 2.4.2, 2.4.1.1, and 2.4.1.2, respectively.

Optimum yield (Section 2.4.2) is defined as the yield produced by the target fishing mortality rate when the stock is at a target biomass level. The target fishing mortality rate is $F_{0.1}$ in the Southern Fishery Management Area and at an undefined level below $F_{\text{threshold}}$ in the Northern Fishery Management Area. The target biomass level is a proxy value for MSY conditions (Overfishing Definition Review Panel 1998). Optimum yield is therefore measurable, if some basic assumptions about the relationship between survey biomass measurements, fishing mortality, and commercial catch is made. The long-term yield, associated with optimum yield is estimated in Section 7.1.5.2.5.1.

The overfishing definition (Section 2.4.1.1) includes the four types of reference points that are recommended by the National Standard 1 guidelines (50 CFR, §600.310). These reference points are a maximum fishing mortality threshold consistent with F_{MSY} , a minimum biomass threshold, a biomass target consistent with B_{MSY} , and a fishing mortality target that is risk averse.

The overfishing definition includes a proxy value for a threshold fishing mortality rate, consistent with F_{MSY} (Overfishing Definition Review Panel 1998). The target fishing mortality rates have been chosen to be risk averse, but there has been no formal assessment of risk because there is too little information about monkfish stock dynamics. Fishing mortality has been estimated by the SAW 23 (NEFSC 1997) and the fishing mortality reference points can be directly compared to these mortality estimates. The fishing mortality reference points were estimated using the Beverton and Holt (1956) method that the SAW 23 used to estimate current fishing mortality.

Stock biomass thresholds have been chosen to determine when the monkfish resource is in an overfished condition, i.e. depleted. The biomass reference point for each stock is defined from the most recent period of time when the monkfish resource was in a healthy condition, i.e. there was a high proportion of mature fish in the population and the population trend was stable. Thus the biomass during 1970-1979 serves as an acceptable proxy for a minimum biomass threshold that is risk averse. Similarly, the Council chose a higher biomass target that is an acceptable proxy for B_{MSY} . It is unclear how this minimum biomass threshold is related to a rebuilding threshold, because the Council was unable to model monkfish stock dynamics and predict rebuilding potential. The biomass target is $\frac{1}{2}$ of the maximum (three-year average) level observed since 1963 in the autumn research survey.

The rebuilding schedule (Section 2.4.1.2) for monkfish is 10 years, the maximum allowed under the Sustainable Fisheries Act. Due to the inability to model monkfish stock dynamics and estimate rebuilding potential, the fishing mortality rate that will meet the rebuilding goal is uncertain. The Council has however established a comprehensive monitoring (Section 3.11.2.3) and framework adjustment process (Section 3.11.1) to ensure the rebuilding goal is achievable.

4.2 National Standard 2 – Scientific Information

“Conservation and management measures shall be based upon the best scientific information available.”

Section 2.6 of this document describes the data the Councils used to evaluate impacts and describe fisheries. Much of the data had been updated since the preparation of the Draft FMP (formerly Draft Amendment 9 to the Multispecies FMP) and these new data had been incorporated into the revised analyses. The Councils know of no new or additional data that would meaningfully alter the results or conclusions reached within this FMP. Section 3.2 describes the new data collection requirements, primarily applying to vessels that qualify for monkfish limited access but do not have a multispecies or scallop days-at-sea permit. The Council estimated the costs of the new reporting requirements are analyzed and discussed in Section 7.7 (PRA).

4.3 National Standard 3 – Management Units

“To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.”

The FMP proposes to manage monkfish throughout the range of the species, in accordance with U.S. law. Bigelow and Schroeder (1953) report that the historic range of monkfish, *Lophius americanus*, extends from the Newfoundland Banks and the Gulf of St. Lawrence in Canada to Cape Lookout, NC. This range is consistent with more recent information, although sporadic catches have been observed further south in the waters off the Southeastern U.S. It is unclear if the monkfish resource in the Northwest Atlantic is composed of one, two, or several stocks. There appears to be some distinction between spawning, maturation, and distribution between monkfish found in the Gulf of Maine and those found in the Mid-Atlantic Bight. It is unknown whether the monkfish on the Scotian Shelf in Canada are interrelated with those in the Gulf of Maine or in Southern New England. Likewise, it is unknown whether the monkfish south of Cape Lookout, NC are interrelated with those in the Mid-Atlantic. Monkfish that occur north of Cape Hatteras, NC appear to be contiguous with and interrelated with monkfish observed off the Delmarva and the Mid-Atlantic. Other species of anglerfish in the North Atlantic include *L. piscatorius*, commonly found in Europe, and *L. budegassa*, commonly found in the Mediterranean.

Monkfish landings occur within the U.S. from Maine to North Carolina (Table 9). All reported U.S. landings occur in states that are contiguous with the proposed northern and southern fishery management areas (Figure). Some landings of monkfish occur in Canada from incidental catch in the groundfish and scallop fisheries, and there has been a recently developing directed fishery.

Table 9. Average annual landings of monkfish, 1992-1996. Source: NMFS
(<http://remora.ssp.nmfs.gov/commercial/landings/index.html>).

State	Pounds, thousands	Revenue (\$1,000)
Connecticut	1,083	501
Delaware	24	11
Maine	4,018	2,179
Maryland	64	56
Massachusetts	12,358	6,832
New Hampshire	295	224
New Jersey	1,798	1,038
New York	603	299
North Carolina	152	114
Rhode Island	3,571	2,114
Virginia	979	383
Grand Total	24,946	13,752

The FMP proposes two management areas for monkfish, although management extends throughout the range of monkfish in U.S. waters. All federally-permitted vessel and all vessel fishing in the Exclusive Economic Zone will be subject to this management plan. The Councils presently propose no management rules for the EEZ south of the NC/SC border, however.

4.4 National Standard 4 – Allocations

“Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation shall be:

- 1) *Fair and equitable to all such fishermen*
- 2) *Reasonably calculated to promote conservation.*
- 3) *Carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.”*

The proposed management measures for monkfish defines a subset of fishing vessels that have demonstrated a history in the fishery and have a high dependence on targeting monkfish. The limited access criteria are therefore intended to be fair and equitable by qualifying vessels that had a legitimate interest in the directed fishery that developed in the early 1990s, prior to the control date. The control date is intended to limit speculative entry into the directed monkfish fishery that occurred in 1995 and 1996 when monkfish liver prices reached new highs. Without limited access, the FMP could not achieve its objectives without significantly adding more restrictions that would negatively impact the industry. As a result, the benefits expected from the proposed management measures would decline due to higher inputs of capital and labor in the fishery. A reduction in net benefits would reduce OY in terms of economic and social value. The social and economic consequences of establishing a limited access program for the monkfish fishery are addressed in Sections 7.1.6 and 7.1.7.

Any U.S. resident is eligible for qualification, regardless of state of residence. Fishermen may use state and federal records to document their monkfish landings and demonstrate their participation in the directed fishery. Vessels that qualify for monkfish limited access also may possess monkfish anywhere in state or federal waters, provided that the possession complies with the requirements in Section 3.0. They are not prevented, for example, from fishing in one of the two management areas provided that they abide by the regulations for that area. Some vessels that began targeting monkfish after the control date may not qualify for limited access, but they are treated

no differently than vessels in another region. Vessels that targeted monkfish since 1995 in NJ and fail to qualify, for example, are no different than a vessel that fails to qualify in Virginia, since monkfish there are considered part of the same stock and are similarly overfished and in need of management.

The FMP allocates temporary fishing privileges as defined by a day-at-sea given to certain vessels. Permits are transferable during a vessel sale or when an owner transfers a permit from one vessel to another that he owns⁵. More than one limited access monkfish permit cannot be added (i.e. stacked) on a single vessel. Although there are no limits on a maximum number of permits an owner or corporation may hold, it is highly unlikely that businesses will acquire excessive numbers of limited access monkfish permits. To do so, would require an individual or business to acquire and operate a fishing vessel for each limited access permit. Beside the cost of purchasing and operating individual vessels for each permit, this outcome is unlikely since nobody has acquired a large number of vessels with monkfish history under the current conditions.

4.4.1 Days-at-sea allocations for multispecies and scallop vessels

One of the more contentious issues identified at the second round of public hearings in February 1998 was the perceived inequity between the allocation of monkfish days to vessels with multispecies or scallop permits. Under the preferred alternative, vessels with a multispecies or scallop limited access permit may use up to 40 multispecies or scallop day-at-sea during a fishing year to target monkfish, provided that the vessel qualifies for monkfish limited access. Vessels that qualify for monkfish limited access and have no multispecies or scallop permits also would receive 40 days to target monkfish, but the days would not be counted against another fishery program. On the surface, this allocation of days and the way they may be used appears to be inequitable because multispecies and scallop vessels would be required to use an existing day-at-sea if the vessel only targets monkfish. Other vessels with no multispecies or scallop days-at-sea only would not lose opportunities to fish for other species and would receive separate monkfish-only days.

The preferred alternative qualification criteria and day-at-sea allocations fairly allow vessels to qualify for monkfish limited access and allocate day-at-sea in a manner that accommodates the customary way that the industry operated and caught monkfish. Compared with other alternatives that would meet the monkfish mortality objectives, the preferred alternative also greatly reduces regulatory discards (Sections 7.1.5.1.1.5 and 7.1.5.1.1.6).

The Councils chose the preferred alternative primarily because many (535) multispecies and scallop vessels would qualify for monkfish limited access. For the non-preferred alternatives, significantly fewer (390-458) of these vessels would qualify. The Councils preferred that vessels which target monkfish as a component of a mixed catch including groundfish and scallops should qualify for monkfish limited access. Even though more scallop vessels would qualify with the preferred alternative, the Councils also believe that few of these vessels will use scallop days to target only monkfish with 10-inch or larger mesh fishing gear. Also, a management program that requires multispecies and scallop vessels to use a multispecies or scallop day-at-sea when targeting monkfish would be consistent with past practices. Many vessels use mobile gear to target both groundfish and monkfish or scallops and monkfish on a single trip. Thus the 40 day-at-sea restriction for multispecies and scallop vessels will limit the amount of fishing effort that could be used to target monkfish, while also accommodating the way that multispecies and scallop vessels historically fished.

This equity issue did not, in fact, arise until the last round of public hearings in February 1998, when the Councils proposed to reduce the amount of multispecies and scallop days-at-sea that could be used to target monkfish. Initially, the Councils' preferred alternative would have allowed multispecies vessels up to 88 annual days-at-sea to target monkfish. Similarly, scallop vessels could use up to 120 annual scallop days to target monkfish. Also in this earlier proposal, all limited access multispecies vessels would automatically qualify for monkfish limited access. On one hand, the multispecies and scallop fishermen saw the original, more liberal approach as fair. The earlier proposal would have allowed them to target monkfish at any time within their days-at-

⁵ The second replacement vessel must not exceed the upgrade limitations contained in this FMP to be able to transfer to take place.

sea allocation. Others pointed out that the earlier proposal would, however, have allowed vessels to target monkfish during tens of thousands of unused multispecies and scallop days.

When the Councils made the qualification criteria for multispecies vessels more restrictive (by raising the qualification criteria from zero pounds to 7,500 pounds for the four years preceding the control date) and reduced the number of monkfish days to 40, fishermen thought the preferred alternative was inequitable. Multispecies fishermen believed that they should be able to target monkfish outside the multispecies days-at-sea program, even though the preferred alternative qualification criteria⁶ would be more liberal than the qualification criteria for other vessels. Similarly, scallopers who qualify for monkfish limited access thought that the cost of converting their vessel and losing valuable scallop days-at-sea would exclude them from the monkfish fishery.

There are five reasons why the Councils chose the preferred alternative over other options that would allocate monkfish-only days to multispecies and scallop vessels that qualify for monkfish limited access:

The monkfish qualification criteria would be more liberal for multispecies vessels than the qualification criteria for other vessels. Multispecies vessels, therefore, should not be entitled to additional day-at-sea to target monkfish.

The monkfish bycatch limits for vessels on a scallop day-at-sea would be considerably more liberal than recommended by the PDT (Appendix I). Scallop vessels, whether or not they qualified for monkfish limited access, will still be able to land monkfish as a component catch and therefore additional days to target exclusively monkfish are unnecessary for the preferred alternative.

The monkfish qualification criteria and the days-at-sea allocations for multispecies and scallop vessels accommodate the current fishery that targets a mixed catch including monkfish. Many of the multispecies and scallop vessels qualify for monkfish limited access due to monkfish that they landed as a component catch.

Other alternatives would increase regulatory discards to unacceptable levels because the other alternatives proposed lower bycatch limits on a multispecies or scallop day-at-sea to allow for more monkfish-only days.

Other alternatives would allow for too few monkfish-only days for the large number of multispecies and scallop vessels. Previous analyses indicated that only 12 days per year could be allocated in year 1 and 3 days per year in year 4, while meeting the mortality objectives. For many vessels, this allocation of monkfish days was much less than would allow a profitable season and in some cases would be shorter than a single trip. Some fishermen stated that it would be too costly to convert their vessel to fish seasonally for monkfish for such a small allocation of days.

It is nonetheless informative to analyze and examine another alternative that would allow some monkfish-only days to be allocated to any vessel that qualifies for monkfish limited access. The following analysis is similar to non-preferred alternative 4, except that it estimates the implications of using alternative 3b qualification criteria, a 200 pound per day-at-sea bycatch monkfish trip limit for vessels on a multispecies or scallop day-at-sea, and meets the same year 2 mortality reductions as estimated that the preferred alternative would achieve. Under the qualification criteria for non-preferred alternative 3b, 455 vessels would qualify for monkfish limited access, compared to 600 vessels under the preferred alternative. Of the 455 vessels that would qualify under non-preferred alternative 3b, 390 had multispecies, scallop, or combination permits for 1998 and are allocated days-at-sea. All other management measures (allocation of days to vessels that qualify, bycatch limits for vessels that are not on a multispecies or scallop day-at-sea, and directed fishery monkfish trip limits) are exactly the same as the preferred alternative. For comparison, multispecies and scallop vessels could use only 40 multispecies or scallop days to target monkfish.

⁶ A multispecies vessel will qualify by having 7,500 pounds tail-weight of monkfish landings during the four-year qualification period, while other vessels larger than 51 GRT would need at least 50,000 pounds tail-weight of monkfish landings to qualify for limited access.

Compared to the preferred alternative, the more conservative qualification criteria from non-preferred alternative 3b and the reduced bycatch limits would be more conservative. In the Northern Fishery Management Area (Table 10), the expected monkfish mortality reduction would be 50 percent in year 2, versus the 33 percent reduction expected under the preferred alternative. This alternative management scenario would only affect the days-at-sea categories, since vessels without multispecies and scallop permits would be unaffected. Landings by vessels that do not qualify for monkfish limited access would increase by 40 percent (980 mt vs. 697 mt), because there would be more vessels would not qualify for monkfish limited access. Conversely, landings by multispecies and scallop vessels that qualify for limited access would be 3,849 mt rather than 5,781 mt. Discards, on the other hand, would increase nearly 10-fold to 20 percent of landings, rather than only two percent of landings.

Table 10. Northern Fishery Management Area: Summary of estimated landings and discards after applying the proposed qualification criteria day-at-sea limits and trip limits. These results are compared to the total 1995-1996 landings for vessels in each category to estimate the anticipated monkfish mortality reduction. The qualification criteria for the non-preferred alternative 4b are the same as those for non-preferred alternative 3b.

	Vessel classification	Mortality reduction objective	Preferred alternative			Non-preferred alternative 4b		
			Expected landings (mt)	Expected discards (mt)	1995-1996 Landings (mt)	Expected landings (mt)	Expected discards (mt)	1995-1996 Landings (mt)
Year 2	DAS Qualifiers		5,781	49	7,991	3,849	422	6,578
	DAS Non-qualifiers		697	49	1,599	980	490	4,742
	Monkfish-only		309	115	708	284	115	708
	Bycatch fisheries		104	33	389	49	18	389
	Total		6,891	246	10,687	5,162	1,045	12,417
	Percent reduction		55%	33%		50%		

Similar results are predicted for the Southern Fishery Management Area (Table 11). As a result of decreased landings, the mortality reduction expected under this approach would be 61 percent, compared to 49 percent for the preferred alternative. Unlike the northern area, however, landings by non-qualifiers actually would decline to 684 mt compared to 1,046 mt for the preferred alternative, even though more vessels fall into the “DAS Non-qualifiers” category. Regulatory discards would increase nearly four-fold to about 25 percent of landings.

Table 11. Southern Fishery Management Area: Summary of estimated landings and discards after applying the proposed qualification criteria day-at-sea limits and trip limits. These results are compared to the total 1995-1996 landings for vessels in each category to estimate the anticipated monkfish mortality reduction. The qualification criteria for the non-preferred alternative 4b are the same as those for non-preferred alternative 3b.

	Vessel classification	Mortality reduction objective	Preferred alternative			Non-preferred alternative 4b		
			Expected landings (mt)	Expected discards (mt)	1995-1996 Landings (mt)	Expected landings (mt)	Expected discards (mt)	1995-1996 Landings (mt)
Year 2	DAS Qualifiers		4,903	44	7,853	3,472	213	6,595
	DAS Non-qualifiers		1,046	210	3,200	684	745	5,505
	Monkfish-only		409	105	1,426	404	105	1,426
	Bycatch fisheries		86	60	935	24	63	935
	Total		6,444	419	13,414	4,584	1,126	14,461
	Percent reduction		59%	49%		61%		

The difference in total catch between the preferred alternative and this alternative scenario could allow management to allocate monkfish-only days-at-sea to multispecies and scallop vessels that qualify for monkfish limited access. In the northern area (Table 10), the non-preferred alternative 4b would have catches that are 930 mt less than the preferred alternative. In the southern area (Table 11) the difference is 1,153 mt. Any management option that accounts for these catches would have equivalent monkfish mortality implications. If monkfish-only

days-at-sea were allocated to all 455 vessels that would qualify for monkfish limited access using the non-preferred alternative 3b criteria (Section 7.1.4.2.2) and multispecies and scallop vessels could not target monkfish during a day-at-sea, the amount of the TAC that could go to a directed fishery would allow 16 days per year for each vessel in year 2. Since the year 2 mortality would be above the overfishing threshold, non-preferred alternative 4b would also allow no or very few days for the limited access monkfish fishery in year 4. With the non-preferred alternative 3b qualification criteria, a 200 pounds tail-weight per day-at-sea trip limit, and an allotment of 16 monkfish-only days, landings in year 2 would total 11,829 mt, or 11 percent less than the preferred alternative. Regulatory discards, on the other hand would be 2,171 mt, or over three times what is anticipated for the preferred alternative. Regulatory discards would be 18 percent of the total landings, versus only five percent for the preferred alternative.

4.4.2 Qualification criteria

Another contentious issue that relates to equity is how the proposed qualification criteria affect fishermen of different states or regions. Although it is permissible to have variable impacts on fishermen that reside in different states, it is not legal to unfairly discriminate against them with rules that intentionally exclude their participation in a fishery. NC fishermen identified this issue at the February 1997 and the February 1998 public hearings. They believed that the Monkfish FMP left them out of the management unit and unfairly prevented them from qualifying for monkfish limited access.

The preferred alternative now includes in the management unit monkfish that occur throughout the range, including monkfish off NC. There appears to be no bias in the proposed qualification criteria that excludes NC fishermen from limited access and the vessels that would not qualify appear to be indistinguishable from vessels in other states that also do not qualify.

NC fishermen would be subject to the same qualification criteria that apply to vessels in other states and may use state landings data to document their participation in the monkfish fishery. According to the 1995 and 1996 dealer records, sixteen NC vessels would qualify for monkfish limited access. Seven vessels that targeted monkfish during 1995-1996 would fail to qualify. These seven vessels represent a proportion of the monkfish fishery that is no greater than the fraction that would not qualify in other states. Failure to qualify for monkfish limited access is the result of insufficient monkfish landings during the four-year qualification period because 1) the vessel did not target monkfish or 2) the vessel entered the fishery after the February 27, 1995 control date.

Some vessels that target monkfish in NC entered the directed monkfish fishery after the control date, but appear to be no different than vessels in other states that also began targeting monkfish after the control date. In NC, the monkfish vessels targeted inshore species with gillnets and began targeting monkfish during the spring when monkfish are available. Similarly, fishermen in NJ began targeting monkfish with gillnets after they could not target species like sturgeon. Massachusetts's fishermen began to target monkfish after the control date because the Multispecies regulations reduced the time when they could pursue groundfish. All cases involved shifts in effort as a response to increasing prices and markets for monkfish, more restrictive regulations in other fisheries, and developing fishing technology.

Although the Councils' intention was to manage monkfish throughout the range, the February 1997 public hearing document erroneously described the management unit as extending from the US-Canada boundary to the NC-VA border and from the shoreline to the 200-mile limit. Council staff added this specific description of the management unit during the final editing stages and it overlooked the contiguous resource area south of the NC-VA border, north of Cape Hatteras, NC. The preferred alternative qualification criteria in the February 1997 public hearing document allowed a vessel of any state the opportunity to qualify for monkfish limited access provided that it could show fishing activity of sufficient volume.

During the first public comment period in 1997, the North Carolina Fisheries Association wrote:

“Some NC commercial fishermen have been inadvertently left out of the proposed monkfish regulations. We respectfully request the NEFMC & MAFMC work with the NCFE to address this legitimate concern.

“NC flounder fishermen (trawlers) historically land monkfish along with summer flounder. The State of NC commercial landings database contains accurate, historical monkfish landings data. How will NC vessels with a history of landings monkfish be treated in the proposed amendment? Obviously, it would be inherently unfair not to allow NC trawler fishermen continued access to this resource in the form of a bycatch allowance.

“According to the last paragraph on page 3 of the hearing draft, the southern fishery management area (Southern Fishery Management Area) extends as far south as the VA-NC border and stops at statistical area #631. This is not consistent with the range of monkfish as fishermen are catching monkfish 7-30 miles off the NC coast (areas #631 & 635).

“The public hearing document (page 4) clearly states “a limited access program for vessels that target and land large volumes of monkfish will be based on historic participation from February 28, 1991 to February 27, 1995 (control date).” Since NC gillnet fishermen do not own multispecies permits, naturally they were never informed that a monkfish control date was either pending or instituted.

“NC gillnet fishermen did not start targeting monkfish until March 1995, several of them even later than that. They all have made substantial gear investments to start this fishery and should not be excluded from continuing to participate. In essence, they are being penalized for developing a limited fishery that provides an opportunity to harvest species other than weakfish, bluefish, dogfish, and shad. Considering the current management situation for these other species, the NC monkfish gillnetter should be applauded, not punished.

“Furthermore, even if these NC fishermen (approx. 6) did fit in under the control date, they typically do not catch the large amounts of monkfish or fish the large number of trips necessary to qualify for a permit under the “preferred option”. However, they cannot operate under extremely low trip limits or measures allowing for monkfish to constitute only 10% of the total catch since these fishermen will target and land exclusively monkfish during January-April.

“Finally, these NC fishermen are right now fishing next to vessels from the northern area that will continue to fish off NC and catch monkfish while NC monkfish fishermen will not be able to do the same if the proposal remains unchanged. This is unfair to NC fishermen and directly violates National Standard #4 of the Magnuson-Stevens Act.

“Therefore, NCFE strongly urges the NEFMC & MAFMC consider allowances for these gillnet fishermen now actively catching monkfish. This can be accomplished by the following:

Extend the Southern Fishery Management Area (and the formal range of monkfish management) to include statistical areas #631 and #635.

Gillnet fishermen fishing in Statistical Areas #631 & #635 with at least 1,000 lbs. of whole monkfish landed and recorded on a valid state landing tickets between January 1, 1995-March 14, 1997 should be granted a permit and a number of days-at-sea to target harvest monkfish.”

NMFS published the monkfish control date notice on February 27, 1995 in the Federal Register. This official government publication is distributed nationally and serves as the official form of notification for all Federal regulations. In addition to this official notification, NMFS mailed a notification to all Northeast region permit-holders that announced the establishment of a monkfish control

date. This mailing included holders of summer flounder and sea scallop permits that fish from NC. The control date notice, furthermore, did not specify a management or geographical boundary where the control date would apply. As published, it applied to all US vessels that land monkfish.

The Councils responded to the public hearing comments by reaffirming the original policy that management was to apply throughout the range and that the qualification criteria therefore would apply to any vessel landing monkfish. According to the proposed qualification criteria, either federal or state records could be used to substantiate participation. Responding to comments by day-boat fishermen, the minimum number of trips and landings per trip thresholds were omitted from the final preferred alternative qualification criteria to accommodate vessels that landed small volumes of monkfish over many trips, as is typical in NC.

The Councils discussed, but could not develop qualification criteria that would admit the small number of NC vessels into the monkfish limited access program without opening the floodgates to other vessels that had entered the monkfish fishery since the control date. The industry later indicated that there were 50 to 75 vessels in NJ that had entered the fishery. Since limited access coupled with days-at-sea allocations is a conservation measure for monkfish, the Councils could not liberalize the qualification criteria in the way that NCFEA suggested without harming the vessels that legitimately participated in the monkfish fishery before the control date.

The proportion of vessels that would not qualify for monkfish limited access ranges from twelve percent (11 vessels) in RI to 100 percent (1 vessel in DE; Table 12). For all states, there were 333 vessels that had at least one trip targeting monkfish (monkfish revenue was greater than 30 percent of total revenue), 35 percent of all vessels that had trips targeting monkfish. For NC, the fraction of vessels that targeted monkfish during 1995-1996 and would not qualify (according to NMFS records only) would be 30 percent of total monkfish vessels (Table 12). States with the highest proportion of non-qualifying vessels that targeted monkfish during 1995-1996 are PA, MD, and NH. It is possible that monkfish landings in all four states are underreported and a greater fraction will ultimately qualify for monkfish limited access. The greatest number of vessels (146) would fail to qualify in MA.

Vessels that potentially fail to qualify account for only 7 percent of trips and 6 percent of landings for all vessels with directed trips (Table 12). NC vessels that may not qualify account for only one percent of trips and two percent of landings. It is likely that these amounts in NC are underreported through the federal dealer reports and could be significantly higher, however. Even though these trips and landings by non-qualifying vessels may be prohibited by the preferred alternative, not all of the indicated monkfish landings would be prevented. A significant fraction of monkfish landings by the vessels that do not qualify for limited access may still occur under the bycatch trip limits, even though they represent trips where monkfish revenue was greater than 30 percent of total revenue. These potential landings within the bycatch restrictions have been estimated in Section 7.1.5.1.1.5.

When the Councils developed the final management measures and at the February 1998 public hearings, NC fishermen restated their belief that they were not properly notified that the monkfish control date applied to them. Mr. James Fletcher, Director of the United National Fishermen's Association, stated that many NC boats entered the monkfish fishery because the February 1997 public hearing document indicated that their catches would be exempt from management. The NC fishermen maintained that it was unfair that they were not properly notified of the control date and they were misled by the management proposals.

NC data (Patricia Murphy, DEHNR, pers. comm.) for 1994-1997 on the other hand contradicts this information. Gillnet vessels in NC began targeting monkfish during the spring of 1994 (Figure 13), prior to the publication of a monkfish control date. It appears that the number of vessels in the monkfish fishery increased slightly in 1995, but catch per trip increased significantly. The monkfish landings per trip remained high in 1996 and fell slightly in 1997. The number of vessels appeared to remain at 1995 levels during 1996 and 1997. Data for March and April 1997, however, were incomplete and only represent the landings and trips for vessels in Dare County.

For the vessels in the monkfish gillnet fishery during 1994, failure to receive the 1995 control date notification would have had no bearing on their decision on whether to enter the fishery. It is possible that additional vessels entered the fishery in 1997 after the public hearing, but this is not evident in the NC landings data.

Table 12. State-by-state comparison between trips targeting monkfish (monkfish revenue greater than 30% of total revenue) during 1995-1996 by vessels that would not qualify for monkfish limited access with 1995-1996 trips by vessels that would qualify for monkfish limited access. The percent of trips and revenue comparisons were adjusted to account for the difference in time between the two periods.

State	Non-qualifying vessels with trips targeting monkfish						Qualifying vessels		
	Vessels	Percent	Trips	Percent	Monkfish Revenue ('000)	Percent	Vessels	Trips	Monkfish Revenue ('000)
ME	27	29%	136	9%	173	11%	65	560	\$1,439
NH	22	69%	425	43%	749	57%	10	324	556
MA	137	37%	1,753	11%	1,648	10%	238	4,005	14,094
RI	20	24%	267	5%	440	7%	65	1,587	5,548
CT	2	50%		6%		2%	2		
NY	26	74%	219	63%	183	59%	9	58	127
NJ	29	53%	344	23%	447	28%	26	443	1,136
PA	0		0		0		1		
DE	0		0		0				
MD	9	90%	134	88%	185	91%	1		
VA	24	67%	39	20%	93	38%	12	75	152
NC	7	64%	10	30%	44	66%	4	8	23
Others/ Unspecified	30	48%	362	12%	690	21%	32	1,045	2,542
Grand Total	333	42%	3,691	13%	4,653	15%	465	8,125	\$25,674

4.5 National Standard 5 – Efficiency

“Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.”

The FMP proposes to establish a limited access fishery for monkfish and vessels that qualify to participate would receive an annual days-at-sea allocation. Limited access is necessary to ensure that the proposed management measures meet the FMP goals, reduce fishing mortality, and rebuild stock biomass. It therefore has implications for efficiency in harvesting the resource that would exceed those for other forms of management. These implications and the factors that the Councils should consider when establishing a limited access system are described below. Limited access permits are transferable to other fishermen through vessel sale or other forms of conveyance. The permit could be transferred to another vessel along with all other permits on the original vessel, provided that the new vessel does not exceed certain characteristics thought to control fishing power.

4.5.1 Efficiency in the utilization of resources

At present, there is too much harvesting capacity in the monkfish fishery to reduce fishing mortality and achieve optimum yield, without excess capital and labor in the fishery dissipating the benefits. The proposed qualification criteria will restrict access to the fishery to those vessels that legitimately targeted monkfish or to those that had a high dependence on monkfish as a catch of mixed species prior to the control date. Although the qualification criteria is not the primary management measure intended to reduce fishing mortality, the proposed limited access program reduces excess capital and labor that entered the fishery since the February 27, 1995 control date. These cost savings are estimated in Section 7.1.6 to total \$20 million over 20 years.

Even more important, the FMP proposes to rebuild stock biomass and as a result, catch per unit effort. Once the stock rebuilds, a directed fishery managed by days-at-sea limits will improve the profitability of those days and the fishing industry. As a result on the limit on days, there is little incentive to fish quicker during a fishery season to capture more fish than another vessel. Incentives to increase capital or labor and make the days more productive remain, but the limited access provisions include upgrade limits that restrict a vessel's ability to mitigate the days-at-sea restrictions. Gillnet vessels are furthermore limited in the number of nets they may set at any time. Trawl vessels will be limited in the amount of net they can pull via the proposed horsepower upgrade limit. When rebuilding occurs, the Councils will match the days-at-sea allocations with the harvesting capability and the anticipated yield from the resource. The lower fishing mortality rate will also rebuild age-structure, enhance yield-per-recruit and promote the landings of larger, more valuable monkfish. The proposed size limit, while increasing costs in the short term, is expected to keep vessels from targeting small fish during the valuable days-at-sea. This measure also will increase the size of monkfish that the industry catches.

Compared to other forms of management, the days-at-sea program is very efficient. Days are easily monitored with a vessel tracking or call-in system and management via days-at-sea do not create a race for fish or create incentives to increase capital to the same extent as would management by quota. An optional call-in system is more costly to the government over the long term, but this flexibility is necessary for some vessels where an expensive VTS is too costly. Management via a quota (non-preferred alternative 1) would have caused the fleet to target monkfish early in the season before the quota was taken. Vessels might respond to quota management by increasing their speed and attempting to fish in poorer weather during the open monkfish season. Other forms of management, by themselves, can also decrease efficiency because they reduce catch per unit effort or force fishermen to pay for new technology more so than they would under days-at-sea management. Examples where fishermen would be less efficient are area closures and trip limits, implemented without other complementary measures that would reduce or restrict time at sea for fishing vessels.

4.5.2 Limited access

Limited access is necessary to manage fishing effort and link days-at-sea limits to the expected fishing mortality rates. This linkage will allow adjustment of days-at-sea allocations to rebuild the fishery and achieve optimum yield. Without limited access, there would be no limit on total days fished as new vessels enter the monkfish fishery, in response to reductions in days for vessels presently in the fishery. Since the Councils have chosen effort management as the primary management strategy, it is necessary to control other inputs of effort, capital, and labor to achieve the FMP goals, reduce fishing mortality, and rebuild the resource to conditions that will achieve optimum yield. Without limited access, the Councils would have to respond to the increased fishing pressure by adding or reducing other limits, e.g. number of nets, trip limits, closed areas, etc.

4.5.3 Factors considered

4.5.3.1 Present participation in the fishery

The Council considered the equity and fairness of the proposed limited access qualification criteria on vessels that entered the monkfish fishery after the control date. In nearly all cases, the fishermen refitted the vessels to pursue monkfish at a moderate cost. Modifications were necessary to target monkfish such as reconfiguration of deck equipment, adding winches that hold more cable, or simply purchasing new gear. These vessels chose to target monkfish because of regulations in other fisheries (multispecies, scallop, sturgeon, etc.) or because of reduced abundance of target species (groundfish, bluefish, weakfish, etc.). Some of this recent fishing effort will shift back into the original fisheries and some will seek other species like spiny dogfish, whiting, bluefish, weakfish, or croaker. The characteristics of these vessels are analyzed and discussed in the Fishery Impact Statement (Section 6.0).

4.5.3.2 Historical fishing practices, and dependence on the fishery

Basically, there are three types of participants in the monkfish fishery: vessels that target monkfish alone, vessels that target a mix of species including monkfish, vessels that catch and land monkfish incidentally to other species. In the first case, the qualification criteria are sufficiently low that any vessel that had a good year of fishing (or four mediocre ones) prior to the control date should easily qualify for limited access. These vessels may have to reduce fishing time until the stock rebuilds, but they will be the primary beneficiaries of the expected stock rebuilding. Many vessels that target a mix of species including monkfish will also qualify under the proposed qualification criteria. These vessels often rely on monkfish landings for a significant (20 to 50%) of their fishery revenue. Vessels in the multispecies fishery often fall into this category and the proposed qualification criteria that applies to them is more liberal than for other vessels. The limited access proposal thus recognizes and makes allowance for this partial dependence on monkfish revenue. Most of the vessels that land monkfish as an incidental catch when targeting other species will not qualify for monkfish limited access. This failure to qualify will prevent vessels from increasing effort and targeting monkfish, when they have not previously participated in the directed fishery. Bycatch allowances for vessels that do not qualify have been set at levels that will require vessels to discard monkfish on a very small proportion of trips (Section 7.1.5.1.1.5.2). It may be attractive to reduce monkfish landings for vessels that have a low reliance on monkfish revenue, but the available management options either increase discards to unacceptable levels or would greatly reduce target catches, both reducing efficiency. The characteristics of these vessels are summarized and described in Section 5.4.

4.5.3.3 The economics of the fishery

The economics of the monkfish fishery is analyzed and described in Section 5.4.5.

The capability for non-qualifying vessels to engage in other fisheries is analyzed and described in the Fishery Impact Statement (Section 6.0). This evaluation is based on the fishing history and permit status of those vessels when they did not target monkfish. Evaluation of the capability of vessels to engage in new fisheries would require an analysis of engineering and stability of each vessel that fails to qualify for monkfish limited access, well beyond the scope of this FMP. The conclusions in the Fishery Impact Statement are therefore based only on past vessel history, their permit status, and the present regulations in alternative fisheries.

4.5.3.4 The cultural and social framework and affected fishing communities

The anticipated impacts on the cultural and social framework are discussed in the Social Impact Analysis, Section 7.1.7. The economic impacts on communities are estimated in Section 7.1.7.3.

4.5.3.5 Other relevant considerations

A new limited access program that overlaps other fishery management programs and jurisdictions raised many issues about equity and fairness. One of the major issues was the effect of a control date on vessels that recently began fishing in a region (NC) within the range of management. The other significant issue was the requirement that multispecies vessels which also qualify for monkfish limited access use a multispecies day-at-sea to target monkfish. The rationale and evaluation of these issues are discussed in Section 4.4.1.

The implementation and annual administrative costs for the limited access program are relatively low, compared with other limited access programs that have been implemented for multispecies (NEFMC 1995) and sea scallops (NEMFC 1993). The estimated costs for the limited access program are low because limited access is piggy-backed onto existing programs. The number of new limited access vessels is only 65 to 130 vessels, while the number of vessels that is expected to qualify is over 600. The Paperwork Reduction Act analysis (Section 7.7) estimates the cost of implementation during year one will be \$20,300 to the public and \$100,200 to the government. Continuing costs for permit renewal is estimated to be \$12,400 to the public and \$76,100 to the government.

4.5.4 Analysis

Most overcapitalization of the fishery has arisen from effort shifts to target monkfish, not because of construction of new or larger, more powerful vessels. While this shift has been positive for other overfished resources, it has increased monkfish fishing effort beyond sustainable levels. The Multispecies and Atlantic Sea Scallop FMPs (Amendment 5 and Amendment 4, respectively) both forecasted this effort shift, but at the time (1992-1993) monkfish was viewed as an alternative fishery that could absorb some fishing effort, as long as targeting of small monkfish could be avoided. Thus the economic inefficiencies caused by too much fishing effort is the result of redeployment of capital and labor within the fisheries of the Northeastern U.S.. Following implementation of the FMP, this excess capital could shift into other fisheries or could be redeployed in other sectors of the economy through gradual vessel attrition. A more thorough evaluation of the economic costs and impacts are described in Sections 7.1.6 and 1.1.

Limited access was chosen by the Councils as an effective way of achieving OY without imposing serious costs inherent in other management systems or creating economic waste by raising discards. Efficient utilization was not the sole criteria for selecting limited access, however. No management measures within the FMP restrict the fishery in ways that prevent industry from using more efficient technology, unless the technology also increases fishing power and threatens the achievement of OY. Restrictions on horsepower, vessel length and size, and on numbers of nets are therefore proposed as conservation measures. These restrictions, however, perpetuate the status quo and do not impose new restrictions that would make the industry less efficient. The FMP proposes no restrictions on the shoreside harvesting or marketing of monkfish. Vessels are however required to land monkfish or monkfish tails to reduce the potential for economic waste caused by fishermen retaining valuable livers and discarding monkfish that are less than the minimum size. Without this liver restriction, the fishery could greatly reduce yield-per-recruit and spawning potential from harvesting monkfish at younger ages and preventing the achievement of OY.

4.5.5 Economic allocation

No allocation of resources or fishing opportunities is proposed by the FMP on the basis of economic factors.

4.6 National Standard 6 – Variations and Contingencies

“Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.”

Considerable uncertainty exists about the biological targets (MSY proxies), the response of the monkfish stocks to lower fishing mortality, optimum yield, and the effectiveness of the proposed measures to achieve the FMP objectives. Recruitment has varied by at least an order of magnitude in the last 30 years. It therefore will have a significant influence on whether the FMP can rebuild the monkfish resource to the biomass target or the maximum mortality rate in years 4 to 6 that will be needed to achieve rebuilding. Equally important is the recovery of other stocks and changes in other fisheries regulations that could influence fishermen’s decisions to target monkfish or other species. These sources of uncertainty and variation are explained or analyzed in the estimation of biological reference points (Section 2.4.1.1), future yield (Section 7.1.5.2.5.1) and economic net benefits (Section 7.1.6).

The Monkfish FMP includes a framework adjustment procedure, described in Section 3.11, that would allow the Council to respond more quickly to changing conditions than would be possible through a plan amendment. The management measures that could be adjusted to respond to changing conditions are described in Section 3.11.4. The Councils also intend to appoint a Monkfish Monitoring Committee (MMC) which would

evaluate the plan's success in reducing mortality and rebuilding stock biomass. The MMC will develop and recommend management adjustments to achieve the plan objectives. During year 3, the MMC will also review the biological reference points, the management targets, and OY. This review will take place after collecting two years of data while the proposed management measures have been in place. This re-evaluation is expected to improve the estimate of the target reference points, OY, and the mortality limits needed to rebuild stock biomass in (at that time) six years.

4.7 National Standard 7 – Costs and Benefits

“Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.”

Monkfish is a very important resource in need of management due to overfishing and the requirement to achieve OY. The monkfish fishery has recently ranked as high as third in total landings and value in New England and occasionally has had the highest annual value for any New England groundfish. The increasing importance to New England fisheries has partly been due to the decline in landings of other species and partly due to the increasing price of monkfish livers. Unfortunately, the monkfish resource is significantly overfished and depleted, especially in the southern area. States implemented minimum size and limits for liver landings during 1993, but these regulations have not reduced fishing mortality. Since monkfish occurs primarily in federal waters, state laws cannot effectively manage the resource and prevent overfishing.

After the stock biomass rebuilds, a directed fishery that is very profitable and efficient is anticipated, provided that monkfish bycatch is held in check. Based on the anticipated yield at OY, the net economic benefits compared to the status quo will increase by \$20 million over 20 years. Additional cost reduction is expected from limits on days-at-sea. These gains are estimated and described in Section 7.1.6. Mortality reduction is expected through days-at-sea limits in concert with other management measures, while at the same time maximizing the industry's flexibility to determine the optimal time and location to fish. Administrative, compliance, and enforcement costs are expected to be low (Section 7.7) because of the FMP's reliance on existing systems for reporting and monitoring days. Based on these general factors, the Monkfish FMP is therefore needed to improve benefits, reduce costs, and achieve optimum yield for a fishery resource that is predominately found in the EEZ.

4.8 National Standard 8 – Communities

“Conservation and management measures shall, consistent with the conservation requirements of the Magnuson-Stevens Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to:

- 1) Provide for the sustained participation of such communities; and*
- 2) To the extent practicable, minimize adverse economic impacts on such communities.”*

The importance of the monkfish fishery to communities and the expected impacts of the preferred and non-preferred alternatives are described in Section 7.1.7.3. Considerable reductions in catch and mortality are necessary to stop overfishing and rebuild stock biomass, however, and this requirement imposes significant economic impacts

on communities that depend on fishing. Communities that have a greater reliance on the directed monkfish fishery and therefore have a greater fraction of vessels that qualify for limited access tend to have greater impacts. Once stock rebuilding occurs, these same communities are anticipated to benefit from the higher yield when days can be restored to limited access vessels.

The preferred alternative attempts to minimize these impacts by allowing the greatest number of vessels to qualify for monkfish limited access. It also attempts to minimize the impacts on communities that depend on the multispecies and scallop fisheries by integrating the monkfish management into the existing day-at-sea programs in those fisheries. Vessels that do not qualify for monkfish limited access would have lower bycatch trip limits to accommodate extra day-at-sea granted to the multispecies and scallop vessels that qualify for monkfish limited access. In contrast, the preferred alternative allows qualifying vessels to use multispecies or scallop days to target monkfish while allowing a sufficiently high bycatch trip limit that accounts for greater than 95 percent of trips where monkfish is caught as bycatch. The preferred alternative, therefore, minimizes the impact on communities that rely on mixed-species fisheries that are common in New England and the Mid-Atlantic.

4.9 National Standard 9 – Bycatch

“Conservation and management measures shall, to the extent practicable:

- 1) Minimize bycatch; and*
- 2) To the extent bycatch cannot be avoided, minimize the mortality of such bycatch.”*

The Monkfish FMP proposes to manage monkfish via regulations on day-at-sea, trip limits, size limits, and qualification for limited access. The day-at-sea program integrates monkfish management into the existing day-at-sea program, where possible, to accommodate the mixed-species nature of the multispecies fishery. The implementation of an effort reduction program via day-at-sea limits, moreover, has a very positive impact on discard mortality (NMFS 1997). Similarly, the limited access measure could also reduce bycatch of other species, depending on how vessels that do not qualify respond to the new regulations. The anticipated responses by vessels that targeted monkfish after the control date are explained in the Fishery Impact Statement (Section 6.0). Trip limits usually are very problematic, because fishermen can be forced to discard species that they cannot avoid while targeting something else. The Councils proposed bycatch limits that accommodate the majority of conditions when monkfish are caught and landed incidentally to other species. Trip limits to control bycatch were set so that only the highest five percent of trips (ranked by monkfish landings) would have to discard monkfish, if they did not change fishing behavior. Some bycatch limits are at even higher levels than this objective goal recommended by the PDT and therefore have an even lower likelihood of increasing bycatch. The implications of various size limits were evaluated by the Councils and are explained below. It appears that the 11-inch minimum size prevents the industry from targeting small, immature monkfish while minimizing the amount of discarding that would be caused by this management measure.

Management measures included in the FMP that minimize bycatch are: integration of monkfish management into existing days-at-sea programs, minimum mesh limits that reduce bycatch of other species while targeting monkfish, bycatch allowances that allow 95 percent or more of trips to land incidental catches of monkfish, and an 11-inch size limit in areas and conditions where catches of immature monkfish are unavoidable.

4.9.1 Discard data collection and analysis

The FMP will require all vessels with limited access monkfish permits to report fishing effort and estimate landings and discards on Vessel Trip Reports (VTR, Section 3.2.1.3). These reports will be used to document the timing, prevalence, and amount of discarding that occurs in the monkfish fishery. In

addition to documenting bycatch of other species and the effects on management/recovery of those stocks, the VTR data will help the Council to identify the amount of regulatory discarding and under what conditions excessive discarding occur. The Councils could use this data to support adjusting the management measures to reduce bycatch of monkfish and other species through the framework process established by this plan.

Although the VTR data will document and allow estimation of discards via a nearly complete census of the directed monkfish fishery, the existing sea sampling program often provides more reliable and detailed catch and effort data. Samples are taken on a tow-by-tow basis and the onboard observers collect more detailed information about the gear and the way that it is fished. This data can be critical to the Councils evaluation of different mesh options, potential gear restrictions, and various time/area/gear closures. Total discard amounts are often estimated by visual examination for each species that the vessel catches, including fish, some shellfish, marine mammals, and birds. The onboard observers also collect length data for landed and discarded finfish species. This information is crucial to estimating total discards by size and including it in the catch-at-age data for assessment of stock abundance and fishing mortality. Size data for landings and discards are also important for estimation of the exploitation pattern and the effect that management has had on it.

Unfortunately, sea sampling data is often woefully inadequate for estimating the size distribution of discards. Sampling frequency is often unbalanced (due to the emphasis on collecting marine mammal data aboard gillnet vessels) and usually leaves large gaps in the data when trying to estimate discarding by season, gear, and/or area. The present sea sampling program intercepts about one percent of total trips in the Northeast Region, while sampling for gillnet vessels approaches 10 percent of total trips. Although the VTR data could assist scientists in estimating and characterizing total discards (provided the data agree with the sea sampling data and are unbiased), sea sampling should be increased by two- to five-fold to adequately estimate discarding for the purposes of stock assessment. In the Councils' opinion, any increase in the frequency of sea samples would improve the information needed to manage monkfish and other species, but a five percent sub-sample of total trips stratified by gear, area, and season would provide a robust estimate of discarding. The Councils recognize the costs associated with deploying onboard observers, but these costs could be justified by the quality of information collected for all species in the commercial catch.

4.9.2 Discard implications of the proposed management measures

Increased discarding is anticipated from implementation of the trip limits and minimum size limits. Day-at-sea limits in the monkfish fishery, the multispecies fishery, and in the scallop fishery will reduce bycatch of monkfish and other species. The proposed limited access program will also reduce monkfish discards and could reduce bycatch of other species, depending on the actual response of vessels that do not qualify for monkfish limited access. The combined effects of the limited access program; day-at-sea reductions for monkfish, multispecies, and scallops; and the proposed directed fishery and bycatch trip limits have been included in the estimate mortality implications for monkfish (7.1.5.1.1.3). Discarding of monkfish for several non-preferred alternatives are also analyzed and considered in this section. The discard implications of the proposed minimum size limit and various alternatives are estimated and considered in Section 7.1.5.1.1.6. The effect of various minimum size limits as a function of the discard mortality rate is shown in Figure 34.

There are some factors that would reduce monkfish discards that could not be analyzed, however. A large fraction of monkfish is presently discarded because of small size or no markets for monkfish caught on long trips. The amount of discards in the present fishery is estimated in Section 7.1.5.1.1.6.6. These discards will decrease by the same fraction as the ratio between future landings plus regulatory discards to current landings. This fractional reduction in discards that presently occur was not included in the evaluation of mortality reduction and could have significant implications for monkfish mortality reduction and stock rebuilding. This source of mortality will need to be carefully monitored to evaluate the effectiveness of management during the monitoring phase of the plan.

Ultimately, the success of the plan will be borne out in reductions in fishing mortality and increases in stock biomass observed through survey data.

A second factor that the Councils could not quantify is the effect that the proposed size limit will have on fishing behavior. It is possible, that fishermen will avoid areas where small monkfish are prevalent and cannot be landed due to the minimum size regulation. While this shift in effort is usually absent in other management systems, the monkfish vessels have a greater cost associated with fishing in areas where small fish occur. Limited access vessels will only have 40 days to fish for monkfish and fishing on small fish not only wastes capital and manpower, it also wastes valuable fishing time. The Councils expect that the effort restrictions will act as a powerful incentive for fishermen to fish when and where monkfish of legal size occur and avoid areas where small fish are abundant. Fishermen have testified throughout the Councils deliberations that there are times and areas where fishermen observe a segregation of large and small fish. These areas, however, cannot be identified by a semi-annual research survey and are unpredictable.

Permits are required of all vessels that land monkfish and must submit a vessel trip report. For most vessels, the reporting burden is small compared with the value of the trip or monkfish landings. Most vessels already have reporting requirements for other species, like groundfish, scallops, and summer flounder. The addition of monkfish adds little, if any, reporting burden. A few vessels, however, may not otherwise be required to make a vessel trip report and would not apply for a general category monkfish permit to avoid reporting. Fishermen on these vessels may be forced to discard their occasional catches of monkfish or to unload them illegally. The former response could increase discard mortality and waste, but the Council expects these amounts to be negligible.

4.9.3 Management measures to minimize bycatch and bycatch mortality

Compared with the alternative, the preferred alternative was chosen to minimize the impacts on fishermen in fisheries where monkfish is an incidental catch and minimize the amount of regulatory discards that would occur. The preferred alternative is expected to increase regulatory discards less than the non-preferred alternatives. Regulatory discards are expected to increase by 675 (4% of estimated catch), 665 (5%), and 3,191 mt (31%) in years 1, 2, and 4, respectively (Table 94 and Table 95). For non-preferred alternatives 3a and 3b, regulatory discards are expected to increase by 914 (5%) to 1,424 (9%), 886 (5%) to 1,443 (9%), and 3,350 (31%) to 2,815 (25%) mt in the same time periods.

Discards in year 4 are probably overestimated for DAS Qualifiers and Monkfish-only categories because the FMP calls for no day-at-sea allocations in year 4 and the amount those vessels caught was counted as discards if the monkfish revenue did not exceed 50 percent of the total for a given trip. The likely outcome, however, is that many of the vessels that qualify for monkfish limited access will turn away from the monkfish fishery if the days allocated are reduced to zero.

Other examined options included rejected alternative 1 (Section 7.1.4.4.1) and rejected alternative 4 (Section 7.1.4.4.3), one that would allocate days to all monkfish qualifiers, regardless of their permit status (Section 4.4.1), and the cumulative impact of the Monkfish FMP preferred alternative and the preferred alternative for Amendment 7 to the Atlantic Sea Scallop FMP (Section 7.1.11.1). The Councils rejected alternative 1 because the bycatch trip limits were too low to provide for a quota allocation for the directed fishery. The proposed trip limits for alternative 1 would not accommodate monkfish landings when they are a component of a mixed catch of targeted species. The estimates of discards for rejected alternative 1 were not as rigorous as those for the preferred alternative, but the initial estimates by the PDT (Appendix I) were unsatisfactory. Likewise, non-preferred alternative 4 proposed trip limits of 200 pounds tail-weight per day-at-sea for all vessels to enable the Councils to allocate an acceptable level of days to the directed fishery. Most comments were against (then) non-preferred alternative 4, because it appeared that it would cause excessive discarding of monkfish by vessels that have incidental catches of monkfish or that target them as a component of a mixed catch. The Councils examined a wide variety of bycatch trip limits and the analyses are provided in Section 7.1.5.1.1.5.3.

An evaluation of another option that would allocate days to all monkfish qualifiers, regardless of their permit status was included in the Final FMP to show the impacts of addressing some equity concerns raised during the February 1998 public hearings. The details of this evaluation are presented in Section 4.4.1. To show the ramifications of a management approach that could allow monkfish-only days for all vessels that qualify for monkfish limited access, more conservative qualification thresholds and bycatch trip limits were considered. For year 2, regulatory discards total 2,171 mt (18% of total catch) vs. 665 mt (5% of total catch for the preferred alternative (Table 10 and Table 11).

The National Environmental Protection Act requires the Councils to examine the cumulative impacts of related laws and regulations or proposals for new laws or recommendations. One of the more significant proposals is Amendment 7 to the Atlantic Sea Scallop FMP, since many scallop vessels catch and land monkfish bycatch while targeting scallops. Under the Monkfish FMP, limited access scallop vessels that qualify for monkfish could also use a portion of their scallop day-at-sea to target monkfish. Amendment 7, therefore, has implications for monkfish bycatch as well as for monkfish as a targeted species. Section 7.1.11.1 describes the impacts in more detail. Regulatory discards would generally be lower than for the monkfish preferred alternative alone, estimated to be 637 (4% of total catch), 634 (5%), and 2,941 mt (35%) for years 1, 2, and 4, respectively.

The implications for discard mortality caused by various size limits is described in Section 7.1.5.1.1.6. During the development of the Monkfish FMP, the Council considered various minimum sizes ranging from 11 to 14-inches tail-length and various implementation options by area and gear. Although it appeared that there could be a benefit of a 14-inch minimum size limit in the Southern Fishery Management Area, the Councils chose to implement an 11-inch minimum size limit throughout both management areas to reduce discards and to lower

enforcement costs associated with different size limits by area. An 11-inch minimum size limit appears to approximate current practices and should cause minimal discarding. In the Southern Fishery Management Area, a greater fraction of the total monkfish catch comes from the directed fishery and the monkfish gillnet fishery. In the former case, the Councils believe that vessels targeting monkfish could avoid concentrations of small monkfish, depending on conditions. The segregation of monkfish between 11 and 14-inches tail length from larger fish might not be as distinct, reducing the fishing industry's ability to avoid illegal fish. The Councils proposed a one-year delay in the higher size limit to allow for more review of this issue and evaluate the need for a higher size limit to meet a potential shortfall in year 2 mortality targets. Gillnet fishermen, on the other hand, rarely catch monkfish less than 14 inches (Figure 37 and Figure 38). Discards at the higher size limit for gillnet vessels would therefore be minimal.

Area closures were not included in the preferred alternative, because not enough is known about monkfish to enable closures that would, among other things, reduce discarding of small monkfish. Area closures are however included within the framework adjustment process, possibly as a measure to reduce discards. Vessel Trip Reports and the Sea Sampling Observer Program data will be instrumental in assessing various area closure options. It might seem attractive to encourage vessels to use gillnets to target monkfish, instead of trawls or dredges. The Councils rejected this approach because it would require vessels to change gear (possibly endangering human life at sea) and gillnets are known to have higher rates of marine mammal encounters than other fishing gears used in the monkfish fishery.

The Councils determined, on the other hand, that it is inappropriate for vessels to use scallop dredges to target monkfish, as had been customary during periods of low scallop abundance. Scallopers using dredges, especially in the Southern Fishery Management Area, tend to catch large amounts of small monkfish (Figure 38). Anecdotal information indicates that their catch of small fish occurs, even when they are fishing next to other gear that is capturing predominately large monkfish. One possible explanation is not that scallop dredges catch more small fish, but that large monkfish are able to escape the oncoming, noisy dredge better than small fish. This effect, if it occurs, would make a dredge unsuitable for targeting mature monkfish without small fish contributing to a large fraction of their catch.

4.9.4 Implementation and monitoring

The Councils' Monkfish Monitoring Committee will seek and evaluate discarding when it reviews the effectiveness of the FMP and develops management options. The Monitoring Committee review and report is a mandated, integral part of the Councils' framework adjustment process. Among the management measures that could be considered to reduce discarding are area closures, size limits, and gear restrictions. Increases in size limits would be limited to those that would produce a positive benefit within two years, accounting for potential increases in discard mortality. Mesh size is currently thought to have little effect on monkfish selectivity, owing to the unusual morphology of monkfish. Other gear technology, grates for example, could be very effective in avoiding capture of small monkfish and could be implemented by a framework adjustment.

4.9.5 Other considerations

Bycatch of species governed by other laws (Marine Mammal Protection Act – Section 7.5, Endangered Species Act – Section 1.1, and The Migratory Bird Treaty Act – Section 7.1.9) is discussed in other sections of this document.

4.10 National Standard 10– Safety of Life at Sea

“Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.”

The Monkfish FMP proposes no area closures or closed seasons that might cause fishermen to fish under conditions that they would not otherwise have fished. The management measures within this FMP, moreover, maximize the flexibility of fishermen to choose when or where they can fish, when compared with other management options. Fishing is already a competitive environment that forces fishermen to search for higher concentrations of fish and to employ new, potentially dangerous gear to maximize their catch. To the extent practical, the FMP minimizes the danger to life at sea while meeting the mortality objectives and other requirements of the Magnuson-Stevens Act and related laws.

4.10.1 Operating environment

No area closures, closed seasons, or other management measures that might cause vessels to extend trips, take trips under adverse conditions, or fish further from shore are proposed by the FMP. Compared to the alternatives, the preferred alternative will maximize the ability for fishermen to fish during the most advantageous times. The other form of management that the Councils seriously considered was establishing seasonal quotas (non-preferred alternative 1). Under this system, there is an incentive for fishermen to concentrate fishing effort immediately after the season opens to maximize their share of the quota before it is filled and the season is closed. Under the preferred alternative, each vessel will be allocated days to target monkfish at any time during the fishing year. In addition, the preferred alternative proposes to allow vessels to carry some unused days into the next fishing year to avoid situations where a vessel might be forced to fish at the end of a fishing year to avoid losing days.

4.10.2 Gear and vessel loading requirements

The FMP proposes no new gear requirements, except for scallop vessels that qualify for monkfish limited access. Due to the small size of monkfish captured in the traditional scallop dredge, continued targeting of monkfish by vessels using dredges would not be consistent with the plan goals. Scallopers that qualify for monkfish limited access and are on a monkfish day-at-sea will therefore be required by the FMP to use gear having mesh no less than 10-inches square or 12-inches diamond. Scallopers may be able to modify their scallop dredges so that it meets the requirements by removing the rings from the dredge and replacing it with a mesh bag. Some other gear modifications may be necessary, but the gear in any case is expected to be lighter, and potentially easier to handle than would be a standard scallop dredge. Vessels using gillnets to target monkfish will be required to use net tags to identify their nets. Deployment of net tags is not expected to present any significant, new hazards to safety.

4.10.3 Limited seasons or areas

No season or area closures are proposed by the FMP. The framework adjustment procedure allows the implementation of season or area closures, but the effects on safety will be examined when the duration and boundaries of the proposed closures are specified.

4.10.4 Consultation

The Councils twice convened its Law Enforcement Committee to evaluate and advise the Councils on Law Enforcement aspects of the plan⁷. The US Coast Guard has representation on this committee and also is a voting member of each Council. In addition, the Councils sent a copy of the Draft FMP and public hearing document to the US Coast Guard for comment. No concerns about the safety of life at sea have been raised by the Coast Guard or by the public.

4.10.5 Mitigation measures

Although the FMP requires no mitigation measures (its management measures actually promotes the safety of human life at sea and presents no new dangers or threats), there are management measures that increase flexibility and enable fishermen to choose fishing methods and seasons that are less dangerous. The foundation of day-at-sea management is to allow fishermen the flexibility to choose when they want to fish. If certain seasons or times present adverse weather conditions that would exceed a vessel's designed seaworthiness, then a fisherman could advance or postpone when he used the 40-day allocation. The only aspect of the day-at-sea program that could force a fisherman's decision to fish is at the end of the fishing year when he may have not fished all of his day-at-sea. To mitigate this potential problem, the FMP proposes to allow fishermen to carry forward up to 10 unused days into the next fishing year. As a result, a fisherman would not have the incentive to extend his last trip in the year to use up his days or to make a trip that he would not have otherwise made because the end of the fishing year was near.

Net limits and the day-boat gillnet category are other measures that have potentially mitigative or positive effects on safety. The FMP proposes net limits and limited access that will reduce the amount of gear that fishermen deploy. Thus, it removes the incentive to increase the amount of gear in response to less fishing time. At the same time, the day-at-sea program imposes some problems for leaving gear at sea while it continues to fish. To compensate for a requirement that all vessels bring their gear to port when they leave the fishing grounds, the FMP proposes to allow gillnet fishermen to declare into a trip- or day-boat category. If the vessel declares into a day-boat category, its time at sea is counted differently but it may leave its gear in the water between trips. This measure is intended to accommodate the various ways that fishermen operate and avoid forcing them to a new mode of fishing for which their vessel was not designed.

5.0 DESCRIPTION OF THE RESOURCE (AFFECTED ENVIRONMENT)

5.1 *Biological Environment*

5.1.1 Distribution

The goosefish (commonly referred to as monkfish) is a member of the family Lophiidae or anglerfishes. It is a widely distributed benthic fish that occurs in the Northwest Atlantic Ocean from the northern Gulf of St. Lawrence southward to Cape Hatteras, North Carolina. The species is known to inhabit waters from the tide-line to depths as great as 840 m (Markle and Musick 1974). They also tolerate a wide range of temperatures, being taken to the north on the Newfoundland Banks in water as cold as 32° F and in the southern waters exceeding 70° F. Adults inhabit the

⁷ Two Law Enforcement Committee meetings were held to consider the proposed management measures:

July 16, 1996 – Review and discussion of the proposed monkfish management measures.

November 18, 1997 – Develop comments on the proposed monkfish management measures.