

The New England Gillnet Effort Study

by

John B. Walden

National Marine Fisheries Serv., Woods Hole, MA 02543

**U.S. DEPARTMENT OF COMMERCE
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ABSTRACT

A field survey was conducted to collect vessel and effort information on the New England gillnet fleet. Gillnet vessels either sold their catch for human consumption, sold fish to the bait market, or kept their catch for personal use. Most vessels which sold their catch for human consumption fished seasonally and used other gear types during the year. Most vessels which supplied seafood markets were from Massachusetts, followed by Maine. Maine had the greatest number of gillnet vessels which fished for bait. Study results were combined with external data sources to estimate the number of vessels in the New England gillnet fleet and to identify "gaps" in existing data collection systems.

INTRODUCTION

The New England gillnet fleet is comprised of vessels which use gillnet gear to harvest a variety of shellfish and finfish species. Gillnets are walls of netting suspended vertically in the ocean by the use of floats and weights and are fished at different depths depending on the species targeted (von Brandt 1984). Gillnets are highly selective because they generally take fish of a uniform size which depends on the mesh size used (von Brandt 1984). Generally, gillnets need to be set where the current is not strong and where there is no floating vegetation. Vessels which fish with gillnet gear either tend their nets or leave and return to retrieve their gear after a certain number of hours. In the Northeast Region (Maine through Virginia) during 1993, sink gillnet gear accounted for six percent of the total landings and four percent of the total value by identifiable vessels (NEFSC 1995).

Marine mammals, notably harbor porpoise, are sometimes entangled and killed in gillnet gear. Gillnet vessels also harvest several species covered under the Northeast Multispecies Plan (NEFMC ,1996). Current amendments to this plan are designed to reduce fishing mortality on demersal groundfish species as well as harbor porpoise bycatch, and include regulations on the gillnet fleet. These have generated a great deal of interest in gillnet vessels and their fishing activity.

This report summarizes results from a field survey conducted

under Marine Mammal Protection Act (MMPA) funding which was designed to identify gillnet vessels, gather information on seasonal and spatial dimensions of their fishing operations, and collect data on gear characteristics. Other data sources were utilized along with the survey database to identify vessels which were missed in the survey and to estimate fleet size.

METHODS

In March of 1992, the former Statistics Investigation of the Northeast Fisheries Science Center (NEFSC) began a study of the New England gillnet fleet. Objectives of the study were to identify all gillnetters fishing from New England ports, and to collect detailed information on fleet operations and gillnet effort. Four temporary samplers were hired and placed in the ports of Rockland, Maine, Gloucester and New Bedford, Massachusetts, and Point Judith, Rhode Island. The sampler in Maine was assigned coverage for all Maine and New Hampshire ports; the person in Gloucester covered from the New Hampshire border through Cape Ann; the New Bedford sampler covered from Cape Cod to the Rhode Island border; and the Point Judith sampler was responsible for all ports in Rhode Island. The permanent port agent from Chatham, Massachusetts covered all of Cape Cod, and the area between Boston and the Cape was covered by the permanent Boston port agent.

The questionnaire which was used in this study is given in Appendix I. Samplers were provided with lists of possible gillnet vessels which were based on federal and state permit files¹. They were then instructed to use the questionnaire to interview all permit holders, in person if possible, on these

¹ Vessels included in the federal files were from the Marine Mammal Exemption Program (MMEP). At the time of the study, the MMEP required that boats which fish using gillnet gear in the Gulf of Maine register their craft and submit log books documenting effort and marine mammal takes.

lists. In most cases, vessels appeared on both the federal and state lists.

The survey collected basic vessel information such as vessel name, state registration or Coast Guard number, name and address of owner and home port. It also collected data on fishing activity in 1990 and 1991 by asking for the months in which gillnet gear was used, areas fished, and alternative fishing activity when the vessel was not fishing with gillnets. Gear information collected included the number of strings typically fished, number of nets per string, and mesh size. Target species sought were divided into four categories -- groundfish, small pelagics, dogfish and bait. Information on marketing and vessel weighout availability was also collected². These last two questions were intended to provide a check on the completeness of data collection procedures under the weighout system. Unfortunately, data on weighout availability are unavailable for many interviews.

The initial survey collected information on gillnet vessel activity during 1990 and 1991. Some survey activity also occurred in 1992, but as this was not completed, only 1990 and 1991 data are used in this report.

The survey was not designed to give managers information which could be used for decisions regarding time and area

² A "weighout" is information collected from dealers in the ports who buy a vessel's catch. Data collected includes pounds and value of each species landed by the vessel. By examining the weighouts from all vessels which use gillnets, a unique vessel count should be obtainable.

closures. Rather, it attempted to gather information on the number of gillnetters in each year, and their activities and geographic distribution. For example, data were gathered which could be used to generate statistics about the number of gillnet vessels fishing in a month or area from a given port, but the two could not be linked together.

RESULTS

Vessel Totals

Captains or owners of 468 gillnet vessels were surveyed. Of these, 286 were identified as commercial vessels which targeted finfish for sale in the seafood sector. The remaining 182 vessels occasionally fished with gillnet gear for bait or personal use. The analysis presented here accordingly classifies vessels as commercial or bait gillnetters, further divided into "fleets" based on state and county which the respondent listed as containing home port.

Table 1 provides the number of commercial gillnet vessels stratified by area (fleet). There were 54 vessels from northeastern Maine counties (north of Cumberland county) and 33 vessels from southern Maine counties (Cumberland and York county). New Hampshire had 26 vessels and there were 67 vessels from northern Massachusetts ports (Essex, Suffolk, Norfolk and Plymouth counties). Southeastern Massachusetts, which included ports from Cape Cod southward (Barnstable, Dukes, Nantucket, and Bristol counties), had 66 vessels. Finally, there were 40 Rhode

Island vessels.

Gillnet vessels which fished for bait or personal consumption were primarily located in Maine (Table 1). Because there were fewer of these vessels, fleets were configured differently. Northeastern Maine counties (northeast of Cumberland county) had 83 vessels and southern Maine contained 60 vessels. Fourteen vessels were identified from New Hampshire and 12 vessels from Massachusetts. Rhode Island and Connecticut accounted for 11 vessels and there were two vessels from unspecified ports.

Seasonal Trends in Effort

Figures 1, 3, 5, 7, 9 and 10 show the monthly percentage of vessels fishing by fleet for commercial gillnetters during the years 1990 and 1991³. This was determined by dividing the number of respondents who stated that their vessel was fishing gillnets in a given month by the total number of vessels from the fleet which fished gillnets during that year. There appeared to be a seasonal component to fishing activity based on fleet. The highest percentage of vessels fishing from northeastern Maine occurred between April and October (Figure 1), while in southern Maine effort peaked in June, fell slightly between July and December, and then dropped sharply in the winter months (Figure 3). New Hampshire Vessels (Figure 5) fished at relatively

³ Survey work was not completed during 1992, and therefore analysis was limited to 1990 and 1991.

constant levels, with the exception of January and February. There were slight seasonal peaks between October and December, and April and June. Northern Massachusetts vessels showed seasonal peaks of activity in spring and fall (Figure 7); activity for southeastern Massachusetts vessels increased to a peak in May and June (Figure 9). Rhode Island vessels were the most active from November through May (Figure 10).

Figures 2, 4, 6, 8 and 11 provide monthly percentages of activity for bait gillnet vessels in 1990 and 1991. In contrast to directed operations for the commercial food fish market, this activity occurs primarily during warmer months in most areas. Northeastern Maine and New Hampshire bait gillnetters were most active in July and August (Figures 2 & 6) while southern Maine vessels were most active in June and July (Figure 4). Massachusetts bait gillnetters had the highest percent of vessels fishing in May, June or July depending on the year (Figure 8). Rhode Island and Connecticut bait gillnetters were most active between June and August (Figure 11).

Distribution of Effort by Statistical Area

Figures 12-22 show distribution of effort by statistical area in terms of average numbers of commercial and bait gillnet vessels fishing during 1990 and 1991. Because the survey requested information only by statistical area, one cannot determine finer breakouts, e.g. locations fished within each statistical area. Consequently, only general patterns are

evident.

Although commercial vessels from some fleets can be found in several different areas, a tendency is evident for the majority of vessels in each fleet to fish in one or two statistical areas in the immediate vicinity of their home port. Most fish close to shore, although some vessels fish offshore in areas such as Georges Bank. Commercial vessels from Rhode Island seemed to stay closer to their home ports than those from other states (Figure 21). Vessels from southeastern Massachusetts appeared to have the widest range of fishing areas (Figure 20).

The tendency to fish in local waters tends to be more distinct for the bait vessels than the commercial fleet (Figures 13,15,17,19,22). Northeastern Maine vessels appeared to be most widely dispersed (Figure 13). Both northeastern and southern Maine vessels were found in offshore areas (Figures 13 and 15) while those from the other states were found in inshore statistical areas only. Bait vessels have less incentive to travel to offshore areas because the prices received in the bait market are lower than those sold to the retail market, making trips for bait less profitable.

Gear Configuration

Table 2 shows the average number of strings fished, and the average nets per string for the commercial and bait gillnet

fleets⁴. Among the commercial gillnetters, the average number of strings fished ranged between 3.6 and 7.4 and the average nets per string were between 6 and 16.6. The standard deviation of strings fished was between 1 and 5.2, and between 3.7 and 7 for nets fished per string.

The average strings fished by bait vessels were between 1.3 and 1.7 and the average nets per string were between 1.3 and 2.1. The standard deviation of strings fished ranged between 0.7 and 0.9, and between 0.8 and 2.4 for nets fished per string. Overall, there was less variability for the bait gillnet fleet than for the commercial fleet. Because these vessels only use gillnets occasionally, this result is not surprising.

In a separate study, DeAlteris and Lazar (1992) found that gillnet vessels fish between 3.5 and 8 strings, with each string containing between 11 and 17 nets with the average section of net between 200 and 300 feet long. With the exception of the Rhode Island fleet, the mean values obtained from this survey are consistent with these figures.

Alternative Fisheries

Results confirmed other surveys which showed that the gillnet fleet is mostly a part-time fleet with only 16 percent of the respondents reported fishing gillnets exclusively. This

A "string" is several individual gillnets attached together at their bridles.

total may in fact be biased downward because of ambiguity on the survey questionnaire which may have led to a high non-response rate by full-time gillnetters.

Figure 23 shows the major alternative gear types fished by commercial gillnet vessels, broken down by fleet. There was a large variety of responses, and not all answers were included. Instead, the three major alternative gear types plus responses by tuna fishermen are shown in the graph. As Figure 23 shows, responses varied among the different fleets. For example, the majority of New Hampshire vessels also fished for tuna, while those from northern Massachusetts lobstered. In southeastern Massachusetts, the majority of vessels also used hook gear, while those from Rhode Island lobstered. These results indicate that gillnetters are often very opportunistic, and will switch to other gear types when resource availability or market conditions warrant.

Marketing Methods

Figure 24 shows the breakdown of marketing methods for gillnet vessels by fleet. The two major methods reported were sales to dealers and auctions. Dealers buy from vessels at dockside and subsequently sell to wholesalers and processors, who then supply the retail market. This category also included fish that was trucked to major markets, such as the Fulton fish market and sold on consignment. At auctions, fishermen may realize

higher prices, by selling directly to wholesalers and processors. Often, fish can command a premium price at auction depending on quality and freshness. The auction in Portland, Maine is one such place where this occurs.

As Figure 24 shows, the majority of gillnet vessels sell their catch through dealers. The exception was for southern Maine vessels where the Portland fish auction is located. Reliance on dealers could be expected for many gillnetters as they are located at some distance from major fish markets in New England (New Bedford, Gloucester, Portland and Point Judith). Transportation costs probably discourage marketing of fish through auctions in most cases. Alternatively, these vessels could be supplying local fresh fish markets and may be able to obtain a higher price by selling to a dealer.

Total Number of Gillnet Vessels

Although many vessels were surveyed, concerns were raised about whether some gillnet vessels were missed. In order to address this issue, vessel listings were obtained from the Northeast Fisheries Science Center's (NEFSC) weighout database (WO) and the sea sampling contractor, Manomet Observatory (MO), and compared to the listings for the present survey. Subsequent to the original analysis, vessels which were part of the Marine Mammal Exemption Program (MMEP) were also included.

Until June 1994, the WO was a voluntary system which

collected data on species and value landed by vessels at the point of first sale to dealers. These data were often supplemented by interviews with vessel captains to gain additional knowledge about fishing areas and time fished. Ideally, this system should allow one to determine the number of gillnet vessels and their fishing patterns. However, because the system was voluntary, and because of manpower limitations in the Fishery Statistics Investigation, it didn't always contain a complete census of a vessel's activity. This problem was often compounded by dealers who combined trip information from one or more vessels onto a single weighout form or who sometimes refused to furnish information. Aggregation problems tended to be greater among the gillnet fleet than the mobile gear fleet because many gillnet vessels land in small, remote ports where port agents visit only once or twice per month. Some trips were missed entirely in such situations. For these reasons, determinations of numbers of gillnet vessels based on WO files therefore likely resulted in underestimates of the true number of gillnet vessels.

A new system of mandatory reporting for dealers and mandatory logbooks for vessels replaced the WO in June 1994. Dealers are now required to report the amount of fish bought from each vessel and captains required to fill out trip logs which are submitted monthly. In theory, this system should capture all vessel activity and allow managers to determine the extent of gillnet activity and number of vessels deploying the gear.

However, a vessel which fishes exclusively in state waters without any federal permits and sells their catch to either other vessels, or to a dealer which doesn't have a federal dealers permit would not be required to submit trip logs. This means that bait gillnet vessels may not have their activity captured by the mandatory reporting system.

Manomet Observatory (MO) is the contractor responsible for placing observers on gillnet vessels to document incidental take of marine mammals. MO, therefore, maintains extensive contacts with industry and listings of all gillnet vessels contacted in New England ports. This database is used to select vessels for carrying observers.

The Marine Mammal Exemption Permit (MMEP) database included vessel information for those vessels registered under the MMEP program. All vessels fishing with sink gillnet gear in the Northeast Region were required to obtain an MMEP permit, at a cost of \$30 per year, and to submit logbooks documenting fishing activity and marine mammal takes. Thus, a complete census of gillnet vessels and their activities in the Northeast Region should be available from this data source.

During 1990-1992, 468 vessels were included in the survey database, 498 vessels in the MMEP database, 345 vessels in the WO database and 262 vessels in the MO database. Because of the differences in numbers of gillnet vessels found in the various datasets, concerns were raised about their completeness, and accordingly as to the adequacy of available information for

planning sea sampling coverage. As stated previously, the MMEP data was not part of the original analysis, but are presented here for comparative purposes.

Table 3 shows the results of a comparison between listings of gillnet vessels obtained in the New England gillnet effort study and listings of gillnet vessels obtained from vessel weighout data files, Marine Mammal Exemption Permit files and Manomet Observatory files. In order to reconcile these differences, a workshop was held in February 1994, at the NEFSC in Woods Hole, Massachusetts to review these data sets which was attended by NEFSC and Manomet Observatory personnel. Representatives from the NEFSC included members of the Statistics Investigation, Economics Investigation, and Marine Mammal Investigation. Vessel lists were generated which showed differences between databases by state. This gave NEFSC survey personnel from each state a compilation of the vessels in their area of responsibility for which there were questions. Discrepancies were discussed among workshop participants and additional information from the federal permit database was used as necessary. Results showed that coding errors existed which accounted for the majority of differences between the databases. For example, 41 vessels were coded as gillnetters in the WO system which in reality used another gear type. Additionally, surveying in 1992 was not completed meaning there were some vessels which still needed to be surveyed. Following reviews of information available to workshop participants, and comparison of

all vessel lists, it was determined that there were 343 commercial gillnetters fishing in Maine, New Hampshire, Massachusetts and Rhode Island in 1992.

Although comparison of vessels in the MMEP files with the other databases wasn't part of the original analysis, subsequent work has shown that there are a large number of vessels in the MMEP database which do not appear in other databases. This may have occurred for several reasons. For example, many owners appear to have registered their vessels under the MMEP program simply to preserve their right to fish with gillnet gear in the future. There may also be vessel coding errors which have not been identified. Implementation of mandatory reporting will provide an opportunity to examine vessels captured under both the new mandatory reporting system and the MMEP program for consistency.

Summary

A field survey was conducted which collected information from 468 gillnet vessels. This total included 286 commercial gillnet vessels for which catches were sold in the foodfish market and an additional 182 vessels which used gillnets to fish for bait or for personal consumption. Among both commercial and bait vessels there were distinct seasonal patterns of fishing effort, which depended on geographic location. Bait gillnet vessels generally fished closer to shore for briefer periods than did the commercial fleet. The average number of nets deployed also varied among both commercial and bait gillnet vessels. A large percentage of the commercial fleet used other gear types besides gillnets during the year. Although most commercial vessels sold their catch to dealers, there were some who sold through auctions. This generally depended on the vessels proximity to major seafood markets and available auctions. Seasonal and spatial fishing patterns, gear configuration, alternative fishing opportunities and marketing methods all were found to vary by home port.

To assess the completeness of survey results, different vessel listings were compared in a workshop including NEFSC survey personnel and staff from the Manomet Observatory. Final tabulation showed there were approximately 343 commercial gillnetters fishing from New England states in 1992. This number may have fluctuated since that time.

The New England gillnet effort study was useful in identifying fishing patterns by area and season for different segments of the fleet, and for identifying discrepancies between different databases. With the initiation of mandatory reporting in the northeast region, the universe of gillnet vessels fishing should become clear. Additionally, comparisons between the MMEP data and the mandatory reporting data need to be made to check for discrepancies between the two databases. There may also be a need to collect additional data from those gillnet vessels which fish for bait or for personal consumption. Because their catch usually does not enter the market through traditional channels, there may be a need to survey bait gillnet vessels again in the future. Whether bait gillnet vessels inadvertently kill marine mammals is also unclear because they never carry observers. Further research is needed to determine the full extent of their gillnet activity.

Literature Cited

DeAlteris, J. and N. Lazar. 1992. Analysis of the sink gillnet fishery in the Gulf of Maine and adjacent waters. Final Copy, University of Rhode Island, Dept. of Fisheries, Animal and Veterinary Science, Kingston, RI 02881.

New England Fishery Management Council. (1996) Amendment seven to the Northeast Multispecies Plan. NEFMC, Saugus, MA.

Northeast Fisheries Science Center. 1995. Status of the fisheries resources off the northeastern United States for 1994. NOAA Technical Memorandum NMFS-F/NEC-101, Northeast Fisheries Science Center, Woods Hole, MA 02543.

von Brandt, Andres. 1984. Fish catching methods of the world, 3rd edition. Fishing News Books, Ltd. Farnham, Surrey England.

Table 1. Number of commercial and bait gillnet vessels surveyed by area (fleet) in the New England Gillnet Effort Study in 1990 & 1991.

Area (Fleet)	Number		Totals
	Commercial Vessels	Bait Vessels	
Northeastern Maine	54	83	137
Southern Maine	33	60	93
New Hampshire	26	14	40
Northern Massachusetts	67	12 ¹	79
Southeastern Massachusetts	66		66
Rhode Island and Connecticut	40 ²	11	51
Total	286	182	468

¹ Includes all Massachusetts bait gillnet vessels.

² Rhode Island Only

Table 2. Number of strings and nets per string fished by commercial and bait gillnet vessels observed in the New England sink gillnet effort study in 1990-1991.

Commercial								
Area (fleet)	Strings				Nets/String			
	Min.	Max.	Mean	Standard Deviation	Min.	Max.	Mean	Standard Deviation
Northeastern Maine	2	8	4.8	1.1	1	21	14.5	4.3
Southern Maine	1	6	3.6	1.4	1	25	15.6	7
New Hampshire	3	8	5.1	1	4	20	16.6	5.2
Northern Massachusetts	1	15	7.2	3.6	1	35	11.2	6.2
Southeastern Massachusetts	2	12	7	2.4	1	22	10.3	4.2
Rhode Island	1	30	7.4	5.2	1	14	6	3.7
Bait								
Area (fleet)	Strings				Nets/String			
	Min.	Max.	Mean	Standard Deviation	Min.	Max.	Mean	Standard Deviation
Northeastern Maine	1	5	1.3	0.7	1	5	1.6	1
Southern Maine	1	6	1.3	0.8	1	4	1.6	0.8
New Hampshire	1	4	1.7	0.9	1	10	2.1	2.4
Massachusetts	1	3	1.5	0.8	1	4	1.8	1
Rhode Island and Connecticut	1	4	1.3	0.9	1	3	1.3	0.7

Table 3. Differences in lists of gillnet vessel found in different databases for the years 1990-92

	Not In			
	Weighout	Survey	Manomet	Marine Mammal Exemption Program
In Weighout	-	196	200	167
Survey	275 (1)	-	260	243
Manomet	147	96	-	70
Marine Mammal Exemption Program	319	316	307	-

1. For example, 275 vessels were located in this survey which did not appear in weighout data files for 1990-1992.

Figure 1. Percentage of commercial gillnet vessels active by month from northeastern Maine ports in 1990 and 1991

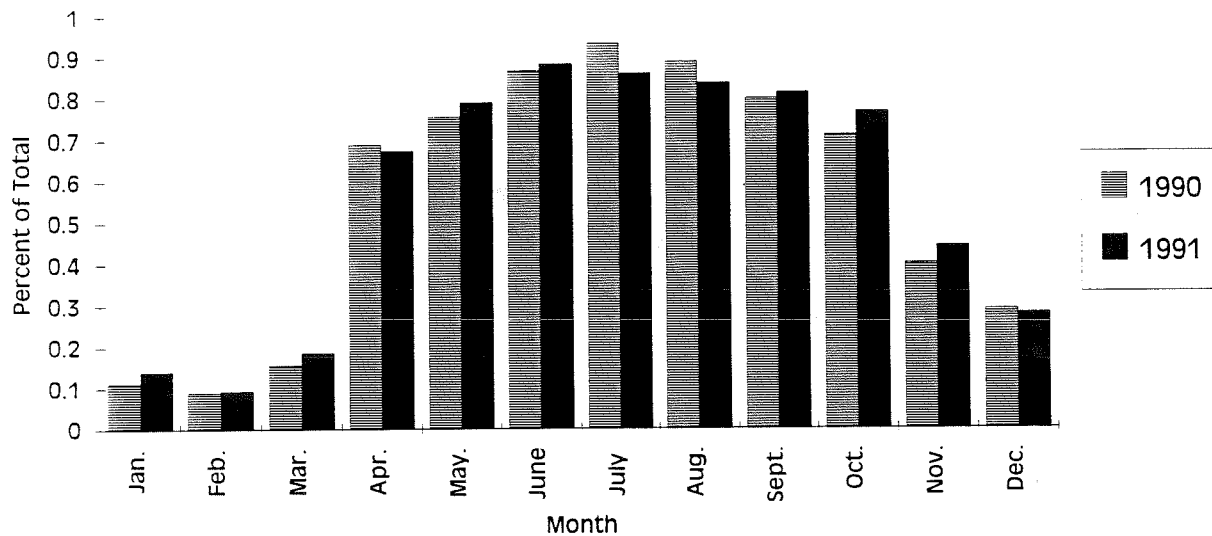


Figure 2. Percentage of bait gillnet vessels active by month from northeastern Maine ports in 1990 and 1991

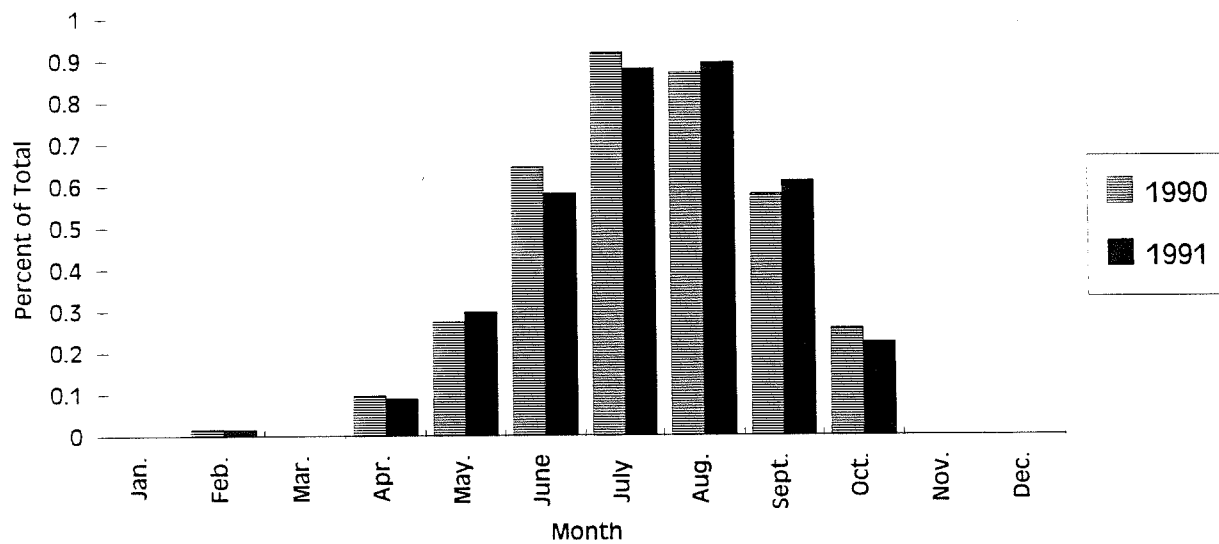


Figure 3. Percentage of commercial gillnet vessels active by month from southern Maine ports in 1990 and 1991

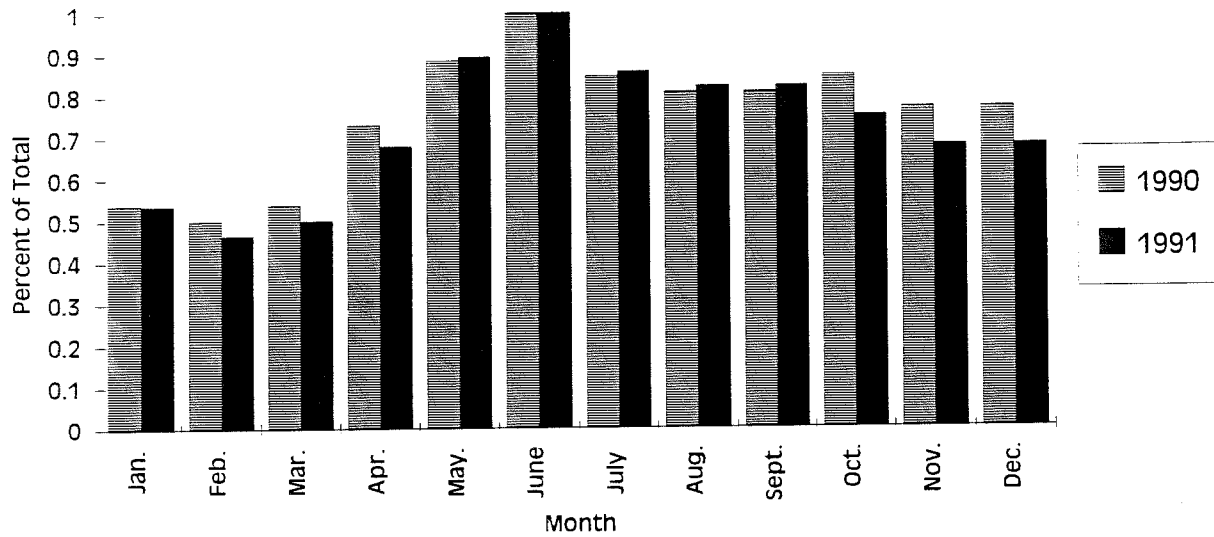


Figure 4. Percentage Of bait gillnet vessels active by month from southern Maine ports in 1990 and 1991

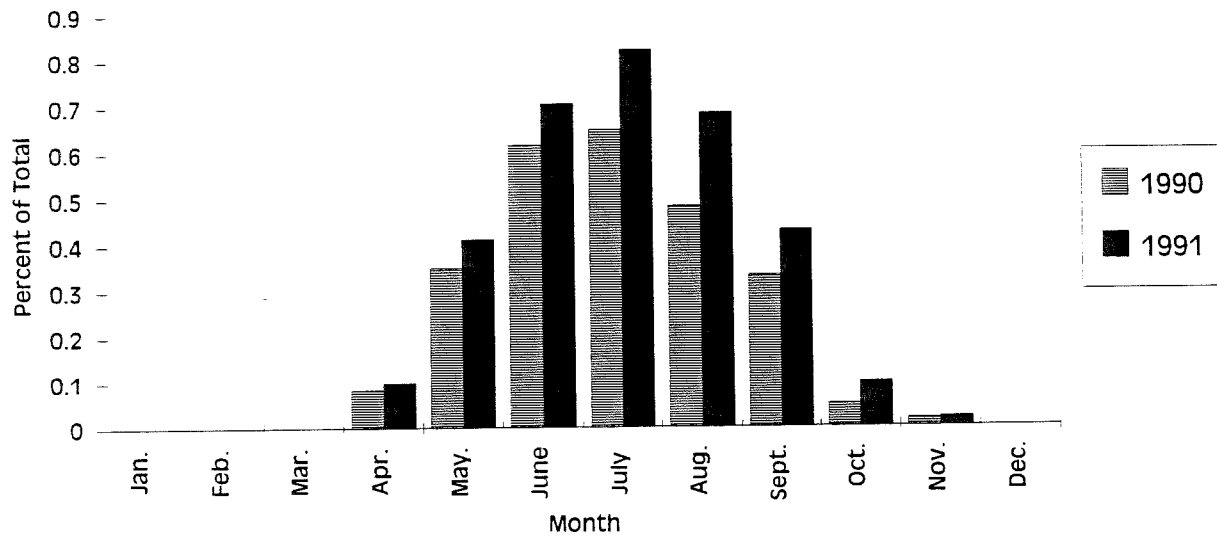


Figure 5. Percentage of commercial gillnet vessels active by month from New Hampshire ports in 1990 and 1991

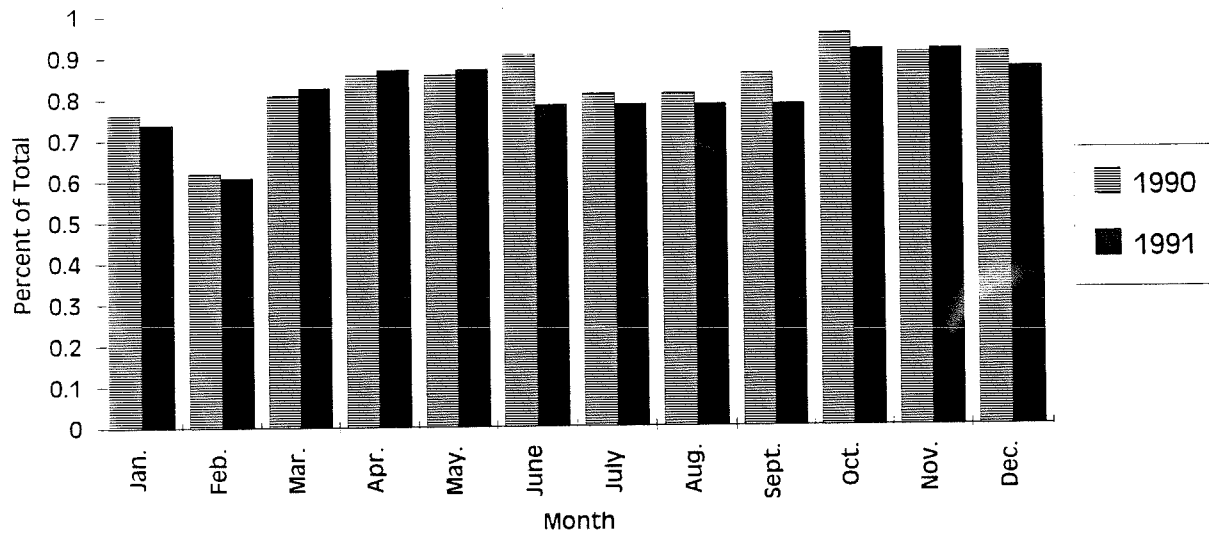


Figure 6. Percentage of bait gillnet vessels active by month from New Hampshire ports in 1990 and 1991

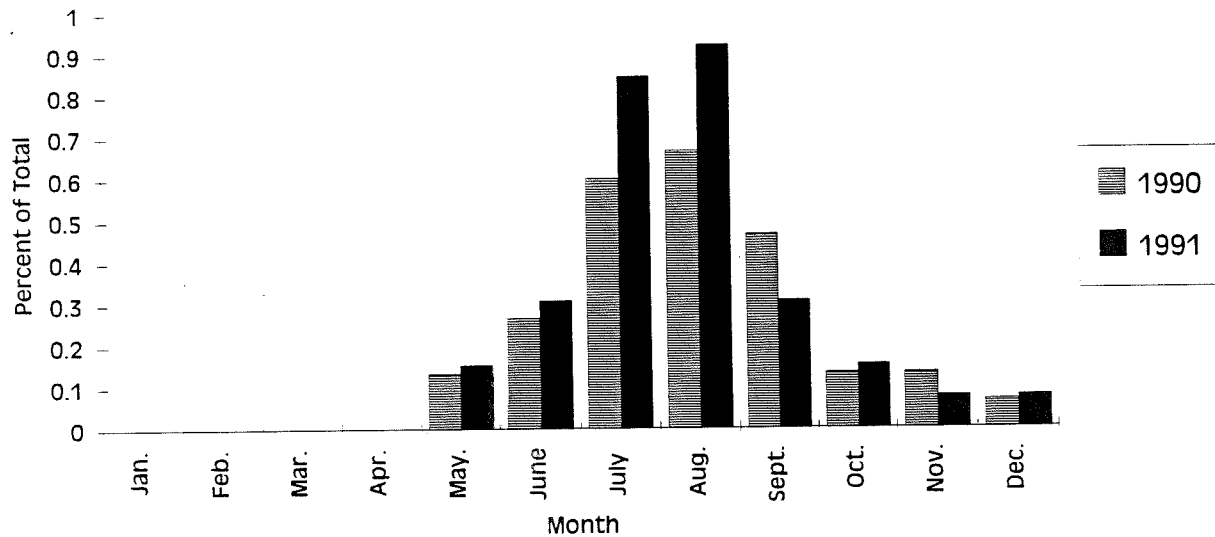


Figure 7. Percentage of commercial gillnet vessels active by month from northern Massachusetts ports in 1990 and 1991

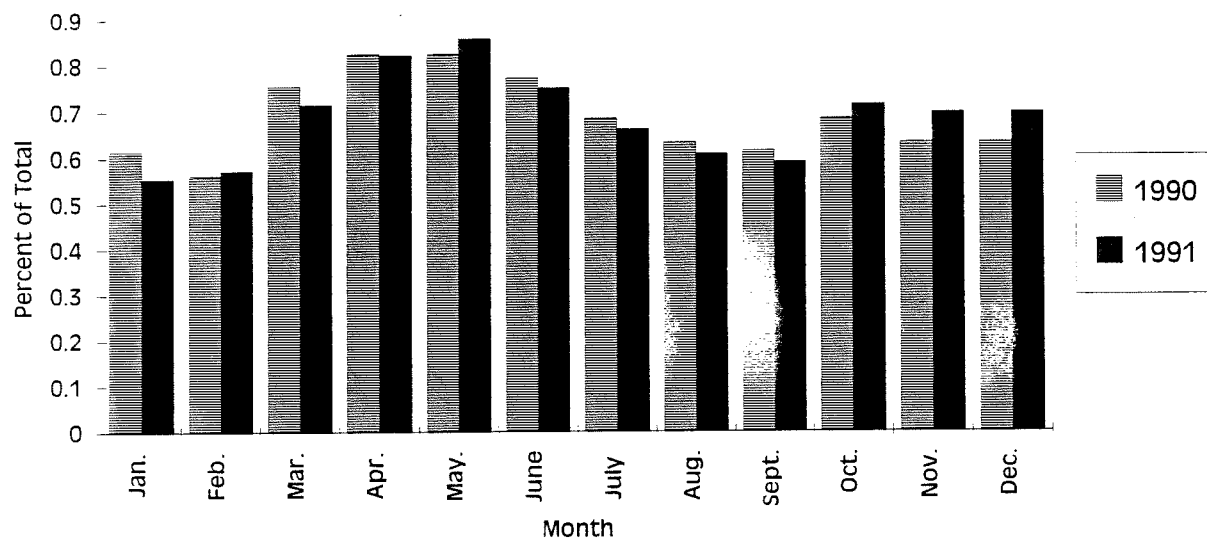


Figure 8. Percentage of bait gillnet vessels active by month from Massachusetts ports in 1990 and 1991

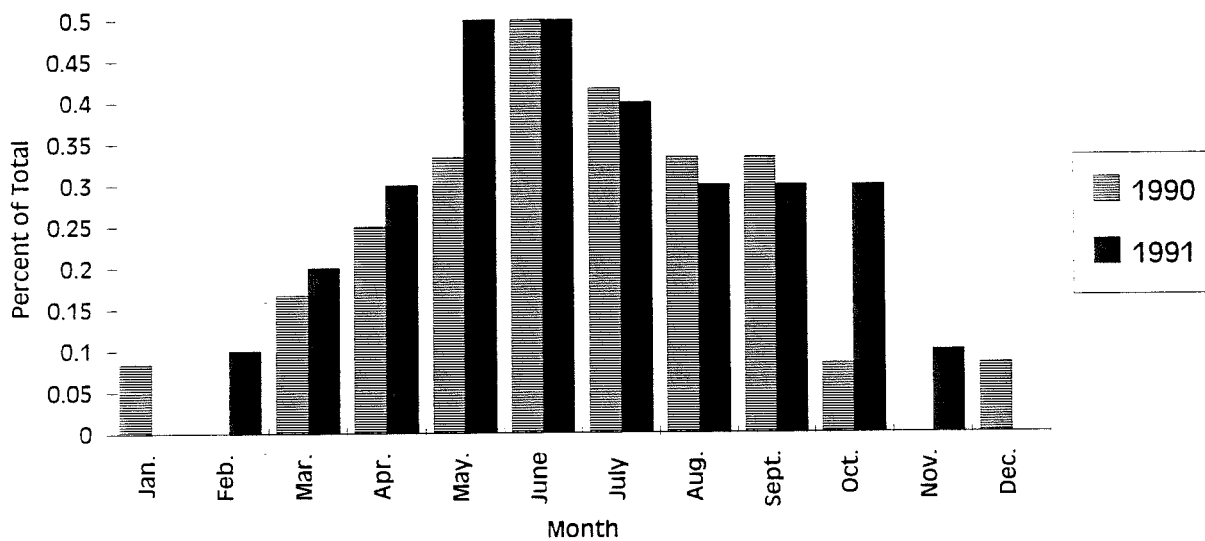


Figure 9. Percentage of commercial gillnet vessels active by month from southeastern Massachusetts ports in 1990 and 1991

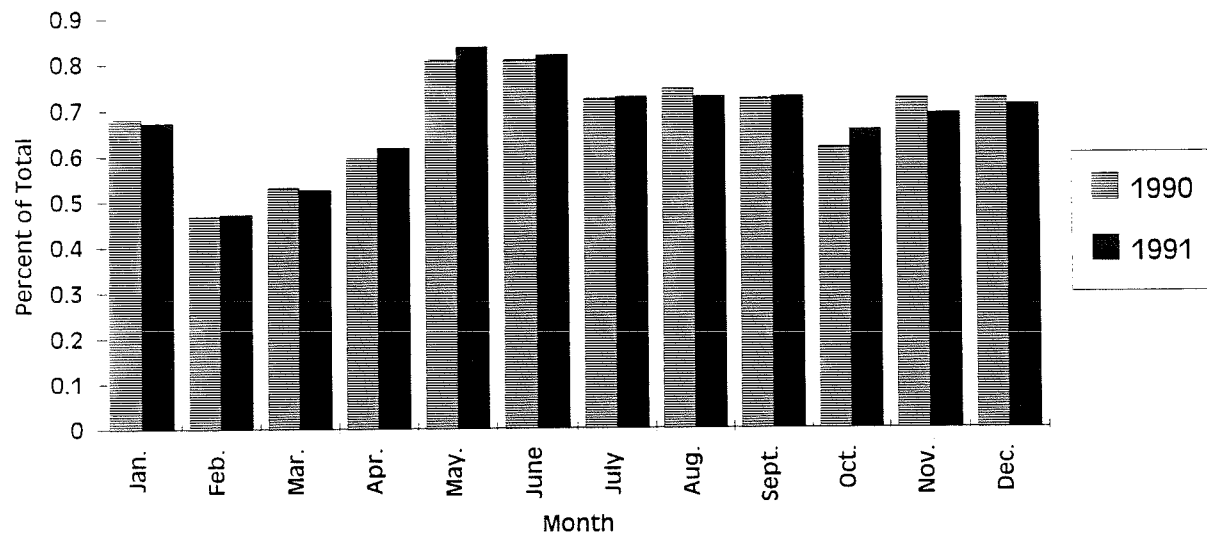


Figure 10. Percentage of commercial gillnet vessels active by month from Rhode Island Ports in 1990 and 1991

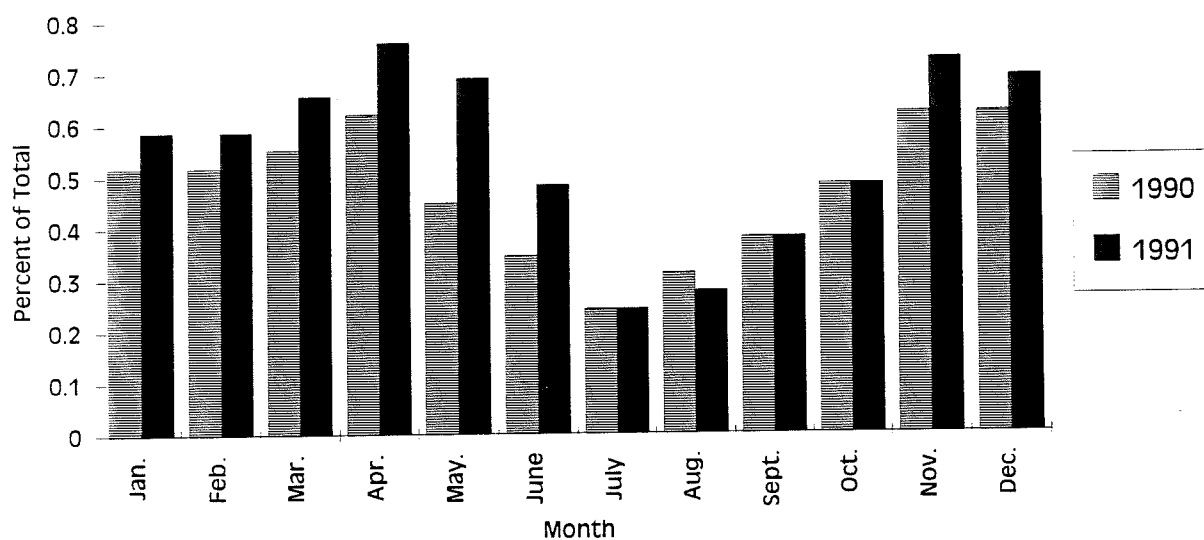
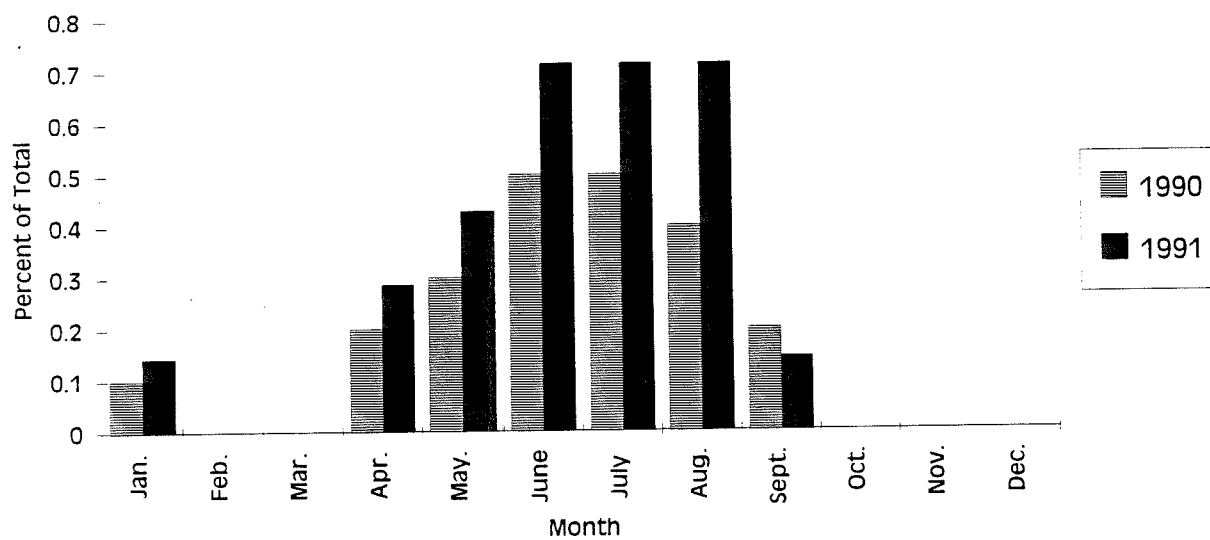


Figure 11. Percentage of bait gillnet vessels active by month from Rhode Island and Connecticut ports in 1990 and 1991



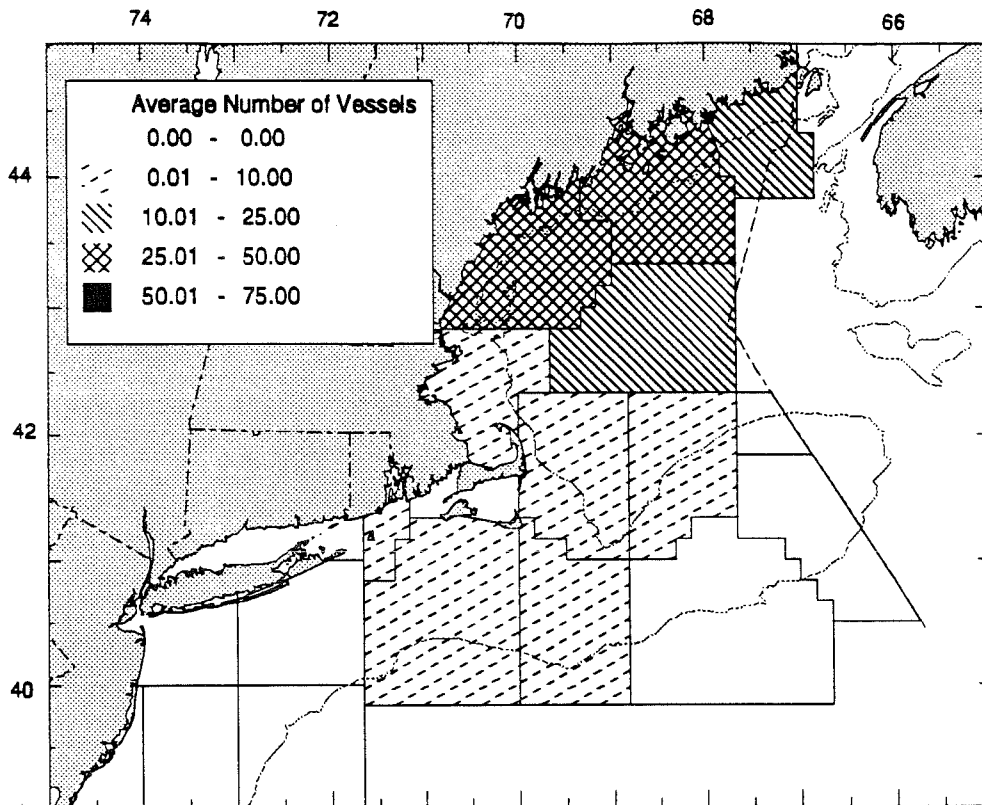


Figure 12. Areas fished by commercial gillnet vessels from northeastern Maine ports in 1990 and 1991

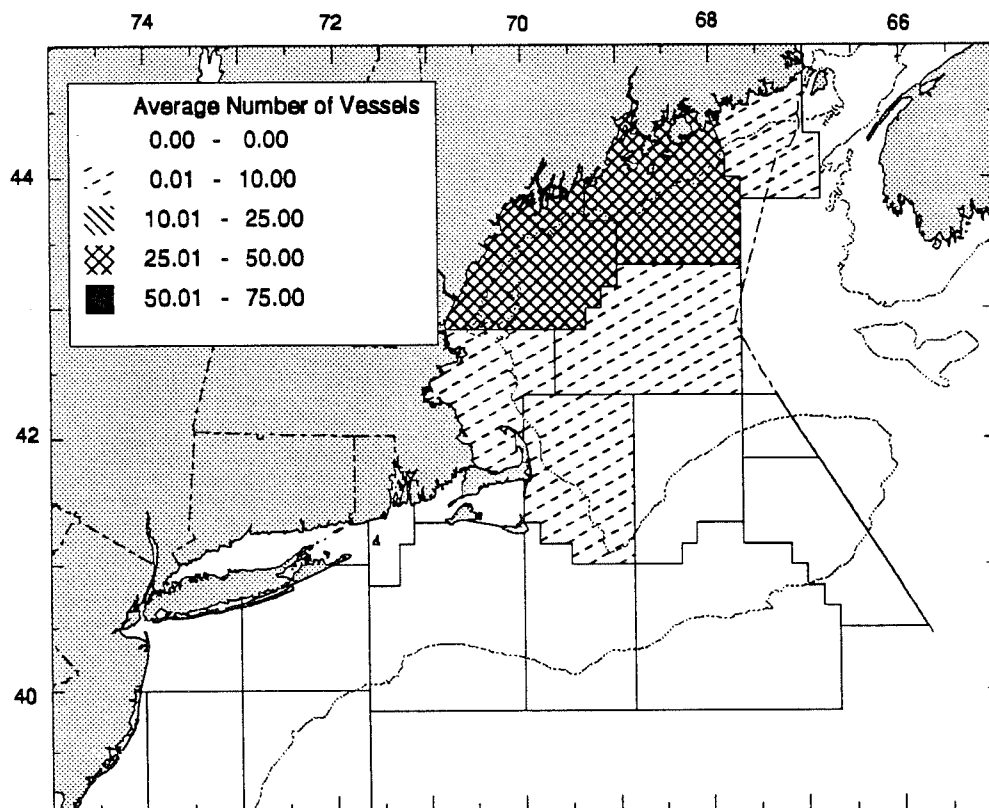


Figure 13. Areas fished by bait gillnet vessels from northeastern Maine ports in 1990 and 1991

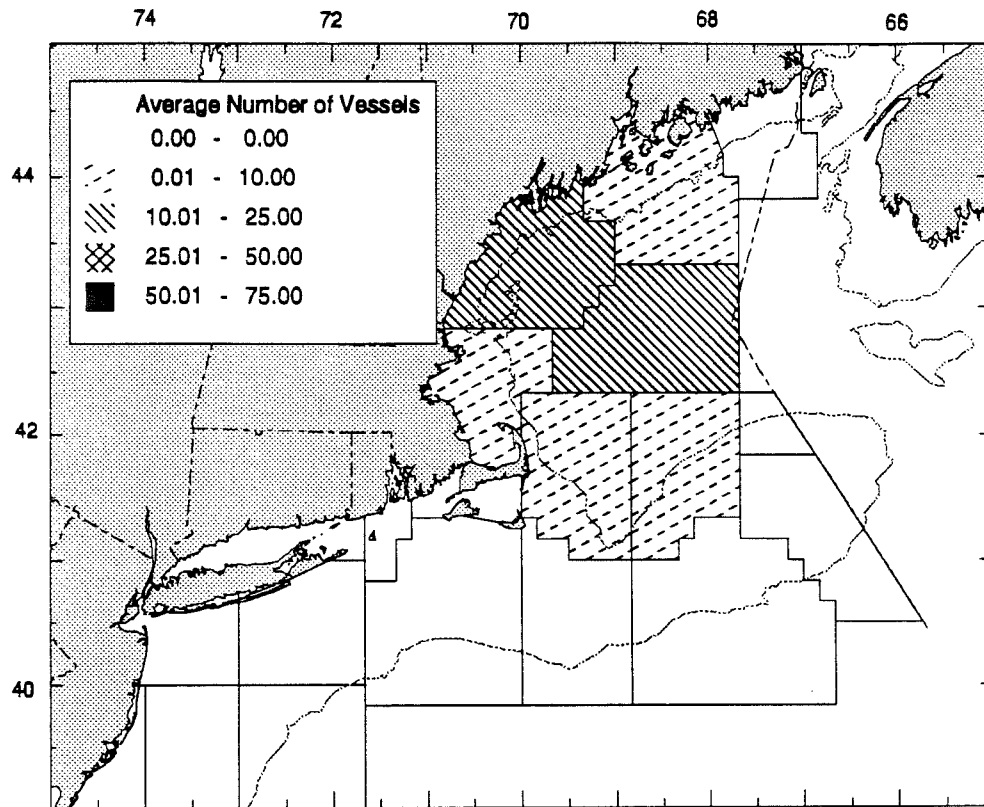


Figure 14. Areas fished by commercial gillnet vessels from southern Maine ports in 1990 and 1991

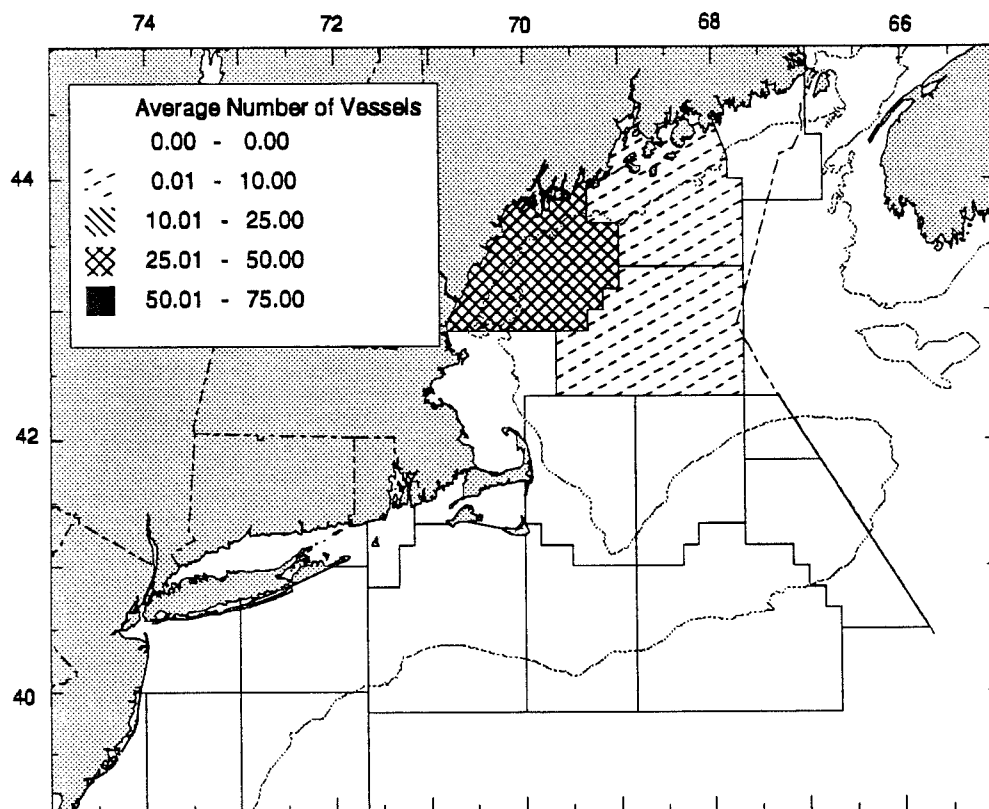


Figure 15. Areas fished by bait gillnet vessels from southeastern Maine ports in 1990 and 1991

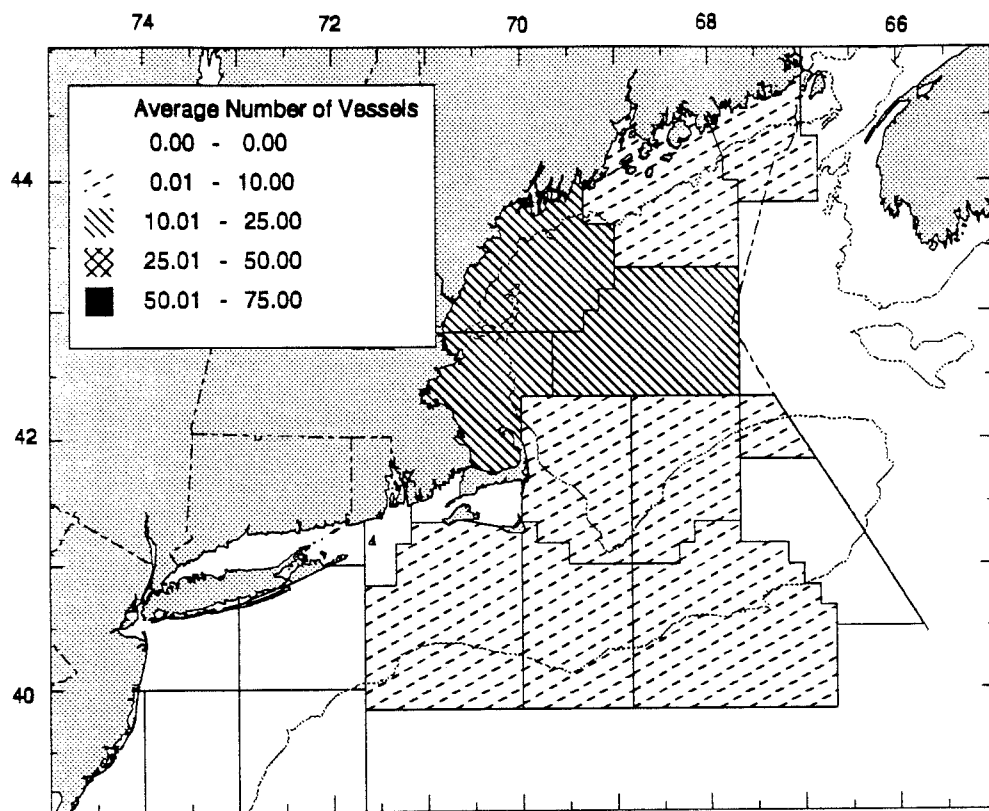


Figure 16. Areas fished by commercial gillnet vessels from New Hampshire ports in 1990 and 1991

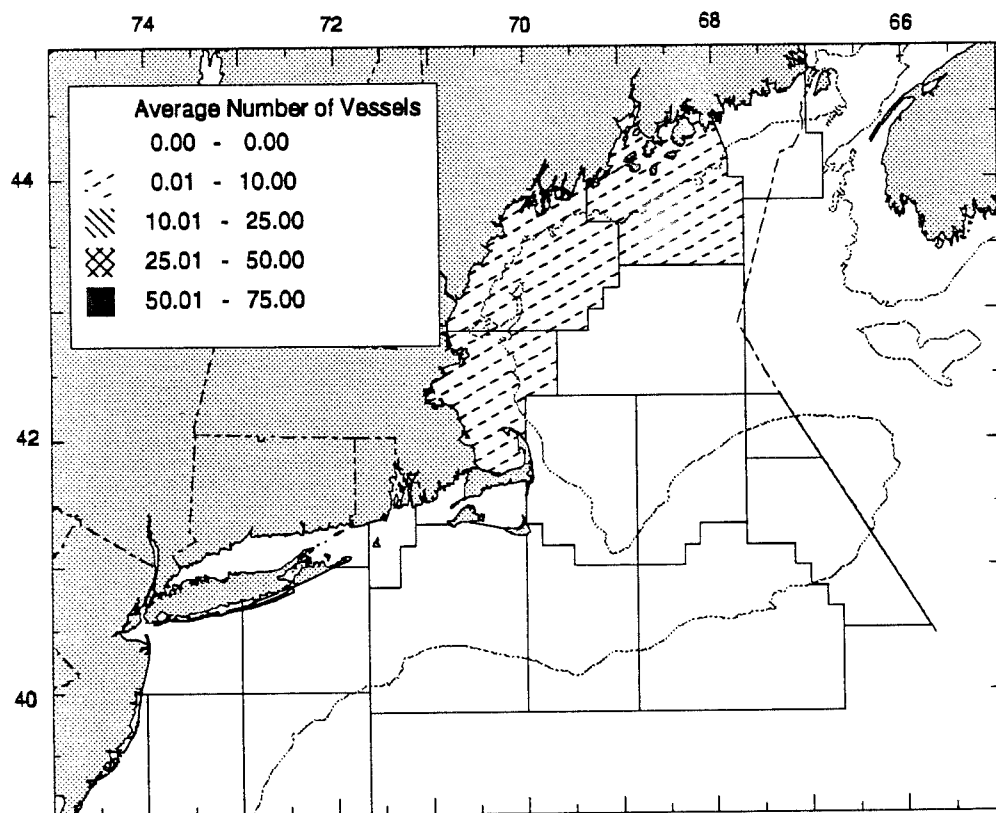


Figure 17. Areas fished by bait gillnet vessels from New Hampshire ports in 1990 and 1991

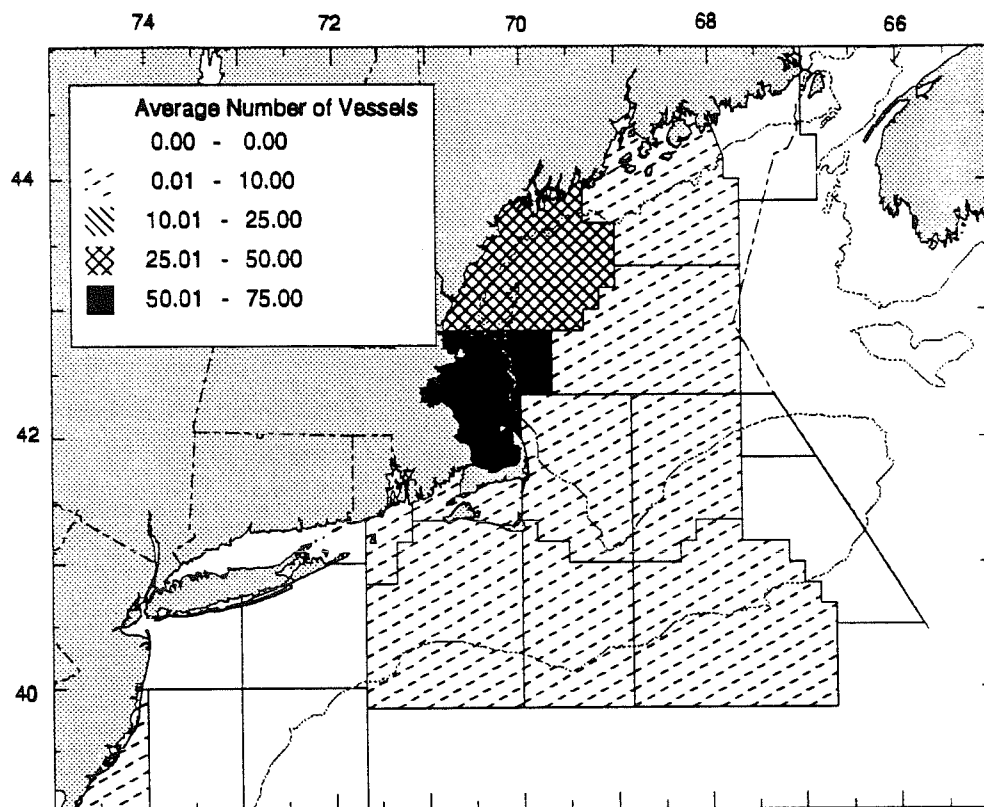


Figure 18. Areas fished by commercial gillnet vessels from northern Massachusetts ports in 1990 and 1991

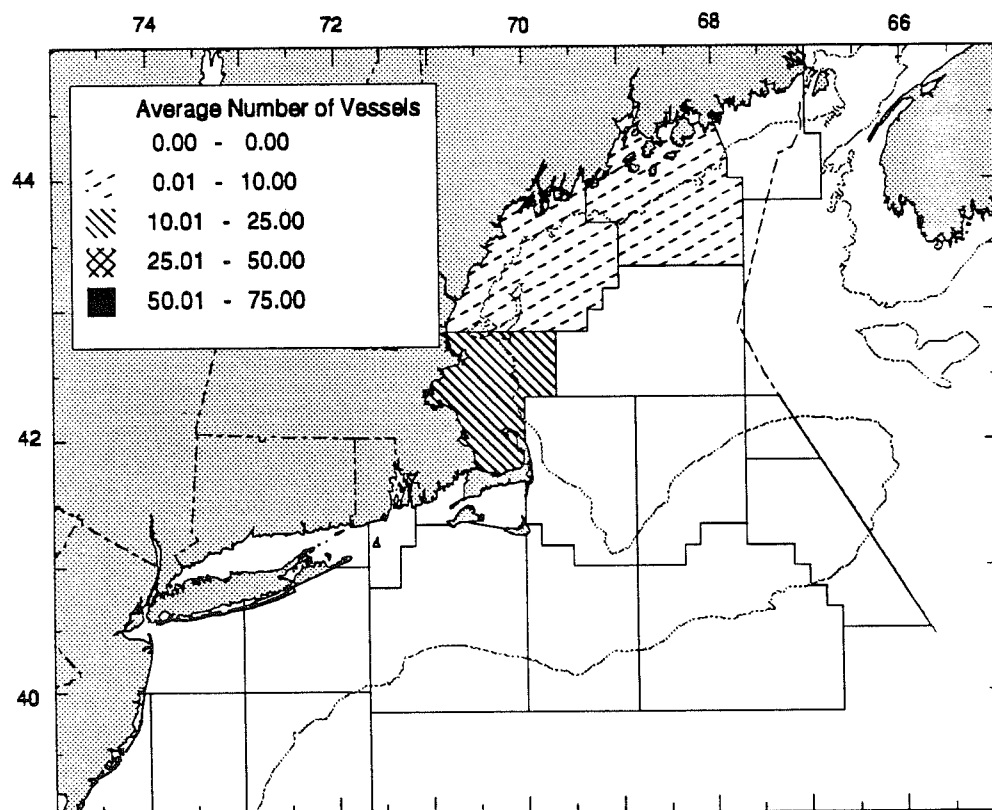


Figure 19. Areas fished by bait gillnet vessels from Massachusetts ports in 1990 & 1991

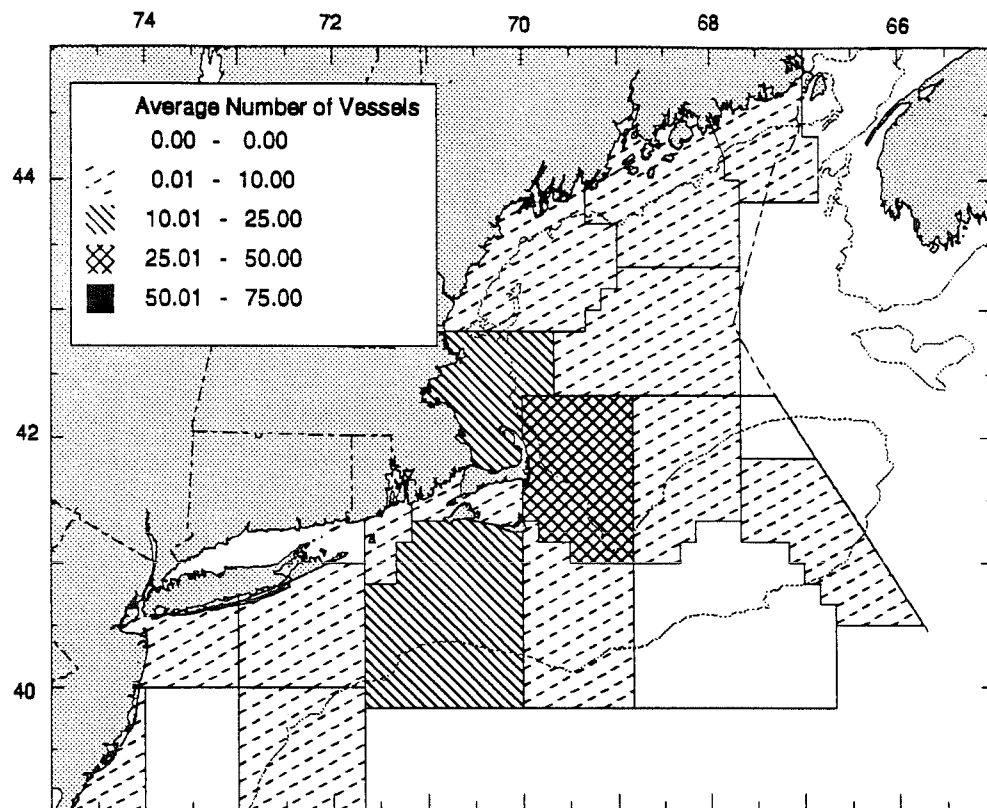


Figure 20. Areas fished by commercial gillnet vessels from southeastern Massachusetts ports in 1990 and 1991

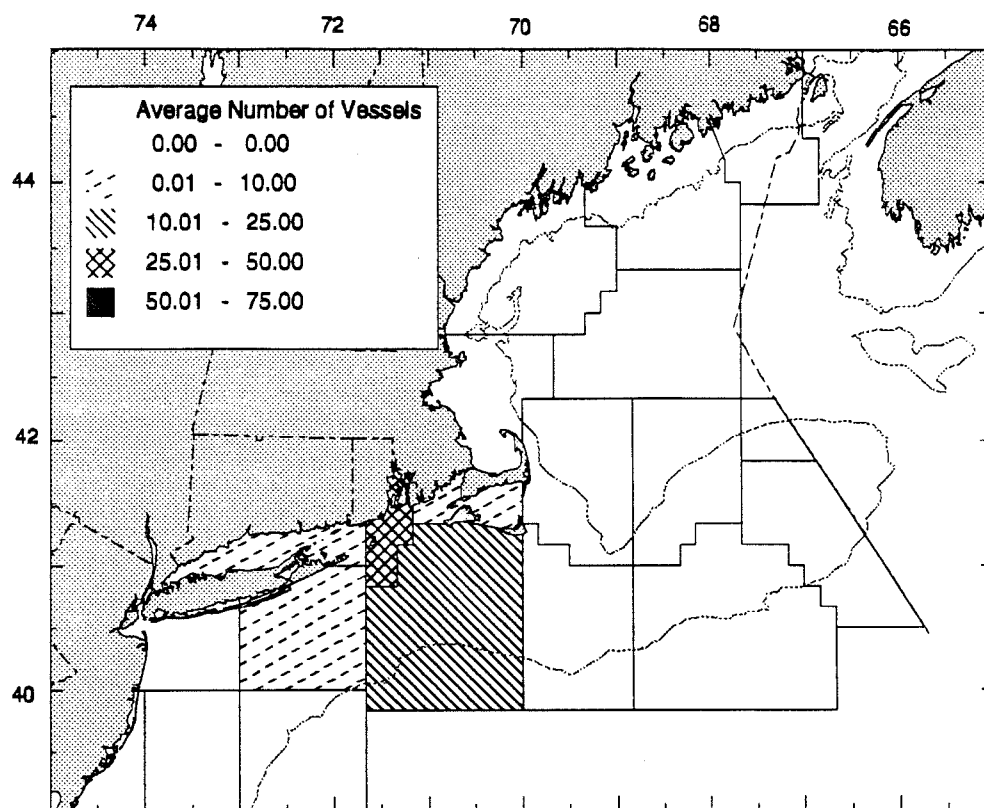


Figure 21. Areas fished by commercial gillnet vessels from Rhode Island ports in 1990 and 1991

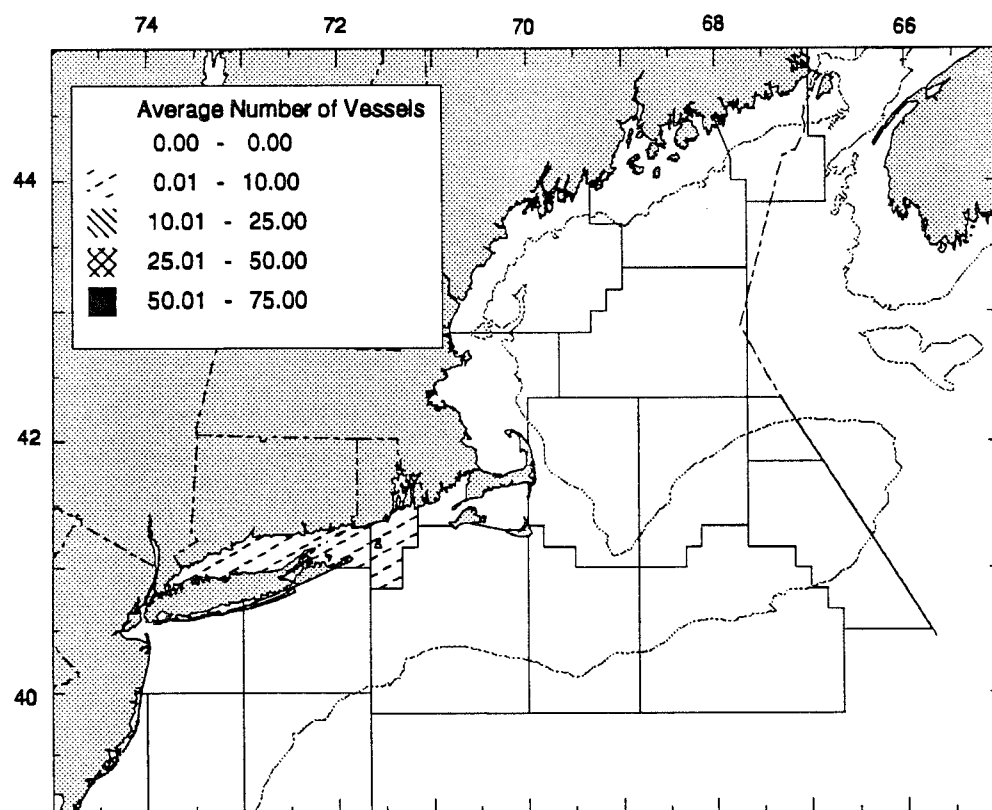


Figure 22. Areas fished by bait gillnet vessels from Rhode Island & Connecticut ports in 1990 and 1991

Figure 23. Alternative fishing gear and activities of commercial gillnet Vessels

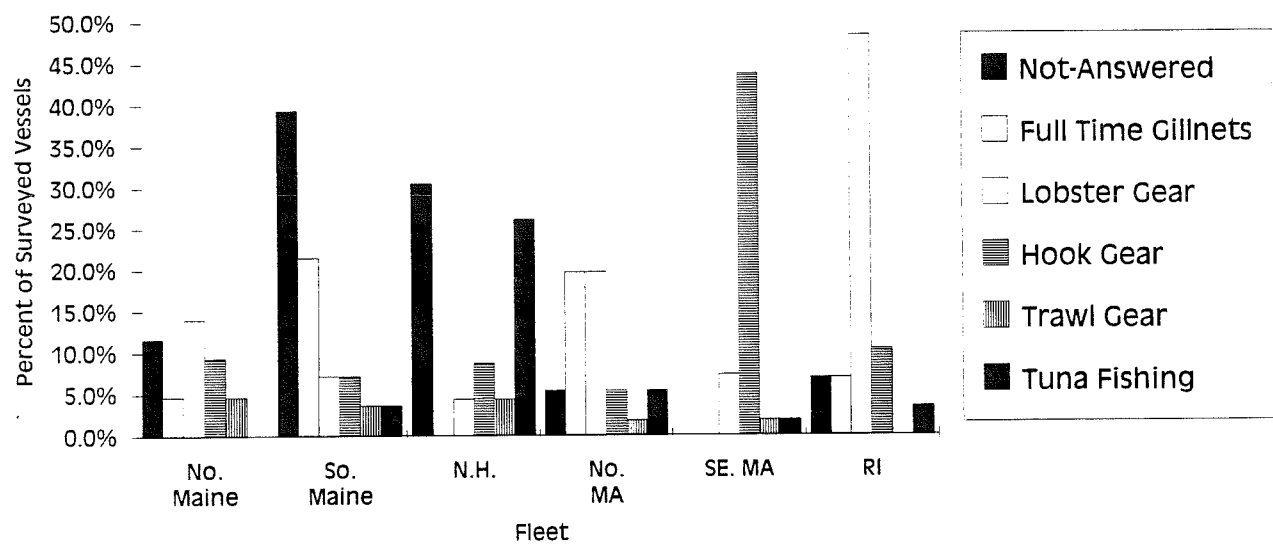
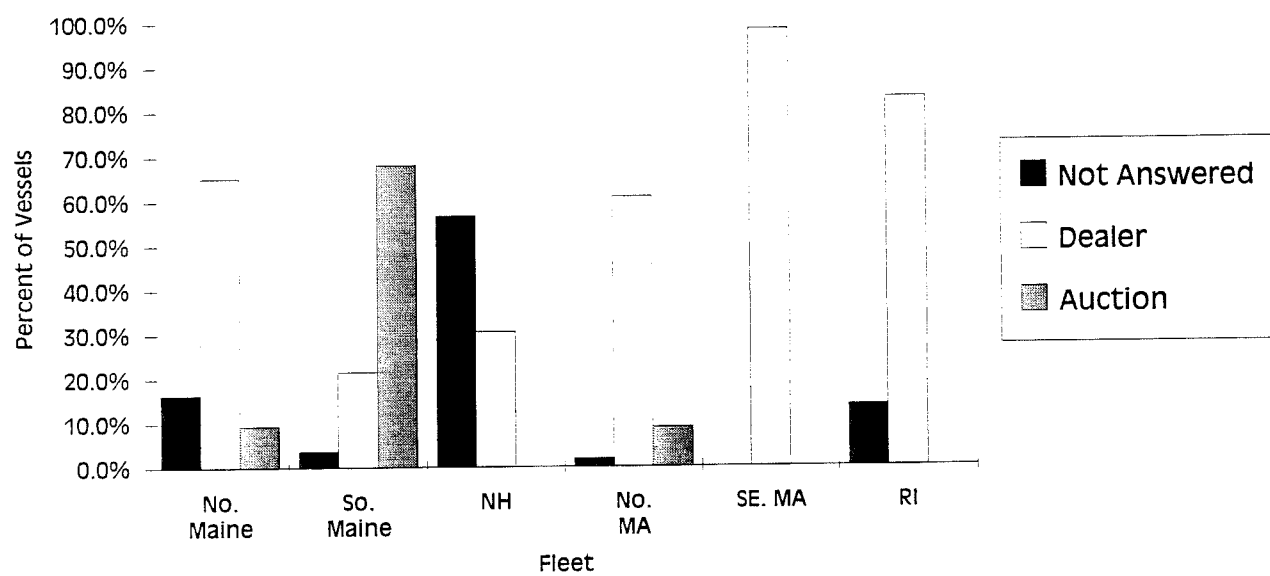


Figure 24. Marketing methods used by commercial gillnet vessels



Appendix one.

New England Gillnet Effort Survey.

GILLNET EFFORT STUDY QUESTIONNAIRE

DATE: _____ STATE: _____ PORT: _____

VESSEL NAME: _____ OFFICIAL NUMBER: _____

Did vessel fish gillnets in 1990?: _____ 1991?: _____ 1992?: _____ (Yes, No)

Name and address of owner: _____

Vessel's home port? _____

Months vessel fished or intended to fish gillnets by year.

1990: 1 2 3 4 5 6 7 8 9 10 11 12. (Circle months

1991: 1 2 3 4 5 6 7 8 9 10 11 12. fished or in-

1992: 1 2 3 4 5 6 7 8 9 10 11 12. tending to fish)

Statistical areas usually fish? _____, _____, _____, _____, _____.
(511, 512, etc.)

What does the vessel do when not fishing gillnets? _____

Gear fished? Number of strings _____ Number of sections or
half-nets per string: _____ Mesh size _____

Target? GROUND FISH _____ SM. PELAGICS _____ DOGFISH _____ BAIT _____

How did/do they market their fish? consignment, auction, peddled
brokered, etc? _____

Who buys most of their fish? _____

Do we get this vessels weighouts? YES _____ NO _____

Why are we missing their weighouts? _____

What would we have to do to get weighouts on them? _____

Other Comments: _____

Note: This is an experimental one-time study.