

Fishery Economic Trends

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Regional Summary

The Northeast's commercial oceanic and estuarine fisheries produced domestic landings worth \$1.098 billion dockside in 1999, a increase of \$98 million over 1998. In 1997 and 1998 domestic landings totaled \$1,009 million, and \$1,000 million respectively. Total quantities and value for finfish and shellfish species of major importance for 1995-1999 are provided in Table 1. Finfish landings brought in \$360 million in 1999, representing 33% of the revenue generated in the region. Shellfish landings brought in \$739 million, accounting for the remaining 67% of revenue.

In 1999, total landings decreased to 636 thousand mt, a 12% decrease over 1998 levels and a 22% decrease from the 1995 peak of 811 thousand mt. Finfish landings (446 thousand mt) decreased by 15% from 1998 figures, while shellfish landings (191 thousand mt) declined by 4% in 1999.

Important species of finfish and shellfish landed or raised in the Northeast Region are shown in Table 1 along with their total quantity, revenue, and ex-vessel prices for the last five years. Landings of finfish, lobster, shrimp, and crab are given in live weight; landings of all other shellfish are expressed in meat weight. The most important species, ranked in terms of 1999 ex-vessel revenue (first-sale dockside), are American lobster, sea scallops, blue crab, Atlantic salmon, goosefish, hard clams, surfclams, menhaden, Loligo squid, and cod. Six of the 10 most valuable species are invertebrates and 5 of the 10 species are harvested predominantly inshore (0-3 miles) or are raised.

Several observations can be made from the landings and revenue data presented in Table 1. First, American lobsters continue to contribute the greatest percentage of the region's ex-vessel revenue, accounting for nearly 30% of the total. Second, while sea scallops remained the second most valued species in the Northeast in 1999, ex-vessel revenue and landings were still below peak values observed during the early 1990s. However, the landings of sea scallops nearly doubled between 1998 and 1999, due to the success of the Closed Area II scallop fishery which opened midway through 1999.

Landings of the region's "traditional" groundfish species (cod, haddock, and yellowtail flounder) decreased from 17,600 in 1998 to 17,200 mt in 1999, a 400 mt decrease over 1998. Total dockside value of these traditional groundfish in 1999 was \$44.4 million, just slightly higher than in 1998 (\$44.3 million). The three "traditional" groundfish species accounted for only 4% of total 1999 catch by value and just 3% by weight.

Sea urchins, for which no fishery existed prior to 1987, rose to become the tenth most valuable species in 1995, and remains the twelfth most valuable in 1999. Value of farmed Atlantic salmon reached a peak in 1998 (60.4 million

dollars), and declined only slightly in 1999 (58.2 million dollars), continuing to demonstrate the importance of marine aquaculture to the Northeast economy. Atlantic salmon (and steelhead trout) are still being raised at over 20 sites in Maine.

Relatively few species accounted for most of the landed value in the Northeast in 1999, with the top 10 generating 72% (\$796 million) of the total. Lobster and sea scallops accounted for 41 percent of the total landed revenue for all species. American lobster generated the largest revenue gain (in absolute terms) in 1999, while Atlantic salmon held this distinction for 1998. Sea scallops also exhibited a notable gain in 1999, increasing over \$47 million, and also accounted for the greatest absolute gain in landings. Although menhaden landings fell significantly, they still accounted for 30% of total landings (by weight) but only %3 by value in 1999.

Table 2 provides data for landings and revenue earned by gear type, for 1997-1999. Pots and traps produced the greatest amount of total revenue in 1999, followed by bottom otter trawl and sea scallop dredges. These 3 gear types accounted for over half (54%) of the region's ex-vessel revenue. Menhaden purse seines and bottom otter trawls account for 45% of the landings by weight.

Many vessels employ more than one gear type. The ability to change from one fishing method to another is of particular importance in fisheries where different species are harvested, requiring different techniques at various seasons of the year.

Table 3 provides the total number of identifiable vessels (those vessels of known tonnage) using scallop dredge, otter trawl, and totals for all gears combined, by tonnage class for 1994-1999. Tonnage Class 1 vessels are less than 5 gross registered tons (GRT); Tonnage Class 2 vessels range from 5 to 50 GRT; Tonnage Class 3 vessels are 51- 150 GRT; and Tonnage Class 4 vessels are greater than 150 GRT.

The total number of vessels appears to have increased during 1994-1997, but this is partly due to the changes which have occurred in our data collection system; since 1994, data for Tonnage Class 1 vessels have been collected and recorded on a per-vessel basis, whereas formerly such data were combined. For all vessels in the larger (Tonnage Class 3 and 4) categories, a decline is evident since 1994, which is also evident for Tonnage Class 3 otter trawlers. The number of larger vessels employing scallop dredges was relatively constant although the number of Tonnage Class 2 scallop vessels in New England increased sharply in 1996 and has since steadily declined. The number of small otter trawl vessels (in all areas) has declined by 26% since 1996. Trends were generally consistent between areas examined.

Table 4 provides the percentage of total landings by identifiable gear type for selected species in the Northeast for 1999. This table indicates the variability in harvesting strategies for individual species. For example, summer flounder is taken predominantly with bottom trawls, while goosefish is taken primarily by bottom trawls and gillnets, and somewhat by scallop dredges. Atlantic herring used to be taken predominantly with purse seines (the other gear in this case), but now is taken primarily with mid-water trawls. Traditional species (cod, haddock, and yellowtail flounder) are taken predominantly by otter trawl, although hook gear and gillnets are much more important for cod.

Data Collection Considerations

NMFS has made many changes to its data collection, archival, and analysis systems in support of the increasingly complex needs of fisheries management. In the Northeast Region, 1993 marked the end of a traditional voluntary method of data collection from vessel owners, operators, and dealers. Regulations implemented in 1994 in several fishery management plans (FMPs) require mandatory reporting programs.

Under the voluntary method of data collection, NMFS obtained information on landings in the Northeast through collection of weighout sales receipts (at the point of first sale) by a network of federal and state port agents. This information was augmented by interviews with vessel operators and a monthly or annual canvas. The present mandatory reporting system became effective in April, 1994 for summer flounder transactions, and in June, 1994 for multispecies and scallop transactions. The mandatory reporting system consists of two components, one from dealers and one from vessel owners and/or operators. Dealer reports contain total landings and revenue information, broken down into market category. Essential data elements such as location fished, gear used and amount of fishing effort,

previously annotated by port agents through interviews, do not now exist in the dealer reports and must be extracted from corresponding vessel trip reports (VTRs).

Dealer reports are assumed to provide accurate totals for landings and revenue; VTRs are used as a subset of the dealer data. The VTR data are still undergoing auditing procedures at various levels and are therefore considered provisional.

Vessel Permits

Background

When a fishery is managed under a federal FMP, participants in that fishery must have an appropriate permit. Possession of that permit constitutes acceptance of the regulations contained in the FMP. It is possession of a permit that triggers the requirement for mandatory reporting by vessels in the sea scallop, multispecies, summer flounder, black sea bass, scup, Loligo squid, Illex squid, mackerel, surf clam and ocean quahog fisheries (1). In the Northeast, most permits are issued by the NMFS Northeast Regional Office and cover those fisheries which fall under Fishery Management Plans (FMPs) of the New England and Mid-Atlantic Fishery Management Councils. The only exception is for tuna permits which are issued by the NMFS Highly Migratory Species Division Office in Silver Spring, Maryland.

The information provided on the permit application can be helpful to managers in many ways. First, permit data assist managers in evaluating the distribution of vessel owners, since it provides residence and home port of permitted vessels. Permit data are also the source of vessel characteristics data (e.g., length, tonnage, horsepower. Permit and related data on days-at-sea usage are important for evaluating active and latent effort, capacity, and to some extent levels of capitalization, as well as for tracking and measuring impacts of measures such as limited access and vessel buybacks. Finally, permit data on residence and home port in conjunction with landings data allow assignment of vessels to communities, facilitating evaluation of impacts of regulations on fishing communities.

Northeast permits allocate fishing privileges under some combination of the following four categories: commercial versus recreational, and limited access versus open access. Commercial permits allow sale of the catch; recreational permits do not. Most recreational permits are held by party and charter boats, although there is a separate category of tuna permits for anglers. In addition, unlike all other charter/party permits in the Northeast, tuna party/charter vessels are commercial. Both commercial and recreational permits may be either "open access" or "limited access", as described below.

For some fisheries where effort limitations are required, a moratorium is established and "qualifying criteria" must be met by the vessel owner in order to acquire a permit. This often includes publication of a control date for entry into the fishery. When a control date is specified, vessels which entered the fishery after that date are not assured of future access. Qualifying criteria may include landings of the species covered under the FMP in question during a specified period of time and also a minimum level of landings. Those who meet these landings requirements are granted a "limited access" permit. Once the qualifying criteria are established, and qualified vessels determined (through a lengthy process which includes an appeals period), no additional vessels can be granted a limited access permit in that fishery for the life of the moratorium without a full amendment process. An "open access" permit, by contrast, can be acquired by anyone at any time, with no limit on the number issued. Some fisheries have both limited and open access categories, with open access permits having much more restrictive regulations. In the Northeast scallop fishery, for example, open access vessels are subject to a 400 lb trip limit. Once limited access scallop vessels use up their days-at-sea, they are also eligible to fish under an open access permit. In the Northeast multispecies fishery, there are several categories of open access permits, each subject to a trip limit.

In the Northeast, the NMFS issued permits in 1997 and 1998 under 7 different FMPs: Northeast Multispecies; Atlantic Sea Scallop; American Lobster; Summer Flounder; Surf Clam and Ocean Quahog; Atlantic Mackerel, Squid and Butterfish; and Atlantic Tunas. Six of the fisheries involved are at least partially managed under limited access arrangements (summer flounder as of 1992 -- with scup and black sea bass brought under limited access via this FMP in 1997; multispecies as of 1994; Atlantic sea scallop as of 1994, American lobster as of 1995; Loligo squid, Illex squid, and butterfish via the Atlantic Mackerel, Squid and Butterfish FMP as of 1997; and Atlantic tuna as of 1982).

Under the Multispecies FMP, vessels not qualifying for limited access can still fish both commercially and recreationally under highly restrictive open access categories. Most recreational multispecies vessels are under open access categories, though a few have qualified for limited access permits. Under the Summer Flounder FMP, non-qualifying vessels can fish only under an open access charter/party category which is non-commercial. Under the American Lobster FMP, all permits are limited access, whether commercial or recreational. Under the Atlantic Mackerel, Squid and Butterfish FMP there are two separate limited access categories -- one for Loligo squid and butterfish, and the other for *Illex* squid. In addition, there are open access commercial and recreational categories and an incidental catch category. For tuna, the small purse seine category is closed to new entrants, but all other categories (commercial and recreational) are open access.

Table 5 indicates the distribution of permits in the Northeast, by FMP, category, and vessel tonnage class for 1996 through 1998. By comparing numbers of vessels over time one can examine the potential effects of limited access on participation -- one measure of capacity. The size component is important because historically, smaller vessels had more difficulty in qualifying for limited access permits, due to their lower landings. Figure 1 offers related data on total numbers of permits for all categories. These data are not broken out by size, but cover a longer time span (11 years) giving more historical perspective.

Several data considerations in Table 5 should be noted. First, it is not possible to be permitted under both limited and open access at the same time for the same species. For FMPs with only open access categories or only limited access categories, however, a vessel can sometimes be permitted as both commercial and recreational. In such cases, the vessel is included solely under the commercial category. Thus, recreational permitted vessels are those which have only a recreational permit. Further, in an FMP such as Atlantic Mackerel, Squid, and Butterfish where there are several species managed separately under either limited or open access, it is possible to have, e.g. a limited access *Illex* squid permit and an open access commercial Atlantic mackerel permit. In such cases, any vessel holding a limited access permit under a given FMP is counted only as limited access. These reporting limitations are used here to avoid double counting vessels (2).

It should also be noted that, except for the limited access category under the Summer Flounder FMP with its landings requirement, there have always been more permits issued than were actually used. In the past, it has been difficult to determine numbers of active permits because the NMFS landings database consolidated landings made by vessels under 5 GRT. With the advent of mandatory reporting under limited access, all vessels with limited access permits must report total landings, even for trips not landing any limited access species. The FMPs involved accounted for 76% of all permitted vessels in 1997 and 75% of all permitted vessels in 1998. This has made it possible to obtain a much more accurate count of participating vessels.

For Figure 1, 1987 was chosen as the base year, as it was the first year that annual permits were issued in the Northeast. Previous permits (beginning in the 1970s) were issued in perpetuity, making it difficult to judge annual change.

Limited Entry

One of the most striking trends in evidence in Figure 1 has been an increase in numbers of permits issued for a fishery when discussions of limited entry begin for that fishery, followed by a decline after limited entry and accompanying fishing restrictions are enacted. This trend appears to reflect a number of factors, such as the tendency of fishers to apply for permits whenever the possibility of limited access for a particular fishery is raised (e.g. in 1990 for multispecies). However, not all of these permits will be actively fished. Some may not meet the qualifying criteria, and, of those that do, some may wish to retain their permits just to keep their limited-access status.

This influx of people hoping to qualify for limited entry, combined with the problem of fully identifying active vessels from the commercial landings databases prior to 1994, has made it difficult to judge the true impact of limited entry on numbers of active fishermen and vessels.

The number of unique Northeast permitted vessels in the multispecies fishery has fallen since 1992, except for a small increase in 1997 (Figure 1). For the scallop fishery, this number has remained remarkably steady since its rise in the late 1980's. Overall, the number of unique permits has declined since 1996.

With respect to impacts of limited entry by vessel size, as noted below under "Fleets and Fish" the majority of the vessels in the Northeast are under 50 GRT. For those fisheries with both limited and open access categories (i.e. multispecies; sea scallops; mackerel, squid, and butterfish; summer flounder; scup; and black sea bass), the open access fleet tends to be comprised of smaller vessels on average than does the limited access fleet -- although there are a few very large open access vessels. Where vessels can be permitted under both limited and open access simultaneously, those vessels with both permits are grouped only with limited access. Open access thus contains vessels with only that permit.

From 1996 through 1998, 80-82% of open access permitted vessels in the multispecies fishery were small (Tonnage Class 1 and 2) while only 68-72% of those under limited access permits fell within this range. For the sea scallop fishery, corresponding figures were 73-75% and 4-5% respectively, from 1996-1998.

In the mackerel, squid, and butterfish fishery, in 1996, 71%, in 1997, 78%, and in 1998, 79% of open access permitted vessels were small (Tonnage Class 1 and 2). There were no limited access permits in 1996, but in 1997-1998, 25-26% of vessels under limited access permits were small.

In the summer flounder fishery, in 1996-1998, corresponding figures were respectively 37% in all three years, and 85% in 1996 followed by two years of 83%. Vessels in the scup and black sea bass fishery have only been permitted since 1997, and began with limited and open access categories. For scup, corresponding percentages were 56% of the limited access fleet and 80% of the open access fleet for both 1997 and 1998. In black sea bass they were 60% in both years, and 82% in 1997 and 79% in 1998. (These data not shown in tabular form.)

Another important measure of potential effort, including possible shifts between fisheries in response to regulatory changes or other factors, is the number and variety of permits held by individual vessels. In the Northeast, a given vessel can potentially be permitted simultaneously under all 7 FMPs.

Fleets and Fish

Tables 6-13 present condensed pictures of the activity of known vessels during 1997-1999. The picture is complicated somewhat by the changes that have occurred in our data collection system and the provisional nature of the data as described above. Because of this, caution is urged in the interpretation of effort related measures.

All information relative to individual vessel activity has been aggregated into annual summaries on the basis of gear use, area fished, and tonnage class. Most information concerns effort, landings, and revenue. No cost information is reported.

Several caveats are in order concerning categorization of vessels by fleet. In general, if a vessel landed at least once in a port in a region (defined as New England; Mid-Atlantic and Chesapeake, or the entire Northeast), its total activity (i.e., all trips regardless of gear used) was ascribed to that particular region. Hence, a vessel's activity may be represented in more than one table. The same potential for multiple representation exists for gear use. For example, if a vessel gillnetted and longlined in the same year, its total activity will be represented in the total activity sections of both the gillnet and longline tables. Its "primary gear" activity, however, reflects only that activity which occurred while using one gear type (i.e., either gillnetting or longlining). For some gears no distinction is made between primary gear activity and total activity because a gear's use constituted the overwhelming majority of the activity of that fleet.

New England Otter Trawl: In 1999, the total revenue for New England otter trawlers was derived primarily from goosefish (16%), *Loligo* squid (14%), cod (10%), winter flounder (8%), whiting (7%), and American plaice and haddock (both 6%) and witch flounder (5%). The total number of vessels using this gear in New England increased in 1994, 1995 and 1996 for the first time since 1988 (not visible in table), but has since decreased in each subsequent year (Table 3). In 1999, the fleet was comprised of 755 vessels, with the greatest decrease occurring among Tonnage Class 2 vessels, which comprise 52% of the total (Table 6). This may be related to Multispecies FMP regulations put in effect in 1996 which no longer exempted all small vessels from certain effort restrictions. In 1999, total revenue (in actual dollars) declined for Tonnage Class 1 and 2 vessels, but increased for larger vessels. Landings and revenue per day absent declined in 1999 for all New England trawlers.

Mid-Atlantic Otter Trawl: In 1999, the total revenue for Mid-Atlantic otter trawlers was derived primarily from Loligo squid (33%), summer flounder (19%), whiting (12%), and Atlantic mackerel (5%). The number of vessels using this gear in the Mid-Atlantic decreased to 317 in 1999, down from a high of 375 in 1995, the highest number since 1988 (Table 3 shows vessel totals since 1994). This number still depicts an increase in vessel numbers since the early 1990s which may represent displaced effort from New England in response to tighter effort controls and area closures. The last two years (1998 and 1999) exhibited increases in revenue per day absent from 1997 levels, despite variations in the average number of days absent from port over the past few years (Table 7). Average days absent increased in 1999 among Tonnage Class 2 and 3 vessels, presumably in an effort to counteract poor landings.

Northeast Scallop Dredge: Table 8 shows the activity of the Northeast sea scallop dredge fleet. Major changes have occurred in numbers of Tonnage Class 1 and 2 vessels, predominantly in New England (Table 3), partly due to the activity of part-time scallopers. In 1999, total revenue (in actual dollars) surged for Tonnage Class 3 and 4 vessels which were able to benefit from the re-opening of the Closed Area II scallop fishery. Not surprisingly, revenue and landings per day absent surged for these vessels as well.

Northeast Shrimp Trawl: The northern shrimp fishery is a seasonal (winter/spring) fishery. In 1999, 92% of shrimp landings were made by vessels using shrimp trawls and 96% of the fleet consisted of Tonnage Class 2 or 3 vessels. The principal gears used by shrimp vessels during the six month off-season are otter trawls, gillnets and lobster traps.

Table 9 shows the activity of the shrimp fleet, both in-season and off-season. Shrimp trawl gear was used about half (48%) of the time that these vessels spent at sea, and contributed only 23% to the total fleet revenues. In 1999, revenue continued its steady decline for these vessels, both in-season and off-season, which may explain the rapid drop in the number of participants in this fishery.

Northeast Gillnet: This gear category excludes data for trips using large mesh drift net gear in the large pelagic fishery. In 1999, total revenue for small mesh drift and sink gillnets was derived primarily from goosfish (40%), cod and pollock (both 10%), spiny dogfish (7%), and striped bass (5%). Gillnet vessels are for the most part Tonnage Class 2 vessels, which employ other gear (usually otter trawls and shrimp trawls) for approximately 15% of the year on average.

The total number of vessels in this fishery went from 429 in 1997 to 460 in 1998, and to 440 in 1999 (Table 10). The number of Tonnage Class 1 vessels doubled in 1998 and then returned to 1997 levels. For the majority of the fleet (Tonnage Class 2 vessels), average revenue per day absent and landings per day absent increased in 1999 compared to 1997 and 1998 levels. Total revenues also rose.

Hook: This category of gear includes longlines, setlines, and line trawls. In 1999, 88% of the total revenue from these related gears was attributed to swordfish (25%), cod (24%), bigeye tuna (20%), tilefish (13%) and yellowfin tuna (6%).

The majority of hook vessels in the Northeast have always been in the Tonnage Class 2 category. There appears to be a trend towards fewer large (Tonnage Class 3 and 4) vessels (Table 11). Of the three years shown, landings and revenue per day absent were highest in 1998, although total revenue was far below previous levels. Total revenue declined in 1999 for all vessel classes.

Surf Clam and Ocean Quahog Dredge: This fishery has stabilized in many respects due to the individual transferable quota (ITQ) management system implemented in 1991. In 1995, the number of vessels in the fishery declined by 16% (to 100, including Tonnage Class 1) after several years of stability, as vessel quotas were further consolidated. In 1996 the number of vessels remained stable (101, including Tonnage Class 1). Since then, there has been continual and gradual consolidation. A total of 86 vessels (all tonnage classes) were left in the fishery in 1999.

The activity summarized in Table 12 is divided between the activity of all vessels in the Northeast Region using surf clam/ocean quahog dredges and those vessels landing only in Mid-Atlantic ports. Of the 80 vessels operating in the region in 1999 (Tonnage Class 1 excluded), 40 landed outside the Mid-Atlantic area.

Since the early 1990's, some vessel owners have agreed to harvest surf clams owned under another ITQ. These vessels received about half the market price of the catch. The lower price received by these vessels reflected the rental price for capital and labor services to harvest the resource, which was lower than the full market value of the clams. The ITQ

owner then received the difference between the rental price and the full fair market value. The revenue for the surf clam fishery, as stated in Table 1, was adjusted so that the prices paid to ITQ owners were taken into account. In the case of vessel performance, however, unadjusted revenues are reported, reflecting what vessels actually earned (Table 12).

Offshore Lobster Traps/Pots: The delineation between offshore and inshore lobster fisheries is not precise, as many vessels fish both sides of the three mile line which divides inshore from offshore. Roughly 14% of the lobster revenue in 1999 was from offshore trips, while 86% was from inshore. A small portion of lobsters taken offshore is caught as bycatch by the otter trawl fleet.

The offshore lobster fleet is dominated by Tonnage Class 2 and 3 vessels. Activity by Tonnage Class 1 and 4 vessels was too limited for inclusion in Table 13. The inshore fleet is dominated by Tonnage Class 1 and 2 vessels.

Total revenue and landings per day absent of offshore lobster increased for the period as a whole for all vessels. Both Tonnage Class 2 and 3 vessels relied heavily on offshore lobster pots; it apparently was not worthwhile for these vessels to diversify to other gear types. It is interesting to note that the smaller vessels generated greater revenue and landings per day absent, indicating that the greater travel time presumed for the larger vessels was not productive.

Aquaculture

Although aquaculture is growing and has potential for supplementing wild-catch fishery products in many seafood markets, aquacultural activities in the Northeast (with the exception of salmon) are mostly experimental. The success of Atlantic salmon farms, however, has sparked interest in the potential of raising alternative species. Salmon production in Maine rose substantially in 1998 and 1999 after 2 poorer years. The impact of salmon aquaculture on wild stocks in Maine is becoming an emotionally and politically charged issue which must be dealt with in the years ahead.

Considerable effort is in progress to examine the possibility of farm-raising a number of species that previously were only available in the wild. Recent restrictions on traditional fishing practices have greatly increased interest in raising cod, haddock, and summer flounder experimentally in the Northeast. Surf clams, soft-shell clams, mussels, oysters, bay scallops and sea scallops are also emerging as viable aquaculture shellfish projects.

Trade

Historically, the Northeast Region has run a trade deficit in edible fishery products because of the large port of entry in New York and the region's proximity to Canadian fishing ports. Between 1997 and 1999, this deficit increased by \$856 million. Imports increased by \$877.1 million (35.1%) in value between 1997 and 1999, while export value increased by \$20.9 million (3.3%) (Tables 14 and 15).

Increases in the value of product specific imports during this time period was led by crab products with a gain of \$182.3 million (Table 14). Other product specific imports which increased in value were shrimp products (\$173.5 million), frozen lobster (\$101.6 million), frozen groundfish and flatfish fillets (\$80.6 million), other lobster products (\$19.6 million), salted or dried groundfish (\$11.3 million), frozen groundfish blocks (\$10.5 million), fresh whole groundfish, halibut and other flatfish (\$10.1 million), canned sardines (\$9.6 million), minced fish (\$7.6 million), clam products (\$5.0 million) and squid (\$0.3 million). These were partially offset by declines in scallop imports (\$11.6 million), ocean perch fillets (\$5.6 million), salted herring (\$1.2 million) and fresh or frozen sea herring (\$0.2 million).

Product specific exports which increased in value between 1997 and 1999 (Table 15) included fresh lobster (\$61.7 million), fresh or frozen fillets (\$20.9 million), frozen lobster (\$7.1 million), crab products (\$3.6 million), other lobster products (\$0.7 million), fresh shellfish (\$0.1 million), clam products (\$0.1 million) and other shellfish products (\$0.1 million). These were offset by declines in export value in nearly every other product group (Table 15).

Canada has traditionally been the largest trading partner for the New England states. Between 1997 and 1998, imports from Canada increased, and then increased again between 1998 and 1999 (Table 16). Overall imports from non-Canadian sources declined in both 1998 and 1999. Examination of market share shows that imports from Canada increased in 3 of 5 categories between 1997 and 1998, but increased in only one category (cod) between 1998 and

1999. Overall, Canadian share of the U.S. market for all categories combined increased from 24% to 27.6% of the total between 1997 and 1999.

Table 17 lists the top ten countries (by value) receiving exports of fishery products from the Northeast Region in 1997, 1998 and 1999. Canada was the region's most important trading partner in terms of export value during all three years, followed by Japan. In all three years, six of the top ten nations belonged to the European Union, and as a block they accounted for more of the total export value than did Japan. Export value to the top ten nations declined 8.2% between 1997 and 1998, and then increased 13.7% between 1998 and 1999. Between 1997 and 1999 export value to these ten nations increased 4.4%. Together, these exports accounted for 83.1% of the value of all fishery product exports from the Northeast Region in 1999.

Processing

Fish processing in the Northeast Region utilizes both domestic landings and, increasingly, imported products. Processing is defined as any activity that adds value to raw products, for example, filleting, cooking, breading, canning, or smoking. The most important processed products, by value, are fresh or frozen fish fillets, and breaded, cooked fish. In 1995 (the latest year available), New England plants produced most (92%) of the fresh and frozen fish fillets, steaks, or other processed portions produced in the Northeast, while Mid-Atlantic plants produced 73% of the canned products and 91% of the cured products. Edible fish product processing of regionally caught species was led by surf clam processors, producing canned products of whole and minced clams, chowder, and juice.

The number of plants and their average annual employment levels, as identified in the annual processed product surveys during 1993-1998, are shown in Table 18. In New England, the number of employees in processing plants increased gradually from 1993 to 1997 and then dropped slightly in 1998. Employment in Mid-Atlantic processing plants was relatively constant from 1995-1997 and then increased in 1998 but was still less than in 1993. The number of processing firms throughout the Northeast Region declined steadily from 1993-1998, reflecting the shrinking supply of fresh domestic fish as well as the lack of substitution of imported product for domestic. The total number of employees in the region involved in processing has increased steadily since 1994. The average number of employees per processing plant has increased, since the number of processing plants in the region is at a new low.

The number of plants and employees in wholesaling establishments in the region (both New England and Mid-Atlantic) showed a dramatic rise in 1995 (61% for number of employees; 42% for number of plants) and has continued at high levels through 1998. The number of wholesaling plants in the Mid-Atlantic more than doubled in 1995 and has slowly increased in each subsequent year.

Foreign Fishing and Joint Ventures

Foreign fishing operations in the U.S. Atlantic Exclusive Economic Zone (EEZ) came under direct control of the U.S. with the passage of the Magnuson Act in 1976, and joint venture (JV) arrangements started in 1982. Since that time, directed foreign fishing has been sporadic within the EEZ; and from 1992-1995, and again in 1997, there were no joint ventures within this region. In 1996 and 1998, there was one joint venture for mackerel and/or herring. No permits were requested for herring JV's in 1999, in part because several international agreements were not renewed.

Internal Waters Processing or IWP arrangements have been allowed since the mid-1980s. These programs are administered by the states (Maine, Massachusetts, Rhode Island, New York, and New Jersey in particular). Under these IWPs, U.S. vessels fish for herring (and some mackerel) in state waters and offload to foreign ships (to date, Russian) for processing. In 1994, 1995, 1996, and 1997 about 3,000, 9,000, 11,000, and 1,000 mt of herring were landed, respectively, under these agreements. No herring were taken under IWPs in 1998 or 1999.

Recreational Fishing

Preliminary data collected by the Marine Recreational Fisheries Statistics Survey (MRFSS) indicate that the total number of finfish caught by recreational anglers in the Northeast Region increased to 109.3 million in 1999 (from

108.1 million in 1998; Figure 2). Catches in the Mid-Atlantic increased about 1.5% (from 84.6 million fish in 1998 to 85.9 million fish in 1999), while catches in New England decreased slightly (from 23.5 million fish in 1998 to 23.4 million fish in 1999). Anglers in the Mid-Atlantic accounted for approximately 4 times the finfish catch of their counterparts in New England.

Striped bass, scup, Atlantic mackerel, bluefish and summer flounder were the most common recreationally-caught species in 1999 in New England (Figure 3). Together, these five species comprised roughly 77% (by number) of the total New England recreational catch. Of particular interest is the continued absence of Atlantic cod. From 1981 to 1995 Atlantic cod consistently ranked anywhere from third to fifth on the list of most common recreationally-caught species. Since 1995, however, species such as summer flounder and striped bass have displaced Atlantic cod as one of the top five species caught in New England.

In the Mid-Atlantic, summer flounder, Atlantic croaker, striped bass, black sea bass, and bluefish were the five most common recreationally-caught species, in order, in 1999 (Figure 4). These species accounted for approximately 66% of the total recreational catch by number. The top 3 species, summer flounder, Atlantic croaker, and striped bass were the same as in 1998, but black sea bass and bluefish replaced weakfish and white perch as the fourth and fifth most common species in 1999.

Marine recreational fishing effort in the Northeast Region declined for the second consecutive year since reaching a 10-year high in 1997. Approximately 20.6 million trips were taken in 1999, a 2.9% decrease from 1998 (21.2 million; see Figure 5). In the Mid-Atlantic, effort decreased to a 7-year low (14.1 million trips), while effort in New England fell to the lowest level since 1995 (6.5 million trips).

Private/rental boat trips outnumbered shore fishing trips for the second consecutive year in New England and accounted for one-half of the total fishing effort (Figure 6). Anglers fishing from the shore accounted for approximately 46% of the total, and the remaining 4% of New England recreational trips were made aboard party or charter boats. Effort decreased slightly across all three modes for the second consecutive year. Shore fishing trips reached a 5-year low (3.0 million trips), private/rental boat trips declined slightly since reaching a ten-year high in 1997 (to 3.3 million trips in 1999), and party/charter boat trips declined to the lowest level in 10 years (234.5 thousand).

In the Mid-Atlantic, private/rental boat fishing accounted for the highest percentage of recreational fishing effort in 1999 (56% of total fishing trips; Figure 7). Shore fishing was second (37% of trips) followed by party/charter boat fishing. Effort decreased slightly for the private/rental boat mode (from 8.6 million trips in 1998 to 7.9 million in 1999) and for the party and charter boat mode (from 974.8 thousand trips in 1998 to 910.5 thousand in 1999). Shore fishing trips, however, increased approximately 10% from 4.8 million in 1998 to 5.3 million in 1999.

During the past six years, NMFS has collected marine recreational economic and social data in the Northeast Region. A comprehensive economic survey of recreational anglers in the Northeast Region was conducted in 1994 in conjunction with the MRFSS and a similar survey was conducted again in 1998. In the remaining years, baseline economic information was collected during the intercept portion of the MRFSS. In 1999, a NOAA Technical Memorandum series was published (cited below), using data collected from the surveys, to provide recreational fishing information about anglers and insight into the economic value of marine recreational fishing in the Northeast. Volume I provides demographic and socio-economic information about recreational marine anglers, including such information as age, education, ethnicity, household income, trip length, and boat ownership. The second volume estimates the value of access to recreational fishing in each state in the Northeast. Lastly, Volume III predicts the rate at which different groups will participate in recreational fishing through the year 2025.

Data from the 1998 survey are currently being analyzed and will be used to provide an indication of the dependence of the Northeast Regions' economy on marine recreational fishing expenditures. A similar assessment was conducted with expenditure data collected from the 1994 survey in Maine. In addition, short-term economic studies of the party/charter industry have been conducted in Maine, Massachusetts, New York, and New Jersey. The Atlantic Coastal Cooperative Statistics Program intends to phase in implementation of a long-term data collection program for party and charter boats along the East coast in the near future. Over time, social and economic data collected from these efforts will help provide a foundation for evaluating marine recreational fisheries and future recreational policies.

Net National Benefits

Previous issues of this report have discussed how economics relates to the Magnuson Fishery Conservation and Management Act of 1976, and presented various economic concepts, including resource rents and the economic value of fish resources based on their ability to grow and reproduce. A report titled, "Our Living Oceans, The Economic Status of U.S. Fisheries" also provides a thorough discussion of this topic.

Many of the fisheries in the Northeast Region are moving towards various types of limited access that could lead to greater fleet efficiency. In the groundfish, summer flounder, lobster, and sea scallop fisheries, moratoria on entry are in place; in the surf clam and ocean quahog fishery, individual transferable quotas have been in effect since 1990.

For further information:

Gautam, A and S. Steinback. 1998. Valuation of recreational fisheries in the northeast United States. Striped Bass: a case study. In: Hickley, P and H Tompkins, eds. Chapter 23 in *Recreational Fisheries: Social, Economic and Management Aspects*. Fishing News Books, Oxford. pp. 165-183.

Hicks, R., S. Steinback, A. Gautam, and E. Thunberg. 1999. Volume II: The economic value of New England and Mid-Atlantic sportfishing in 1994. NOAA Tech. Memo. NMFS-F/SPO-38.

NEFSC. 1998. Status of Fishery Resources off the Northeastern United States for 1998. NOAA Tech. Memo. NMFS-NE-115.

NMFS. 1996. Our living oceans. The economic status of U.S. fisheries, 1996. NOAA Tech. Memo. NMFS-F/SPO-22.

Steinback, S. 1999. Regional economic impact assessments of recreational fisheries: An application of the IMPLAN modeling system to marine party and charter boat fishing in Maine. *N. Am J. Fish. Mgt.* 19(3):724-736.

Steinback, S., J. O'Neil, E. Thunberg, A. Gautam, and M. Osborn. 1999. Volume I: Summary report of methods and descriptive statistics for the 1994 Northeast region marine recreational economics survey. NOAA Tech. Memo. NMFS-F/SPO-37.

Thunberg, E., S. Steinback, G. Gray, A. Gautam, and M. Osborn. 1999. Volume III: Summary report of methods and descriptive statistics for the 1994 Northeast region marine recreational fishing participation survey. NOAA Tech. Memo. NMFS- F/SPO-39.

1. These were the fisheries under mandatory reporting in 1997 and 1998. Other fisheries were added in 1999 and 2000 and will be discussed in the next edition of this document.

2. To give a sense of how many vessels would have been double counted, 1998 data include 34 cases of a vessel holding both a commercial and a recreational permit in the summer flounder fishery, 22 cases in the lobster fishery, 55 cases in the black sea bass fishery, and 50 cases in the scup fishery. In the Atlantic mackerel, squid and butterfish fishery there were 207 vessels holding both an open access commercial and an open access recreational permit and 307 vessels holding both a limited access and a different species open access permit. (These data are not shown in tabular form.)

Table 1. Important species landed or raised in the Northeast, their landings, L (thousand mt¹), ex-vessel revenue, R (\$, millions), and prices,P (\$ per lb), 1995-1999².

Year	L	R	P	L	R	P	L	R	P	L	R	P	L	R	P
	American lobster			Sea scallops			Blue crab			Atlantic salmon ³			Goosefish		
1995	31.8	214.6	3.06	8.0	91.1	5.16	56.7	101.2	0.81	10.0	56.7	2.56	25.1	36.1	0.65
1996	32.5	242.8	3.39	7.9	98.2	5.64	37.7	64.3	0.77	12.0	46.2	2.10	25.3	32.3	0.58
1997	37.5	271.6	3.29	6.3	90.5	6.56	45.3	82.7	0.83	12.2	49.5	1.84	28.3	35.2	0.56
1998	36.3	255.2	3.19	5.6	76.0	6.19	39.1	90.1	1.05	13.1	60.4	2.09	26.7	33.9	0.58
1999	39.7	323.0	3.69	10.1	123.1	5.50	39.0	80.6	0.94	12.2	58.2	2.16	25.2	47.0	0.85
	Hard Clam			Surfclam			Menhaden			Squid Loligo			Cod		
1995	4.2	42.1	4.50	30.1	47.1	0.71	344.9	45.7	0.06	18.5	23.8	0.58	13.7	28.6	0.95
1996	3.2	35.1	4.94	28.8	42.6	0.67	283.1	37.9	0.06	12.5	18.6	0.68	14.3	26.7	0.85
1997	4.4	44.5	4.62	26.3	38.9	0.67	246.9	33.8	0.06	16.2	26.5	0.74	13.0	24.6	0.86
1998	3.6	41.2	5.20	24.5	33.0	0.61	249.2	44.4	0.08	19.2	32.7	0.77	11.1	25.5	1.04
1999	3.5	40.7	5.25	26.7	34.1	0.58	188.9	33.2	0.08	18.8	32.2	0.78	9.7	23.9	1.11
	Oyster			Sea Urchins			Ocean Quahog			Summer fl.			Whiting		
1995	3.1	38.0	5.48	15.6	35.7	1.04	23.2	21.7	0.42	5.0	20.4	1.86	14.7	14.0	0.43
1996	2.8	36.9	6.02	10.1	24.0	1.08	21.1	20.4	0.44	4.0	14.3	1.64	16.2	13.6	0.38
1997	2.1	16.0	3.46	9.0	21.6	1.09	19.9	19.9	0.45	4.0	15.3	1.74	15.6	15.1	0.44
1998	2.4	22.1	4.23	7.0	17.4	1.13	18.1	18.4	0.46	5.1	18.8	1.68	15.0	13.4	0.41
1999	2.2	22.1	4.58	7.1	20.6	1.31	17.6	18.5	0.48	4.8	18.0	1.69	14.1	14.3	0.46
	Bluefin tuna			Winter fl.			Soft Clam			Yellowtail fl			At Herring		
1995	0.9	20.4	10.66	4.0	12.7	1.43	1.1	10.7	4.48	1.9	6.0	1.42	68.8	8.8	0.06
1996	0.9	16.5	8.40	4.8	14.5	1.38	1.0	8.3	3.75	2.4	7.6	1.43	87.7	10.9	0.06
1997	1.0	16.4	7.42	5.4	15.8	1.34	1.0	10.0	4.34	2.9	9.5	1.50	96.9	11.6	0.05
1998	1.0	12.0	5.24	5.1	15.1	1.34	1.3	12.2	4.33	3.7	10.9	1.35	82.3	11.1	0.06
1999	1.0	14.3	6.31	4.7	13.0	1.27	1.2	12.4	4.67	4.4	11.4	1.17	79.4	11.0	0.06
	Penaeid Shrimp			Striped Bass			Haddock			Am Plaice			Pollock		
1995	0.0	0.1	2.39	1.8	6.2	1.54	0.4	1.2	1.33	4.6	13.2	1.29	3.4	6.8	0.92
1996	0.0	0.0	2.57	2.1	8.0	1.72	0.6	1.5	1.18	4.4	12.3	1.27	3.0	4.5	0.69
1997	1.0	7.4	3.23	2.7	8.6	1.46	1.5	3.6	1.08	3.9	11.4	1.31	4.3	5.4	0.57
1998	0.6	4.0	2.90	2.9	9.5	1.47	2.8	7.9	1.26	3.7	10.3	1.28	5.6	8.1	0.66
1999	1.6	10.8	3.15	2.8	10.5	1.69	3.1	9.1	1.31	3.1	8.5	1.23	4.6	8.4	0.83
	Witch fl			Black Sea Bass			Spiny Dogfish			Swordfish			White hake		
1995	2.2	8.4	1.73	0.9	2.9	1.50	16.2	7.0	0.20	1.2	7.7	2.89	4.3	6.2	0.65
1996	2.1	7.7	1.67	1.5	3.6	1.13	18.2	7.5	0.19	0.8	5.6	3.06	3.3	4.6	0.63
1997	1.8	6.6	1.69	1.2	4.0	1.49	17.6	5.8	0.15	1.0	2.2	1.01	2.2	3.2	0.65
1998	1.9	6.5	1.59	1.2	4.4	1.66	19.7	7.1	0.16	1.1	5.4	2.13	2.4	3.8	0.73
1999	2.1	6.6	1.41	1.4	5.2	1.71	14.7	5.2	0.16	0.9	4.9	2.45	2.6	4.3	0.74
	Scup			Squid Illex			Bigeye Tuna			Weakfish			Atlantic Mackerel		
1995	2.9	5.8	0.91	14.1	8.1	0.26	0.9	8.0	4.19	1.8	2.5	0.62	8.4	2.7	0.15
1996	2.7	6.3	1.07	17.0	9.7	0.26	0.4	2.8	3.62	1.5	2.6	0.80	15.8	4.6	0.13
1997	2.2	6.4	1.32	13.6	6.1	0.20	0.5	2.9	2.79	2.4	2.8	0.53	15.4	9.5	0.28
1998	1.9	6.1	1.46	23.6	9.7	0.19	0.5	2.8	2.55	3.2	3.2	0.45	14.6	5.2	0.16
1999	1.5	4.2	1.26	7.4	3.9	0.24	0.6	3.7	2.90	2.7	3.6	0.60	12.0	3.6	0.14
	Pandalid Shrimp			Skates			Butterfish			Tilefish			Bluefish		
1995	6.8	13.2	0.88	7.1	3.4	0.22	2.2	2.6	0.55	0.7	2.9	1.98	2.3	1.8	0.36
1996	9.5	15.1	0.72	14.2	6.2	0.20	3.6	5.2	0.66	1.1	4.2	1.68	2.7	1.9	0.32
1997	6.4	11.5	0.82	11.0	3.3	0.14	2.8	4.7	0.76	1.8	4.9	1.23	3.3	2.2	0.30
1998	3.7	7.6	0.94	13.9	4.1	0.13	2.0	2.5	0.58	1.3	4.8	1.62	3.1	2.3	0.33
1999	1.7	3.5	0.93	12.6	3.2	0.12	2.1	2.7	0.58	0.5	2.7	2.31	2.8	2.5	0.40
	Yellowfin tuna			Red Hake			Mussels			Redfish			Windowpane fl		
1995	1.1	3.8	1.64	1.6	1.0	0.28	3.0	2.5	0.37	0.4	0.6	0.62	0.8	1.0	0.58
1996	0.4	1.9	2.14	1.1	0.7	0.29	2.6	2.3	0.39	0.3	0.5	0.66	1.0	0.9	0.42
1997	0.9	3.7	1.94	1.3	0.8	0.27	2.0	1.7	0.38	0.3	0.3	0.54	0.5	0.6	0.51
1998	0.5	2.1	1.82	1.3	0.8	0.27	1.3	1.1	0.39	0.3	0.4	0.57	0.5	0.4	0.35
1999	0.4	1.5	1.56	1.6	0.9	0.26	0.9	0.7	0.36	0.4	0.4	0.51	0.2	0.1	0.27
	Total Shellfish ⁴			Total Finfish ⁴			Total ⁴								
	L	R		L	R		L	R		L	R		L	R	
1995	223.2	653.2		587.3	373.2		810.6	1026.4							
1996	196.1	628.4		556.1	336.7		752.2	965.1							
1997	201.2	657.9		533.6	351.0		734.8	1008.9							
1998	198.4	630.7		524.4	369.6		722.9	1000.3							
1999	190.6	738.6		445.5	359.7		636.1	1098.3							

¹ Landings of finfish, lobster, shrimp, and crab are given in live weight; landings of all other shellfish are expressed in meat weight² North Carolina landings and price data not included for 1995-1996.³ Amounts raised and value at first sale⁴ Price not meaningful for total figures

Table 2. Landings (thousand mt, landed weight) and ex-vessel revenue (\$, millions) for Northeast fisheries, by gear type, 1997-1999.

Gear Types	<u>1997</u>		<u>1998</u>		<u>1999</u>	
	Landings	Revenue	Landings	Revenue	Landings	Revenue
Pots & traps- lobster	40.8	269.7	39.8	254.9	39.7	295.8
Otter trawl, bottom-fish	112.2	174.2	131.2	183.2	106.2	175.9
Dredge-sea scallop	8.0	91.3	7.1	75.8	11.5	119.4
Pots & traps- blue crab	21.2	35.5	22.4	37.1	30.4	60.1
Dredge-surf clam & ocean quahog	46.3	55.1	42.6	47.6	42.2	47.0
Sink gill net	33.7	35.0	35.0	38.9	30.9	45.5
Purse seine- menhaden	241.5	32.6	230.6	40.9	167.9	29.5
Long line, bottom and pelagic	6.8	22.6	6.8	21.9	5.6	18.9
Diving gear	7.4	19.2	5.6	15.1	5.9	18.3
Hand line, other	2.8	17.2	3.4	15.4	3.1	18.1
Hoes	1.0	10.0	1.4	13.5	1.4	14.9
Otter trawl, bottom-shrimp	8.0	18.9	4.3	11.6	3.2	14.0
Otter trawl, bottom-scallops	0.4	4.9	0.6	6.6	1.0	9.9
Tongs and grabs	1.1	13.7	0.3	3.4	1.1	8.6
Rakes	1.3	15.2	0.8	4.4	0.4	4.4
Purse seine- herring	52.5	6.5	21.5	3.3	24.3	3.7
Unknown ¹	41.9	121.6	36.9	165.8	22.7	132.2
All other gears	83.4	64.8	107.5	60.3	117.2	81.8
Total	710.3	1008.0	697.9	999.7	614.7	1097.9

¹ Includes oyster dredge

Table 3. Number of identifiable vessels using otter trawls and scallop dredges, and total number of vessels regardless of gear type in the Northeast region by tonnage class (TC ¹) and sub-region, 1994-1999.

Year/Subregion	TC1	Otter Trawls				Total	TC1	Scallop Dredges				Total	All Vessels ²				Total
		TC2	TC3	TC4+	Total			TC2	TC3	TC4+	Total		TC1	TC2	TC3	TC4+	
1994	Northeast	34	502	446	131	1113	2	65	82	131	280	405	1622	673	280	2980	
	New England	31	419	299	94	843	2	64	29	89	184	389	1387	410	198	2384	
	Mid-Atlantic & Chesapeake	3	86	184	55	328	0	1	68	85	154	18	274	332	149	773	
1995	Northeast	47	606	442	133	1228	3	64	80	134	281	442	1684	646	283	3055	
	New England	40	488	291	90	909	3	62	36	106	207	387	1395	408	221	2411	
	Mid-Atlantic & Chesapeake	7	122	190	56	375	0	2	59	71	132	62	349	318	133	862	
1996	Northeast	47	624	424	134	1229	9	120	82	132	343	409	1863	607	276	3155	
	New England	44	510	284	96	934	9	118	43	105	275	379	1572	381	217	2549	
	Mid-Atlantic & Chesapeake	3	117	182	54	356	0	2	56	56	114	32	352	303	113	800	
1997	Northeast	35	576	414	143	1168	15	109	86	124	334	505	1786	599	267	3157	
	New England	31	486	280	102	899	15	107	50	106	278	448	1477	381	215	2521	
	Mid-Atlantic & Chesapeake	4	96	166	53	319	0	2	57	50	109	61	367	291	105	824	
1998	Northeast	40	542	391	142	1115	17	89	87	127	320	457	1672	552	257	2938	
	New England	35	456	257	99	847	17	87	51	106	261	367	1341	343	204	2255	
	Mid-Atlantic & Chesapeake	5	92	180	60	337	0	2	55	50	107	95	389	285	107	876	
1999	Northeast	19	476	377	131	1003	7	64	85	129	285	331	1633	544	247	2755	
	New England	18	394	256	87	755	7	64	68	125	264	276	1258	381	212	2127	
	Mid-Atlantic & Chesapeake	1	88	168	60	317	0	0	58	53	111	57	426	267	106	856	

¹ TC1=less than 5 gross registered tons (GRT), TC2=5-50 GRT,TC3=51-150 GRT,TC4=151+GRT.

² The "All Vessels" columns provide a unique count of vessels regardless of gear used.

³ Northeast vessels include those that landed at least once in Maine, Massachusetts, New Hampshire, Rhode Island, Connecticut, New York, New Jersey, Maryland, Virginia, or Delaware. New England vessels include those that landed at least once in Maine, Mass, New Hampshire, Rhode Island, or Connecticut. Mid Atl.& Chesapeake vessels include those that landed at least once in New York, New Jersey, Maryland, Virginia, or Delaware.

Table 4. Percentages of landings (by weight) by gear type for selected species in the Northeast, 1999.

GEAR TYPE	Cod	Yellowtail flounder	Haddock	Other multi- species ¹	Menhaden	Summer flounder	American lobster	Sea scallops	Swordfish	Atlantic herring
Bottom trawl	58.2%	92.5%	91.6%	88.7%	0.0%	92.2%	0.9%	9.5%	2.3%	2.0%
Midwater trawl	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	66.5%
Hook gear	17.1%	0.0%	1.5%	0.6%	0.0%	0.0%	0.0%	0.0%	97.6%	0.0%
Gillnet	19.4%	5.9%	6.7%	10.2%	0.3%	1.1%	0.1%	0.0%	0.1%	0.1%
Pots/traps	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%
Lobster pot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	98.9%	0.0%	0.0%	0.0%
Scallop dredge	0.0%	1.3%	0.0%	0.1%	0.0%	1.5%	0.0%	90.4%	0.0%	0.0%
Other gear	5.3%	0.3%	0.2%	0.4%	99.7%	4.6%	0.1%	0.1%	0.0%	31.4%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

GEAR TYPE	Atlantic mackerel	Butter- fish	Loligo	Black sea bass	Scup	Goosefish	Northern shrimp	Bluefin tuna
Bottom trawl	93.2%	94.1%	99.1%	29.0%	69.9%	42.7%	93.8%	0.0%
Midwater trawl	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hook gear	0.0%	0.0%	0.0%	0.2%	0.0%	0.3%	0.0%	1.4%
Gillnet	1.9%	1.7%	0.0%	0.6%	0.0%	46.5%	0.0%	0.0%
Pots/traps	1.5%	0.8%	0.2%	56.4%	15.0%	0.0%	5.8%	0.0%
Lobster pot	0.0%	0.0%	0.0%	0.7%	0.2%	0.0%	0.4%	0.0%
Scallop dredge	0.0%	0.0%	0.0%	0.1%	0.0%	10.5%	0.0%	0.0%
Other gear	2.6%	3.4%	0.7%	13.0%	14.9%	0.0%	0.0%	98.6%
Total	100%	100%	100%	100%	100%	100%	100%	100%

¹ Includes pollock, winter flounder, witch flounder, windowpane flounder, American plaice, redfish, white hake, red hake, whiting, and ocean pout.

Table 5. Numbers of unique permitted vessels by tonnage class ¹, permit, and category ², 1996-1998 ³

Fishery Management Plan	Tonnage Class 1			Tonnage Class 2			Tonnage Class 3			Tonnage Class 4			TOTALS		
	1996	1997	1998	1996	1997	1998	1996	1997	1998	1996	1997	1998	1996	1997	1998
Multispecies ⁴															
Lim. acc.	102	111	106	1107	1152	1092	427	418	364	127	125	107	1763	1806	1669
Open acc.	415	546	472	877	1089	1052	227	250	235	114	111	113	1633	1996	1872
Total	517	657	578	1984	2241	2144	654	668	599	241	236	220	3396	3802	3541
Sea Scallop ⁴															
Lim. acc.	-	-	-	15	13	10	159	154	139	154	143	144	-	-	-
Open acc.	159	168	166	1308	1296	1288	430	419	384	101	111	96	1998	1994	1934
Total	-	-	-	1323	1309	1298	589	573	523	255	254	240	-	-	-
Black Sea Bass															
Lim. acc. comm.		90	95		469	497		282	301		88	92		929	985
Open acc. rec.		25	30		194	273		48	79		0	0		267	382
Total		115	125		663	770		330	380		88	92		1196	1367
Scup															
Lim. acc. comm.	⁵	86	83		451	434		330	316		95	91		962	924
Open acc. rec.		33	33		267	272		75	70		0	0		375	375
Total		119	116		718	706		405	386		95	91		1337	1299
Lobster															
Lim. acc. comm.	321	305	278	2453	2445	2322	489	469	420	201	195	176	3464	3414	3196
Lim. acc. rec.	-	-	-	14	13	12	-	-	0	0	0	0	-	-	-
Total	-	-	-	2467	2458	2334	-	-	420	201	195	176	-	-	-
Summer Flounder															
Lim. acc. comm.	41	36	34	358	349	331	480	464	422	207	203	189	1086	1052	976
Open acc. Charter/Party	67	61	55	448	394	399	93	93	89	-	-	-	-	-	-
Total	108	97	89	806	743	730	573	557	511	-	-	-	-	-	-
Squid/Mackerel/Butterfish ^{4 6}															
Lim. acc. comm.		-	0		111	102		234	228		82	87		-	417
Open acc. comm.	416	284	239	1641	943	958	656	251	223	265	119	122	2978	1597	1542
Open acc. Charter/Party	68	69	57	421	397	370	103	104	89	0	0	0	592	570	516
Total	484	-	296	2062	1451	1430	759	589	540	265	201	209	3570	-	2475

Bluefin Tuna

Open acc. rec.	7887	5146	5366	4419	3629	3815	126	97	115	30	78	128	12462	9646	1073
															2
Open acc. comm.	5531	3422	3021	7963	5650	5492	810	431	503	212	117	143	14516	9915	9543
Lim. acc. comm.	0	0	0	0	0	0	-	-	-	4	-	-	-	-	-
Total	13418	8568	8387	12382	9279	9307	-	-	-	246	-	-	-	-	-

Surf Clam and Ocean Quahog ⁷

Clam open access comm. & rec. ONLY	28	25	27	182	169	134	92	46	31	41	21	19	343	261	211
Quahog open access comm. & rec. ONLY	14	15	13	130	108	108	17	17	15	-	-	-	-	-	-
BOTH clam and quahog open acc. comm. and rec.	82	66	74	535	547	576	324	335	314	155	169	169	1096	1117	1133
Total	124	106	114	847	824	818	433	398	360	-	-	-	-	-	-

¹ Tonnage class (TC) 1 vessels are < 5 GRT; TC 2, 5-50 GRT; TC 3, 51-150 GRT; TC 4, 151+ GRT.

² Where there are 3 or fewer entries or where a row or column total would reveal the exact number in one of these categories, a “-” is used to protect confidentiality.

³ Vessels with both commercial and recreational permits under a single FMP are listed under commercial only, to avoid double counting. For the Squid/Mackerel/Butterfish FMP, vessels with a limited access permit are included under that heading only, and vessels holding a charter/party permit are under that category only. The only vessels listed under open access commercial are those with no limited access or charter/party permits. See text.

⁴ For these FMP's there are also multiple sub-categories within some of the categories listed here.

⁵ Blank spaces indicate a category or permit which did not exist in that year.

⁶ In 1997, 990 bluefin tuna vessels did not supply tonnage data. In 1998, there were 1692 such vessels. These vessels are counted in the annual totals, but not in tonnage breakdowns.

⁷ These two fisheries are under an ITQ system, therefore, possession of a permit does not by itself convey harvest privileges. See text.

Table 6. Characteristics, activity and revenue data for New England otter trawl vessels by vessel tonnage class¹, 1997-1999.
Data for all trips included, regardless of gear used.

	<u>Tonnage Class 1</u>			<u>Tonnage Class 2</u>			<u>Tonnage Class 3</u>			<u>Tonnage Class 4</u>		
	1997	1998	1999	1997	1998	1999	1997	1998	1999	1997	1998	1999
Number of vessels	31	35	18	486	456	394	280	257	256	102	99	87
Average age	12	16	14	22	23	24	22	22	23	17	18	19
Average GRT	3	3	3	23	23	23	102	101	101	178	176	178
Average days absent	-. ²	-. ²	-. ²	118	125	127	140	129	166	178	108	154
Average crew size	2.0	2.1	2.1	2.5	2.5	2.4	4.1	4.1	4.1	6.4	6.6	6.6
Revenue per day absent (\$)	-. ²	-. ²	-. ²	545	576	564	1923	2426	1914	3486	5885	4870
Landings per day absent (lbs)	-. ²	-. ²	-. ²	820	779	696	2839	3615	2502	9059	13672	10373
Total revenue (\$,millions)	0.7	0.8	0.4	31.3	32.8	28.2	75.4	80.4	83.1	63.3	62.9	65.2

¹ Tonnage Class (TC) 1 vessels, <5 Gross Registered Tons (GRT); TC2, 5-50 GRT; TC3, 51-150 GRT; and TC4, >150 GRT.

² Less than 10 vessels available on which to base effort estimates

Table 7. Characteristics, activity, and revenue data for Mid-Atlantic otter trawl vessels, by vessel tonnage class¹, 1997-1999. Data for all trips included, regardless of gear used.

	<u>Tonnage Class 2</u>			<u>Tonnage Class 3</u>			<u>Tonnage Class 4</u>		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
Number of vessels	96	92	88	166	180	168	53	60	60
Average age	24	24	27	21	22	24	19	18	20
Average GRT	38	26	27	107	105	105	178	179	179
Average days absent	121	72	136	152	138	161	174	184	155
Average crew size	2.2	2.1	2.2	4.7	4.6	4.7	7.5	7.3	7.5
Revenue per day absent (\$)	513	925	542	1673	2044	2092	3037	3105	4040
Landings per day absent (lbs)	693	1174	707	3582	4017	4206	6234	10468	8291
Total revenue (\$, millions)	6.0	6.1	6.5	42.2	50.8	56.6	28.0	34.3	37.6

¹Tonnage class (TC) 2 vessels, 5-50 Gross Registered Tons (GRT); TC3, 51-150 GRT; and TC4, >150 GRT. TC1 vessels omitted due to insufficient data.

Table 8. Characteristics, activity, and revenue data for Northeast vessels using scallop dredges, by vessel tonnage class¹, 1997-1999. Data for all trips included, regardless of gear used.

	<u>Tonnage Class 2</u>			<u>Tonnage Class 3</u>			<u>Tonnage Class 4</u>		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
Number of vessels	109	89	64	86	87	85	124	127	129
Average age	20	24	30	21	21	22	19	20	21
Average GRT	22	22	24	119	118	118	182	180	180
Average days absent	58	32	45	232	231	222	251	242	260
Average crew size	2.5	2.4	2.3	7.0	7.0	7.1	8.4	8.4	8.4
Revenue per day absent (\$)	793	1431	1246	1441	1404	2041	2015	1765	2562
Landings per day absent (lbs, live wt)	1032	1777	1433	2622	1931	3008	2683	2454	4481
Total revenue (\$ millions)	5.0	4.1	3.6	28.7	28.2	38.5	62.7	54.2	85.9

¹ Tonnage Class (TC) 2 vessels, 5-50 Gross Registered Tons (GRT); TC3, 51-150 GRT; and TC4, >150 GRT. TC 1 vessels were omitted due to insufficient data.

Table 9. Characteristics, activity, and revenue data for Northeast vessels using shrimp trawls, by vessel tonnage class¹, 1997 - 1999. Data included for all trips and trips using shrimp gear only.

	<u>Tonnage Class 1</u>			<u>Tonnage Class 2</u>			<u>Tonnage Class 3</u>		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
All Trips									
Number of vessels	14	11	7	228	178	137	48	45	31
Average age	10	12	14	18	18	19	21	22	19
Average GRT	3	4	4	22	23	24	85	80	74
Average days absent	⁻²	⁻²	⁻²	110	39	62	⁻²	⁻²	⁻²
Average crew size	2.2	2.1	2.0	2.3	2.3	2.3	3.2	3.4	3.2
Revenue per day absent (\$)	⁻²	⁻²	⁻²	609	1911	948	⁻²	⁻²	⁻²
Landings per day absent (lbs)	⁻²	⁻²	⁻²	836	2414	1156	⁻²	⁻²	⁻²
Total revenue (\$, millions)	0.6	0.6	0.2	15.3	13.3	8.1	11.6	11.3	7.1
Trips Using Shrimp Trawls Only									
Average days absent	⁻²	⁻²	⁻²	26	23	30	⁻²	⁻²	⁻²
Average crew size	2.2	2.1	2.0	2.3	2.3	2.3	3.2	3.4	3.2
Revenue per day absent (\$)	⁻²	⁻²	⁻²	1135	1055	460	⁻²	⁻²	⁻²
Landings per day absent (lbs)	⁻²	⁻²	⁻²	1385	1129	498	⁻²	⁻²	⁻²

¹ Tonnage Class (TC) 1 vessels, <5 Gross Registered Tons (GRT); TC2, 5-50 GRT; TC3, 51-150 GRT; and TC4, >150 GRT.

² Less than 10 vessels available on which to base effort estimates

Table 10. Characteristics, activity, and revenue data for Northeast vessels using gillnets, by vessel tonnage class¹, 1997-1999. Data included for all trips and trips using gillnets only.

	<u>Tonnage Class 1</u>			<u>Tonnage Class 2</u>			<u>Tonnage Class 3</u>		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
All Trips									
Number of vessels	25	53	25	359	377	378	45	30	37
Average age	14	17	13	19	18	19	21	20	22
Average GRT	2	3	2	20	19	20	83	74	80
Average days absent	- ²	- ²	- ²	138	142	110	108	97	85
Average crew size	2.0	2.0	2.0	2.7	2.6	2.6	3.7	3.7	3.9
Revenue per day absent (\$)	- ²	- ²	- ²	647	674	958	2323	2203	3283
Landings per day absent (lbs)	- ²	- ²	- ²	1276	1277	1384	4241	2884	3614
Total revenue (\$, millions)	0.7	1.2	1.0	32.1	36.1	39.8	11.3	6.4	10.3
Trips Using Gillnets Only									
Average days absent	- ²	- ²	- ²	131	130	98	71	70	69
Average crew size	2.0	2.0	2.0	2.7	2.6	2.6	3.7	3.7	3.9
Revenue per day absent (\$)	- ²	- ²	- ²	496	556	831	988	1062	1801
Landings per day absent (lbs)	- ²	- ²	- ²	1145	1192	1307	1876	1771	2013

¹ Tonnage Class (TC) 1 vessels <5 Gross Registered Tons (GRT); TC2, 5-50 GRT; TC3, 51-150 GRT. TC4 vessels omitted due to insufficient data.

² Less than 10 vessels available on which to base effort estimates

Table 11. Characteristics, activity, and revenue data for Northeast vessels using hook gear, by vessel tonnage class¹, 1997-1999. Data included for all trips and trips using hook gear only.

	<u>Tonnage Class 1</u>			<u>Tonnage Class 2</u>			<u>Tonnage Class 3</u>			<u>Tonnage Class 4</u>		
	1997	1998	1999	1997	1998	1999	1997	1998	1999	1997	1998	1999
All Trips												
Number of vessels	26	37	33	192	195	187	52	49	44	13	8	4
Average age	19	16	14	16	16	17	17	16	18	15	14	12
Average GRT	2	3	2	19	19	20	91	90	88	169	169	164
Average days absent	⁻²	⁻²	⁻²	90	82	77	⁻²	⁻²	⁻²	⁻²	⁻²	⁻²
Average crew size	2.0	2.3	2.2	2.5	2.5	2.5	4.5	4.3	4.3	7.5	5.2	5.0
Revenue per day absent (\$)	⁻²	⁻²	⁻²	784	1022	1012	⁻²	⁻²	⁻²	⁻²	⁻²	⁻²
Landings per day absent (lbs)	⁻²	⁻²	⁻²	1246	1490	1126	⁻²	⁻²	⁻²	⁻²	⁻²	⁻²
Total revenue (\$ million)	0.4	0.8	0.7	13.5	16.3	14.6	12.0	14.2	12.5	12.2	2.9	2.2
Trips Using Hook Gear Only												
Average days absent	⁻²	⁻²	⁻²	78	58	56	⁻²	⁻²	⁻²	⁻²	⁻²	⁻²
Average crew size	2.0	2.3	2.2	2.5	2.5	2.5	4.5	4.3	4.3	7.5	5.2	5.0
Revenue per day absent (\$)	⁻²	⁻²	⁻²	464	697	658	⁻²	⁻²	⁻²	⁻²	⁻²	⁻²
Landings per day absent (lbs)	⁻²	⁻²	⁻²	543	720	736	⁻²	⁻²	⁻²	⁻²	⁻²	⁻²

¹ Tonnage Class (TC) 1 vessels, <5 GRT; TC2, 5-50 GRT; TC3, 51-150 GRT; and TC4, >150 GRT.

² Less than 10 vessels available on which to base effort estimates

Table 12. Characteristics, activity, and revenue data for Northeast surf clam and ocean quahog vessels and Mid-Atlantic vessels only, by vessel tonnage class¹, 1997-1999.

	<u>Tonnage Class 2</u>			<u>Tonnage Class 3</u>			<u>Tonnage Class 4</u>		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
All Regional Surf Clam/Ocean Quahog Vessels									
Number of vessels	42	35	34	31	27	26	21	22	20
Average age	15	17	17	22	22	24	21	22	24
Average GRT	17	16	16	115	112	116	178	177	181
Average days absent	- ²	- ²	- ²	- ²	- ²	- ²	- ²	- ²	- ²
Average crew size	2.6	2.5	2.6	4.2	4.0	4.2	4.7	4.7	4.7
Revenue per day absent (\$)	- ²	- ²	- ²	- ²	- ²	- ²	- ²	- ²	- ²
Landings per day absent (lbs live wt.)	- ²	- ²	- ²	- ²	- ²	- ²	- ²	- ²	- ²
Total revenue (\$, millions)	2.4	1.7	2.1	27.1	30.0	23.5	20.9	19.9	20.0
Mid-Atlantic Surf Clam/Ocean Quahog Vessels Only									
Number of vessels	4	3	3	28	23	21	18	16	16
Average days absent	- ²	- ²	- ²	- ²	- ²	- ²	- ²	- ²	- ²
Average crew size	3.3	3.0	3.0	4.1	4.0	4.0	4.7	4.7	4.7
Revenue per day absent (\$)	- ²	- ²	- ²	- ²	- ²	- ²	- ²	- ²	- ²
Landings per day absent (lbs live wt.)	- ²	- ²	- ²	- ²	- ²	- ²	- ²	- ²	- ²
Total revenue (\$, millions)	0.5	0.4	0.4	24.8	19.6	20.8	17.7	15.4	16.1

¹ Tonnage Class (TC) 2 vessels, 5-50 Gross Registered Tons (GRT); TC3 vessels, 51-150 GRT; and TC4 vessels, > 150 GRT. TC1 vessels were omitted due to insufficient data.

² Indicates less than 10 vessels available on which to base effort estimates

Table 13. Characteristics, activity, and revenue data for Northeast vessels using offshore lobster gear by vessel tonnage class¹, 1997-1999. Data included for all trips and offshore lobster trips only.

	<u>Tonnage Class 2</u>			<u>Tonnage Class 3</u>		
	1997	1998	1999	1997	1998	1999
All Trips						
Number of vessels	80	80	87	33	39	45
Average age	20	20	19	14	16	19
Average GRT	20	20	22	90	90	90
Average days absent	49	45	38	198	229	208
Average crew size	2.5	2.5	2.6	4.3	4.5	4.3
Revenue per day absent (\$)	1479	1880	2927	1592	1455	1828
Landings per day absent (lbs)	949	1548	1693	732	933	1302
Total revenue (\$, millions)	5.8	6.8	9.7	10.4	13.0	17.1
Offshore Lobster Trips Only						
Average days absent	39	40	30	190	223	186
Average crew size	2.5	2.5	2.6	4.3	4.5	4.3
Revenue per day absent (\$)	1351	1239	2371	1094	1076	1478
Landings per day absent (lbs)	469	410	721	429	408	577

¹ Tonnage Class (TC) 2 vessels, 5-50 Gross Registered Tons (GRT); TC3, 51-150 GRT. TC1 and TC4 vessels were omitted due to insufficient data.

Table 14. Value (\$, millions) of imported edible fishery products in the northeast, 1997 - 1999.

Product Category	1997	1998	1999
Fresh or frozen sea herring	2.3	3.6	2.1
Fresh whole groundfish, halibut and other flatfish	40.5	47.7	50.6
Frozen whole groundfish, halibut and other flatfish	28.7	29.9	35.4
Fresh or frozen salmon	99.8	106.1	129.4
Frozen groundfish blocks	174.4	196.8	184.9
Other fish fresh or frozen	85.0	85.2	119.5
Ocean perch fillets	35.2	49.3	29.6
Fresh groundfish and flatfish fillets	37.7	38.8	46.4
Frozen groundfish and flatfish fillets	300.1	306.6	380.7
Other fresh or frozen fillets	182.4	202.0	261.2
Salted or dried groundfish	34.5	38.3	45.8
Salted herring	3.0	2.4	1.8
Canned tuna	128.0	145.1	202.3
Canned sardines	31.7	37.2	41.3
Minced fish	9.8	15.3	17.4
Clam products	12.9	18.1	17.9
Crab products	118.6	165.7	300.9
Lobster, fresh	125.4	139.2	163.6
Lobster, frozen	160.1	161.6	261.7
Other lobster products	69.6	70.4	89.2
Scallops	147.6	144.6	136.0
Shrimp products	410.3	553.4	583.8
Squid	33.2	30.2	33.5
Other fishery products	228.0	217.6	241.0
Totals	2,498.8	2,804.9	3,375.9

Table 15. Value (\$, millions) of exported fishery products (including re-exports)¹ in the Northeast, 1997-1999.

Product Category	1997	1998	1999
Fresh or frozen herring	0.6	0.2	0.5
Processed herring products	10.9	8.3	8.4
Fresh or frozen salmon	37.2	35.1	28.8
Fresh or frozen cod	11.5	13.3	10.8
Fresh or frozen mackerel	6.8	5.8	4.7
Fresh or frozen dogfish	20.1	14.6	16.3
Butterfish	3.7	1.2	0.8
Fresh or frozen tuna	19.2	18.7	11.3
Other fish, fresh or frozen	106.8	98.4	94.2
Fresh or frozen fish fillets	25.1	31.5	46.0
Fish sticks & portions	7.8	5.5	5.2
Sea urchin, live	8.4	5.9	5.6
Sea urchin, roe	50.0	48.4	46.9
Other roe products	10.6	8.9	10.3
Shrimp fresh	3.1	1.2	1.0
Shrimp frozen	29.5	27.4	21.4
Shrimp canned	8.5	6.7	7.1
Lobster, fresh	155.1	147.1	216.8
Lobster, frozen	4.5	8.0	11.6
Other lobster products	0.4	1.6	1.1
Crab products	9.2	9.3	12.8
Fresh or frozen squid	14.9	20.8	12.0
Shellfish fresh	8.6	9.4	8.7
Clam products	5.0	5.2	5.1
Fresh or frozen scallops	22.8	19.1	19.2
Other shellfish products	3.8	3.1	3.9
Other edible fishery products	45.5	32.2	40.1
Totals	629.4	586.7	650.3

¹ Re-exports consist of commodities of foreign origin which have entered the United States for consumption or into Customs bonded warehouses or U.S. Foreign Trade Zones, and which, at the time of exportation, are in substantially the same condition as when imported (U.S. Census Bureau, Guide to Foreign Trade Statistics.
<http://www.census.gov/foreign-trade/www/sec2.html>)

Table 16. New England imports (mt, 1000's) of selected fishery products¹ from Canada and all other countries 1997-1999.

Product	1997		1998		1999	
	Canada	Other	Canada	Other	Canada	Other
Cod	43.3	134.2	36.7	103.4	43.8	111.8
Flatfish ²	14.2	21.1	16.7	21.3	16.6	20.4
Other groundfish ³	36.3	238.4	43.2	227.9	38.2	216.8
Other finfish	36.7	34.2	43.7	42.2	42.5	31.6
Scallops	6.0	3.5	5.5	3.7	5.2	3.5
Total	136.5	431.4	145.8	398.5	146.3	384.1

¹With the exception of scallops, product forms include whole fresh or frozen, frozen blocks, and fresh or frozen fillets. Finfish weights are expressed in live weight equivalents and scallops in meat weight equivalents.

²Includes halibut.

³Includes cusk, hake, haddock, pollock and ocean perch.

Table 17. Top ten countries receiving exports of fishery products from the Northeast region, ranked by value of exports (\$, millions), 1997-1999.

Country	Year		
	1997	1998	1999
Canada	209.6	186.7	257.8
Japan	101.1	89.4	84.0
France ¹	64.6	55.8	47.0
Italy ¹	28.5	37.7	40.4
Spain ¹	26.7	36.6	34.7
South Korea	22.4	18.5	33.2
United Kingdom ¹	26.4	12.2	15.2
Germany ¹	14.4	19.7	11.0
Hong Kong	13.3	11.9	10.0
Belgium ¹	10.5	6.7	7.1
Total	517.5	475.2	540.4

¹ Denotes European Union (E.U.) countries

Table 18. Processing and wholesaling establishments for marine products and their employment levels for 1993-1998.¹

Year/Area	Processing		Wholesaling		Total	
	Plants	Employees	Plants	Employees	Plants	Employees
1993						
New England	221	4,727	670	3,041	891	7,768
Mid-Atlantic ²	161	6,027	348	2,490	509	8,517
Totals	382	10,754	1,018	5,531	1,400	16,285
1994						
New England	206	4,794	614	3,471	820	8,265
Mid-Atlantic	144	5,036	317	3,056	461	8,092
Totals	350	9,830	931	6,527	1,281	16,357
1995						
New England	194	4,952	625	5,043	819	9,995
Mid-Atlantic	127	5,385	697	5,489	824	10,874
Totals	321	10,337	1,322	10,532	1,643	20,869
1996						
New England	170	4,986	634	4,918	804	9,904
Mid-Atlantic	117	5,396	702	5,410	819	10,806
Totals	287	10,382	1,336	10,328	1,623	20,710
1997						
New England	159	5,168	650	4,822	809	9,990
Mid-Atlantic	113	5,348	721	5,473	834	10,821
Totals	272	10,516	1,371	10,295	1,643	20,811
1998						
New England	150	5,130	674	5,006	824	10,136
Mid-Atlantic	99	5,898	729	5,537	828	11,435
Totals	321	11,028	1,403	10,543	1,652	21,571

¹ Data for 1999 not available

² Mid-Atlantic region includes Virginia, Maryland, District of Columbia, Delaware, New Jersey, New York, and Pennsylvania

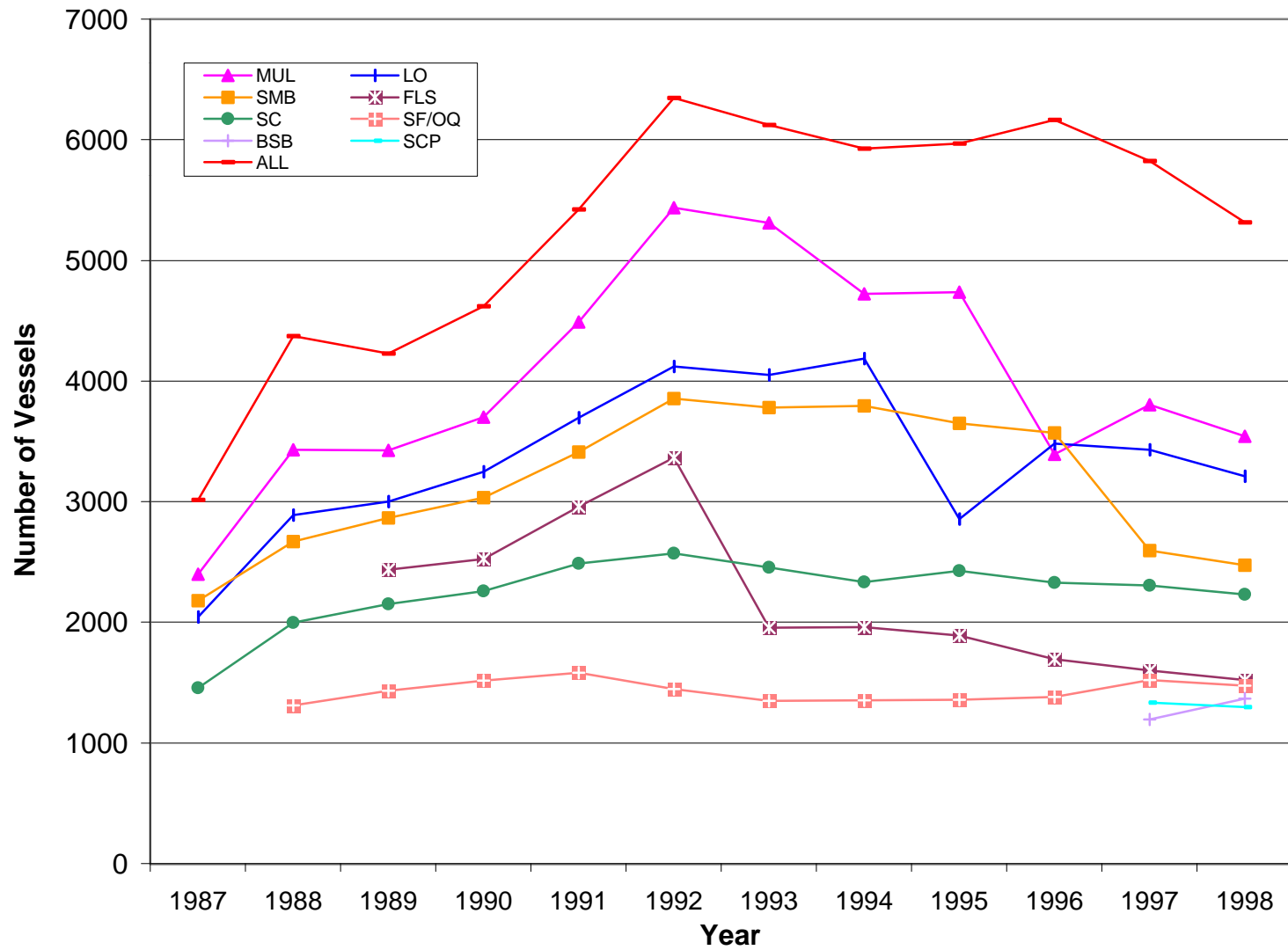


Figure 1. Numbers of Unique Northeast Permitted Vessels, 1987-1998.
(MUL=multispecies, SMB=squid/mackerel/butterfish, SC=scallops, BSB=black sea bass, LO=lobster, FLS=summer flounder, SF/OQ=surf clam & ocean quahog, SCP=scup)

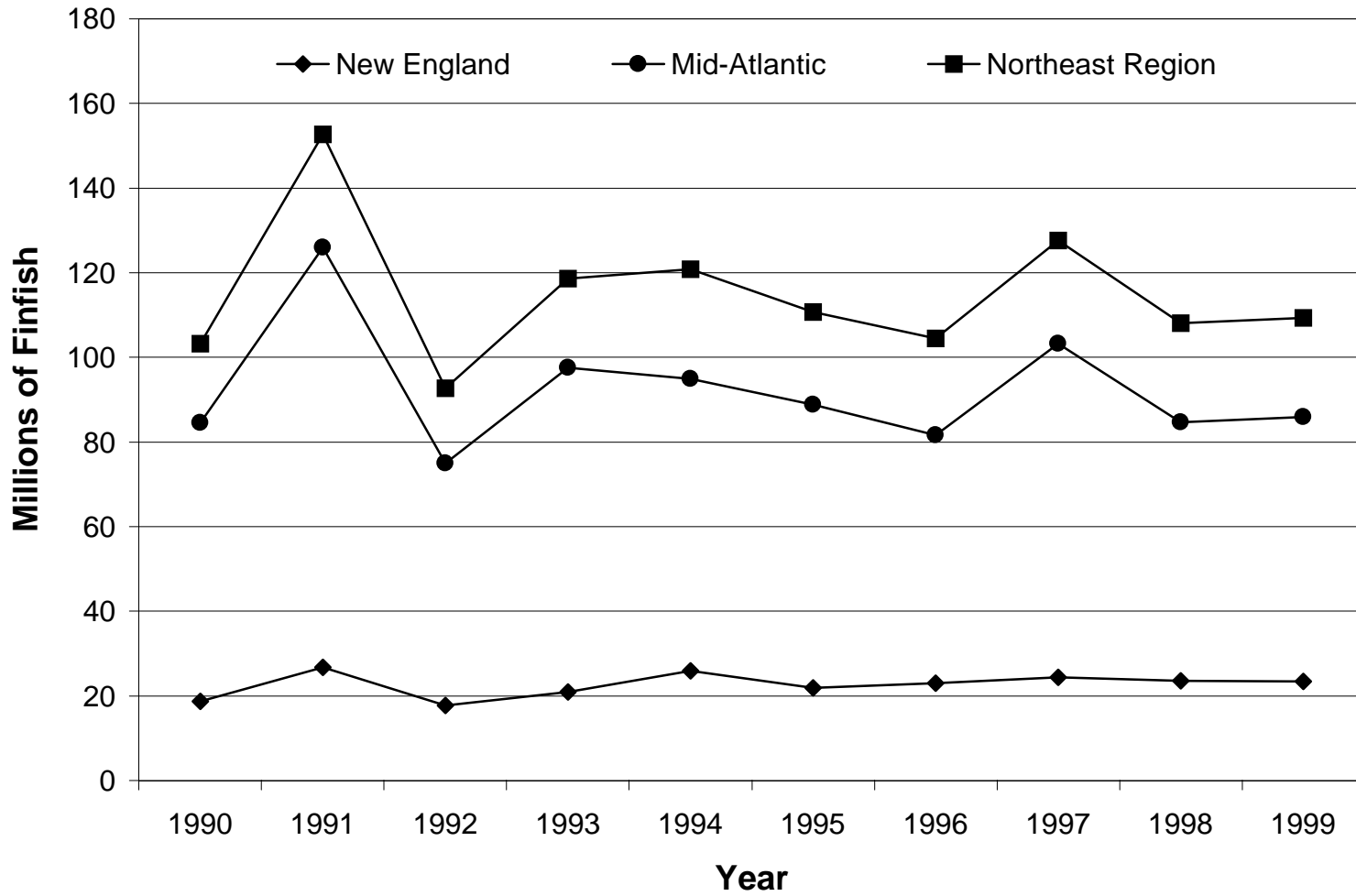


Figure 2. Estimated number of fish caught by marine recreational fishermen, by subregion, 1990-1999.

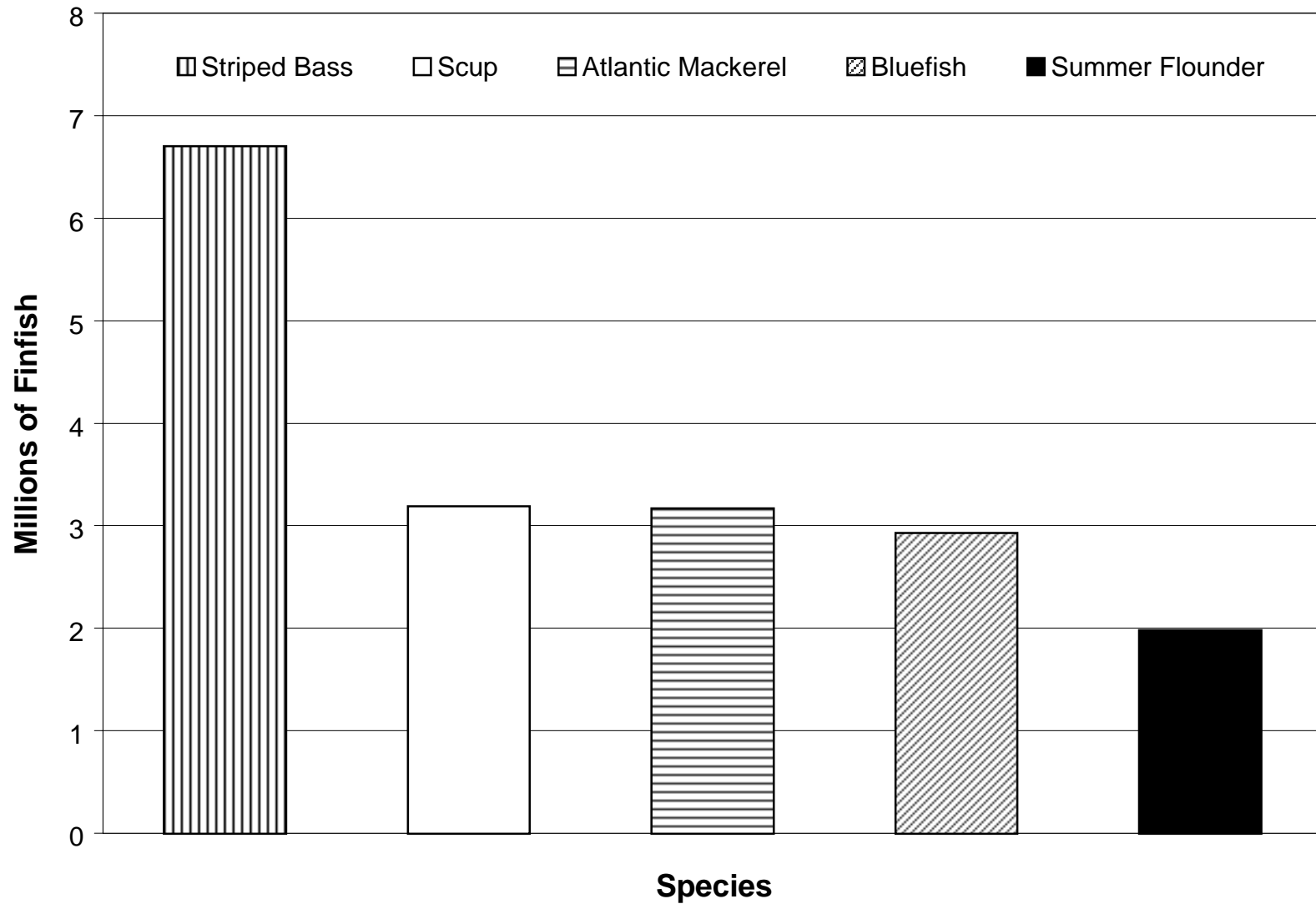


Figure 3. Top five species caught by marine recreational fishermen in New England waters in 1999.

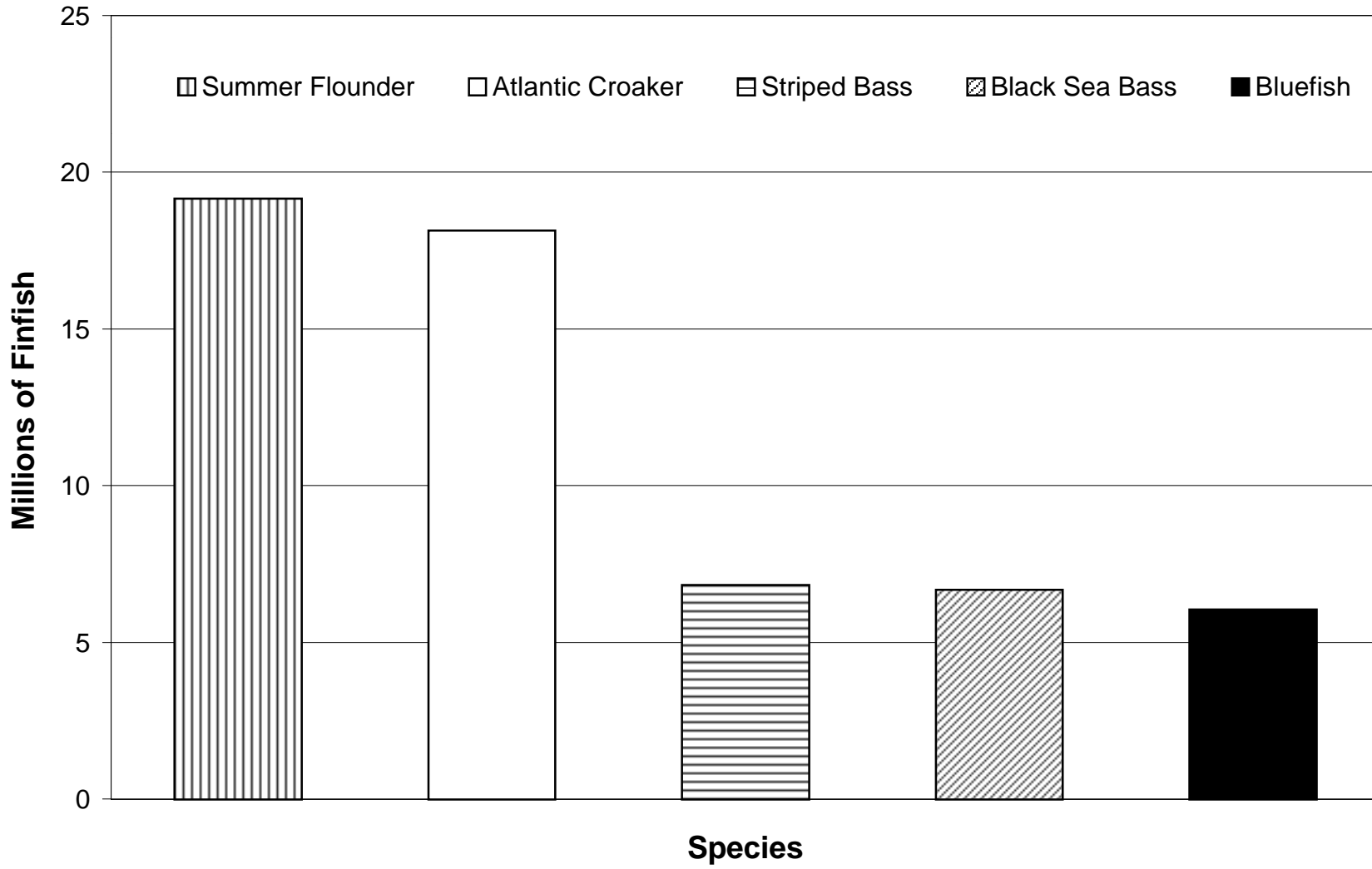


Figure 4. Top five species caught by marine recreational fishermen in the Mid-Atlantic in 1999.

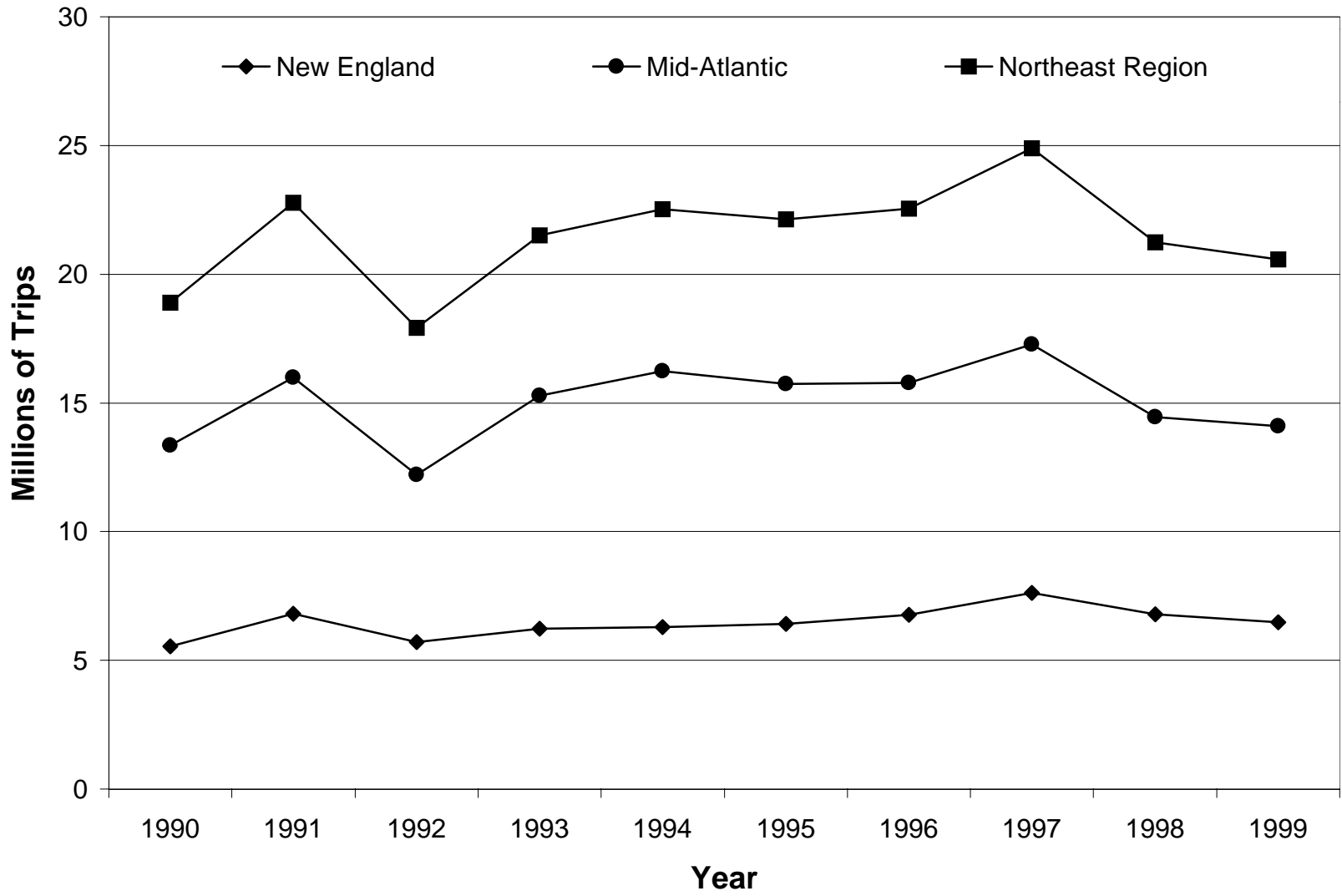


Figure 5. Estimated number of marine recreational fishing trips, by subregion.

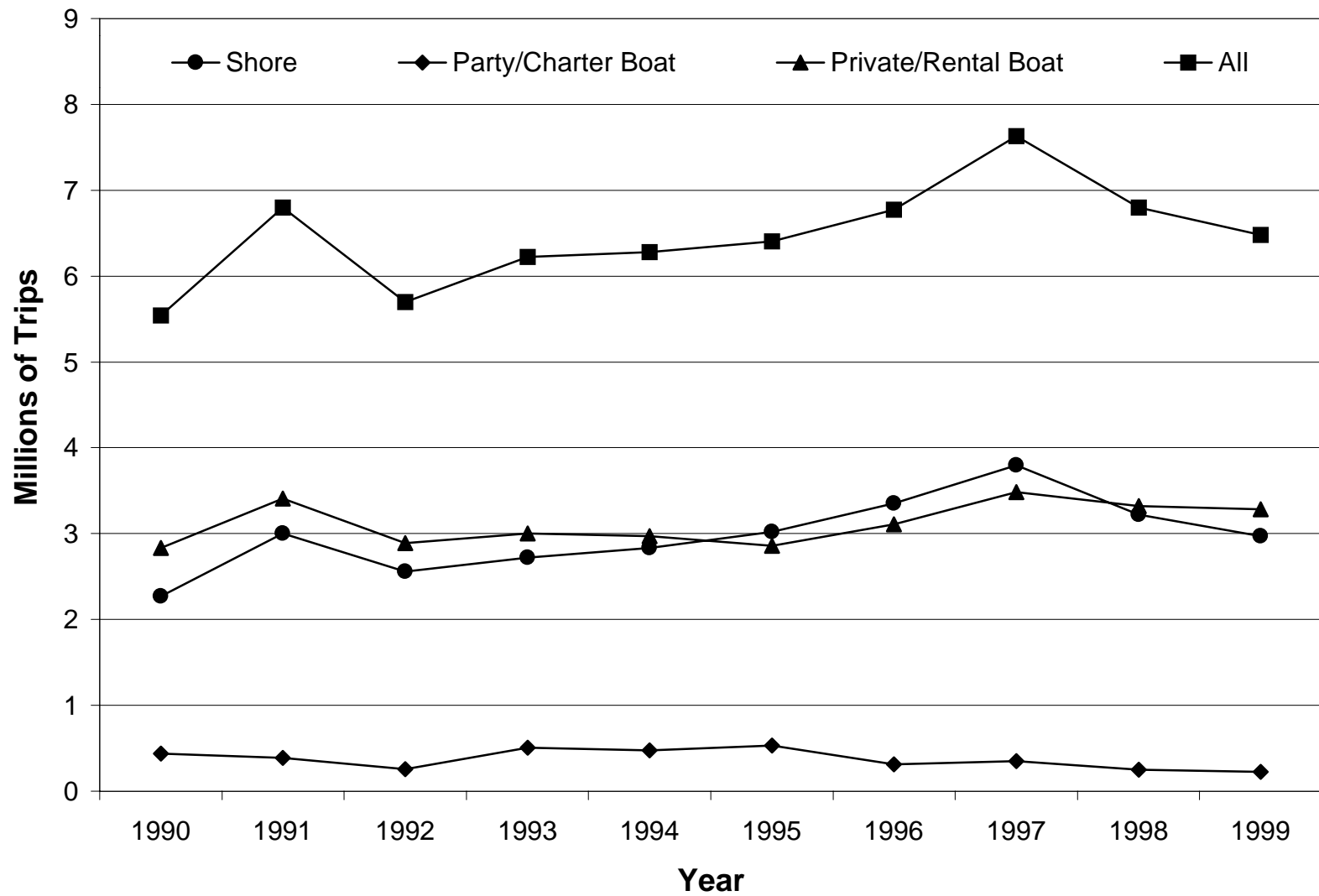


Figure 6. Estimated number of recreational fishing trips by mode in New England.

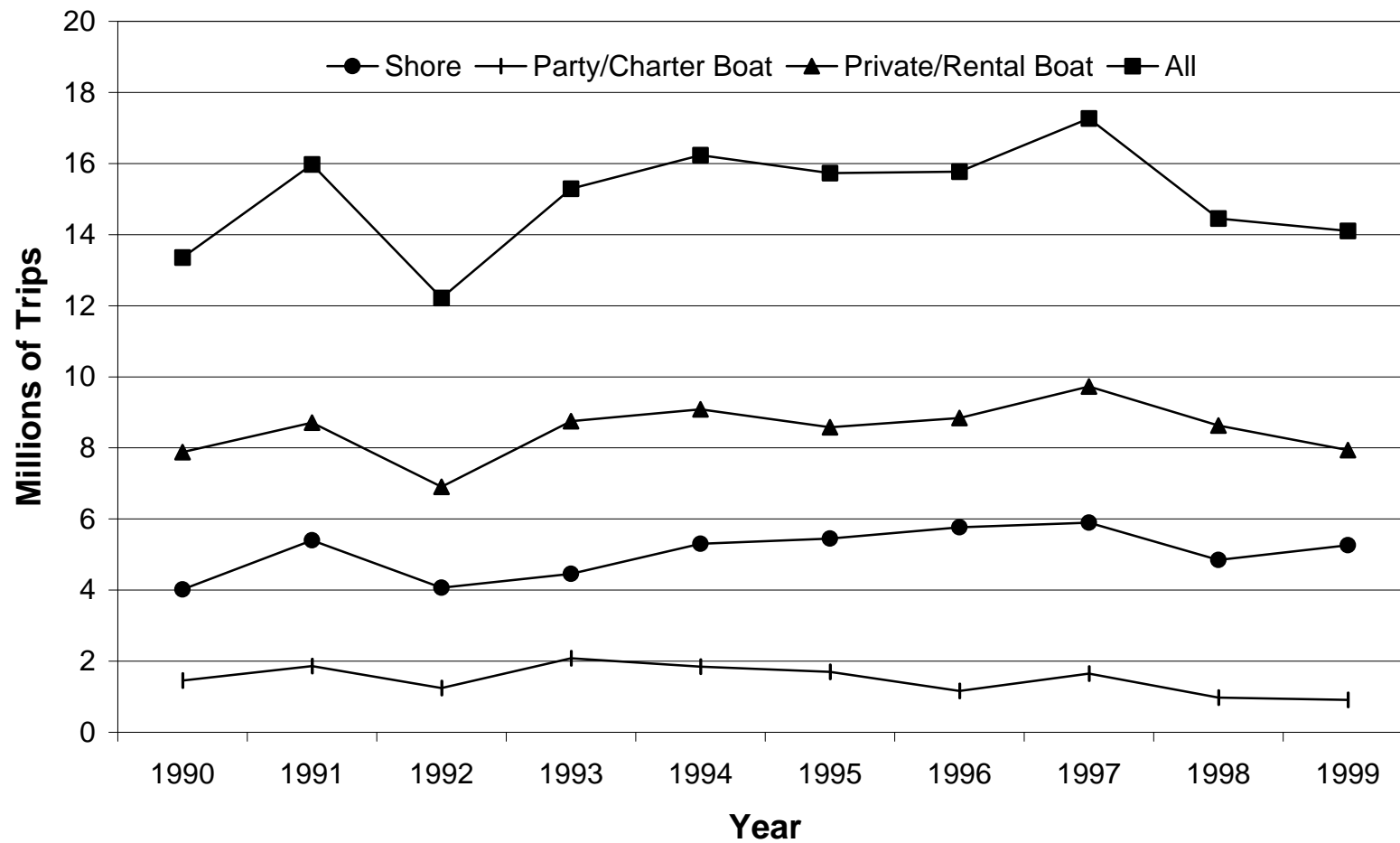


Figure 7. Estimated number of recreational fishing trips by mode in the Mid-Atlantic.