



NOAA Technical Memorandum NMFS-NE-113

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Individual Vessel Behavior in the Northeast Otter Trawl Fleet during 1982-92

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October 1997

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Acronyms

GRT	=	gross registered tons
IVTS	=	individual vessel time series
LPUE	=	landings per unit of effort
NAFO	=	Northwest Atlantic Fisheries Organization
NEFMC	=	New England Fishery Management Council
NEFSC	=	Northeast Fisheries Science Center
NMFS	=	National Marine Fisheries Service
SA	=	statistical area
TC	=	tonnage class

ABSTRACT

This paper characterizes otter trawl fleet activity in the northeastern United States from an individual vessel perspective. An individual vessel time series data base was created from the National Marine Fisheries Service's commercial fisheries landings weighout data base covering 1982-92. The distributions of such annual variables as number of trips, number of ports at which landed, number of species landed, number of statistical areas in which fished, number of days absent, weight landed, and revenue are presented across three vessel size classes. The central tendencies and variability in these individual vessel attributes are presented.

Observations on individual vessel behavior, as well as a discussion of the applicability of the individual vessel data base approach, are also presented.

INTRODUCTION

There is not a consistent, widely held, complete picture of how any of the fishing fleets in the northeastern United States operate. The perceptions of such fleet operations, as gleaned from the standard aggregate statistics about the region's fisheries are, at best, partial. Further, the perceptions do not reveal much about the decision-making behavior ("behavior") of individual fishing vessels within any of the fleets.

The change in fisheries management in the Northeast to direct control of individual vessels in some fisheries (*i.e.*, allotment to individual vessels of an annual number of days at sea), and the trend toward controlled access to specific fisheries, will make an understanding of individual vessel behavior critical to the success of fisheries management. Analysis of such behavior will permit optimum design, monitoring, and control of these fisheries management measures, and would apply particularly well in a multispecies fisheries environment.

Information about individual vessel behavior resides in the National Marine Fisheries Service's (NMFS) Northeast Fisheries Science Center's (NEFSC's) commercial fisheries data bases, but has not been tapped because the procedures needed to extract it are cumbersome, and because until recently, the interest in individual vessel behavior and fleet operations was secondary.

Recently, however, a working group consisting of members from the NEFSC's Population Dynamics Branch and Social Sciences Branch has been established to facilitate complementary and multidisciplinary research on Northeast fleet operations, based on individual fishing vessel behavior. A major objective of the working group is to encourage modeling of temporal and spatial effects in such operations and behavior. For example, although most major fisheries are pursued by some vessels dedicated strictly to that fishery, switching into and out of that fishery by other vessels often occurs in response to seasonal opportunities, market conditions, stock statuses, and more. This switching can create significant, interannual, unbalanced movement among fisheries.

This paper presents the results of an initial characterization of the Northeast otter trawl fleet. This characterization is based on a single individual vessel time series (IVTS) data base which was created from the NEFSC's commercial fisheries weighout data base. This IVTS data base consists of 36 variables, and covers the 1982-92 period. The unit of organization and analysis (*i.e.*, file definition) within the IVTS data base is an individual vessel's activity through a calendar year. Each file summarizes activity according to such variables as number of trips, trip length, number of ports at which landed, number of statistical areas in which fished, number of calendar months in which fished, and number of species landed.

This characterization serves several purposes: 1) indicating what time series information exists in the weighout data base; 2) examining the robustness of the existing data and the data collection system to support individual vessel analyses; 3) exploring the difficulty of creating time series data bases from the existing data structure; and 4) assessing the value of obtaining software to make IVTS files available to analysts.

The following section of this paper, "Methods," includes a brief background on the region's data collection system as a basis for understanding the study's methods. The section then describes data collection, storage, and preparation practices, variable definitions, and methods used in screening the data and generating the IVTS data base.

The "Results" section includes a brief background on the region's fisheries as a framework for understanding the results. The section then refers to tables describing the variable values, summed on an annual basis for individual vessels, and broken out by tonnage class.

The "Discussion" section focuses on issues of data coverage and sampling, variable selection and accuracy, and the general IVTS data base approach. Because this paper is more of an evaluation of the general usefulness of weighout data and of the IVTS data base for providing individual vessel behavior information, than an evaluation of the specific findings on such behavior in the Northeast during 1982-92, the discussion has more analyses of data and data base issues than of individual vessel behavior findings. The examination of the data raises several questions about data definition, measurement, collection, sampling, and quality control. Because the data have not previously been exposed to this type of analysis, the majority of these questions have not been answered.

A set of "Conclusions and Recommendations" complete the report.

METHODS

BACKGROUND

The NMFS is attempting to enhance its systems for collecting, archiving, and analyzing fisheries catch and effort data to support the increasingly complex needs of fisheries management. As part of the effort to enhance the data collection system, mandatory reporting by dealers and vessels was implemented in 1994. Until the mandatory reporting system was implemented, a voluntary system existed which relied on port agents collecting catch and effort data for vessels of at least 5 gross registered tons (GRT) landing in the NMFS Northeast Region (*i.e.*, from Cape Hatteras to the Canadian border). These voluntarily supplied data, covering the 1982-92 period, have been the basis for this paper.

DATA COLLECTION AND STORAGE

The voluntary data collection system consists of three tiers. The first tier is landings data which are compiled from dealer weighout slips (*i.e.*, receipt records) which provide the landed weight of the catch by species, vessel, and trip. The second tier is effort data which are collected through interviews with the vessel operators conducted in port at the time of landing. These interview records contain the most reliable trip information on variables such as gear type, fishing location, depth, and effort. The third tier is tow-by-tow data which were collected in the early years of the 1982-92 period at sea by port agents sailing on commercial fishing vessels, and collected in the later years of the period by contract personnel sailing on the vessels (*i.e.*, the sea sampling program).

Since all three tiers depend on voluntary cooperation, the percentage of total landings in the Northeast which has been recorded by the weighout slip process is not known. Twenty-eight percent of trips for which weighout slips existed in 1992 resulted in interviews by port agents. For multiple-day trips, the interview rate was approximately 50%; for day-boat trips, the rate was approximately 15%. For the remaining trips (*i.e.*, noninterviewed), port agents estimated fishing effort, gear, and location based on their knowledge of the particular vessel's activity and the activities of similar vessels operating in the same general area.

The voluntary system of data collection came into being in 1964, originating with Maine, Massachusetts, and Rhode Island. The system added New Jersey in 1978, Maryland and Virginia in 1981, New Hampshire in 1982, New York in 1986, and Connecticut and Delaware in 1989. Problems exist with the data collected in New York in that, because of fish handling practices there, an individual vessel is not able to be identified in the data base when no interview occurred.

The data base structure for storing these voluntary data has also evolved since 1964. Because of technical aspects of the data collection and storage process, difficulties and uncertainties exist for data collected prior to 1982. The difficulties and uncertainties occur when one associates the weighout landings data from an individual trip with the corresponding interview data. For this reason and because of changes in the structure of the computer data bases themselves, the analyses in this paper are limited to data collected from 1982 to 1992.

DATA PREPARATION, ANALYSIS, AND PORTRAYAL

This study includes those vessels which used otter trawl gear exclusively throughout the year. Vessels that used other gear or a combination of otter trawls and other gear were not examined.

Otter trawl vessels were divided into three categories based on their GRT, following the traditional classes used by the NEFSC for this fleet. Tonnage class (TC) 2 contains vessels that are 5 to 50 GRT, TC3 contains vessels that are 51 to 150 GRT, and TC4 contains vessels that are 151 or more GRT.

A single data file which contains the available cumulative annual landings weight, landings revenue, and effort statistics for each vessel was created as the basis for the analyses. Weight landed values are given as the live weight equivalents in metric tons for all species combined for a given vessel. Revenue values are given as total nominal dollars (*i.e.*, not adjusted for inflation) for all species landed by a given vessel. Each vessel was identified by its six-digit identification (*i.e.*, permit) number which is assigned as part of the federal fishing permitting process.

Landings per unit of effort (LPUE) statistics were calculated as the simple ratio of the annual cumulative landings (both as weight and revenue) of a vessel divided by the annual cumulative nominal effort of that vessel. Two measures of effort were examined: 1) number of trips, and 2) number of days absent. The days absent measure was recorded to the nearest day, and includes the time between when a vessel left and returned to port.

For some individual trips, effort statistics were either missing or inconsistent (*e.g.*, the amount of time trawling exceeded the length of the trip). While the number of trips in which these problems occurred were relatively small, not accounting for these problems in the data resulted in large distortions in some of the preliminary analyses (particularly those involving landings rates by individual vessels). To utilize information from as many vessels as possible, procedures were developed for screening and, where possible, for adjusting the effort data for missing or inconsistent values. Such adjustments to effort data were based on the performance by that vessel during the rest of the year in question. When such adjustments were not possible for a given vessel, then that vessel was eliminated from those statistical results which required effort data. Consequently, the total number of vessels will vary slightly among some of this study's statistical results.

The resulting statistical information about fleet behavior has been presented as tables displaying an annual time series of frequency distributions of the various fishery statistics. In the tables, one axis contains the years 1982 through 1992, while the other axis contains intervals of values of the variable of interest. To provide better resolution across the spectrum of values for some individual vessel behavior variables and for some vessel size classes, it was necessary to define intervals of unequal size, with higher resolution at the lower end of the spectrum.

Within the cells of the tables are numbers which are, in most instances, counts of vessels which fall into that year and variable interval. A vessel is included in a particular cell because of the measure of its activity over the course of the year. In most cases, this measure is a summing of events,

such as number of trips in a year or number of statistical areas in which fished in a year. In a few cases, though, this measure is an average such as the annual average trip length for that vessel.

RESULTS

BACKGROUND

The total number of vessels in all Northeast fisheries grew considerably after passage of the Fishery Conservation and Management Act in 1976 (Conservation and Utilization Division 1993). According to the weighout data base, the total number of vessels in the region of 5 GRT or more grew from 1,245 in 1978 to 1,891 in 1992. Most of this growth occurred by 1984, and among those vessels using otter trawls.

The overall ex-vessel (*i.e.*, dockside) revenue of landings by all Northeast vessels grew steadily from 1978 to 1984, and from then until 1992 varied around a mean of about \$470 million dollars in nominal terms. The weight of landings followed the same trend, and was around 707,000 metric tons (mt). These values do not reflect increases in the cost of fishing nor in the amount of time spent fishing, both of which have increased over the 1978-92 period.

In the NMFS Northeast Region in 1982, 1,193 otter trawl vessels each landed an average of almost 2.4 mt per day at sea. In 1992, with 1,012 vessels fishing, this value dropped to below 1.7 mt per day. Revenue per day at sea rose in nominal terms between 1982 and 1992, but in real terms (*i.e.*, adjusted for inflation) fell over the 11-yr period from \$2,110 to \$1,600.

Given this history of aggregate fleet behavior, I examined the annual frequency distribution of 13 variables of individual vessel behavior over 11 yr for three vessel size classes.

VARIABLES

Number of Vessels

All Gear Types

In 1992, 39% of TC2 vessels used otter trawls exclusively (Table 1). Other important gear for TC2 vessels in 1992 included "other gear" (34%) and gill nets (15%). ("Other gear" includes all gear except otter trawls, gill nets, scallop dredges, and/or clam dredges.) The reliance on otter trawls exclusively declined from the mid 1980s, from a peak of 56% in 1986 to 39% in 1992.

The majority (58%) of TC3 vessels used otter trawls exclusively in 1992 (Table 2). Other important gear or combinations of gear for TC3 vessels in 1992 included "other gear" (18%) and scallop dredges only (10%). The heavy

reliance on otter trawls was consistent over the years of the study. The exclusive use of scallop dredges increased over the period, while the exclusive use of clam dredges peaked in 1986.

Beginning in 1989, more TC4 vessels relied on scallop dredges alone than on otter trawls alone (Table 3). The percentage of TC4 vessels fishing exclusively with otter trawls during the study period remained relatively steady (*i.e.*, ranging between 32 and 38%), while the percentage of those fishing exclusively with scallop dredges nearly doubled (*i.e.*, from 25 to 47%). Together, those vessels using scallop dredges alone (47%) or otter trawls alone (33%) comprised 80% of the TC4 fleet in 1992.

Otter Trawls

From 1982 to 1992, the number of TC2 otter trawl vessels declined by about 100, while the number of TC3 vessels grew and then declined to its original number (Table 4). The TC4 vessels, comprising only about 10% of the fleet, experienced this same upward and downward shift as the TC3 vessels over the time period.

Year Built

As of 1992, the TC2 otter trawl fleet had the oldest composition, with 5% being built prior to 1941, 22% prior to 1951, and 54% prior to 1976, leaving 46% being built since 1976 (Table 5).

As of 1992, only 13% of the TC3 otter trawl fleet was built prior to 1966, while 74% was built between 1966 and 1980 (Table 6).

The trend toward younger vessels is strongest among the TC4 otter trawl fleet. As of 1992, the TC4 otter trawl fleet contained very few vessels (10%) built prior to 1976, with the heaviest construction period being 1976-80 (Table 7).

Number of Trips

In this variable, a phenomenon is encountered in which a significant percentage of both large and small vessels appear to take very few trips per year. For the 1982-92 period, a significant percentage of TC2 vessels made less than 11 trips per year, but in addition, a significant percentage of vessels made more than 100 trips per year (Table 8). This distribution is consistent across all 11 yr. The TC2 vessels were most likely of any class of vessel to have made more than 100 trips in any given year. They were also just as likely as the larger vessels to have made less than 11 trips per year.

Throughout the 11-yr period, the majority of TC3 vessels fished 30 or fewer trips per year (Table 9). By 1992, 31% of TC3 vessels made between 21 and 30 trips per year. For the 1982-92 period, the distribution of the number of trips

per TC3 vessel was skewed toward the low end of the defined intervals.

The TC4 vessels predominately fished between 21 and 30 trips per year (Table 10). Only a handful of such vessels fished more than 40 trips in a given year.

Trip Length

The smaller TC2 vessels had average trips of shorter duration than larger TC3 and TC4 vessels during 1982-92. No TC2 vessels made trips longer than 11 days. In 1992, 95% of TC2 vessels had an average trip length of less than or equal to 3 days (Table 11).

Over the study period, between 32 and 41% of TC3 vessels had average trips of less than or equal to 3 days (Table 12). An additional 15-30% had an average trip of 4-5 days, 20-25% had an average trip of 6-7 days, and 11-24% had an average trip of 8-9 days. Over the study period, this mid-size otter trawler class tended toward longer trips.

During 1982-92, TC4 vessels generally fished for a greater period of time on each trip when compared to the smaller size classes (Table 13). By 1992, almost half of all TC4 vessels had trips which averaged 8-9 days; few such vessels had average trips of more than 9 days.

Number of Ports at Which Landed

The number of ports visited annually by a single vessel was usually one or two, with occasional values up to six for TC2 and TC4 vessels, and up to seven for TC3 vessels (Tables 14-16).

The percentage of TC2 vessels landing at one port increased from 65% in 1982 to 80% in 1988, then declined to 72% in 1992. The percentage of these vessels landing at two ports declined from 27% in 1982 to 13% in 1988, then increased to 20% in 1992. About 90% of TC2 vessels landed consistently in either one or two ports over the 11-yr time frame.

For TC3 vessels, 55% landed at one port in 1982. This value rose to 71% in 1988, then declined to 54% in 1992. The percentage of these vessels landing at two ports declined from 32 to 22% between 1982 and 1988, then increased to 34% in 1992.

The percentage of TC4 vessels landing at one port rose from 49% in 1982 to 75% in 1987, then declined to 58% in 1992. The percentage of these vessels landing at two ports declined from 34 to 18% between 1982 and 1987, then increased to 28% in 1992.

Number of Statistical Areas in Which Fished

The TC2 vessels fished in a maximum (in 1985) of nine different statistical areas (SAs) during 1982-92; however,

an annual average of 94% of these vessels fished in a maximum of only three SAs over the 11 yr (Table 17). Less than 1% of the TC2 vessels on average fished in more than five SAs.

Over the study period, an annual average of only 2% of TC3 vessels fished in more than eight SAs, while an annual average of 88% fished in 1-6 SAs (Table 18). In 1982, those TC3 vessels fishing in 1-6 SAs were distributed fairly uniformly among the six categories. By 1992, only 8% fished in just one area, while 67% fished in four or more SAs.

During 1982-92, TC4 vessels fished in as many as 10 or more SAs in a year, but on average 82% of the vessels fished in 3-8 SAs, and 54% fished in 4-6 SAs (Table 19). The highest annual percentage fishing in just one SA (13%) occurred in 1988, compared to 3% in 1992.

Number of Calendar Months in Which Fished

There was a significant percentage of TC2 vessels fishing either only in 1 mo (*e.g.*, 21% in 1992) or in all 12 mo (*e.g.*, 20% in 1992) (Table 20). Vessels which weren't in these two extreme categories seemed to be evenly distributed among the other 10 categories. This bimodal distribution held throughout the 11-yr period.

Most TC3 vessels fished in more months than TC2 vessels. Those TC3 vessels fishing in all 12 mo predominated, more so in 1992 than in prior years (Table 21). There was a significant percentage of TC3 vessels (between 5 and 12%) fishing in only 1 mo of the year.

The percentage of TC4 vessels fishing in all 12 mo increased from 31% in 1982 to 66% in 1992 (Table 22). A small proportion (3-10%) of vessels fished in only 1 mo during the 11-yr period.

Number of Species Landed

The percentage of TC2 vessels landing no more than two species per year increased significantly over the study period, from 5 to 19% (Table 23). The percentage of TC2 vessels landing between 15 and 17 species per year, the interval that had dominated the 1980s, climbed from 20% in 1982 to 22% in 1984, then fell to 9% by 1992. There is a clear trend during the study period toward fewer species being landed per TC2 vessel per year.

In 1992, most (76%) TC3 vessels landed at least 12 species, with 43% landing between 12 and 17 species (Table 24). In the 1980s, TC3 vessels were landing fewer species on average than TC2 vessels. By 1992 that was no longer the case, as TC3 vessels landed more species on average.

The TC4 vessels had a tighter distribution of the number of species landed than the smaller vessel size categories (Table 25). Throughout the study period, a majority of these vessels landed between 9 and 17 species, with a slight trend to land more species over time.

Number of Days Absent

From 1982 to 1992, between 60 and 70% of TC2 vessels were absent from port for less than 76 days per year, and between 20 and 30% were absent for less than 11 days per year (Table 26). The distribution for TC2 vessels is skewed to the left with most observations clustered within the lower 20% of the overall range.

From 1982 to 1992, between 50 and 60% of TC3 vessels were absent from port from 76 to 200 days per year (Table 27). In 1992, 67% of these vessels were absent from port from 101 to 250 days per year, 43% were absent from 151 to 250 days, while only 6% were absent for less than 11 days.

For TC4 vessels, 50% or more were absent from port over 150 days per year during the 11-yr period (Table 28). In 1992, over 50% were absent for more than 200 days, a significant increase in effort from 1991 levels. Between 4 and 16% of these vessels were absent for less than 26 days per year during the study period.

Weight Landed

For the study period, the distribution of total annual landings is highly skewed left for all tonnage classes, with most observations clustered within the lower 10% of the range (Tables 29-31). Total annual landings per vessel declined over the study period for all tonnage classes.

During the study period, total annual landings of most TC2 vessels ranged from 0 to 200 mt, with a maximum of 1,000 mt. The percentage of TC2 vessels landing 100 or fewer metric tons per year increased from 75% in 1982 to 88% in 1992.

From 1982 to 1992, total annual landings of most TC3 vessels ranged from 0 to 500 mt, with a maximum of 5,000 mt. In this tonnage class, 54% of vessels landed 200 or fewer metric tons in 1982, compared to 72% in 1992.

During the study period, total annual landings of most TC4 vessels ranged from 0 to 1,000 mt, with a maximum of 5,000 mt. The percentage of TC4 vessels landing 500 or fewer metric tons per year increased from 44% in 1982 to 69% in 1992.

Weight Landed per Day Absent

Average weight landed per day absent in all tonnage classes declined over the study period (Tables 32-34). The percentage of TC2 vessels accounting on average for 0.5 or fewer metric tons per day absent increased from 28% in 1982 to 60% in 1992. Over the 11-yr period, average weight landed per day absent for most TC2 vessels ranged from 0 to 1.0 mt, with a maximum of 10.0 mt. From 1982 to 1986, between 20 and 44% of TC2 vessels had average weight landed per day absent values over 1.0 mt. In 1992, only 10% of these vessels fell in that range.

Thirty-one percent of TC3 vessels landed on average 1.5 or fewer metric tons per day absent in 1982 compared to 83% in 1992. During the study period, landed weight per day absent for most of these vessels ranged from greater than 0.5 to 2.0 mt, but during the latter part of the period, the dominant range was from 0 to 1.5 mt. The maximum average landed weight per day absent for TC3 vessels exceeded 10.0 mt.

The percentage of TC4 vessels landing an average of 2.5 or fewer metric tons per day absent increased from 24% in 1982 to 69% in 1992. Average landed weight per day absent for most TC4 vessels ranged over the 11 yr from greater than 1.0 to 5.0 mt, the upper end of the range being common in 1982, and the lower end of that range being dominant in 1992. The maximum average landed weight per day absent exceeded 30.0 mt for TC4 vessels.

Revenue

Over the 11-yr period, 62% (range of 56-67%) of TC2 vessels grossed \$50,000 or less per year (Table 35). Twenty-one percent of these vessels (range of 16-24%) grossed more than \$50,000 to \$100,000; 14% (range of 12-17%) grossed more than \$100,000 to \$200,000. During some years of the study period, some TC2 vessels grossed up to \$500,000, though on average during the study period, only 3% grossed more than \$200,000.

During 1982-92, an average of 25% of TC3 vessels grossed \$50,000 or less per year, while 12% grossed more than \$50,000 to \$100,000, and 50% grossed more than \$100,000 to \$400,000 (Table 36). On average, only 7% grossed more than \$400,000 to \$500,000, and only 6% grossed over \$500,000.

Over the 11-yr period, the majority of TC4 vessels earned more than \$200,000 to \$1,000,000 per year (Table 36). An average of 60% earned more than \$400,000 per year, and between 1 and 10% earned more than \$1,000,000 per year. In 1992, 9% earned more than \$1,000,000, and only 8% earned \$100,000 or less. Over the period, the overall pattern of revenue distributions (in nominal terms) shifted slightly to the right.

Revenue per Day Absent

During the study period, the majority (73%) of TC2 vessels had average annual revenues per day absent of \$1,000 or less (Table 38). In 1992, 92% of these vessels had average revenues per day absent of \$1,500 or less.

Dominant intervals of average annual revenue-per-day-absent values among TC3 otter trawlers during 1982-92 were: 1) more than \$500 to \$1,000 (15% on average); 2) more than \$1,000 to \$1,500 (28%); 3) more than \$1,500 to \$2,000 (27%); and 4) more than \$2,000 to \$2,500 (15%) (Table 39). During 1982-92, only 2% of these otter trawlers earned an annual average of \$500 or less per day absent, only 17% earned

less than \$1,000, and only 13% earned \$2,500 or more per day absent. In 1992, only 19% earned \$2,000 or more per day absent.

During 1982-92, 80% of TC4 vessels had average annual revenues per day absent of more than \$2,000, with 6% having average annual revenues per day absent of more than \$5,000 (Table 40). In 1992, only 14% of TC4 vessels had average annual revenues per day absent of more than \$4,000.

DISCUSSION

INDIVIDUAL VESSEL BEHAVIOR OBSERVATIONS

General Observations

In looking at all 13 statistical variables for all three vessel size classes of Northeast otter trawlers during 1982-92, one notes that a number of statistical trends (*e.g.*, trip lengths, number of species landed, and revenues) often seemed to reverse, and that the turning points of those reversals often occurred in 1987 or 1988. Many factors such as changes in fish abundances, seafood demand, and fishery regulations could have influenced those trend reversals. During the 11-yr study period, there was little relative variation and only a slight net decrease in the annual collective abundances of the principal groundfish and flounders (*i.e.*, 12 demersal species) most sought by the Northeast's fishermen (Conservation and Utilization Division 1993). There was a significant increase up to 1987, then a relative leveling off through 1992, of consumer demand nationally for seafood species (Fisheries Statistics Division 1993). Perhaps most importantly, though, there were increasingly more restrictive fishery regulations adopted for Northeast fishermen in late 1986 (Halliday and Pinhorn 1997); those regulations would have begun to manifest themselves in their first or second full year of adoption (*i.e.*, 1987 or 1988).

After implementation of the Fishery Conservation and Management Act in March 1977, the New England Fishery Management Council (NEFMC) assumed the lead responsibility for preparing the fishery management plans for those species most commonly sought by the Northeast's otter trawlers. The first such plan -- the 1977 "Fishery Management Plan for Atlantic Groundfish" -- relied on minimum fish sizes, spawning area closures, and maximum harvest levels for just Atlantic cod, haddock, and yellowtail flounder.

In March 1982, the NEFMC adopted a new, *laissez-faire* approach to management of these three species by implementing the "Interim Fishery Management Plan for Atlantic Groundfish." The interim plan placed no controls on fish harvest levels, fishing effort, or fishery participation, but relied only on minimum fish sizes, minimum mesh sizes, and

spawning area closures, again for just the three species. The interim plan failed to improve the generally low abundances of two highly sought species -- haddock and yellowtail flounder.

Consequently, in September 1986, the NEFMC adopted an increasingly restrictive approach to management of the three species through implementation of the "Fishery Management Plan for the Northeast Multispecies Fishery." The NEFMC used the same fishery management tools as the previous, interim fishery management plan, but increasingly covered more species, raised minimum fish sizes, and lengthened spawning area closures, four times between 1987 and 1993.

That a number of the statistical variable - vessel size class combinations showed trend reversals soon after the adoption of increasingly restrictive fishery management regulations would seem to support the goal of using individual vessel behavior attributes to model otter trawl fleet operations. Such modeling might ultimately be able to predict the individual-vessel-level effects of various fishery management regulations, and, in turn, to predict the likelihood of success or failure of such regulations.

Specific Observations

Results have been presented for 13 variables. Some specific observations can be made to add to the understanding of the trends during 1982-92 for several of these variables: number of trips, number of days absent, number of ports at which landed, number of statistical areas in which fished, number of calendar months in which fished, and number of species landed.

The results showed a trend for larger vessels to make fewer trips and smaller vessels to make more trips. This difference is not surprising given the distinction between "day boats" and "trip boats." This variable, numbers of trips, was one in which difficult-to-explain phenomena appeared, such as when both large and small vessels made very few trips per year. Independent information would be required to determine the cause or mix of causes for such low levels of participation. Regional emigration, mechanical problems, and financial problems are all possibilities.

In addition to the number of trips variable, the days absent variable was used to measure effort. The days absent variable provides a general indication of gross fishing time. Variations in steaming time and time lost due to weather or mechanical difficulties, however, should be taken into account when comparing this variable to nominal fishing effort.

The number of ports at which landed variable provides an indication of the degree to which vessels landed their catch at a port other than their primary port. A larger number of ports visited in a given year may indicate an attempt to obtain higher prices at alternate ports, or fishing activity conducted over a wider geographic range. Many factors are likely to be involved.

The number of statistical areas in which fished variable is a relatively “soft” statistic, depending, even for inter-viewed trips, on fishermen’s recall and/or their desire to reveal fishing grounds after tiring trips. The number of statistical areas fished by individual vessels over the course of a year is related to a variety of factors. Across the fleet, for example, it may be related to the size of the vessel where a larger vessel is able to cover a greater distance, or to the species being sought and the gear being deployed. Changes over the study period in the relative number of statistical areas being fished may also indicate changes during that period in the relative distribution/availability of the species being sought. An increase in the number of statistical areas being fished by vessels of a given size, for instance, may be caused by an increase in the amount of searching required for those vessels to make their catches. Also, in groupings of vessels which use a variety of gear, we might expect to see a larger number of statistical areas being fished.

The number of calendar months in a given year in which a particular vessel was recorded as having fished varies considerably. While some of this variability may be due to incomplete coverage in certain years, it may also be explained by vessels which have entered the fleet since 1982. Unless a new vessel is available to fish in the first month of its initial year, it will be perceived as having participated for fewer than the expected number of months. This perception will be particularly warped for larger vessels which are expected to fish year-round. A substantial proportion of the perceived outliers may be due to this initial-entry phenomenon.

As noted, in the 1980s, TC3 vessels were landing fewer species on average than TC2, possibly because they could travel farther offshore and remain targeted on fewer but more specific stocks than TC2 vessels. By 1992, this trend reversed, and many other factors influenced what was brought home for sale. The decline in the predominance of all stocks of Atlantic cod, haddock, and yellowtail flounder has led to markets opening up to many more species, for example.

DATA, VARIABLE, AND DATA BASE ISSUES

Before any attempt can be made to model fleet operations, a number of data, variable, and data base issues must be addressed and resolved. Those issues fall into three categories: data coverage and sampling, variable selection and accuracy, and data base coverage.

Data Coverage and Sampling

Much of what can or cannot be said about the behavior of individual vessels depends on the completeness and

integrity of the underlying data. During the period of this study, the implied behavior of some vessels as derived from the collected data suggests that there may be concerns with data completeness and integrity. For example, were there TC4 vessels earning less than \$100,000 per year? Were there TC3 vessels fishing less than 10 days per year? Were there TC4 vessels landing less than 100 mt per year? There are legitimate reasons why the answers to these questions could be yes. However, it is difficult if not impossible in many instances to tell from the existing data whether or not true vessel behavior was being observed or reported. This section addresses these concerns from the standpoint of incomplete coverage and sampling bias.

Incomplete Coverage

Incomplete coverage by the voluntary data collection system could have occurred for several reasons. Data could have been missed when vessels landed in remote ports which port agents visited infrequently. Even if the vessels’ landings data were recorded by cooperative dealers, the corresponding effort data would have been missed if a port agent did not conduct interviews with the vessel captains.

Uncooperative dealers, whether in a port agent’s resident port or in a remote port, could have refused to supply landings data on vessels from which they bought fish. When this occurred, both landings and effort data would have been missed by the data collection system.

Data could have been missed when vessels sold either directly to restaurants or from “roadside” stands. Again, landings and effort data would have been missed. This direct selling is not as common among TC3 and TC4 vessels as it is among TC2 vessels that land lobster or shrimp in small Maine ports.

Individual vessel data could have been missed when landings from several vessels were lumped together on one dealer weighout slip (*i.e.*, across-vessel lumping). Unless a vessel happened to be interviewed soon after landing, there was no way to determine its landings or effort for that trip based on the lumped-across-vessel dealer weighout slip.

In addition to dealer-based, across-vessel lumping, there was also state-based lumping in a couple of instances. Connecticut and Delaware have no port agents, and report only their total landings (*i.e.*, weight and revenue). There is no way to associate those state-total landings data with an individual vessel’s landings or effort.

Sampling Bias

Reasons for sampling bias in the voluntary data collection system can stem from the incomplete coverage noted above, as well as from other factors. The inability to associate landings and effort data with a particular vessel due to the problems of incomplete data coverage can prevent an

accurate count of the number of vessels fishing at any point in time, and bias downward any per-vessel annual statistical averages.

Factors other than incomplete coverage which contribute to sampling bias include vessel transiency, vessel name/number confusion, otter-trawl-only-use vessel inclusion, within-vessel lumping, interview nonrandomness, and data estimation/proration.

When transient vessels from outside the NMFS Northeast Region landed one or more trips in the region, they were often not identified as transients on the weighout slips. Consequently, these transient vessels tended to bias downward the annual per-vessel statistical averages.

When a vessel would change names, the change would sometimes not be detected by the port agents collecting the data, nor by those auditing the data, on that vessel. As a result, that vessel's data would not be assigned to the correct vessel file -- which is based on the vessel's federal fishing permit number -- and two vessel files would be created inadvertently for one vessel. This vessel name/number confusion would bias downward the annual per-vessel statistical averages.

Since this study included only vessels that used otter trawls exclusively throughout the year, and excluded all vessels that used a combination of otter trawls and other gear, there is opportunity for bias in the results. The nature and extent of any such bias are unclear, though.

Two analogous, "time saving" practices which could compromise data are: 1) dealers lumping trips from the same vessel onto one weighout slip, and 2) port agents lumping several weighout slips from the same vessel fishing in the same area into one computer record (*i.e.*, within-vessel lumping). The practices of within-vessel lumping are adequate for generating fleet totals and averages. However, for modeling efforts which relate landings to effort on a trip-by-trip basis for a given vessel, these practices have been counter productive. Eliminating from analysis those data records where these practices occur may cause an unacceptable loss of data, and, at the same time, bias the remaining data, although the nature and extent of such bias are unclear.

Most questions about the sampling bias concern the randomness of interview coverage. A frequency distribution of vessel interviews tends to be bimodal, with modes near 0 and 100%. It would be expected that vessels which landed in remote ports and were never seen by port agents would have never been interviewed. On the other hand, a large number of vessels were interviewed 100% of the time, meaning that vessels were not interviewed in a random manner. Nonrandomness may introduce considerable bias when attempting to model vessel behavior. Again, the nature and extent of such bias are unclear.

Two types of "data generating" practices which could compromise data are: 1) port agents estimating and assigning effort and location data -- based on their judgment of the fishing practices of similar vessels under similar circum-

stances (*e.g.*, target species, time of year) -- to a vessel file for the noninterviewed trips by that vessel; and 2) this study's proration of missing or inaccurate vessel data -- based on that vessel's behavior during the remainder of the calendar year -- for that vessel's record. There is opportunity for bias as a result of these practices, but the nature and extent of such bias are unclear.

As noted for several of the bias-creating factors mentioned above, the nature and extent of such bias are unclear. For some factors, there is no apparent way to measure the bias after the fact (*e.g.*, vessel transiency). For other factors, a separate analysis of other existing data would have to be undertaken (*e.g.*, inclusion of vessels using a combination of otter trawls and other gear).

Variable Selection and Accuracy

Whether a vessel's trip record is based on an interview or not plays a large role not only in any bias of the data, but also in the accuracy of any subsequent statistics derived from the data. The following discussion focuses on the differential effects of interviewed and noninterviewed data on those statistics which rely on effort and location data. Two such statistics -- the number of days absent and the number of statistical areas in which fished -- are covered in more detail.

Interview vs. Noninterview Effects

Since records from both interviewed and noninterviewed trips were included in the statistical analyses of vessel activity, not all statistical variables which were selected from these records can be interpreted with the same degree of certainty. The accuracy of the variables describing effort and location (*i.e.*, trip length, days absent, and statistical areas in which fished), and of those variables which were subsequently computed (*i.e.*, landings per day absent and revenue per day absent), depends to a large extent on the proportion of trips which were interviewed.

Instead of having effort and location data for noninterviewed trips be assigned to trip records based on the judgment and experience of port agents, an alternative procedure -- proration -- could be devised to estimate noninterviewed effort and location data, using the interview data alone as a sample base. A proration procedure would need to assume that the quantity to be prorated (*e.g.*, the number of TC4 otter trawlers absent more than 250 days in 1985) is distributed in the population (*i.e.*, all trips in the weighout data base) the same as those in the sample (*i.e.*, all trips in the interview data base). Also, an additional assumption about the relationship between effort and some known quantity, such as landings, must be made in order to estimate the unknown quantity of effort associated with the noninterviewed trips. Such assumptions could not

avoid bias as implied in the earlier discussion of that subject (*e.g.*, larger otter trawlers landing at principal ports are more likely to be interviewed, and the effort- and location-based statistics for these vessels are more likely to be accurate). Such assumptions could nonetheless be made.

Days Absent

The number of days absent by a fishing vessel was selected as the measure of overall fishing activity instead of the number of days fished. The number of days absent is a more robust measure since it is based on the simple departure and arrival dates of the vessel from its home port, and is, therefore, readily determined for vessels which are not often interviewed. While the more restrictive days fished statistic is usually considered a better measure of fishing effort for determining fishing mortality, the days absent statistic is a better measure of annual vessel activity.

To measure LPUE consistently, days fished must be adjusted for changes in technology such as increased horsepower, larger nets, and more sophisticated electronics and deck layout, all of which have increased fishing power over time. Days absent may also be affected by these factors since, for example, greater efficiency may result in shorter trips. Such a tendency might, in turn, be offset by the ability to complete more trips per year. In the case of declining resource abundance, however, an increase in the number of days absent may be a consequence of needing to remain at sea longer due to reduced ability to locate and/or catch fish.

Statistical Areas

The variable that defines the number of statistical areas in which a vessel fished (Figure 1), which was chosen to represent the locations fished, is one of four location variables encoded on the weighout record: 1) 10 min of longitude by 10 min of latitude, 2) 30 min of longitude by 30 min of latitude, 3) NMFS statistical areas, and 4) Northwest Atlantic Fisheries Organization (NAFO) subareas and divisions. Each of the four variables represents an increasingly broader level of spatial resolution, respectively. The 10-min square areas are only encoded for interviewed trips, and would, therefore, require proration of the noninterviewed trips in order to be used comprehensively. The 30-min square areas, the NMFS statistical areas, and NAFO subareas and divisions are encoded for all trips, whether interviewed or not.

On noninterviewed trips, the statistical area is assigned by the port agent based on a vessel's recent activity pattern; however, statistical areas are drawn on a sufficiently large spatial scale so as to minimize judgment errors. Nevertheless, it is more likely that multiple areas will be en-

coded on an interviewed trip (defined as a "split" trip) than on one that is not interviewed.

Data Base Coverage

Over the 1980s, the voluntary data collection system grew to cover more states and ports. Some new questions were added to the sampling process, but the fundamental sampling design did not change. Essentially, the system had been set up to collect information on biomass removed by gear type from different fishing areas; it did not focus on individual vessels.

One obvious limitation of the system was the omission of data on vessels under 5 GRT. Landings data from these smaller vessels were recorded, but were lumped under a general category of "unknown:under-tonnage." Another limitation was the lack of accurate reporting of the number of crew members for a trip. The number of berths on a vessel was used as a proxy for crew size. Another limitation was that there were more vessels which fished in a given year than could be individually identified through the weighout system. The federal fishing permit process which issues permits to vessels fishing for regulated species didn't help in this instance because not all vessels with permits fished for the permitted species, and some vessels were without permits since they fished for unregulated species or in state waters only. Lastly, and importantly, vessel cost information was difficult to obtain through the system.

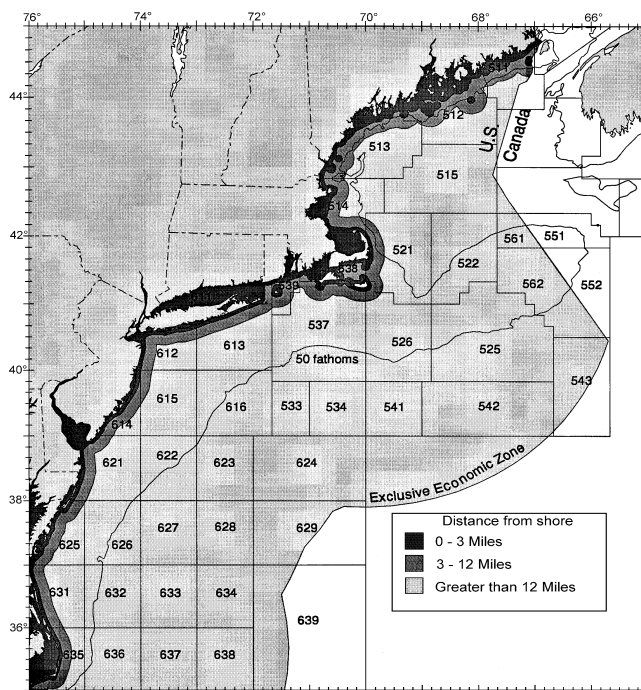


Figure 1. Statistical areas for commercial fisheries data collection in the NMFS Northeast Region.

Then, in 1994, requirements for federal fishing permits and logbooks changed. Amendment 5 to the Fishery Management Plan for the Northeast Multispecies Fishery requires annual permits for vessels, operators, and dealers, and mandatory logbooks for fishermen. The logbooks request data on several aspects of fishing activity. The value of the information derived from the logbooks will still depend, however, on the willingness of vessel captains to report data thoroughly and accurately, and on the ability of the NMFS Northeast Region to process the data effectively and efficiently.

The logbooks are designed to address concerns of universal coverage and the practice of lumping catches. They should alleviate the problem of multiple entries, reveal the number of vessels fishing in a given year, and indicate which vessels fished part-time, were transients, or didn't fish a complete year due to different causes. At the very least, the logbooks should enhance measurement of nominal fishing activity (*e.g.*, number of trips, time at sea) for all vessels. It remains to be seen, however, whether information will improve on areas fished. They will also have the potential for picking up some additional data which can help in estimating cost information.

CONCLUSIONS AND RECOMMENDATIONS

Fisheries managers and policy analysts lack knowledge of key aspects of the behavior of the Northeast otter trawl fleet. These key aspects often involve the decision-making behavior of individual vessels, especially in response to changes in fisheries management regulations.

This study has been a first parsing of the data collected through the pre-1994, voluntary collection system in order to examine individual vessel behavior. It has pointed out some surprising behavior patterns for individual vessels. Although some of this behavior revealed by the study appeared odd because of the methods used, other behavior appeared that way because of real variation in the decision making by individual vessels.

To improve the usefulness of the information emanating from future individual vessel behavior studies, several steps should be taken. First, attention will need to be given to new problems created by the mandatory reporting requirement, such as reporting compliance and verification.

The introduction of bias into existing data bases should also be avoided as much as possible when mandatory data are merged with, or are used to prorate, the voluntary data.

Second, there is a need to examine the individual vessel behavior in fisheries other than the otter trawl fleet.

Third, creating a multiyear analytical data set on individual vessel behavior will require the use of front-end software capable of manipulating data and testing hypotheses. In particular, such software should be able to identify vessels fishing in or relocating to other regions during the year.

Fourth, because of the value of having individual vessel behavior information, the design of future data collection schemes and data base management systems must incorporate the flexibility to create and examine individual vessel data.

This approach of examining individual vessel behavior holds much promise of revealing useful information to fisheries managers and policy analysts. Further efforts, as noted above, should now be made to ensure that the process of examining individual vessel behavior becomes more realistic.

ACKNOWLEDGMENTS

The author acknowledges the assistance of the original members of the Fleet Modelling Group who consisted of Anne Lange, Phil Logan, Ralph Mayo, Tom Polacheck, and John Walden.

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Table 1. Number of TC2 commercial fishing vessels by gear type in the northeastern United States during 1982-92. (For each year/gear type combination, the upper value is the number of vessels; the lower value is the percentage of the annual total. OT = otter trawl; SD = scallop dredge; GN = gill net; CD = clam dredge.)

Year	Gear Type							Total
	OT	SD	OT & SD	GN	CD	OT & GN	Other	
1982	410 50.87	4 0.50	9 1.12	68 8.44	18 2.23	54 6.70	243 30.15	806 100.00
1983	358 37.29	22 2.29	26 2.71	55 5.73	16 1.67	23 2.40	460 47.92	960 100.00
1984	405 55.18	11 1.50	22 3.00	59 8.04	13 1.77	23 3.13	201 27.38	734 100.00
1985	383 53.64	9 1.26	8 1.12	62 8.68	14 1.96	28 3.92	210 29.41	714 100.00
1986	378 56.25	3 0.45	6 0.89	69 10.27	13 1.93	19 2.83	184 27.38	672 100.00
1987	417 53.67	8 1.03	8 1.03	91 11.71	12 1.54	44 5.66	197 25.35	777 100.00
1988	387 51.06	7 0.92	14 1.85	119 15.70	10 1.32	39 5.15	182 24.01	758 100.00
1989	295 42.39	15 2.16	19 2.73	115 16.52	9 1.29	40 5.75	203 29.17	696 100.00
1990	299 42.29	18 2.55	13 1.84	103 14.57	2 0.28	45 6.36	227 32.11	707 100.00
1991	310 42.35	17 2.32	11 1.50	111 15.16	6 0.82	51 6.97	226 30.87	732 100.00
1992	315 38.84	24 2.96	18 2.22	119 14.67	23 2.84	38 4.69	274 33.79	811 100.00
Total	3957	138	154	971	136	404	2607	8367

Table 2. Number of TC3 commercial fishing vessels by gear type in the northeastern United States during 1982-92. (For each year/gear type combination, the upper value is the number of vessels; the lower value is the percentage of the annual total. OT = otter trawl; SD = scallop dredge; GN = gill net; CD = clam dredge.)

Year	Gear Type							Total
	OT	SD	OT & SD	GN	CD	OT & GN	Other	
1982	391 54.76	45 6.30	55 7.70	1 0.14	68 9.52	2 0.28	152 21.29	714 100.00
1983	438 55.73	49 6.23	61 7.76	2 0.25	68 8.65	2 0.25	166 21.12	786 100.00
1984	489 59.06	62 7.49	61 7.37	2 0.24	71 8.57	4 0.48	139 16.79	828 100.00
1985	446 58.07	49 6.38	40 5.21	0 0.00	79 10.29	0 0.00	154 20.05	768 100.00
1986	460 60.45	58 7.62	26 3.42	1 0.13	89 11.70	0 0.00	127 16.69	761 100.00
1987	460 59.66	60 7.78	36 4.67	1 0.13	86 11.15	1 0.13	127 16.47	771 100.00
1988	458 58.05	64 8.11	43 5.45	3 0.38	80 10.14	6 0.76	135 17.11	789 100.00
1989	460 59.74	66 8.57	44 5.71	3 0.39	82 10.65	4 0.52	111 14.42	770 100.00
1990	418 57.03	70 9.55	51 6.96	5 0.68	56 7.64	5 0.68	128 17.46	733 100.00
1991	397 58.47	69 10.16	39 5.74	4 0.59	36 5.30	2 0.29	132 19.44	679 100.00
1992	390 58.12	68 10.13	40 5.96	3 0.45	45 6.71	7 1.04	118 17.59	671 100.00
Total	4807	660	496	25	760	33	1489	8270

Table 3. Number of TC4 commercial fishing vessels by gear type in the northeastern United States during 1982-92. (For each year/gear type combination, the upper value is the number of vessels; the lower value is the percentage of the annual total. OT = otter trawl; SD = scallop dredge; GN = gill net; CD = clam dredge.)

Year	Gear Type						Total
	OT	SD	OT & SD	CD	OT & GN	Other	
1982	80 33.20	61 25.31	48 19.92	31 12.86	0 0.00	21 8.71	241 100.00
1983	87 34.94	65 26.10	44 17.67	34 13.65	0 0.00	19 7.63	249 100.00
1984	86 31.85	74 27.41	39 14.44	36 13.33	0 0.00	35 12.96	270 100.00
1985	99 34.62	72 25.17	39 13.64	40 13.99	1 0.35	35 12.24	286 100.00
1986	106 37.99	72 25.81	32 11.47	46 16.49	0 0.00	23 8.24	279 100.00
1987	102 35.66	85 29.72	29 10.14	42 14.69	0 0.00	28 9.79	286 100.00
1988	109 34.49	93 29.43	41 12.97	43 13.61	0 0.00	30 9.49	316 100.00
1989	104 31.90	117 35.89	39 11.96	46 14.11	1 0.31	19 5.83	326 100.00
1990	99 32.78	126 41.72	32 10.60	16 5.30	1 0.33	28 9.27	302 100.00
1991	95 31.77	121 40.47	29 9.70	26 8.70	1 0.33	27 9.03	299 100.00
1992	95 33.22	135 47.20	12 4.20	24 8.39	0 0.00	20 6.99	286 100.00
Total	1062	1021	384	384	4	285	3140

Table 4. Number of TC2, TC3, and TC4 commercial fishing vessels by tonnage class in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/tonnage class combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Tonnage Class			Total
	2	3	4	
1982	410 46.54	391 44.38	80 9.08	881 100.00
1983	358 40.54	438 49.60	87 9.85	883 100.00
1984	405 41.33	489 49.90	86 8.78	980 100.00
1985	383 41.27	446 48.06	99 10.67	928 100.00
1986	378 40.04	460 48.73	106 11.23	944 100.00
1987	417 42.59	460 46.99	102 10.42	979 100.00
1988	387 40.57	458 48.01	109 11.43	954 100.00
1989	295 34.34	460 53.55	104 12.11	859 100.00
1990	299 36.64	418 51.23	99 12.13	816 100.00
1991	310 38.65	397 49.50	95 11.85	802 100.00
1992	315 39.38	390 48.75	95 11.88	800 100.00
Total	3957	4807	1062	9826

Table 5. Year of construction for TC2 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each calendar year/year built combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Year Built											Total
	<1941	1941-1945	1946-1950	1951-1955	1956-1960	1961-1965	1966-1970	1971-1975	1976-1980	1981-1985	>1985	
1982	59 14.43	45 11.00	54 13.20	31 7.58	24 5.87	13 3.18	35 8.56	51 12.47	89 21.76	8 1.96	0 0.00	409 100.00
1983	46 12.85	38 10.61	47 13.13	21 5.87	19 5.31	14 3.91	33 9.22	39 10.89	81 22.63	20 5.59	0 0.00	358 100.00
1984	50 12.72	42 10.69	58 14.76	29 7.38	21 5.34	14 3.56	30 7.63	43 10.94	78 19.85	28 7.12	0 0.00	393 100.00
1985	51 13.39	33 8.66	44 11.55	28 7.35	21 5.51	16 4.20	27 7.09	41 10.76	92 24.15	28 7.35	0 0.00	381 100.00
1986	34 9.14	36 9.68	48 12.90	30 8.06	21 5.65	16 4.30	24 6.45	49 13.17	78 20.97	36 9.68	0 0.00	372 100.00
1987	34 8.33	37 9.07	50 12.25	31 7.60	24 5.88	13 3.19	28 6.86	44 10.78	93 22.79	48 11.76	6 1.47	408 100.00
1988	34 8.63	33 8.38	43 10.91	26 6.60	19 4.82	18 4.57	28 7.11	53 13.45	84 21.32	48 12.18	8 2.03	394 100.00
1989	24 8.05	25 8.39	37 12.42	16 5.37	16 5.37	11 3.69	24 8.05	29 9.73	69 23.15	36 12.08	11 3.69	298 100.00
1990	26 8.72	27 9.06	39 13.09	20 6.71	11 3.69	7 2.35	20 6.71	35 11.74	63 21.14	38 12.75	12 4.03	298 100.00
1991	21 6.86	27 8.82	31 10.13	19 6.21	14 4.58	9 2.94	30 9.80	36 11.76	69 22.55	34 11.11	16 5.23	306 100.00
1992	15 4.84	21 6.77	31 10.00	17 5.48	18 5.81	9 2.90	22 7.10	33 10.65	67 21.61	48 15.48	29 9.35	310 100.00
Total	394	364	482	268	208	140	301	453	863	372	82	3927

Table 6. Year of construction for TC3 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each calendar year/year built combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Year Built										Total	
	<1941	1941-1945	1946-1950	1951-1955	1956-1960	1961-1965	1966-1970	1971-1975	1976-1980	1981-1985		>1985
1982	13 3.41	32 8.40	12 3.15	12 3.15	19 4.99	34 8.92	83 21.78	55 14.44	110 28.87	11 2.89	0 0.00	381 100.00
1983	15 3.55	25 5.92	17 4.03	15 3.55	19 4.50	39 9.24	90 21.33	57 13.51	125 29.62	20 4.74	0 0.00	422 100.00
1984	12 2.54	21 4.45	14 2.97	18 3.81	19 4.03	34 7.20	96 20.34	66 13.98	161 34.11	31 6.57	0 0.00	472 100.00
1985	7 1.61	20 4.60	12 2.76	10 2.30	15 3.45	32 7.36	98 22.53	67 15.40	149 34.25	25 5.75	0 0.00	435 100.00
1986	4 0.90	14 3.15	13 2.92	10 2.25	12 2.70	27 6.07	91 20.45	70 15.73	169 37.98	33 7.42	2 0.45	445 100.00
1987	4 0.89	15 3.35	9 2.01	10 2.23	12 2.68	30 6.70	90 20.09	75 16.74	164 36.61	35 7.81	4 0.89	448 100.00
1988	5 1.12	14 3.14	10 2.24	7 1.57	11 2.47	28 6.28	95 21.30	74 16.59	155 34.75	36 8.07	11 2.47	446 100.00
1989	1 0.22	8 1.77	7 1.55	6 1.33	13 2.88	24 5.32	94 20.84	70 15.52	178 39.47	38 8.43	12 2.66	451 100.00
1990	1 0.25	4 0.98	8 1.96	5 1.23	7 1.72	24 5.88	86 21.08	61 14.95	163 39.95	36 8.82	13 3.19	408 100.00
1991	1 0.26	6 1.56	5 1.30	5 1.30	10 2.60	20 5.21	77 20.05	62 16.15	150 39.06	34 8.85	14 3.65	384 100.00
1992	1 0.26	5 1.32	6 1.59	6 1.59	10 2.65	22 5.82	71 18.78	61 16.14	147 38.89	33 8.73	16 4.23	378 100.00
Total	64	164	113	104	147	314	971	718	1671	332	72	4670

Table 7. Year of construction for TC4 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each calendar year/year built combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Year Built											Total
	<1941	1941-1945	1946-1950	1951-1955	1956-1960	1961-1965	1966-1970	1971-1975	1976-1980	1981-1985	>1985	
1982	4 5.26	2 2.63	3 3.95	1 1.32	0 0.00	4 5.26	5 6.58	2 2.63	51 67.11	4 5.26	0 0.00	76 100.00
1983	3 3.57	3 3.57	2 2.38	0 0.00	0 0.00	3 3.57	5 5.95	3 3.57	55 65.48	10 11.90	0 0.00	84 100.00
1984	2 2.41	0 0.00	2 2.41	0 0.00	0 0.00	2 2.41	6 7.23	1 1.20	55 66.27	15 18.07	0 0.00	83 100.00
1985	2 2.06	0 0.00	1 1.03	0 0.00	0 0.00	1 1.03	7 7.22	3 3.09	61 62.89	22 22.68	0 0.00	97 100.00
1986	1 0.96	0 0.00	1 0.96	0 0.00	0 0.00	1 0.96	6 5.77	5 4.81	63 60.58	24 23.08	3 2.88	104 100.00
1987	0 0.00	1 0.99	1 0.99	0 0.00	0 0.00	1 0.99	5 4.95	5 4.95	54 53.47	28 27.72	6 5.94	101 100.00
1988	1 0.92	1 0.92	0 0.00	0 0.00	0 0.00	2 1.83	5 4.59	6 5.50	52 47.71	28 25.69	14 12.84	109 100.00
1989	0 0.00	1 0.97	0 0.00	0 0.00	0 0.00	0 0.00	4 3.88	4 3.88	48 46.60	27 26.21	19 18.45	103 100.00
1990	0 0.00	1 1.02	0 0.00	1 1.02	0 0.00	0 0.00	6 6.12	2 2.04	47 47.96	24 24.49	17 17.35	98 100.00
1991	1 1.06	1 1.06	0 0.00	0 0.00	0 0.00	0 0.00	2 2.13	4 4.26	46 48.94	24 25.53	16 17.02	94 100.00
1992	0 0.00	1 1.08	0 0.00	0 0.00	0 0.00	0 0.00	5 5.38	3 3.23	42 45.16	25 26.88	17 18.28	93 100.00
Total	14	11	10	2	0	14	56	38	574	231	92	1042

Table 8. Number of trips by TC2 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of trips combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Trips											Total
	<11	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	>100	
1982	116 27.95	34 8.19	36 8.67	31 7.47	31 7.47	25 6.02	20 4.82	19 4.58	15 3.61	18 4.34	70 16.87	415 100.00
1983	96 26.45	35 9.64	22 6.06	43 11.85	21 5.79	24 6.61	27 7.44	14 3.86	9 2.48	12 3.31	60 16.53	363 100.00
1984	103 25.37	41 10.10	38 9.36	27 6.65	39 9.61	24 5.91	19 4.68	29 7.14	16 3.94	13 3.20	57 14.04	406 100.00
1985	105 27.42	41 10.70	38 9.92	33 8.62	30 7.83	19 4.96	21 5.48	15 3.92	13 3.39	11 2.87	57 14.88	383 100.00
1986	94 24.80	55 14.51	28 7.39	30 7.92	26 6.86	20 5.28	14 3.69	18 4.75	19 5.01	15 3.96	60 15.83	379 100.00
1987	103 24.64	56 13.40	33 7.89	36 8.61	26 6.22	23 5.50	31 7.42	16 3.83	18 4.31	18 4.31	58 13.88	418 100.00
1988	100 25.64	52 13.33	38 9.74	25 6.41	28 7.18	19 4.87	19 4.87	13 3.33	15 3.85	17 4.36	64 16.41	390 100.00
1989	71 23.83	27 9.06	35 11.74	27 9.06	26 8.72	19 6.38	9 3.02	17 5.70	8 2.68	13 4.36	46 15.44	298 100.00
1990	73 24.41	43 14.38	29 9.70	19 6.35	20 6.69	16 5.35	17 5.69	13 4.35	13 4.35	8 2.68	48 16.05	299 100.00
1991	83 26.77	43 13.87	26 8.39	20 6.45	18 5.81	20 6.45	12 3.87	15 4.84	11 3.55	11 3.55	51 16.45	310 100.00
1992	98 31.11	34 10.79	20 6.35	19 6.03	18 5.71	20 6.35	13 4.13	16 5.08	20 6.35	10 3.17	47 14.92	315 100.00
Total	1042	461	343	310	283	229	202	185	157	146	618	3976

Table 9. Number of trips by TC3 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of trips combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Trips											Total
	<11	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	>100	
1982	106 27.04	58 14.80	88 22.45	50 12.76	27 6.89	10 2.55	11 2.81	9 2.30	13 3.32	8 2.04	12 3.06	392 100.00
1983	105 23.97	73 16.67	92 21.00	72 16.44	24 5.48	11 2.51	14 3.20	14 3.20	9 2.05	7 1.60	17 3.88	438 100.00
1984	131 26.73	75 15.31	118 24.08	62 12.65	30 6.12	16 3.27	10 2.04	12 2.45	4 0.82	8 1.63	24 4.90	490 100.00
1985	100 22.37	71 15.88	124 27.74	57 12.75	21 4.70	10 2.24	14 3.13	6 1.34	5 1.12	10 2.24	29 6.49	447 100.00
1986	108 23.48	105 22.83	101 21.96	45 9.78	17 3.70	18 3.91	12 2.61	3 0.65	8 1.74	15 3.26	28 6.09	460 100.00
1987	100 21.79	78 16.99	132 28.76	48 10.46	17 3.70	14 3.05	12 2.61	13 2.83	13 2.83	6 1.31	26 5.66	459 100.00
1988	130 28.20	89 19.31	118 25.60	42 9.11	12 2.60	10 2.17	10 2.17	8 1.74	11 2.39	11 2.39	20 4.34	461 100.00
1989	149 32.25	64 13.85	118 25.54	33 7.14	23 4.98	14 3.03	15 3.25	7 1.52	6 1.30	7 1.52	26 5.63	462 100.00
1990	109 26.01	52 12.41	114 27.21	44 10.50	24 5.73	19 4.53	13 3.10	9 2.15	5 1.19	6 1.43	24 5.73	419 100.00
1991	84 21.21	62 15.66	111 28.03	47 11.87	15 3.79	9 2.27	16 4.04	11 2.78	12 3.03	5 1.26	24 6.06	396 100.00
1992	67 17.18	68 17.44	121 31.03	41 10.51	19 4.87	13 3.33	11 2.82	18 4.62	6 1.54	5 1.28	21 5.38	390 100.00
Total	1189	795	1237	541	229	144	138	110	92	88	251	4814

Table 10. Number of trips by TC4 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of trips combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Trips											Total
	<11	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	>100	
1982	14 17.50	20 25.00	27 33.75	14 17.50	4 5.00	0 0.00	1 1.25	0 0.00	0 0.00	0 0.00	0 0.00	80 100.00
1983	12 13.79	18 20.69	36 41.38	14 16.09	5 5.75	1 1.15	0 0.00	0 0.00	1 1.15	0 0.00	0 0.00	87 100.00
1984	12 13.95	18 20.93	41 47.67	10 11.63	1 1.16	2 2.33	1 1.16	0 0.00	0 0.00	1 1.16	0 0.00	86 100.00
1985	20 20.20	14 14.14	45 45.45	14 14.14	1 1.01	1 1.01	3 3.03	1 1.01	0 0.00	0 0.00	0 0.00	99 100.00
1986	13 12.26	29 27.36	40 37.74	14 13.21	3 2.83	5 4.72	1 0.94	0 0.00	1 0.94	0 0.00	0 0.00	106 100.00
1987	15 14.71	15 14.71	53 51.96	9 8.82	5 4.90	1 0.98	2 1.96	2 1.96	0 0.00	0 0.00	0 0.00	102 100.00
1988	27 24.77	11 10.09	51 46.79	9 8.26	6 5.50	1 0.92	3 2.75	1 0.92	0 0.00	0 0.00	0 0.00	109 100.00
1989	20 19.23	15 14.42	46 44.23	10 9.62	6 5.77	4 3.85	2 1.92	1 0.96	0 0.00	0 0.00	0 0.00	104 100.00
1990	17 17.17	10 10.10	42 42.42	15 15.15	5 5.05	2 2.02	7 7.07	0 0.00	1 1.01	0 0.00	0 0.00	99 100.00
1991	10 10.53	11 11.58	42 44.21	16 16.84	6 6.32	4 4.21	4 4.21	1 1.05	0 0.00	0 0.00	1 1.05	95 100.00
1992	12 12.63	10 10.53	46 48.42	13 13.68	1 1.05	8 8.42	3 3.16	1 1.05	1 1.05	0 0.00	0 0.00	95 100.00
Total	172	171	469	138	43	29	27	7	4	1	1	1062

Table 11. Trip length in days for TC2 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/trip length combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Trip Length (days)					Total
	3	4-5	6-7	8-9	10-11	
1982	383 93.41	23 5.61	3 0.73	1 0.24	0 0.00	410 100.00
1983	333 93.54	17 4.78	2 0.56	2 0.56	2 0.56	356 100.00
1984	376 92.84	28 6.91	1 0.25	0 0.00	0 0.00	405 100.00
1985	355 92.69	21 5.48	5 1.31	2 0.52	0 0.00	383 100.00
1986	355 93.92	22 5.82	1 0.26	0 0.00	0 0.00	378 100.00
1987	393 94.24	19 4.56	5 1.20	0 0.00	0 0.00	417 100.00
1988	364 94.55	16 4.16	5 1.30	0 0.00	0 0.00	385 100.00
1989	282 95.59	13 4.41	0 0.00	0 0.00	0 0.00	295 100.00
1990	281 93.98	17 5.69	1 0.33	0 0.00	0 0.00	299 100.00
1991	289 93.23	18 5.81	3 0.97	0 0.00	0 0.00	310 100.00
1992	300 95.24	14 4.44	0 0.00	1 0.32	0 0.00	315 100.00
Total	3711	208	26	6	2	3953

Table 12. Trip length in days for TC3 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/trip length combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Trip Length (days)										Total
	3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20	
1982	148 37.85	111 28.39	82 20.97	48 12.28	2 0.51	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	391 100.00
1983	178 40.64	123 28.08	86 19.63	47 10.73	4 0.91	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	438 100.00
1984	168 34.36	145 29.65	106 21.68	53 10.84	17 3.48	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	489 100.00
1985	161 36.10	105 23.54	98 21.97	64 14.35	18 4.04	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	446 100.00
1986	167 36.30	101 21.96	96 20.87	71 15.43	24 5.22	0 0.00	1 0.22	0 0.00	0 0.00	0 0.00	460 100.00
1987	157 34.20	107 23.31	115 25.05	75 16.34	5 1.09	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	459 100.00
1988	151 32.97	110 24.02	96 20.96	84 18.34	11 2.40	3 0.66	2 0.44	0 0.00	1 0.22	0 0.00	458 100.00
1989	150 32.68	86 18.74	105 22.88	95 20.70	16 3.49	4 0.87	1 0.22	1 0.22	0 0.00	1 0.22	459 100.00
1990	132 31.65	91 21.82	88 21.10	88 21.10	15 3.60	1 0.24	0 0.00	0 0.00	0 0.00	2 0.48	417 100.00
1991	127 32.07	74 18.69	85 21.46	94 23.74	9 2.27	7 1.77	0 0.00	0 0.00	0 0.00	0 0.00	396 100.00
1992	126 32.31	58 14.87	86 22.05	93 23.85	19 4.87	7 1.79	1 0.26	0 0.00	0 0.00	0 0.00	390 100.00
Total	1665	1111	1043	812	140	22	5	1	1	3	4803

Table 13. Trip length in days for TC4 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/trip length combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Trip Length (days)										Total
	3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20	
1982	7 8.75	8 10.00	25 31.25	38 47.50	2 2.50	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	80 100.00
1983	8 9.20	18 20.69	20 22.99	38 43.68	3 3.45	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	87 100.00
1984	5 5.81	10 11.63	18 20.93	44 51.16	9 10.47	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	86 100.00
1985	7 7.07	12 12.12	25 25.25	37 37.37	17 17.17	1 1.01	0 0.00	0 0.00	0 0.00	0 0.00	99 100.00
1986	11 10.38	8 7.55	26 24.53	43 40.57	8 7.55	5 4.72	4 3.77	1 0.94	0 0.00	0 0.00	106 100.00
1987	13 12.75	9 8.82	33 32.35	40 39.22	1 0.98	3 2.94	3 2.94	0 0.00	0 0.00	0 0.00	102 100.00
1988	14 12.84	13 11.93	23 21.10	43 39.45	8 7.34	6 5.50	1 0.92	0 0.00	0 0.00	1 0.92	109 100.00
1989	13 12.50	11 10.58	24 23.08	40 38.46	9 8.65	4 3.85	1 0.96	0 0.00	1 0.96	1 0.96	104 100.00
1990	8 8.08	12 12.12	21 21.21	46 46.46	9 9.09	1 1.01	1 1.01	0 0.00	1 1.01	0 0.00	99 100.00
1991	9 9.47	11 11.58	25 26.32	44 46.32	4 4.21	2 2.11	0 0.00	0 0.00	0 0.00	0 0.00	95 100.00
1992	9 9.47	14 14.74	17 17.89	46 48.42	8 8.42	0 0.00	0 0.00	1 1.05	0 0.00	0 0.00	95 100.00
Total	104	126	257	459	78	22	10	2	2	2	1062

Table 14. Number of ports at which landed by TC2 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of ports combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Ports						Total
	1	2	3	4	5	6	
1982	270 64.59	114 27.27	24 5.74	8 1.91	2 0.48	0 0.00	418 100.00
1983	275 74.73	62 16.85	23 6.25	8 2.17	0 0.00	0 0.00	368 100.00
1984	293 71.99	79 19.41	25 6.14	8 1.97	2 0.49	0 0.00	407 100.00
1985	275 70.69	87 22.37	22 5.66	5 1.29	0 0.00	0 0.00	389 100.00
1986	275 72.56	84 22.16	16 4.22	4 1.06	0 0.00	0 0.00	379 100.00
1987	329 78.52	61 14.56	19 4.53	5 1.19	5 1.19	0 0.00	419 100.00
1988	321 80.45	51 12.78	16 4.01	8 2.01	3 0.75	0 0.00	399 100.00
1989	235 77.81	44 14.57	15 4.97	4 1.32	2 0.66	2 0.66	302 100.00
1990	238 78.03	47 15.41	12 3.93	7 2.30	1 0.33	0 0.00	305 100.00
1991	225 72.12	57 18.27	18 5.77	8 2.56	4 1.28	0 0.00	312 100.00
1992	226 71.52	62 19.62	15 4.75	11 3.48	2 0.63	0 0.00	316 100.00
Total	2962	748	205	76	21	2	4014

Table 15. Number of ports at which landed by TC3 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of ports combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Ports							Total
	1	2	3	4	5	6	7	
1982	216 54.82	125 31.73	43 10.91	8 2.03	1 0.25	1 0.25	0 0.00	394 100.00
1983	266 60.73	110 25.11	45 10.27	10 2.28	3 0.68	3 0.68	1 0.23	438 100.00
1984	282 57.55	145 29.59	46 9.39	14 2.86	3 0.61	0 0.00	0 0.00	490 100.00
1985	279 62.14	117 26.06	36 8.02	11 2.45	4 0.89	2 0.45	0 0.00	449 100.00
1986	262 56.96	145 31.52	43 9.35	10 2.17	0 0.00	0 0.00	0 0.00	460 100.00
1987	324 70.13	109 23.59	22 4.76	6 1.30	1 0.22	0 0.00	0 0.00	462 100.00
1988	327 70.63	103 22.25	25 5.40	8 1.73	0 0.00	0 0.00	0 0.00	463 100.00
1989	294 63.36	124 26.72	34 7.33	8 1.72	3 0.65	1 0.22	0 0.00	464 100.00
1990	269 64.05	106 25.24	37 8.81	6 1.43	2 0.48	0 0.00	0 0.00	420 100.00
1991	234 58.79	127 31.91	30 7.54	6 1.51	1 0.25	0 0.00	0 0.00	398 100.00
1992	211 53.96	133 34.02	34 8.70	11 2.81	2 0.51	0 0.00	0 0.00	391 100.00
Total	2964	1344	395	98	20	7	1	4829

Table 16. Number of ports at which landed by TC4 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of ports combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Ports						Total
	1	2	3	4	5	6	
1982	39 48.75	27 33.75	8 10.00	5 6.25	0 0.00	1 1.25	80 100.00
1983	55 63.22	18 20.69	10 11.49	4 4.60	0 0.00	0 0.00	87 100.00
1984	52 60.47	22 25.58	7 8.14	5 5.81	0 0.00	0 0.00	86 100.00
1985	59 59.60	28 28.28	9 9.09	3 3.03	0 0.00	0 0.00	99 100.00
1986	60 56.60	33 31.13	9 8.49	4 3.77	0 0.00	0 0.00	106 100.00
1987	77 75.49	19 18.63	6 5.88	0 0.00	0 0.00	0 0.00	102 100.00
1988	71 64.55	29 26.36	9 8.18	1 0.91	0 0.00	0 0.00	110 100.00
1989	59 56.73	38 36.54	5 4.81	2 1.92	0 0.00	0 0.00	104 100.00
1990	65 65.66	28 28.28	4 4.04	1 1.01	1 1.01	0 0.00	99 100.00
1991	57 60.00	29 30.53	7 7.37	2 2.11	0 0.00	0 0.00	95 100.00
1992	55 57.89	27 28.42	13 13.68	0 0.00	0 0.00	0 0.00	95 100.00
Total	649	298	87	27	1	1	1063

Table 17. Number of statistical areas in which fished by TC2 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of statistical areas combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Statistical Areas								Total
	1	2	3	4	5	6	7	9	
1982	243 58.13	116 27.75	31 7.42	17 4.07	6 1.44	4 0.96	1 0.24	0 0.00	418 100.00
1983	191 51.90	104 28.26	43 11.68	19 5.16	9 2.45	2 0.54	0 0.00	0 0.00	368 100.00
1984	189 46.44	140 34.40	50 12.29	17 4.18	9 2.21	2 0.49	0 0.00	0 0.00	407 100.00
1985	206 52.96	113 29.05	49 12.60	13 3.34	6 1.54	0 0.00	1 0.26	1 0.26	389 100.00
1986	211 55.67	110 29.02	33 8.71	17 4.49	7 1.85	1 0.26	0 0.00	0 0.00	379 100.00
1987	273 65.16	87 20.76	31 7.40	22 5.25	6 1.43	0 0.00	0 0.00	0 0.00	419 100.00
1988	251 62.91	95 23.81	30 7.52	15 3.76	8 2.01	0 0.00	0 0.00	0 0.00	399 100.00
1989	186 61.59	83 27.48	19 6.29	12 3.97	2 0.66	0 0.00	0 0.00	0 0.00	302 100.00
1990	194 63.61	74 24.26	22 7.21	9 2.95	3 0.98	2 0.66	1 0.33	0 0.00	305 100.00
1991	183 58.65	88 28.21	24 7.69	11 3.53	4 1.28	1 0.32	1 0.32	0 0.00	312 100.00
1992	183 57.91	91 28.80	25 7.91	11 3.48	4 1.27	2 0.63	0 0.00	0 0.00	316 100.00
Total	2310	1101	357	163	64	14	4	1	4014

Table 18. Number of statistical areas in which fished by TC3 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of statistical areas combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Statistical Areas											Total
	1	2	3	4	5	6	7	8	9	10	11	
1982	56 14.21	56 14.21	64 16.24	67 17.01	53 13.45	50 12.69	37 9.39	8 2.03	0 0.00	2 0.51	1 0.25	394 100.00
1983	64 14.61	66 15.07	61 13.93	72 16.44	62 14.16	54 12.33	40 9.13	12 2.74	4 0.91	1 0.23	2 0.46	438 100.00
1984	71 14.49	72 14.69	64 13.06	71 14.49	76 15.51	69 14.08	42 8.57	17 3.47	5 1.02	2 0.41	1 0.20	490 100.00
1985	57 12.69	51 11.36	75 16.70	81 18.04	66 14.70	62 13.81	34 7.57	15 3.34	6 1.34	1 0.22	1 0.22	449 100.00
1986	56 12.17	68 14.78	77 16.74	74 16.09	84 18.26	53 11.52	29 6.30	10 2.17	5 1.09	2 0.43	2 0.43	460 100.00
1987	65 14.07	63 13.64	81 17.53	72 15.58	76 16.45	58 12.55	32 6.93	10 2.16	4 0.87	0 0.00	1 0.22	462 100.00
1988	62 13.39	76 16.41	78 16.85	76 16.41	64 13.82	64 13.82	28 6.05	8 1.73	6 1.30	1 0.22	0 0.00	463 100.00
1989	81 17.46	84 18.10	57 12.28	60 12.93	79 17.03	59 12.72	23 4.96	7 1.51	8 1.72	5 1.08	1 0.22	464 100.00
1990	74 17.62	55 13.10	51 12.14	80 19.05	59 14.05	62 14.76	22 5.24	9 2.14	2 0.48	5 1.19	1 0.24	420 100.00
1991	45 11.31	59 14.82	48 12.06	56 14.07	51 12.81	69 17.34	43 10.80	18 4.52	3 0.75	3 0.75	3 0.75	398 100.00
1992	30 7.67	49 12.53	51 13.04	71 18.16	65 16.62	60 15.35	36 9.21	16 4.09	7 1.79	5 1.28	1 0.26	391 100.00
Total	661	699	707	780	735	660	366	130	50	27	14	4829

Table 19. Number of statistical areas in which fished by TC4 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of statistical areas combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Statistical Areas											Total
	1	2	3	4	5	6	7	8	9	10	11	
1982	3 3.75	5 6.25	12 15.00	11 13.75	11 13.75	10 12.50	14 17.50	10 12.50	3 3.75	0 0.00	1 1.25	80 100.00
1983	7 8.05	7 8.05	8 9.20	14 16.09	16 18.39	12 13.79	15 17.24	4 4.60	3 3.45	1 1.15	0 0.00	87 100.00
1984	5 5.81	3 3.49	5 5.81	9 10.47	22 25.58	23 26.74	10 11.63	5 5.81	1 1.16	1 1.16	2 2.33	86 100.00
1985	8 8.08	6 6.06	4 4.04	10 10.10	15 15.15	24 24.24	17 17.17	10 10.10	2 2.02	0 0.00	3 3.03	99 100.00
1986	4 3.77	9 8.49	9 8.49	10 9.43	20 18.87	26 24.53	15 14.15	7 6.60	2 1.89	4 3.77	0 0.00	106 100.00
1987	4 3.92	5 4.90	16 15.69	15 14.71	22 21.57	20 19.61	10 9.80	6 5.88	3 2.94	1 0.98	0 0.00	102 100.00
1988	14 12.73	9 8.18	5 4.55	14 12.73	21 19.09	20 18.18	21 19.09	4 3.64	2 1.82	0 0.00	0 0.00	110 100.00
1989	6 5.77	7 6.73	8 7.69	12 11.54	16 15.38	24 23.08	15 14.42	7 6.73	2 1.92	4 3.85	3 2.88	104 100.00
1990	10 10.10	4 4.04	8 8.08	3 3.03	15 15.15	16 16.16	19 19.19	16 16.16	5 5.05	2 2.02	1 1.01	99 100.00
1991	2 2.11	5 5.26	5 5.26	9 9.47	7 7.37	34 35.79	16 16.84	8 8.42	5 5.26	2 2.11	2 2.11	95 100.00
1992	3 3.16	3 3.16	13 13.68	11 11.58	18 18.95	16 16.84	14 14.74	12 12.63	3 3.16	1 1.05	1 1.05	95 100.00
Total	66	63	93	118	183	225	166	89	31	16	13	1063

Table 20. Number of calendar months in which fished by TC2 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of months combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Months												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
1982	81 19.38	27 6.46	20 4.78	20 4.78	23 5.50	27 6.46	16 3.83	16 3.83	27 6.46	37 8.85	31 7.42	93 22.25	418 100.00
1983	71 19.29	23 6.25	24 6.52	17 4.62	12 3.26	22 5.98	24 6.52	20 5.43	14 3.80	24 6.52	39 10.60	78 21.20	368 100.00
1984	65 15.97	26 6.39	30 7.37	24 5.90	12 2.95	21 5.16	23 5.65	21 5.16	31 7.62	33 8.11	45 11.06	76 18.67	407 100.00
1985	61 15.68	30 7.71	27 6.94	22 5.66	17 4.37	25 6.43	24 6.17	29 7.46	24 6.17	24 6.17	28 7.20	78 20.05	389 100.00
1986	47 12.40	46 12.14	25 6.60	19 5.01	18 4.75	19 5.01	18 4.75	29 7.65	27 7.12	26 6.86	22 5.80	83 21.90	379 100.00
1987	70 16.71	26 6.21	38 9.07	27 6.44	20 4.77	17 4.06	27 6.44	22 5.25	25 5.97	21 5.01	48 11.46	78 18.62	419 100.00
1988	64 16.04	34 8.52	35 8.77	31 7.77	22 5.51	20 5.01	19 4.76	14 3.51	23 5.76	29 7.27	33 8.27	75 18.80	399 100.00
1989	50 16.56	20 6.62	29 9.60	20 6.62	17 5.63	16 5.30	14 4.64	18 5.96	15 4.97	22 7.28	18 5.96	63 20.86	302 100.00
1990	54 17.70	25 8.20	25 8.20	22 7.21	10 3.28	18 5.90	19 6.23	15 4.92	18 5.90	22 7.21	15 4.92	62 20.33	305 100.00
1991	58 18.59	38 12.18	21 6.73	14 4.49	11 3.53	21 6.73	11 3.53	18 5.77	10 3.21	20 6.41	26 8.33	64 20.51	312 100.00
1992	66 20.89	36 11.39	31 9.81	12 3.80	7 2.22	10 3.16	12 3.80	14 4.43	16 5.06	25 7.91	24 7.59	63 19.94	316 100.00
Total	687	331	305	228	169	216	207	216	230	283	329	813	4014

Table 21. Number of calendar months in which fished by TC3 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of months combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Months												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
1982	49 12.44	23 5.84	21 5.33	18 4.57	17 4.31	21 5.33	14 3.55	14 3.55	24 6.09	27 6.85	42 10.66	124 31.47	394 100.00
1983	42 9.59	27 6.16	20 4.57	19 4.34	18 4.11	20 4.57	22 5.02	21 4.79	14 3.20	31 7.08	45 10.27	159 36.30	438 100.00
1984	52 10.61	28 5.71	23 4.69	25 5.10	20 4.08	23 4.69	17 3.47	17 3.47	23 4.69	33 6.73	65 13.27	164 33.47	490 100.00
1985	42 9.35	23 5.12	12 2.67	23 5.12	14 3.12	19 4.23	22 4.90	15 3.34	20 4.45	30 6.68	61 13.59	168 37.42	449 100.00
1986	38 8.26	23 5.00	11 2.39	16 3.48	22 4.78	25 5.43	20 4.35	13 2.83	31 6.74	46 10.00	59 12.83	156 33.91	460 100.00
1987	33 7.14	24 5.19	21 4.55	16 3.46	11 2.38	12 2.60	19 4.11	21 4.55	27 5.84	31 6.71	67 14.50	180 38.96	462 100.00
1988	45 9.72	23 4.97	37 7.99	19 4.10	13 2.81	20 4.32	22 4.75	20 4.32	21 4.54	40 8.64	53 11.45	150 32.40	463 100.00
1989	51 10.99	30 6.47	22 4.74	26 5.60	14 3.02	22 4.74	24 5.17	21 4.53	26 5.60	32 6.90	53 11.42	143 30.82	464 100.00
1990	43 10.24	25 5.95	18 4.29	11 2.62	19 4.52	15 3.57	20 4.76	21 5.00	22 5.24	22 5.24	40 9.52	164 39.05	420 100.00
1991	34 8.54	17 4.27	18 4.52	8 2.01	17 4.27	6 1.51	16 4.02	18 4.52	16 4.02	28 7.04	43 10.80	177 44.47	398 100.00
1992	20 5.12	17 4.35	15 3.84	5 1.28	15 3.84	13 3.32	11 2.81	15 3.84	24 6.14	23 5.88	51 13.04	182 46.55	391 100.00
Total	449	260	218	186	180	196	207	196	248	343	579	1767	4829

Table 22. Number of months in which fished by TC4 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of months combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Months												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
1982	3 3.75	6 7.50	3 3.75	2 2.50	2 2.50	3 3.75	3 3.75	7 8.75	8 10.00	4 5.00	14 17.50	25 31.25	80 100.00
1983	9 10.34	1 1.15	0 0.00	0 0.00	3 3.45	8 9.20	2 2.30	6 6.90	3 3.45	5 5.75	13 14.94	37 42.53	87 100.00
1984	3 3.49	2 2.33	7 8.14	2 2.33	1 1.16	4 4.65	3 3.49	3 3.49	5 5.81	2 2.33	15 17.44	39 45.35	86 100.00
1985	7 7.07	3 3.03	3 3.03	3 3.03	5 5.05	2 2.02	3 3.03	4 4.04	3 3.03	4 4.04	13 13.13	49 49.49	99 100.00
1986	4 3.77	2 1.89	2 1.89	1 0.94	6 5.66	1 0.94	2 1.89	3 2.83	8 7.55	7 6.60	18 16.98	52 49.06	106 100.00
1987	4 3.92	2 1.96	4 3.92	4 3.92	3 2.94	3 2.94	2 1.96	4 3.92	3 2.94	5 4.90	18 17.65	50 49.02	102 100.00
1988	10 9.09	7 6.36	6 5.45	2 1.82	1 0.91	6 5.45	0 0.00	6 5.45	3 2.73	6 5.45	18 16.36	45 40.91	110 100.00
1989	5 4.81	5 4.81	2 1.92	5 4.81	4 3.85	2 1.92	2 1.92	0 0.00	7 6.73	6 5.77	16 15.38	50 48.08	104 100.00
1990	7 7.07	3 3.03	3 3.03	1 1.01	2 2.02	2 2.02	0 0.00	3 3.03	3 3.03	9 9.09	11 11.11	55 55.56	99 100.00
1991	3 3.16	1 1.05	1 1.05	4 4.21	3 3.16	0 0.00	2 2.11	2 2.11	0 0.00	4 4.21	17 17.89	58 61.05	95 100.00
1992	5 5.26	1 1.05	2 2.11	1 1.05	3 3.16	3 3.16	2 2.11	3 3.16	1 1.05	4 4.21	7 7.37	63 66.32	95 100.00
Total	60	33	33	25	33	34	21	41	44	56	160	523	1063

Table 23. Number of species landed per TC2 vessel in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of species combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Species												Total
	1-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	24-26	27-29	30-32	33	
1982	20 4.78	34 8.13	43 10.29	50 11.96	58 13.88	82 19.62	69 16.51	31 7.42	11 2.63	14 3.35	5 1.20	1 0.24	418 100.00
1983	15 4.07	31 8.40	32 8.67	44 11.92	53 14.36	78 21.14	67 18.16	32 8.67	13 3.52	2 0.54	2 0.54	0 0.00	369 100.00
1984	13 3.19	32 7.84	38 9.31	53 12.99	62 15.20	91 22.30	41 10.05	38 9.31	18 4.41	19 4.66	3 0.74	0 0.00	408 100.00
1985	14 3.59	30 7.69	39 10.00	58 14.87	65 16.67	81 20.77	39 10.00	21 5.38	18 4.62	18 4.62	6 1.54	1 0.26	390 100.00
1986	21 5.53	25 6.58	39 10.26	46 12.11	76 20.00	51 13.42	48 12.63	34 8.95	19 5.00	10 2.63	9 2.37	2 0.53	380 100.00
1987	20 4.76	37 8.81	41 9.76	67 15.95	53 12.62	80 19.05	57 13.57	28 6.67	16 3.81	18 4.29	3 0.71	0 0.00	420 100.00
1988	16 4.00	39 9.75	49 12.25	58 14.50	72 18.00	63 15.75	40 10.00	32 8.00	17 4.25	9 2.25	4 1.00	1 0.25	400 100.00
1989	18 5.94	34 11.22	34 11.22	55 18.15	43 14.19	43 14.19	36 11.88	17 5.61	16 5.28	7 2.31	0 0.00	0 0.00	303 100.00
1990	29 9.51	22 7.21	51 16.72	38 12.46	52 17.05	46 15.08	26 8.52	19 6.23	14 4.59	6 1.97	2 0.66	0 0.00	305 100.00
1991	40 12.86	20 6.43	42 13.50	34 10.93	52 16.72	41 13.18	29 9.32	21 6.75	19 6.11	8 2.57	4 1.29	1 0.32	311 100.00
1992	60 18.93	17 5.36	34 10.73	43 13.56	44 13.88	30 9.46	34 10.73	25 7.89	14 4.42	9 2.84	6 1.89	1 0.32	317 100.00
Total	266	321	442	546	630	686	486	298	175	120	44	7	4021

Table 24. Number of species landed per TC3 vessel in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of species combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Species												Total
	1-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	24-26	27-29	30-32	33	
1982	8 2.03	13 3.30	36 9.14	71 18.02	64 16.24	80 20.30	48 12.18	42 10.66	20 5.08	10 2.54	2 0.51	0 0.00	394 100.00
1983	10 2.28	27 6.16	29 6.62	77 17.58	73 16.67	87 19.86	65 14.84	42 9.59	19 4.34	6 1.37	3 0.68	0 0.00	438 100.00
1984	7 1.43	26 5.31	39 7.96	101 20.61	74 15.10	85 17.35	60 12.24	29 5.92	35 7.14	28 5.71	6 1.22	0 0.00	490 100.00
1985	2 0.45	13 2.90	26 5.79	107 23.83	70 15.59	83 18.49	55 12.25	37 8.24	23 5.12	22 4.90	7 1.56	4 0.89	449 100.00
1986	4 0.87	15 3.26	37 8.04	89 19.35	74 16.09	88 19.13	61 13.26	37 8.04	30 6.52	16 3.48	4 0.87	5 1.09	460 100.00
1987	12 2.60	15 3.25	34 7.36	87 18.83	76 16.45	79 17.10	62 13.42	35 7.58	25 5.41	25 5.41	12 2.60	0 0.00	462 100.00
1988	14 3.02	17 3.67	51 11.02	114 24.62	75 16.20	69 14.90	53 11.45	22 4.75	18 3.89	25 5.40	5 1.08	0 0.00	463 100.00
1989	17 3.66	13 2.80	54 11.64	85 18.32	97 20.91	79 17.03	47 10.13	19 4.09	19 4.09	20 4.31	9 1.94	5 1.08	464 100.00
1990	12 2.86	18 4.29	43 10.24	90 21.43	68 16.19	71 16.90	40 9.52	25 5.95	22 5.24	19 4.52	8 1.90	4 0.95	420 100.00
1991	2 0.50	26 6.53	25 6.28	69 17.34	76 19.10	70 17.59	38 9.55	22 5.53	30 7.54	23 5.78	8 2.01	9 2.26	398 100.00
1992	4 1.02	14 3.58	29 7.42	45 11.51	80 20.46	87 22.25	38 9.72	18 4.60	21 5.37	23 5.88	22 5.63	10 2.56	391 100.00
Total	92	197	403	935	827	878	567	328	262	217	86	37	4829

Table 25. Number of species landed per TC4 vessel in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of species combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Number of Species												Total
	1-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	24-26	27-29	30-32	33	
1982	0 0.00	0 0.00	3 3.75	21 26.25	17 21.25	20 25.00	7 8.75	6 7.50	4 5.00	2 2.50	0 0.00	0 0.00	80 100.00
1983	2 2.30	2 2.30	7 8.05	14 16.09	31 35.63	15 17.24	4 4.60	7 8.05	5 5.75	0 0.00	0 0.00	0 0.00	87 100.00
1984	0 0.00	2 2.33	6 6.98	17 19.77	29 33.72	18 20.93	4 4.65	2 2.33	2 2.33	4 4.65	2 2.33	0 0.00	86 100.00
1985	0 0.00	2 2.02	5 5.05	22 22.22	34 34.34	19 19.19	5 5.05	2 2.02	4 4.04	3 3.03	2 2.02	1 1.01	99 100.00
1986	0 0.00	3 2.83	8 7.55	19 17.92	34 32.08	21 19.81	5 4.72	4 3.77	7 6.60	4 3.77	1 0.94	0 0.00	106 100.00
1987	2 1.96	5 4.90	8 7.84	12 11.76	32 31.37	18 17.65	14 13.73	4 3.92	2 1.96	3 2.94	2 1.96	0 0.00	102 100.00
1988	2 1.82	4 3.64	17 15.45	15 13.64	36 32.73	17 15.45	7 6.36	3 2.73	2 1.82	1 0.91	4 3.64	2 1.82	110 100.00
1989	1 0.97	5 4.85	4 3.88	18 17.48	23 22.33	25 24.27	13 12.62	4 3.88	0 0.00	3 2.91	1 0.97	6 5.83	103 100.00
1990	3 3.03	2 2.02	8 8.08	18 18.18	20 20.20	26 26.26	10 10.10	2 2.02	1 1.01	1 1.01	3 3.03	5 5.05	99 100.00
1991	0 0.00	0 0.00	7 7.37	12 12.63	25 26.32	29 30.53	5 5.26	3 3.16	6 6.32	4 4.21	3 3.16	1 1.05	95 100.00
1992	0 0.00	5 5.26	3 3.16	13 13.68	21 22.11	25 26.32	8 8.42	6 6.32	0 0.00	5 5.26	6 6.32	3 3.16	95 100.00
Total	10	30	76	181	302	233	82	43	33	30	24	18	1062

Table 26. Number of days absent by TC2 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of days absent combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Days Absent from Port									Total
	1-10	11-25	26-50	51-75	76-100	101-125	126-150	151-200	201-250	
1982	102 24.88	43 10.49	54 13.17	48 11.71	44 10.73	56 13.66	37 9.02	25 6.10	1 0.24	410 100.00
1983	86 24.02	38 10.61	43 12.01	47 13.13	48 13.41	48 13.41	24 6.70	23 6.42	1 0.28	358 100.00
1984	85 20.99	48 11.85	69 17.04	52 12.84	59 14.57	37 9.14	30 7.41	25 6.17	0 0.00	405 100.00
1985	85 22.19	48 12.53	76 19.84	54 14.10	38 9.92	28 7.31	32 8.36	19 4.96	3 0.78	383 100.00
1986	78 20.63	57 15.08	64 16.93	45 11.90	51 13.49	30 7.94	34 8.99	18 4.76	1 0.26	378 100.00
1987	92 22.06	60 14.39	74 17.75	57 13.67	50 11.99	42 10.07	30 7.19	12 2.88	0 0.00	417 100.00
1988	84 21.71	65 16.80	67 17.31	36 9.30	46 11.89	45 11.63	28 7.24	15 3.88	1 0.26	387 100.00
1989	62 21.02	38 12.88	62 21.02	39 13.22	31 10.51	31 10.51	17 5.76	13 4.41	2 0.68	295 100.00
1990	64 21.40	50 16.72	51 17.06	35 11.71	28 9.36	36 12.04	25 8.36	8 2.68	2 0.67	299 100.00
1991	72 23.23	53 17.10	37 11.94	39 12.58	36 11.61	34 10.97	20 6.45	18 5.81	1 0.32	310 100.00
1992	91 28.89	46 14.60	28 8.89	34 10.79	39 12.38	31 9.84	25 7.94	17 5.40	4 1.27	315 100.00
Total	901	546	625	486	470	418	302	193	16	3957

Table 27. Number of days absent by TC3 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of days absent combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Days Absent from Port										Total
	1-10	11-25	26-50	51-75	76-100	101-125	126-150	151-200	201-250	>250	
1982	53 13.55	40 10.23	34 8.70	36 9.21	42 10.74	46 11.76	47 12.02	72 18.41	21 5.37	0 0.00	391 100.00
1983	56 12.79	31 7.08	49 11.19	36 8.22	50 11.42	54 12.33	41 9.36	93 21.23	28 6.39	0 0.00	438 100.00
1984	60 12.27	44 9.00	43 8.79	42 8.59	57 11.66	58 11.86	52 10.63	100 20.45	31 6.34	2 0.41	489 100.00
1985	47 10.54	33 7.40	49 10.99	31 6.95	39 8.74	45 10.09	59 13.23	89 19.96	52 11.66	2 0.45	446 100.00
1986	47 10.22	37 8.04	41 8.91	39 8.48	46 10.00	56 12.17	51 11.09	117 25.43	23 5.00	3 0.65	460 100.00
1987	43 9.35	40 8.70	40 8.70	36 7.83	49 10.65	57 12.39	55 11.96	122 26.52	18 3.91	0 0.00	460 100.00
1988	50 10.92	49 10.70	46 10.04	32 6.99	50 10.92	50 10.92	48 10.48	92 20.09	39 8.52	2 0.44	458 100.00
1989	56 12.17	43 9.35	50 10.87	45 9.78	43 9.35	42 9.13	48 10.43	93 20.22	39 8.48	1 0.22	460 100.00
1990	44 10.53	34 8.13	34 8.13	35 8.37	38 9.09	34 8.13	50 11.96	89 21.29	58 13.88	2 0.48	418 100.00
1991	37 9.32	25 6.30	26 6.55	24 6.05	36 9.07	45 11.34	40 10.08	101 25.44	59 14.86	4 1.01	397 100.00
1992	22 5.64	27 6.92	28 7.18	20 5.13	29 7.44	45 11.54	48 12.31	97 24.87	72 18.46	2 0.51	390 100.00
Total	515	403	440	376	479	532	539	1065	440	18	4807

Table 28. Number of days absent by TC4 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/number of days absent combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Days Absent from Port										Total
	1-10	11-25	26-50	51-75	76-100	101-125	126-150	151-200	201-250	>250	
1982	2 2.50	5 6.25	7 8.75	3 3.75	7 8.75	7 8.75	9 11.25	18 22.50	21 26.25	1 1.25	80 100.00
1983	6 6.90	4 4.60	1 1.15	7 8.05	6 6.90	8 9.20	7 8.05	26 29.89	22 25.29	0 0.00	87 100.00
1984	2 2.33	2 2.33	8 9.30	4 4.65	5 5.81	8 9.30	4 4.65	21 24.42	31 36.05	1 1.16	86 100.00
1985	5 5.05	7 7.07	5 5.05	6 6.06	4 4.04	4 4.04	9 9.09	23 23.23	33 33.33	3 3.03	99 100.00
1986	3 2.83	3 2.83	3 2.83	6 5.66	6 5.66	10 9.43	7 6.60	27 25.47	33 31.13	8 7.55	106 100.00
1987	3 2.94	5 4.90	5 4.90	9 8.82	5 4.90	5 4.90	5 4.90	34 33.33	22 21.57	9 8.82	102 100.00
1988	7 6.42	10 9.17	6 5.50	7 6.42	4 3.67	8 7.34	8 7.34	26 23.85	28 25.69	5 4.59	109 100.00
1989	7 6.73	3 2.88	7 6.73	3 2.88	7 6.73	9 8.65	8 7.69	19 18.27	34 32.69	7 6.73	104 100.00
1990	9 9.09	2 2.02	3 3.03	3 3.03	5 5.05	4 4.04	3 3.03	28 28.28	38 38.38	4 4.04	99 100.00
1991	0 0.00	4 4.21	8 8.42	0 0.00	1 1.05	3 3.16	7 7.37	32 33.68	37 38.95	3 3.16	95 100.00
1992	6 6.32	0 0.00	4 4.21	4 4.21	4 4.21	3 3.16	2 2.11	16 16.84	49 51.58	7 7.37	95 100.00
Total	50	45	57	52	54	69	69	270	348	48	1062

Table 29. Weight landed in metric tons by TC2 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/weight landed combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Weight Landed (00s mt)				Total
	≤1	>1-2	>2-5	>5-10	
1982	315 75.36	78 18.66	25 5.98	0 0.00	418 100.00
1983	267 72.55	73 19.84	27 7.34	1 0.27	368 100.00
1984	326 80.10	53 13.02	27 6.63	1 0.25	407 100.00
1985	319 82.01	51 13.11	18 4.63	1 0.26	389 100.00
1986	323 85.22	43 11.35	13 3.43	0 0.00	379 100.00
1987	368 87.83	38 9.07	13 3.10	0 0.00	419 100.00
1988	355 88.97	34 8.52	10 2.51	0 0.00	399 100.00
1989	267 88.41	27 8.94	8 2.65	0 0.00	302 100.00
1990	263 86.23	30 9.84	10 3.28	2 0.66	305 100.00
1991	274 87.82	28 8.97	9 2.88	1 0.32	312 100.00
1992	278 87.97	34 10.76	4 1.27	0 0.00	316 100.00
Total	3355	489	164	6	4014

Table 30. Weight landed in metric tons by TC3 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/weight landed combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Weight Landed (00s mt)							Total
	≤1	>1-2	>2-5	>5-10	>10-15	>15-25	>25-50	
1982	158 40.10	54 13.71	132 33.50	46 11.68	3 0.76	1 0.25	0 0.00	394 100.00
1983	156 35.62	81 18.49	165 37.67	33 7.53	3 0.68	0 0.00	0 0.00	438 100.00
1984	196 40.00	109 22.24	155 31.63	28 5.71	2 0.41	0 0.00	0 0.00	490 100.00
1985	193 42.98	109 24.28	133 29.62	12 2.67	1 0.22	1 0.22	0 0.00	449 100.00
1986	207 45.00	136 29.57	106 23.04	9 1.96	2 0.43	0 0.00	0 0.00	460 100.00
1987	219 47.40	131 28.35	108 23.38	3 0.65	0 0.00	1 0.22	0 0.00	462 100.00
1988	240 51.84	131 28.29	87 18.79	4 0.86	1 0.22	0 0.00	0 0.00	463 100.00
1989	253 54.53	128 27.59	78 16.81	3 0.65	0 0.00	2 0.43	0 0.00	464 100.00
1990	187 44.52	93 22.14	126 30.00	10 2.38	2 0.48	1 0.24	1 0.24	420 100.00
1991	155 38.94	117 29.40	109 27.39	12 3.02	2 0.50	1 0.25	2 0.50	398 100.00
1992	153 39.13	128 32.74	95 24.30	8 2.05	0 0.00	4 1.02	3 0.77	391 100.00
Total	2117	1217	1294	168	16	11	6	4829

Table 31. Weight landed in metric tons by TC4 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/weight landed combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Weight Landed (00s mt)							Total
	≤1	>1-2	>2-5	>5-10	>10-15	>15-25	>25-50	
1982	13 16.25	4 5.00	18 22.50	41 51.25	4 5.00	0 0.00	0 0.00	80 100.00
1983	13 14.94	4 4.60	29 33.33	34 39.08	7 8.05	0 0.00	0 0.00	87 100.00
1984	10 11.63	9 10.47	32 37.21	29 33.72	6 6.98	0 0.00	0 0.00	86 100.00
1985	21 21.21	9 9.09	39 39.39	28 28.28	2 2.02	0 0.00	0 0.00	99 100.00
1986	14 13.21	17 16.04	40 37.74	33 31.13	1 0.94	1 0.94	0 0.00	106 100.00
1987	18 17.65	8 7.84	55 53.92	20 19.61	0 0.00	0 0.00	1 0.98	102 100.00
1988	24 21.82	18 16.36	49 44.55	17 15.45	1 0.91	0 0.00	1 0.91	110 100.00
1989	18 17.31	17 16.35	43 41.35	18 17.31	2 1.92	3 2.88	3 2.88	104 100.00
1990	16 16.16	3 3.03	47 47.47	22 22.22	6 6.06	3 3.03	2 2.02	99 100.00
1991	10 10.53	6 6.32	49 51.58	25 26.32	4 4.21	1 1.05	0 0.00	95 100.00
1992	12 12.63	11 11.58	43 45.26	19 20.00	5 5.26	3 3.16	2 2.11	95 100.00
Total	169	106	444	286	38	11	9	1063

Table 32. Weight landed in metric tons per day absent by TC2 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/weight landed per day absent combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Weight Landed per Day Absent (mt)							Total
	≤0.5	>0.5-1.0	>1.0-1.5	>1.5-2.0	>2.0-2.5	>2.5-5.0	>5.0-10	
1982	114 27.80	144 35.12	87 21.22	39 9.51	15 3.66	10 2.44	1 0.24	410
1983	82 22.91	119 33.24	84 23.46	34 9.50	20 5.59	15 4.19	4 1.12	358
1984	137 33.83	134 33.09	78 19.26	37 9.14	10 2.47	8 1.98	1 0.25	405
1985	174 45.43	112 29.24	61 15.93	25 6.53	7 1.83	4 1.04	0 0.00	383
1986	168 44.56	130 34.48	59 15.65	12 3.18	3 0.80	5 1.33	0 0.00	377
1987	215 51.68	134 32.21	36 8.65	20 4.81	3 0.72	8 1.92	0 0.00	416
1988	226 58.85	105 27.34	30 7.81	7 1.82	5 1.30	10 2.60	1 0.26	384
1989	175 59.32	77 26.10	35 11.86	4 1.36	3 1.02	1 0.34	0 0.00	295
1990	165 55.18	88 29.43	23 7.69	8 2.68	9 3.01	6 2.01	0 0.00	299
1991	161 52.10	107 34.63	26 8.41	10 3.24	2 0.65	3 0.97	0 0.00	309
1992	188 59.68	94 29.84	20 6.35	8 2.54	4 1.27	1 0.32	0 0.00	315
Total	1805	1244	539	204	81	71	7	3951

Table 33. Weight landed in metric tons per day absent by TC3 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/weight landed per day absent combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Weight Landed per Day Absent (mt)								Total
	≤0.5	>0.5 -1.0	>1.0 -1.5	>1.5 -2.0	>2.0 -2.5	>2.5 -5.0	>5.0 -10	>10 -20	
1982	10 2.56	49 12.53	64 16.37	87 22.25	68 17.39	91 23.27	22 5.63	0 0.00	391 100.00
1983	11 2.51	47 10.73	88 20.09	99 22.60	87 19.86	96 21.92	10 2.28	0 0.00	438 100.00
1984	19 3.89	94 19.22	148 30.27	92 18.81	60 12.27	65 13.29	10 2.04	1 0.20	489 100.00
1985	32 7.17	154 34.53	117 26.23	62 13.90	41 9.19	34 7.62	4 0.90	2 0.45	446 100.00
1986	41 8.91	183 39.78	99 21.52	79 17.17	26 5.65	24 5.22	6 1.30	2 0.43	460 100.00
1987	41 8.91	169 36.74	136 29.57	60 13.04	26 5.65	25 5.43	2 0.43	1 0.22	460 100.00
1988	52 11.35	195 42.58	116 25.33	49 10.70	20 4.37	25 5.46	1 0.22	0 0.00	458 100.00
1989	78 16.96	189 41.09	106 23.04	43 9.35	19 4.13	22 4.78	1 0.22	2 0.43	460 100.00
1990	45 10.77	149 35.65	120 28.71	50 11.96	24 5.74	21 5.02	8 1.91	1 0.24	418 100.00
1991	56 14.11	129 32.49	117 29.47	48 12.09	14 3.53	23 5.79	5 1.26	5 1.26	397 100.00
1992	56 14.36	169 43.33	99 25.38	35 8.97	6 1.54	16 4.10	2 0.51	7 1.79	390 100.00
Total	441	1527	1210	704	391	442	71	21	4807

Table 34. Weight landed in metric tons per day absent by TC4 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/weight landed per day absent combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Weight Landed per Day Absent (mt)										Total
	≤0.5	>0.5 -1.0	>1.0 -1.5	>1.5 -2.0	>2.0 -2.5	>2.5 -5.0	>5.0 -10	>10 -20	>20 -30	>30 -50	
1982	0 0.00	0 0.00	2 2.50	6 7.50	11 13.75	50 62.50	11 13.75	0 0.00	0 0.00	0 0.00	80 100.00
1983	0 0.00	1 1.15	1 1.15	9 10.34	13 14.94	58 66.67	5 5.75	0 0.00	0 0.00	0 0.00	87 100.00
1984	1 1.16	1 1.16	9 10.47	15 17.44	18 20.93	33 38.37	9 10.47	0 0.00	0 0.00	0 0.00	86 100.00
1985	2 2.02	7 7.07	21 21.21	17 17.17	22 22.22	28 28.28	2 2.02	0 0.00	0 0.00	0 0.00	99 100.00
1986	2 1.89	15 14.15	14 13.21	23 21.70	18 16.98	24 22.64	9 8.49	1 0.94	0 0.00	0 0.00	106 100.00
1987	2 1.96	11 10.78	21 20.59	29 28.43	16 15.69	12 11.76	9 8.82	2 1.96	0 0.00	0 0.00	102 100.00
1988	3 2.75	8 7.34	24 22.02	35 32.11	15 13.76	16 14.68	6 5.50	1 0.92	1 0.92	0 0.00	109 100.00
1989	2 1.92	12 11.54	28 26.92	24 23.08	7 6.73	17 16.35	10 9.62	3 2.88	0 0.00	1 0.96	104 100.00
1990	0 0.00	4 4.04	23 23.23	26 26.26	14 14.14	19 19.19	9 9.09	3 3.03	1 1.01	0 0.00	99 100.00
1991	1 1.05	7 7.37	26 27.37	18 18.95	8 8.42	25 26.32	7 7.37	2 2.11	1 1.05	0 0.00	95 100.00
1992	2 2.11	10 10.53	26 27.37	20 21.05	8 8.42	17 17.89	8 8.42	4 4.21	0 0.00	0 0.00	95 100.00
Total	15	76	195	222	150	299	85	16	3	1	1062

Table 35. Nominal revenue in dollars for TC2 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/nominal revenue combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Nominal Revenue (000s dollars)						Total
	≤50	>50-100	>100-200	>200-300	>300-400	>400-500	
1982	251 60.34	87 20.91	66 15.87	9 2.16	3 0.72	0 0.00	416 100.00
1983	207 56.25	87 23.64	62 16.85	9 2.45	3 0.82	0 0.00	368 100.00
1984	255 62.65	90 22.11	49 12.04	12 2.95	1 0.25	0 0.00	407 100.00
1985	259 66.58	63 16.20	56 14.40	10 2.57	1 0.26	0 0.00	389 100.00
1986	238 62.96	74 19.58	58 15.34	7 1.85	1 0.26	0 0.00	378 100.00
1987	254 60.77	87 20.81	59 14.11	14 3.35	3 0.72	1 0.24	418 100.00
1988	261 65.74	82 20.65	49 12.34	4 1.01	1 0.25	0 0.00	397 100.00
1989	194 64.24	65 21.52	35 11.59	7 2.32	1 0.33	0 0.00	302 100.00
1990	197 64.59	61 20.00	40 13.11	6 1.97	1 0.33	0 0.00	305 100.00
1991	187 60.13	60 19.29	49 15.76	9 2.89	5 1.61	1 0.32	311 100.00
1992	198 62.66	67 21.20	40 12.66	9 2.85	1 0.32	1 0.32	316 100.00
Total	2501	823	563	96	21	3	4007

Table 36. Nominal revenue in dollars for TC3 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/nominal revenue combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Nominal Revenue (000s dollars)										Total
	≤50	>50 -100	>100 -200	>200 -300	>300 -400	>400 -500	>500 -600	>600 -800	>800 -1000	>1000	
1982	111 28.17	53 13.45	76 19.29	53 13.45	43 10.91	30 7.61	19 4.82	7 1.78	2 0.51	0 0.00	394 100.00
1983	117 26.71	47 10.73	100 22.83	69 15.75	45 10.27	33 7.53	16 3.65	9 2.05	2 0.46	0 0.00	438 100.00
1984	134 27.35	52 10.61	110 22.45	77 15.71	60 12.24	39 7.96	10 2.04	7 1.43	1 0.20	0 0.00	490 100.00
1985	120 26.73	60 13.36	81 18.04	93 20.71	55 12.25	22 4.90	12 2.67	5 1.11	1 0.22	0 0.00	449 100.00
1986	106 23.04	60 13.04	96 20.87	88 19.13	61 13.26	29 6.30	10 2.17	8 1.74	0 0.00	2 0.43	460 100.00
1987	97 21.00	55 11.90	87 18.83	78 16.88	73 15.80	34 7.36	22 4.76	11 2.38	3 0.65	2 0.43	462 100.00
1988	127 27.43	57 12.31	116 25.05	59 12.74	60 12.96	21 4.54	12 2.59	9 1.94	1 0.22	1 0.22	463 100.00
1989	137 29.53	65 14.01	99 21.34	77 16.59	46 9.91	21 4.53	12 2.59	5 1.08	0 0.00	2 0.43	464 100.00
1990	108 25.71	53 12.62	76 18.10	65 15.48	50 11.90	29 6.90	23 5.48	12 2.86	3 0.71	1 0.24	420 100.00
1991	80 20.10	48 12.06	71 17.84	71 17.84	59 14.82	28 7.04	21 5.28	17 4.27	0 0.00	3 0.75	398 100.00
1992	71 18.16	44 11.25	79 20.20	80 20.46	56 14.32	34 8.70	17 4.35	6 1.53	0 0.00	4 1.02	391 100.00
Total	1208	594	991	810	608	320	174	96	13	15	4829

Table 37. Nominal revenue in dollars for TC4 vessels in the northeastern U.S. otter trawl fleet during 1982-92. (For each year/nominal revenue combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Nominal Revenue (000s dollars)										Total
	≤50	>50 -100	>100 -200	>200 -300	>300 -400	>400 -500	>500 -600	>600 -800	>800 -1000	>1000	
1982	8 10.00	5 6.25	7 8.75	14 17.50	5 6.25	10 12.50	9 11.25	19 23.75	1 1.25	2 2.50	80 100.00
1983	8 9.20	5 5.75	9 10.34	7 8.05	8 9.20	16 18.39	16 18.39	13 14.94	4 4.60	1 1.15	87 100.00
1984	5 5.81	3 3.49	11 12.79	8 9.30	12 13.95	15 17.44	10 11.63	16 18.60	3 3.49	3 3.49	86 100.00
1985	10 10.10	6 6.06	12 12.12	9 9.09	9 9.09	18 18.18	14 14.14	11 11.11	6 6.06	4 4.04	99 100.00
1986	6 5.66	4 3.77	5 4.72	17 16.04	13 12.26	18 16.98	10 9.43	18 16.98	12 11.32	3 2.83	106 100.00
1987	7 6.86	4 3.92	10 9.80	5 4.90	10 9.80	17 16.67	14 13.73	21 20.59	10 9.80	4 3.92	102 100.00
1988	15 13.64	5 4.55	9 8.18	8 7.27	21 19.09	17 15.45	15 13.64	13 11.82	3 2.73	4 3.64	110 100.00
1989	11 10.58	5 4.81	6 5.77	14 13.46	12 11.54	14 13.46	10 9.62	19 18.27	3 2.88	10 9.62	104 100.00
1990	13 13.13	2 2.02	2 2.02	4 4.04	9 9.09	11 11.11	20 20.20	19 19.19	11 11.11	8 8.08	99 100.00
1991	5 5.26	4 4.21	4 4.21	6 6.32	5 5.26	11 11.58	19 20.00	17 17.89	16 16.84	8 8.42	95 100.00
1992	8 8.42	1 1.05	9 9.47	4 4.21	5 5.26	16 16.84	11 11.58	23 24.21	9 9.47	9 9.47	95 100.00
Total	96	44	84	96	109	163	148	189	78	56	1063

Table 38. Nominal revenue in dollars per day absent for TC2 vessels in the northeastern U.S. otter trawl fleet, 1982-92. (For each year/nominal revenue per day absent combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Nominal Revenue per Day Absent (00s dollars)									Total
	≤5	>5 -10	>10 -15	>15 -20	>20 -25	>25 -30	>30 -40	>40 -50	>50	
1982	137 33.58	169 41.42	57 13.97	26 6.37	12 2.94	3 0.74	3 0.74	0 0.00	1 0.25	408 100.00
1983	111 31.01	131 36.59	69 19.27	25 6.98	9 2.51	7 1.96	2 0.56	2 0.56	2 0.56	358 100.00
1984	131 32.35	175 43.21	74 18.27	18 4.44	3 0.74	2 0.49	0 0.00	2 0.49	0 0.00	405 100.00
1985	140 36.55	151 39.43	69 18.02	15 3.92	4 1.04	1 0.26	2 0.52	1 0.26	0 0.00	383 100.00
1986	94 24.93	176 46.68	71 18.83	25 6.63	8 2.12	0 0.00	1 0.27	2 0.53	0 0.00	377 100.00
1987	83 19.95	195 46.88	81 19.47	34 8.17	11 2.64	8 1.92	3 0.72	1 0.24	0 0.00	416 100.00
1988	102 26.49	191 49.61	56 14.55	24 6.23	6 1.56	1 0.26	3 0.78	2 0.52	0 0.00	385 100.00
1989	79 26.78	145 49.15	45 15.25	15 5.08	4 1.36	6 2.03	1 0.34	0 0.00	0 0.00	295 100.00
1990	101 33.78	136 45.48	50 16.72	8 2.68	3 1.00	0 0.00	0 0.00	1 0.33	0 0.00	299 100.00
1991	85 27.51	121 39.16	71 22.98	22 7.12	5 1.62	3 0.97	1 0.32	1 0.32	0 0.00	309 100.00
1992	92 29.21	145 46.03	52 16.51	20 6.35	6 1.90	0 0.00	0 0.00	0 0.00	0 0.00	315 100.00
Total	1155	1735	695	232	71	31	16	12	3	3950

Table 39. Nominal revenue in dollars per day absent for TC3 vessels in the northeastern U.S. otter trawl fleet, 1982-92. (For each year/nominal revenue per day absent combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Year	Nominal Revenue per Day Absent (00s dollars)									Total
	≤5	>5 -10	>10 -15	>15 -20	>20 -25	>25 -30	>30 -40	>40 -50	>50	
1982	8 2.05	56 14.32	83 21.23	98 25.06	63 16.11	43 11.00	28 7.16	9 2.30	3 0.77	391 100.00
1983	12 2.74	50 11.42	108 24.66	123 28.08	75 17.12	36 8.22	27 6.16	7 1.60	0 0.00	438 100.00
1984	14 2.86	73 14.93	131 26.79	135 27.61	83 16.97	30 6.13	19 3.89	1 0.20	3 0.61	489 100.00
1985	13 2.91	68 15.25	148 33.18	140 31.39	45 10.09	21 4.71	10 2.24	0 0.00	1 0.22	446 100.00
1986	9 1.96	62 13.48	126 27.39	139 30.22	66 14.35	31 6.74	20 4.35	4 0.87	3 0.65	460 100.00
1987	8 1.74	40 8.70	98 21.30	124 26.96	99 21.52	46 10.00	35 7.61	6 1.30	4 0.87	460 100.00
1988	14 3.06	71 15.50	135 29.48	122 26.64	70 15.28	19 4.15	19 4.15	5 1.09	3 0.66	458 100.00
1989	10 2.17	82 17.83	151 32.83	113 24.57	67 14.57	14 3.04	15 3.26	2 0.43	6 1.30	460 100.00
1990	13 3.11	82 19.62	120 28.71	95 22.73	55 13.16	32 7.66	16 3.83	0 0.00	5 1.20	418 100.00
1991	6 1.51	63 15.87	111 27.96	97 24.43	69 17.38	31 7.81	14 3.53	2 0.50	4 1.01	397 100.00
1992	11 2.82	64 16.41	132 33.85	108 27.69	47 12.05	15 3.85	6 1.54	3 0.77	4 1.03	390 100.00
Total	118	711	1343	1294	739	318	209	39	36	4807

Table 40. Nominal revenue in dollars per day absent for TC4 vessels in the northeastern U.S. otter trawl fleet, 1982-92. (For each year/nominal revenue per day absent combination, the upper value is the number of vessels; the lower value is the percentage of the annual total.)

Nominal Revenue per Day Absent (00s dollars)										
Year	5	>5 -10	>10 -15	>15 -20	>20 -25	>25 -30	>30 -40	>40 -50	>50	Total
1982	0 0.00	1 1.25	2 2.50	13 16.25	11 13.75	26 32.50	19 23.75	7 8.75	1 1.25	80 100.00
1983	0 0.00	0 0.00	5 5.75	9 10.34	24 27.59	16 18.39	25 28.74	6 6.90	2 2.30	87 100.00
1984	0 0.00	0 0.00	7 8.14	10 11.63	21 24.42	18 20.93	24 27.91	5 5.81	1 1.16	86 100.00
1985	1 1.01	1 1.01	6 6.06	26 26.26	13 13.13	26 26.26	20 20.20	4 4.04	2 2.02	99 100.00
1986	0 0.00	2 1.89	4 3.77	20 18.87	23 21.70	17 16.04	32 30.19	3 2.83	5 4.72	106 100.00
1987	0 0.00	2 1.96	2 1.96	8 7.84	17 16.67	19 18.63	39 38.24	8 7.84	7 6.86	102 100.00
1988	2 1.83	1 0.92	5 4.59	11 10.09	27 24.77	24 22.02	26 23.85	5 4.59	8 7.34	109 100.00
1989	1 0.96	3 2.88	5 4.81	18 17.31	17 16.35	21 20.19	26 25.00	4 3.85	9 8.65	104 100.00
1990	0 0.00	3 3.03	5 5.05	11 11.11	21 21.21	17 17.17	29 29.29	2 2.02	11 11.11	99 100.00
1991	0 0.00	1 1.05	2 2.11	9 9.47	22 23.16	16 16.84	25 26.32	10 10.53	10 10.53	95 100.00
1992	1 1.05	0 0.00	7 7.37	12 12.63	20 21.05	16 16.84	26 27.37	6 6.32	7 7.37	95 100.00
Total	5	14	50	147	216	216	291	60	63	1062