

6.0 DESCRIPTION OF FISHERY IMPACTS

Vessels that will be affected the most by the proposed management measures include those that historically targeted monkfish, but are not expected to qualify for a limited access monkfish permit. There are at least 331 vessels that targeted monkfish (greater than 30 percent of a trip's revenue came from monkfish landings) during 1995-1996 and are not expected to qualify for limited access. Since these vessels would not qualify, they would receive no days for targeting monkfish and could not exceed the applicable bycatch allowances. There are therefore three possible responses by vessels that would not qualify: shift fishing effort onto other species in fisheries that are open to the vessel, fish for monkfish without exceeding the bycatch limits, or reduce fishing activity.

The response by these 331 vessels is governed by the permits that the vessel holds (or are available to the vessel), the capability of the vessel and its equipment to function in another fishery, and the experience of the captain and crew in another fishery. The Fisheries Impact Statement addresses the likelihood of these highly-affected vessels to shift fishing effort into other fisheries. The ability for the vessel to continue fishing for monkfish without exceeding the monkfish bycatch limits and the likelihood of reducing fishing activity involves a radical change in behavior and is governed by economics. Predicting large changes in fishing behavior requires data, knowledge, and models that are not available.

This chapter therefore focuses on identifying which fisheries are most vulnerable to increases in fishing effort due to the effects of the Monkfish FMP. It augments the information presented in the description of the human environment (Section 5.4) that describes the various fisheries in terms of gear use and dependence on monkfish. The discussion below has a narrower focus, i.e. what is the likely effect on other fisheries by vessels that are displaced because they can no longer target monkfish. A much broader discussion of all vessels that catch monkfish is given in the Social Impact Analysis (Section 7.1.7).

6.1 Permit status

About 2/3rds of the vessels that have insufficient history to qualify for a limited access monkfish permit, but targeted monkfish during 1995-1996 have multispecies fleet days-at-sea and lobster commercial lobster permits (Table 55). Many multispecies vessels appear to have commercial lobster permits to land their incidental catch of lobsters when they are trawling for groundfish and other finfish. Some vessels also use trawls to target lobster and monkfish in the canyons and the edge of the continental shelf.

The next most frequent permit holdings by these vessels are summer flounder limited access, surf clam, ocean quahog, and the open-access squid/mackerel/butterfish permits (Table 55). About half of these vessels hold these permits, although the individual vessels hold different combinations of these permits. The number of vessels holding summer flounder permits reflects the overlap in the Mid-Atlantic large mesh fishery and the monkfish fishery. Similarly the number of vessels that hold squid/mackerel/butterfish permits also reflects the overlap between the Mid-Atlantic small mesh fishery and the monkfish fishery. In addition to the number of squid/mackerel/butterfish open access permits, there are also 67 vessels that hold Loligo/butterfish moratorium permits. The high number of vessels holding surf clam and ocean quahog permits is surprising, but it is not known how many of these vessels also own quota shares. Without owning or leasing quota shares, it would be impossible for these vessels to shift effort into the surf clam and ocean quahog fisheries, however. These permit characteristics are similar to the ones for vessels that are expected to qualify for a limited access monkfish permit, described in Section 3.1.2.

Based on permit-holdings only, it is most likely that the vessels that fish in the Gulf of Maine and Georges Bank will continue to fish in the multispecies fishery if they can no longer target monkfish. Some vessels may increase their utilization of their annual days-at-sea allocations to compensate for their inability to fish for monkfish. Others may be able to continue targeting monkfish and groundfish during their multispecies days if it is profitable to do so and comply with the 300 pounds tail-weight per day-at-sea trip limit. This response, however, is an intended outcome of the bycatch allowances selected by the Councils for the Northern Fishery Management Area, accommodating the traditional mixed-fishery while preventing the vessels from targeting exclusively monkfish outside of their multispecies days-at-sea.

In Southern New England and the Mid-Atlantic, the permit-holdings suggest that vessels that use large mesh may shift fishing effort into the summer flounder fishery. Summer flounder landings are however regulated by the Summer Flounder FMP. Instead of increasing fishing mortality on summer flounder, any shifts of fishing effort into this fishery would shorten the season or possibly require lower trip limits to extend the season in response to the increased fishing effort.

Based on permit-holdings, vessels that would not qualify for monkfish limited access and use small mesh are likely to shift effort into the squid/mackerel/butterfish and whiting fisheries in Southern New England and the Mid-Atlantic. Landings of squid, mackerel, and butterfish are controlled by a quota, while fishing effort for whiting will be regulated by a hake amendment to the Multispecies FMP, now under development.

Table 55. Northeast Region fishing permits held by vessels that targeted monkfish during 1995-1996, for vessels that are not expected to qualify for a limited access monkfish permit. Permit status is as of March 7, 1998. Source: NER permit data.

Permit	Number of vessels
Scup limited access	0
Scup charter/party	0
Summer flounder limited access	141
Summer flounder charter/party	4
Multispecies individual day-at-sea	8
Multispecies fleet day-at-sea	209
Multispecies small vessel	0
Multispecies hook	1
Multispecies combination	0
Multispecies large mesh individual day-at-sea	0
Multispecies large mesh fleet day-at-sea	3
Multispecies open-handgear	7
Multispecies open charter/party	1
Multispecies scallop possession limit	27
Multispecies non-regulated	13
Scallop general	0
Scallop limited access full time	31
Scallop limited access part time	6
Scallop limited access occasional	2
Scallop limited access full time small dredge	0
Scallop limited access part time small dredge	0
Lobster commercial	230
Lobster charter/party	1
Surf clam	160
Ocean quahog	137
Loligo/butterfish moratorium	67
Illex moratorium	2
Squid/mackerel/butterfish charter/party open	124
Squid/mackerel/butterfish incidental catch open	166
Mackerel open	8
Total vessels	331

Permit-holdings, however, only provide an indication of the propensity for displaced vessels to target other federally-regulated species. The discussion below examines this issue in greater detail by evaluating what these vessels caught when they were not targeting monkfish, i.e. the revenue from monkfish landings was less than 30 percent of the total trip revenue. The gear that vessels historically used and the areas fished determines the species that a vessel catches in alternative fisheries. Both factors impose significant costs to the vessel if it were to switch gears or areas. In the first case, there are costs associated with modifying the vessel, purchasing new gear, and gaining experience using unfamiliar equipment. In the second case, there are costs associated with travelling to and from distant fishing grounds, finding dealers in remote ports to handle the vessel's landings, and fishing in unfamiliar waters. Landings of other species by these vessels therefore provide a reasonable indication of how these vessels would respond to limits on their ability to target monkfish.

6.2 Maine to New York

Most important in terms of landings of these vessels when targeting other species with trawls are regulated multispecies (3.7 million pounds live weight) and whiting (aka silver hake, 3.1 million pounds live weight, Table 56). These species groups accounted for 50 and 17 percent of the total value of trips by these vessels (Table 57), when they were targeting other species besides monkfish. About 95 percent by weight and 92 percent by value of these and other species are landed by vessels that have multispecies permits. Next in importance are monkfish and spiny dogfish. The former appears to come from the mixed-species fishery that includes monkfish and occurs in the Gulf of Maine, while the latter appears to come from a seasonal fishery off Massachusetts. Also notable are the landings of multispecies by vessels that do not have multispecies limited access permits. Some of these landings during 1995-1996 may have occurred from landings by vessels that had open-access multispecies permits, or by vessels that have since relinquished their multispecies limited access permit (either through the vessel capacity reduction program or because of other factors).

For vessels that used gillnets to target species other than monkfish, spiny dogfish (18.6 million pounds live weight, Table 58) was the most important alternative landings for these vessels that targeted monkfish during 1995-1996. The second-ranked species in terms of total landings on trips not targeting monkfish were regulated multispecies (5.1 million pounds live weight). These species groups accounted for 55 and 38 percent of the value on all trips not targeting monkfish (Table 59). As for vessels using trawls, vessels with multispecies permits accounted for about 95 percent of the total landings and value on trips not targeting monkfish. For vessels that had no NER permit as of March 1998, however, spiny dogfish was the most important alternative species, accounting for nearly 90 percent of landings (Table 58) and 60 percent of value (Table 59). Reflecting the small mesh fishery in Southern New England, vessels with squid/mackerel/butterfish permits, the most important species group in terms of value was multispecies, followed by spiny dogfish. Spiny dogfish landings were greater, but had lower value.

The most important species for vessels using scallop dredges were, of course, scallops. Scallops accounted for over 75 percent by weight (Table 60) and 93 percent by value (Table 61) of landings on trips targeting species other than monkfish. Most of the landings came from vessels that had multispecies permits, most likely those with combination multispecies permits and scallop permits. Even on these vessels, monkfish was a secondary contributor to landings, due to the amount of monkfish bycatch and incidental catch on trips targeting scallops.

Table 56. 1995-1996 landings of species in ME to NY, by permit and species on trips not targeting monkfish by vessels using trawls that would not qualify for monkfish limited access. These vessels had at least one trip during 1995-1996 that targeted monkfish. Permits were ranked in the following order to determine the highest ranking permit for each category of permit combinations: multispecies, sea scallops, summer flounder, lobster, squid/mackerel, surf clams/ocean quahogs, no Northeast region fisheries permit. Source: NMFS dealer data for 1996 and permit data as of March 1998.

Species ¹¹	Primary permit							Total
	Lobster	Multispecies	No permit	Scallop	Squid/Mackerel	Summer flounder	Surf Clam	
Unclassified		444						444
Black sea bass		33,204	349	1	45	22		33,621
Bluefish	22	114,100	150	64	90		36	114,462
Dogfish	82	397,388	794				1,260	399,524
Summer flounder	869	268,130	11,790	1,007	3,005	1,585		286,386
Herring		35,525			6		6	35,537
Lobster	2,931	30,633	688			24	3,114	37,390
Monkfish	3,563	416,356	51,300	21	1,935	221	919	474,315
Multispecies	41,886	3,314,244	291,402	72	4,341	11,358	26,734	3,690,037
Other Fish	271	144,367	11,345	15	1,525	66	490	158,079
Other Invertebrates	250	5,172	88		201		50	5,761
Scallops	2	1,994	25					2,021
Scup		174,773	286	1	6,047	954		182,061
Skates	472	186,967	7,781		52	242	715	196,229
SQM	152	1,361,460	34,934	1	41,416	64	120	1,438,147
Whiting	135	3,102,836	7,499		5,102	1,526	126	3,117,224
Total	50,635	9,587,593	418,431	1,182	63,765	16,062	33,570	10,171,238

¹¹ Groupings are as follows:

- Multispecies includes cod, haddock, pollock, white hake, redfish, r&w hake, yellowtail, winter fl., witch, fl. windowpane, am plaice, fl. unc.
- Bluefish includes bluefish, spot, croaker, and weakfish
- Dogfish includes smooth and spiny dogfish
- Herring includes Atlantic herring, shad, and menhaden
- SQM includes Loligo, Illex, squid unclassified, at. mackerel, butterfish
- Whiting includes silver hake, red hake, offshore hake, kingfish
- Other Fish includes all other finfish
- Other Invertebrates includes all other invertebrates.

Table 57. Percent of 1995-1996 revenue derived from landed species by vessels in ME to NY, by permit and species on trips not targeting monkfish by vessels using trawls that would not qualify for monkfish limited access. These vessels had at least one trip during 1995-1996 that targeted monkfish. Permits were ranked as in Table 56. Source: NMFS dealer data for 1996 and permit data as of March 1998.

Species ¹²	Primary permit							Total
	Lobster	Multispecies	No permit	Scallop	Squid/Mackerel	Summer flounder	Surf Clam	
Unclassified	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Black sea bass	0.00%	0.74%	0.08%	0.04%	0.13%	0.19%	0.00%	0.69%
Bluefish	0.01%	0.64%	0.02%	1.07%	0.24%	0.00%	0.03%	0.59%
Dogfish	0.02%	0.98%	0.04%	0.00%	0.00%	0.00%	0.84%	0.91%
Fluke	2.82%	7.54%	5.34%	94.25%	15.64%	18.52%	0.00%	7.43%
Herring	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.01%	0.08%
Lobster	13.92%	1.36%	0.49%	0.00%	0.00%	0.27%	22.77%	1.51%
Monkfish	7.33%	6.79%	13.34%	0.90%	5.29%	1.70%	3.83%	7.12%
Multispecies	74.81%	48.73%	71.86%	2.96%	17.83%	71.21%	70.79%	50.23%
Other Fish	0.30%	0.96%	1.65%	0.70%	1.34%	0.27%	0.47%	0.99%
Other Invertebrates	0.19%	0.04%	0.01%	0.00%	0.11%	0.00%	0.07%	0.04%
Scallops	0.02%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.08%
Scup	0.00%	2.26%	0.11%	0.04%	6.38%	4.40%	0.00%	2.13%
Skates	0.34%	1.12%	0.85%	0.00%	0.06%	0.53%	0.86%	1.09%
SQMB	0.14%	10.86%	5.17%	0.04%	49.60%	0.15%	0.17%	10.55%
Whiting	0.09%	17.83%	1.02%	0.00%	3.38%	2.76%	0.15%	16.56%
Percent of total	0.82%	92.44%	5.53%	0.03%	0.45%	0.25%	0.49%	100.00%

¹² See Table 56.

Table 58. 1995-1996 landings of species in ME to NY, by permit and species on trips not targeting monkfish by vessels using gillnets that would not qualify for monkfish limited access. These vessels had at least one trip during 1995-1996 that targeted monkfish. Permits were ranked as in Table 56. Source: NMFS dealer data for 1996 and permit data as of March 1998.

Species ¹³	Primary permit					Total
	Lobster	Multispecies	No permit	Squid/Mackerel	Surf Clam	
Black sea bass		27				27
Bluefish	661	337,097	10,529	1,000	2,619	351,906
Dogfish	71,570	16,912,006	759,508	139,156	700,385	18,582,625
Summer flounder		603	11			614
Herring		14,824	261	229	15	15,329
Lobster		4,871	59		522	5,452
Monkfish	702	275,189	15,143	4,758	3,051	298,843
Multispecies	5,848	4,956,247	67,165	62,529	18,254	5,110,043
Other Fish	66	97,151	3,126	2,420	204	102,967
Other Invertebrates		781		251		1,032
Scup		56				56
Skates	127	28,122	1,156	578	186	30,169
SQMB	10	66,428	3,645	223	805	71,111
Whiting	38	59,926	780	360	2,087	63,191
Total	79,022	22,753,328	861,383	211,504	728,128	24,633,365

¹³ See Table 56.

Table 59. Percent of 1995-1996 revenue derived from landed species by vessels in ME to NY, by permit and species on trips not targeting monkfish by vessels using gillnets that would not qualify for monkfish limited access. These vessels had at least one trip during 1995-1996 that targeted monkfish. Permits were ranked as in Table 56. Source: NMFS dealer data for 1996 and permit data as of March 1998.

Species ¹⁴	Primary permit					Total
	Lobster	Multispecies	No permit	Squid/Mackerel	Surf Clam	
Black sea bass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bluefish	0.82%	1.11%	1.81%	0.40%	0.40%	1.11%
Dogfish	63.68%	36.93%	59.77%	26.40%	84.87%	38.33%
Summer flounder	0.00%	0.01%	0.00%	0.00%	0.00%	0.01%
Herring	0.00%	0.04%	0.05%	0.07%	0.01%	0.04%
Lobster	0.00%	0.21%	0.09%	0.00%	1.10%	0.22%
Monkfish	3.62%	3.59%	6.27%	6.82%	2.36%	3.67%
Multispecies	31.22%	56.77%	30.65%	64.37%	10.25%	55.27%
Other Fish	0.11%	0.60%	0.62%	1.41%	0.07%	0.59%
Other Invertebrates	0.00%	0.00%	0.00%	0.04%	0.00%	0.00%
Scup	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Skates	0.46%	0.15%	0.23%	0.30%	0.06%	0.15%
SQMB	0.03%	0.30%	0.39%	0.07%	0.30%	0.30%
Whiting	0.06%	0.30%	0.11%	0.13%	0.58%	0.30%
Percent of total	0.19%	94.23%	2.62%	1.13%	1.83%	100.00%

¹⁴ See Table 56.

Table 60. 1995-1996 landings of species in ME to NY, by permit and species on trips not targeting monkfish by vessels using scallop dredges that would not qualify for monkfish limited access. These vessels had at least one trip during 1995-1996 that targeted monkfish. Permits were ranked as in Table 56. Source: NMFS dealer data for 1996 and permit data as of March 1998.

Species ¹⁵	Primary permit			Total
	Multispecies	No permit	Scallop	
Summer flounder	1,235			1,235
Monkfish	123,739	10,268	4,478	138,485
Multispecies	15,798	547		16,345
Other Fish	128	36		164
Scallops	479,673	65,043	24,309	569,025
Skates	9			9
Total	620,582	75,894	28,787	725,263

¹⁵ See Table 56.

Table 61. Percent of 1995-1996 revenue derived from landed species by vessels in ME to NY, by permit and species on trips not targeting monkfish by vessels using scallop dredges that would not qualify for monkfish limited access. These vessels had at least one trip during 1995-1996 that targeted monkfish. Permits were ranked as in Table 56. Source: NMFS dealer data for 1996 and permit data as of March 1998.

Species ¹⁶	Primary permit			Total
	Multispecies	No permit	Scallop	
Summer flounder	0.05%	0.00%	0.00%	0.04%
Monkfish	6.50%	4.39%	5.31%	6.23%
Multispecies	0.59%	0.11%	0.00%	0.51%
Other Fish	0.00%	0.00%	0.00%	0.00%
Scallops	92.86%	95.50%	94.69%	93.21%
Skates	0.00%	0.00%	0.00%	0.00%
Percent of total	85.44%	10.46%	4.10%	100.00%

¹⁶ See Table 56.

6.3 New Jersey to Virginia

For vessels that fish from NJ to VA with trawls, over 90 percent of the landings of alternative species come from vessels that have multispecies permits (Table 62). Even though landings by vessels with these permits predominate, most of the landings are of summer flounder (900 thousand pounds live weight) and squid/mackerel/butterfish (600 thousand pounds). These two species groups also contribute to 51 and 10 percent of the total landed revenue on trips targeting species other than monkfish (Table 63). Secondary in importance as alternative species to these vessels is scup, black sea bass, and dogfish. This mix of alternative species, when the vessels are not targeting monkfish reflect the type of fisheries that are available in the Mid-Atlantic, rather than their permit holdings. Even though the vessels hold multispecies permits, they appear to more frequently target other species and have summer flounder or squid/mackerel/butterfish permits. Although most of the remaining landings are from vessels with scallop permits, these vessels target summer flounder more frequently than vessels that hold multispecies permits. Over half of the landings and 66 percent of the value (Table 62 and Table 63) come from summer flounder on trips targeting species other than monkfish. These vessels may be scallop dredge vessels that also use trawls (they are not combination vessels, because they would have a multispecies permit) or scallop trawl vessels that target summer flounder seasonally. Landings are negligible of other species beside monkfish by vessels without NER permits.

When using gillnets, vessels pursued spiny dogfish when they didn't target monkfish. Over 85 percent of the landings were dogfish and most of the vessels landing species other than monkfish also had multispecies permits. Dogfish contributed to 75 percent of the value of the landings of alternative species (Table 65). Negligible landings on trips not targeting monkfish occurred for vessels that held summer flounder and surf clam permits. Dogfish landings also were a primary alternative species for vessels without NER permits (Table 64 and Table 65), but the landings of bluefish, spot, croaker, and weakfish were surprisingly low. It's possible that local dealers did not report the landings of these species, especially since the federal government does not regulate spot and croaker.

As expected, scallops were the most important alternative species for vessels that targeted monkfish and used dredges. Scallops contributed to nearly 85 percent of the poundage (Table 66) and 96 percent of the value (Table 67) of landings from trips targeting species other than monkfish. About 60 percent of the landings came from vessels that held multispecies permits during 1998, most probably combination boats. Some scallop landings were attributable to vessels without NER permits, and may represent 1995-1996 landings by combination vessels that were in the Vessel Capacity Reduction Program.

Table 62. 1995-1996 landings of species in NJ to VA, by permit and species on trips not targeting monkfish by vessels using trawls that would not qualify for monkfish limited access. These vessels had at least one trip during 1995-1996 that targeted monkfish. Permits were ranked as in Table 56. Source: NMFS dealer data for 1996 and permit data as of March 1998.

Species ¹⁷	Primary permit				Total
	Multispecies	No permit	Scallop	Summer flounder	
Black sea bass	98,654		19,144	4,373	122,171
Bluefish	31,621		1,611		33,232
Dogfish	188,449		63,100		251,549
Summer flounder	792,133	2,874	110,431	13,693	919,131
Herring	6,435				6,435
Lobster	2,774		89		2,863
Monkfish	59,982	396	8,339	818	69,535
Multispecies	123,513		693	29	124,235
Other Fish	34,857		2,000		36,857
Other Invertebrates	19,837		189		20,026
Scallops	13,428	204	5,520	67	19,219
Scup	192,778		1,454	7	194,239
Skates	12,020		61		12,081
SQMB	586,181		5,349	400	591,930
Whiting	415,300		55		415,355
Total	2,577,962	3,474	218,035	19,387	2,818,858

¹⁷ See Table 56.

Table 63. Percent of 1995-1996 revenue derived from landed species by vessels in NJ to VA, by permit and species on trips not targeting monkfish by vessels using trawls that would not qualify for monkfish limited access. These vessels had at least one trip during 1995-1996 that targeted monkfish. Permits were ranked as in Table 56. Source: NMFS dealer data for 1996 and permit data as of March 1998.

Species ¹⁸	Primary permit				Total
	Multispecies	No permit	Scallop	Summer flounder	
Black sea bass	5.45%	0.00%	10.06%	21.19%	6.03%
Bluefish	0.70%	0.00%	0.19%	0.00%	0.65%
Dogfish	1.71%	0.00%	4.21%	0.00%	1.92%
Summer flounder	49.17%	70.08%	66.09%	73.07%	51.02%
Herring	0.05%	0.00%	0.00%	0.00%	0.04%
Lobster	0.54%	0.00%	0.14%	0.00%	0.49%
Monkfish	3.53%	9.16%	4.09%	3.59%	3.59%
Multispecies	6.96%	0.00%	0.23%	0.09%	6.25%
Other Fish	0.97%	0.00%	0.05%	0.00%	0.88%
Other Invertebrates	0.83%	0.00%	0.08%	0.00%	0.75%
Scallops	3.49%	20.76%	13.34%	1.40%	4.42%
Scup	6.17%	0.00%	0.79%	0.01%	5.60%
Skates	0.14%	0.00%	0.01%	0.00%	0.13%
SQMB	11.31%	0.00%	0.70%	0.65%	10.19%
Whiting	8.97%	0.00%	0.01%	0.00%	8.03%
Percent of total	89.52%	0.20%	9.25%	1.02%	100.00%

¹⁸ See Table 56.

Table 64. 1995-1996 landings of species in NJ to VA, by permit and species on trips not targeting monkfish by vessels using gillnets that would not qualify for monkfish limited access. These vessels had at least one trip during 1995-1996 that targeted monkfish. Permits were ranked as in Table 56. Source: NMFS dealer data for 1996 and permit data as of March 1998.

Species ¹⁹	Primary permit			Surf Clam	Total
	Multispecies	No permit	Summer flounder		
Black sea bass	39			6	45
Bluefish	9,381	359	1,510		11,250
Dogfish	701,654	60,878	3,659	529	766,720
Summer flounder	153				153
Herring	3,990		661	6	4,657
Lobster	184	16		1	201
Monkfish	17,112	2,334	90	162	19,698
Multispecies	548	50			598
Other Fish	3,963	602	58	28	4,651
Other Invertebrates	2,839	115	1	18	2,973
Scup	7				7
Skates	15,400	455		46	15,901
SQMB	49,939	4,390	37	4,999	59,365
Whiting	28				28
Total	805,237	69,199	6,016	5,795	886,247

¹⁹ See Table 56.

Table 65. Percent of 1995-1996 revenue derived from landed species by vessels in NJ to VA, by permit and species on trips not targeting monkfish by vessels using gillnets that would not qualify for monkfish limited access. These vessels had at least one trip during 1995-1996 that targeted monkfish. Permits were ranked as in Table 56. Source: NMFS dealer data for 1996 and permit data as of March 1998.

Species ²⁰	Primary permit				Total
	Multispecies	No permit	Summer flounder	Surf Clam	
Black sea bass	0.02%	0.00%	0.00%	0.46%	0.02%
Bluefish	2.07%	0.60%	5.61%	0.00%	1.96%
Dogfish	75.24%	76.36%	54.73%	17.96%	74.83%
Summer flounder	0.13%	0.00%	0.00%	0.00%	0.12%
Herring	0.50%	0.00%	26.81%	0.38%	0.63%
Lobster	0.42%	0.42%	0.00%	0.31%	0.42%
Monkfish	10.28%	14.76%	6.94%	12.97%	10.65%
Multispecies	0.32%	0.27%	0.00%	0.00%	0.31%
Other Fish	1.90%	1.76%	5.39%	2.15%	1.91%
Other Invertebrates	0.73%	0.40%	0.07%	0.69%	0.69%
Scup	0.00%	0.00%	0.00%	0.00%	0.00%
Skates	4.19%	1.24%	0.00%	1.23%	3.90%
SQMB	4.20%	4.19%	0.44%	63.85%	4.56%
Whiting	0.01%	0.00%	0.00%	0.00%	0.01%
Percent of total	90.31%	8.38%	0.67%	0.64%	100.00%

²⁰ See Table 56.

Table 66. 1995-1996 landings of species in NJ to VA, by permit and species on trips not targeting monkfish by vessels using scallop dredges that would not qualify for monkfish limited access. These vessels had at least one trip during 1995-1996 that targeted monkfish. Permits were ranked as in Table 56. Source: NMFS dealer data for 1996 and permit data as of March 1998.

Species ²¹	Primary permit			Total
	Multispecies	No permit	Scallop	
Black sea bass		81	569	650
Summer flounder	36,272	8,716	17,918	62,906
Monkfish	166,728	18,461	99,847	285,036
Multispecies	1,405	15		1,420
Scallops	1,026,208	77,073	683,213	1,786,494
Scup			230	230
SQMB			825	825
Whiting	12			12
Total	1,230,625	104,346	802,602	2,137,573

²¹ See Table 56.

Table 67. Percent of 1995-1996 revenue derived from landed species by vessels in NJ to VA, by permit and species on trips not targeting monkfish by vessels using scallop dredges that would not qualify for monkfish limited access. These vessels had at least one trip during 1995-1996 that targeted monkfish. Permits were ranked as in Table 56. Source: NMFS dealer data for 1996 and permit data as of March 1998.

Species²²	Primary permit			Total
	Multispecies	No permit	Scallop	
Black sea bass	0.00%	0.02%	0.01%	0.00%
Summer flounder	0.74%	2.23%	0.56%	0.74%
Monkfish	3.49%	4.06%	2.44%	3.13%
Multispecies	0.02%	0.00%	0.00%	0.01%
Scallops	95.75%	93.69%	96.99%	96.10%
Scup	0.00%	0.00%	0.00%	0.00%
SQMB	0.00%	0.00%	0.01%	0.00%
Whiting	0.00%	0.00%	0.00%	0.00%
Percent of total	58.84%	4.72%	36.44%	100.00%

²² See Table 56.

6.4 Conclusions

6.4.1 Effort shifts caused by failure to qualify for monkfish limited access

Shifts in fishing effort from the Monkfish FMP will most likely be greatest by vessels that targeted monkfish, but would not qualify for a limited access monkfish permit. Many of these vessels entered the monkfish fishery after the control date and therefore would fail to qualify. The owners of these vessels could purchase another vessel that qualifies for monkfish limited access or they could pursue other species in fisheries that the vessel is equipped for and where the crew has experience. Therefore the permits held by the vessel and the history of landings on trips targeting species other than monkfish give an indication of the least costly responses by fisherman whose vessels do not qualify for a limited access monkfish permit.

Some generalities are apparent from the detailed analysis of permit holdings and landings history described above. In the Gulf of Maine and in Southern New England, most vessels have multispecies permits and are likely to target groundfish and sea scallops, to the extent that regulations allow. Vessels that use gillnets will most likely target spiny dogfish, skates, and groundfish. Skates are a low-value fishery and a fishery management plan for spiny dogfish is under development and would all but eliminate directed fishing by 2000.

In the Mid-Atlantic states, vessels that would not qualify for a limited access monkfish permit would have more options. Instead of groundfish, vessels using trawls would most likely target summer flounder, squid, mackerel, butterfish, scup, and/or black sea bass. Since these species are managed with quotas, the most likely outcome would be a shorter season, possibly increasing the prevalence of discards when the fisheries closed. Vessels that use dredges will probably increase effort on sea scallops, but the Sea Scallop FMP limits fishing effort. Gillnet vessels are likely to shift fishing effort onto dogfish as long as there is a directed fishery and potentially target inshore species, such as bluefish, spot, croaker, and/or weakfish.

The above conclusions are only based on permit status and experience by the vessels in the fishery. As always, some fishermen will look to other opportunities that are outside the bounds of the fishery, as we know it. In addition to the options identified above, the fishermen (working with dealers and processors) could begin targeting other species and develop new markets. One recent example of this in the region is the conch fishery in the Mid-Atlantic. At one time, the monkfish fishery was also in a similar condition.

Development of markets for unexplored resources can be a healthy economic outcome (diversifying the fishery), but in general the newly exploited species tend to be vulnerable to higher rates of exploitation because they grow slowly and have low fecundity. Spiny dogfish is another perfect example of this problem. Species that live in deep, cold water beyond the continental shelf tend to also display similar biological characteristics.

6.4.2 Effort shifts caused by the Monkfish FMP management measures

Within the plan, there are some measures that could lead to changes in fishing effort and gear use. Scallop vessels would no longer be able to use dredges to target monkfish as they had in the past. Two options that a vessel that qualifies for monkfish limited access has are to use large mesh in a beam trawl or to re-equip the vessel to use gillnets. Both options are thought to involve significant cost in terms of gear, equipment, and training. The Councils do not believe that many scallop vessels will pay this added costs when they also have to use scallop days-at-sea when targeting monkfish. Increases in gillnet and beam trawl fishing effort is expected to be low.

The management measures in the plan tend to be somewhat more restrictive in the Southern Fishery Management Area than in the Northern Fishery Management Area. Beginning year 2, the FMP proposes directed fishery trip limits and a larger (14") minimum size limit for the Southern Fishery Management Area. As a result, it may become more attractive to fish in the northern area, especially for vessels that use gillnets. Countering this incentive, however, are the multispecies regulations which allow for only a short exempted monkfish fishery in two areas in the Gulf of Maine and the Multispecies Regulated Mesh Area. Otherwise, a vessel that fished in the

Southern Fishery Management Area would have to possess a multispecies permit and use multispecies days-at-sea to fish in the Northern Fishery Management Area. Also the net limits are more conservative, compared to prevailing practices, in the Northern Fishery Management Area than in the Southern Fishery Management Area. Although vessels operating in both areas would be limited to 160 monkfish nets, it is customary to set more gear for longer periods in the northern area to accommodate weather and other factors. As a result, shifts in gillnet fishing effort from the Southern Fishery Management Area will probably be low.

In the last several years, however, the multispecies regulations induced multispecies vessels to fish in the Mid-Atlantic when they were not on a multispecies day-at-sea. Under the Monkfish FMP, this incentive will evaporate because a vessel with a multispecies permit will have to use a multispecies and monkfish day-at-sea when targeting monkfish. Coupled with the net limits, it is expected that the amount of gillnets in the Mid-Atlantic area is therefore likely to substantially decline under the proposed monkfish management measures.