



STATE OF CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

Robert Klee
Commissioner

Bureau of Natural Resources
Marine Fisheries Division
www.ct.gov/deep/fishing

A STUDY OF MARINE RECREATIONAL FISHERIES IN CONNECTICUT

Find a place to fish with our *Saltwater Fishing Resource Map* !!

State of Connecticut
Governor Dannel P. Malloy

Department of ENERGY & ENVIRONMENTAL PROTECTION
Saltwater Fishing Resource Map

WELCOME

This map shows the locations of points of interest related to saltwater fishing within the state of Connecticut and around Long Island Sound (LIS), including:

- sporting licensing agents
- bait and tackle shops
- enhanced opportunity shore fishing sites
- car top boat launches with LIS access
- trailered boat launches with LIS access
- party and charter boat locations

View information on saltwater fishing in the state of Connecticut or on the [Enhanced Opportunity Shore Fishing Program](#). Additional links are also provided below the map.

Please send feedback about this application to: deep.marine.fisheries@ct.gov.

Select a point of interest to obtain more information about it.

Search for a point of interest by name or vicinity around a location by entering a name or address in the search bar above the map. Wildcard characters include "%" for multiple characters and "." and for a single character.

Zoom by using the zoom buttons on the map, by double-clicking, by using the scrollwheel, or by holding the 'Shift' key and drawing a rectangle on the map.

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As seen on the CT DEEP website:

<http://www.depdata.ct.gov/maps/saltwaterfish/map.htm>

Federal Aid in Sport Fish Restoration
F-54-R-33 Annual Performance Report
March 1, 2013 – February 28, 2014
Job 2.1: Long Island Sound Trawl Survey



State of Connecticut
Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127
www.ct.gov/deep

Federal Aid in Sport Fish Restoration
F-54-R-33
Annual Performance Report

Project Title: *A Study of Marine Recreational Fisheries in Connecticut*

Period Covered: March 1, 2013 - February 28, 2014

Job Title

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Date: August 27, 2014

Cover: "Saltwater Fishing Resource Map," an interactive GIS map on the Agency website (<http://www.depdata.ct.gov/maps/saltwaterfish/map.htm>) featuring information of interest to recreational saltwater anglers in CT (see Job 7 for more information).

JOB 2: MARINE FINFISH SURVEY

Part 1: Long Island Sound Trawl Survey

Part 2: Estuarine Seine Survey

PART 1: LONG ISLAND SOUND TRAWL SURVEY

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JOB 2 PART 1: LONG ISLAND SOUND TRAWL SURVEY (LISTS)

CRUISE RESULTS FROM THE 2013 SPRING AND FALL SURVEYS

STUDY PERIOD AND AREA

The Connecticut DEEP Marine Fisheries Division completed the thirtieth year the Long Island Sound Trawl Survey in 2013. The Long Island Sound Trawl Survey encompasses an area from New London to Greenwich, Connecticut and includes waters from 5 to 46 meters in depth in both Connecticut and New York state waters. Typically, Long Island Sound is surveyed in the spring, from April through June, and during the fall, from September through October. This report includes results from the 2013 spring and fall sampling periods and provides time series information since the commencement of the survey in 1984.

GOAL

To collect, manage, synthesize and interpret fishery independent data on the living resources of Long Island Sound for fishery management and information needs of Connecticut biologists, fishery managers, lawmakers and the public.

OBJECTIVES

- 1) *Provide an annual index of counts and biomass per standard tow for 40 common species.*
- 2) *Provide age specific indices of abundance for scup, summer flounder, tautog and winter flounder.*
- 3) *Provide a recruitment index for bluefish (age 0) and weakfish (age 0).*
- 4) *Provide length frequency distributions of black sea bass, bluefish, scup, striped bass, summer flounder, tautog, weakfish, winter flounder, and other ecologically important species suitable for conversion to age using modal analysis, age-length keys or other techniques.*
- 5) *Provide annual total counts and biomass for all finfish species taken.*
- 6) *Provide annual total biomass for all invertebrate species taken.*
- 7) *Provide a species list for Long Island Sound based on LIS Trawl Survey sampling, noting the presence of additional species from other sampling conducted by the Marine Fisheries Division.*

INTRODUCTION

The Long Island Sound Trawl Survey (LISTS) was initiated in 1984 to provide fishery independent monitoring of important recreational species in Long Island Sound. A stratified-random design based on bottom type and depth interval was chosen and forty sites were sampled monthly from April through November to establish seasonal patterns of abundance and distribution. Seven finfish species were initially of primary interest: bluefish, scup, striped bass, summer flounder, tautog, weakfish, and winter flounder. Length data for these species were collected from every tow; scup, tautog, and winter flounder were sampled for aging. Lobster were also enumerated and measured from every tow. All fish species were identified and counted.

Since 1984, several changes have been incorporated into the Survey. In 1991, the sampling schedule was changed to a spring/fall format, although sampling is still conducted on a monthly basis (April - June, September, and October). Beginning in 1992, species were weighed in aggregate with an onboard scale to provide indices of biomass. Furthermore, more species have been sampled for lengths, such as windowpane and fourspot flounders, and important forage species such as butterfish, long-finned squid, and several herring species. By 2003, the list of species measured expanded to 20 finfish species and two invertebrate species (lobster and long-finned squid). In addition, rarely occurring species (totaling less than 30 fish/year each) are now measured and age structures are collected from bluefish, menhaden, tautog, scup, winter flounder, weakfish and large summer flounder (>59 cm). All of these changes serve to improve the quality and quantity of information made available to fishery managers for local and regional assessment of stock condition, and to provide a more complete annual inventory of LIS (Long Island Sound) fishery resources.

METHODS

Sampling Design

LISTS is conducted from longitude 72° 03' (New London, Connecticut) to longitude 73° 39' (Greenwich, Connecticut). The sampling area includes Connecticut and New York waters from 5 to 46 m in depth and is conducted over mud, sand and transitional (mud/sand) sediment types. Sampling is divided into spring (April-June) and fall (Sept-Oct) periods, with 40 sites sampled monthly for a total of 200 sites annually. The sampling gear employed is a 14 m otter trawl with a 51 mm codend (Table 2.1). To reduce the bias associated with day-night changes in catchability of some species, sampling is conducted during daylight hours only (Sissenwine and Bowman 1978).

LISTS employs a stratified-random sampling design. The sampling area is divided into 1.85 x 3.7 km (1 x 2 nautical miles) sites (Figure 2.1), with each site assigned to one of 12 strata defined by depth interval (0 - 9.0 m, 9.1 - 18.2 m, 18.3 - 27.3 m or, 27.4+ m) and bottom type (mud, sand, or transitional as defined by Reid et al. 1979). For each monthly sampling cruise, sites are selected randomly from within each stratum. The number of sites sampled in each stratum was determined by dividing the total stratum area by 68 km² (20 square nautical miles), with a minimum of two sites sampled per stratum (Table 2.2). Discrete stratum areas smaller than a sample site are not sampled.

Sampling Procedures

Prior to each tow, temperature (°C) and salinity (ppt) are measured at 1 m below the surface and 0.5 m above the bottom using a YSI model 30 S-C-T meter. Water is collected at depth with a five-liter Niskin bottle, and temperature and salinity are measured within the bottle immediately upon retrieval.

The survey's otter trawl is towed from the 15.2 m aluminum R/V John Dempsey for 30 minutes at approximately 3.5 knots, depending on the tide. At completion of the tow, the catch is placed onto a sorting table and sorted by species. Finfish, lobsters and squid are counted and weighed in aggregate (to the nearest 0.1 kg) by species with a precision marine-grade scale (30 kg, +/- 10 gm capacity). Catches weighing less than 0.1 kg are recorded as 0.1 kg. During the initial two years of the survey (1984 & 1985), lobsters were the only invertebrates recorded. Squid abundance has been recorded since 1986. Since 1992, additional invertebrate species have been weighed in aggregate, and some have been counted. The complete time series of species counted and weighed in the survey is documented in Appendix 2.4.

For selected finfish species, lengths are recorded to the centimeter as either total length or fork length (e.g. measurements from 100 mm to 109 mm are recorded as 10 cm) and entered in the database as 105 mm (Table 2.3). Lobsters are measured to 0.1 mm carapace length. Squid are measured using the mantle length (cm), horseshoe crab measurements are taken using prosomal width (cm) and whelk (knobbed and channeled) shell widths are measured in millimeters.

The number of individuals measured from each tow varies by species, and also depends on the size of the catch and range of lengths (Table 2.3). If a species is subsampled, the length frequency of the catch is determined by multiplying the proportion of measured individuals in each centimeter interval by the total number of individuals caught. Some species are sorted and subsampled by length group so that, for example, all large individuals are measured and a subsample of small (often young-of-year) specimens is measured. All individuals not measured in a length group are counted. The length frequency of each group is estimated as described above, i.e. the proportion of individuals in each centimeter interval of the subsample is expanded to determine the total number of individuals caught in the length group. The estimated length frequencies of each size group are then appended to complete the length frequency for that species. This procedure is often used with catches of bluefish, scup, and weakfish, which are usually dominated by young-of-year or discrete age/length classes.

Bluefish, menhaden, scup, summer flounder, tautog, weakfish (ageing was discontinued in 2013) and winter flounder are sampled for age determination (Table 2.3). The target number of age samples (otolith) for bluefish were 50 from the spring period (defined by ASMFC Bluefish Technical Committee as Jan-July) and 50 from the fall period (August-December). Subsamples of scup, stratified by length group, are measured to the nearest mm (fork length) and scales from each individual are taken for ageing. Scup scales are removed posterior to the pectoral fin and ventral to the lateral line. The scales are pressed onto plastic laminate with an Ann Arbor roller press to obtain an impression of the scale, which is then viewed with a microfiche reader at 21x. Scales are also taken from all summer flounder greater than 59 cm. At least 15 scales are removed from the caudal peduncle area. These scales are pressed and aged to

supplement the National Marine Fisheries Service age key and are also included in the formulation of LISTS summer flounder catch-at-age matrix (see below).

Menhaden scales are collected from roughly 50 fish each year as required by Amendment 2 of the ASMFC Atlantic menhaden management plan. Amendment 2 introduced a requirement for biological sampling of the commercial bait harvest to support improved stock assessments. However since Connecticut has such a small menhaden commercial fishery, sampling it would be difficult. The same size/age component of the menhaden population taken in the commercial fishery is available to LISTS so collections are taken as part of each survey cruise. Menhaden fork length (mm), and sex are recorded and scales are taken about mid-body (lateral line) and below the insertion of the dorsal fin. Most tautog taken in LISTS are aged due to the low numbers caught in recent years (under 250 fish). Tautog are iced and taken to the lab, where their total length (mm), sex, and total weight (gm) are recorded and their age is determined from opercular bones (Cooper 1967). At the request of the ASMFC Tautog Technical Committee, LISTS began collecting tautog otoliths in addition to opercles in 2012. Results from a recent ASMFC Tautog Ageing Workshop (May 2012) indicated there was no clear benefit to switching from opercles to otoliths for CT, so tautog otoliths will be collected (minimum of 50 per/ASMFC) and archived for potential use in the future. Subsamples of winter flounder, stratified by length group and area (as listed in bottom of Table 2.3), are iced and taken to the lab where they are measured to the millimeter (total length), weighed (gm) and sexed. Their maturity stage is determined (NMFS 1989), and they are aged with whole and/or sectioned otoliths (Simpson et al. 1988). Weakfish scales are obtained and processed as described above for scup, and prior to 2013 otoliths were sectioned and read using procedures described in Simpson et al. 1988. Ageing structures for weakfish were collected in 2013 but not aged. LISTS will discontinue weakfish collections in 2014 (see modifications).

In reports prior to 2001, three species were not included in annual and seasonal totals: American sand lance, bay anchovy, and striped anchovy. These species, with the possible exception of striped anchovy, can be very abundant in Long Island Sound, but are not retained well in the otter trawl. Additionally, many of these fish are young-of-year and often drop out of the net as it is retrieved and wound on the net reel. For this reason they were not included in the list of species to be counted when LISTS was started in 1984. However, to document the occurrence of these species in LISTS catches, American sand lance was added in 1994, striped anchovy was added in 1996, and bay anchovy was added in 1998. Since 2001, adults of these three species have been included in the annual and seasonal totals and the young-of-year are listed if present in the year's catch but are not quantified (Table 2.15, Appendix 2.4). Young-of-year for these three species are included in the database but are cataloged with a separate species identifier and quantities are considered estimates (Appendix 2.2).

In 2013, the only endangered species encountered by LIS Trawl Survey was Atlantic sturgeon, a species that was listed as Endangered by NOAA in 2012. Sampling procedures have been modified in recent years to minimize the likelihood of injury to Atlantic sturgeon. When sampling in a season and area where the chance of catching a sturgeon is high (based on historic LISTS catch) and water depth is greater than 27m, gear retrieval speed is reduced to decrease the stress induced by rapid changes in pressure. When a sturgeon is detected in the net, it is removed as quickly and carefully as possible. Subsequent handling and processing follow protocols described in A Protocol for Use of Shortnose, Atlantic, Gulf, and Green Sturgeons (Kahn and

Mohead. 2010. U.S. Dep. Commerce, NOAA Tech Memo, NMFS-OPR-45, 62p., http://www.nmfs.noaa.gov/pr/pdfs/species/kahn_mohead_2010.pdf) and adhere to the Reasonable and Prudent Measures, as well as, the Terms and Conditions spelled out in the ESA Section 7 Biological Opinion's Incidental Take Statement issued by NOAA for CT in June 2012 (http://www.greateratlantic.fisheries.noaa.gov/protected/section7/bo/oldbiops/usfws_state_of_ct_marine_surveys_2012_web_archive.pdf). Future LISTS interactions with sturgeon will follow requirements of the subsequent biological opinion issued by NOAA for the 11 Northeast States and District of Columbia. All interactions with endangered species are reported in Appendix 2.5.

Data Analysis

Indices of Abundance: Annual Mean Count and Weight per Tow

To evaluate the relative abundance of common species, an annual spring (April - June) and fall (September - October) geometric mean number per tow and weight per tow (biomass, kg) is calculated for the common finfish and invertebrate species. To calculate the geometric mean, the numbers and weight per tow are logged (\log_e) to normalize the highly skewed catch frequencies typical of trawl surveys:

$$\text{Transformed variable} = \ln(\text{variable}+1).$$

Means are computed on the log scale and then retransformed to the geometric mean:

$$\text{geometric mean} = \exp(\text{mean})-1.$$

The geometric mean count per tow was calculated from 1984 - 2013 for 38 finfish species, lobster, and long-finned squid (1986 - 2013). The geometric mean weight per tow was calculated using weight data collected since 1992 for the same species, plus an additional 13 invertebrates.

For the seven finfish species that were measured on every tow (bluefish, scup, striped bass, summer flounder, tautog, weakfish, and winter flounder) biomass indices were calculated for the years 1984 - 1991 by using length/weight equations to convert length frequencies to weight per tow. Bluefish, scup, weakfish and winter flounder lengths were converted using equations from Wilk et al. 1978; striped bass conversions were accomplished using an equation from Young et al. 1994; summer flounder and tautog conversions were accomplished using equations developed from LISTS data from 1984 -1987 and 1984 -1996 respectively.

Indices of Abundance: Indices-at-Age and Age Group

Annual age specific indices (indices-at-age matrices) were calculated for scup, striped bass, summer flounder, winter flounder and tautog. The age data used to calculate the indices came from three sources: striped bass ages were derived using the von Bertalanffy (1938) equation; summer flounder age-length keys were obtained from the National Marine Fisheries Service (NMFS) Northeast Fisheries Science Center spring and fall trawl surveys combined with LISTS ages (>59 cm); scup, winter flounder and tautog age-length keys (in 1 cm intervals) were obtained directly from LISTS. Since fish growth can fluctuate annually as a function of population size or other environmental factors, a year and season specific age-length key was used wherever possible. Once lengths have been converted to age, the proportion at age is

multiplied by the abundance index of the appropriate season to produce an index of abundance at age.

Recruitment (young-of-year) and age 1+ (all fish age one and older) indices were calculated for bluefish and weakfish. Observed modes in the length frequencies were used to separate the two groups.

The specific methods used to calculate indices-at-age for each species were as follows:

- ◆ **Bluefish.** Otoliths were taken from 227 bluefish, 62 from the spring period and 151 from the fall period. Of the 62 samples taken in the spring, only 20 were obtained from LISTS; the bulk of the samples came from recreational anglers. Most of the fall samples were obtained from LISTS (151 fish) although 14 samples were obtained through donations from a fishing tournament. . In 2012 a coast wide biological sampling program was initiated through ASMFC addendum 1 of the bluefish management plan. Since there is only two years of data from the northeast, there are still limited results available at this time. Therefore, the method of using modes observed in the fall length frequencies to separate bluefish into age 0 and age 1+ groups, and calculate a geometric mean catch per tow for each group (Table 2.22) was continued through 2013. Comparison of the mean length-at-ages reported for young-of-year and age 1 bluefish in the New York Bight (Chiarella and Conover 1990) and Long Island Sound (Richards 1976) with LISTS length frequencies suggests that bluefish can easily be identified as either age 0 (snapper bluefish) or adults (age 1+). Richards (1976) and Chiarella and Conover (1990) determined that most bluefish less than 30 cm are age 0. A discontinuity in the LISTS fall length frequencies occurs most years between 26 cm and 39 cm (Table 2.42). Therefore 30 cm was determined to be a suitable length for partitioning age 0 and age one fish. With the addition the biological sampling programs along the coast, either a regional northeast key will be developed or possibly just using the LISTS key will be utilized for calculating a full index-at-age for Long Island Sound.

Prior to 2012, there was limited bluefish ageing in the northeast. Although North Carolina state biologists have aged bluefish for some time, their age keys were not used to age Long Island Sound bluefish because North Carolina mean lengths-at-age are not consistent with modes observed in Long Island Sound bluefish length frequencies. This difference suggests that growth may vary by region, or that early and late spawned bluefish may be differentially distributed along the coast (Kendall and Walford 1979).

- ◆ **Scup.** An index-at-age matrix was developed for 1984-2013 using spring (May-June only) and fall (September-October) LISTS data (Table 2.23). April data was omitted since very few scup are taken at this time. A total of 12,221 scup aged between 1984 and 2013 were used to make year and season specific age-length keys (1 cm intervals). In the relatively few instances when the season/year specific key failed at a given 1 cm length interval, a three-year pooled key was used to determine the age. Three-year pooled keys were calculated using the years proceeding and following the “run” year. For the terminal year, only two years were used for the pooled key. The final index-at-age was computed for both spring and fall indices-at-age. Since very few scup older than age 9 are taken (less than 4% in any given year), an age 10+ group is calculated by summing

indices for ages 10 and up. To represent the full adult portion of the population an age 2+ index is calculated by summing the indices for ages 2 through 10+.

- ◆ **Striped bass.** To approximate the ages of striped bass taken in the spring survey (Table 2.24), the average of the Chesapeake Bay and Hudson River striped bass von Bertalanffy parameters ($L_{\max} = 49.9$ in, $K = 0.13$, $t_0 = 0.16$, Vic Crecco, pers. comm.) were used in the rearranged von Bertalanffy equation:

$$t = (1/K) * (-\log_e ((L_{\max} - L_t) / L_{\max})) + t_0$$

Since this equation estimates age t as a fraction of a year, the estimates were rounded to the nearest year (e.g. age 3 = ages 2.5 to 3.4). A spring catch-at-age matrix was developed for 1984 through 2013 by apportioning the spring index by the percentage of fish at each age (Table 2.25).

- ◆ **Summer flounder.** The year and season specific age-length keys (1 cm intervals) used to age LISTS catches were provided by NMFS from their spring and fall trawl surveys. These keys were supplemented with fish caught and aged by LISTS (typically 60 cm and over). In 2013 LISTS had sample requests for summer flounder and scale samples from these fish (< 60cm) were collected. In 2013, 163 summer flounder, were aged; 157 from the spring and 6 (all > 60cm) from the fall. Since 2001, whenever the season/year specific key failed at a given 1 cm length interval a pooled year key using only adjacent years was used (Gottschall and Pacileo 2002). Since it is thought that growth rates for summer flounder have changed over time, a pooled key using only adjacent years would more accurately represent fish that could not be aged by the season/year specific key. Using this methodology, the catch-at-age matrix (Table 2.26) will remain unchanged for all but the terminal year, which will be updated as the following years' data becomes available.
- ◆ **Tautog.** An index-at-age matrix was developed for 1984-2013 using all survey months (Gottschall and Pacileo 2007) (Table 2.27). During 2013, 165 tautog were captured and opercles were collected from all; 129 collected in the spring and 36 were collected in the fall. Ageing for 2006-2012 has been completed. Ageing for 2013 samples has not yet been completed. A 2012 age key was used for the 2013 un-aged fish and a pooled key was used where the 2012 key failed. Therefore, the 2013 indices-at age are preliminary; the 2013 tautog samples will be aged during the summer of 2014 and an updated index-at-age matrix will be constructed.
- ◆ **Weakfish.** Age 0 and age 1+ indices were calculated for both spring (1984 – 2013) and fall surveys (1984 – 2009, 2013) (Table 2.28). Since few weakfish are taken in April, the spring geometric mean was calculated using only May and June. All weakfish taken in spring are assumed to be age 1+. Similar to bluefish, the fall age 0 and 1+ indices were calculated by using length frequencies to separate the catch. Since a break in the fall length frequencies generally occurs between 24 and 32 cm each year (Table 2.57), weakfish less than 30 cm are considered to be age 0 while those greater than or equal to 30 cm are ages 1+.

- ◆ **Winter flounder.** An index-at-age matrix was developed for 1984-2013 using April and May LISTS data (Table 2.29). June data were not used since length frequency data suggest that many adult winter flounder have left the Sound by this time (an exception was made for 1984, the first year of LISTS, because very few samples were taken in the spring months). A total of 22,671 winter flounder aged between 1984 and 2013 were used to make year and region (east of Stratford Shoal, west of Stratford Shoal) specific age-length keys in 1 cm intervals. Similar to scup and summer flounder, three year pooled keys using only the adjacent years (two years for the terminal year runs) were used to assign ages if year specific keys were not available.

Each flounder aged as described above was also assessed for maturity stage (following Burnett 1989) by sex. CT DEEP staging of winter flounder was verified in a cooperative study with NMFS in 2009-2010 (Gottschall and Pacileo 2011). The percentage of male and female fish in each centimeter length group that was sexually mature (ripe, resting, or spent) was calculated in order to determine the length group at which 50% was mature each year.

Species Richness by Group

The Long Island Sound Trawl Survey monitors species richness using groups of species classified as either cold temperate or warm temperate. For the purposes of tracking species richness, American sand lance, bay anchovy, and striped anchovy were omitted (see *Sampling Procedures* section). All other finfish species captured in LISTS were divided into groups based on their temperature preferences and seasonal spawning habits as documented in the literature (Collette and Klein-MacPhee 2002, Murdy et al. 1997). Species in the cold temperate group prefer water temperatures below 15⁰C (60⁰F), tend to spawn at the lower end of their temperature tolerance range, and are more abundance north of Long Island Sound than south of New York. Species in the warm temperate group prefer warmer temperatures (11-22⁰C or 50-77⁰F), tend to spawn in the upper range of their temperature tolerance, and are more abundant south of the Sound than north of Cape Cod (Appendix 2.6). Species that are not tolerant of cold temperatures, are abundant only south of Chesapeake Bay but stray into northern waters mostly as juveniles, and spawn only in the mid-Atlantic Bight and south were placed into a separate group (subtropical) and were not included in the analysis because they are typically only present in the fall LISTS.

Open Water Forage Abundance

A Long Island Sound open water forage index of abundance was compiled to measure the available food base which supports resident and migratory species within the Sound. This index is formulated as a biomass index that is assembled from 11 of the forage species that are most common in LISTS catches along with three other species that are considered forage at an early life stage (young-of-year, YOY). The species used to generate the index are; Atlantic herring, long-finned squid, butterfish, alewife, blueback herring, American shad, hickory shad, menhaden, whiting, spotted hake, and red hake along with young-of-year stage of scup, bluefish, and weakfish. The geometric mean biomass is calculated using the aggregate of these 14 species on a per tow basis and calculated using the same methodology as described above for individual species biomass indices.

RESULTS AND DISCUSSION

Overview of LISTS 2013 Spring and Fall Surveys

Each month of the survey, sampling aboard the R/V John Dempsey generally began in the east end of Long Island Sound and progressed westward. The April survey commenced on April 9, 2013, and continued until April 25 for a total of nine (9) days underway and 40 tows completed. May sampling started on May 7 and continued till May 21 with nine (9) sampling days underway and 40 sites completed. June sampling began on June 10 and ended on June 27, taking eleven (11) days underway to complete the 40 sites. The Fall Survey needed 10 days underway in September and 9 days underway in October to complete the 40 sites in each of the months. A total of 200 LISTS tows were completed in 48 days underway during the spring and fall 2012 surveys (Table 2.4); not including transit days or weather days.

Maps showing the sites selected versus the sites sampled during each month of sampling are provided in Figure 2.2 (April), Figure 2.3 (May), Figure 2.4 (June), Figure 2.5 (September) and Figure 2.6 (October). Within each figure the red bordered sites are the sites selected for the month and the solid blue dots indicate the actual sites sampled. If a site had to be relocated during sampling, an explanation of why it was moved is provided under the figure. Additional site/station information is provided in Table 2.5 (April), Table 2.6 (May), Table 2.7 (June), Table 2.8 (September) and Table 2.9 (October). These tables provide date of sample, time, tow duration, latitude/longitude, surface and bottom temperature and salinity, average tow speed, distance towed and approximate area swept for each tow.

Sometimes, a full 30-minute tow cannot be completed. Typical reasons for short tows include lack of room because of observed pot gear set in the immediate area, a drop in speed due to entanglement with some object on the bottom (frequently derelict pot gear), or a complete stop in forward motion (submerged wreck or rock pile). Survey crew will often attempt to finish an interrupted tow by clearing the net (if needed) and resetting beyond the obstruction or observed gear. If this is not possible, a site may have to be moved to another site nearby with the same stratum (bottom type and depth). If the site was moved, the data from the initial site will not be used. Typically, a minimum of 15-20 minutes is required for a LISTS tow to be recorded. However, there are occasions when a tow with less than 15 minutes will be accepted, usually because there is no alternate site in the designated strata in the vicinity. Short tow information for each month in the 2013 survey is summarized in Table 2.10.

Cooperative Sample and Data Collection

Throughout the time series, LISTS staff have been participating in cooperative efforts for sample collections, data requests, and special projects using survey personnel, equipment, and other resources. Most of these cooperative efforts are with state researchers or agencies, the National Marine Fisheries Service, Atlantic States Marine Fisheries Commission, New England and Mid-Atlantic Councils, and researchers or graduate students associated with state or local universities. Table 2.11 illustrates many of the organizations that requested data in 2013, while Table 2.12 shows sample request received and fulfilled. In recent years many requests for samples have come from high schools, aquariums, or other educational organizations needing finfish and invertebrates for teaching purposes. Additionally, our own staff often have sample or data requests for media or other public outreach events (see Job 6 of this report).

Number of Species Identified

Fifty-five finfish species were observed in the 2013 Long Island Sound Trawl Survey (Table 2.13). This includes one new species for the survey; two bullnose ray (*Myliobatis freminvillei*, shown at right), were caught on two separate tows during the fall survey. From 1984 to 2013, LIS Trawl Survey has identified one hundred four (104) finfish species (Appendix 2.1), averaging 58 species per year with a range of 43 to 70 species (Fig 2.7). In addition, a total of 41 types



of invertebrates were collected in 2013 (Table 2.14). Most invertebrates are identified to species. However, in some cases, invertebrates were identified to genus or a higher level taxon.

Total Catch

Appendix 2.4 presents a time series (1984-2013) of the finfish species collected each year and their respective rank by numbers. Annual total biomass of invertebrates is also included in this appendix (1992-2013), ranked by weight (kg).

A total of 83,413 finfish weighing 15,844 kg were sampled in 2013 (Table 2.15). In twenty-one out of the last thirty years butterfish has been the highest-ranking finfish (numbers) in LISTS. In 2013, LISTS caught less than half of the butterfish (29,569 fish) seen just one year earlier yet this species still accounted for 35.4% of the catch by number and 7.9% of the biomass. Scup was the second most abundant by number (24,961) and the most abundant by weight, accounting for 37.5% of the biomass in 2013. Typically, scup and butterfish account for 60% of the Trawl Survey annual catch (range 27.1%-86.0%, 1984-2013, Appendix 2.4) and have been among the five most abundant species caught (by number) each year of the thirty-year LISTS time-series. Scup was more abundant than butterfish in the spring survey, however, butterfish was the more abundant species in the fall (Table 2.16). The top five species (by number) in 2013, in order of decreasing abundance, were butterfish, scup (porgy), Atlantic herring, striped searobin, windowpane flounder and weakfish. These five species accounted for 77.8% of the total annual catch and 57.8% of the total biomass.

A total of 39,539 finfish weighing 9,713 kg were sampled in spring of 2013 (Table 2.16). Scup topped the spring catch both by number and biomass, with 17,037 fish (4,690.6 kg) accounting for 43.1% of the catch numerically and 48.3% by weight. The scup index of abundance for spring 2013 (14.23 scup per tow) was the eighth highest in the time-series, making 2013 the eighth time in the past 14 years that the springtime index has been above the time-series mean of 11.66 scup per tow (Table 2.18). Scup from 10 to 32 centimeters fork length were most prominent in the length frequency distribution. Three modes were present at 11, 19, and 29 centimeters. The smaller size group often seen in the spring (10-12 cm) were much less abundant than what was observed in 2012, but nonetheless present this past spring. The number

of scup greater than 30 cm in springtime catches has been increasing for the past decade (Table 2.52).

Butterfish were much less abundant during the spring of 2013 but still was the second most abundant species with 9.3% of the springtime catch. Atlantic herring was the third most abundant fish by number (3,563, or 9.0% of the total). Winter flounder and striped searobin were the third and fourth most abundant, respectively, for the spring. Windowpane flounder, historically one the top five most abundant species, was only the six most abundant species this season by number with 1,624 fish accounting for 265.8 kg. Summer flounder (fluke) springtime catches have been increasing since the mid 1990's, except for a dip in 2005-2006 (Table 2.18). The springtime fluke index was 3.24 fish/tow, roughly three times more than the time-series average of 1.4 fish/tow. An unusually high number of spot (shown to the right) were present not only in LISTS springtime catches but in catches reported by recreational anglers. Although spot have been documented in approximately 75% of our fall surveys, this is the first time spot have been observed during the spring survey. Spot were the eighth most common species seen during this Survey with 1,434 fish observed and a geometric mean of 0.89 fish/tow.



Overall, the number of finfish caught in spring of 2013 was lighter than typical in both numbers and biomass, yet the mean number of finfish species caught per sample (11.9 species) was similar to the spring time-series average of 11.4 species per sample (Figure 2.15). An open water forage abundance biomass index was calculated (see *Methods* section) using both the spring and fall biomass of the Sound's forage base. This index also reflected lighter than normal catch of forage species in 2013 (Figure 2.16). The 2013 forage base index of 6.85 kg/tow was 50% less than the 1992-2013 average (14.09 kg/tow). Squid and butterfish dominate this index and their lower abundance in the Sound is the primary reason for the lower than average index value. The 2013 biomass of the three YOY species (bluefish, weakfish, and scup), which make up about a third of the forage index, was also low. However, the 2013 biomass index of Atlantic herring and menhaden was average, indicating that their availability in the Sound has not declined.

Additionally, a geometric mean weight per tow for aggregated finfish and aggregated invertebrates was calculated for the spring and fall time-series (Figure 2.17). The mean was calculated as described above for individual species but biomass was summed initially for each tow, first for finfish and then invertebrates. Mean biomass per tow of finfish was calculated as 38.09 kg per tow during the spring of 2013; about 21% below the 1992-2013 time series average of 48.26 kg per tow. Invertebrate biomass was quite low; a 61.4% decrease from the average of 8.06 kg per tow.

A total of 43,875 finfish weighing 6,131 kg were sampled in fall of 2013 (Table 2.16). Catches in the fall survey have consistently been dominated by four species: butterfish, scup, weakfish and bluefish (Table 2.16). In fact, three of the four (butterfish, scup and bluefish) have been the five most abundant fish in each fall survey in the LISTS time-series. In 2013, the four named species comprised 85.5% of the total catch of finfish and 47.8% of the total fall biomass. Butterfish comprised 59.0% of the fall catch by number and 16.9% by weight. The fall catch of 25,876 butterfish was about 65% below average in 2013, a significant decrease from fall 2012 and the fourth lowest in the time series (geometric mean catch per tow = 60.24, Table 2.19, Figure 2.8). Scup abundance fell precipitously to about 23% of average fall levels with 7,924 fish (1,255.0 kg) taken or 18.1% of the fall total count and 20.5% of the fall biomass. The corresponding fall indices for all sizes of scup (40.68, Table 2.19) and for young-of-year scup (17.74, Table 2.23) were both well below their time-series means of 178.56 and 131.45, respectively (Figure 2.11). Weakfish and bluefish comprised 4.3% and 4.1% of the fall catch, with 1,876 fish and 1,809 fish, respectively. Bluefish abundance was at an all time low this past season with an index of 9.71 fish per tow. Overall, bluefish abundance has been trending lower since the peak of 45.3 fish per tow in 1999. The bluefish abundance index is typically driven by young-of-year fish which were noticeably absent from the September and October samples. The 2013 young-of-year bluefish index (7.86 fish/tow, Table 2.22) was 49% of the long term average and the second lowest since 1984. The weakfish index of abundance (7.5 fish/tow) again dropped to below average levels for the time-series (Table 2.19). Five out of the last six years have been below average for weakfish in Long Island Sound. Similar to bluefish, weakfish abundance is driven by the young-of-year index (7.01 fish/tow, Table 2.28). Over the time-series, 97% of the fall weakfish catch has been young-of-year weakfish (less than 30 cm TL). The fall age 1+ index for weakfish (0.52 fish/tow), although lower than the previous two years, still remained 73% higher than average fall levels (0.30 fish/tow). The previous two fall surveys (2011 and 2012) had the most age 1+ weakfish since the peak catch in 1997 (Figure 2.13). Smooth dogfish again ranked high in biomass (2nd) with 1,507.1 kg from 758 individuals. Overall, the number of finfish caught in fall of 2013 was lighter than typical in both numbers and biomass, yet the mean number of finfish species caught per sample (13.6 species) was slightly above the 12.5 species per sample average (Figure 2.15). As described above, geometric means are calculated for finfish biomass per tow and, similar to the spring, finfish biomass per tow is about 22% less than average since 1992 (Figure 2.17). Invertebrate biomass per tow during the fall survey is 15.40 kg per tow or about 56% less than average.

A total of 1,947 kg of invertebrates were taken in 2013 (Table 2.15). Over 75% of the invertebrate biomass was comprised of four species, namely, blue mussel (622.1 kg, 31.9% of total), horseshoe crab (531.8 kg, 27.3%), long-finned squid (170.8 kg, 8.8%), and spider crab (156.5 kg, 8.0%). The total biomass of invertebrate catch taken in the spring of 2013 was 644 kg (Table 2.17). Horseshoe crab had the highest biomass 269.2 kg comprising 41.6% of the total spring weight followed by spider crab with 130.6 kg (20.2%) and long-finned squid with 35.3 kg (5.5%). For American lobsters, the 2013 spring index of 0.44 lobsters/tow was the lowest recorded in the thirty year time series (Table 2.18). The spring 2013 index of long-finned squid (1.47 per tow) was also the lowest observed for the series (Table 2.18, Figure 2.14). Springtime squid abundance has dropped each year since 2009. A total of 1,303 kg of invertebrates were taken in fall of 2013 (Table 2.17). Blue mussel topped the fall list of invertebrate biomass, with 609.6 kg or 46.8% of the total invertebrate biomass for fall, however, the majority of the blue mussel catch occurred from only two tows last year. Horseshoe crab was the second most

abundant invertebrate with 262.6 kg or 20.2% of the biomass, followed by 10.4 kg of long-finned squid. Squid abundance was the third lowest for the time series (32.59 squid/tow) and comprised mostly of individuals less than 13cm in length (96%). There were only 24 American lobster (6.7 kg), yielding an index of 0.16 lobsters per tow, another record low for fall abundance (Table 2.19, Figure 2.14).

The invasive alga species, *Heterosiphonia japonica* (HJ), was again documented in a significant number of springtime tows in 2013 (48% of the tows). A total springtime catch of 539.3 kg was recorded and the June survey had the highest monthly biomass, mostly because of a single large haul (245.8 kg) off of the Mattituck sill. Fall samples, however, only had a 29% occurrence rate. The largest fall sample of 13.8 kg occurred at the mouth of the Thames River in October. HJ has been a significant nuisance for the trawl survey by increasing the time associated with clearing the net for the next set. Even small catches of this alga increase processing time because it does not shake out of the meshes easily. Large catches of this particular alga (see photo at right) likely decrease the performance of the net.



Length Frequencies

Length frequency tables are provided primarily to give the reader an understanding of the size range of various species taken in LISTS. Lengths are converted to age frequencies for analysis of principal species such as scup, bluefish, striped bass, summer flounder, tautog, winter flounder, and weakfish. Changes such as an expansion in the size (age) range for some important recreational species are apparent in recent years including more large scup (Table 2.52-2.53), striped bass (Table 2.54-2.55), and summer flounder (Table 2.56-2.57).

Length frequencies were prepared for 22 species:

alewife	spring and fall	1989 - 2013	Table 2.30;
American shad	spring and fall	1989 - 2013	Table 2.31;
American lobster	spring and fall (M&F)	1984 - 2013	Table 2.32-Table 2.35;
Atlantic herring	spring and fall	1989 - 2013	Table 2.36;
Atlantic menhaden	spring and fall	1996 – 2013	Table 2.37;
black sea bass	spring and fall	1987 – 2013	Table 2.38, Table 2.39
blueback herring	spring and fall	1989 - 2013	Table 2.40;
bluefish	spring and fall	1984 - 2013	Table 2.41, Table 2.42;
butterfish	spring and fall	1986 - 1990, 1992 - 2013	Table 2.43;
clearnose skate	spring and fall	1993 - 2013	Table 2.44, Table 2.45;
fourspot flounder	spring and fall	1989 - 1990, 1996 - 2013	Table 2.46;

hickory shad	spring and fall	1991 - 2013	Table 2.47;
horseshoe crab	spring and fall (M&F)	1998 - 2013	Table 2.48, Table 2.49;
long-finned squid	spring and fall	1986 - 1990, 1992 - 2013	Table 2.50, Table 2.51;
scup	spring and fall	1984 - 2013	Table 2.52, Table 2.53;
striped bass	spring and fall	1984 - 2013	Table 2.54, Table 2.55;
summer flounder	spring and fall	1984 - 2013	Table 2.56, Table 2.57;
tautog	spring	1984 - 2013	Table 2.58;
weakfish	spring and fall	1984 - 2013	Table 2.59, Table 2.60;
windowpane flounder	spring and fall	1989, 1990, 1994 - 2013	Table 2.61, Table 2.62;
winter flounder	April-May and fall	1984 - 2013	Table 2.63, Table 2.64;
winter skate	spring and fall	1995 - 2013	Table 2.65.

For the years where length data are available, length frequencies were prepared for the seasons or months for which the preferred indices of abundance and catch-at-age matrices are calculated; for some species length frequencies are provided for both seasons.

Seasonal Indices of Abundance

The geometric mean count per tow was calculated from 1984-2013 for 38 finfish species plus lobster and long-finned squid (squid since 1986). All spring (April-June) and fall (September-October) data are used to compute the abundance indices presented in Tables 2.18 (spring) and 2.19 (fall), with the preferred seasonal index (for counts) denoted by an asterisk. Geometric mean biomass-per-tow indices have been calculated for 38 finfish and 15 invertebrate species (or species groups) since 1992, for both spring and fall (Table 2.20 and 2.21, respectively). Age specific indices of abundance were calculated for selected important recreational species, including scup, striped bass, summer flounder, and winter flounder (see below). For two other species, bluefish and weakfish recruitment indices were calculated using modal analysis of the length frequencies. For each of the thirty-eight finfish species, plots including catch per tow in numbers and biomass in kilograms are illustrated in Figures 2.8 through 2.13. These figures also include plots of each of the age specific indices and recruitment indices mentioned above. Figure 2.14 provides plots of abundance (biomass) indices for crabs (lady, rock, spider; 1992-2013), American lobster (1984-2013), horseshoe crab (1992-2013), and long-finned squid (1986-2013).

During the spring survey only two finfish species were at record high levels of abundance (black sea bass and spot). There were six species at record low levels during this past spring (American lobster, fourbeard rockling, ocean pout, sea raven, long-finned squid, and winter flounder). Of the species where the spring index is the preferred index of abundance for the trawl survey (Table 2.18), an additional five species had indices of abundance (geometric mean count per tow) at or above the time-series mean; alewife, Atlantic herring, spiny dogfish, striped bass, and winter skate (Figures 2.8 – 2.13). Although the fall trawl index is usually the preferred index of scup abundance, even the springtime scup indices have mostly been above average since 2000 (Table 2.18) due to high abundances of age 2+ scup in recent years (Figure 2.11). Similarly, the fall index is usually preferred for summer flounder, but over the last several seasons, spring catches have risen to levels comparable to the fall. The 2013 spring abundance of 3.24 fish/tow is the third highest index and is above the fall index of 3.07 fish/tow.

During the fall survey, only one species had record high abundance, smooth dogfish. Of the species where the fall index is the preferred index of abundance for the trawl survey (Table 2.19), an additional ten (10) species had indices of abundance (geometric mean count per tow) above the time-series mean; clearnose skate, spotted hake, hickory shad, hogchoker, moonfish, northern kingfish, rough scad, spot, striped searobin, and summer flounder (Figures 2.8 – 2.13). Conversely, three species had record low indices of abundance; bluefish, blueback herring and American lobster (Table 2.19).

Relative indices of abundance (geometric mean number per tow) of American lobster were at record low levels for both spring and fall surveys in 2013. This continues the decreasing trend begun in the late 1990's. American lobster abundance in spring 2013 remains very low at 0.44 lobsters per tow (Table 2.18). Current springtime abundance is only about 2.5% of the peak abundance of 18.52 lobsters per tow seen in 1998 (Figure 2.14). In each of the past three fall surveys, the abundance index for American lobster has reached successively new record low levels and is currently less than 1% of peak abundance seen in the 1997 fall survey (19.60 lobsters per tow, Table 2.19). Catch of long-finned squid has been a bit below average for the past three years and the fall index is currently only the second lowest in the time-series (32.59 squid/tow) (Tables 2.18 – 2.19, Figure 2.14). Lady crab and rock crab indices have been low for the past decade, (Tables 2.20-2.21, Figure 2.14).

Indices of Abundance: Important Recreational Species

Spring and fall abundance indices are presented in Tables 2.18-2.19. Indices of abundance at age were also calculated for seven important recreational species: bluefish (Table 2.22), scup (Table 2.23), striped bass (Table 2.24 age frequency, Table 2.25 indices at age), summer flounder (Table 2.26), tautog (Table 2.27), weakfish (Table 2.28) and winter flounder (Table 2.29). Bluefish and striped bass indices-at-age are based on the fall and spring surveys, respectively, whereas winter flounder indices-at-age are based on only the April and May cruises of the spring survey. In 2013, LISTS collected otoliths from 688 winter flounder, 685 of which were used in the development of age keys and the final catch-at-age matrix. Both scup and weakfish indices-at-age are calculated and presented separately for each season. Scales from 775 scup were collected and aged in 2013, 773 of which were used in the keys and calculations of the age matrix. Weakfish and bluefish use modal distributions for calculating their respective recruitment index although a small number of weakfish are taken each year for ageing purposes (see methods).

Although the striped bass abundance in spring recently fell below the time series mean from 2010-2012, the current index of 0.67 fish per tow increased modestly and remains well above the average for the first eight years of the time series (0.08 fish per tow, 1984-1992). Springtime adult scup abundance remains high relative to 1984-1999 levels; the 2013 spring index of age 2+ fish (53.31 fish/tow) was the sixth highest in the time-series (Table 2.23, Figure 2.11). The index of age 2+ in the fall (16.24 fish/tow) was average for the time series yet relatively high compared to the first half of the time-series average of 2.58 fish/tow. There was a unusual lack of young-of-year scup during the fall of 2013. The abundance abruptly dropped to levels not seen since the first four years of the survey when abundance was at a minimum. Summer flounder (fluke) abundance, in both spring and fall, has generally been increasing for the past 15 years (Tables 2.18-2.19). The fall index of abundance has historically been viewed

as the preferred index of abundance from the trawl survey, however, fluke are now just as abundant in the spring survey. The fluke index for spring 2013 (3.24 fish per tow) is more than double the time-series average (1.46 fish per tow) and the fall index (3.07 fish per tow) is the seventh highest in the time-series. The spring survey index for tautog has remained low and below the time-series average for 20 of the past 21 years, although there was a small, short-lived increase in abundance in 2002 (Table 2.18, Figure 2.13). Abundance indices from 1993-2013 averaged 0.48 fish/tow, only about half the 1984-1992 average of 1.2 fish/tow. Winter flounder springtime abundance (April-May, age4+) has been low and declining for the past twelve years, with 2006 being the lowest index for the time-series and the average for 2007-2013 being approximately one-third the time series average (Table 2.29, Figure 2.9).

A couple of other species of recreational importance were at relatively high abundances in 2013. Black sea bass indices for both spring and fall were record highs or near record levels for the LISTS time-series (0.97 fish per tow in the spring and 0.99 fish per tow in the fall, Tables 2.18-2.19). Spot, a popular recreational species further south along the East Coast, showed up in large numbers during the spring of 2013; having a record geometric mean of 0.89 fish per tow. Spot abundance during the fall was also high with at 1.7 fish per tow and was second only to the peak index of 2.67 fish/tow in 2008 (Table 2.19, Figure 2.12). Hickory shad abundance was also relatively high in the fall 2013 survey, with the fourth highest index of the time-series (0.16 fish/tow) being much higher than the rest of the time-series except for 2005 & 2006 (Table 2.19, Figure 2.12). Finally, adult weakfish was also relatively abundant in the 2013 surveys; the 1+ spring index (0.52 fish per tow) was the second highest of the time-series, behind 2012 (0.62 fish per tow), while the 1+ fall index (also 0.52 fish per tow) remained well above the time series mean (0.30 fish per tow) (Table 2.8, Figure 2.13).

Winter Flounder Average Size at Maturity

Average size at maturity for winter flounder captured in April and May cruises has increased since maturation data recording began in 1990. The number mature by cm-interval and sex was calculated for the subset of fish examined in the laboratory each year, and a five-year average computed to maximize sample size. The resulting maturation curves (Figure 2.18) skew right for both sexes from 1990-94 to 2010-2013. The 50%-midpoint for females has increased from 24-26cm in the 1990s to 27cm after 2000. The 50%-midpoint for males has increased from 16-19cm in the 1990s to 20-22cm after 2000. These results indicate not only a larger average size at maturation but also a greater synchronization of the maturation process over a smaller size range.

Species Richness by Group

The number of cold temperate and warm temperate species captured in each tow was averaged by seasonal cruise (April-June and September-October) for each year from 1984-2013 as an indicator of annual biological diversity or species richness. Trends in these indicators were tested for statistical significance by regression analysis. Results (Figure 2.19) show that the average number of warm temperate species captured/tow in spring and fall cruises has increased ($F=22.6$ and 64.0 respectively, $p<0.001$); while the average number of cold temperate species has decreased, especially in spring ($F=22.9$, $p<0.001$) but also in fall cruises ($F=8.6$, $p=0.007$).

MODIFICATIONS

Ecosystem health relates to the diversity of species and the abundance of numerous species (not just recreationally important species or forage species), yet the LIS Trawl Survey collects only minimal data for some of these other species (e.g. only count and weight are recorded). Therefore, in 2014, lengths will be collected from all finfish species on each tow. The same sub-sampling procedures will be employed for large catches as has been done in the past. To help offset the increase in time needed to process the catch (due to more species being measured), to handle an expanding number of sample requests, and to acquire age structures from additional species (bluefish and menhaden) as required by ASMFC fishery management plans, LISTS will no longer collect weakfish otoliths or process weakfish for ageing purposes. Connecticut has been *de minimus* status under the ASMFC weakfish fishery management plan for years and has minimal commercial (<5,000 lbs) and recreational (no MRIP intercepts since 2004) fisheries.

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**TABLES 2.1 - 2.29
LISTS**

Table 2.1. Specifications for the Wilcox 14 m high-rise trawl net and associated gear.

Component	Description
Headrope	9.1 m long, 13 mm combination wire rope
Footrope	14.0 m long, 13 mm combination wire rope
Sweep	Combination type, 9.5 mm chain in belly, 7.9 mm chain in wing
Floats	7 floats, plastic, 203 mm diameter
Wings	102 mm mesh, #21 twisted nylon
Belly	102 mm mesh, #21 twisted nylon
Tail Piece	76 mm mesh, #21 twisted nylon
Codend	51 mm mesh, #54 braided nylon
Ground Wires	18.2 m long, 6x7 wire, 9.5 mm diameter
Bridle Wires:	top legs 27.4 m long, 6x7 wire, 6.4 mm diameter
Bottom Legs	27.4 m long, 6x7 wire, 11.1 mm, rubber disc type, 40 mm diameter
Doors	Steel "V" type, 1.2 m long x 0.8 m high, 91 kg
Tow Warp	6x7 wire, 9.5 mm diameter

Table 2.2. The number of sites scheduled for sampling each month within the 12 depth-bottom type strata.

Bottom type	Depth Interval (m)				Totals
	0 - 9.0	9.1 - 18.2	18.3 - 27.3	27.4+	
Mud	2	3	5	5	15
Sand	2	2	2	2	8
Transitional	3	5	5	4	17
Totals	7	10	12	11	40

Table 2.3. Length and age data collected in 2013.

In addition to the species listed below, other rarely occurring species (totaling less than 30 fish/year each) were measured. During 2013, twenty-six other species were measured during LISTS sampling as either rarely occurring species or for other research related projects

Species measured	Measurement	# tows/day	# fish measured
Alewife	FL (cm)	All	min of 15 / tow
American lobster	CL (0.1 mm)	All	min of 50 / tow
American shad	FL (cm)	All	min of 15 / tow
Atlantic herring	FL (cm)	All	min of 15 YOY and min of 30 adults / tow
Atlantic menhaden	FL (cm)	All	min of 15 / tow
Atlantic sturgeon	FL (cm)	All	All
Blueback herring	FL (cm)	All	min of 15 / tow
Bluefish	FL (cm)	All	min of 30 YOY / tow, all adults
black sea bass	TL (cm)	All	All
butterfish	FL (cm)	1st -3rd	min of 15 YOY and 15 adults / tow
cunner	TL (cm)	All	All
dogfish, smooth	FL (cm)	All	All
dogfish, spiny	FL (cm)	All	All
fourspot flounder	TL (cm)	3rd on	min of 30/tow
hake, red	TL (cm)	3rd on	min of 30/tow
hake, silver (whiting)	TL (cm)	3rd on	min of 30/tow
hake, spotted	TL (cm)	3rd on	min of 30/tow
hickory shad	FL (cm)	All	All
horseshoe crab	PW (cm)	All	All
northern searobin	FL (cm)	3rd on	min of 30/tow
moonfish	FL (cm)	Occasional	min of 10/tow
smallmouth flounder	TL (cm)	Occasional	min of 10/tow
striped bass	FL (cm)	All	All
striped searobin	FL (cm)	3rd on	min of 30/tow
scup	FL (cm)	All	min of 15 YOY and 30 / mode for age 1+
long-finned squid	ML (cm)	1st -3rd	min of 30 / tow
summer flounder	FL (cm)	All	All
tautog	TL (cm)	All	All
weakfish	FL (cm)	All	min of 15 YOY / tow, all adults
whelk , channeled	PW (mm)	All	All
whelk , knobbed	PW (mm)	All	All
windowpane flounder	TL (cm)	1st -3rd	min of 50 / tow
winter flounder	TL (cm)	All	min of 100 / tow
winter skate	TL (cm)	All	All

Species aged	Structure	Subsample
bluefish	scales / otoliths	Collected each season. For each season, minimum of 50 scale and otolith samples collected from full length distribution. Spring collection may use other means of sampling to obtain the required minimum.
Menhaden	scales	Collected each season. For each season, minimum of 30 scale samples collected from full length distribution. Collection may use commercial sampling to obtain the required minimum.
scup	scales	Collected every month. For each month scales are taken from the following: 3 fish/cm <20 cm; 5/cm from 20-29 cm; and all fish > 30 cm.
summer flounder	scales	all fish > = 60 cm
tautog	opercular bones	Collected from a minimum of 200 fish/year.
weakfish	scales / otoliths	Collected each season. For each season, 1 scale and one otolith sample / cm up to 19 cm and all scales and otoliths >= 20 cm. Ageing/collections discontinued in October 2014
winter flounder	otoliths	Collected during April and May from two areas in the Sound: eastern-central and western. For each month and area, subsamples are taken as follows: in the eastern-central area 7 fish / cm < 30 cm, 14 / cm from 30-36 cm, all fish > 36 cm. In the western area 5 fish / cm < 30 cm, 10/cm from 30-36 cm, all fish > than 36 cm.

Notes: min = minimum; YOY = young-of-year; FL = fork length; TL = total length; CL = carapace length; ML = mantle length; PW = prosomal width.

Table 2.4. Number of Long Island Sound Trawl Survey (LISTS) samples taken by year and cruise.

In 1984, thirty-five sites per monthly cruise from April through November were scheduled for sampling. Starting in 1985, forty sites per cruise were scheduled. In 1991, the Trawl Survey was modified to a spring (April - June) and fall (September - October) format--July, August and November sampling was suspended. In 1993 and 1994, an additional cruise of 40 sites was added to the fall period. The additional fall cruise was suspended in 1995. One hundred twenty tows were conducted in 2006 due to delays in rebuilding the main engine on the R/V John Dempsey (spring) and mechanical failure/overhaul of the hydraulic power take-off (fall). Delays in overhauling the transmission in the fall of 2008 resulted in missing September sampling. The June cruise and all of fall sampling in 2010 were canceled for an engine replacement in the R/V John Dempsey. Due to delays in engine replacement, begun in 2010 but not completed until late April 2011, April sampling in 2011 was abbreviated.

Cruise	Year																												Total		
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011		2012	2013
April	-	-	35	40	40	40	40	45*	-	40	40	40	40	40	40	40	40	40	40	40	40	40	-	40	40	40	40	12	40	40	
May	13	41	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	40	
June	19	5	41	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	40	40	40	-	40	40	40	
July	35	40	40	40	40	40	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
August	34	40	40	40	40	40	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
September	35	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	41**	40	40	40	40	40	40	40	-	40	-	40	40	40	
Sept/Oct	-	-	-	-	-	-	-	-	-	40	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
October	35	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	-	40	40	40	-	40	40	40	
November	29	40	40	40	40	40	40	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	-	-	-	-	-	
Total	200	246	316	320	320	320	297	205	160	240	240	200	200	200	200	200	201	200	200	200	199	200	120	200	160	200	78	172	200	200	6,394

Table 2.5. Station information for LISTS April 2013.

Standard LISTS tows in the spring begin with SP and fall begins with FA. Latitude (N) and Longitude (W) are displayed in decimal degrees. Surface and bottom temperature and salinity are labeled as S_ and B_, respectively. Area swept is estimated by assuming the effective sweep is 2/3rds of the footrope length.

Sample Number	Date	Site Number	Bottom Type	Depth Interval	Time Start	Duration (min)	Latitude	Longitude	S_Temp (sfc, C)	S_Salinity (sfc, ppt)	B_Temp (btm, C)	B_Salinity (btm, ppt)	Ave Speed (knots)	Distance (nm)	Area Swept (sq.nm)
SP2013001	4/9/2013	1837	T	1	8:38	30	41.2906	-72.1992	6.1	28.3	6.6	28.7	3.2	1.61649	0.00816
SP2013002	4/9/2013	1437	T	4	11:29	30	41.2332	-72.2656	5.8	28.6	5.0	29.5	3.1	1.53413	0.00775
SP2013003	4/9/2013	1133	S	4	13:41	30	41.2000	-72.3481	5.2	28.5	4.9	29.3	1.3	0.62917	0.00318
SP2013004	4/9/2013	0831	S	4	15:34	30	41.1413	-72.4560	6.6	27.5	5.0	28.0	1.7	0.85184	0.00430
SP2013005	4/10/2013	1434	S	1	7:03	30	41.2423	-72.3398	5.6	27.7	5.3	28.6	3.7	1.85757	0.00938
SP2013006	4/10/2013	0028	T	2	9:43	30	41.0186	-72.5856	5.9	27.0	5.9	27.0	3.6	1.82275	0.00920
SP2013007	4/10/2013	0325	T	3	11:12	30	41.0553	-72.7562	5.9	27.1	4.9	27.1	2.8	1.37528	0.00694
SP2013008	4/10/2013	0827	T	3	12:42	30	41.1315	-72.6686	6.1	27.2	5.0	27.6	3.4	1.67572	0.00846
SP2013009	4/10/2013	1228	T	3	13:57	30	41.2032	-72.6030	5.6	27.9	5.6	27.9	3.8	1.88131	0.00950
SP2013010	4/11/2013	0530	S	3	8:15	30	41.0938	-72.5133	6.2	27.4	5.5	27.7	3.2	1.59786	0.00807
SP2013011	4/11/2013	0129	S	2	9:29	30	41.0287	-72.5635	6.2	27.1	6.2	27.1	3.7	1.85340	0.00936
SP2013012	4/11/2013	5824	S	1	10:59	30	40.9802	-72.7353	6.6	27.1	5.9	27.1	3.2	1.61058	0.00813
SP2013013	4/11/2013	5923	M	3	12:08	30	40.9880	-72.7935	6.7	27.0	5.6	27.1	3.0	1.47814	0.00746
SP2013014	4/11/2013	0023	M	4	13:36	30	41.0226	-72.8356	7.8	27.0	4.6	27.5	3.3	1.63153	0.00824
SP2013015	4/15/2013	0627	S	3	8:49	30	41.1096	-72.6150	5.7	27.5	5.7	27.4	2.9	1.45656	0.00736
SP2013016	4/15/2013	0426	T	3	10:06	30	41.0775	-72.6388	6.0	27.3	5.6	27.4	3.2	1.60499	0.00810
SP2013017	4/15/2013	0424	M	4	11:24	30	41.0770	-72.7585	6.0	27.5	5.1	27.5	3.5	1.73652	0.00877
SP2013018	4/15/2013	0524	T	4	12:38	30	41.0893	-72.7978	6.2	27.4	5.2	27.5	1.9	0.94667	0.00478
SP2013019	4/15/2013	1024	T	3	14:08	30	41.1725	-72.7798	6.8	27.5	6.2	27.5	2.7	1.33299	0.00673
SP2013020	4/16/2013	1529	T	1	7:59	30	41.2498	-72.5646	6.3	24.9	6.5	26.6	3.1	1.55689	0.00786
SP2013021	4/16/2013	1327	T	2	8:48	30	41.2380	-72.6050	6.7	26.8	6.5	27.1	3.1	1.53188	0.00774
SP2013022	4/16/2013	1427	T	1	9:55	30	41.2483	-72.6045	6.6	26.8	6.6	26.9	3.6	1.79710	0.00907
SP2013023	4/16/2013	0925	T	4	11:22	30	41.1668	-72.7188	6.7	27.4	6.1	27.5	2.8	1.41310	0.00714
SP2013024	4/16/2013	1124	T	2	12:41	30	41.2002	-72.7542	7.2	27.5	6.6	27.5	3.7	1.83589	0.00927
SP2013025	4/17/2013	0513	M	2	8:41	30	41.0990	-73.2060	7.8	26.4	5.9	27.1	3.1	1.53986	0.00778
SP2013026	4/17/2013	0007	M	3	10:35	30	41.0157	-73.4570	7.6	26.9	6.3	26.8	3.1	1.56367	0.00790
SP2013027	4/17/2013	5709	S	2	12:01	25	40.9482	-72.4100	8.5	26.6	7.3	26.7	2.9	1.22054	0.00616
SP2013028	4/17/2013	0011	M	4	13:50	30	41.0086	-73.3303	7.7	27.0	5.7	27.1	2.7	1.34605	0.00680
SP2013029	4/18/2013	0614	M	2	8:19	22	41.1175	-73.1573	7.1	26.7	6.7	26.9	2.5	0.91758	0.00463
SP2013030	4/18/2013	0412	M	2	9:37	30	41.0748	-73.2618	7.9	26.8	5.8	27.0	3.0	1.52395	0.00770
SP2013031	4/18/2013	0114	M	4	11:11	30	41.0092	-73.2220	7.9	27.0	5.4	27.2	2.5	1.25993	0.00636
SP2013032	4/18/2013	0015	T	4	12:46	30	41.0000	-73.1766	7.3	26.8	5.4	27.2	2.6	1.31242	0.00663
SP2013033	4/24/2013	0017	M	4	9:13	30	41.0067	-73.0815	7.3	26.9	7.1	27.1	2.7	1.34564	0.00680
SP2013034	4/24/2013	0019	M	3	10:44	30	40.9925	-73.0413	7.5	27.1	7.2	27.1	3.1	1.54709	0.00781
SP2013035	4/24/2013	5918	M	3	11:54	30	40.9857	-73.0331	7.7	27.1	7.2	27.1	3.4	1.69225	0.00855
SP2013036	4/24/2013	0021	M	3	13:09	30	41.0008	-72.9240	7.5	27.2	6.8	27.1	3.1	1.53941	0.00777
SP2013037	4/25/2013	1019	T	2	7:50	30	41.1615	-73.0428	8.0	27.1	7.9	27.3	.	.	.
SP2013038	4/25/2013	0919	T	2	9:07	30	41.1487	-72.9938	8.4	27.1	7.8	27.3	.	.	.
SP2013039	4/25/2013	1320	M	1	10:37	30	41.2057	-72.9876	9.0	27.0	8.4	27.1	.	.	.
SP2013040	4/25/2013	1425	M	1	12:32	30	41.2383	-72.7280	8.9	27.0	8.2	27.0	.	.	.

Table 2.6. Station information for LISTS May 2013.

Standard LISTS tows in the spring begin with SP and fall begins with FA. Latitude (N) and Longitude (W) are displayed in decimal degrees. Surface and bottom temperature and salinity are labeled as S_ and B_, respectively. Area swept is estimated by assuming the effective sweep is 2/3rds of the footrope length.

Sample Number	Date	Site Number	Bottom Type	Depth Interval	Time Start	Duration (min)	Latitude	Longitude	S_Temp (sfc, C)	S_Salinity (sfc, ppt)	B_Temp (btm, C)	B_Salinity (btm, ppt)	Ave Speed (knots)	Distance (nm)	Area Swept (sqnm)
SP2013041	5/7/2013	1028	T	4	11:14	30	41.1740	-72.5828	9.8	28.3	9.4	28.4	2.5	1.27017	0.00641
SP2013042	5/7/2013	0523	M	4	13:14	30	41.0898	-72.7973	11.6	27.9	8.3	28.0	2.6	1.30191	0.00657
SP2013043	5/7/2013	0121	M	4	14:36	30	41.0245	-72.8801	11.6	27.8	7.8	28.2	2.6	1.32132	0.00667
SP2013044	5/9/2013	0817	M	2	7:57	30	41.1393	-73.0478	12.1	27.9	11.9	27.8	3.8	1.87919	0.00949
SP2013045	5/9/2013	0110	T	3	10:00	30	41.0343	-73.3130	11.9	27.4	8.9	27.6	3.5	1.73088	0.00874
SP2013046	5/9/2013	5709	S	2	11:44	16	40.9470	-73.4086	11.5	27.2	11.4	27.2	3.4	0.90978	0.00459
SP2013047	5/9/2013	5513	S	2	13:47	30	40.9250	-73.2480	11.4	27.2	10.8	27.3	3.1	1.54509	0.00780
SP2013048	5/10/2013	0617	T	2	8:05	30	41.1110	-73.0500	12.6	27.6	10.6	27.8	3.7	1.82590	0.00922
SP2013049	5/10/2013	0315	M	3	9:11	30	41.0628	-73.1331	12.2	27.7	10.3	27.8	3.6	1.81395	0.00916
SP2013050	5/10/2013	0114	M	4	10:37	17	41.0085	-73.2243	12.6	27.3	18.9	27.7	2.5	0.70130	0.00354
SP2013051	5/10/2013	5917	M	3	12:38	30	40.9888	-73.0713	12.0	27.3	9.7	27.5	3.3	1.63263	0.00824
SP2013052	5/10/2013	0218	M	4	13:50	22	41.0280	-73.0540	12.8	27.6	8.7	27.9	3.0	1.10357	0.00557
SP2013053	5/14/2013	1118	M	1	7:43	30	41.1891	-73.0222	10.5	27.8	10.1	27.8	3.2	1.57568	0.00796
SP2013054	5/14/2013	1320	M	1	9:03	30	41.2048	-72.9903	10.6	27.8	10.2	27.8	3.0	1.50925	0.00762
SP2013055	5/14/2013	1121	M	2	10:16	30	41.1801	-72.9418	11.6	27.7	9.5	27.8	2.8	1.39356	0.00704
SP2013056	5/14/2013	1123	M	2	11:28	30	41.1807	-72.8436	11.6	27.7	9.9	27.8	2.7	1.37175	0.00693
SP2013057	5/14/2013	0720	M	3	12:57	23	41.1248	-72.9266	11.2	27.8	9.1	27.8	3.1	1.17805	0.00595
SP2013058	5/14/2013	0920	T	2	14:02	30	41.1635	-72.9288	11.3	27.7	9.5	27.8	2.8	1.40588	0.00710
SP2013059	5/15/2013	0519	M	3	8:15	30	41.0868	-73.0158	10.8	27.6	9.2	27.8	3.2	1.60919	0.00813
SP2013060	5/15/2013	0421	M	4	9:57	30	41.0728	-72.9280	11.2	27.5	9.1	27.8	3.0	1.48090	0.00748
SP2013061	5/15/2013	5823	S	1	11:54	30	40.9810	-72.8254	12.3	27.3	12.3	27.3	2.9	1.43171	0.00723
SP2013062	5/15/2013	5924	M	3	12:49	30	40.9933	-72.7828	12.0	27.4	11.0	27.6	2.8	1.41778	0.00716
SP2013063	5/16/2013	0931	S	4	8:01	30	41.1617	-72.4401	11.1	28.0	10.3	29.6	1.9	0.93625	0.00473
SP2013064	5/16/2013	0128	T	2	9:54	30	41.0285	-72.5817	12.0	27.5	12.0	27.4	3.3	1.67048	0.00844
SP2013065	5/16/2013	0027	T	2	11:02	30	41.0081	-72.6456	12.3	27.5	11.5	27.5	2.8	1.40599	0.00710
SP2013066	5/16/2013	0226	T	3	12:32	20	41.0420	-72.6788	12.4	27.5	11.2	27.6	2.6	0.86455	0.00437
SP2013067	5/17/2013	1434	S	1	7:04	30	41.2425	-72.3343	11.1	28.6	10.9	29.3	1.6	0.81451	0.00411
SP2013068	5/17/2013	1840	T	1	9:22	30	41.3233	-72.0843	12.6	26.8	11.0	30.6	3.1	1.55503	0.00785
SP2013069	5/17/2013	1737	T	1	11:02	30	41.2900	-72.1976	12.0	30.3	11.2	30.6	2.8	1.40610	0.00710
SP2013070	5/20/2013	0730	S	4	8:02	30	41.1325	-72.4655	12.5	28.1	11.2	29.7	2.6	1.31181	0.00662
SP2013071	5/20/2013	0228	T	2	9:37	30	41.0423	-72.5630	13.2	27.6	11.1	29.1	2.8	1.37786	0.00696
SP2013072	5/20/2013	0325	T	3	11:09	30	41.0658	-72.7047	13.2	27.6	11.1	28.4	2.6	1.30095	0.00657
SP2013073	5/20/2013	0625	T	4	12:38	30	41.1042	-72.7476	13.7	27.8	10.7	28.9	3.2	1.62107	0.00819
SP2013074	5/20/2013	0725	T	4	13:53	30	41.1210	-72.7432	13.7	27.9	10.8	28.9	3.0	1.50162	0.00758
SP2013075	5/20/2013	1029	S	3	15:16	28	41.1596	-72.5941	12.7	27.9	11.2	29.1	2.4	1.11107	0.00561
SP2013076	5/21/2013	0929	S	3	8:35	30	41.1642	-72.5291	11.4	29.6	11.4	29.6	2.5	1.25857	0.00636
SP2013077	5/21/2013	0526	T	3	9:51	30	41.1023	-72.6343	14.2	27.8	11.3	29.1	2.7	1.34417	0.00679
SP2013078	5/21/2013	1027	T	4	11:13	30	41.1815	-72.6438	13.6	28.3	11.5	29.1	2.4	1.18717	0.00599
SP2013079	5/21/2013	1227	T	3	12:46	30	41.2060	-72.6328	12.9	28.6	11.7	29.0	3.7	1.83098	0.00925
SP2013080	5/21/2013	1427	T	1	14:22	30	41.2351	-72.6605	12.6	28.5	12.0	28.7	.	.	.

Table 2.7. Station information for LISTS June 2013.

Standard LISTS tows in the spring begin with SP and fall begins with FA. Latitude (N) and Longitude (W) are displayed in decimal degrees. Surface and bottom temperature and salinity are labeled as S_ and B_, respectively. Area swept is estimated by assuming the effective sweep is 2/3rds of the footrope length.

Sample Number	Date	Site Number	Bottom Type	Depth Interval	Time Start	Duration (min)	Latitude	Longitude	S_Temp (sfc, C)	S_Salinity (sfc, ppt)	B_Temp (btm, C)	B_Salinity (btm, ppt)	Ave Speed (knots)	Distance (nm)	Area Swept (sq.nm)
SP2013081	6/10/2013	1437	T	4	14:37	30	41.2450	-72.2123	14.6	29.7	13.9	30.6	2.3	1.16261	0.00587
SP2013082	6/12/2013	1436	T	4	7:31	30	41.2466	-72.2286	14.7	26.0	14.1	30.2	2.7	1.34644	0.00680
SP2013083	6/13/2013	1133	S	4	8:06	30	41.1902	-72.3961	15.5	27.7	14.2	29.7	2.0	0.99375	0.00502
SP2013084	6/13/2013	0531	T	3	9:40	30	41.0918	-72.4702	15.7	27.5	15.4	28.0	3.2	1.57560	0.00796
SP2013085	6/13/2013	5824	S	1	12:37	30	40.9835	-72.8033	16.8	27.2	16.6	27.2	2.9	1.46678	0.00741
SP2013086	6/13/2013	5825	S	1	13:28	30	40.9748	-72.7729	16.5	27.3	16.3	27.3	3.1	1.56012	0.00788
SP2013087	6/17/2013	0530	S	3	8:17	30	41.0966	-72.5049	16.3	27.6	15.2	28.0	2.1	1.05903	0.00535
SP2013088	6/17/2013	0229	T	2	10:06	30	41.0446	-72.5600	17.4	27.3	16.1	27.5	2.6	1.29522	0.00654
SP2013089	6/17/2013	0224	M	4	12:09	30	41.0402	-72.8003	18.2	25.6	13.1	28.1	3.1	1.56385	0.00790
SP2013090	6/17/2013	0326	T	3	13:20	30	41.0536	-72.7188	19.4	26.1	13.7	27.9	2.8	1.39764	0.00706
SP2013091	6/17/2013	0629	S	4	14:53	28	41.1030	-72.5518	17.1	27.5	15.4	27.8	2.1	0.99001	0.00500
SP2013092	6/18/2013	0627	S	3	8:31	22	41.1085	-72.6205	17.4	27.4	15.5	27.8	2.4	0.87725	0.00443
SP2013093	6/18/2013	0526	T	3	9:34	30	41.1048	-72.6324	18.1	27.1	15.6	27.7	2.2	1.09420	0.00553
SP2013094	6/18/2013	0824	T	4	11:42	30	41.1313	-72.7930	19.0	26.9	13.8	27.9	3.3	1.62643	0.00821
SP2013095	6/18/2013	1228	T	3	13:27	30	41.2026	-72.6005	18.0	26.9	15.1	27.7	2.8	1.38744	0.00701
SP2013096	6/19/2013	1428	T	1	8:01	30	41.2485	-72.5724	16.0	25.3	15.3	27.4	3.3	1.62936	0.00823
SP2013097	6/19/2013	0823	M	3	9:53	25	41.1508	-72.7970	17.4	27.2	14.1	27.8	2.9	1.19118	0.00602
SP2013098	6/19/2013	0821	M	3	11:06	30	41.1095	-72.9056	18.8	26.7	14.8	27.7	2.9	1.43649	0.00725
SP2013099	6/19/2013	0219	M	4	12:41	30	41.0425	-72.9894	18.4	26.2	13.2	28.1	3.0	1.51152	0.00763
SP2013100	6/19/2013	0819	T	2	15:40	30	41.1336	-73.0206	18.1	25.9	15.7	27.3	3.0	1.48640	0.00751
SP2013101	6/20/2013	0918	T	2	7:55	30	41.1668	-73.0128	17.9	26.0	16.3	27.2	3.3	1.65181	0.00834
SP2013102	6/20/2013	0615	M	2	9:17	30	41.1057	-73.1426	18.1	25.6	16.2	26.7	3.2	1.61368	0.00815
SP2013103	6/20/2013	0214	M	3	10:32	30	41.0406	-72.2131	18.2	24.5	14.4	27.4	3.4	1.71328	0.00865
SP2013104	6/20/2013	0015	T	4	11:53	30	40.9988	-73.1761	18.7	26.3	14.0	27.6	3.5	1.75359	0.00886
SP2013105	6/20/2013	0218	M	4	13:20	21	41.0257	-73.0606	18.9	25.2	13.7	27.9	3.0	1.03960	0.00525
SP2013106	6/24/2013	0714	T	1	8:36	30	41.1315	-73.1395	18.0	26.0	18.1	26.1	3.7	1.84239	0.00930
SP2013107	6/24/2013	0110	T	3	10:14	30	41.0331	-73.3210	19.2	26.3	14.7	27.4	3.1	1.55657	0.00786
SP2013108	6/24/2013	5709	S	2	11:57	30	40.9488	-73.4065	21.0	25.6	17.1	26.6	3.1	1.55022	0.00783
SP2013109	6/24/2013	0011	M	4	13:35	30	41.0070	-73.3431	20.5	26.2	14.6	27.5	3.3	1.64337	0.00830
SP2013110	6/25/2013	0511	M	2	8:48	24	41.1015	-73.2613	20.4	26.3	15.8	27.0	3.4	1.36009	0.00687
SP2013111	6/25/2013	5812	M	3	10:13	30	40.9785	-73.3033	19.8	26.2	16.1	27.0	2.7	1.33903	0.00676
SP2013112	6/25/2013	5513	S	2	11:34	30	40.9236	-73.2520	19.3	26.4	18.6	26.4	3.3	1.63641	0.00826
SP2013113	6/25/2013	0215	M	4	13:50	30	41.0291	-73.1776	21.4	26.3	14.9	27.6	3.1	1.53163	0.00773
SP2013114	6/26/2013	5612	T	2	9:29	30	40.9453	-73.2601	21.2	26.2	17.8	26.6	3.1	1.56882	0.00792
SP2013115	6/26/2013	0413	M	3	11:32	24	41.0625	-73.2645	19.8	26.3	15.5	27.3	2.5	0.99662	0.00503
SP2013116	6/26/2013	0514	M	2	12:52	16	41.0860	-73.2193	20.9	26.3	15.9	27.2	2.9	0.77375	0.00391
SP2013117	6/27/2013	1118	M	1	7:40	30	41.1807	-73.0544	20.2	26.7	17.9	27.0	3.5	1.75214	0.00885
SP2013118	6/27/2013	0919	T	2	9:11	30	41.1505	-72.9898	21.0	26.4	16.4	27.3	3.2	1.61078	0.00813
SP2013119	6/27/2013	1423	T	1	10:50	30	41.2275	-72.8643	18.6	26.8	18.3	27.0	2.5	1.27499	0.00644
SP2013120	6/27/2013	1425	M	1	12:29	30	41.2385	-72.7285	18.8	27.2	18.8	27.2	3.2	1.60147	0.00809

Table 2.8. Station information for LISTS September 2013.

Standard LISTS tows in the spring begin with SP and fall begins with FA. Latitude (N) and Longitude (W) are displayed in decimal degrees. Surface and bottom temperature and salinity are labeled as S_ and B_, respectively. Area swept is estimated by assuming the effective sweep is 2/3rds of the footrope length.

Sample Number	Date	Site Number	Bottom Type	Depth Interval	Time Start	Duration (min)	Latitude	Longitude	S_Temp (sfc, C)	S_Salinity (sfc, ppt)	B_Temp (btm, C)	B_Salinity (btm, ppt)	Ave Speed (knots)	Distance (nm)	Area Swept (sq.nm)
FA2013001	9/9/2013	1737	T	1	7:48	30	41.2895	-72.1983	19.1	30.7	19.6	30.7	3.0	1.51272	0.00764
FA2013002	9/9/2013	1840	T	1	9:24	30	41.3282	-72.0851	19.6	29.0	19.2	30.9	3.0	1.48218	0.00748
FA2013003	9/9/2013	0931	S	4	13:02	30	41.1558	-72.4536	20.7	29.6	20.4	29.8	3.5	1.73859	0.00878
FA2013004	9/9/2013	0628	S	3	14:23	30	41.1160	-72.5628	21.4	29.2	20.9	29.5	2.5	1.25706	0.00635
FA2013005	9/9/2013	0830	S	4	15:55	30	41.1460	-72.4943	21.6	29.2	20.5	29.8	2.1	1.05590	0.00533
FA2013006	9/10/2013	1533	S	1	6:50	30	41.2546	-72.3378	20.1	28.1	20.1	28.1	2.1	1.06424	0.00537
FA2013007	9/10/2013	0330	S	1	9:36	30	41.0591	-72.4991	21.6	28.3	21.6	28.3	3.2	1.58557	0.00801
FA2013008	9/10/2013	0028	T	2	11:15	30	41.0172	-72.5961	21.8	28.2	21.8	28.4	3.4	1.71083	0.00864
FA2013009	9/10/2013	5925	T	1	12:45	30	41.0018	-72.7106	21.7	28.3	21.9	28.4	2.7	1.35528	0.00684
FA2013010	9/11/2013	1437	T	4	7:23	30	41.2441	-72.2104	19.9	29.8	19.4	30.7	1.8	0.90406	0.00457
FA2013011	9/11/2013	0528	S	3	11:21	30	41.0975	-72.5463	22.0	28.2	21.4	29.0	2.3	1.16326	0.00587
FA2013012	9/11/2013	0327	T	3	12:45	30	41.0618	-72.6299	22.6	28.2	21.6	28.7	3.6	1.77618	0.00897
FA2013013	9/11/2013	0325	T	3	14:04	30	41.0643	-72.7095	22.7	28.3	21.7	28.6	3.3	1.65219	0.00834
FA2013014	9/11/2013	0624	T	4	15:29	30	41.1098	-72.7988	22.0	28.4	21.5	28.9	2.9	1.47103	0.00743
FA2013015	9/12/2013	1433	S	2	7:15	25	41.2477	-72.3530	20.3	29.0	20.2	29.5	1.4	0.56543	0.00286
FA2013016	9/12/2013	1429	T	2	9:20	30	41.2375	-72.5696	21.2	29.1	21.2	29.2	2.4	1.19916	0.00606
FA2013017	9/12/2013	1227	T	3	10:33	30	41.2143	-72.5800	22.0	28.9	21.3	29.1	2.5	1.25369	0.00633
FA2013018	9/12/2013	0925	T	4	12:10	30	41.1370	-72.7116	22.3	28.4	21.2	29.0	3.0	1.47723	0.00746
FA2013019	9/12/2013	1121	M	2	13:53	30	41.1953	-72.8867	22.8	28.2	21.5	28.7	3.4	1.69237	0.00855
FA2013020	9/13/2013	0418	M	4	8:27	20	41.0776	-72.9756	22.3	28.0	21.3	29.0	2.5	0.83378	0.00421
FA2013021	9/13/2013	1019	T	2	9:43	30	41.1648	-73.0183	22.3	28.2	21.7	28.6	3.6	1.79794	0.00908
FA2013022	9/13/2013	1018	T	2	10:56	30	41.1757	-73.0133	22.4	28.2	21.8	28.5	3.1	1.52766	0.00771
FA2013023	9/16/2013	0417	T	3	8:21	30	41.0750	-73.0763	21.3	28.4	21.3	28.8	2.9	1.43767	0.00726
FA2013024	9/16/2013	5919	M	3	9:50	30	40.9900	-73.0330	21.8	28.1	21.8	28.3	3.1	1.57112	0.00793
FA2013025	9/16/2013	0019	M	3	11:58	30	40.9991	-73.0085	21.8	28.1	21.5	28.1	3.3	1.65454	0.00835
FA2013026	9/16/2013	0320	M	4	13:32	22	41.0576	-72.9278	21.4	28.5	21.3	28.9	2.4	0.87906	0.00444
FA2013027	9/18/2013	0511	M	2	8:44	30	41.0992	-73.2704	20.8	28.2	20.8	28.3	3.3	1.66480	0.00841
FA2013028	9/18/2013	0007	M	3	10:19	30	41.0172	-73.4575	21.3	28.3	21.1	28.3	3.2	1.58340	0.00800
FA2013029	9/18/2013	0110	T	3	11:51	30	41.0233	-73.3668	21.5	28.2	21.5	28.6	3.0	1.48500	0.00750
FA2013030	9/18/2013	5811	M	3	13:49	30	40.9735	-73.3434	21.5	28.1	21.3	28.2	3.5	1.76388	0.00891
FA2013031	9/18/2013	0013	M	4	15:01	30	41.0031	-73.2580	22.1	28.2	21.3	28.5	3.4	1.67865	0.00848
FA2013032	9/19/2013	0512	M	2	8:43	30	41.0983	-73.2586	20.9	28.3	20.8	28.3	3.2	1.61760	0.00817
FA2013033	9/19/2013	5912	M	3	10:34	30	40.9863	-73.2986	21.2	28.2	21.2	28.2	3.0	1.49156	0.00753
FA2013034	9/19/2013	5513	S	2	12:14	30	40.9330	-73.2528	20.7	27.8	21.0	27.9	3.1	1.55891	0.00787
FA2013035	9/19/2013	0113	M	4	13:46	30	41.0233	-73.2595	21.5	28.5	21.2	28.5	3.4	1.71509	0.00866
FA2013036	9/19/2013	0015	T	4	15:00	17	40.9975	-73.1757	21.8	28.4	21.3	28.6	2.9	0.82983	0.00419
FA2013037	9/20/2013	0420	M	4	9:17	30	41.0775	-72.9628	20.8	28.6	21.1	28.8	2.2	1.09817	0.00555
FA2013038	9/20/2013	0917	T	2	11:34	30	41.1526	-73.0850	21.0	28.5	20.8	28.4	3.0	1.49545	0.00755
FA2013039	9/24/2013	1320	M	1	7:43	30	41.2090	-72.9919	19.8	28.2	19.7	28.2	3.2	1.61708	0.00817
FA2013040	9/24/2013	1425	M	1	9:44	30	41.2385	-72.7273	19.5	28.6	19.5	28.6	3.0	1.50147	0.00758

Table 2.9. Station information for LISTS October 2013.

Standard LISTS tows in the spring begin with SP and fall begins with FA. Latitude (N) and Longitude (W) are displayed in decimal degrees. Surface and bottom temperature and salinity are labeled as S_ and B_, respectively. Area swept is estimated by assuming the effective sweep is 2/3rds of the footrope length

Sample Number	Date	Site Number	Bottom Type	Depth Interval	Time Start	Duration (min)	Latitude	Longitude	S_Temp (sfc, C)	S_Salinity (sfc, ppt)	B_Temp (btm, C)	B_Salinity (btm, ppt)	Ave Speed (knots)	Distance (nm)	Area Swept (sq.nm)
FA2013041	10/8/2013	1436	T	4	7:12	30	41.2335	-72.2943	18.6	29.5	18.6	30.2	3.0	1.47686	0.00746
FA2013042	10/8/2013	1336	T	4	8:23	30	41.2132	-72.2868	18.6	29.8	18.6	30.2	2.4	1.21527	0.00614
FA2013043	10/8/2013	1840	T	1	10:46	22	41.3253	-72.0843	18.5	30.1	18.2	30.9	2.9	1.07099	0.00541
FA2013044	10/8/2013	1235	T	4	12:55	30	41.2120	-72.2748	18.5	30.6	18.4	30.7	3.5	1.75625	0.00887
FA2013045	10/8/2013	1332	S	1	14:28	30	41.2296	-72.4043	18.7	29.6	18.7	29.7	2.2	1.07858	0.00545
FA2013046	10/15/2013	0731	S	4	8:01	25	41.1346	-72.4723	18.1	29.3	18.1	29.4	3.2	1.32147	0.00667
FA2013047	10/15/2013	0126	T	3	9:50	30	41.0281	-72.6447	18.4	29.0	18.3	29.0	2.7	1.32546	0.00669
FA2013048	10/15/2013	0124	M	4	11:11	30	41.0276	-72.7530	18.8	28.7	18.5	29.0	2.4	1.18646	0.00599
FA2013049	10/15/2013	0526	T	3	12:43	30	41.0898	-72.6945	18.8	28.9	18.7	28.9	3.3	1.67021	0.00843
FA2013050	10/15/2013	0830	S	4	14:08	30	41.1350	-72.5457	18.7	28.8	18.7	28.8	2.9	1.46781	0.00741
FA2013051	10/16/2013	1432	S	2	7:16	30	41.2332	-72.4059	17.7	29.6	17.6	29.6	3.2	1.61595	0.00816
FA2013052	10/16/2013	1029	S	3	10:23	30	41.1728	-72.5333	17.9	29.3	17.9	29.3	1.9	0.94757	0.00478
FA2013053	10/16/2013	0728	S	3	11:55	30	41.1241	-72.5713	18.5	29.0	18.3	29.2	1.5	0.77019	0.00389
FA2013054	10/16/2013	0623	M	4	13:43	30	41.1100	-72.7983	18.9	28.8	18.7	28.8	2.4	1.18996	0.00601
FA2013055	10/16/2013	1225	T	2	15:17	30	41.1965	-72.7725	18.6	28.6	18.6	28.7	3.3	1.63692	0.00827
FA2013056	10/17/2013	0531	T	3	8:21	30	41.0920	-72.4720	18.3	29.2	18.3	29.2	3.4	1.67795	0.00847
FA2013057	10/17/2013	0429	T	3	9:46	30	41.0785	-72.5500	18.3	29.1	18.3	29.1	2.9	1.44789	0.00731
FA2013058	10/17/2013	5825	S	1	11:31	30	41.0037	-72.7047	18.5	28.9	18.5	28.8	2.2	1.12112	0.00566
FA2013059	10/17/2013	0222	M	4	13:48	30	41.0417	-72.8356	18.9	28.8	18.6	28.9	2.1	1.06061	0.00536
FA2013060	10/17/2013	0719	M	3	15:39	30	41.1245	-72.9750	18.5	28.1	18.5	28.3	2.6	1.28933	0.00651
FA2013061	10/18/2013	1118	M	1	7:37	30	41.1912	-73.0243	17.6	28.2	17.5	28.2	3.2	1.58253	0.00799
FA2013062	10/18/2013	1319	M	1	9:00	30	41.2007	-73.0028	17.6	28.3	17.7	28.3	2.8	1.39533	0.00705
FA2013063	10/21/2013	0511	M	2	8:54	30	41.0993	-73.2626	17.4	28.0	17.4	28.1	3.5	1.73773	0.00878
FA2013064	10/21/2013	0110	T	3	10:19	28	41.0300	-73.3242	18.3	28.3	18.3	28.3	3.4	1.56464	0.00790
FA2013065	10/21/2013	0011	M	4	12:01	30	41.0058	-73.3453	18.4	28.4	18.4	28.4	2.6	1.30347	0.00658
FA2013066	10/21/2013	0312	M	3	13:24	30	41.0543	-73.2863	18.5	28.4	18.4	28.4	3.1	1.55042	0.00783
FA2013067	10/22/2013	0618	M	3	8:39	30	41.0987	-73.0526	18.0	28.4	18.3	28.6	3.0	1.50864	0.00762
FA2013068	10/22/2013	5917	M	3	10:25	30	40.9898	-73.0698	18.1	28.4	18.0	28.4	2.6	1.28258	0.00648
FA2013069	10/22/2013	0015	T	4	11:51	20	41.0073	-73.1273	18.2	28.5	18.3	28.7	2.8	0.94223	0.00476
FA2013070	10/22/2013	5513	S	2	13:43	30	40.9273	-73.2501	17.6	28.1	17.6	28.2	3.2	1.62290	0.00820
FA2013071	10/23/2013	0920	T	2	7:53	30	41.1535	-72.9861	17.8	28.4	17.7	28.4	3.1	1.53463	0.00775
FA2013072	10/23/2013	0619	M	3	9:10	30	41.1147	-72.9656	17.8	28.5	17.9	28.5	3.1	1.57428	0.00795
FA2013073	10/23/2013	5713	T	2	11:27	30	40.9643	-73.2011	17.6	28.3	17.5	28.3	3.2	1.60374	0.00810
FA2013074	10/23/2013	0115	M	4	13:02	30	41.0220	-73.1698	18.0	28.7	18.0	28.7	2.1	1.06545	0.00538
FA2013075	10/23/2013	1022	M	2	15:40	30	41.1717	-72.8813	17.6	28.5	17.6	28.5	3.3	1.64983	0.00833
FA2013076	10/30/2013	1221	T	2	8:10	20	41.2088	-72.9225	14.6	28.3	14.5	28.3	3.0	1.01338	0.00512
FA2013077	10/30/2013	1423	T	1	9:22	30	41.2288	-72.8588	13.8	28.1	13.7	28.1	3.7	1.84703	0.00933
FA2013078	10/30/2013	1223	M	2	10:46	30	41.2025	-72.8373	15.3	28.4	15.3	28.4	3.7	1.84007	0.00929
FA2013079	10/30/2013	1224	T	2	12:06	21	41.1995	-72.7973	15.5	28.5	15.3	28.4	3.6	1.27568	0.00644
FA2013080	10/30/2013	1529	T	1	13:33	30	41.2398	-72.6198	14.0	28.2	14.0	28.3	3.4	1.70216	0.00860

Table 2.10. Samples with non-standard tow durations and reasons for incomplete tows, spring and fall 2013.

Standard LISTS tows begin with SP(spring) or FA (fall).

Sample	Date	Site	Bottom Type	Depth Interval	Time	Duration	Reason	Comments
APRIL								
SP2013027	4/17/2013	5709	S	2	12:01	25	pots	pot gear with expired tags
SP2013029	4/18/2013	0614	M	2	8:19	22	pots	single pot with expired tags in net; lots of growth on pot
MAY								
SP2013046	5/9/2013	5709	S	2	11:44	16	pots	snagged string of active pots set across our path; also 2 single pots in net, one had 2012 tag and one had no tag
SP2013050	5/10/2013	0114	M	4	10:37	17	pots	2 attempts; strings of old gear on both attempts
SP2013052	5/10/2013	0218	M	4	13:50	22	pots	2 attempts; strings of old gear on both attempts; some damage to net
SP2013057	5/14/2013	0720	M	3	12:57	23	pots	string of active gear; no buoy visible - was shrunken and submerged
SP2013066	5/16/2013	0226	T	2	12:32	20	algae	net clogged with algae
SP2013075	5/20/2013	1029	S	3	15:16	28	speed drop	speed dropped just before boost but no gear or debris in net
JUNE								
SP2013091	6/17/2013	0629	S	4	14:53	28	weather	had to leave area due to rapidly approaching thunderstorm
SP2013092	6/18/2013	0627	S	3	8:31	22	pots	pot buoys in our lane; ran out of room to tow
SP2013097	6/19/2013	0823	M	3	9:53	25	pots	string of pot gear on door
SP2013105	6/20/2013	0218	M	4	13:20	21	pots	string of ghost pots; net badly torn
SP2013110	6/25/2013	0511	M	2	8:48	24	pots	string of old gear on door
SP2013115	6/26/2013	0413	M	3	11:32	24	pots	string of pot gear on door; expired tags
SP2013116	6/26/2013	0514	M	2	12:52	16	pots	multiple strings of gear; expired tags
SEPT								
FA2013015	9/12/2013	1433	S	2	7:15	25	hang	came off during haul-back; no damage to net
FA2013020	9/13/2013	0418	M	4	8:27	20	hang	came off during haul-back; no damage to net
FA2013026	9/16/2013	0320	M	4	13:32	22	pots	string of pots; large tear in net
FA2013036	9/19/2013	0015	T	4	15:00	17	pots	snagged multiple strings of pot gear; some active but tags expired; some inactive; lots of strain on net; line in prop; damage to net needed repair
OCT								
FA2013043	10/8/2013	1840	T	1	10:46	22	pots	single ghost pots net; some had expired tags, others had no tags; some pots broken up
FA2013046	10/15/2013	0731	S	4	8:01	25	speed drop	speed dropped but no gear or debris in net; sand dunes?
FA2013064	10/21/2013	0110	T	3	10:19	28	hang	large rocks in net; repaired damage to chain/foot rope
FA2013069	10/22/2013	0015	T	4	11:51	20	pots	gear on both doors
FA2013076	10/30/2013	1221	T	2	8:10	20	pots	pot buoys in our lane; ran out of room to tow; also one ghost pot in net (expired tags; escape vent released); mended holes in net
FA2013079	10/30/2013	1224	T	2	12:06	21	hang	came off during haul-back; no damage to net

Table 2.11. Data requests by month, 2013.

MONTH	REQUEST	ORGANIZATION OR PURPOSE
January	LISTS sea bass catch, indices & length frequency, 1984-2012	CT DEEP & ASMFC
	LISTS winter flounder catch, indices & age matrix, 1984-2012	Dominion
	ESS winter flounder catch & indices, 1988-2012	Dominion
	LISTS distribution of invasive red alga in 2012	Dominion
February	LISTS time-series indices	CT CEQ
	CT River seine survey MEN, 1987-2012	Dominion
	LISTS tautog catch & indices	Dominion
	MRIP data for tautog	Dominion
	LISTS indices & species groups for Climate Change Analyses	CT DEEP
March		
April	LISTS sea bass catch, indices & length frequency, 1984-2012	ASMFC
	ESS sea bass catch, 1988-2012	ASMFC
	LISTS seasonal indices for time-series	University of Florida
	LISTS butterfish indices	MAFMC
May	scup length measurements (total vs fork)	ASMFC
	LISTS fluke lengths	NY DEC
	LISTS winter flounder indices, 1984-2012	MA DMF / ASMFC
	LISTS scup & fluke indices & age keys, 1984-2012	NMFS
June	scup length measurements (total vs fork)	ASMFC
	LISTS butterfish & squid counts, lengths & indices (1984-2012)	NOAA/NMFS
July	LISTS count & biomass indices, 1984-2012	Normandeau Assoc.
	LISTS counts & weights	ACOE
	LISTS horseshoe crab indices, 1984-2012	USFWS / ASMFC
	LISTS distribution of invasive red alga 2013 update	Dominion
	LISTS fluke lengths by depth interval	CT DEEP
August	LISTS catch distribution verts & inverts, 1984-2012	EPA/USN
	LISTS catch distribution MEN, 1984-2012, count	ASMFC
	LISTS fall catch distribution MEN, 1984-2012, count	ASMFC
	LISTS distribution of invasive red alga 2013 update	CT DEEP
	LISTS little skate counts & weights, 1984-2012	Middle Tenn State Univ
	LISTS counts, weights, lengths for Atlantic sturgeon, 1984-2011	ASMFC
September	LISTS winter flounder counts & lengths	NY DEC
	LISTS catch data for PGY,BUT,SQL,WFL,WPF (1984-2012)	MA DMF
October	GIS map layer of LISTS site grid	NMFS NEFSC
	data collected for EPA	EPA
	LISTS lobster catch data, 1984-2012	Univ of Maine
November	LISTS time-series of lobster catch	CT DEEP / ASMFC
	ESS time-series of catch data	EPA
	LISTS scup catch-at-age, 1984-2012	CT DEEP
December	LISTS tautog catch & age data, 1984-2012	MA DMF / ASMFC
	LISTS Jonah crab catch data	MA DMF

Table 2.12. Sample requests by month, 2013.

MONTH	REQUEST	ORGANIZATION OR PURPOSE
April	squid & various finfish specimens for dissection class	Putnam High School
	river herring collected for genetic marker study	Univ of Calif, Santa Cruz
	channeled and knobbed whelk (conch)	NY DEC
May	squid & various finfish specimens for dissection class	Putnam High School
	channeled and knobbed whelk (conch)	NY DEC
June	channeled and knobbed whelk (conch)	NY DEC
	hermit crabs	UConn
	flake for physiological experiment	Univ of New Haven
	tows conducted for EPA	EPA
	summer flounder (otoliths)	Old Dominion
September	channeled and knobbed whelk (conch)	NY DEC
	LSK, CNS, SMD parasitology studies	Middle Tenn State Univ
October	hermit crabs	UConn
	channeled and knobbed whelk (conch)	NY DEC

Table 2.13. List of finfish species observed in 2013.

Fifty - five finfish species were observed in 2013. (Bold type indicates new species). Since 1984, one hundred-four species of finfish have been identified in LISTS (see Appendix 2.1 for the full list of species).

Common Name	Scientific Name	Common Name	Scientific Name
anchovy, bay	Anchoa mitchilli	menhaden, Atlantic	Brevoortia tyrannus
anchovy, striped	Anchoa hepsetus	moonfish	Selene setapinnis
black sea bass	Centropristes striata	pipefish, northern	Syngnathus fuscus
bluefish	Pomatomus saltatrix	pollock	Pollachius virens
butterfish	Peprilus triacanthus	puffer, northern	Sphoeroides maculatus
cornetfish, red	Fistularia petimba	ray, bullnose ray	Myliobatis freminvillei
croaker, Atlantic	Micropogonias undulatus	rockling, fourbeard	Enchelyopus cimbrius
cunner	Tautoglabrus adspersus	sand lance, American	Ammodytes americanus
dogfish, smooth	Mustelus canis	scad, rough	Trachurus lathami
dogfish, spiny	Squalus acanthius	scad, round	Decapterus punctatus
eel, conger	Conger oceanicus	sculpin, longhorn	Myoxocephalus octodecemspin
flounder, fourspot	Paralichthys oblongus	scup	Stenotomus chrysops
flounder, smallmouth	Etropus microstomus	searobin, northern	Prionotus carolinus
flounder, summer	Paralichthys dentatus	searobin, striped	Prionotus evolans
flounder, windowpane	Scophthalmus aquosus	shad, American	Alosa sapidissima
flounder, winter	Pseudopleuronectes american	shad, hickory	Alosa mediocris
glasseye snapper	Priacanthus cruentatus	silverside, Atlantic	Menidia menidia
goatfish, red	Mullus auratus	skate, clearnose	Raja eglanteria
haddock	Melanogrammus aeglefinus	skate, little	Leucoraja erinacea
hake, red	Urophycis chuss	skate, winter	Leucoraja ocellata
hake, silver	Merluccius bilinearis	spot	Leiostomus xanthurus
hake, spotted	Urophycis regia	stargazer, northern	Astroscopus guttatus
harvestfish	Peprilus paru	striped bass	Morone saxatilis
herring, Atlantic	Clupea harengus	sturgeon, Atlantic	Acipenser oxyrinchus
herring, alewife	Alosa pseudoharengus	tautog	Tautoga onitis
herring, blueback	Alosa aestivalis	toadfish, oyster	Opsanus tau
hogchoker	Trinectes maculatus	weakfish	Cynoscion regalis
kingfish, northern	Menticirrhus saxatilis		

Names taken from: Common and Scientific Names of Fishes from the United States, Canada and Mexico, American Fisheries Society, Sixth ed., 2004.

Table 2.14. List of invertebrates observed in 2013.

In 2013, forty-one invertebrate "species" were identified. In most cases, invertebrates are identified to species; however, species that are very similar are identified to genus, and in difficult cases, to a higher taxon.

Common Name	Scientific Name	Common Name	Scientific Name
Tubularia hydroids	Tubularia, spp.	northern moon snail	Lunatia heros
arks	Noetia-Anadara spp.	oyster, common	Crassostrea virginica
bryozoan, bushy	Phylum Bryozoa	sea cucumber	Class Holothuroidea
bryozoan, rubbery	Alyonidium verrilli	sea grape	Molgula spp.
clam, hard clams	Artica-Mercinaria-Pitar sp.	sea urchin, purple	Arbacia punctulata
clam, surf	Spisula solidissima	shrimp, coastal mud	Upogebia affinis
coral, star	Astrangia poculata	shrimp, ghost	Gilvossius setimanus
crab, mud	Family Xanthidae	shrimp, mantis	Squilla empusa
crab, Japanese shore	Hemigrapsus sanguineus	shrimp, northern red	Pandalus montagui
crab, blue	Callinectes sapidus	shrimp, sand	Crangon septemspinosa
crab, flat claw hermit	Pagurus pollicaris	slipper shell, common	Crepidula fornicata
crab, horseshoe	Limulus polyphemus	sponge spp.	sponge spp.
crab, lady	Ovalipes ocellatus	sponge, boring	Cliona celate
crab, rock	Cancer irroratus	sponge, deadman's fingers	Haliclona spp.
crab, spider	Libinia emarginata	sponge, red bearded	Microciona prolifera
hydroid spp.	hydroid spp.	squid, long-finned	Loligo pealeii
jelly, comb	Phylum Ctenophora	starfish spp.	Asteriid spp.
jellyfish, lion's mane	Cyanea capillata	whelk, channeled	Busycotypus canaliculatus
lobster, American	Homarus americanus	whelk, knobbed	Busycon carica
mussel, blue	Mytilus edulis	worms, fan	Myxicola infundibulum
mussel, ribbed	Geukensia demissa		

Names taken from: A Field Guide to the Atlantic Seashore, Peterson Field Guide Series, 1978 (Gosner, 1978).

Table 2.15. Total number and weight (kg) of finfish and invertebrates caught in 2013.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring and American sand lance are not quantified. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	29,569	35.4	1,252.5	7.9					
scup	24,961	29.9	5,945.6	37.5					
Atlantic herring	3,566	4.3	321.2	2.0					
striped searobin	2,724	3.3	1,112.5	7.0					
windowpane flounder	2,096	2.5	326.6	2.1					
weakfish	1,964	2.4	203.7	1.3					
northern searobin	1,934	2.3	161.7	1.0					
spot	1,917	2.3	195.4	1.2					
winter flounder	1,912	2.3	576.8	3.6					
bluefish	1,829	2.2	517.7	3.3					
bay anchovy	1,350	1.6	6.8	0.0					
fourspot flounder	1,144	1.4	203.4	1.3					
summer flounder	1,071	1.3	726.6	4.6					
smooth dogfish	1,051	1.3	2,162.3	13.6					
spotted hake	927	1.1	66.8	0.4					
moonfish	868	1.0	10.0	0.1					
red hake	849	1.0	61.1	0.4					
little skate	583	0.7	317.8	2.0					
silver hake	519	0.6	23.6	0.1					
black sea bass	449	0.5	181.2	1.1					
alewife	376	0.5	34.1	0.2					
hogchoker	250	0.3	27.2	0.2					
Atlantic menhaden	234	0.3	87.5	0.6					
American shad	222	0.3	15.3	0.1					
clearnose skate	218	0.3	387.0	2.4					
striped bass	200	0.2	421.0	2.7					
tautog	161	0.2	160.8	1.0					
smallmouth flounder	128	0.2	5.2	0.0					
winter skate	91	0.1	111.2	0.7					
blueback herring	68	0.1	4.3	0.0					
hickory shad	33	0.0	10.8	0.1					
rough scad	28	0.0	1.3	0.0					
red goatfish	21	0.0	0.5	0.0					
spiny dogfish	21	0.0	91.5	0.6					
cunner	20	0.0	1.8	0.0					
northern kingfish	14	0.0	2.3	0.0					
American sand lance	7	0.0	0.1	0.0					
haddock	5	0.0	0.4	0.0					
oyster toadfish	5	0.0	0.9	0.0					
Atlantic sturgeon	4	0.0	98.0	0.6					
Atlantic silverside	3	0.0	0.3	0.0					
northern puffer	3	0.0	0.3	0.0					
fourbeard rockling	3	0.0	0.2	0.0					
bullnose ray	2	0.0	5.7	0.0					
harvestfish	2	0.0	0.2	0.0					
northern pipefish	2	0.0	0.2	0.0					
conger eel	1	0.0	1.2	0.0					
Atlantic croaker	1	0.0	0.1	0.0					
glasseye snapper	1	0.0	0.1	0.0					
pollock	1	0.0	0.1	0.0					
round scad	1	0.0	0.1	0.0					
red cornetfish	1	0.0	0.1	0.0					
longhorn sculpin	1	0.0	0.4	0.0					
striped anchovy	1	0.0	0.1	0.0					
northern stargazer	1	0.0	0.1	0.0					
Total	83,413		15,843.7						
					Finfish not ranked				
					anchovy spp, (yoy)				
					Atlantic herring, (yoy)				
					American sand lance (yoy)				
					gadid spp, (yoy)				
					Invertebrates				
					blue mussel	3	0.0	622.1	31.9
					horseshoe crab	265	3.4	531.8	27.3
					long-finned squid	5,393	69.6	170.8	8.8
					spider crab	nc		156.5	8.0
					lion's mane jellyfish	1,067	13.8	150.0	7.7
					common slipper shell	nc		61.0	3.1
					American lobster	144	1.9	37.3	1.9
					bushy bryozoan	nc		26.8	1.4
					boring sponge	nc		26.1	1.3
					mantis shrimp	646	8.3	21.6	1.1
					flat claw hermit crab	nc		21.4	1.1
					knobbed whelk	51	0.7	18.7	1.0
					channeled whelk	95	1.2	18.6	1.0
					hydroid spp.	nc		13.2	0.7
					lady crab	nc		13.2	0.7
					rock crab	nc		13.0	0.7
					blue crab	52	0.7	10.4	0.5
					Tubularia, spp.	nc		6.7	0.3
					common oyster	nc		5.3	0.3
					mud crabs	nc		3.5	0.2
					sand shrimp	nc		2.9	0.1
					northern moon snail	nc		2.9	0.1
					surf clam	8	0.1	2.4	0.1
					starfish spp.	1	0.0	2.1	0.1
					sea grape	nc		2.1	0.1
					arks	nc		1.9	0.1
					hard clams	6	0.1	0.9	0.0
					comb jelly spp	nc		0.8	0.0
					red bearded sponge	nc		0.6	0.0
					rubbery bryozoan	nc		0.5	0.0
					purple sea urchin	10	0.1	0.5	0.0
					coastal mud shrimp	4	0.1	0.3	0.0
					deadman's fingers sponge	nc		0.3	0.0
					mixed sponge species	nc		0.3	0.0
					star coral	nc		0.2	0.0
					sea cucumber	2	0.0	0.2	0.0
					fan worm tubes	nc		0.1	0.0
					ghost shrimp	1	0.0	0.1	0.0
					Japanese shore crab	1	0.0	0.1	0.0
					northern red shrimp	1	0.0	0.1	0.0
					ribbed mussel	nc		0.1	0.0
					Total	7,750		1,947.4	

Note: nc= not counted

Table 2.16. Total counts and weight (kg) of finfish taken in the spring and fall sampling periods, 2013.
Species are listed in order of descending count.. Young-of-year bay anchovy, striped anchovy, Atlantic herring and American sand lance are not included. Number of tows (sample sizes): Spring = 120 and Fall=80.

Spring					Fall				
species	count	%	weight	%	species	count	%	weight	%
scup	17,037	43.1	4,690.6	48.3	butterfish	25,876	59.0	1,036.7	16.9
butterfish	3,693	9.3	215.8	2.2	scup	7,924	18.1	1,255.0	20.5
Atlantic herring	3,563	9.0	320.9	3.3	weakfish	1,876	4.3	157.9	2.6
winter flounder	1,852	4.7	564.4	5.8	bluefish	1,809	4.1	477.2	7.8
striped searobin	1,809	4.6	699.1	7.2	striped searobin	916	2.1	413.4	6.7
windowpane flounder	1,624	4.1	265.8	2.7	moonfish	868	2.0	10.0	0.2
northern searobin	1,572	4.0	134.6	1.4	smooth dogfish	758	1.7	1,507.1	24.6
spot	1,434	3.6	107.3	1.1	bay anchovy	551	1.3	2.9	0.0
fourspot flounder	1,082	2.7	198.5	2.0	spot	483	1.1	88.1	1.4
bay anchovy	799	2.0	3.9	0.0	windowpane flounder	472	1.1	60.8	1.0
red hake	762	1.9	52.5	0.5	summer flounder	376	0.9	277.1	4.5
summer flounder	695	1.8	449.5	4.6	northern searobin	362	0.8	27.1	0.4
spotted hake	676	1.7	31.1	0.3	spotted hake	252	0.6	35.7	0.6
silver hake	502	1.3	22.1	0.2	clearnose skate	193	0.4	346.1	5.6
little skate	394	1.0	211.8	2.2	little skate	190	0.4	106.0	1.7
smooth dogfish	293	0.7	655.2	6.7	black sea bass	186	0.4	83.2	1.4
alewife	292	0.7	31.0	0.3	red hake	87	0.2	8.6	0.1
black sea bass	263	0.7	98.0	1.0	alewife	84	0.2	3.1	0.1
hogchoker	167	0.4	17.7	0.2	hogchoker	83	0.2	9.5	0.2
Atlantic menhaden	163	0.4	63.8	0.7	American shad	79	0.2	6.7	0.1
striped bass	160	0.4	326.7	3.4	Atlantic menhaden	71	0.2	23.7	0.4
American shad	143	0.4	8.6	0.1	fourspot flounder	62	0.1	4.9	0.1
tautog	132	0.3	138.0	1.4	winter flounder	60	0.1	12.4	0.2
weakfish	88	0.2	45.8	0.5	smallmouth flounder	41	0.1	2.3	0.0
smallmouth flounder	87	0.2	2.9	0.0	striped bass	40	0.1	94.3	1.5
winter skate	74	0.2	85.2	0.9	tautog	29	0.1	22.8	0.4
blueback herring	68	0.2	4.3	0.0	rough scad	28	0.1	1.3	0.0
clearnose skate	24	0.1	40.9	0.4	hickory shad	27	0.1	9.4	0.2
spiny dogfish	21	0.1	91.5	0.9	red goatfish	21	0.0	0.5	0.0
bluefish	20	0.1	40.5	0.4	silver hake	17	0.0	1.5	0.0
cunner	19	0.0	1.7	0.0	winter skate	17	0.0	26.0	0.4
American sand lance	7	0.0	0.1	0.0	northern kingfish	12	0.0	2.0	0.0
haddock	5	0.0	0.4	0.0	oyster toadfish	4	0.0	0.6	0.0
hickory shad	5	0.0	1.4	0.0	Atlantic herring	3	0.0	0.3	0.0
Atlantic silverside	3	0.0	0.3	0.0	northern puffer	3	0.0	0.3	0.0
Atlantic sturgeon	3	0.0	89.5	0.9	bullnose ray	2	0.0	5.7	0.1
fourbeard rockling	3	0.0	0.2	0.0	harvestfish	2	0.0	0.2	0.0
northern kingfish	2	0.0	0.3	0.0	northern pipefish	2	0.0	0.2	0.0
pollock	1	0.0	0.1	0.0	Atlantic sturgeon	1	0.0	8.5	0.1
longhorn sculpin	1	0.0	0.4	0.0	conger eel	1	0.0	1.2	0.0
oyster toadfish	1	0.0	0.3	0.0	Atlantic croaker	1	0.0	0.1	0.0
Total	39,539		9,712.7		cunner	1	0.0	0.1	0.0
					glasseye snapper	1	0.0	0.1	0.0
					round scad	1	0.0	0.1	0.0
					red cornetfish	1	0.0	0.1	0.0
					striped anchovy	1	0.0	0.1	0.0
					northern stargazer	1	0.0	0.1	0.0
					Total	43,875		6,131.0	

Table 2.17. Total catch of invertebrates taken in the spring and fall sampling periods, 2013.
Species are ranked by total weight (kg). Number of tows (sample sizes): Spring = 120 and Fall=80.

species	Spring				species	Fall			
	count	%	weight	%		count	%	weight	%
horseshoe crab	139	7.1	269.2	41.6	blue mussel	3	0.0	609.6	46.8
spider crab	.	.	130.6	20.2	horseshoe crab	126	2.2	262.6	20.2
long-finned squid	672	34.2	35.3	5.5	long-finned squid	4,722	81.6	135.5	10.4
American lobster	120	6.1	30.6	4.7	lion's mane jellyfish	340	5.9	124.0	9.5
lion's mane jellyfish	728	37.1	26.0	4.0	common slipper shell	.	.	57.2	4.4
bushy bryozoan	.	.	23.0	3.6	spider crab	.	.	25.9	2.0
boring sponge	.	.	22.3	3.4	mantis shrimp	460	7.9	14.3	1.1
blue mussel	.	.	12.5	1.9	knobbed whelk	37	0.6	13.8	1.1
hydroid spp.	.	.	12.3	1.9	lady crab	.	.	11.9	0.9
channeled whelk	64	3.3	12.3	1.9	flat claw hermit crab	.	.	11.5	0.9
rock crab	.	.	10.4	1.6	American lobster	24	0.4	6.7	0.5
flat claw hermit crab	.	.	9.9	1.5	channeled whelk	31	0.5	6.3	0.5
mantis shrimp	186	9.5	7.3	1.1	blue crab	28	0.5	5.2	0.4
Tubularia, spp.	.	.	6.7	1.0	bushy bryozoan	.	.	3.8	0.3
common oyster	.	.	5.3	0.8	boring sponge	.	.	3.8	0.3
blue crab	24	1.2	5.2	0.8	rock crab	.	.	2.6	0.2
knobbed whelk	13	0.7	4.9	0.8	surf clam	5	0.1	1.9	0.1
common slipper shell	.	.	3.8	0.6	arks	.	.	1.2	0.1
sand shrimp	.	.	2.8	0.4	mud crabs	.	.	0.9	0.1
mud crabs	.	.	2.6	0.4	hydroid spp.	.	.	0.9	0.1
northern moon snail	.	.	2.4	0.4	starfish spp.	.	.	0.9	0.1
sea grape	.	.	2.0	0.3	northern moon snail	.	.	0.5	0.0
lady crab	.	.	1.3	0.2	hard clams	4	0.1	0.4	0.0
starfish spp.	1	0.1	1.2	0.2	purple sea urchin	8	0.1	0.4	0.0
comb jelly spp	.	.	0.8	0.1	star coral	.	.	0.2	0.0
arks	.	.	0.7	0.1	rubbery bryozoan	.	.	0.2	0.0
red bearded sponge	.	.	0.5	0.1	mixed sponge species	.	.	0.2	0.0
hard clams	2	0.1	0.5	0.1	red bearded sponge	.	.	0.1	0.0
surf clam	3	0.2	0.5	0.1	sand shrimp	.	.	0.1	0.0
coastal mud shrimp	4	0.2	0.3	0.0	ghost shrimp	1	0.0	0.1	0.0
deadman's fingers sponge	.	.	0.3	0.0	sea grape	.	.	0.1	0.0
rubbery bryozoan	.	.	0.3	0.0	Total	5,789		1,302.8	
sea cucumber	2	0.1	0.2	0.0					
fan worm tubes	.	.	0.1	0.0					
Japanese shore crab	1	0.1	0.1	0.0					
northern red shrimp	1	0.1	0.1	0.0					
ribbed mussel	.	.	0.1	0.0					
mixed sponge species	.	.	0.1	0.0					
purple sea urchin	2	0.1	0.1	0.0					
Total	1,962		644.6						

Note: nc= not counted

Table 2.22. Bluefish indices of abundance, 1984-2013.

Using September and October length data, the geometric mean catch per tow was calculated for two age groups of bluefish: age-0 and all fish age 1 and older. Age-0 was defined as bluefish less than 30 cm fork length.

Fall				
Year	age 0 count / tow	age 0 kg / tow	ages 1+ count / tow	ages 1+ kg / tow
1984	20.34	2.51	1.61	2.03
1985	11.27	1.64	4.16	6.25
1986	8.05	1.13	3.77	5.96
1987	9.01	0.88	3.11	4.85
1988	10.73	1.59	2.20	4.43
1989	21.07	3.17	1.92	3.80
1990	12.82	2.09	6.14	8.92
1991	22.57	2.75	5.59	8.49
1992	9.23	1.27	8.44	14.88
1993	11.61	1.96	3.34	7.11
1994	24.85	2.54	3.07	6.09
1995	16.85	2.48	4.07	5.32
1996	13.85	2.27	2.34	4.09
1997	31.26	2.56	2.35	3.68
1998	25.89	2.08	1.65	2.70
1999	39.19	5.43	0.86	1.61
2000	14.67	2.97	2.18	3.75
2001	19.04	2.11	2.62	3.87
2002	12.35	2.25	3.63	4.81
2003	16.85	3.16	2.16	3.31
2004	13.30	2.39	10.38	13.96
2005	12.10	2.39	2.65	5.04
2006	12.43	1.49	2.14	2.74
2007	23.98	4.14	2.44	4.22
2008	6.14	0.82	4.52	8.18
2009	11.65	1.16	3.18	5.09
2010	-	-	-	-
2011	8.21	1.34	1.40	2.36
2012	13.11	1.86	0.97	1.67
2013	7.86	0.87	0.96	1.82
84-12				
mean	16.16	2.23	3.32	5.33

Table 2.23. Scup indices-at-age, 1984-2013.

Spring (May and June) and fall (September and October) catch and age data were used to determine the geometric mean indices-at-age¹. The spring and fall age keys were used to expand length frequencies to age frequencies and then the spring and fall overall indices were proportioned by the percentage of fish in each age. The 0-10+ index represents the overall index (sum of ages 0-10+), and the adult 2+ index is provided as the sum of ages 2-10+ index. Fish older than age 9 were included in the age 10+ index².

Spring (May-June)													
Year	0-10+	2+	Age 0	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10+
1984	2.797	2.308	0	0.489	1.311	0.577	0.307	0.074	0.004	0.002	0	0	0.034
1985	5.648	2.707	0	2.941	2.002	0.327	0.244	0.047	0.025	0.050	0	0.004	0.008
1986	7.230	2.785	0	4.444	1.651	0.988	0.137	0.003	0.003	0.003	0	0	0.003
1987	2.186	1.758	0	0.428	1.646	0.071	0.034	0.007	0	0	0	0	0
1988	2.061	0.893	0	1.168	0.309	0.502	0.054	0.026	0	0	0	0	0.003
1989	6.249	0.615	0	5.634	0.563	0.034	0.016	0.000	0.001	0.001	0	0	0
1990	4.867	2.345	0	2.521	2.098	0.206	0.037	0.005	0	0	0	0	0
1991	7.046	2.795	0	4.251	1.436	1.258	0.086	0.012	0.002	0	0	0	0
1992	1.749	1.360	0	0.389	1.212	0.093	0.052	0.002	0	0.002	0	0	0
1993	2.530	2.492	0	0.038	2.286	0.189	0.006	0.006	0.002	0.002	0	0	0
1994	3.892	3.093	0	0.799	2.038	0.931	0.100	0.015	0.003	0.007	0	0	0
1995	13.587	0.645	0	12.943	0.387	0.199	0.052	0.003	0.003	0	0	0	0
1996	7.766	2.562	0	5.204	2.477	0.074	0.004	0.006	0.002	0	0	0	0
1997	7.558	4.394	0	3.164	2.610	1.679	0.063	0.009	0.023	0.005	0.005	0	0
1998	10.826	0.761	0	10.065	0.578	0.115	0.063	0.005	0	0	0	0	0
1999	4.732	2.021	0	2.711	1.755	0.162	0.074	0.030	0	0	0	0	0
2000	146.224	21.711	0	124.513	17.184	4.237	0.195	0.064	0.030	0	0	0	0
2001	22.486	20.837	0	1.649	18.988	1.575	0.252	0.018	0.003	0.001	0	0	0
2002	257.914	208.764	0	49.150	66.611	123.248	17.437	1.294	0.099	0.035	0.040	0	0
2003	13.116	12.980	0	0.136	4.047	3.284	4.964	0.608	0.069	0.005	0.005	0	0
2004	26.915	26.902	0	0.014	3.965	8.956	4.904	8.207	0.764	0.079	0.018	0.009	0
2005	8.483	7.325	0	1.157	1.278	1.055	1.511	1.269	1.944	0.223	0.045	0	0
2006	59.052	40.570	0	18.482	23.719	5.629	2.072	2.557	3.160	2.897	0.529	0.007	0
2007	32.802	25.288	0	7.514	15.865	5.845	1.489	0.548	0.536	0.541	0.385	0.073	0.007
2008	92.100	75.143	0	16.957	40.620	27.815	4.936	0.911	0.158	0.303	0.236	0.148	0.016
2009	104.454	72.840	0	31.614	28.228	28.413	12.491	2.498	0.613	0.215	0.134	0.250	0.000
2010	68.138	67.717	0	0.421	24.265	21.998	14.002	6.019	1.187	0.118	0.058	0.041	0.029
2011	36.112	33.985	0	2.127	3.285	11.378	9.812	4.116	3.391	1.421	0.248	0.071	0.263
2012	114.410	65.371	0	49.039	25.925	11.982	9.231	9.567	4.671	2.755	0.871	0.144	0.226
2013	57.922	53.309	0	4.613	29.415	8.721	3.150	4.982	4.451	1.545	0.758	0.169	0.117
84-12													
Mean	36.998	24.585	0.000	12.412	10.288	9.063	2.918	1.308	0.576	0.299	0.089	0.026	0.020

Fall (Sept-Oct)													
Year	0-10+	2+	Age 0	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10+
1984	10.721	1.692	7.986	1.043	0.783	0.519	0.280	0.092	0.018	0	0	0	0
1985	30.972	1.277	24.914	4.781	0.425	0.587	0.190	0.044	0.030	0.002	0	0	0
1986	25.761	2.519	12.863	10.379	2.277	0.219	0.013	0.005	0.005	0	0	0	0
1987	18.544	2.063	12.468	4.013	1.405	0.579	0.058	0.009	0.009	0.004	0	0	0
1988	39.699	2.092	31.687	5.920	1.818	0.242	0.032	0	0	0	0	0	0
1989	65.087	1.596	40.920	22.571	1.501	0.083	0.012	0	0	0	0	0	0
1990	69.477	7.396	54.350	7.731	6.946	0.398	0.034	0.005	0.008	0	0	0.005	0
1991	311.570	2.953	291.568	17.050	1.759	1.040	0.147	0.008	0	0	0	0	0
1992	83.731	6.244	50.971	26.516	5.540	0.398	0.287	0.013	0.007	0	0	0	0
1993	77.057	1.165	74.061	1.831	1.019	0.121	0.012	0.010	0	0	0.003	0	0
1994	92.523	0.657	90.778	1.088	0.457	0.185	0.012	0.003	0	0	0	0	0
1995	59.136	0.150	32.465	26.521	0.144	0.006	0	0	0	0	0	0	0
1996	61.459	1.400	51.497	8.562	1.365	0.029	0	0.005	0	0	0	0	0
1997	41.276	0.809	31.791	8.677	0.630	0.172	0.008	0	0	0	0	0	0
1998	103.272	0.628	90.404	12.240	0.537	0.069	0.022	0	0	0	0	0	0
1999	537.683	8.574	498.180	30.930	8.349	0.195	0.019	0.011	0	0	0	0	0
2000	521.103	9.265	250.391	261.446	8.323	0.794	0.140	0.008	0	0	0	0	0
2001	177.641	20.239	140.506	16.897	18.421	1.607	0.186	0.025	0	0	0	0	0
2002	348.703	41.179	259.902	47.623	23.321	16.812	0.665	0.325	0.048	0	0.007	0	0
2003	152.227	83.963	52.910	15.354	32.065	22.394	26.440	2.493	0.539	0.016	0.016	0	0
2004	291.458	36.277	251.052	4.129	8.338	15.082	5.978	6.245	0.534	0.072	0.008	0.021	0
2005	424.063	18.183	373.318	32.562	8.144	2.437	4.015	1.505	1.689	0.332	0.060	0	0
2006	116.755	13.575	52.164	51.016	9.525	2.341	0.257	0.351	0.377	0.681	0.044	0	0
2007	475.295	37.346	319.893	118.056	29.335	5.929	0.896	0.226	0.302	0.313	0.313	0.033	0
2008	303.256	24.478	243.679	35.099	11.921	7.044	3.556	1.055	0.502	0.137	0.124	0.140	0
2009	139.380	31.506	67.486	40.388	20.786	6.934	2.615	0.735	0.214	0.131	0.068	0.022	0
2010	-	-	-	-	-	-	-	-	-	-	-	-	-
2011	198.226	40.786	119.032	38.409	8.157	14.894	9.669	3.922	3.225	0.586	0.167	0.025	0.140
2012	223.522	15.983	153.235	54.305	9.963	2.846	2.063	0.567	0.137	0.323	0.076	0.007	0
2013	40.683	16.235	17.744	6.704	9.187	4.069	0.807	1.058	0.746	0.237	0.090	0.031	0
84-12													
Mean	178.557	14.785	131.445	32.326	7.973	3.713	2.057	0.631	0.273	0.093	0.032	0.009	0.005

(1) In 1984, 1985, 2003, 2004, 2006, 2008, 2010 and 2011 less than the number of scheduled tows were conducted in some months(Table 2.4).

(2) Fish in the age 10+ group include: 6 fish taken 1984-1988, 8 fish taken 2002-2010, 81 taken in 2011, 28 taken in 2012, and 26 taken in 2013. The oldest scup aged were two 14-year-old fish taken in 1985 and 2013.

Table 2.24. Age frequency of striped bass taken in spring, 1984-2013.

Ages were derived from trawl survey length data using the average of Hudson River and Chesapeake Bay von Bertalanffy parameters.

Age	Year																													
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1	0	0	0	0	0	0	0	0	0	2	0	0	3	0	0	0	1	0	2	1	1	0	0	2	11	5	0	1	11	0
2	0	0	0	2	1	5	28	11	4	3	6	98	12	36	119	41	113	47	150	30	15	220	3	46	20	84	3	2	46	49
3	0	0	0	0	1	3	8	7	8	7	10	26	97	116	122	87	20	41	76	38	38	54	25	109	15	54	7	2	13	33
4	0	0	0	2	4	1	2	3	13	16	20	8	37	40	68	42	22	15	48	23	18	59	15	44	48	130	17	29	13	21
5	0	0	0	2	0	1	1	5	5	14	18	7	14	17	28	95	22	28	45	39	21	33	22	44	41	64	24	50	19	12
6	0	0	0	2	1	1	3	0	1	8	8	6	7	14	20	46	32	36	52	41	22	28	11	28	11	34	11	44	12	16
7	0	0	0	0	0	0	0	2	0	7	1	1	8	9	3	17	12	13	25	23	14	16	10	9	7	10	6	29	5	10
8	0	0	0	0	0	0	0	1	2	1	1	3	2	4	1	4	4	2	12	5	3	9	4	3	3	1	2	7	3	15
9	0	0	0	0	0	0	0	2	1	1	1	0	3	2	1	0	1	2	3	7	2	1	3	1	1	0	0	1	2	1
10	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	1	2	0	1	0	0	0	3	3	2	0	0	0	0	2
11	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	1	1	0	0	0	0	0	1	1
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Total	0	0	0	8	7	11	43	32	34	59	65	150	184	238	362	334	229	184	414	207	135	421	97	289	159	382	70	166	125	160

Note: number of fish taken but not measured = one in 1984, one in 1988, two in 1990.

Table 2.25. Striped bass indices-at-age, 1984-2013.

Spring length data was converted to ages using the average of Hudson River and Chesapeake Bay von Bertalanffy parameters (Vic Crecco, pers comm). Indices-at-age were then determined by apportioning the spring indices (from Table 2.10) by the percentage of fish in each age.

Year	Index	Spring											
		Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12
1984	0.02	0	0	0	0	0	0	0	0	0	0	0	0
1985	0.00	0	0	0	0	0	0	0	0	0	0	0	0
1986	0.00	0	0	0	0	0	0	0	0	0	0	0	0
1987	0.05	0	0.0125	0	0.0125	0.0125	0.0125	0	0	0	0	0	0
1988	0.04	0	0.0057	0.0057	0.0229	0	0.0057	0	0	0	0	0	0
1989	0.06	0	0.0273	0.0164	0.0055	0.0055	0.0055	0	0	0	0	0	0
1990	0.16	0	0.1042	0.0298	0.0074	0.0037	0.0112	0	0	0	0.0037	0	0
1991	0.15	0	0.0516	0.0328	0.0141	0.0234	0	0.0094	0.0047	0.0094	0.0047	0	0
1992	0.22	0	0.0259	0.0518	0.0841	0.0324	0.0065	0	0.0129	0.0065	0	0	0
1993	0.27	0.0093	0.014	0.0326	0.0745	0.0652	0.0372	0.0326	0.0047	0.0047	0	0	0
1994	0.30	0	0.0277	0.0462	0.0923	0.0831	0.0369	0.0046	0.0046	0.0046	0	0	0
1995	0.59	0	0.3855	0.1023	0.0315	0.0275	0.0236	0.0039	0.0118	0	0.0039	0	0
1996	0.63	0.0103	0.0411	0.3321	0.1267	0.0479	0.024	0.0274	0.0068	0.0103	0	0.0034	0
1997	0.85	0	0.1286	0.4143	0.1429	0.0607	0.05	0.0321	0.0143	0.0071	0	0	0
1998	0.97	0	0.3189	0.3269	0.1822	0.075	0.0536	0.008	0.0027	0.0027	0	0	0
1999	1.10	0	0.1346	0.2857	0.1379	0.3119	0.151	0.0558	0.0131	0	0.0033	0.0033	0
2000	0.84	0.0037	0.4163	0.0737	0.0811	0.0811	0.1179	0.0442	0.0147	0.0037	0.0074	0	0
2001	0.61	0	0.1558	0.1359	0.0497	0.0928	0.1193	0.0431	0.0066	0.0066	0	0	0
2002	1.30	0.0063	0.4722	0.2392	0.1511	0.1416	0.1637	0.0787	0.0378	0.0094	0.0031	0	0
2003	0.87	0.0042	0.1267	0.1605	0.0971	0.1647	0.1732	0.0971	0.0211	0.0296	0	0	0
2004	0.56	0.0042	0.0627	0.1588	0.0752	0.0878	0.0919	0.0585	0.0125	0.0084	0	0.0042	0
2005	1.17	0	0.61	0.1497	0.1636	0.0915	0.0776	0.0444	0.025	0.0028	0	0.0028	0
2006	0.61	0	0.0189	0.1572	0.0943	0.1384	0.0692	0.0629	0.0252	0.0189	0.0189	0.0063	0
2007	1.02	0.0071	0.1629	0.386	0.1558	0.1558	0.0992	0.0319	0.0106	0.0035	0.0106	0	0
2008	0.57	0.0394	0.0717	0.0538	0.1721	0.147	0.0394	0.0251	0.0108	0.0036	0.0072	0	0
2009	0.60	0.0078	0.1316	0.0846	0.2037	0.1003	0.0533	0.0157	0.0016	0	0	0	0
2010	0.40	0	0.0169	0.0394	0.0958	0.1352	0.062	0.0338	0.0113	0	0	0	0
2011	0.48	0.0029	0.0058	0.0058	0.0839	0.1446	0.1272	0.0839	0.0202	0.0029	0	0	0.0029
2012	0.43	0.0381	0.1595	0.0451	0.0451	0.0659	0.0416	0.0173	0.0104	0.0069	0	0.0035	0
2013	0.67	0	0.2052	0.1382	0.0879	0.0503	0.067	0.0419	0.0628	0.0042	0.0084	0.0042	0
84-12													
mean		0.0046	0.1272	0.1161	0.0829	0.0792	0.0570	0.0279	0.0098	0.0049	0.0022	0.0008	0.0001

Table 2.26. Summer flounder indices-at-age, 1984-2013.

Year and season specific age keys obtained from the NMFS spring and fall surveys were used to convert LISTs length frequencies to ages. Starting in 2000 LISTs ageing data (60 cm and over) were added to the age key to supplement the older age groups. Indices-at-age were determined for each season by apportioning the spring and fall overall indices (from Table 2.19 and Table 2.20) by the percentage of fish in each age.

Year	Spring												
	0-11	Age 0	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11
1984	0.6291	0	0.3236	0.2610	0.0445	0	0	0	0	0	0	0	0
1985	0.4410	0	0.0166	0.3168	0.0489	0.0587	0	0	0	0	0	0	0
1986	0.9510	0	0.7700	0.0892	0.0742	0.0126	0.0050	0	0	0	0	0	0
1987	1.0572	0	0.9515	0.0793	0.0202	0.0036	0.0026	0	0	0	0	0	0
1988	0.4986	0	0.2317	0.2232	0.0352	0.0085	0	0	0	0	0	0	0
1989	0.1016	0	0.0111	0.0550	0.0191	0.0164	0	0	0	0	0	0	0
1990	0.3475	0	0.3053	0.0201	0.0156	0.0065	0	0	0	0	0	0	0
1991	0.6391	0	0.3892	0.2059	0.0205	0.0235	0	0	0	0	0	0	0
1992	0.5546	0	0.3182	0.1906	0.0229	0	0.0229	0	0	0	0	0	0
1993	0.5074	0	0.3216	0.1504	0.0101	0.0152	0.0101	0	0	0	0	0	0
1994	0.8601	0	0.4959	0.3136	0.0324	0	0	0	0.0182	0	0	0	0
1995	0.2796	0	0.2023	0.0608	0.0110	0	0	0	0.0055	0	0	0	0
1996	0.9609	0	0.6216	0.2370	0.0868	0	0.0052	0	0.0103	0	0	0	0
1997	0.9991	0	0.4481	0.4461	0.0740	0.0121	0.0134	0.0054	0	0	0	0	0
1998	1.3067	0	0.0734	0.5952	0.4693	0.1167	0.0324	0.0197	0	0	0	0	0
1999	1.4401	0	0.3263	0.5563	0.3521	0.1110	0.0696	0.0248	0	0	0	0	0
2000	1.7898	0	0.3805	0.7853	0.4240	0.0538	0.1316	0.0092	0	0.0054	0	0	0
2001	1.7468	0	0.8408	0.3395	0.3653	0.1073	0.0488	0.0333	0.0067	0.0051	0	0	0
2002	3.1851	0	1.0571	1.2637	0.4646	0.2233	0.0930	0.0362	0.0236	0.0145	0.0091	0	0
2003	3.4211	0	1.6080	1.0159	0.3949	0.2316	0.0851	0.0462	0.0327	0.0025	0.0042	0	0
2004	1.8381	0	0.2592	0.8180	0.4100	0.1878	0.0338	0.0817	0.0302	0.0145	0.0029	0	0
2005	0.8038	0	0.2523	0.2641	0.1495	0.0334	0.0364	0.0393	0.0196	0.0046	0.0046	0	0
2006	0.6129	0	0.0383	0.3597	0.0676	0.0654	0.0337	0.0263	0.0168	0.0051	0	0	0
2007	2.5073	0	1.1569	0.2053	0.5595	0.3163	0.1150	0.0888	0.0428	0.0152	0.0065	0.0010	0
2008	1.6145	0	0.6008	0.2912	0.2374	0.2633	0.1165	0.0622	0.0236	0.0033	0.0054	0.0054	0.0054
2009	1.9295	0	0.7772	0.3770	0.2905	0.1804	0.1949	0.0700	0.0258	0.0101	0.0036	0	0
2010	2.6878	0	1.8671	0.2805	0.2113	0.1439	0.0944	0.0416	0.0244	0.0142	0.0052	0.0052	0
2011	3.8479	0	1.0024	1.0839	0.8014	0.3820	0.3159	0.1098	0.0628	0.0580	0.0171	0.0146	0
2012	3.0620	0	0.4684	0.6283	0.9746	0.6346	0.2044	0.0754	0.0333	0.0224	0.0050	0.0113	0.0043
2013	3.2359	0	0.8843	0.6681	0.6637	0.6734	0.2047	0.0818	0.0201	0.0184	0.0041	0.0044	0.0129
84-12													
Mean	1.4007	0.0000	0.5557	0.3970	0.2306	0.1106	0.0574	0.0265	0.0130	0.0060	0.0022	0.0013	0.0003

Year	Fall												
	0-11	Age 0	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11
1984	0.9888	0	0.5648	0.3269	0.0713	0.0140	0.0042	0.0042	0.0034	0	0	0	0
1985	1.1931	0.2453	0.3605	0.4984	0.0804	0	0.0085	0	0	0	0	0	0
1986	1.7157	0.1738	1.1902	0.2681	0.0817	0.0019	0	0	0	0	0	0	0
1987	1.3963	0.0749	1.0573	0.2309	0.0305	0.0027	0	0	0	0	0	0	0
1988	1.4159	0.0150	0.8739	0.4782	0.0366	0.0122	0	0	0	0	0	0	0
1989	0.1363	0	0.0227	0.1051	0.0085	0	0	0	0	0	0	0	0
1990	0.8678	0.0321	0.6720	0.1214	0.0339	0.0042	0.0042	0	0	0	0	0	0
1991	1.2557	0.0363	0.8141	0.3457	0.0432	0.0082	0.0041	0.0041	0	0	0	0	0
1992	1.0178	0.0131	0.5685	0.3578	0.0561	0.0134	0.0089	0	0	0	0	0	0
1993	1.1113	0.0842	0.8371	0.1490	0.0362	0.0029	0	0.0019	0	0	0	0	0
1994	0.5517	0.1325	0.3008	0.0957	0.0138	0.0089	0	0	0	0	0	0	0
1995	0.5408	0.0424	0.3812	0.1043	0.0090	0.0039	0	0	0	0	0	0	0
1996	2.1914	0.0840	1.0394	1.0276	0.0375	0.0029	0	0	0	0	0	0	0
1997	2.4980	0.0693	0.8494	1.2261	0.3016	0.0321	0.0099	0.0084	0.0012	0	0	0	0
1998	1.7153	0	0.3251	1.0456	0.2867	0.0392	0.0187	0	0	0	0	0	0
1999	2.6787	0.0482	0.8000	1.4412	0.2963	0.0823	0.0084	0.0023	0	0	0	0	0
2000	1.9134	0.1151	0.5117	0.8244	0.2971	0.1122	0.0433	0.0067	0	0.0029	0	0	0
2001	4.4181	0.0208	2.6891	1.1372	0.4342	0.1095	0.0153	0.0078	0	0.0042	0	0	0
2002	6.1211	0.4415	3.0870	1.9304	0.4769	0.1216	0.0429	0.0168	0.0040	0	0	0	0
2003	3.3879	0	1.4584	1.3192	0.4069	0.0873	0.0908	0.0164	0.0089	0	0	0	0
2004	1.9537	0.2545	0.3848	0.7551	0.4398	0.0804	0.0241	0.0150	0	0	0	0	0
2005	2.4099	0.0671	1.0930	0.7441	0.3554	0.0866	0.0316	0.0123	0.0166	0.0032	0	0	0
2006	1.3148	0.0976	0.2170	0.5915	0.2299	0.0957	0.0435	0.0214	0.0182	0	0	0	0
2007	1.8880	0.1295	0.5669	0.3869	0.4676	0.2012	0.0778	0.0408	0.0087	0.0043	0	0	0.0043
2008	3.0853	0.7816	0.4848	0.9581	0.4458	0.3256	0.0804	0.0090	0	0	0	0	0
2009	3.1169	0.4054	0.6606	0.8883	0.6241	0.3182	0.1330	0.0437	0.0244	0.0070	0.0122	0.0000	0.0000
2010	-	-	-	-	-	-	-	-	-	-	-	-	-
2011	2.5578	0.1173	0.6933	0.9333	0.5641	0.1232	0.0543	0.0275	0.0130	0.0130	0.0061	0.0052	0.0075
2012	3.7358	0.1633	0.4592	0.8283	1.4239	0.5848	0.1836	0.0631	0.0296	0	0	0	0
2013	3.0664	0.2181	0.5709	0.6080	0.8049	0.6328	0.1789	0.0291	0.0139	0.0016	0	0.0082	0
84-12													
Mean	2.0420	0.1302	0.8201	0.6828	0.2710	0.0884	0.0317	0.0108	0.0046	0.0012	0.0007	0.0002	0.0004

Table 2.27. Tautog indices-at-age, 1984-2013.

Year and season specific age keys obtained from the LISTS spring and fall surveys were used to convert LISTS length frequencies to ages. Indices-at-age were then determined for each season by apportioning the spring and fall overall indices (from Table 2.10 and Table 2.11) by the percentage of fish in each age, and then summing the spring and fall indices-at-age. The age 1-20+ index is the sum of indices ages 1 – 20+. The age 20+ category includes 36 fish ranging from 20 to 30 years of age.

Year	Age										
	1 - 20+	1	2	3	4	5	6	7	8	9	10
1984	3.4693	0.0109	0.0816	0.1898	0.3030	0.4590	0.4955	0.2892	0.2851	0.3105	0.3532
1985	1.7968	0	0.0191	0.0936	0.1922	0.1667	0.1279	0.1836	0.3005	0.2021	0.0902
1986	1.7200	0.0015	0.0273	0.0933	0.0495	0.1037	0.2019	0.2409	0.2452	0.2864	0.1017
1987	1.2129	0.0242	0.0799	0.0592	0.0602	0.1003	0.1341	0.1908	0.1349	0.0957	0.0523
1988	0.9006	0.0031	0.0327	0.0466	0.0721	0.0447	0.0401	0.0755	0.1008	0.1641	0.0790
1989	1.2590	0	0.0426	0.0683	0.1370	0.0893	0.1154	0.1495	0.1600	0.1046	0.0817
1990	1.1615	0.0113	0.0840	0.1546	0.1122	0.1142	0.0493	0.0500	0.1247	0.0875	0.0622
1991	1.1468	0.0057	0.0235	0.0582	0.1189	0.1241	0.1487	0.0931	0.1253	0.1071	0.1067
1992	1.0254	0.0197	0.0490	0.0709	0.0412	0.0491	0.1229	0.1323	0.0849	0.0632	0.0636
1993	0.5694	0.0034	0.0211	0.0505	0.0313	0.0166	0.0605	0.0595	0.0423	0.0489	0.0522
1994	0.5839	0.0093	0.0362	0.0322	0.0684	0.0558	0.0551	0.0555	0.0799	0.0516	0.0312
1995	0.2529	0.0034	0.0091	0.0092	0.0297	0.0602	0.0269	0.0212	0.0346	0.0150	0.0219
1996	0.5627	0.0073	0.0518	0.0305	0.0086	0.0762	0.0452	0.0654	0.0712	0.0667	0.0608
1997	0.5079	0	0.0390	0.0675	0.0568	0.0574	0.0639	0.0491	0.0556	0.0486	0.0101
1998	0.6442	0	0.0425	0.0281	0.0701	0.0821	0.0876	0.0875	0.0848	0.0465	0.0575
1999	0.7614	0.0498	0.0792	0.0583	0.0666	0.1015	0.1379	0.0748	0.0843	0.0431	0.0203
2000	0.8004	0.0012	0.0466	0.0578	0.0829	0.0740	0.1402	0.1376	0.0897	0.0392	0.0467
2001	0.8946	0.0062	0.0304	0.0863	0.0830	0.1294	0.1197	0.1193	0.1058	0.0715	0.0454
2002	1.1666	0.0101	0.0247	0.0585	0.1012	0.1748	0.1972	0.1895	0.2091	0.0739	0.0419
2003	0.8978	0.0033	0.0124	0.0083	0.0598	0.1485	0.2385	0.1596	0.0893	0.0778	0.0185
2004	0.6934	0.0075	0.0205	0.0150	0.0361	0.0710	0.1930	0.1096	0.0494	0.0812	0.0440
2005	0.7596	0.0100	0.0367	0.0618	0.0261	0.0922	0.1437	0.1576	0.1064	0.0303	0.0268
2006	0.8405	0	0.0334	0.0345	0.1039	0.1274	0.1140	0.1196	0.1521	0.0620	0.0479
2007	0.6136	0.0038	0.0126	0.0167	0.0460	0.0478	0.0608	0.0919	0.0936	0.0966	0.0532
2008	0.7269	0.0066	0.0279	0.0428	0.0620	0.0848	0.1164	0.0708	0.0649	0.0831	0.0640
2009	0.4822	0.0150	0.0355	0.0074	0.0026	0.0394	0.0681	0.1013	0.0658	0.0319	0.0324
2010	0.2472	0	0.0053	0.0455	0.0093	0.0053	0.0315	0.0503	0.0294	0.0096	0.0093
2011	0.4456	0.0180	0.0401	0.0532	0.0303	0.0301	0.0612	0.0630	0.0415	0.0267	0.0167
2012	0.5809	0.027	0.1148	0.0919	0.0808	0.0635	0.0389	0.0384	0.0499	0.0489	0.0115
2013*	0.5722	0.0186	0.0802	0.0855	0.0865	0.0811	0.0598	0.076	0.0401	0.0184	0.0107
84-12											
Mean	0.8305	0.0088	0.0385	0.0536	0.0657	0.0832	0.1050	0.1049	0.1027	0.0773	0.0482

Year	Age									
	11	12	13	14	15	16	17	18	19	20+
1984	0.1261	0.2281	0.0933	0.0507	0.0449	0.0322	0.0469	0.0156	0.0006	0.0531
1985	0.1595	0.0982	0.0226	0.0994	0	0.0249	0.0039	0.0124	0	0
1986	0.1423	0.0863	0.0374	0.0522	0.0232	0.0071	0.0114	0.0003	0.0023	0.0061
1987	0.0607	0.0543	0.0479	0.0313	0.0246	0.0265	0.0105	0.0004	0.0048	0.0203
1988	0.0469	0.0395	0.0295	0.0225	0.0493	0.0086	0.0063	0.0055	0.0052	0.0286
1989	0.0569	0.0932	0.0430	0.0404	0.0348	0.0172	0.0067	0.0048	0	0.0136
1990	0.0979	0.0375	0.0567	0.0397	0.0221	0.0250	0.0088	0.0170	0.0035	0.0033
1991	0.0610	0.0258	0.0399	0.0361	0.0217	0.0005	0.0160	0.0117	0.0080	0.0148
1992	0.0599	0.0512	0.0440	0.0581	0.0236	0.0208	0.0167	0.0298	0.0167	0.0078
1993	0.0368	0.0351	0.0351	0.0129	0.0157	0.0152	0.0129	0.0097	0.0097	0
1994	0.0234	0.0238	0.0071	0.0118	0.0118	0.0096	0.0024	0.0047	0.0070	0.0071
1995	0.0036	0.0036	0.0073	0	0	0	0.0036	0	0	0.0036
1996	0.0230	0.0127	0.0103	0.0048	0.0099	0.0090	0.0086	0.0004	0.0001	0.0002
1997	0.0072	0.0119	0.0144	0.0048	0.0121	0.0071	0	0.0024	0	0
1998	0.0192	0.0164	0.0055	0.0055	0	0.0027	0.0055	0	0	0.0027
1999	0.0191	0.0090	0.0087	0.0029	0	0	0.0030	0.0029	0	0
2000	0.0213	0.0130	0.0123	0.0101	0.0084	0.0104	0.0023	0	0.0027	0.0040
2001	0.0407	0.0161	0.0152	0.0004	0.0053	0.0105	0.0036	0.0001	0.0026	0.0031
2002	0.0257	0.0185	0.0107	0.0070	0.0147	0.0039	0	0	0	0.0052
2003	0.0274	0.0088	0.0059	0.0184	0.0029	0.0124	0	0.0029	0	0.0031
2004	0.0204	0.0221	0.0119	0.0003	0.0028	0.0031	0.0026	0.0002	0	0.0027
2005	0.0347	0.0257	0.0039	0.0037	0	0	0	0	0	0
2006	0.0183	0.0200	0.0037	0	0.0037	0	0	0	0	0
2007	0.0294	0.0156	0.0194	0.0108	0.0019	0.0116	0	0.0019	0	0
2008	0.0322	0.0225	0.0228	0.0163	0.0098	0	0	0	0	0
2009	0.0343	0.0064	0.0091	0.0217	0.0070	0.0032	0.0011	0	0	0
2010	0.0192	0.0139	0.0048	0.0046	0.0046	0	0	0	0.0046	0
2011	0.0167	0.0161	0.0080	0.0080	0.0040	0.0000	0.0040	0.0080	0.0000	0.0000
2012	0	0.0077	0.0038	0	0.0038	0	0	0	0	0
2013*	0	0.0077	0.0038	0	0.0038	0	0	0	0	0
84-12										
Mean	0.0436	0.0356	0.0219	0.0198	0.0125	0.0090	0.0061	0.0045	0.0023	0.0060

* 2013 - ageing not complete so used a 2010-2012 pooled age key

Table 2.28. Weakfish age 0 and age 1+ indices of abundance, 1984-2013.

Using spring (May, June) and fall (September, October) length data, the geometric mean catch per tow was calculated for three groups of weakfish: fall age-0, spring - all fish age 1 and older (1+), and fall - all fish age 1 and older (1+). Weakfish less than 30 cm fork length in the fall were defined as age-0.

Year	Fall		Fall		Spring	
	age 0 count / tow	age 0 kg / tow	ages 1+ count / tow	age 1+ kg / tow	ages 1+ count / tow	ages 1+ kg / tow
1984	1.00	0.14	0.53	0.84	0.02	0.15
1985	6.19	0.74	0.24	0.46	0.00	0.10
1986	13.16	0.91	0.24	0.51	0.10	0.33
1987	0.63	0.13	0.11	0.16	0.02	0.11
1988	3.49	0.30	0.06	0.13	0.05	0.17
1989	8.69	0.94	0.02	0.10	0.04	0.16
1990	5.56	0.56	0.08	0.13	0.07	0.13
1991	11.95	1.44	0.31	0.41	0.28	0.26
1992	3.05	0.31	0.18	0.24	0.12	0.22
1993	4.08	0.46	0.12	0.18	0.10	0.15
1994	11.19	1.23	0.06	0.13	0.04	0.12
1995	5.22	0.84	0.70	0.64	0.18	0.16
1996	15.23	1.49	0.56	0.52	0.19	0.19
1997	12.38	1.03	0.89	0.81	0.42	0.34
1998	5.02	0.76	0.28	0.36	0.37	0.41
1999	30.93	3.21	0.39	0.51	0.45	0.59
2000	63.31	3.34	0.30	0.32	0.18	0.28
2001	40.09	2.20	0.52	0.54	0.27	0.26
2002	41.35	2.85	0.16	0.26	0.16	0.26
2003	49.41	1.77	0.07	0.17	0.04	0.14
2004	58.98	2.99	0.21	0.25	0.15	0.16
2005	25.86	2.50	0.12	0.18	0.27	0.23
2006	1.05	0.20	0.29	0.30	0.14	0.22
2007	63.93	3.86	0.06	0.14	0.11	0.22
2008	9.03	1.17	0.08	0.14	0.05	0.12
2009	6.48	0.57	0.30	0.22	0.08	0.16
2010	-	-	-	-	0.02	0.12
2011	11.64	0.87	0.68	0.55	0.10	0.15
2012	21.96	1.47	0.73	0.69	0.62	0.56
2013	7.01	0.59	0.52	0.52	0.52	0.44
84-12						
mean	18.96	1.37	0.30	0.35	0.16	0.22

**TABLES 2.30 - 2.65
LENGTH FREQUENCIES
LISTS**

Table 2.30. Alewife length frequencies, spring and fall, 1 cm intervals, 1989–2013.

From 1989 - 1990, lengths were recorded from the first three tows of each day; since 1991, lengths have been recorded from every tow.

length	Spring																								
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	2	0	0	0	0	0	0	4	0	0	1	0	1	0	0	4	0	2	1	0	0
8	0	0	0	0	18	3	3	0	0	2	9	16	0	3	1	2	0	0	4	1	10	0	1	3	
9	0	0	2	0	15	9	6	1	6	0	6	21	32	1	18	6	16	0	0	4	6	10	0	3	
10	0	0	0	1	11	19	18	2	22	7	6	28	23	5	32	55	32	0	8	5	11	23	5	6	
11	0	0	5	4	10	44	11	2	64	11	20	52	14	6	27	87	26	29	13	32	10	9	22	8	
12	6	0	4	7	6	83	17	8	127	12	32	43	5	29	25	100	55	44	34	131	17	6	54	27	
13	1	0	4	4	47	122	48	16	63	44	42	99	4	70	11	83	61	15	38	193	24	12	48	98	
14	0	0	9	7	77	172	35	26	69	61	56	234	7	139	28	63	37	9	37	178	51	6	50	187	
15	3	0	8	5	68	140	54	32	56	51	120	334	6	157	25	33	50	49	85	86	101	8	59	123	
16	2	0	8	5	84	159	38	86	44	50	144	320	4	86	26	31	74	25	128	46	106	7	37	56	
17	5	4	4	16	63	108	32	203	28	34	330	85	5	82	21	33	73	78	161	47	142	5	7	27	
18	4	4	9	8	59	81	7	254	32	22	136	15	4	15	19	18	71	93	182	25	196	2	11	17	
19	6	7	7	2	37	33	7	180	9	11	99	20	3	6	26	42	59	86	122	49	215	7	11	24	
20	3	1	7	2	27	24	10	161	17	17	82	22	9	17	13	30	26	76	105	38	137	7	9	19	
21	1	0	3	1	13	17	14	107	34	22	72	27	12	28	22	50	21	40	71	21	53	18	9	18	
22	4	2	8	2	10	26	12	103	48	18	47	41	18	46	25	48	18	41	14	29	22	10	24	34	
23	5	1	8	6	3	12	12	76	44	16	47	90	36	63	40	36	7	5	28	16	13	12	16	27	
24	7	0	3	2	1	12	7	34	28	14	21	58	45	49	42	13	6	1	10	7	14	4	7	18	
25	3	2	1	0	3	5	2	9	9	2	11	11	23	12	29	11	3	1	3	0	11	2	4	11	
26	1	0	1	2	1	5	1	3	1	2	2	1	5	7	17	5	2	0	2	0	1	0	2	3	
27	2	0	1	0	0	1	0	0	0	0	0	1	2	1	2	2	1	0	0	0	0	0	0	1	
28	1	0	0	0	1	1	0	0	0	1	0	0	0	1	0	2	1	0	0	1	0	0	2	0	
29	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
32	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	56	21	93	74	556	1,076	334	1,304	701	395	1,275	1,515	274	820	452	749	642	569	1,068	901	1,138	172	364	698	

length	Fall																								
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	-	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	1	0	-	0	0	0
9	0	0	0	0	3	1	0	0	1	0	0	1	6	1	1	0	1	0	3	2	0	-	1	0	0
10	0	0	0	0	5	1	4	1	1	0	1	4	23	0	7	1	7	0	8	2	1	-	1	0	0
11	0	0	0	0	27	30	5	5	6	1	3	5	59	0	33	6	14	0	22	1	2	-	9	0	8
12	0	0	0	1	120	82	9	25	12	9	6	9	86	4	64	7	8	0	44	0	2	-	22	2	14
13	0	0	3	0	88	84	14	21	21	7	9	17	72	0	4	12	17	0	87	5	10	-	14	3	16
14	0	0	2	4	16	36	11	30	31	0	11	10	23	3	3	16	15	0	134	14	10	-	22	0	34
15	0	0	1	8	21	31	0	9	53	0	5	8	24	3	5	28	15	2	118	4	8	-	28	2	6
16	3	0	3	10	53	14	4	1	110	1	25	2	36	17	20	30	12	4	31	0	1	-	14	1	2
17	2	0	0	12	25	33	1	2	194	4	34	0	27	8	19	12	3	0	8	3	1	-	19	2	2
18	3	0	0	9	13	24	1	1	62	3	11	1	5	0	0	1	5	0	6	0	1	-	17	0	0
19	0	0	0	2	1	11	0	0	0	1	4	1	0	1	0	0	0	0	7	1	0	-	1	0	1
20	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	-	0	0	0
21	0	0	0	0	3	1	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	-	0	0	0
22	0	1	0	0	2	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	-	0	0	0
23	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	-	0	0	0
24	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
25	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
27	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
Total	8	1	9	46	377	354	50	95	492	27	117	58	364	38	156	113	98	6	468	33	37	0	148	10	83

Table 2.31. American shad length frequencies, spring and fall, 2.0 cm intervals (midpoint given), 1989-2013.

From 1989 - 1990, lengths were recorded from the first three tows of each day; since 1991, lengths have been recorded from every tow.

length	Spring																								
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
9	0	0	0	0	8	2	17	0	6	9	5	5	2	13	6	1	6	0	0	0	1	0	0	0	11
11	0	0	1	3	7	2	16	5	24	27	20	46	1	101	12	8	11	0	5	26	12	12	5	3	48
13	4	0	10	8	4	4	11	9	59	85	31	29	2	87	11	14	10	0	20	78	36	21	28	34	38
15	49	1	82	17	6	22	22	191	177	108	65	21	2	41	0	45	25	38	54	180	66	77	100	106	20
17	29	8	49	23	10	72	68	154	319	97	52	32	4	49	3	6	4	14	44	51	40	47	25	45	11
19	5	5	4	33	6	374	40	47	62	32	20	13	0	17	0	2	0	5	8	11	15	5	3	5	2
21	1	3	10	25	6	158	6	9	2	1	35	1	0	4	4	2	6	0	3	3	3	2	1	0	1
23	0	3	31	20	5	18	2	16	5	8	50	4	0	7	7	4	7	0	4	3	4	0	0	10	8
25	0	2	10	7	1	6	0	15	1	7	14	2	3	4	0	0	3	0	7	0	0	1	0	22	1
27	0	1	1	0	0	2	0	5	0	1	1	1	0	0	0	0	2	0	4	0	0	0	0	4	0
29	0	0	0	0	0	1	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	1	3	0	3	3	0	1	0	0	1	0	2	0	0	0	0	0	0
35	0	1	1	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	0	0	0	0
37	0	0	0	2	0	1	0	0	4	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0
39	1	0	0	3	2	2	1	0	2	0	4	0	0	2	0	0	0	1	1	0	0	0	0	0	0
41	1	0	1	5	2	3	2	0	3	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0
43	0	0	1	4	2	1	0	0	1	1	6	0	0	2	0	0	0	0	0	0	0	0	0	0	1
45	1	0	1	7	2	3	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	2	0	1	2	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2
49	0	0	0	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
51	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	91	24	202	163	61	675	189	452	669	378	313	157	14	337	43	83	79	60	152	353	178	165	162	231	142

length	Fall																								
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
7	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	-	0	0	0
9	0	0	7	1	2	6	7	0	6	1	5	0	1	1	4	5	4	0	2	4	0	-	4	4	0
11	0	1	4	5	23	26	16	1	20	14	27	0	4	1	14	6	3	0	19	4	27	-	4	4	0
13	0	0	7	21	54	208	24	7	28	13	44	0	1	0	22	4	5	0	26	3	22	-	2	2	1
15	0	0	4	2	33	245	14	2	5	4	6	0	0	0	0	2	0	0	13	0	36	-	2	0	2
17	0	0	22	7	10	20	2	0	12	64	13	2	5	11	15	77	3	1	2	0	3	-	6	2	8
19	32	34	93	41	53	57	84	0	67	290	130	16	47	199	121	155	23	6	5	6	42	-	35	5	31
21	129	143	22	102	466	229	335	15	99	123	251	104	34	44	80	21	46	0	8	28	88	-	42	52	32
23	30	27	0	30	394	197	83	19	12	0	179	39	3	0	6	0	14	1	8	7	25	-	14	21	5
25	0	0	0	1	24	50	3	4	0	0	17	0	1	0	0	1	0	0	0	0	0	-	0	0	0
27	0	0	0	3	2	7	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	-	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
37	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	-	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
41	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
49	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
51	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
Total	192	205	159	214	1,061	1,047	568	48	251	509	674	161	96	256	262	273	98	8	83	52	243	-	109	90	79

Table 2.36. Atlantic herring length frequencies, spring and fall, 1 cm intervals, 1989-2013.
Atlantic herring lengths were recorded from the first three tows of each day.

length	Spring																								
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
3	0	0	0	5	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	4	0	0	0	0	18	504	61	0	0	1	2	0	0	0	1	213	2	12	0	29
5	0	2	0	11	3	1	0	0	1	149	1,547	104	0	0	8	30	76	3	20	36	3,416	28	35	15	429
6	1	3	3	16	1	0	1	3	0	92	237	1	3	0	9	10	140	2	2	13	449	12	59	2	227
7	0	1	4	15	2	0	2	15	69	84	18	7	11	1	0	8	118	1	0	12	44	1	103	2	38
8	0	0	7	0	1	0	0	5	165	28	5	1	6	1	0	9	73	11	0	23	48	1	132	0	10
9	0	0	3	0	1	0	1	1	27	11	4	0	8	0	0	3	8	10	0	16	59	0	43	1	1
10	0	0	0	0	3	1	0	0	0	2	0	0	1	0	0	0	0	0	0	2	6	0	3	1	0
11	0	0	0	0	3	1	0	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
12	0	0	0	0	38	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
13	0	8	0	0	215	8	0	0	5	0	0	0	0	0	1	3	0	0	0	0	0	5	1	1	0
14	0	1	0	0	203	11	0	1	29	0	0	0	1	0	0	9	7	0	0	0	1	29	26	6	23
15	2	0	8	0	122	9	6	0	59	5	0	0	2	0	0	49	14	0	9	1	9	39	55	16	112
16	3	1	38	0	174	17	7	3	12	8	0	3	0	0	0	65	20	0	14	0	91	49	19	12	121
17	2	31	33	0	100	42	8	2	4	5	0	6	2	0	0	140	63	0	27	2	149	25	3	3	119
18	2	4	29	2	28	32	12	0	10	2	0	0	1	0	3	275	98	0	166	6	28	31	7	0	49
19	0	16	19	29	21	39	12	6	21	0	1	0	11	2	1	117	57	0	467	1	203	86	14	20	32
20	0	161	67	15	41	43	78	10	40	5	1	6	65	3	2	67	67	0	228	7	521	222	14	107	50
21	0	333	72	24	35	29	283	26	14	4	2	11	85	17	0	12	19	0	99	11	279	106	8	196	148
22	0	424	70	111	96	14	399	15	19	11	10	38	77	32	0	16	11	3	105	9	162	71	24	91	847
23	0	201	160	61	387	111	245	20	7	4	15	36	14	87	4	0	15	4	106	13	144	97	59	23	824
24	0	195	297	311	436	224	290	22	18	1	19	47	33	71	17	0	25	3	150	27	71	105	173	21	268
25	0	315	337	751	645	485	416	46	117	2	9	99	31	18	36	3	21	5	122	38	87	108	214	16	104
26	1	447	360	503	921	560	1,028	85	202	31	10	70	46	30	63	3	78	3	125	39	108	110	210	18	96
27	0	347	514	382	807	947	723	93	236	33	35	80	24	27	65	14	106	9	122	38	69	95	147	11	30
28	0	338	513	391	825	604	706	64	234	44	37	104	34	19	72	9	87	6	116	36	85	62	65	4	5
29	2	247	319	492	550	387	337	37	82	21	25	69	29	52	1	40	3	47	15	44	26	48	4	1	1
30	0	156	383	142	287	204	231	29	31	1	11	24	8	3	27	3	19	1	6	6	27	7	2	0	0
31	2	127	139	77	129	29	14	4	15	2	0	0	4	0	8	1	0	0	2	6	0	2	0	0	0
32	0	50	22	1	33	6	14	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	11	13	2	0	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
34	0	8	1	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	15	3,427	3,411	3,341	6,119	3,808	4,814	489	1,421	566	2,491	767	497	363	368	847	1,165	64	1,931	355	6,319	1,317	1,479	570	3,563

length	Fall																								
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
7	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
8	0	0	0	99	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-	0	0	0
9	0	0	0	328	16	4	0	0	2	3	0	0	0	0	1	0	0	0	0	0	4	-	1	0	1
10	0	0	0	176	3	6	0	14	6	59	0	0	0	0	12	1	0	0	0	0	2	-	0	0	1
11	0	3	0	34	5	9	0	11	3	49	0	1	0	0	47	0	0	2	0	0	1	-	0	0	1
12	0	0	0	3	9	11	0	1	0	0	0	0	0	0	20	1	0	0	1	0	0	-	0	0	0
13	0	0	0	0	13	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	-	0	0	0
14	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
15	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
16	0	0	0	1	7	2	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	-	0	0	0
17	0	0	1	0	7	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	-	1	0	0
18	0	0	6	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	-	1	0	0
19	0	0	5	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-	0	0	0
20	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
21	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
22	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	1	0	0
23	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	-	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	-	0	0	0
Total	0	3	12	642	110	40	0	27	12	112	0	2	0	0	80	3	3	2	2	1	9	-	4	0	3

Table 2.37. Atlantic menhaden length frequency, spring and fall, 1 cm intervals, 1996-2013.

Menhaden are scheduled to be measured from every tow. However, the following numbers of menhaden were not measured: 5 juveniles and 4 adults in 1996, and 7 adults in 1997.

length	Spring																	
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	7	0
11	0	0	0	1	0	0	13	0	0	0	0	0	0	0	0	0	3	0
12	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	15	0
13	0	0	0	0	0	0	6	0	0	0	2	0	0	0	0	0	8	0
14	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	5	0
15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	8	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
20	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
25	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	1	0
26	0	0	0	0	0	0	1	0	0	0	0	4	0	0	0	0	2	3
27	0	0	0	0	0	0	1	0	0	0	0	6	2	3	1	4	14	25
28	0	1	0	0	1	0	1	0	0	0	0	5	4	9	5	10	33	32
29	0	1	0	0	1	0	0	1	3	0	1	5	2	2	1	18	53	59
30	0	1	0	0	0	0	1	1	0	0	0	4	1	5	0	10	28	27
31	0	3	0	0	0	0	0	0	1	0	2	4	1	0	0	1	12	13
32	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	1	0
33	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Total	0	6	0	1	9	0	47	2	5	1	5	33	10	19	7	43	195	162

length	Fall																	
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	-	0	0	0
5	0	0	0	0	0	0	0	2	0	0	0	1	0	0	-	0	0	0
6	0	0	0	0	0	0	0	17	1	0	0	24	0	0	-	0	1	1
7	1	0	0	20	12	0	2	32	26	0	1	39	2	0	-	0	0	0
8	0	1	18	51	73	0	6	22	178	11	0	32	2	2	-	0	0	0
9	0	11	53	152	128	0	8	9	135	22	0	12	6	0	-	0	0	0
10	1	5	120	471	125	1	9	1	143	19	0	34	3	3	-	0	1	0
11	0	6	49	337	51	25	14	1	47	13	2	51	2	4	-	0	0	0
12	0	11	44	25	35	30	10	1	18	9	8	24	1	5	-	6	0	4
13	0	0	20	2	15	16	14	4	1	1	1	49	0	4	-	7	1	5
14	0	2	0	0	6	7	20	2	0	3	2	7	0	3	-	9	0	4
15	0	0	0	0	2	4	24	0	0	1	0	1	1	5	-	6	1	1
16	0	0	0	0	2	0	8	0	0	2	1	1	4	4	-	3	0	1
17	0	0	0	0	3	0	12	0	0	0	0	0	3	0	-	0	1	0
18	0	0	0	0	0	0	17	0	0	0	0	0	0	1	-	0	2	0
19	0	0	0	0	0	0	16	0	0	0	0	0	0	1	-	0	2	0
20	0	0	0	1	0	0	2	0	0	0	0	0	0	0	-	0	2	0
21	0	0	0	1	0	0	1	0	0	1	0	0	0	0	-	0	1	0
22	0	0	0	0	0	0	1	0	0	0	0	0	0	0	-	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
24	0	0	0	1	0	0	0	0	0	0	0	0	0	0	-	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	1
26	0	0	0	0	0	0	1	0	0	0	0	3	0	0	-	0	7	2
27	2	0	0	0	0	0	1	0	0	1	0	21	9	4	-	4	27	6
28	3	1	0	3	0	0	2	0	3	4	0	35	2	7	-	18	68	13
29	23	17	0	6	1	0	18	5	10	21	2	31	1	1	-	48	66	12
30	30	25	0	28	3	0	29	8	44	54	2	18	0	5	-	30	35	14
31	11	17	1	42	7	1	39	8	65	43	2	7	0	2	-	4	11	5
32	2	6	1	27	12	0	27	3	51	21	1	2	0	0	-	2	0	1
33	0	1	0	19	4	2	25	2	10	5	0	0	0	0	-	0	0	0
34	0	0	0	1	4	0	9	1	7	2	1	0	0	0	-	0	0	0
35	0	0	0	0	1	0	5	0	1	1	0	0	0	0	-	0	0	0
Total	73	103	306	1,187	484	86	320	119	740	234	23	392	36	51	-	137	226	70

Table 2.39. Black sea bass length frequencies, fall, 1 cm intervals, 1987-2013.
Since 1987, black sea bass have been measured from every tow.

length	Fall																												
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	2	0	0	1	-	0	1	3	
5	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	2	0	3	1	0	0	0	1	-	4	0	2	
6	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0	3	1	0	7	0	0	1	1	0	-	4	1	3	
7	0	0	0	0	0	4	0	3	1	0	1	0	0	3	0	6	4	0	23	2	0	3	2	0	-	2	1	3	
8	0	2	0	1	0	4	0	1	2	0	1	0	0	0	1	5	8	0	15	2	0	4	0	2	-	1	2	1	
9	0	0	0	0	1	3	0	0	4	0	0	0	1	0	0	3	6	0	10	2	0	1	2	0	-	1	2	0	
10	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1	3	0	5	2	0	2	0	0	-	0	2	0	0	
11	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5	0	2	2	0	1	0	0	-	0	5	0	
12	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	-	0	3	0	0	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	-	0	4	0	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2	0	-	0	14	0	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	-	0	21	0	
16	0	0	0	0	0	2	0	0	0	0	0	0	0	2	1	0	1	0	0	0	0	1	5	0	-	0	37	0	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	7	0	0	0	1	4	8	2	-	0	20	3	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	16	1	0	0	1	1	14	6	-	0	20	3	
19	0	0	0	0	0	0	0	0	0	0	0	2	0	3	1	0	23	0	0	0	2	2	10	4	-	0	23	1	
20	0	0	0	0	0	3	0	0	0	0	2	0	1	6	3	0	19	0	0	0	1	4	10	6	-	0	14	1	
21	0	0	0	0	0	1	0	0	0	1	0	1	0	4	1	0	17	0	0	1	3	4	9	4	-	0	9	1	
22	0	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0	5	0	0	0	0	1	4	3	-	0	3	8	
23	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	4	0	1	0	0	2	0	0	-	0	6	11	
24	0	0	2	0	0	0	0	0	0	0	1	0	0	3	0	0	2	0	0	0	0	0	0	0	-	0	0	12	
25	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	-	0	0	14	
26	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	2	-	1	0	18		
27	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	1	0	2	-	1	1	15	
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4	2	0	-	1	2	13	
29	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	3	0	1	1	2	0	1	0	0	-	2	1	8	
30	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	5	0	0	0	0	1	0	-	5	1	8	
31	0	0	0	0	1	0	2	0	0	0	0	0	0	0	1	0	1	1	0	0	0	2	1	0	-	4	1	4	
32	0	0	2	0	0	0	0	0	0	0	0	1	0	2	3	2	0	0	0	0	0	2	0	0	-	1	0	4	
33	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3	2	0	0	0	2	0	0	0	0	-	1	1	4	
34	0	0	1	0	2	0	0	0	0	0	0	0	0	0	2	2	0	0	1	0	1	1	0	0	-	1	1	0	
35	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3	2	1	1	0	0	0	1	1	-	2	1	1	
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	2	0	0	-	0	1	2	
37	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	9	2	0	0	0	0	1	1	0	-	3	1	3	
38	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	7	3	0	0	1	0	1	0	1	-	1	1	6	
39	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	2	0	1	-	2	2	1	
40	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	2	0	1	0	0	0	1	0	-	1	3	7	
41	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3	0	0	1	0	2	0	0	-	3	2	2	
42	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	2	0	0	0	0	-	3	4	3	
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	1	0	0	-	0	3	5	
44	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	3	1	0	0	0	0	0	0	0	-	1	3	2	
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	-	0	0	3	
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	-	0	1	1	
47	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	-	0	1	0	
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	-	0	2	2	
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	1	
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	-	0	0	1	
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	1	0	
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	1	1	
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	-	0	1	1	
Total	0	3	9	1	8	22	2	8	12	1	6	4	10	33	22	66	155	11	75	23	12	53	77	38	0	45	224	185	

Table 2.40. Blueback herring length frequencies, spring and fall, 1 cm intervals, 1989-2013.

From 1989 - 1990, lengths were recorded from the first three tows of each day; since 1991, lengths have been recorded from every tow.

length	Spring																								
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
6	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	2	0	2	7	2	0	0	2	0	4	1	0	3	2	1	0	0	1	0	4	0	0	5
8	0	0	3	0	2	76	20	4	0	5	0	10	7	12	7	9	8	1	0	8	0	1	0	0	9
9	0	0	2	0	3	114	11	5	21	15	0	14	5	9	23	23	14	8	1	11	7	4	3	3	9
10	0	0	5	10	7	74	9	19	45	45	0	18	2	9	26	47	6	23	9	14	19	19	5	18	5
11	0	0	3	4	9	41	9	10	258	48	0	28	1	6	11	39	10	2	3	12	25	38	9	12	8
12	3	0	5	0	2	9	5	3	4	16	0	18	2	3	4	20	12	0	5	2	27	8	3	5	1
13	0	0	0	4	0	13	5	2	0	2	0	12	1	1	1	12	3	1	3	4	17	10	6	1	1
14	0	0	0	15	0	5	3	1	1	1	0	3	0	0	0	0	7	0	1	1	5	4	2	0	0
15	0	0	1	27	1	3	4	7	0	0	1	2	0	4	0	0	8	1	2	2	9	1	0	0	0
16	0	0	0	65	0	8	3	7	0	3	5	1	1	1	4	4	13	2	23	1	30	4	2	2	7
17	0	0	1	11	3	9	1	10	4	0	5	3	10	7	4	4	11	2	37	7	64	2	12	2	5
18	0	1	0	2	0	3	0	4	2	0	0	5	15	2	3	3	1	2	7	3	49	1	3	2	3
19	0	0	0	0	1	2	4	3	2	0	0	0	3	0	0	3	2	1	3	2	17	2	1	0	1
20	0	0	0	4	0	1	1	0	0	0	0	2	1	1	0	0	5	2	0	1	2	0	1	0	1
21	2	1	2	0	0	1	1	3	0	0	0	1	3	0	0	3	2	3	2	0	1	1	0	0	7
22	1	0	0	1	0	3	0	4	0	1	0	3	0	0	1	0	1	0	1	1	0	1	0	0	5
23	0	0	3	2	0	3	2	3	1	0	0	5	0	1	0	1	0	0	1	1	0	1	0	0	0
24	0	1	2	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	2	0	0	1	0	0	1
25	0	0	0	1	0	1	1	1	0	0	0	1	0	0	2	0	0	1	1	0	0	0	0	0	0
26	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	3	29	147	30	373	83	90	338	140	11	136	52	56	89	173	104	49	101	71	272	102	47	45	68

length	Fall																								
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
5	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
6	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	5	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	33	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
9	0	0	0	0	0	0	21	3	2	2	1	0	0	0	0	0	0	0	1	0	2	-	0	0	0
10	0	0	0	0	0	1	3	0	8	1	0	1	0	0	0	0	0	0	0	0	0	-	0	0	0
11	0	0	0	0	3	13	4	0	3	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
12	0	0	3	9	8	227	14	0	12	1	1	0	7	0	0	2	0	0	0	0	0	-	0	0	0
13	38	1	4	11	24	225	48	0	117	18	0	0	36	2	0	15	2	2	0	0	0	-	0	1	0
14	77	0	1	6	18	247	40	1	111	28	1	0	117	7	0	17	3	8	1	1	3	-	4	0	0
15	24	0	0	1	20	94	3	3	34	16	0	3	52	3	4	6	2	4	14	2	5	-	9	0	0
16	0	0	0	0	2	14	0	0	0	5	2	1	10	0	4	0	0	0	31	0	2	-	9	0	0
17	0	0	0	0	0	2	0	0	0	1	1	2	2	0	1	0	0	0	7	0	1	-	3	0	0
18	1	0	0	0	0	1	0	0	0	0	0	1	3	0	0	0	0	0	0	0	5	-	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
20	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	-	0	0	0
21	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	-	0	0	0
22	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
24	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	-	0	0	0
25	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
Total	140	2	9	27	76	827	172	7	292	72	8	8	227	12	9	42	8	14	55	3	18	0	25	1	0

Table 2.44. Clearnose skate length frequencies, spring, 1 cm intervals, 1993-2013.

length	Spring																				
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
47	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
50	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	1
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	1
57	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	1
58	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0
59	0	0	0	0	0	0	0	0	0	4	1	0	0	1	2	0	0	0	1	0	0
60	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	0	0	8	0
61	0	0	1	0	0	0	1	0	0	2	0	0	0	0	1	0	0	0	0	7	0
62	0	0	0	0	0	0	2	0	0	1	0	0	0	2	0	2	2	0	0	5	1
63	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	1	0	0	1	3	1
64	0	0	0	0	0	0	0	1	0	3	0	1	0	0	1	0	1	0	1	9	0
65	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	2	1	0	1	4	0
66	0	0	0	0	0	0	0	0	0	1	2	0	0	0	3	0	1	0	4	4	2
67	0	0	0	0	0	0	0	0	1	2	0	0	0	1	1	1	2	0	1	9	4
68	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2	1	0	1	6	2
69	0	0	0	0	0	0	0	0	1	4	0	1	1	0	4	0	2	0	0	7	2
70	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	4	0	3	5	3
71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0
72	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	1	0	0	3	1
73	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	5	0
74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	1
75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
83	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
87	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	0	0	5	3	6	31	8	5	2	9	22	12	21	1	13	95	24

Table 2.45. Clearnose skate length frequencies, fall, 1 cm intervals, 1993-2013.

length	Fall																					
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
43	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
47	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
51	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
52	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
53	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
54	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	1	3	2	
55	0	0	0	0	0	0	0	0	1	0	0	0	3	2	1	1	0	0	0	1	2	
56	0	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	0	0	0	3	2	
57	0	0	0	0	0	0	0	0	0	1	0	0	4	0	0	1	0	1	4	1		
58	0	0	0	0	0	1	0	2	2	3	0	0	4	1	1	0	0	0	1	5	3	
59	2	0	0	0	0	1	0	1	3	0	0	0	1	2	0	0	0	0	3	1	4	
60	0	0	0	0	0	0	0	1	2	0	0	0	7	3	1	0	1	0	1	4	2	
61	0	0	0	0	0	0	1	0	4	1	2	1	7	3	1	0	1	0	3	9	4	
62	0	0	0	0	1	0	1	0	4	0	1	0	7	1	2	1	2	0	0	8	7	
63	0	0	0	0	0	2	3	1	0	2	0	0	2	2	1	2	1	0	3	9	12	
64	0	0	0	0	0	0	3	1	5	5	2	0	3	0	3	0	1	0	2	9	16	
65	0	0	0	0	0	3	1	2	1	1	2	1	7	1	6	1	6	0	1	14	12	
66	0	0	1	0	1	4	0	0	5	2	9	3	4	0	5	3	3	0	5	12	12	
67	0	0	0	1	0	1	2	1	3	2	5	4	6	2	3	2	4	0	1	17	17	
68	0	0	0	0	0	1	1	0	3	0	4	0	5	1	8	3	2	0	5	11	17	
69	0	0	0	0	0	0	0	3	3	0	3	1	11	2	6	0	1	0	3	11	19	
70	0	0	0	0	0	0	0	0	5	0	2	1	6	2	2	1	3	0	1	12	18	
71	0	0	0	0	0	0	0	0	4	0	5	1	2	1	5	2	1	0	1	9	10	
72	0	0	0	0	0	0	0	1	1	0	3	1	6	0	3	2	5	0	2	5	6	
73	0	0	0	0	0	0	0	0	3	3	1	0	1	1	3	1	2	0	0	3	10	
74	0	0	0	0	0	0	0	0	1	1	4	0	1	0	5	0	2	0	4	5	2	
75	0	0	0	0	0	1	0	1	1	2	0	0	2	0	4	1	2	0	1	4	4	
76	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	1	2	0	
77	0	0	2	0	0	0	0	0	1	4	0	0	0	0	3	1	0	0	0	4	1	
78	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	3	1	
79	0	0	0	0	0	0	1	0	0	0	1	2	1	0	4	1	0	0	0	3	0	
80	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	0	0	1	1	
81	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	1	0	0	1	0	
82	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0	0	1	
83	0	0	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	0	0	1	0	
84	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
85	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	1	1	
86	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2	0	0	
87	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	
89	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
92	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
98	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
99	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	
Total	2	0	3	1	4	20	17	15	59	29	47	17	100	27	75	25	46	0	44	185	193	

Table 2.46. Fourspot flounder length frequencies, spring and fall, 2 cm intervals (midpoint given), 1989, 1990, 1996-2013.

Fourspot lengths were recorded from the first three tows of each day.

length	Spring																			
	1989	1990	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
13	2	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	1	0	1	0
15	5	2	0	0	5	5	0	0	3	0	3	0	0	0	0	0	0	0	0	0
17	21	8	1	3	8	12	1	2	17	2	13	0	0	6	0	0	6	2	5	1
19	19	19	8	16	14	61	22	5	89	8	8	0	6	7	7	4	2	1	24	2
21	17	42	31	60	13	28	26	4	99	6	4	1	18	11	9	10	3	10	42	11
23	11	341	198	161	16	32	239	42	33	8	4	14	24	9	17	6	5	45	56	20
25	56	528	279	353	105	72	422	181	84	124	26	71	29	44	39	37	33	157	258	185
27	103	225	208	456	209	97	256	300	199	228	82	75	33	105	81	91	55	150	441	209
29	120	139	193	392	233	81	201	245	191	187	129	64	44	170	108	127	55	107	461	189
31	89	60	117	192	137	66	139	153	175	163	178	68	61	121	94	90	69	93	303	139
33	51	27	54	76	60	60	81	45	89	88	113	52	36	52	70	51	36	49	92	100
35	8	33	15	22	16	25	39	11	26	47	35	31	13	43	34	31	24	27	31	27
37	2	12	6	3	4	7	12	8	7	12	5	11	4	9	11	7	9	9	4	16
39	0	4	3	0	2	1	1	2	3	6	2	3	1	7	2	0	4	5	0	0
41	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0
45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Total	504	1,440	1,113	1,734	822	548	1,439	999	1,015	879	602	394	271	585	472	455	302	655	1,719	899

length	Fall																			
	1989	1990	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
5	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	1	-	0	0	0
7	0	1	0	1	4	0	0	1	0	0	1	0	2	0	0	1	-	1	0	1
9	5	0	0	23	19	0	2	2	0	4	1	0	2	1	1	7	-	4	0	0
11	9	4	2	46	27	5	4	17	5	2	12	4	5	0	7	16	-	17	3	1
13	10	15	5	68	22	24	6	25	3	3	9	9	13	2	8	59	-	28	4	11
15	6	17	35	55	21	42	5	15	9	0	13	17	4	5	11	45	-	22	13	10
17	0	0	42	16	3	16	1	0	3	0	1	26	3	2	16	20	-	4	12	2
19	0	0	22	0	0	4	1	0	1	0	0	2	0	0	7	6	-	0	0	4
21	0	0	0	2	2	3	2	0	2	0	1	0	0	1	0	0	-	0	0	1
23	1	2	9	2	5	0	17	1	5	0	0	0	1	1	0	1	-	0	0	0
25	0	3	42	7	16	5	58	3	7	3	4	1	0	6	1	2	-	2	3	0
27	0	7	41	10	22	4	77	5	13	7	6	5	0	7	1	6	-	1	9	2
29	0	3	24	5	22	5	54	10	18	11	13	5	0	20	6	8	-	1	11	2
31	0	1	20	3	6	3	25	1	18	4	30	6	0	12	5	6	-	1	6	2
33	0	0	6	1	1	1	7	1	13	7	19	2	1	3	1	11	-	3	6	0
35	0	0	4	0	1	0	5	0	6	5	6	7	0	4	4	1	-	2	2	2
37	0	0	0	0	0	0	2	1	3	0	2	0	0	0	1	-	-	1	0	0
39	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	-	0	0	0
Total	31	53	252	239	171	112	266	83	106	46	118	85	33	64	68	192	-	87	69	38

Table 2.48. Horseshoe crab length frequencies by sex, spring, 1 cm intervals, 1998-2013.
Horseshoe crabs were measured (prosomal width) from every tow.

Sex	length	1998*	Spring																
			1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		
F	13		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
F	14		1	3	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0
F	15		0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0
F	16		1	0	0	3	2	1	1	0	0	1	0	0	0	0	1	0	0
F	17		1	0	2	2	1	4	1	0	1	1	0	0	0	0	1	0	0
F	18		2	1	0	3	2	4	0	0	2	1	1	0	0	0	0	2	2
F	19		4	1	2	2	5	5	0	0	3	4	1	0	0	0	2	0	0
F	20		5	2	0	7	1	2	3	0	3	2	0	0	1	2	0	0	0
F	21		8	2	1	8	6	2	1	0	3	8	1	0	3	5	4	4	4
F	22		8	6	4	13	10	7	2	0	10	4	6	0	3	3	2	2	2
F	23		14	15	18	19	22	17	3	2	9	14	4	3	4	9	7	7	7
F	24		15	7	15	32	29	25	5	4	15	11	12	6	3	15	19	19	19
F	25		15	10	23	25	22	20	8	5	11	16	10	9	9	14	19	19	19
F	26		23	13	28	26	22	23	3	2	16	12	10	4	16	14	17	17	17
F	27		15	9	18	18	18	18	8	4	10	9	9	5	18	11	8	8	8
F	28		8	6	9	6	7	4	2	2	5	4	10	3	8	10	13	13	13
F	29		3	0	3	4	4	4	0	3	5	1	3	4	1	3	2	2	2
F	30		1	0	3	2	0	0	3	2	0	2	1	1	4	0	1	1	1
F	31		0	0	0	0	4	0	0	0	0	1	1	0	0	0	0	0	0
F	32		0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
M	14		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
M	15		0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
M	16		0	0	0	2	5	2	0	1	2	0	0	2	0	0	0	0	0
M	17		5	2	4	7	9	9	0	0	3	2	3	0	1	5	0	0	0
M	18		11	8	12	19	24	21	2	0	17	10	3	2	5	7	6	6	6
M	19		22	13	32	42	25	33	3	0	19	12	10	7	7	8	16	16	16
M	20		15	16	30	20	33	31	7	0	21	10	11	7	15	13	10	10	10
M	21		18	5	13	14	16	10	1	0	6	12	5	3	3	9	6	6	6
M	22		4	5	7	6	7	6	2	0	4	2	1	1	4	5	3	3	3
M	23		1	0	3	1	4	2	1	0	0	1	1	0	0	0	2	2	2
M	24		2	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1
M	25		0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0
M	26		0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
M	27		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M	28		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M	29		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M	30		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
U	22		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			51	204	125	228	285	285	251	60	25	166	141	104	57	105	138	138	138

Table 2.49. Horseshoe crab length frequencies by sex, fall, 1 cm intervals, 1998-2013.
Horseshoe crabs were measured (prosomal width) from every tow.

Sex	length	Fall															
		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
F	13	0	0	2	0	0	0	3	0	1	0	0	0	-	0	0	0
F	14	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
F	15	0	0	0	0	2	0	0	0	0	0	0	0	-	0	0	0
F	16	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
F	17	1	1	0	0	2	1	0	1	1	0	1	0	-	0	0	0
F	18	0	2	0	1	0	1	1	1	0	0	0	0	-	0	0	0
F	19	3	2	2	2	0	1	0	0	1	0	1	1	-	0	0	0
F	20	5	1	1	4	4	2	3	0	2	0	0	2	-	0	0	0
F	21	3	2	2	3	1	4	6	3	1	1	1	0	-	0	0	0
F	22	3	8	13	13	10	3	9	4	1	2	6	6	-	6	0	2
F	23	8	15	15	12	8	8	13	10	7	7	6	14	-	6	2	3
F	24	7	19	30	27	21	9	24	10	6	17	14	22	-	18	10	12
F	25	17	12	20	31	33	13	19	6	12	26	17	17	-	19	9	11
F	26	19	23	33	31	18	9	29	12	10	22	15	24	-	25	16	27
F	27	14	7	21	22	18	7	22	8	3	17	11	28	-	16	5	15
F	28	2	4	10	8	13	6	15	5	4	8	11	22	-	11	3	10
F	29	2	3	2	5	2	3	8	2	0	4	1	5	-	2	4	2
F	30	0	1	1	2	0	2	1	2	0	2	0	2	-	0	1	2
F	31	0	1	0	0	1	0	0	2	0	0	0	1	-	0	0	0
F	32	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
F	33	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
F	34	0	0	0	0	0	1	0	0	0	0	0	0	-	0	0	0
M	11	0	0	0	1	0	0	0	0	0	0	0	0	-	0	0	0
M	12	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
M	13	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
M	14	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
M	15	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
M	16	0	0	2	1	5	3	0	0	0	1	1	0	-	1	0	0
M	17	6	5	7	6	3	5	11	0	1	3	1	2	-	3	0	1
M	18	12	14	28	18	14	15	21	3	9	3	9	18	-	13	4	2
M	19	10	20	39	27	31	11	39	13	4	12	21	14	-	9	4	6
M	20	20	23	35	32	22	8	30	12	9	19	23	31	-	10	1	17
M	21	6	11	18	15	9	4	15	4	2	10	6	13	-	7	1	7
M	22	5	3	8	4	6	0	10	2	5	6	2	5	-	6	0	5
M	23	0	0	3	2	6	1	1	0	2	3	1	3	-	0	1	2
M	24	0	0	1	3	0	0	1	0	1	2	0	2	-	0	0	0
M	25	0	0	2	0	0	0	0	0	0	0	0	1	-	0	0	1
M	26	2	0	0	3	0	0	0	0	1	0	0	1	-	0	0	0
M	27	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
M	28	0	0	0	0	0	0	0	1	0	0	0	0	-	0	0	0
M	29	0	0	0	1	0	0	0	0	0	0	0	0	-	0	0	0
Total		145	177	295	274	229	117	281	101	83	165	148	234	-	152	61	41

Table 2.50. Long-finned squid length frequencies, spring, 1 cm intervals, 1986-1990, 1992-2013.
Length frequencies of squid taken from the first three tows of each day.

length	Spring																										
	1986	1987	1988	1989	1990	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	14	0	0	0	0	1
3	0	0	0	0	0	0	0	0	1	5	1	18	4	11	0	6	0	6	0	1	2	111	17	1	0	5	4
4	0	0	3	0	0	3	9	31	48	23	11	103	10	32	5	44	11	51	1	12	8	220	66	1	6	28	17
5	0	1	35	0	1	7	64	137	87	39	35	323	32	36	12	48	16	70	11	18	36	220	128	5	17	45	46
6	0	6	53	0	0	8	99	117	175	23	46	444	20	31	15	36	6	88	20	13	35	148	141	2	45	64	31
7	2	2	60	0	0	17	96	108	178	33	45	324	18	20	24	27	9	65	4	9	21	66	74	9	42	40	22
8	3	10	30	0	3	20	49	63	141	34	42	290	18	13	26	36	12	51	7	8	19	55	30	7	15	31	22
9	2	2	40	2	0	20	42	83	170	40	45	159	43	24	41	18	26	24	6	12	30	54	63	4	23	59	31
10	2	9	53	1	9	17	47	71	248	55	51	135	47	18	52	41	24	59	10	30	50	106	67	40	38	130	57
11	1	23	76	4	4	28	60	141	367	75	69	67	82	39	74	49	33	84	28	61	53	173	163	72	39	155	75
12	19	103	152	6	11	70	133	125	367	78	98	33	88	92	90	75	53	198	51	123	60	220	317	132	77	108	78
13	24	232	202	12	24	58	163	133	258	95	125	50	106	111	87	72	88	321	146	163	64	112	367	171	75	60	34
14	22	243	294	36	43	91	163	108	146	81	180	18	99	96	52	86	74	448	208	119	58	105	209	167	65	44	26
15	22	368	300	48	83	87	210	79	132	77	213	13	94	101	39	62	63	414	234	137	37	75	177	133	65	37	16
16	14	343	271	111	146	67	289	80	80	43	166	5	71	76	34	47	41	475	227	138	36	76	114	78	50	63	16
17	7	479	252	81	142	53	218	67	98	42	174	14	39	59	31	46	42	352	180	102	13	61	126	73	41	24	4
18	36	208	223	92	145	59	195	28	66	44	105	10	41	58	16	22	27	200	134	77	21	48	99	50	41	16	18
19	23	361	222	95	128	30	150	24	53	24	83	5	20	32	26	12	11	144	64	40	19	20	54	60	28	21	9
20	24	328	143	62	90	52	80	18	65	19	78	9	22	35	22	14	15	124	81	57	11	25	42	21	44	19	8
21	27	214	102	30	67	45	90	13	30	15	39	1	16	24	16	18	14	136	53	33	5	34	21	35	21	36	4
22	13	238	100	42	53	46	43	16	17	12	51	8	12	19	17	6	12	115	53	26	9	14	22	28	16	24	3
23	13	160	46	40	54	22	28	7	9	4	55	3	9	18	3	9	13	49	36	32	3	7	9	14	21	13	7
24	13	174	33	35	48	11	23	7	5	9	61	0	16	11	10	6	14	64	41	21	6	10	16	14	23	3	4
25	6	195	65	28	63	9	21	9	12	0	33	3	10	14	9	2	7	40	23	22	4	3	9	9	6	6	1
26	6	242	37	58	32	21	37	5	26	2	36	4	3	12	9	6	5	28	28	8	4	5	12	7	2	2	0
27	7	197	41	27	53	13	10	4	14	2	7	1	4	6	0	1	2	17	9	9	1	2	5	0	7	4	0
28	2	133	19	32	51	11	27	3	0	1	10	0	2	1	4	2	0	15	9	6	1	1	4	1	0	5	0
29	2	86	10	8	30	15	7	2	7	3	1	3	5	0	2	3	2	5	3	4	1	1	2	0	0	2	0
30	5	121	24	12	31	3	1	2	9	1	14	1	0	0	1	8	2	11	0	6	1	0	3	0	3	2	0
31	3	78	14	11	5	4	8	1	3	0	0	0	1	1	1	0	0	3	2	2	1	0	1	0	0	0	0
32	0	61	7	6	9	1	7	0	0	1	0	0	0	0	1	3	0	1	1	0	0	0	1	0	2	0	0
33	0	25	7	7	6	9	0	1	5	0	5	0	1	1	0	1	0	0	0	1	0	0	2	0	0	0	0
34	0	0	0	0	9	2	2	1	8	0	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
35	1	38	0	0	2	0	0	1	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0
36	0	38	4	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	2	0	0	5	2	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
38	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	301	4,719	2,918	896	1,347	900	2,371	1,485	2,825	880	1,883	2,044	933	993	721	809	622	3,658	1,670	1,290	609	1,986	2,361	1,134	812	1,047	534

Table 2.51. Long-finned squid length frequencies, fall, 1 cm intervals, 1986-1990, 1992-2013.
Length frequencies of squid taken from the first three tows of each day.

length	Fall																										
	1986	1987	1988	1989	1990	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	13	0	12	0	0	0	0	0	0	0	0	0	0	0	4	0	0	3	12	0	0	14	-	0	0	11
2	0	31	0	1	0	49	0	9	25	24	6	20	29	2	0	11	0	1	10	74	9	33	90	-	12	10	67
3	0	126	59	112	74	266	914	80	156	57	125	115	104	53	36	80	90	170	91	107	20	87	343	-	80	101	51
4	0	320	212	468	278	1,507	2,336	477	598	491	642	362	384	230	261	886	693	763	249	420	294	939	-	618	469	127	
5	0	892	826	743	830	2,906	3,502	1,332	1,223	1,371	1,091	1,888	1,214	1,215	663	695	2,225	1,757	1,539	587	1,367	417	2,332	-	1,417	705	273
6	3	1,019	1,165	677	836	5,015	4,358	1,803	1,896	1,869	1,278	2,737	1,782	1,842	923	1,067	3,185	2,705	2,337	913	2,780	604	2,894	-	1,405	731	426
7	13	817	722	446	469	5,210	4,331	2,152	2,254	2,751	1,169	3,412	2,390	2,204	996	1,193	2,566	2,759	2,552	917	3,822	780	2,746	-	1,315	698	550
8	135	654	333	283	220	3,110	3,811	2,225	2,080	2,224	935	2,939	1,808	1,797	839	929	1,885	1,787	2,006	611	3,549	908	1,791	-	840	638	570
9	16	692	146	108	129	1,594	2,913	2,486	2,124	1,853	570	1,993	1,829	1,081	616	488	1,785	907	1,283	385	2,119	777	1,131	-	670	584	418
10	13	503	65	58	42	894	1,772	2,055	1,540	1,264	446	1,216	1,332	695	528	354	861	626	970	204	1,974	480	808	-	637	399	306
11	0	310	62	70	39	737	1,178	1,607	905	698	291	675	780	556	264	214	215	392	541	183	1,379	332	326	-	343	359	178
12	0	165	21	38	24	284	737	843	387	579	153	368	423	380	154	145	58	144	307	85	728	193	222	-	211	232	123
13	0	82	24	34	17	242	408	415	159	297	126	328	277	247	132	87	2	96	194	31	447	103	108	-	139	148	62
14	0	77	9	17	6	40	278	329	110	160	44	199	235	204	68	53	1	103	64	26	253	47	41	-	40	97	53
15	0	31	11	17	3	18	185	181	77	83	31	103	133	128	66	13	2	48	44	9	150	18	27	-	86	64	14
16	0	4	11	13	2	0	53	99	33	46	15	90	111	73	32	10	0	43	30	8	159	7	14	-	18	35	2
17	0	14	0	10	4	0	73	75	15	16	13	23	120	101	8	6	0	1	24	17	103	5	2	-	7	8	6
18	0	1	23	6	1	0	20	31	2	6	10	16	82	34	3	0	0	8	2	11	74	0	1	-	25	12	4
19	0	1	0	0	0	0	3	12	0	1	0	1	34	9	2	4	0	1	1	11	2	0	0	-	0	7	0
20	0	13	0	5	1	0	2	7	0	0	1	1	22	3	2	1	0	4	2	1	3	0	0	-	0	1	0
21	0	15	0	4	0	0	0	3	0	0	0	0	22	9	1	0	0	0	0	0	1	0	0	-	0	5	2
22	0	2	0	3	1	0	0	11	0	6	0	1	17	0	0	0	0	0	1	0	0	0	0	-	0	2	1
23	0	0	0	3	0	0	2	1	0	0	0	0	4	0	0	0	0	0	1	0	0	0	0	-	1	0	0
24	0	1	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5	0	0	-	0	0	0
25	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	-	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	1	0
Total	180	5,783	3,689	3,136	2,976	21,872	26,877	16,233	13,446	13,903	6,795	16,767	13,111	11,018	5,563	5,615	13,761	12,245	12,765	4,441	19,364	5,085	13,829	-	7,864	5,306	3,244

Table 2.52. Scup spring length frequencies, 1 cm intervals, 1984-2013.
Lengths were recorded from every tow.

length	Spring																														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	13	0	0	0	0	0	
8	0	0	0	6	3	84	0	12	0	0	0	11	0	0	10	24	61	0	16	0	0	4	56	4	145	3	0	0	35	0	
9	4	30	50	33	46	1,049	11	80	9	0	11	408	152	10	163	128	976	98	400	0	0	77	322	145	606	148	0	19	435	60	
10	8	138	377	46	160	2,523	270	514	49	3	48	1,202	537	145	1,381	355	5,293	405	2,303	4	1	169	1,151	926	1,700	1,966	14	115	3,169	338	
11	10	362	724	38	144	2,075	493	1,365	67	4	92	1,437	1,055	311	1,617	313	10,571	645	3,389	19	1	136	1,259	1,033	2,055	3,476	22	203	3,888	460	
12	5	194	427	9	31	312	280	576	57	3	67	809	826	151	712	131	8,815	586	1,706	33	1	62	1,263	486	950	3,418	7	178	2,589	300	
13	2	51	122	4	9	87	56	122	18	4	23	108	397	36	359	51	4,041	265	722	25	2	19	888	78	586	1,141	1	77	1,241	93	
14	0	7	64	2	0	72	22	0	11	5	2	20	29	25	154	16	1,043	104	498	7	1	8	626	76	357	561	3	16	262	74	
15	2	4	4	11	4	137	40	3	3	77	7	3	3	11	66	1	201	220	247	7	42	56	251	298	426	593	40	19	62	98	
16	9	47	26	65	19	121	202	8	4	217	48	6	61	49	24	13	48	1,349	1,035	121	327	129	722	1,177	1,971	1,430	222	100	52	504	
17	37	91	91	119	40	105	310	63	49	339	142	11	264	123	57	75	229	4,517	2,943	415	485	129	1,670	1,607	3,916	2,151	614	215	206	1343	
18	22	204	208	174	34	95	231	182	135	286	194	28	545	216	89	161	1,034	8,611	4,097	733	403	140	2,254	1,444	3,722	1,953	780	312	642	2764	
19	28	130	182	100	16	50	121	347	258	159	203	30	390	136	66	172	1,451	6,452	3,619	720	261	114	1,607	918	1,978	1,078	527	270	1,123	3058	
20	11	71	131	33	25	33	30	256	136	35	99	22	153	81	21	130	1,106	1,840	3,679	390	381	29	934	390	1,315	798	424	257	909	1402	
21	3	15	36	15	44	13	26	223	65	27	95	19	34	62	11	78	513	518	6,253	427	584	42	559	266	2,149	1,320	599	655	377	271	
22	7	7	6	4	49	7	18	292	11	17	56	17	10	96	8	29	173	292	8,129	660	1,077	111	416	458	2,835	1,941	723	1,260	200	296	
23	6	22	103	3	33	12	12	225	10	25	44	19	1	86	17	25	240	755	5,618	931	982	174	427	603	2,340	1,522	641	1,387	313	665	
24	4	38	124	5	14	9	6	103	21	14	23	24	8	46	18	26	282	833	2,385	977	745	161	361	558	1,351	1,149	580	1,123	568	738	
25	3	28	77	2	4	5	7	33	15	8	10	15	2	20	12	13	199	278	1,292	1,025	844	216	234	272	854	909	573	930	816	591	
26	0	11	73	2	3	3	3	15	10	1	8	5	1	5	10	10	154	132	1,266	741	1,215	332	262	128	642	793	523	658	1,000	312	
27	2	3	35	3	1	4	1	5	4	4	6	8	2	3	7	7	50	93	491	363	1,200	353	283	91	382	504	350	651	931	461	
28	0	12	4	5	4	3	3	1	6	2	2	0	1	3	3	2	13	88	282	201	730	379	427	109	230	267	243	637	721	689	
29	1	14	6	3	2	0	0	2	2	0	0	0	1	0	1	6	19	36	147	81	331	332	622	115	198	234	153	468	565	753	
30	0	11	3	1	0	1	0	2	1	1	1	1	1	3	0	0	8	8	71	33	116	171	618	156	64	90	41	321	467	627	
31	0	1	0	1	2	0	0	1	0	0	1	0	1	4	0	1	6	3	35	23	37	101	441	167	54	42	34	235	307	496	
32	0	2	1	0	1	1	1	0	1	0	0	0	1	0	0	3	3	2	10	11	28	41	317	126	68	32	15	123	174	310	
33	0	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	4	2	11	4	11	16	266	65	57	57	14	78	105	152	
34	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	3	1	4	2	8	1	30	37	47	16	4	44	63	106	
35	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	1	0	3	0	1	2	17	18	26	10	4	32	31	36	
36	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	1	4	9	11	11	2	28	17	23	
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	3	4	8	1	15	6	8	
38	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0	5	4	10	
39	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	2	3	
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	3	0	0
41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Total	166	1,497	2,877	684	689	6,801	2,143	4,430	942	1,232	1,183	4,204	4,474	1,624	4,806	1,771	36,537	28,134	50,654	7,955	9,817	3,506	18,292	11,764	31,052	27,623	7,155	10,435	21,283	17,042	

Table 2.53. Scup fall length frequencies, 1 cm intervals, 1984-2013.
Lengths were recorded from every tow.

length	Fall																														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	-	0	0	0	
3	0	8	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	13	4	9	0	0	-	4	0	0	
4	1	61	0	0	17	1	3	14	196	0	6	0	0	18	4	1	1	28	117	19	143	363	11	74	0	34	-	21	29	4	
5	16	90	313	213	103	128	57	120	483	28	312	1	13	70	224	21	168	317	603	214	1,302	850	129	381	0	234	-	131	119	7	
6	295	249	626	1,193	625	612	340	1,805	1,516	554	931	41	185	338	1,246	1,041	991	1,891	2,132	573	4,723	4,122	389	1,303	4	1,106	-	705	567	116	
7	627	588	753	491	1,782	1,367	640	4,923	1,554	4,383	5,217	219	788	1,020	2,354	4,570	4,228	5,003	5,571	1,589	8,721	9,683	942	4,516	871	2,923	-	1,769	1,849	180	
8	345	1,827	507	499	2,264	1,765	2,152	11,168	2,595	9,063	11,585	602	2,048	1,318	4,330	9,886	7,464	7,327	9,315	701	10,637	11,328	1,442	10,576	3,092	3,078	-	3,977	4,036	563	
9	719	2,637	210	434	2,050	1,500	3,806	13,883	936	9,169	13,327	1,867	3,502	1,479	4,515	18,224	9,302	5,369	10,102	205	10,751	8,808	1,517	13,782	6,383	1,316	-	4,882	5,961	1275	
10	262	2,025	84	77	656	798	2,728	5,539	250	5,754	4,712	1,916	2,667	1,184	3,126	29,863	6,831	2,837	6,754	33	5,987	5,295	459	10,376	7,196	610	-	2,365	5,770	701	
11	8	1,064	19	12	81	95	601	1,191	78	814	432	606	525	499	728	20,073	1,806	888	2,020	3	1,896	1,973	126	2,547	1,733	75	-	632	2,695	375	
12	0	9	4	22	17	124	28	88	40	12	46	103	31	191	94	6,931	467	312	488	6	344	734	256	1,316	84	10	-	112	726	118	
13	14	59	41	144	53	670	51	2	304	13	4	46	39	44	56	1,190	428	229	197	87	77	680	606	1,645	27	81	-	42	154	70	
14	30	265	322	288	274	1,449	13	46	860	70	22	403	161	130	180	198	2,744	309	276	249	159	1,158	1,101	3,269	193	598	-	248	482	288	
15	86	339	603	277	649	1,102	171	305	1,393	176	68	1,283	459	517	504	459	6,889	690	854	325	268	784	1,210	4,216	367	1,890	-	883	1,483	454	
16	91	473	452	149	313	487	373	910	942	251	117	1,478	491	588	738	742	10,695	762	1,403	201	130	555	801	3,003	493	2,445	-	1,425	2,233	331	
17	46	299	361	61	111	213	362	683	465	168	103	869	299	289	446	1,583	7,208	593	1,642	92	75	359	338	1,468	330	1,777	-	1,138	2,015	203	
18	27	170	188	29	81	415	242	110	70	87	262	111	101	193	1,548	3,508	225	1,370	43	37	261	179	555	110	830	-	613	1,332	83		
19	8	44	55	20	85	42	309	39	28	56	57	47	51	21	72	1,196	771	294	733	175	78	234	113	676	88	320	-	293	455	176	
20	21	15	36	52	93	43	266	13	145	95	34	18	75	32	33	436	396	769	621	586	189	308	147	1,121	185	343	-	110	199	505	
21	47	8	44	87	87	34	424	56	254	111	41	9	70	34	33	289	337	967	797	693	339	194	158	1,179	228	336	-	186	212	640	
22	59	38	116	88	96	34	333	64	265	88	56	4	58	39	27	460	216	655	1,214	500	447	147	128	655	238	226	-	288	388	478	
23	75	77	133	61	18	14	101	86	181	44	38	4	23	17	16	329	189	328	1,185	315	544	88	134	365	150	190	-	408	319	164	
24	93	64	84	33	17	9	34	98	27	16	33	3	7	10	7	173	124	195	1,071	506	744	104	90	189	94	170	-	649	184	179	
25	46	49	38	27	4	6	21	47	23	12	17	1	1	12	5	66	49	96	769	726	1,072	146	59	181	123	170	-	822	112	238	
26	38	53	13	28	10	3	10	19	17	10	11	0	0	4	2	13	35	55	271	720	878	173	42	170	147	167	-	643	106	162	
27	38	64	9	36	7	1	2	13	22	10	7	0	2	1	2	19	42	27	184	558	790	212	23	91	99	128	-	502	122	129	
28	31	18	12	11	3	1	3	6	13	7	6	0	2	1	1	4	20	11	67	261	731	214	15	78	85	107	-	383	116	108	
29	9	21	4	7	0	0	1	1	6	4	2	0	0	0	3	2	13	14	32	101	433	174	23	32	59	86	-	341	59	135	
30	8	16	2	1	0	0	0	0	0	0	0	0	0	0	0	3	4	22	75	122	101	36	27	51	35	-	196	63	116		
31	7	7	1	1	0	0	1	2	1	0	0	0	1	0	0	1	2	3	14	23	45	46	26	43	22	28	-	111	26	47	
32	2	1	0	0	0	0	3	0	0	0	1	0	0	0	0	1	0	0	1	14	25	18	20	37	20	21	-	76	17	36	
33	1	2	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	5	10	3	6	27	14	13	-	31	11	24	
34	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	5	2	10	11	13	-	16	1	9		
35	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	1	0	1	1	6	7	-	10	0	7	
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4	0	0	1	4	2	-	7	1	2	
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	-	2	0	1	
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	1
Total	3,050	10,641	5,030	4,344	9,496	10,592	13,249	41,363	12,705	30,983	37,272	9,782	11,609	7,957	18,939	99,319	64,927	30,198	49,829	9,602	51,706	49,133	10,533	63,921	22,507	19,371	-	24,021	31,842	7,925	

Table 2.54. Striped bass spring length frequencies, 2 cm intervals (midpoint given), 1984–2013.

All striped bass taken in the Survey were measured, with the exception of one fish taken in 1984, one in 1988, and two in 1990.

length	Spring																														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
11	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	1	0	0	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	8	0	0	0	1	0	
17	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	2	0	0	0	3	0		
19	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	5	0	0	5	0	
21	0	0	0	0	0	2	3	0	0	0	0	4	1	0	2	1	3	0	8	0	0	1	0	0	21	0	0	5	3		
23	0	0	0	0	0	1	1	0	1	0	0	9	0	0	11	1	8	1	22	0	0	23	0	7	1	24	1	0	10	11	
25	0	0	0	1	0	1	4	2	0	0	0	18	0	2	28	1	18	7	32	4	2	57	0	9	4	24	1	2	8	9	
27	0	0	0	0	0	0	5	1	2	0	2	28	2	5	30	2	24	15	38	4	1	67	1	12	4	7	1	0	8	11	
29	0	0	0	0	1	0	9	2	0	1	1	24	4	12	21	14	28	16	27	11	4	50	1	10	6	5	0	0	8	7	
31	0	0	0	0	0	1	6	2	1	2	2	12	4	14	20	10	29	5	17	7	5	19	1	4	4	1	0	0	5	4	
33	0	0	0	1	0	0	0	6	1	0	3	7	8	5	20	24	7	6	12	10	10	6	2	5	4	6	0	0	2	7	
35	0	0	0	0	1	0	3	2	1	1	0	8	20	2	19	16	3	4	7	7	13	7	6	6	1	2	1	1	2	7	
37	0	0	0	0	0	0	3	1	0	0	1	8	26	25	25	15	2	11	12	11	11	4	5	16	2	5	2	1	3	10	
39	0	0	0	0	0	1	0	0	0	0	3	3	19	42	23	13	2	14	14	7	4	7	6	35	2	10	3	0	3	9	
41	0	0	0	0	0	2	2	1	3	1	3	4	17	30	25	19	6	7	20	3	2	20	2	26	2	19	1	0	1	2	
43	0	0	0	0	0	0	0	1	3	5	1	0	7	16	17	11	3	2	17	5	1	13	4	25	6	14	0	0	4	2	
45	0	0	0	1	0	0	0	0	5	2	2	3	12	6	19	9	4	1	17	2	3	12	2	11	7	21	0	0	5	4	
47	0	0	0	0	2	0	0	0	0	3	6	0	7	10	15	10	5	6	9	3	2	17	0	7	10	30	2	6	1	4	
49	0	0	0	0	2	0	2	1	2	3	4	1	5	13	14	6	4	3	8	5	6	17	1	12	9	28	7	4	1	6	
51	0	0	0	0	0	1	0	1	4	3	4	2	7	7	12	6	4	3	9	7	1	4	6	5	10	32	2	8	5	3	
53	0	0	0	1	0	0	0	1	2	5	4	2	7	4	8	11	5	2	5	6	6	9	6	8	12	19	5	11	1	4	
55	0	0	0	0	0	0	1	1	1	4	2	2	5	3	13	13	7	3	8	9	3	7	6	4	12	9	7	11	5	3	
57	0	0	0	0	0	0	0	2	2	2	8	1	2	3	6	21	4	5	9	9	6	13	3	15	12	13	8	13	6	0	
59	0	0	0	2	0	1	0	0	0	4	2	2	2	7	7	22	4	5	10	11	4	5	5	5	8	17	6	5	6	6	
61	0	0	0	0	0	0	0	2	1	2	5	2	3	3	2	26	4	10	17	7	6	6	4	12	5	17	3	13	1	2	
63	0	0	0	1	1	0	0	0	1	5	1	0	2	3	2	21	8	13	6	9	7	7	4	15	5	15	2	12	1	3	
65	0	0	0	0	0	0	0	0	0	1	4	0	3	5	10	15	10	4	13	9	4	8	6	4	1	12	4	8	2	6	
67	0	0	0	0	0	1	0	0	1	1	0	1	3	4	6	10	9	6	19	14	6	4	3	8	4	8	1	15	4	3	
69	0	0	0	0	0	0	2	0	0	3	3	3	1	3	1	10	3	13	15	10	5	7	2	5	3	3	2	9	4	4	
71	0	0	0	1	0	0	1	0	0	0	1	2	1	3	1	10	5	6	6	5	3	9	1	4	5	7	2	12	3	3	
73	0	0	0	0	0	0	0	2	0	3	0	0	7	6	2	5	8	5	12	10	2	6	3	3	3	3	2	7	1	4	
75	0	0	0	0	0	0	0	0	0	3	1	0	0	0	6	1	2	4	10	5	5	1	3	0	3	4	8	3	2	2	
77	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	3	5	2	0	6	1	5	2	1	1	0	9	0	2	7	
79	0	0	0	0	0	0	0	1	1	0	0	3	2	3	0	1	2	1	7	1	1	4	2	0	1	1	1	5	1	7	
81	0	0	0	0	0	0	0	0	1	1	0	0	1	1	2	2	0	4	0	2	4	1	2	2	0	1	1	2	5	0	
83	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	1	4	0	1	1	1	1	0	0	0	1	0	3	
85	0	0	0	0	0	0	0	2	0	0	0	0	2	1	0	0	1	3	2	0	1	0	0	0	0	0	0	1	1	0	
87	0	0	0	0	0	0	0	0	1	1	1	0	1	1	1	0	0	1	0	4	2	0	2	1	1	0	0	0	0	0	
89	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	1	0	0	3	0	0	0	0	0	0	1	1	
91	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0	1	0	0	0	0	2	
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	1	0	0	0	0	0	
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	1	1	
97	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Total	0	0	0	8	7	11	43	32	34	59	65	151	184	239	361	335	229	184	413	208	135	422	97	287	160	382	69	165	125	160	

Table 2.55. Striped bass fall length frequencies, 2 cm intervals (midpoint given), 1984–2013.

All striped bass taken in the Survey were measured on each tow.

length	Fall																													
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	1	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	1	1	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	7	2	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	13	1	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	9	1	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	4	2	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	-	3	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	1	4	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0	0	0	-	1	0	0
41	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	7	0	2	0	0	0	-	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	1	0	19	0	0	0	1	0	-	0	4	0
45	0	0	1	0	0	0	0	0	0	0	0	4	3	2	2	0	0	1	0	18	1	1	2	0	0	-	1	0	1	3
47	0	0	0	0	0	0	0	0	0	0	0	4	3	0	11	0	0	1	1	18	1	1	10	0	2	-	0	5	6	
49	0	0	0	0	0	0	0	0	0	1	0	0	9	2	9	1	0	0	0	14	2	4	22	1	1	-	0	6	5	
51	0	0	0	0	0	0	0	0	0	4	2	0	8	4	1	9	0	0	3	0	29	2	5	18	2	4	-	2	2	2
53	1	0	0	0	0	0	0	0	0	2	2	1	5	14	7	5	5	0	3	0	27	7	7	16	7	7	-	2	2	4
55	0	0	0	0	0	0	0	0	1	0	1	0	2	10	5	5	2	0	4	1	26	1	2	10	4	10	-	3	3	2
57	0	0	0	1	1	0	0	1	1	5	0	2	3	11	5	5	5	2	7	1	11	6	3	6	3	8	-	0	0	3
59	0	0	0	0	0	0	0	0	1	0	0	0	0	7	3	0	8	0	2	0	13	6	3	5	3	8	-	0	6	1
61	0	0	0	0	3	0	0	1	0	1	0	2	2	3	1	2	4	2	2	0	12	1	6	4	3	4	-	2	1	2
63	0	0	0	0	2	0	0	1	1	1	1	0	0	3	2	3	6	7	3	1	9	5	2	5	1	6	-	3	0	5
65	0	0	0	0	1	0	0	0	2	1	1	0	0	2	0	4	6	5	3	0	7	2	2	7	1	6	-	6	0	2
67	0	0	0	0	1	0	0	1	0	1	2	2	1	1	0	1	6	1	6	0	8	4	3	4	0	5	-	3	0	0
69	0	0	0	0	1	0	0	0	0	1	1	0	2	2	0	0	4	3	4	0	6	0	3	6	2	6	-	2	0	2
71	0	0	0	0	1	0	0	0	1	0	0	1	1	1	2	0	3	3	5	0	3	3	0	0	0	1	-	1	2	0
73	0	0	0	0	0	0	0	0	0	2	1	4	0	2	3	1	2	2	0	1	3	0	0	0	4	1	-	5	1	1
75	0	0	0	0	0	0	0	1	0	0	1	2	1	1	0	1	3	2	1	1	1	2	0	1	0	0	-	1	1	0
77	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	1	4	0	4	0	1	0	0	2	3	0	-	5	1	0
79	0	0	0	0	0	0	0	0	0	2	1	0	0	1	1	0	1	1	2	1	1	0	1	0	3	1	-	0	0	0
81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	-	0	0	0
83	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	-	0	0	2
85	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	2	1	0	1	0	3	-	1	0	0
87	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	-	0	0	0
89	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	-	1	0	0
91	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	-	0	0	0
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	-	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	2	-	0	0	0
97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	5	-	0	0	0
99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	-	0	0	0
101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	-	0	0	0
103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	-	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	-	0	0	0
107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	-	0	0	0
111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	-	0	0	0
Total	1	0	1	1	10	0	0	6	8	22	16	15	48	80	37	62	64	28	56	8	243	47	47	131	39	83	-	77	46	40

Table 2.56. Summer flounder length frequencies, spring, 2 cm intervals (midpoint given), 1984–2013.

All summer flounder taken in the Survey were measured, with the exception of one fish in 1990.

length	Spring																														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
13	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
15	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	15	0	0	1	0	0	0	
17	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	28	1	1	7	0	0	1	
19	0	0	0	36	0	0	1	0	0	0	0	1	1	0	0	0	2	0	0	2	1	0	0	37	1	3	10	0	0	0	
21	0	0	11	39	0	0	0	0	0	0	3	2	2	1	0	0	2	1	1	3	0	0	46	5	16	21	1	0	15		
23	0	0	10	31	1	0	1	3	2	0	9	1	2	2	0	0	6	1	13	1	2	1	37	3	21	38	4	2	21		
25	1	0	22	33	2	0	2	6	1	9	20	1	2	10	1	2	6	5	2	27	3	3	0	21	7	43	86	21	4	41	
27	8	0	43	25	20	0	7	12	6	22	32	3	11	10	2	14	7	26	13	79	8	14	0	11	13	55	94	50	22	58	
29	7	0	39	6	18	0	15	17	14	15	10	9	45	22	5	32	21	60	50	135	25	10	2	19	34	53	78	90	56	56	
31	9	1	17	3	18	0	19	23	12	12	19	12	44	27	4	42	23	53	89	104	14	19	5	19	28	24	37	92	51	33	
33	0	7	13	5	12	1	12	9	8	7	22	2	14	25	7	22	28	16	57	54	18	15	21	6	25	26	10	70	44	36	
35	2	8	4	2	13	3	1	5	6	7	16	2	12	11	11	22	22	10	41	49	13	12	17	9	14	20	7	81	58	35	
37	1	3	4	5	8	2	1	6	2	6	20	1	10	20	28	26	34	20	57	75	34	8	14	12	10	28	16	69	60	64	
39	3	3	3	4	5	1	2	5	2	7	7	0	12	16	38	18	36	12	61	71	51	9	10	22	14	36	20	55	66	62	
41	1	3	7	1	8	2	1	6	5	4	6	3	5	10	35	14	33	19	51	77	49	13	5	26	17	35	12	38	34	68	
43	0	1	3	0	2	2	0	0	2	4	6	7	6	6	22	16	22	24	28	58	48	10	5	30	13	28	13	25	43	46	
45	0	0	1	1	3	0	0	8	4	0	4	0	5	4	15	11	29	16	21	33	18	5	4	26	6	30	7	19	23	39	
47	0	0	3	3	3	1	1	4	2	1	3	0	1	6	9	10	18	14	20	43	28	12	3	25	14	14	16	26	24	28	
49	1	0	1	1	1	1	2	0	2	1	0	2	1	3	2	12	17	7	10	14	32	26	6	3	35	9	13	10	20	23	20
51	0	0	5	0	1	0	0	1	1	0	1	0	1	3	15	9	8	12	19	19	13	8	7	26	15	16	9	15	15	18	
53	0	0	1	0	1	0	2	1	0	1	1	2	3	5	5	9	5	8	10	21	16	6	4	10	15	8	2	18	8	13	
55	0	2	1	0	1	1	0	0	1	2	1	0	3	2	6	8	8	8	14	10	13	5	2	11	18	14	2	15	8	12	
57	0	0	0	0	0	1	1	0	0	0	2	0	0	1	5	4	5	8	12	9	3	2	1	13	14	16	2	14	3	6	
59	0	0	0	0	1	1	0	0	0	2	0	0	2	3	3	8	8	2	6	12	8	4	1	5	5	17	3	7	8	9	
61	0	2	0	0	0	0	0	0	0	1	2	1	1	0	1	3	4	4	6	5	5	3	0	2	4	7	3	7	1	3	
63	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0	2	1	7	10	9	0	4	6	5	8	2	8	6	3	
65	0	1	0	0	0	0	0	1	1	0	1	0	0	0	1	1	2	4	2	8	2	1	0	7	3	4	6	4	5	5	
67	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	2	3	5	4	0	1	1	1	1	1	6	0	1	
69	0	0	0	1	0	1	0	0	0	0	0	0	1	1	1	1	0	0	0	4	2	0	0	3	0	1	1	0	1	0	
71	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	1	2	0	3	4	0	0	0	0	0	0	1	3	
73	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	1	2	2	0	
75	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	1	2	0	1	1	0	0	
77	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Total	33	32	189	203	118	18	67	109	72	101	188	51	186	188	230	289	334	342	588	962	416	172	110	512	297	538	516	758	569	696	

Table 2.57. Summer flounder length frequencies, fall, 2 cm intervals (midpoint given), 1984–2013.

All summer flounder taken in the Survey were measured, with the exception of two fish in 1985.

length	Fall																													
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	-	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	-	0	0	0
15	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	2	0	1	-	0	0	0	
17	0	0	2	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0	0	0	2	-	0	0	0	
19	0	3	3	0	0	0	0	0	0	2	0	1	0	0	0	0	1	0	0	0	0	2	1	1	5	-	0	0	0	
21	0	7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	0	1	4	8	-	0	0	2	
23	0	4	3	0	0	0	0	0	1	2	0	1	3	0	0	0	0	1	7	0	3	2	0	0	11	6	-	0	2	6
25	0	6	0	0	0	0	0	2	0	4	0	0	2	0	0	1	1	0	5	0	5	0	0	3	5	7	-	3	1	5
27	0	6	3	1	0	0	1	1	0	1	0	0	0	0	0	3	11	1	17	0	5	2	0	4	17	14	-	4	3	4
29	0	2	2	7	0	0	0	1	0	1	1	0	1	0	0	1	2	1	19	0	10	1	0	6	8	6	-	5	5	13
31	0	3	6	9	3	0	0	1	1	0	1	0	4	3	0	4	2	14	13	0	5	5	0	18	5	5	-	11	7	26
33	10	0	10	30	10	0	3	3	3	8	8	8	12	17	1	16	3	28	14	3	6	33	5	14	3	8	-	29	34	45
35	22	4	33	35	20	0	10	11	14	29	7	13	33	37	11	18	8	104	70	15	3	55	2	19	1	34	-	35	42	33
37	21	17	44	28	41	0	14	21	19	31	10	6	33	44	10	39	23	109	106	29	6	37	6	15	8	34	-	38	58	37
39	20	10	35	21	37	0	11	28	15	29	25	6	38	72	17	50	33	81	158	28	18	32	9	9	29	40	-	54	73	25
41	16	11	26	16	36	1	18	30	12	37	10	16	49	54	21	52	31	61	119	16	21	57	10	20	36	34	-	41	55	46
43	11	24	26	5	21	1	18	13	13	16	4	9	23	27	34	43	31	28	61	22	25	30	16	17	27	29	-	27	37	27
45	3	16	9	3	18	1	15	13	9	6	5	2	15	10	32	22	13	16	77	21	32	25	13	14	9	20	-	17	23	33
47	2	11	6	6	8	3	3	5	6	11	7	2	13	11	36	8	8	15	35	18	29	15	4	8	5	27	-	6	15	16
49	3	12	1	2	3	3	3	3	8	3	7	1	8	7	15	4	18	23	24	10	26	15	8	13	5	20	-	9	11	19
51	3	1	4	1	1	2	0	8	4	6	0	3	8	4	9	7	11	20	14	8	9	7	1	15	2	7	-	2	15	11
53	1	1	2	2	1	4	1	7	4	3	1	0	3	5	7	12	7	8	5	5	7	8	4	16	1	10	-	1	11	8
55	1	2	1	2	1	0	2	4	2	1	0	2	0	3	4	3	5	9	1	2	4	3	2	7	0	8	-	4	14	8
57	2	0	1	2	1	0	1	0	1	2	1	1	2	2	2	2	2	5	10	2	4	1	2	3	1	2	-	1	0	4
59	0	0	1	0	1	0	1	0	0	1	3	0	0	2	1	6	3	4	7	4	3	1	0	8	0	4	-	1	2	3
61	0	0	0	1	0	0	1	0	0	1	0	0	0	1	2	1	2	0	1	2	0	1	0	2	0	4	-	4	1	2
63	1	1	0	0	1	0	0	1	1	0	0	0	0	0	2	0	2	1	2	2	1	0	1	1	0	3	-	1	0	1
65	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2	0	1	1	1	1	0	1	1	1	0	0	-	0	0	2
67	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	0	1	-	1	0	1
69	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	-	0	0	0
71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	-	0	0	0	0
73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-	0	0	0
75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	-	0	0	0
Total	117	141	225	171	203	16	102	153	114	194	93	70	248	299	206	293	220	531	770	189	228	331	95	219	178	343	-	294	409	377

Table 2.59. Weakfish length frequencies, spring, 2 cm intervals (midpoint given), 1984-2013.
Weakfish were measured from every tow.

length	Spring																														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	1	3	0	3	10	4	
23	0	0	0	0	0	0	0	0	1	0	0	3	0	0	1	0	0	1	2	1	2	9	3	6	1	0	1	0	2	5	8
25	0	0	0	0	1	0	1	0	0	0	2	3	1	0	1	2	3	4	1	2	9	10	3	0	2	0	0	0	0	6	
27	0	0	0	0	0	0	2	4	0	0	3	5	3	5	4	1	2	13	3	0	3	27	4	4	0	0	0	2	4	10	
29	0	0	0	0	0	0	2	4	1	3	3	7	12	12	16	5	1	20	0	0	2	22	2	4	1	1	0	0	5	12	
31	0	0	0	0	1	0	1	6	3	3	3	7	15	21	21	8	5	9	1	0	2	20	1	0	0	0	0	0	11	8	
33	0	0	0	0	0	0	12	0	3	2	1	5	19	10	10	1	5	0	0	0	2	11	0	3	0	0	0	0	0	17	1
35	0	0	0	0	1	0	1	13	0	0	0	0	4	11	4	3	1	2	1	0	0	0	0	1	0	0	0	1	28	2	
37	0	0	0	1	0	0	2	5	0	0	0	1	2	2	3	1	0	0	1	0	0	1	0	2	1	0	0	2	31	3	
39	0	0	0	0	1	0	0	4	0	0	0	0	1	1	0	2	0	0	2	0	0	0	0	1	0	0	0	3	26	6	
41	0	0	0	0	0	0	0	0	0	0	0	0	0	4	7	3	0	2	1	0	0	0	0	1	6	0	0	1	15	3	
43	0	0	0	1	0	0	0	1	1	0	0	0	0	2	3	6	0	0	1	0	0	0	0	1	0	0	0	0	8	1	
45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	1	0	0	0	0	0	0	0	0	0	0	0	3	1	
47	0	0	0	0	0	0	0	1	1	0	0	0	0	1	2	2	1	0	1	0	0	0	0	2	0	0	1	0	2	2	2
49	0	0	1	0	0	0	0	0	0	0	0	1	0	1	5	3	1	0	1	0	0	0	4	1	0	0	0	0	1	4	4
51	0	0	0	0	0	1	0	1	2	0	0	0	0	0	6	3	2	0	1	0	0	0	2	0	0	0	0	0	1	3	3
53	0	0	0	0	0	0	0	0	3	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	1	0	0	0	7	3	
55	0	0	0	0	0	0	0	0	4	0	0	0	0	1	1	3	1	0	2	0	0	0	0	0	0	0	0	0	6	4	
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	9	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1
59	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	5	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0
61	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1
63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	2	0	0	1	0	0	0	0	0	0	0	0	0	1	0
65	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0
71	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
73	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0
77	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
79	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
83	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	9	2	6	5	9	51	18	11	13	28	43	81	92	85	29	59	28	5	28	96	26	31	6	10	1	16	187	86	

Table 2.60. Weakfish length frequencies, fall, 2 cm intervals (midpoint given), 1984-2013.

Weakfish were measured from every tow, with the exceptions of 968 juveniles in 1988 and 863 juveniles in 1989 that were not measured.

length	Fall																														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5	0	0	0	0	2	1	0	0	0	1	0	2	0	3	0	0	24	13	0	6	0	0	1	0	0	0	0	0	0	0	
7	0	3	51	0	13	46	2	0	48	22	16	34	34	92	0	1,065	89	2	357	30	8	3	101	9	9	-	9	81	23		
9	15	70	448	15	37	247	39	11	218	76	127	74	110	431	27	53	5,951	1,054	253	1,026	1,263	11	6	904	18	117	-	83	519	127	
11	24	168	1,625	84	63	566	130	423	233	222	413	33	366	749	110	976	7,488	3,672	1,009	1,186	4,329	197	26	2,578	70	528	-	302	1,475	276	
13	69	187	2,191	98	60	1,152	207	522	289	340	1,586	137	713	598	589	1,748	3,650	4,135	2,455	1,108	5,940	1,246	41	4,876	492	938	-	455	1,246	379	
15	54	474	894	22	31	1,699	519	831	292	550	2,561	566	1,529	214	788	2,802	1,641	2,124	3,740	1,153	3,909	2,538	37	4,570	931	692	-	620	1,606	485	
17	17	1,196	107	3	17	750	629	949	120	503	2,538	957	2,084	356	1,160	2,889	1,821	764	1,875	590	1,168	2,739	36	2,084	594	212	-	665	1,017	239	
19	5	379	50	2	3	162	312	741	35	235	665	748	1,165	651	497	2,007	1,169	366	851	132	471	1,798	27	991	253	43	-	225	332	125	
21	2	92	4	4	0	1	57	347	22	63	146	141	187	417	104	1,147	565	250	345	29	235	413	9	645	129	2	-	82	140	78	
23	1	14	10	1	0	1	6	267	9	6	71	11	8	106	50	357	100	84	94	0	74	89	1	352	15	1	-	8	50	24	
25	1	13	1	0	0	1	0	65	2	0	0	3	0	5	0	234	22	5	13	0	31	26	0	173	6	0	-	1	8	2	
27	0	14	0	0	0	0	0	0	2	0	0	0	0	0	0	38	0	2	13	0	0	1	0	70	0	1	-	0	1	0	
29	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0	11	0	0	0	1	0	0	0	-	9	0	1	
31	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	1	0	0	3	0	0	0	7	-	10	6	5
33	0	0	0	0	0	0	0	0	2	0	0	3	3	0	1	0	3	0	0	1	2	0	2	0	0	12	-	16	7	3	
35	2	1	0	0	0	0	0	1	1	1	0	6	12	8	3	1	12	0	1	0	4	0	4	0	0	0	14	-	21	18	22
37	5	0	2	1	0	0	1	0	2	0	0	13	19	18	10	0	9	3	1	0	1	2	6	0	0	9	-	9	18	11	
39	3	0	2	0	0	0	1	2	8	2	2	16	21	31	10	3	13	7	3	1	4	4	1	2	2	6	-	8	7	24	
41	4	2	4	1	0	0	2	1	1	3	5	23	41	37	13	5	9	18	3	0	6	6	2	3	1	1	-	2	7	13	
43	5	1	4	4	0	0	0	9	0	8	4	38	18	43	11	14	6	24	3	0	1	6	4	3	1	0	-	1	5	12	
45	7	4	0	3	1	0	1	9	0	8	1	27	11	28	10	15	1	22	1	0	6	2	1	1	1	0	-	4	12	6	
47	3	6	0	5	1	0	0	20	0	3	2	9	6	15	8	8	0	34	1	1	3	3	1	0	1	0	-	6	6	4	
49	0	1	1	0	0	0	1	22	0	1	4	5	1	10	2	9	1	8	0	0	0	3	0	1	0	1	-	10	10	4	
51	4	1	1	1	0	0	0	26	1	0	0	4	3	2	1	5	0	5	4	0	0	0	1	0	0	0	-	11	8	3	
53	1	0	0	0	1	0	0	19	2	2	0	0	2	1	0	0	2	0	0	0	0	0	0	0	0	1	-	6	7	2	
55	0	1	1	0	0	0	1	4	1	0	0	0	4	2	3	0	2	1	0	0	0	0	2	0	0	0	-	2	4	1	
57	1	2	0	0	2	0	0	0	3	0	0	0	2	2	4	2	0	1	0	0	0	0	1	0	0	0	-	2	1	1	
59	1	1	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	3	0	0	0	0	0	0	0	-	0	2	5	
61	0	1	0	0	0	0	0	1	3	0	0	0	0	0	0	0	2	0	3	0	0	0	1	0	0	0	-	0	0	2	
63	0	0	0	0	0	0	0	0	3	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	-	0	0	1	
65	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	5	0	0	0	0	0	0	0	1	0	-	0	0	0	
67	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0	0	0	-	0	0	0	
69	1	1	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	
71	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	-	0	0	0	
73	7	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	
75	10	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	-	0	0	0	
77	5	5	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	
79	2	2	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	
81	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	
83	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	-	0	0	0	
85	1	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	
87	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	
89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	
91	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	
Total	259	2,650	5,415	246	234	4,628	1,911	4,270	1,299	2,047	8,141	2,850	6,332	3,823	3,404	12,331	23,561	12,683	10,686	5,592	17,478	9,092	216	17,355	2,524	2,594	-	2,567	6,599	1,878	

Table 2.61. Windowpane flounder length frequencies, spring, 1 cm intervals, 1989, 1990, 1994-2013.
Lengths were recorded from the first three tows of each day.

length	Spring																					
	1989	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
4	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
5	4	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2	0	0
6	0	0	0	0	0	2	0	2	5	1	1	10	2	0	0	1	0	4	4	9	0	0
7	0	0	0	0	1	4	2	4	17	2	7	22	3	0	0	7	3	8	9	9	5	0
8	0	2	4	1	3	5	4	3	27	7	6	23	6	0	0	31	5	17	10	20	19	10
9	0	40	16	3	2	9	5	2	11	10	21	20	11	0	0	18	6	10	13	24	16	4
10	25	66	67	12	34	15	7	8	17	13	12	11	19	7	2	4	11	23	8	10	10	16
11	69	96	169	86	79	37	19	20	5	29	8	3	24	12	1	4	11	8	7	11	10	20
12	89	74	305	148	162	76	60	40	3	23	10	7	25	16	7	8	17	4	20	2	0	16
13	337	53	362	259	288	136	131	37	10	29	5	9	58	25	12	22	13	6	72	9	3	8
14	430	66	232	189	381	309	200	45	11	26	8	13	100	22	34	28	44	17	93	7	7	10
15	414	124	152	180	487	362	211	96	24	43	15	13	101	23	42	60	51	37	107	15	32	19
16	305	180	126	89	310	606	177	123	27	55	12	15	72	37	36	107	119	62	117	19	64	16
17	174	212	209	70	331	754	130	165	23	73	9	15	65	22	48	129	137	97	166	23	81	17
18	78	178	372	99	339	588	165	160	32	94	24	23	56	4	45	132	116	90	104	58	133	20
19	65	132	357	139	548	440	260	194	26	78	19	26	45	16	20	110	101	75	124	58	155	30
20	174	144	289	143	604	366	362	386	75	89	15	31	60	13	24	130	76	51	76	47	135	40
21	216	116	217	85	567	429	461	357	136	95	22	45	32	22	24	186	122	50	88	66	97	62
22	299	143	139	82	401	438	311	301	166	232	45	50	42	29	27	246	155	63	172	75	97	121
23	319	108	163	57	409	368	229	217	138	290	110	92	39	42	28	181	216	92	198	107	117	140
24	270	103	147	54	280	323	227	217	125	245	141	123	66	36	41	158	132	84	199	122	128	166
25	177	87	183	54	236	231	188	206	121	208	133	111	109	47	31	162	118	82	155	134	121	142
26	189	103	184	70	235	191	178	136	106	126	114	76	100	52	52	186	103	67	161	120	118	138
27	138	79	138	56	187	222	162	161	91	88	69	88	86	49	37	104	100	60	148	103	102	86
28	148	38	70	44	117	145	138	97	56	83	62	68	71	29	38	100	111	45	103	69	100	55
29	78	26	68	24	97	98	67	53	47	59	41	37	48	24	24	65	52	30	146	42	70	41
30	99	35	42	27	66	75	58	42	37	39	42	35	51	20	14	33	46	24	51	24	45	27
31	50	20	25	12	31	23	34	39	12	25	19	22	32	13	8	14	22	11	67	25	33	12
32	8	15	13	4	25	12	13	26	16	21	17	9	16	5	2	23	19	6	21	7	7	6
33	16	3	2	9	5	8	6	3	8	15	7	2	10	1	3	2	5	1	33	14	13	8
34	0	5	5	0	4	1	1	1	2	5	4	4	9	3	0	4	5	2	20	11	11	4
35	0	4	5	1	3	0	3	4	5	10	2	4	5	0	0	3	3	3	11	1	4	2
36	0	4	2	2	1	1	0	0	1	2	0	5	0	2	0	0	1	0	0	0	1	0
37	0	0	0	1	0	0	3	1	1	2	2	1	1	0	0	0	0	0	8	0	0	0
38	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	4,171	2,256	4,064	2,001	6,234	6,274	3,812	3,147	1,381	2,118	1,002	1,015	1,365	571	600	2,258	1,920	1,129	2,511	1,244	1,734	1,236

Table 2.62. Windowpane flounder length frequencies, fall, 1 cm intervals, 1989, 1990, 1994-2013.
Lengths were recorded from the first three tows of each day.

length	Fall																					
	1989	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
6	1	0	1	0	0	0	0	0	3	1	0	0	3	0	0	0	0	1	-	0	0	0
7	5	0	5	0	6	0	1	0	0	0	0	2	0	0	0	0	0	4	-	1	0	0
8	8	3	18	5	24	15	1	0	6	9	0	5	11	14	5	4	0	15	-	4	2	2
9	25	2	28	6	70	17	2	2	2	2	0	21	15	49	2	6	2	15	-	2	3	1
10	18	11	78	10	165	50	2	4	3	9	1	20	22	67	1	14	5	17	-	9	6	7
11	15	9	60	22	227	75	31	11	7	14	0	13	27	111	5	18	3	24	-	19	1	7
12	16	12	50	15	270	107	33	6	9	9	1	6	16	155	2	26	15	29	-	31	5	6
13	23	6	30	10	285	173	47	3	11	9	6	0	14	145	8	44	43	19	-	19	10	10
14	33	14	11	13	306	154	48	5	23	6	0	4	8	109	3	36	58	27	-	36	14	10
15	58	23	23	9	250	110	39	6	18	3	5	8	3	62	2	37	38	25	-	43	18	11
16	140	38	15	16	181	60	34	3	11	3	5	9	3	33	0	30	28	31	-	41	19	13
17	188	44	35	26	112	78	33	11	30	7	14	4	9	12	7	21	20	35	-	72	37	13
18	91	53	47	48	101	119	54	11	15	12	8	11	2	8	19	19	16	47	-	70	19	19
19	46	46	49	47	145	179	95	44	29	6	10	7	11	20	32	26	10	45	-	52	44	31
20	49	28	39	48	131	213	96	67	30	13	9	6	18	30	39	39	31	24	-	41	50	29
21	21	11	23	24	125	165	69	38	52	18	9	11	35	50	25	36	40	28	-	35	87	23
22	14	14	16	19	65	123	37	18	28	22	21	2	25	48	25	42	25	26	-	51	58	28
23	3	10	20	6	67	63	32	12	37	30	39	6	10	14	12	32	27	20	-	47	79	30
24	9	4	7	9	25	49	13	11	33	19	39	11	15	13	9	19	32	23	-	40	45	15
25	4	3	6	3	22	28	9	6	18	19	25	14	8	10	10	6	9	9	-	16	24	29
26	2	0	8	3	19	29	9	4	16	9	10	18	4	3	4	8	16	6	-	18	22	17
27	6	2	3	1	11	17	8	3	5	11	12	17	4	5	3	4	5	4	-	7	14	16
28	2	1	4	1	3	12	1	1	4	5	6	9	2	3	3	3	2	7	-	9	1	13
29	2	2	0	1	2	17	0	1	6	3	1	4	2	3	1	3	2	1	-	2	0	2
30	2	1	2	1	0	5	0	0	1	2	2	2	0	1	1	0	0	0	-	3	1	2
31	0	0	0	0	0	0	0	0	0	1	0	3	1	2	0	0	2	1	-	0	0	1
32	1	0	0	1	0	0	0	0	0	0	0	2	0	1	0	0	0	1	-	0	1	0
33	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0
Total	782	337	578	344	2,613	1,858	694	267	397	242	223	215	268	968	218	473	429	484	-	668	560	335

Table 2.64. Winter flounder length frequencies, fall, 1 cm intervals, 1984-2013.
Winter flounder were measured from every tow.

length	Fall																														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
7	0	0	0	0	1	0	1	1	3	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	0	0	0	1	7	0	0	1	5	43	0	1	2	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	
9	0	0	0	0	3	4	0	1	8	83	3	0	3	4	2	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	
10	0	2	0	0	10	3	2	1	9	39	6	3	11	5	3	0	0	2	0	0	2	1	2	0	0	0	0	1	0	0	
11	1	3	2	2	8	6	4	9	6	42	10	16	16	6	3	0	0	6	0	0	9	0	0	0	1	1	0	0	2	0	
12	9	16	16	8	34	38	6	34	18	159	63	28	54	23	20	3	5	13	0	1	21	4	1	3	2	11	0	2	4	0	
13	18	37	43	47	97	127	34	72	72	331	149	67	157	77	68	44	20	62	6	1	41	28	6	9	10	21	0	5	14	0	
14	25	57	82	54	243	343	130	139	85	409	230	87	218	113	137	128	53	123	24	5	65	77	8	10	23	36	0	7	38	1	
15	31	63	116	67	295	367	260	144	149	435	219	96	255	165	190	194	111	122	37	10	61	98	17	9	45	51	0	19	59	3	
16	60	55	104	72	302	293	345	91	182	377	187	77	225	176	192	243	156	116	40	9	48	99	23	9	60	48	0	28	62	3	
17	65	49	118	53	207	315	327	110	140	247	146	61	173	175	160	268	170	80	43	11	37	66	11	6	43	50	0	22	61	5	
18	89	53	86	72	167	213	319	99	111	151	142	64	132	116	87	225	169	66	33	10	19	52	5	10	49	35	0	25	50	6	
19	111	41	50	79	212	199	326	108	99	85	141	41	119	126	60	158	148	32	31	8	21	33	5	7	25	31	0	18	26	4	
20	97	36	45	83	184	146	310	95	97	68	124	32	136	78	46	108	107	28	35	9	7	24	7	16	17	14	0	11	25	3	
21	100	37	27	53	184	121	245	96	84	51	111	23	96	65	25	86	89	25	23	10	8	14	4	19	6	10	0	11	16	0	
22	67	33	22	54	138	105	176	79	68	39	56	19	97	38	28	52	62	20	38	10	4	9	7	15	6	4	0	5	15	3	
23	63	22	17	44	104	107	146	73	42	39	38	13	65	55	24	29	41	16	28	17	2	6	3	17	4	5	0	7	22	2	
24	38	17	13	25	77	68	91	40	37	38	24	10	58	32	15	27	47	33	31	15	1	1	3	18	4	2	0	4	20	4	
25	34	14	9	21	40	85	53	48	28	29	26	5	47	23	14	29	35	24	28	10	0	7	2	9	9	6	0	4	30	2	
26	36	10	7	14	32	39	49	20	17	30	28	2	25	26	11	19	30	31	27	18	5	6	2	12	10	0	0	2	20	5	
27	16	10	1	5	32	43	38	13	8	22	13	3	27	20	13	17	21	15	20	21	3	5	0	8	9	3	0	7	20	3	
28	34	6	2	11	12	33	16	17	13	10	8	3	14	14	8	13	25	20	9	11	4	5	0	4	6	0	0	6	16	2	
29	13	3	1	5	9	30	12	7	7	12	10	1	17	7	7	17	15	22	10	10	6	1	0	4	7	3	0	5	7	3	
30	14	6	2	3	13	10	14	5	7	7	7	0	10	7	3	8	13	17	8	10	2	1	1	9	13	1	0	3	5	4	
31	8	1	2	2	4	12	1	8	3	8	8	2	13	5	11	7	8	4	4	16	2	1	0	7	8	1	0	2	7	1	
32	6	0	1	2	6	4	3	2	1	4	3	1	4	2	4	5	6	4	6	11	3	1	0	6	3	4	0	2	7	3	
33	5	1	2	0	1	1	4	6	0	3	2	1	3	4	5	9	9	6	10	12	2	1	1	0	4	1	0	2	4	1	
34	1	2	0	0	0	1	0	1	1	2	2	0	3	3	5	1	10	2	7	10	3	0	0	0	5	2	0	3	4	1	
35	4	0	0	4	0	3	1	0	0	0	1	1	1	1	3	4	6	3	4	4	3	1	0	2	3	0	0	1	5	1	
36	1	0	1	0	0	0	1	0	0	0	1	0	2	0	0	2	4	3	4	4	2	1	0	2	3	2	0	4	0	1	
37	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0	1	1	3	1	2	2	0	1	3	2	0	2	2	0	
38	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	2	1	5	4	2	2	0	0	4	2	0	1	4	0	
39	2	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	1	3	5	0	2	2	0	0	2	0	0	0	1	0	
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	3	2	2	0	1	3	2	0	0	0	0	
41	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	3	3	0	0	2	0	0	0	0	0	0	1	1	0
42	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
44	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0
Total	949	575	769	781	2,422	2,717	2,914	1,321	1,300	2,771	1,765	657	1,984	1,370	1,146	1,699	1,364	907	527	262	392	557	108	213	387	351	-	211	547	547	

Table 2.65. Winter skate length frequencies, spring and fall, 2 cm intervals (midpoint given), 1995-2013.

Winter skate were scheduled to be measured from every tow. However, the following numbers of skate were not measured: 4 in 1995, 10 in 1996, and 2 in 1997.

length	Spring																		
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
27	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
37	0	0	0	0	0	0	1	0	0	3	0	0	1	1	1	1	1	7	7
39	0	0	0	0	0	0	0	1	2	2	0	0	1	0	1	0	1	5	3
41	0	0	0	0	0	0	0	1	1	2	0	0	1	1	1	2	0	4	3
43	0	0	0	0	0	3	0	1	2	4	1	0	0	1	2	1	0	0	9
45	0	0	0	0	1	3	0	0	0	6	0	0	2	1	1	2	0	7	5
47	0	0	0	0	0	2	0	0	0	4	3	0	3	0	0	0	1	1	3
49	0	0	0	0	0	2	0	0	1	2	1	1	1	2	2	0	0	3	2
51	0	1	0	1	0	0	0	1	1	0	1	0	0	0	1	0	0	3	3
53	0	0	0	0	1	3	1	0	1	0	0	1	1	0	1	0	0	1	3
55	0	0	2	3	1	1	0	0	1	1	1	4	3	0	1	0	0	2	5
57	1	2	4	3	2	0	0	0	6	0	0	1	2	1	3	0	2	2	4
59	5	4	1	5	3	2	0	1	1	2	0	1	0	0	2	1	0	2	2
61	1	5	2	1	0	0	3	1	1	1	3	1	1	3	2	0	1	2	4
63	2	2	2	4	1	0	0	1	2	3	2	2	0	1	1	0	2	1	3
65	4	2	4	7	0	0	0	0	0	0	1	1	1	2	0	0	2	3	2
67	1	1	2	2	1	1	0	1	1	1	3	3	0	1	1	1	2	3	2
69	2	0	1	4	2	0	0	1	4	1	0	1	2	3	2	0	3	1	2
71	1	3	2	3	1	2	2	1	2	2	0	1	2	3	0	0	0	4	1
73	0	3	0	0	0	1	2	4	0	2	1	4	3	1	1	1	3	5	2
75	4	4	1	5	3	1	2	1	3	1	0	1	4	3	3	4	3	5	0
77	0	2	3	6	7	2	1	1	1	1	0	0	2	4	0	1	2	0	1
79	1	2	1	4	1	1	2	3	1	1	1	0	4	3	2	1	4	2	0
81	0	4	0	3	2	1	1	2	3	3	0	1	1	1	1	0	2	3	0
83	0	3	0	2	0	0	1	0	1	1	0	0	1	0	3	1	1	4	0
85	0	2	1	1	0	3	1	2	1	0	0	0	0	0	0	0	0	3	1
87	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	1	0
89	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
91	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
93	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Total	22	40	27	55	26	29	18	26	37	45	18	23	37	35	32	16	30	77	72

length	Fall																		
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-	0	0	0
39	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	-	0	2	0
41	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-	0	1	0
43	0	0	2	0	0	0	0	2	0	0	0	0	0	1	0	-	2	1	1
45	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	-	0	4	3
47	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	-	0	1	0
49	1	5	1	0	0	0	0	0	0	0	1	0	0	0	0	-	0	1	4
51	0	0	1	0	2	0	2	0	0	0	0	0	0	1	0	-	0	2	1
53	2	0	2	1	0	0	1	1	0	0	1	0	0	0	0	-	0	2	0
55	1	2	1	0	1	0	4	0	0	0	0	0	0	1	0	-	0	0	1
57	2	6	2	0	0	0	0	3	0	0	2	0	0	1	1	-	3	0	0
59	2	2	2	1	0	0	1	1	0	0	0	0	0	0	1	-	0	1	0
61	0	5	0	0	0	0	3	0	0	0	0	0	1	0	0	-	0	0	1
63	1	4	1	0	0	0	1	0	0	0	2	0	0	0	0	-	0	0	1
65	2	3	0	1	1	0	0	1	0	3	0	0	0	1	1	-	1	0	0
67	1	2	2	1	0	0	2	0	0	0	3	0	1	1	1	-	0	0	1
69	0	2	1	1	0	0	0	1	0	0	0	0	1	1	1	-	0	1	3
71	0	0	0	0	0	0	0	1	0	2	0	0	2	1	1	-	0	0	1
73	0	2	1	1	1	0	0	2	0	1	1	0	0	0	0	-	1	1	0
75	1	3	1	0	1	0	1	1	0	1	1	0	1	1	1	-	0	1	0
77	0	1	0	0	0	0	1	2	0	1	0	0	0	2	0	-	0	0	0
79	0	0	0	0	0	0	1	1	0	0	0	0	0	1	1	-	0	0	0
81	0	0	0	1	0	0	1	1	0	0	1	0	1	1	1	-	0	1	0
83	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	-	0	1	0
85	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	-	0	0	0
87	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	-	0	0	0
Total	15	37	19	7	7	1	20	19	0	9	13	0	7	16	11	-	7	20	17

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**FIGURES 2.1 - 2.19
LISTS**

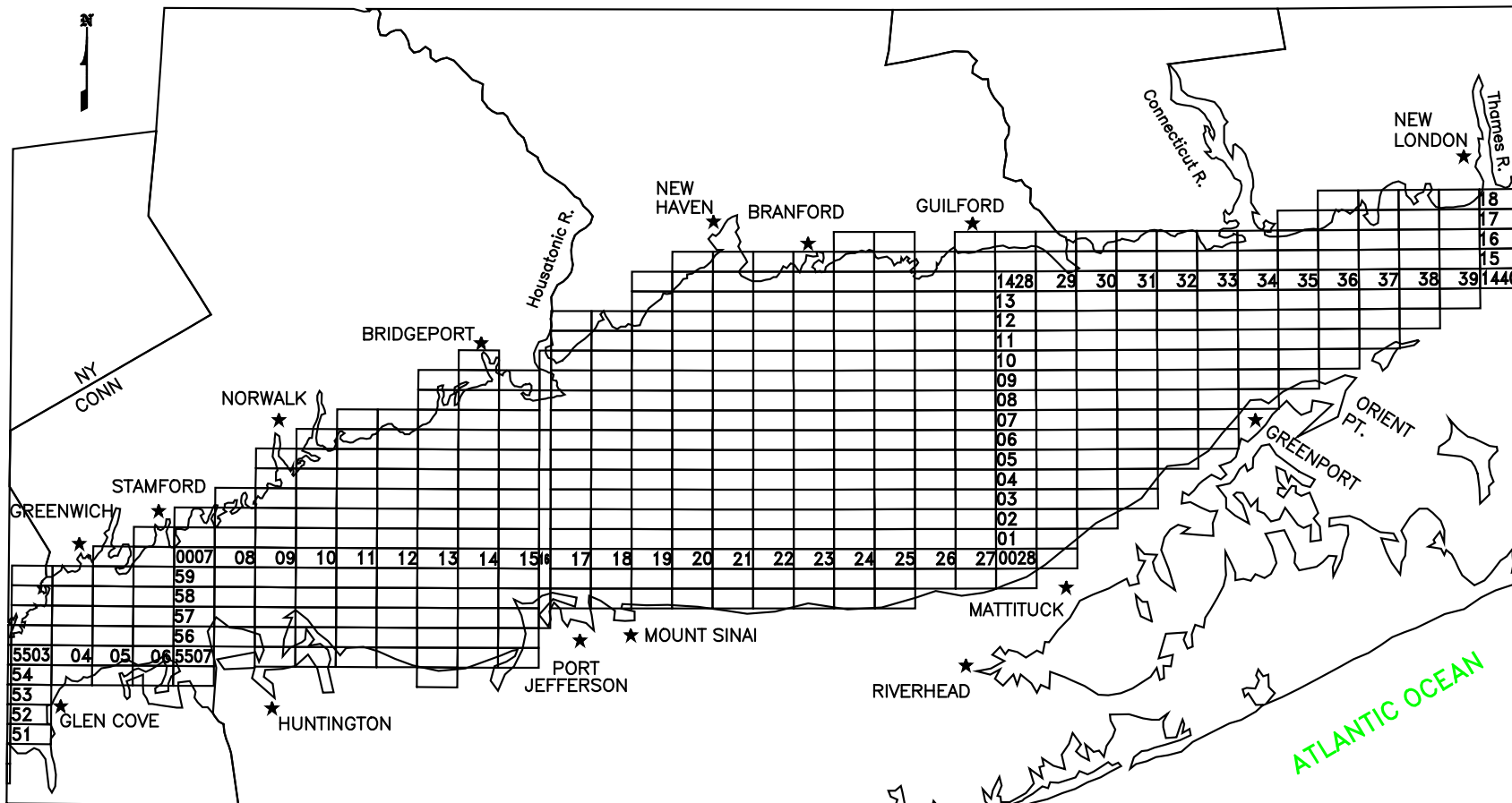
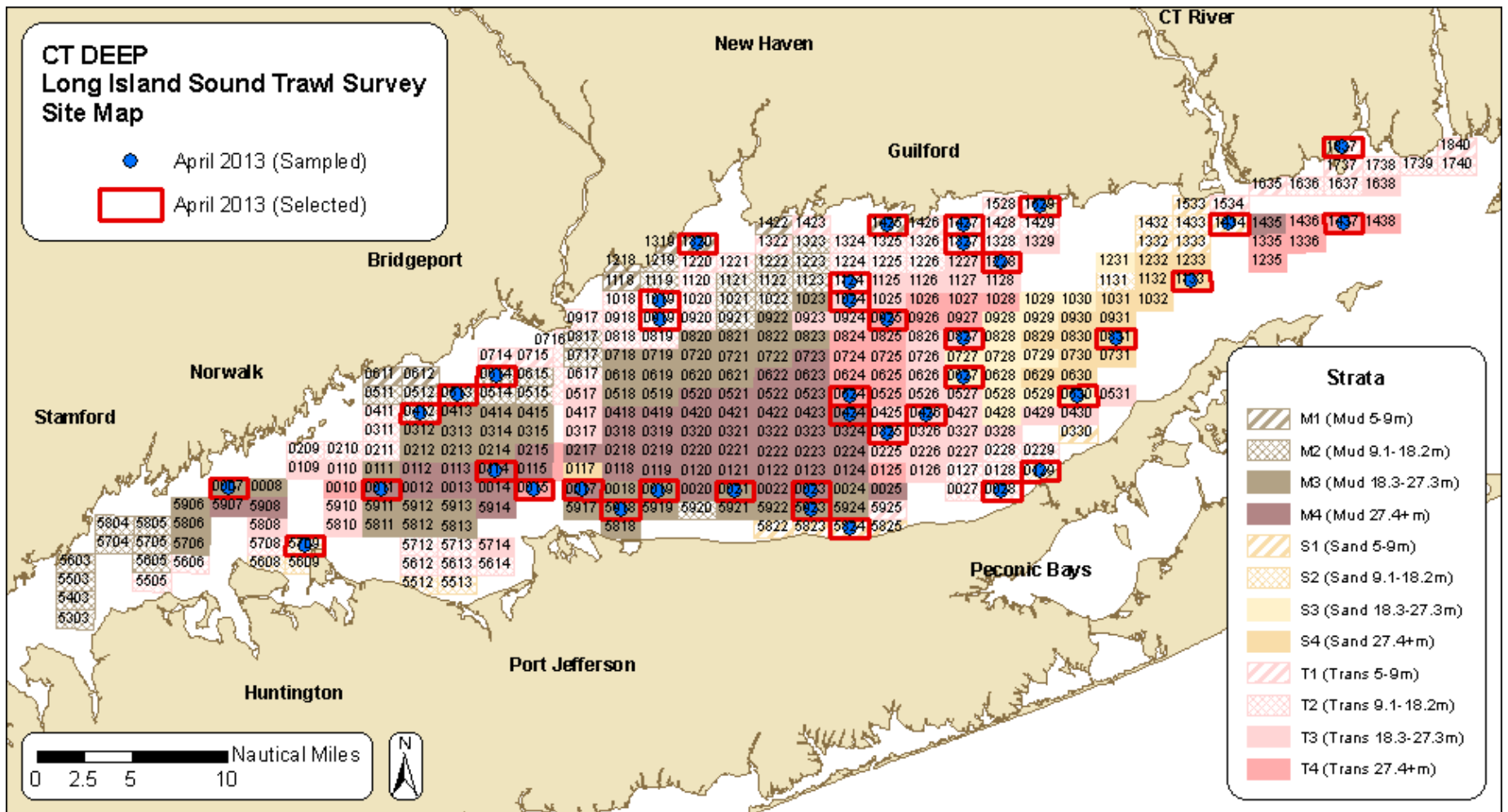


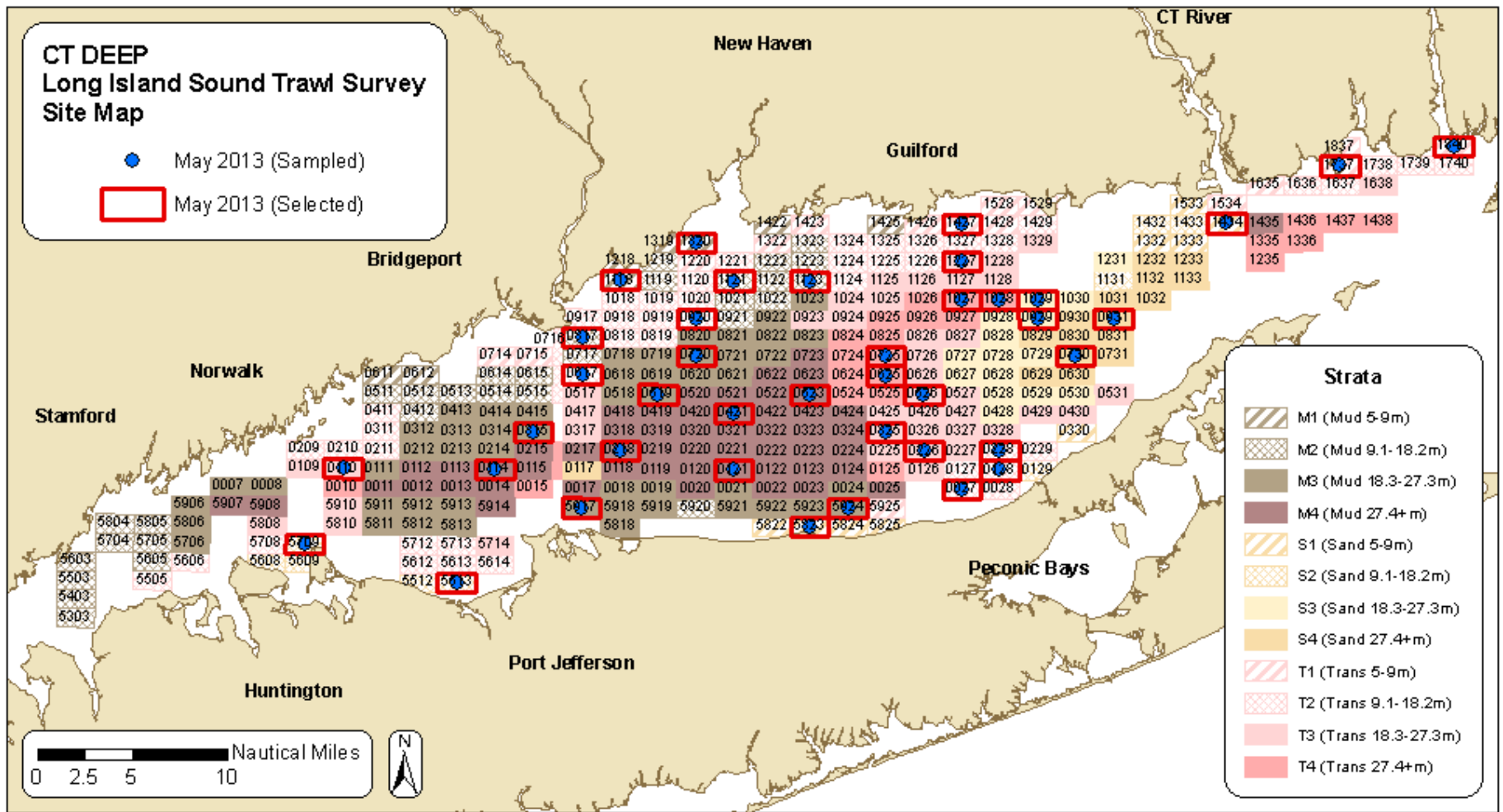
Figure 2.1. Trawl Survey site grid. Each sampling site is 1x2 nmi (nautical miles). A four-digit number identifies the site: the first two digits are the row numbers (corresponding to minutes of latitude) and the last two digits are the column numbers (corresponding to two nautical miles in length on the longitudinal axis). Examples: site 1428 near Guilford and 0028 near Mattituck. (Note: The sites in column 16 are approximately 2x1 nmi. The grid was drawn on the Eastern and Western Long Island Sound 80,000:1 nautical charts, which overlap by the area in column 16.)

Figure 2.2. April 2013 sites selected and sampled. The red outlined rectangles are the sites selected for the cruise and the blue dots are the sites sampled. Samples collected from a different site than published in the "Notice to Fishermen" are noted in table below map.



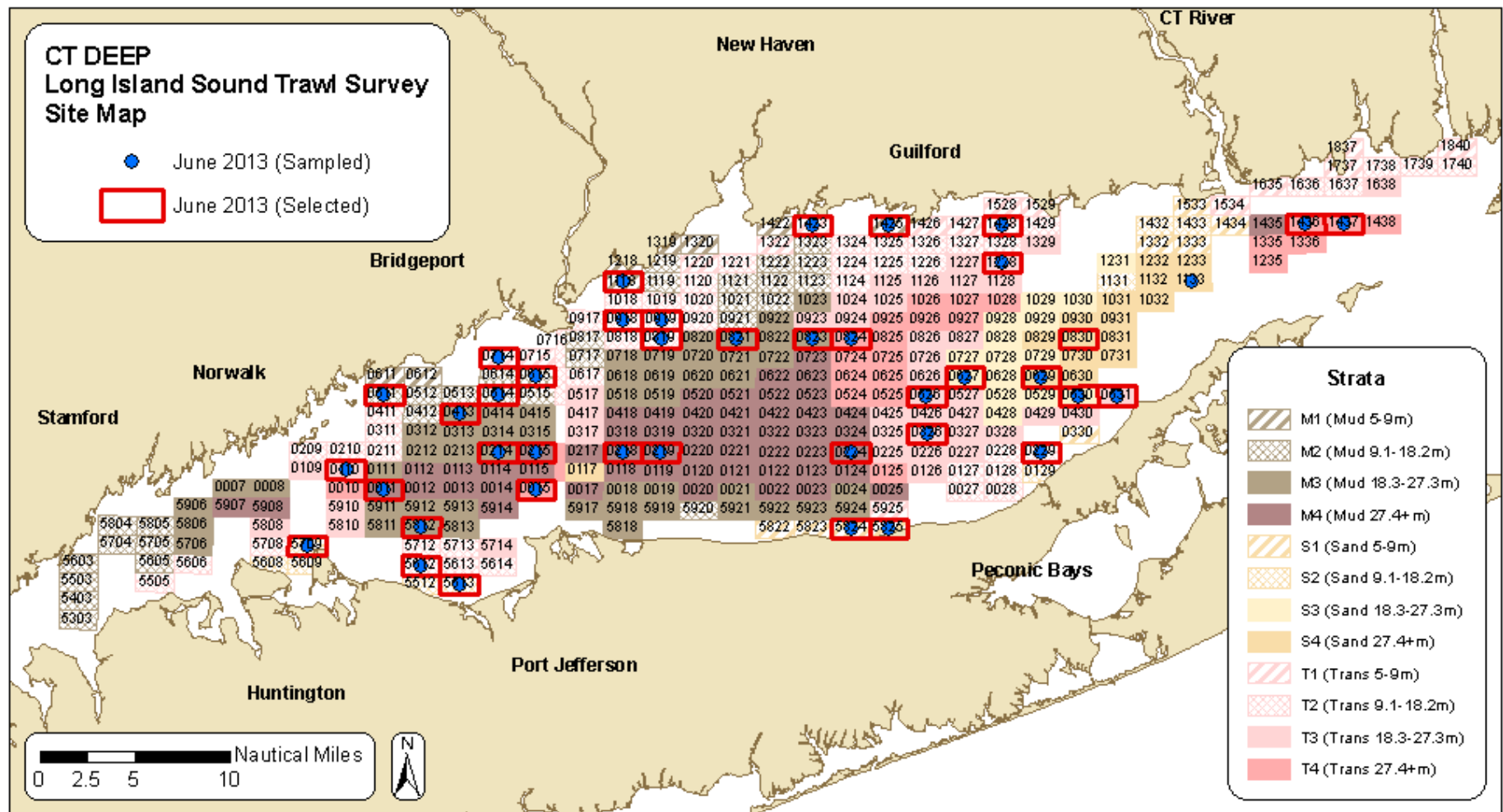
Sample	Site Sampled	Sampled Strata	Site Selected	Selected Strata	Reason Moved
No sites were moved during this cruise.					

Figure 2.3. May 2013 sites selected and sampled. The red outlined rectangles are the sites selected for the cruise and the blue dots are the sites sampled. Samples collected from a different site than published in the "Notice to Fishermen" are noted in table below map.



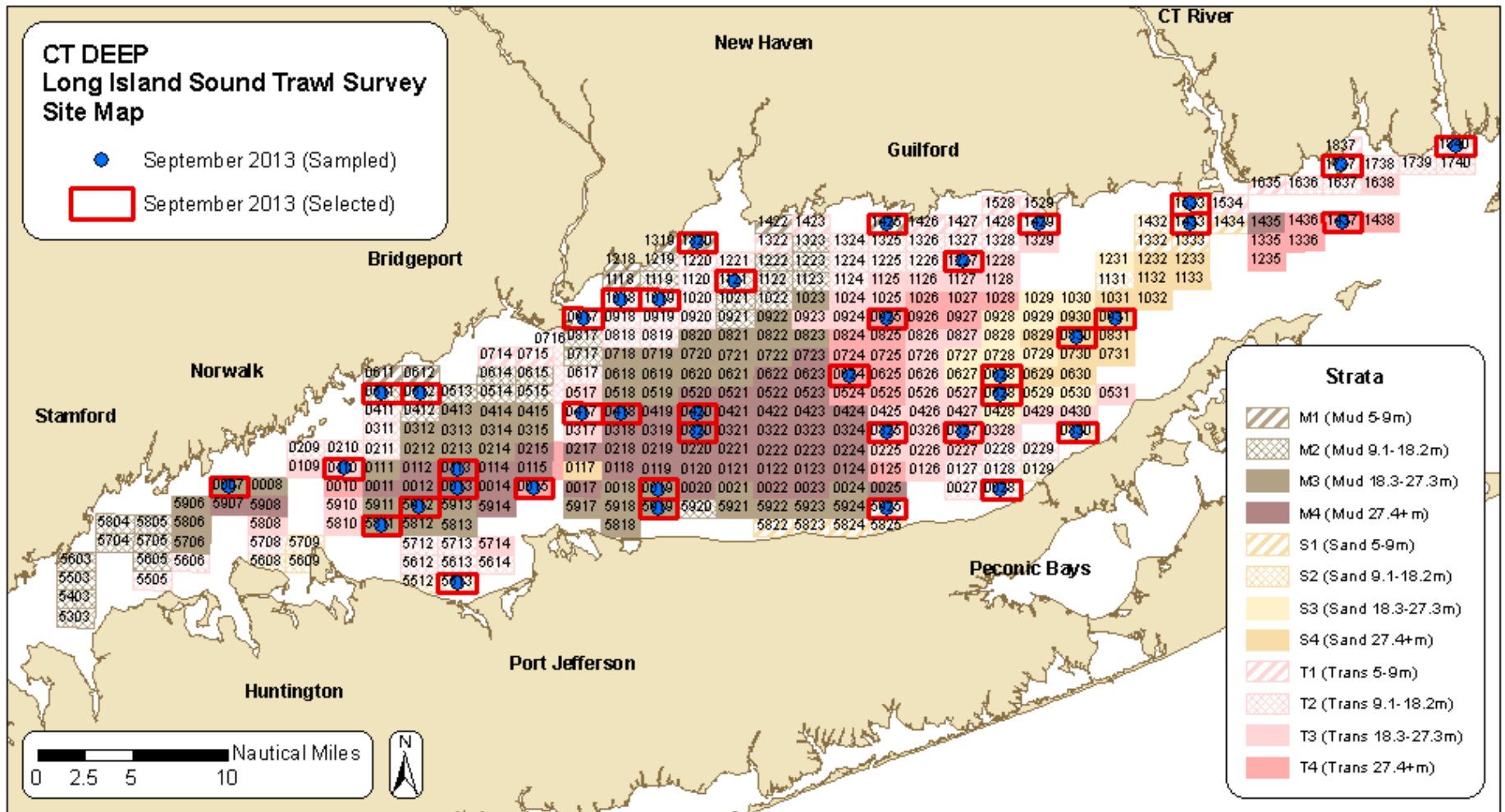
Sample	Site Sampled	Sampled Strata	Site Selected	Selected Strata	Reason Moved
No sites were moved during this cruise.					

Figure 2.4. June 2013 sites selected and sampled. The red outlined rectangles are the sites selected for the cruise and the blue dots are the sites sampled. Samples collected from a different site than published in the "Notice to Fishermen" are noted in table below map.



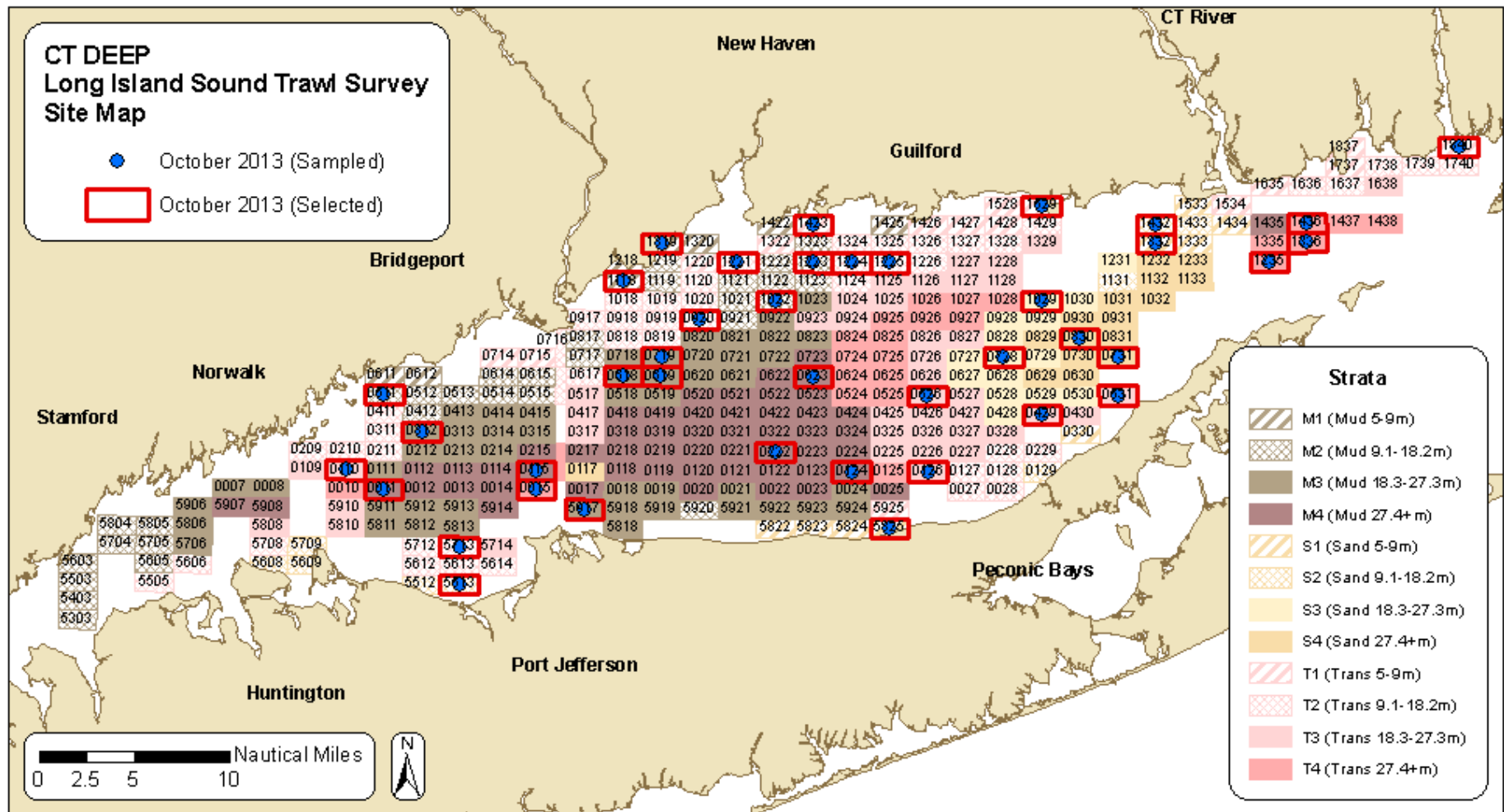
Sample	Site Sampled	Sampled Strata	Site Selected	Selected Strata	Reason Moved
SP2013083	1133	S4	0830	S4	sampled different site (same strata) for EPA

Figure 2.5. September 2013 sites selected and sampled. The red outlined rectangles are the sites selected for the cruise and the blue dots are the sites sampled. Samples collected from a different site than published in the "Notice to Fishermen" are noted in table below map.



Sample	Site Sampled	Sampled Strata	Site Selected	Selected Strata	Reason Moved
No sites were moved during this cruise.					

Figure 2.6. October 2013 sites selected and sampled. The red outlined rectangles are the sites selected for the cruise and the blue dots are the sites sampled. Samples collected from a different site than published in the "Notice to Fishermen" are noted in table below map.



Sample	Site Sampled	Sampled Strata	Site Selected	Selected Strata	Reason Moved
No sites were moved during this cruise.					

Figure 2.7. Number of finfish species observed annually, 1984-2013. *Note: there was no October sampling in 2006 and there was no June, September or October sampling in 2010. Average number of finfish species caught per year is 57.5 for the time-series. See Table 2.4 for details on number of tows completed each year.*

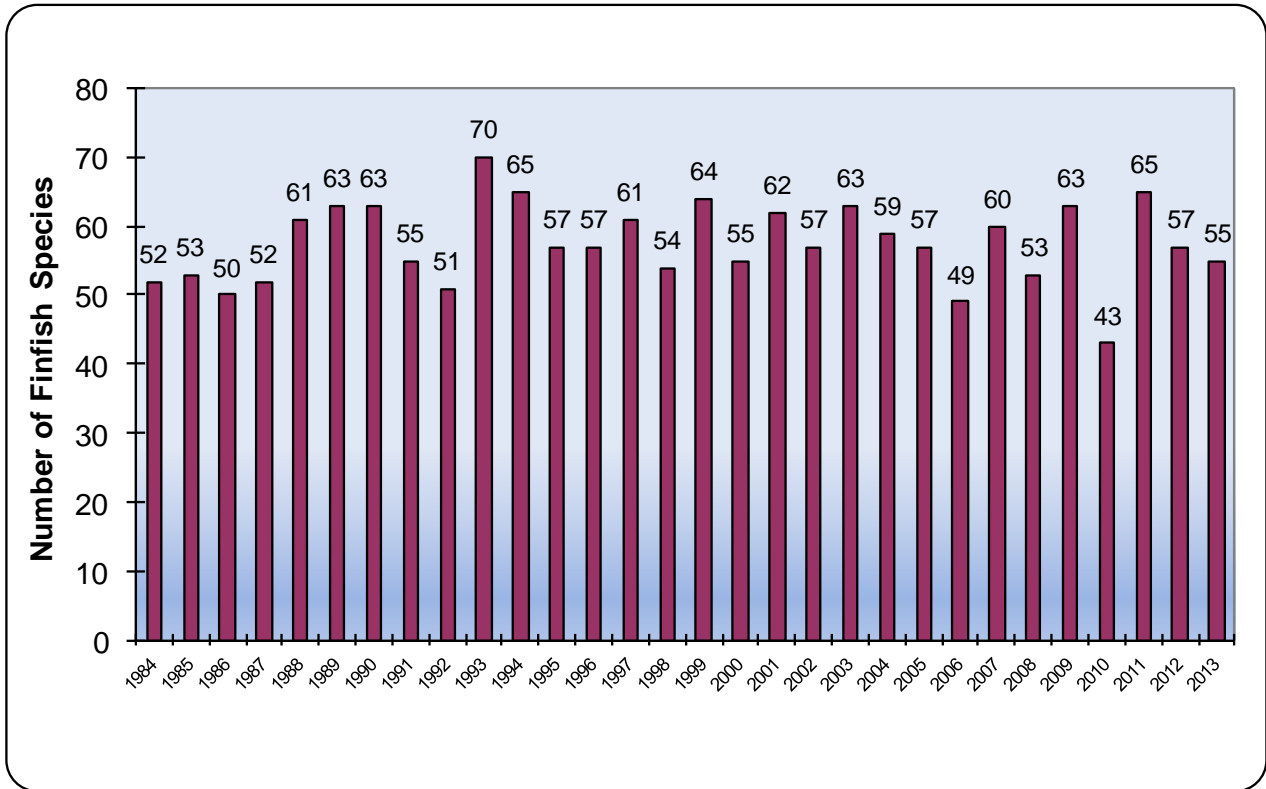
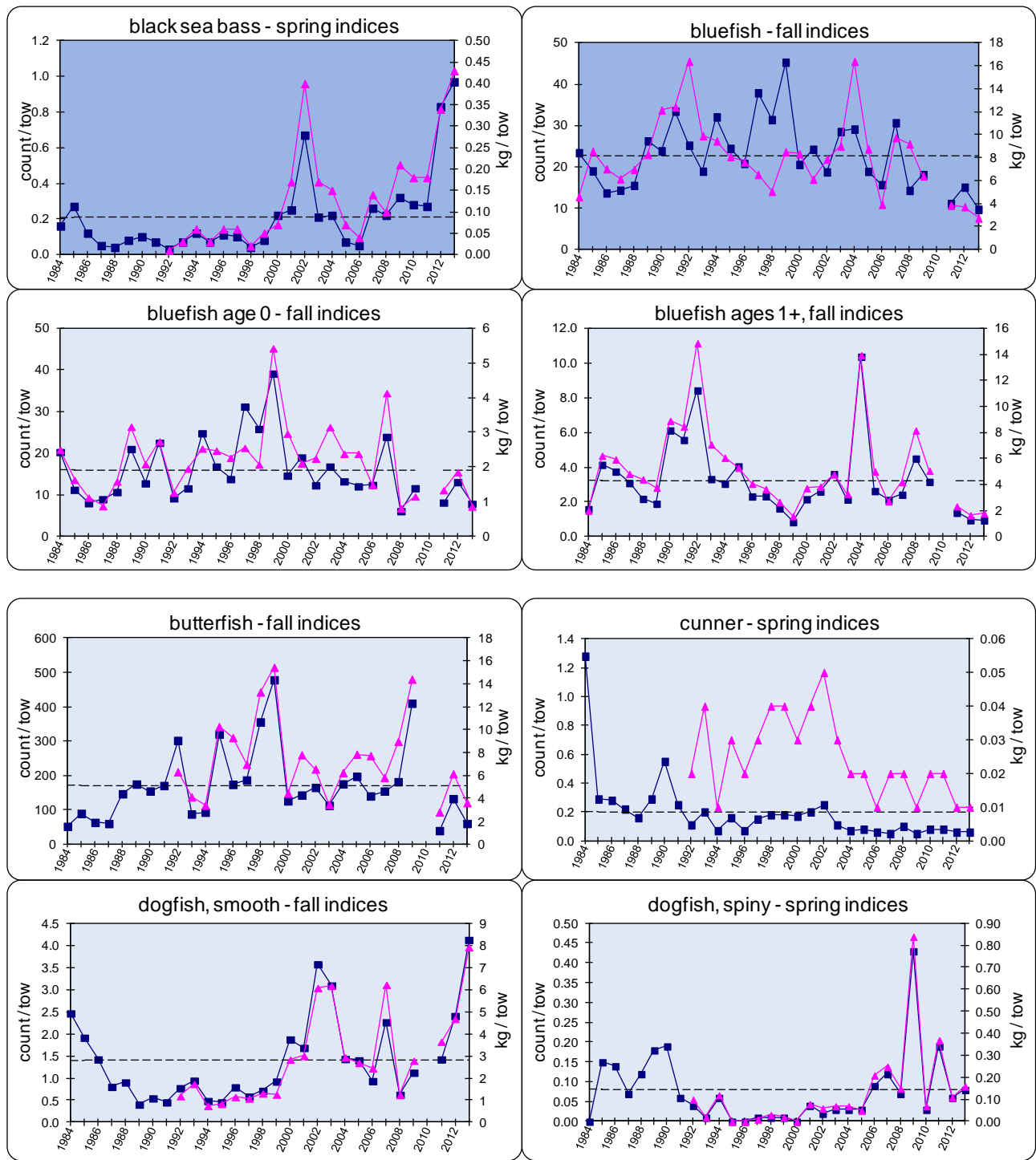
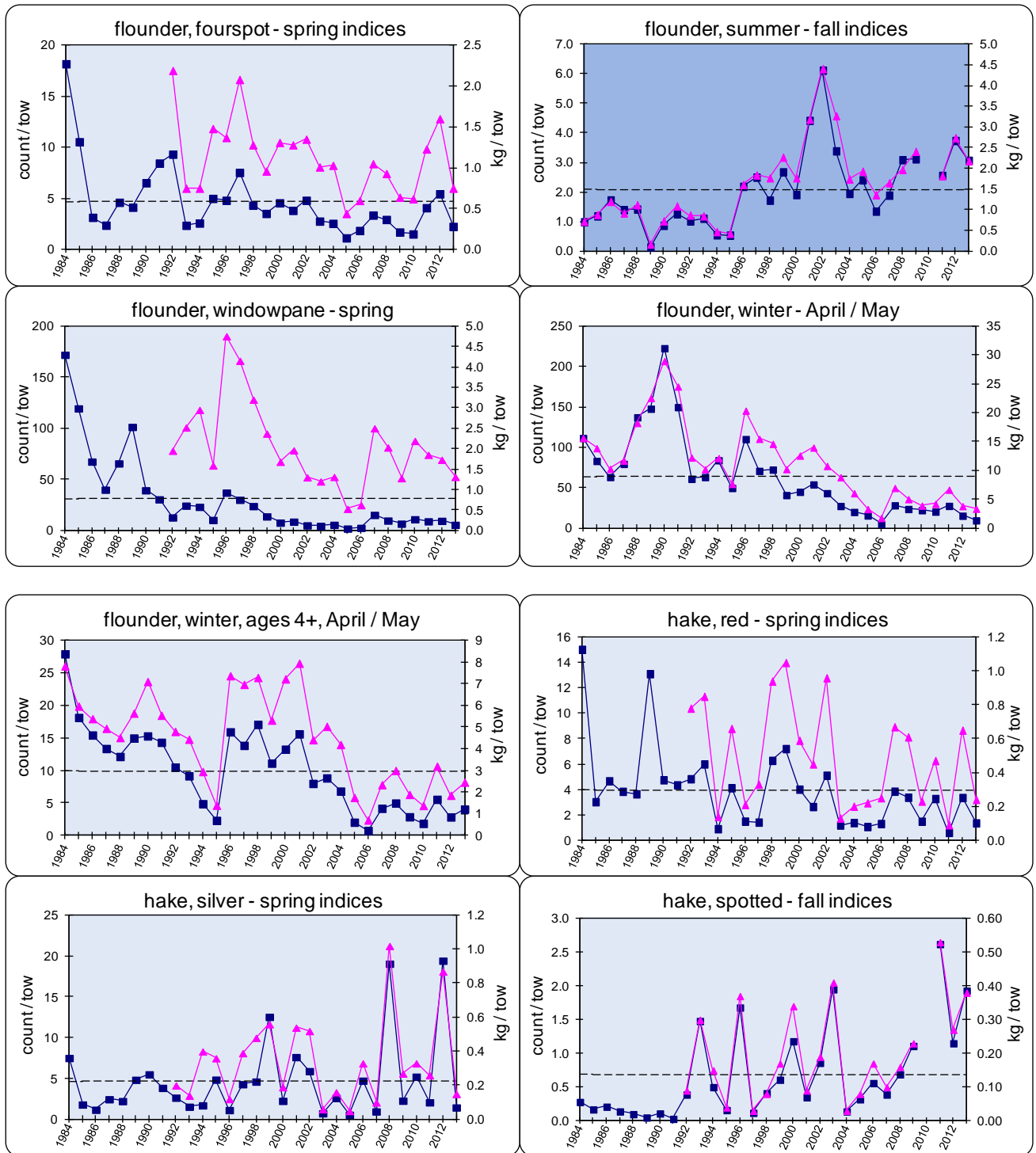


Figure 2.8. Plots of abundance indices for: black sea bass, bluefish (total, age 0, and ages 1+), butterfish, cunner, and dogfish (smooth and spiny).



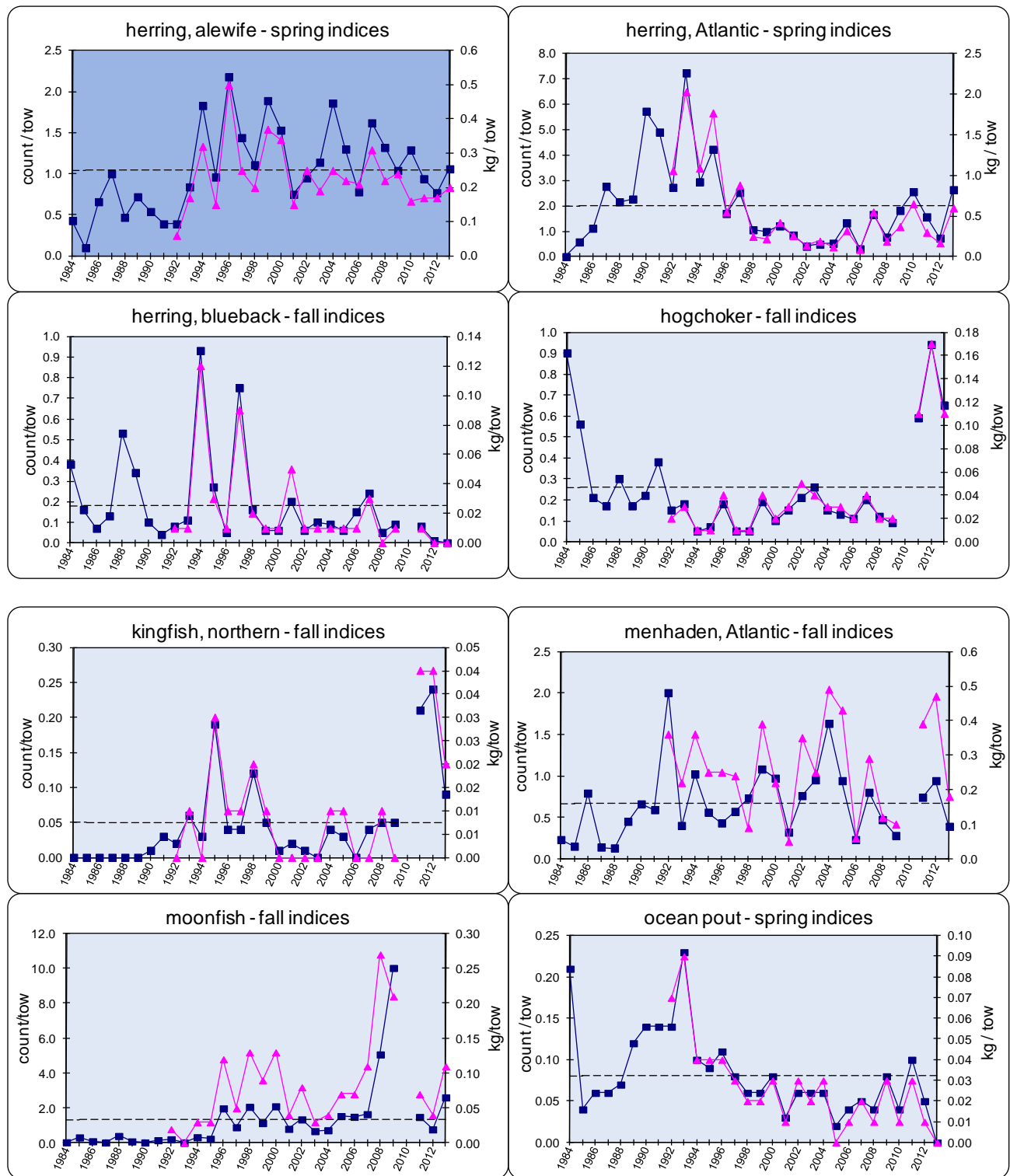
Legend:
■ = count / tow
▲ = kg / tow
 ---- = mean count / tow

Figure 2.9. Plots of abundance indices for: flounders (fourspot, summer, windowpane, winter, and winter ages 4+) and hakes (red, silver, and spotted).



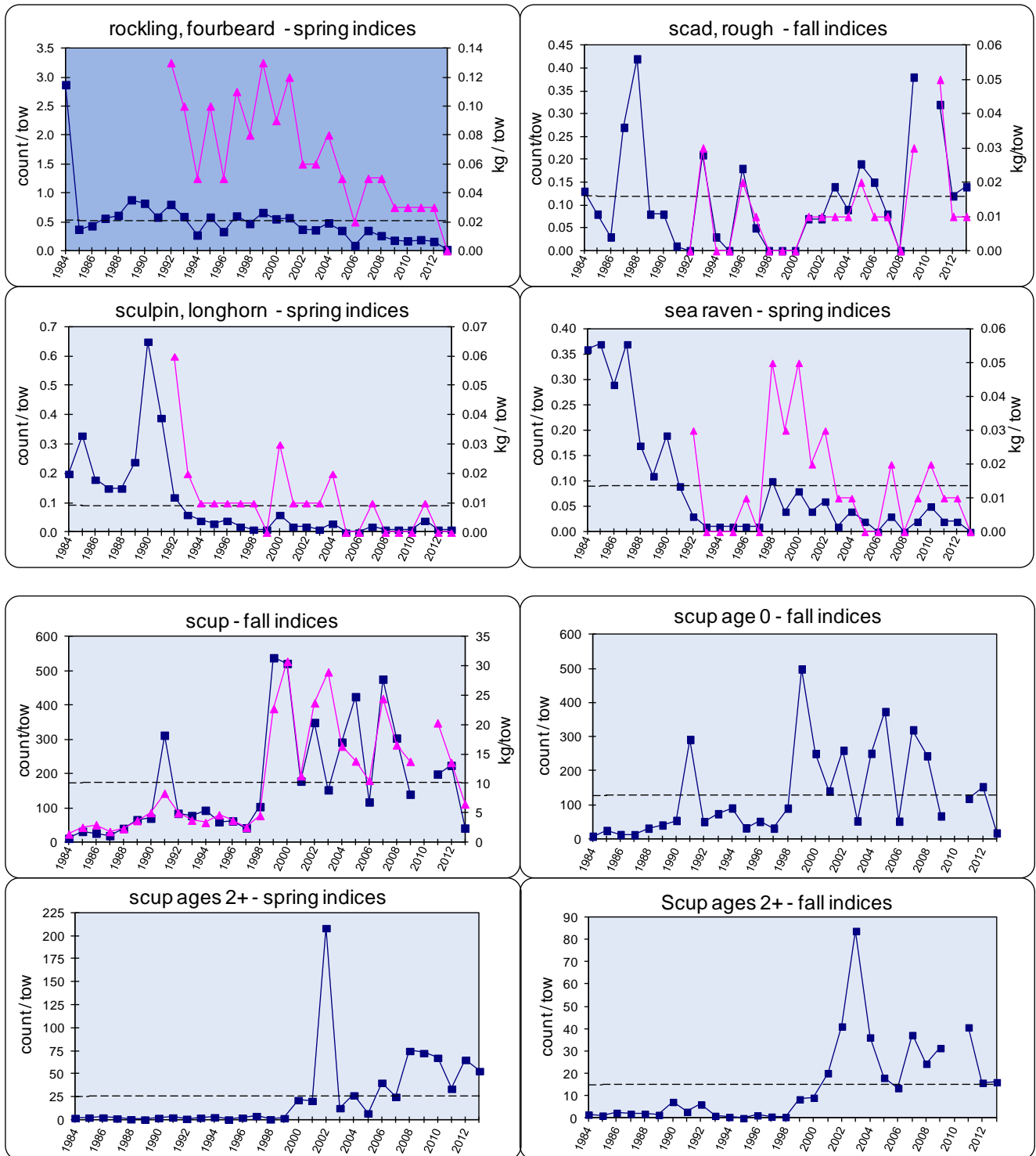
Legend:
 ■ = count / tow
 ▲ = kg / tow
 --- = mean count / tow

Figure 2.10. Plots of abundance indices for: herrings (alewife, Atlantic, and blueback), hogchoker, Northern kingfish, Atlantic menhaden, moonfish, and ocean pout.



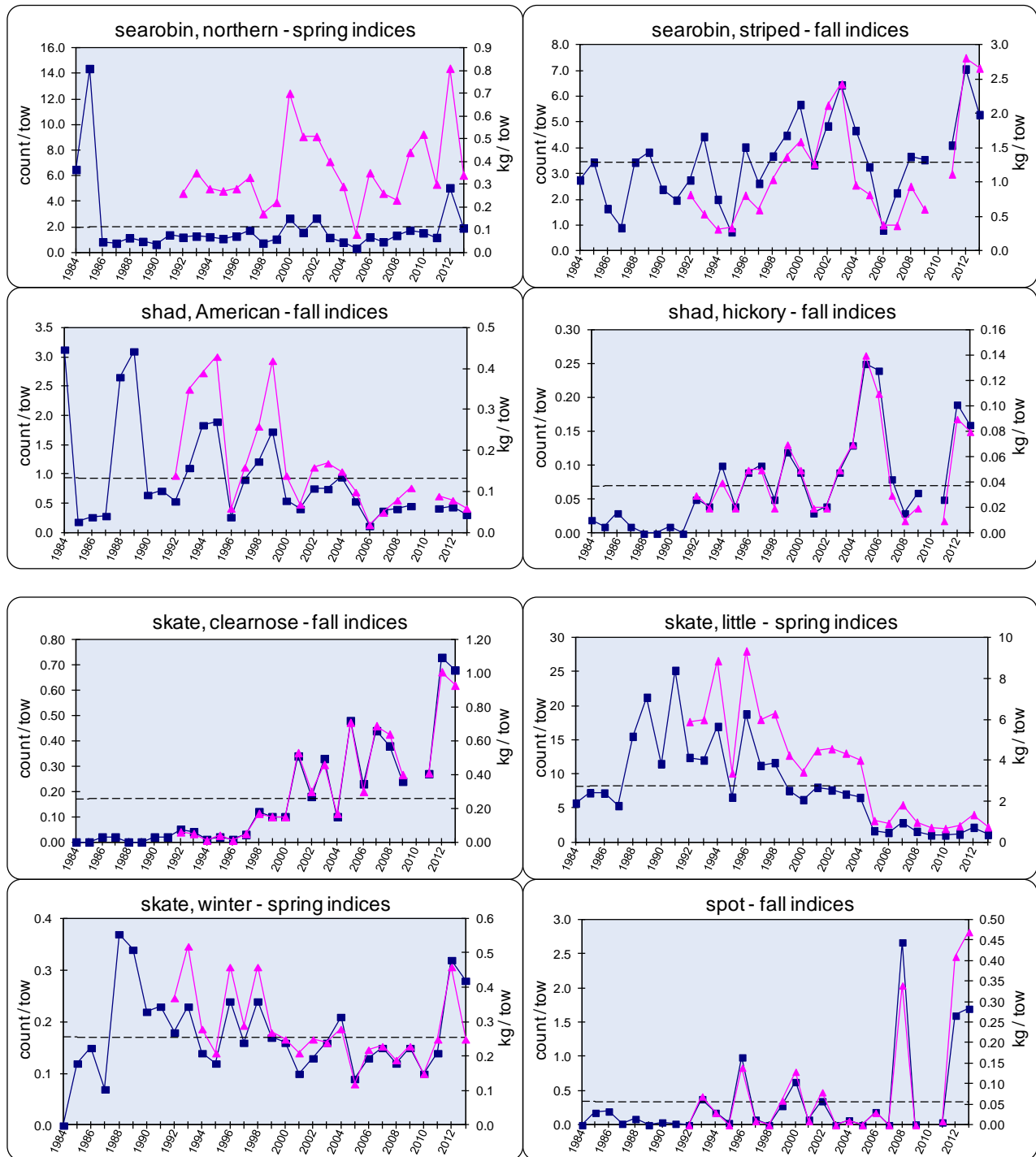
Legend:
■ = count / tow
▲ = kg / tow
 ---- = mean count / tow

Figure 2.11. Plots of abundance indices for: fourbeard rockling, rough scad, longhorn sculpin, sea raven, and scup (all ages, age 0, and ages 2+).



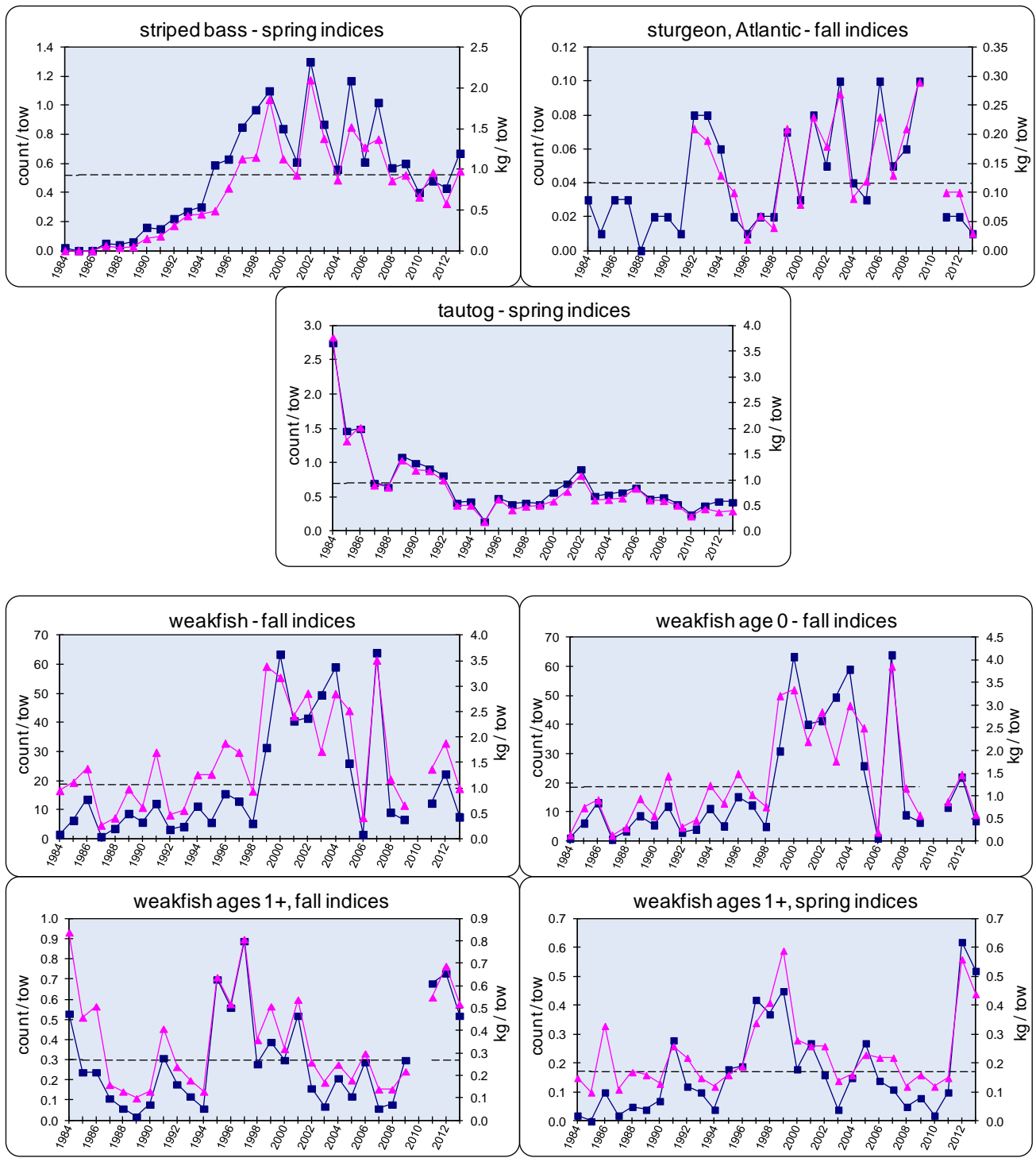
Legend:
■ = count / tow
▲ = kg / tow
 ---- = mean count / tow

Figure 2.12. Plots of abundance indices for: searobins (striped and northern), shad (American and hickory), skates (clearnose, little, and winter), and spot.



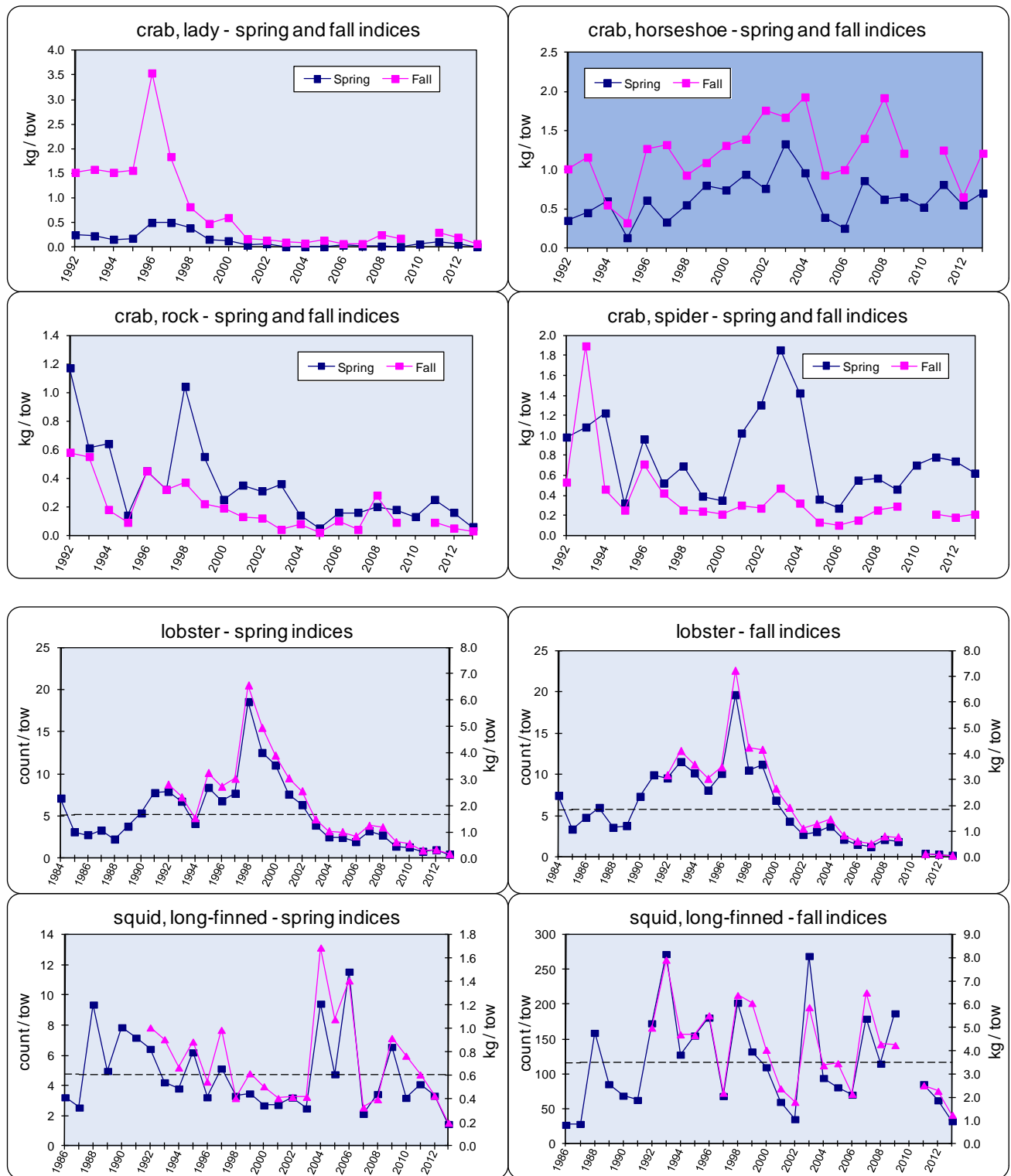
Legend:
■ = count / tow
▲ = kg / tow
 ---- = mean count / tow

Figure 2.13 Plots of abundance indices for: striped bass, Atlantic sturgeon, tautog, and weakfish (all ages, age 0, and ages 1+).



Legend:
■ = count / tow
▲ = kg / tow
 ---- = mean count / tow

Figure 2.14. Plots of abundance and biomass indices for: crabs (lady, rock, and spider), horseshoe crab, American lobster, and long-finned squid.



Legend for bottom four graphs:

- = count / tow
- ▲ = kg / tow
- = mean count / tow

Figure 2.15. Mean number of finfish species per sample, spring and fall, 1984-2013. This index measures the diversity of species supported within the Sound's various habitats.

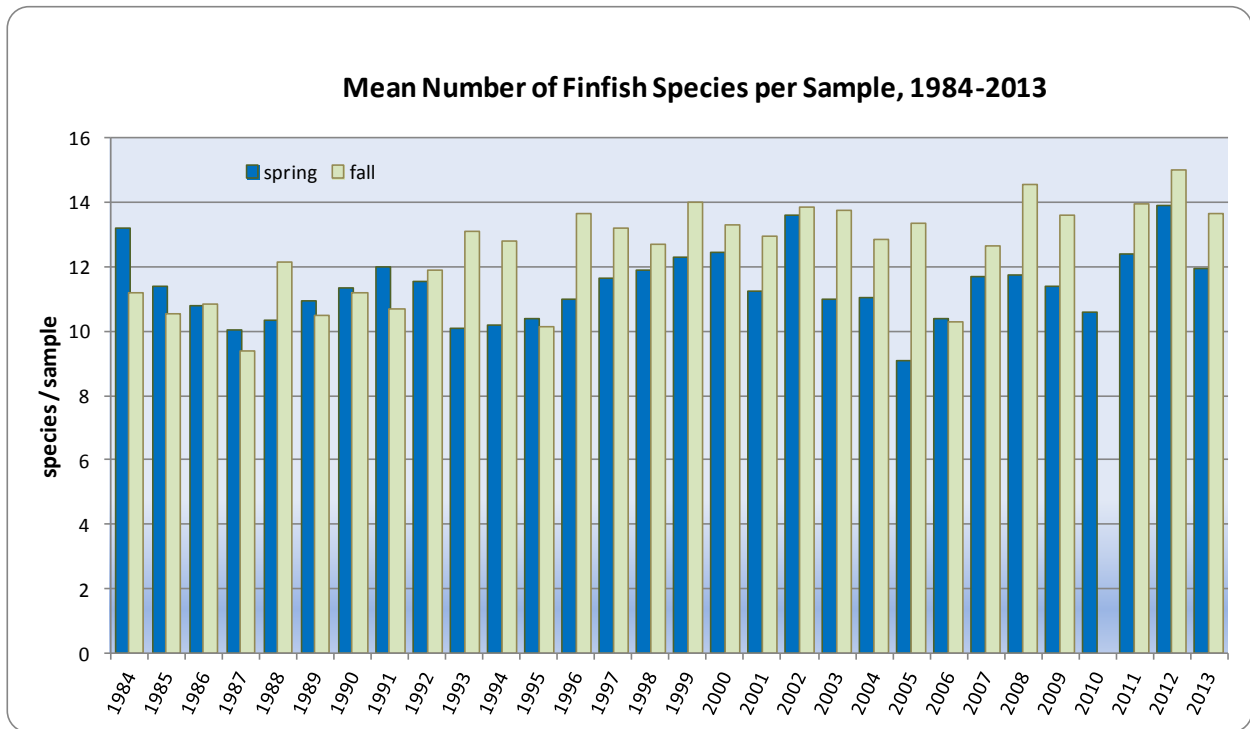


Figure 2.16. Open water forage abundance, 1992-2013. The geometric mean is calculated as the aggregate sample biomass per tow of 14 of the most common forage species sampled in the survey. This index measures the available food base which supports both resident and migratory species. The average since 1992 is 14.09 kg/tow (red line).

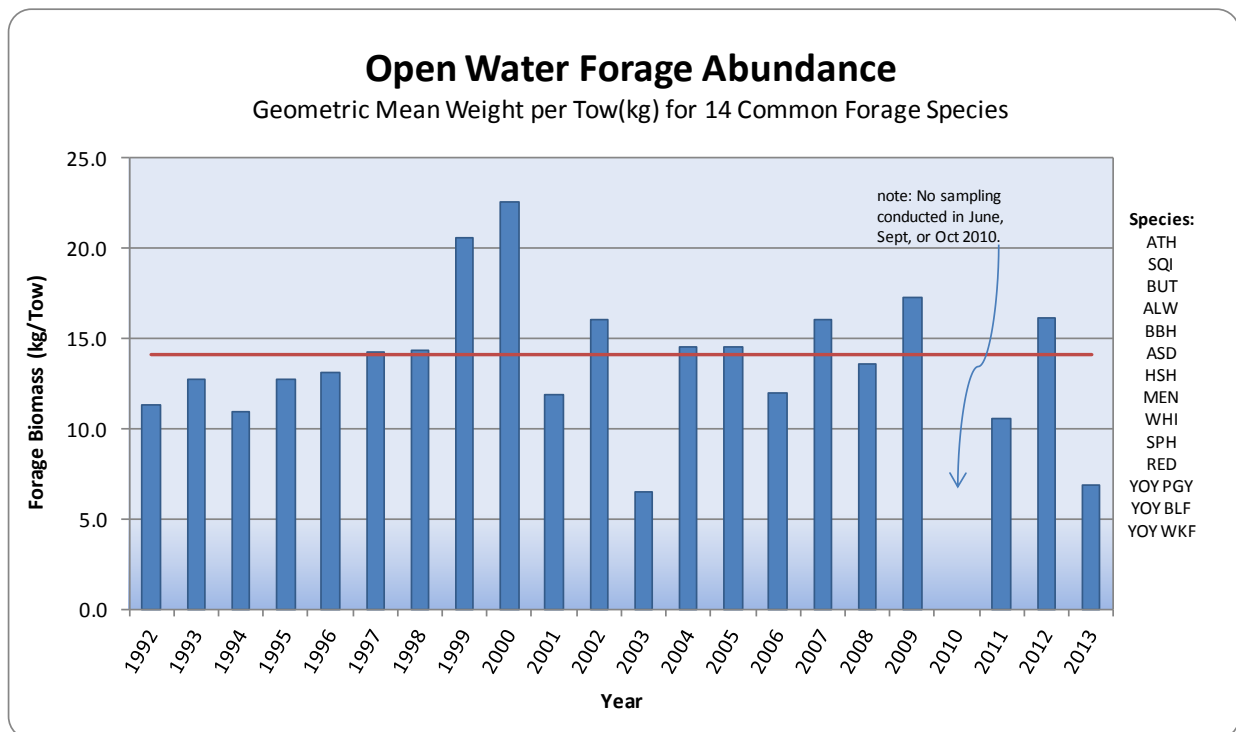


Figure 2.17. Geometric mean biomass of finfish and invertebrates per sample, spring and fall, 1992-2013.
 This index measures the diversity of species supported within the Sound's various habitats.

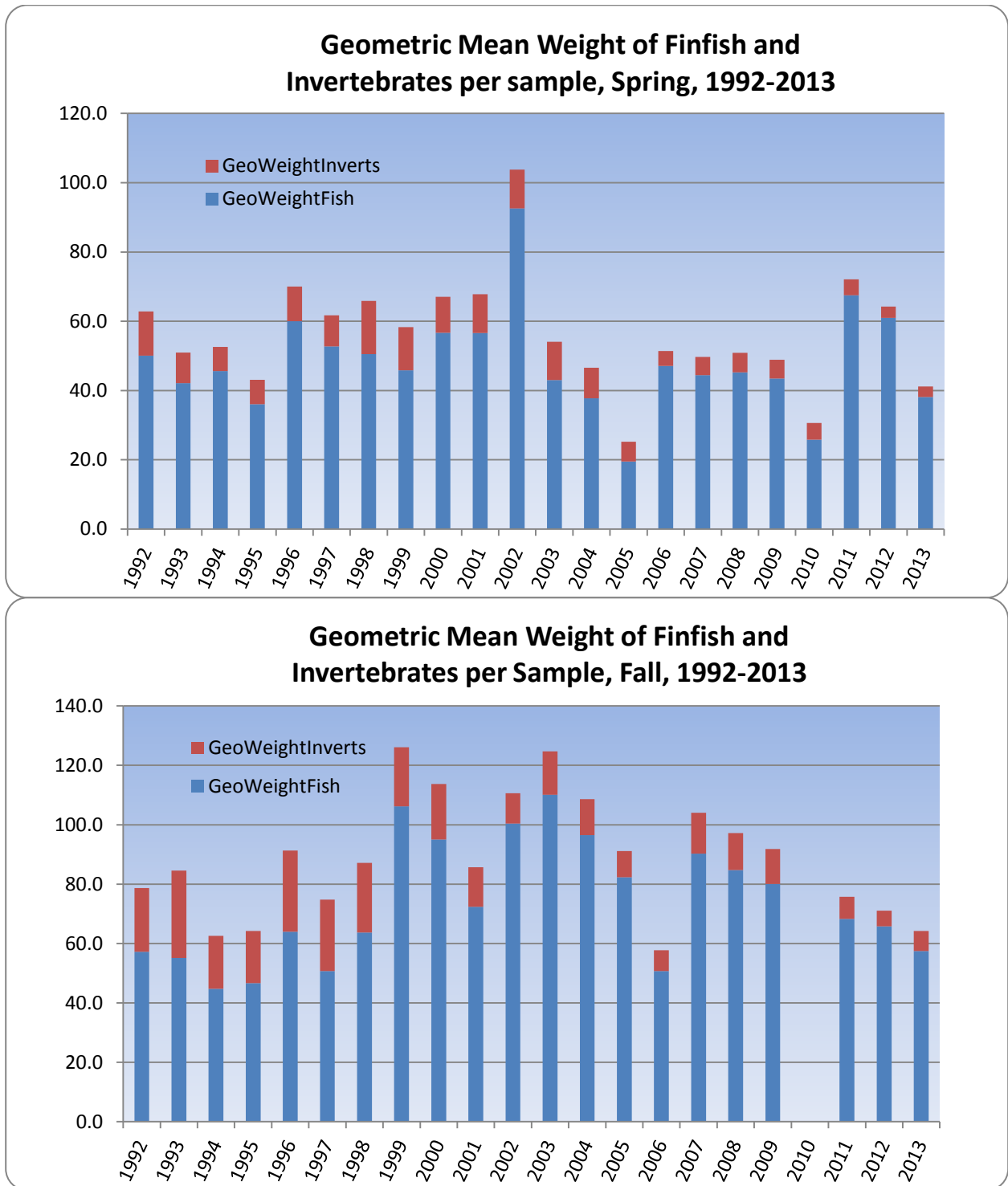


Figure 2.18: Percent of sampled winter flounder that were sexually mature by length group for female and male flounder captured in LISTS over five time periods, 1990-2013.

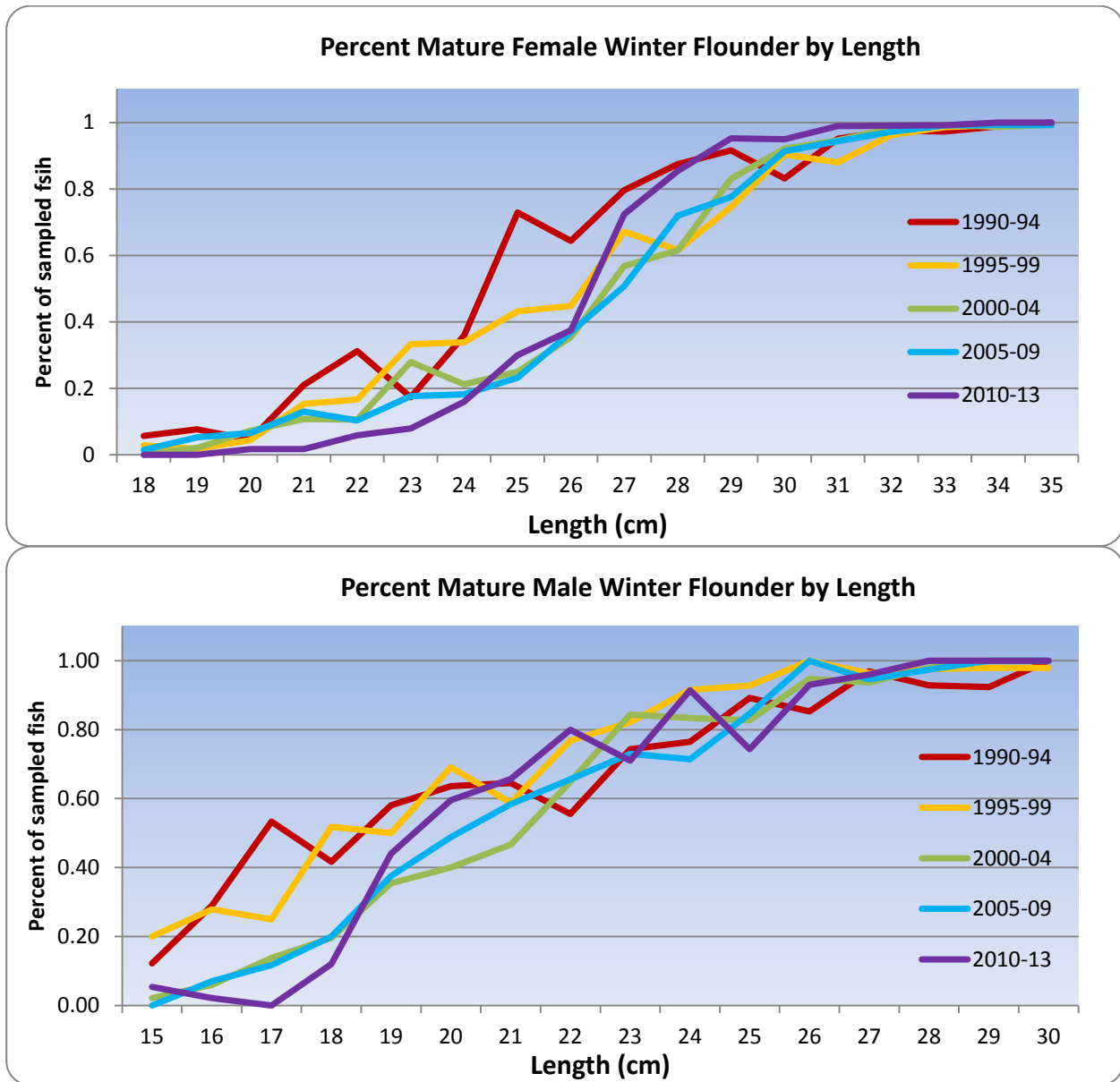
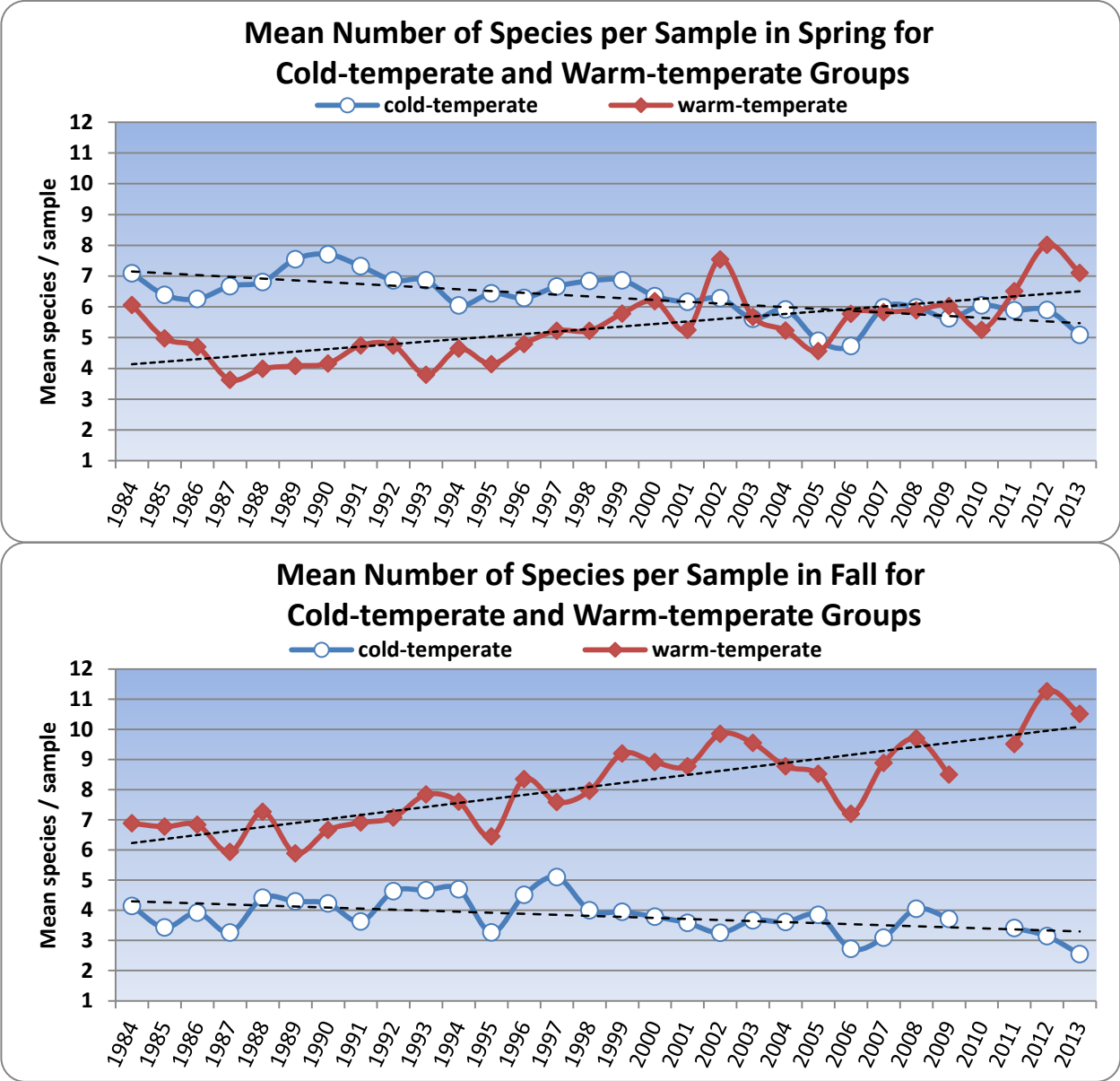


Figure 2.19. Trends in the number of cold temperate versus warm temperate species per sample captured in spring and fall LIS Trawl Surveys. See Appendix 2.5 for list of species included in analysis.



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**APPENDICES
LISTS**

Appendix 2.1. List of finfish species identified by A Study of Marine Recreational Fisheries in Connecticut (F54R) and other CT DEP Marine Fisheries Division programs. LISTS has collected one hundred-four finfish species from 1984-2013.

This appendix contains a list of 146 species identified (Bold type indicates new species) from all sampling programs conducted since 1984. Species are listed alphabetically by common name (AFS 2004). Sampling program abbreviations, survey time periods and gear type are as follows:

Survey Abbreviation	Survey Description	Time Period	Gear Type
CTR	CT River Creel Survey	1997-1998	bus stop creel survey mainstem of CT River
EPA	cooperative sampling in western LIS with EPA	1986-1990	used LISTS net
ESS (F54R)	Estuarine Seine Survey	1988 to present	7.6m (25 ft) beach seine
IS (F54R)	Inshore Survey of Juvenile Winter Flounder	1990-1994	beam trawls (also a little data from 1995-1996)
ISS (F54R-starting 2008)	Inshore Seine Surveys in CT & TH rivers	1979 to present	15.2m (50 ft) bag seine set by boat
LISTS (F54R)	Long Island Sound Trawl Survey	1984 to present	14m (50 ft) trawls with 2" codend mesh
MISC	misc sampling conducted on R/V Dempsey	various	various
NCA	"inshore" EPA NCA C2K sampling	2000	skiff trawls
NRRWS	sampling in western end of LIS, the "Narrows"	2000-2007	14m (50 ft) trawls with 2" codend mesh
SNFH (F54R)	Study of Nearshore Finfish Habitat	1995-1996	plankton net
SS (F54R)	Summer Survey	1991-1993, 1996	14m (50 ft) trawls with codend liner in LIS
TN	Trap Net Survey	1997-1998	trap nets in rivers

Common Name	Scientific Name	Survey
anchovy, bay	<i>Anchoa mitchilli</i>	LISTS;NRRWS;ESS;ISS;IS; SS;NCA;MISC
anchovy, striped	<i>Anchoa hepsetus</i>	LISTS; ESS; IS; SS
banded rudderfish	<i>Seriola zonata</i>	LISTS; ESS
bass, largemouth	<i>Micropterus salmoides</i>	ISS; TN;CTR
bass, rock	<i>Ambloplites rupestris</i>	ISS; TN;CTR
bass, smallmouth	<i>Micropterus dolomieu</i>	ISS; TN;CTR
bass, striped	<i>Morone saxatilis</i>	LISTS;NRRWS;ESS;ISS; SS;NCA;MISC;EPA;TN;CTR
bigeye	<i>Priacanthus arenatus</i>	LISTS; IS
bigeye, short	<i>Pristigenys alta</i>	LISTS
black sea bass	<i>Centropristes striata</i>	LISTS;NRRWS;ESS; IS; SS;NCA;MISC;EPA
blenny, feather	<i>Hypsoblennius hentz</i>	LISTS
bluefish	<i>Pomatomus saltatrix</i>	LISTS;NRRWS;ESS;ISS; SS; MISC;EPA; CTR
bluegill	<i>Lepomis macrochirus</i>	TN;CTR
bonefish	<i>Albula vulpes</i>	ISS
bonito, Atlantic	<i>Sarda sarda</i>	LISTS; EPA
bullhead, brown	<i>Ameiurus nebulosus</i>	ISS; NCA; TN;CTR
burrfish, striped	<i>Chilomycterus schoepfi</i>	LISTS; ESS
burrfish, web	<i>Chilomycterus antillarum</i>	ESS
butterfish	<i>Peprilus triacanthus</i>	LISTS;NRRWS;ESS;ISS;IS; SS;NCA;MISC;EPA
carp	<i>Cyprinus carpio</i>	ISS; NCA; TN;CTR
catfish, channel	<i>Ictalurus punctatus</i>	ISS; NCA; TN;CTR
catfish, white	<i>Ameiurus catus</i>	NCA; TN;CTR
cod, Atlantic	<i>Gadus morhua</i>	LISTS; SS
cornetfish, bluespotted	<i>Fistularia tabacaria</i>	ESS; IS
cornetfish, red	<i>Fistularia petimba</i>	LISTS; IS
crappie, black	<i>Pomoxis nigromaculatus</i>	ISS; NCA; TN;CTR
crappie, white	<i>Pomoxis annularis</i>	TN;CTR
croaker, Atlantic	<i>Micropogonias undulatus</i>	LISTS; IS
cunner	<i>Tautoglabrus adspersus</i>	LISTS;NRRWS;ESS;ISS;IS; SS; MISC;EPA
cusk-eel, fawn	<i>Lepophidium profundorum</i>	LISTS
cusk-eel, striped	<i>Ophidion marginatum</i>	LISTS; SS
darter, tessellated	<i>Etheostoma olmstedii</i>	ISS
dogfish, smooth	<i>Mustelus canis</i>	LISTS;NRRWS;ESS; IS; SS; MISC;EPA
dogfish, spiny	<i>Squalus acanthius</i>	LISTS;NRRWS; MISC
eel, American	<i>Anguilla rostrata</i>	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS;NCA; EPA;TN;CTR
eel, conger	<i>Conger oceanicus</i>	LISTS; IS; SS
fallfish	<i>Semotilus corporalis</i>	ISS
filefish, orange	<i>Aluterus schoepfi</i>	LISTS; IS; SS
filefish, planehead	<i>Monacanthus hispidus</i>	LISTS; EPA
filefish, scrawled	<i>Aluterus scriptus</i>	IS
flounder, American plaice	<i>Hippoglossoides platessoide</i>	LISTS
flounder, fourspot	<i>Paralichthys oblongus</i>	LISTS;NRRWS; IS; SS; MISC;EPA
flounder, smallmouth	<i>Etropus microstomus</i>	LISTS;NRRWS;ESS; IS; SS;NCA;MISC

Appendix 2.1 cont.

Common Name	Scientific Name	Survey
flounder, summer	<i>Paralichthys dentatus</i>	LISTS;NRRWS;ESS;ISS;IS; SS;NCA;MISC;EPA;TN;CTR
flounder, windowpane	<i>Scophthalmus aquosus</i>	LISTS;NRRWS;ESS;ISS;IS; SS;NCA;MISC;EPA;TN;CTR
flounder, winter	<i>Pseudopleuronectes americanus</i>	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS;NCA;MISC;EPA;TN;CT
flounder, yellowtail	<i>Pleuronectes ferrugineus</i>	LISTS; IS
glasseye snapper	<i>Priacanthus cruentatus</i>	LISTS
goatfish, dwarf	<i>Upeneus parvus</i>	LISTS
goatfish, red	<i>Mullus auratus</i>	LISTS
goby, code	<i>Gobiosoma robustum</i>	IS
goby, naked	<i>Gobiosoma bosci</i>	LISTS; ESS;ISS;IS
goldfish	<i>Carassius auratus</i>	CTR
goosefish	<i>Lophius americanus</i>	LISTS; IS; SS; MISC
grubby	<i>Myoxocephalus aeneus</i>	LISTS; ESS;ISS;IS;SNFH;SS; EPA
gunnel, banded	<i>Pholis fasciata</i>	ESS; IS
gunnel, rock	<i>Pholis gunnellus</i>	LISTS; ESS;ISS;IS;SNFH;SS
gurnard, flying	<i>Dactylopterus volitans</i>	ESS
haddock	<i>Melanogrammus aeglefinus</i>	LISTS; SS
hake, red	<i>Urophycis chuss</i>	LISTS;NRRWS; IS; SS; MISC;EPA
hake, silver	<i>Merluccius bilinearis</i>	LISTS;NRRWS; SS; MISC;EPA
hake, spotted	<i>Urophycis regia</i>	LISTS;NRRWS; ESS; IS; SS; MISC;EPA
harvestfish	<i>Peprilus paru</i>	LISTS
herring, Atlantic	<i>Clupea harengus</i>	LISTS;NRRWS; IS;SNFH;SS; MISC;EPA
herring, alewife	<i>Alosa pseudoharengus</i>	LISTS;NRRWS;ESS;ISS; SNFH;SS; MISC;EPA;TN;CTR
herring, blueback	<i>Alosa aestivalis</i>	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS; EPA;TN;CTR
herring, round	<i>Etrumeus teres</i>	LISTS; EPA
hogchoker	<i>Trinectes maculatus</i>	LISTS;NRRWS;ESS;ISS;IS; SS; MISC;EPA;TN
jack, blue runner	<i>Caranx crysos</i>	LISTS; EPA
jack, crevalle	<i>Caranx hippos</i>	LISTS;NRRWS; ESS; ISS; EPA
jack, yellow	<i>Caranx bartholomaei</i>	LISTS;NRRWS; ESS; IS; MISC;EPA
killifish, rainwater	<i>Lucania parva</i>	ESS
killifish, striped	<i>Fundulus majalis</i>	ESS; IS
kingfish, northern	<i>Menticirrhus saxatilis</i>	LISTS;NRRWS;ESS;ISS;IS; SS; EPA
lamprey, sea	<i>Petromyzon marinus</i>	LISTS; IS; TN
lizardfish, inshore	<i>Synodus foetens</i>	LISTS;NRRWS;ESS;ISS;IS; SS; MISC
lookdown	<i>Selene vomer</i>	LISTS; ISS
lumpfish	<i>Cyclopterus lumpus</i>	LISTS; IS;SNFH
mackerel, Atlantic	<i>Scomber scombrus</i>	LISTS; ISS; SS; EPA
mackerel, Spanish	<i>Scomberomorus maculatus</i>	LISTS; SS; EPA
menhaden, Atlantic	<i>Brevoortia tyrannus</i>	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS;NCA;MISC;EPA
minnow, sheepshead	<i>Cyrinodon variegatus</i>	ESS;ISS
moonfish	<i>Selene setapinnis</i>	LISTS;NRRWS; SS; MISC;EPA
mullet, white	<i>Mugil curema</i>	LISTS;ESS;ISS
mummichog	<i>Fundulus heteroclitus</i>	ESS; IS
needlefish, Atlantic	<i>Strongylura marina</i>	ESS;ISS
ocean pout	<i>Macrozoarces americanus</i>	LISTS;NRRWS; MISC;EPA
oyster toadfish	<i>Opsanus tau</i>	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS; EPA
perch, white	<i>Morone americana</i>	LISTS;NRRWS;ESS;ISS;IS;SNFH; NCA; TN;CTR
perch, yellow	<i>Perca flavescens</i>	ISS; SNFH; TN;CTR
perch, silver	<i>Bairdiella chrysoura</i>	LISTS
pickerel, chain	<i>Esox niger</i>	ISS; TN
pike, northern	<i>Esox lucius</i>	ISS; TN;CTR
pinfish	<i>Lagodon rhomboides</i>	LISTS
pipefish, northern	<i>Syngnathus fuscus</i>	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS;NCA; EPA
pollock	<i>Pollachius virens</i>	LISTS;NRRWS; SNFH;SS; EPA
pompano, African	<i>Alectis ciliaris</i>	LISTS; ISS
puffer, northern	<i>Sphoeroides maculatus</i>	LISTS;NRRWS;ESS;ISS;IS; SS
pumpkinseed	<i>Lepomis gibbosus</i>	ESS;ISS; NCA; TN;CTR
radiated shanny	<i>Ulvaria subbifurcata</i>	SNFH
ray, bullnose	<i>Myliobatis freminvillei</i>	LISTS
ray, roughtail stingray	<i>Dasyatis centroura</i>	LISTS

Appendix 2.1 cont.

Common Name	Scientific Name	Survey
rockling, fourbeard	<i>Enchelyopus cimbrius</i>	LISTS;NRRWS; IS;SNFH;SS; MISC;EPA
salmon, Atlantic	<i>Salmo salar</i>	LISTS; TN
sand lance, American	<i>Ammodytes americanus</i>	LISTS; ESS; IS;SNFH;SS
sandbar (brown) shark	<i>Carcharhinus plumbeus</i>	LISTS
scad, bigeye	<i>Selar crumenophthalmus</i>	LISTS; SS; MISC
scad, mackerel	<i>Decapterus macarellus</i>	LISTS; SS
scad, rough	<i>Trachurus lathami</i>	LISTS;NRRWS; SS; MISC;EPA
scad, round	<i>Decapterus punctatus</i>	LISTS;NRRWS
sculpin, longhorn	<i>Myoxocephalus octodecemspinosus</i>	LISTS;NRRWS; ISS; SNFH; MISC
scup	<i>Stenotomus chrysops</i>	LISTS;NRRWS;ESS;ISS;IS; SS;NCA;MISC;EPA
sea raven	<i>Hemitripterus americanus</i>	LISTS; SNFH; MISC;EPA
seahorse, lined	<i>Hippocampus erectus</i>	LISTS; ESS; IS
searobin, northern	<i>Prionotus carolinus</i>	LISTS;NRRWS;ESS; IS;SNFH;SS; MISC;EPA
searobin, striped	<i>Prionotus evolans</i>	LISTS;NRRWS;ESS;ISS;IS; SS;NCA;MISC;EPA
seasnail	<i>Liparis atlanticus</i>	LISTS; SNFH
sennet, northern	<i>Sphyaena borealis</i>	LISTS; ESS
shad, American	<i>Alosa sapidissima</i>	LISTS;NRRWS;ESS;ISS; SS; MISC;EPA;TN;CTR
shad, gizzard	<i>Dorosoma cepedianum</i>	LISTS;NRRWS; ISS; TN
shad, hickory	<i>Alosa mediocris</i>	LISTS;NRRWS; ISS; SS; MISC;EPA; CTR
sharksucker	<i>Echeneis naucrates</i>	LISTS
shiner, golden	<i>Notemigonus crysoleucas</i>	ISS; TN
shiner, spottail	<i>Notropis hudsonius</i>	ISS; NCA; TN;CTR
silverside, Atlantic	<i>Menidia menidia</i>	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS; MISC;EPA
silverside, inland	<i>Menidia beryllina</i>	SNFH
skate, barndoor	<i>Dipturus laevis</i>	LISTS
skate, clearnose	<i>Raja eglanteria</i>	LISTS;NRRWS; IS
skate, little	<i>Leucoraja erinacea</i>	LISTS;NRRWS;ESS; IS; SS;NCA;MISC;EPA; CTR
skate, winter	<i>Leucoraja ocellata</i>	LISTS;NRRWS; SS; MISC
smelt, rainbow	<i>Osmerus mordax</i>	LISTS; ESS; IS;SNFH;SS; TN;CTR
snapper, grey	<i>Lutjanus griseus</i>	ESS; IS
spot	<i>Leiostomus xanthurus</i>	LISTS;NRRWS; ISS;IS; SS; MISC;EPA
stargazer, northern	<i>Astroscopus guttatus</i>	LISTS; ESS
stickleback, four-spine	<i>Apeltes quadracus</i>	ESS; IS
stickleback, nine-spine	<i>Pungitius pungitius</i>	ESS; IS
stickleback, three-spine	<i>Gasterosteus aculeatus</i>	ESS; IS; TN
sturgeon, Atlantic	<i>Acipenser oxyrinchus</i>	LISTS
sucker, white	<i>Catostomus commersoni</i>	ISS; NCA; TN;CTR
tautog	<i>Tautoga onitis</i>	LISTS;NRRWS;ESS;ISS;IS; SS;NCA;MISC;EPA
tomcod, Atlantic	<i>Microgadus tomcod</i>	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS; EPA; CTR
triggerfish, gray	<i>Balistes capriscus</i>	LISTS
trout, brook	<i>Salvelinus fontinalis</i>	TN;CTR
trout, brown	<i>Salmo trutta</i>	CTR
walleye	<i>Sander vitreus</i>	TN
weakfish	<i>Cynoscion regalis</i>	LISTS;NRRWS;ESS;ISS;IS; SS;NCA;MISC;EPA

Appendix 2.2. Annual total count of finfish, lobster and squid taken in the LISTS, 1984-2013.

Counts include all tows- number of tows conducted shown in second row. Refer to Appendix 2.4 for details on number of tows conducted per month. Note: nc = not counted. Anchovy spp., (yoy) and sand lance, (yoy) are estimated.

Common name	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total	
(number of tows)	200	246	316	320	320	320	297	200	160	240	240	200	200	200	200	200	200	200	200	200	199	200	120	200	120	200	78	172	200	200	6,348	
anchovy, bay	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	548	2,303	443	992	2,434	1,523	814	1,492	2,440	1,128	11,128	475	4,693	1,296	1,350	33,059	
anchovy, striped	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	11	0	0	216	0	47	0	2	0	0	0	6	1	5	0	1	3	1	293	
anchovy, spp (yoy-est)	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	2,667	15,700	935	1,515	3,410	13,110	3,254	2,179	1,267	8,537	1,135	0	2,382	93	2,004	58,188	
bigeye	0	0	0	1	2	2	1	0	0	0	1	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	10	
bigeye, short	1	2	0	0	1	2	0	0	0	1	1	0	3	2	0	0	0	1	5	0	0	0	0	0	0	0	0	0	0	0	19	
black sea bass	34	53	44	24	22	21	39	39	5	20	34	12	27	22	18	50	69	134	394	64	124	42	19	116	122	121	37	91	410	449	2,657	
blenny, feather	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	
blue runner	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	34	0	24	27	0	90	
bluefish	9,927	8,946	5,712	3,517	3,857	12,568	8,195	5,845	5,269	6,469	16,245	5,524	6,705	10,815	8,814	7,843	6,135	3,986	3,450	3,766	6,504	6,532	2,100	9,378	1,699	3,657	2	2,765	3,851	1,829	181,904	
bonito, Atlantic	0	2	0	1	1	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	9	
burrfish, striped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	
butterfish	37,137	67,944	44,624	42,519	60,746	94,928	80,778	40,537	95,961	67,087	54,378	64,930	49,360	70,985	136,926	191,100	60,490	45,264	66,550	36,133	94,735	92,996	50,022	49,137	48,766	108,087	2,894	42,141	60,539	29,569	1,987,263	
cod, Atlantic	0	0	0	0	0	0	1	0	0	0	0	2	0	1	0	0	1	0	0	58	33	10	0	0	0	15	21	109	0	0	251	
Gadus spp. (yoy/larvae)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	0	0	0	34	8	17	0	95	
cornetfish, red	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	
croaker, Atlantic	0	0	0	0	0	0	0	0	0	41	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	47
cunner	359	98	97	129	72	268	196	75	30	65	25	41	17	43	65	51	50	51	55	42	21	24	8	16	26	18	11	14	20	20	2,006	
cusck-eel, fawn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	
cusck-eel, striped	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	0	0	5	
dogfish, smooth	846	919	850	526	564	374	284	193	304	420	361	168	275	167	310	305	467	598	1,019	570	503	467	332	580	328	588	10	613	610	1,051	14,602	
dogfish, spiny	89	252	173	76	434	99	417	14	6	14	58	0	1	7	18	10	4	48	17	85	38	41	11	32	35	148	3	58	16	21	2,226	
eel, American	2	0	1	0	0	2	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	9	
eel, american (yoy/larvae)	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0	0	0	1	0	0	0	0	1	
eel, conger	0	0	0	0	0	0	0	0	1	3	0	2	1	0	0	2	0	2	0	3	0	0	0	0	0	0	0	3	1	1	19	
eel, conger (yoy/larvae)	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	1	0	0	0	0	0	0	1	0	2	
filefish, orange	0	1	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
filefish, planehead	4	20	1	0	25	13	23	1	0	10	1	0	3	0	0	3	0	1	0	1	0	0	1	0	1	1	0	0	0	0	109	
flounder, American plaice	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	3	
flounder, fourspot	2,691	2,759	2,126	2,112	4,653	2,924	4,698	3,553	2,774	1,447	1,674	2,584	2,815	4,122	1,908	1,393	2,590	2,167	1,859	1,877	1,406	688	466	1,094	902	1,036	402	1,400	2,597	1,144	63,860	
flounder, smallmouth	2	0	2	15	39	13	4	20	12	30	17	19	41	58	97	96	61	98	139	49	50	44	7	48	89	96	31	67	258	128	1,628	
flounder, summer	208	249	716	531	414	47	242	263	186	293	282	121	434	486	436	582	555	875	1,356	1,181	644	506	203	733	477	881	517	1,051	980	1,071	16,518	
flounder, windowpane	26,200	18,936	22,514	15,588	26,919	31,082	14,738	8,482	2,980	8,526	6,678	3,815	14,116	10,324	6,483	4,643	2,488	3,065	1,991	2,177	2,275	1,982	1,077	4,051	3,511	2,496	2,850	2,831	3,536	2,096	258,448	
flounder, winter	13,921	13,851	19,033	22,696	36,706	45,563	59,981	26,623	9,548	16,843	21,481	15,558	22,722	14,701	15,697	10,288	8,867	9,826	6,884	4,676	4,021	4,692	1,699	4,550	4,973	4,068	2,579	3,092	3,365	1,912	430,413	
flounder, yellowtail	0	0	0	0	7	0	1	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	1	1	2	1	0	1	0	0	18	
glasseye snapper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	4	8	1	6	0	0	0	1	24
goatfish, dwarf	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
goatfish, red	1	0	0	0	0	0	2	1	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	21	28
goby, naked	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
goosefish	1	8	1	1	1	15	3	8	10	4	8	4	1	2	3	2	1	1	3	0	1	2	1	0	0	0	0	0	2	0	83	
grubby	0	1	1	1	5	9	6	0	0	0	5	1	2	11	5	2	0	0	1	2	0	2	0	1	0	0	4	0	0	0	59	

Appendix 2.2 cont.

Common name (number of tows)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
gunnel, rock	0	6	0	6	5	10	9	0	0	0	1	0	3	0	0	0	3	1	1	6	2	9	2	1	2	2	29	4	1	0	104
haddock	0	0	0	0	0	0	0	0	0	0	0	2	0	1	7	1	0	0	0	26	7	2	0	0	0	0	0	0	0	5	50
hake, red	3,696	1,161	3,061	2,258	3,808	7,365	3,300	2,085	1,606	4,183	546	1,977	872	748	3,015	2,973	2,393	1,382	2,103	873	829	585	625	2,788	1,723	897	990	278	1,720	849	60,687
hake, silver	1,525	724	1,464	1,848	3,427	3,551	4,243	1,537	544	508	2,136	1,941	489	1,973	1,870	5,126	679	3,945	2,013	496	1,417	165	1,267	290	6,587	947	1,747	948	7,519	519	61,444
hake, spotted	78	69	96	55	255	12	42	73	68	497	184	72	384	77	142	381	1,425	606	798	656	230	234	321	340	1,267	327	665	725	626	927	11,630
harvestfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3
herring, alewife	284	37	242	819	415	473	287	103	122	934	1,431	386	1,402	1,194	456	1,393	1,572	638	855	746	859	742	573	1,537	931	1,175	172	512	708	376	21,374
herring, Atlantic	112	510	2,536	2,549	2,721	2,560	25,029	4,003	4,565	6,271	3,850	9,135	972	3,455	893	2,511	770	497	365	459	851	1,168	66	1,932	356	6,330	1,318	1,482	571	3,566	91,401
herring, Atlantic (yoy-est)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,540	1,542	1,380	9,046	539	1,007	10,334	12	3,255	47	48	623	11,196	40,569	
herring, blueback	1,722	117	267	104	247	367	124	38	175	106	1,199	255	97	630	211	19	143	279	68	110	218	111	63	156	74	291	101	72	46	68	7,478
herring, round	22	15	0	1	0	0	0	0	2	6	2	0	0	0	31	0	0	5	0	0	0	0	0	0	0	0	0	0	2	0	86
hogchoker	293	282	140	87	113	118	259	104	61	73	37	17	45	15	12	39	40	85	100	92	83	61	22	78	38	39	34	147	340	250	3,103
jack, crevalle	0	1	0	1	4	0	0	0	0	6	8	1	0	3	0	8	0	0	1	2	2	2	0	2	0	1	0	4	2	0	48
jack, yellow	0	0	0	0	0	41	8	11	2	2	6	32	6	2	6	20	3	3	13	1	1	28	0	0	0	1	0	0	0	186	
kingfish, northern	0	0	0	0	0	1	1	4	2	10	7	25	6	7	15	6	2	2	1	1	5	4	0	4	3	7	0	34	59	14	220
lamprey, sea	0	0	0	1	1	0	1	1	0	2	0	0	1	1	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	11
lizardfish, inshore	0	0	0	0	0	2	0	0	0	0	1	0	0	2	1	7	1	21	1	0	0	1	4	2	10	2	0	43	0	0	98
lobster, American	5,995	3,549	4,924	6,923	6,032	7,645	9,696	8,524	8,160	12,583	9,123	9,944	9,490	16,467	16,211	13,922	10,481	5,626	3,880	2,923	1,843	1,389	748	1,648	1,096	853	293	230	349	144	180,689
lookdown	0	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	6
lumpfish	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
mackerel, Atlantic	68	17	20	29	45	376	46	2	4	17	11	1	5	8	13	21	2	0	5	8	0	37	0	9	0	5	0	0	0	749	
mackerel, Spanish	0	0	0	0	0	11	0	2	1	233	106	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	355
menhaden, Atlantic	161	304	718	600	335	623	407	348	1,115	298	411	318	88	116	306	1,187	492	86	366	799	746	235	28	426	47	69	7	181	426	234	11,475
moonfish	7	226	23	7	142	60	10	24	62	6	149	33	921	287	1,188	645	1,817	225	424	133	182	356	361	979	689	2,575	0	640	262	868	13,301
mullet, white	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
ocean pout	26	3	14	14	30	58	39	42	18	66	42	30	26	15	13	17	18	6	13	14	18	3	5	12	9	22	6	27	14	0	619
perch, silver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
perch, white	0	0	0	0	0	2	0	0	0	4	1	0	1	4	0	1	1	0	0	8	2	0	0	0	4	1	0	1	1	0	31
pinfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
pipefish, northern	1	0	1	0	3	0	0	0	5	21	2	2	0	1	0	2	4	4	2	6	2	4	3	2	0	2	4	4	1	2	78
pollock	5	0	3	8	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	18	2	5	0	56	
pompano, African	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
puffer, northern	1	2	6	0	3	2	2	5	1	28	4	1	3	1	28	14	4	8	6	3	5	5	0	8	0	5	0	9	47	3	204
ray, bullnose ray	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
ray, roughtail stingray	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	1	0	0	0	1	0	0	1	1	0	8
rockling, fourbeard	376	89	184	312	563	686	393	163	150	242	93	169	109	199	133	233	185	251	106	113	173	106	14	87	81	47	35	43	43	3	5,381
rudderfish, banded	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
salmon, Atlantic	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
sand lance, American	nc	nc	nc	nc	nc	nc	nc	nc	nc	3	25	95	0	2	4	178	4	4	3	19	70	6	0	30	7,495	1,227	13,061	9,535	2	7	31,770
sand lance, (yoy-est)	nc	nc	nc	nc	nc	nc	nc	nc	nc	0	1,000	5	0	0	100	1,075	0	430	0	0	0	0	5,444	2	3,750	7,932	0	15,600	0	0	35,338
scad, bigeye	0	0	0	0	15	63	1	1	0	0	3	0	2	1	1	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	108
scad, mackerel	0	0	0	0	0	0	1	2	6	0	4	1	3	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	20
scad, rough	34	32	19	89	180	81	41	1	0	100	13	0	35	65	0	0	0	10	10	12	14	62	14	13	0	59	0	150	19	28	1,082

Appendix 2.2 cont.

Common name (number of tows)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total	
scad, round	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	1	2	0	0	4	11	12	0	3	0	1	0	1	0	1	42	
sculpin, longhorn	14	82	51	32	107	107	263	139	31	11	7	5	7	4	2	2	14	5	3	5	5	0	0	3	2	2	1	9	1	1	915	
scup	8,806	18,054	16,449	9,761	12,566	37,642	21,193	45,790	13,646	32,218	38,456	13,985	16,087	9,582	23,742	101,095	101,464	58,325	100,481	26,926	61,521	52,642	28,829	75,681	53,560	46,991	7,157	34,457	53,119	24,961	1,145,186	
sea raven	57	59	70	88	52	34	44	19	4	1	1	2	2	3	30	9	19	7	11	3	7	3	0	5	0	5	6	3	5	0	549	
seahorse, lined	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
searobin, northern	585	2,267	546	280	605	381	357	609	313	951	878	1,317	672	579	360	547	2,014	1,594	2,123	1,632	784	265	630	691	809	2,012	1,128	803	3,642	1,934	31,310	
searobin, striped	1,434	2,295	2,035	1,482	2,086	2,211	2,353	865	857	1,491	1,298	682	1,008	819	1,321	1,690	3,129	2,061	2,394	2,235	1,308	757	366	755	612	1,507	141	1,630	2,973	2,724	46,519	
seasnail	0	0	0	0	1	0	8	0	0	0	0	0	0	0	0	0	0	4	0	0	4	2	0	0	0	0	0	0	0	0	19	
sennet, northern	1	0	0	0	0	1	0	0	0	2	0	0	0	0	0	6	0	1	2	0	0	8	0	2	0	5	0	1	3	0	32	
shad, American	1,852	425	642	1,036	3,208	4,007	550	361	380	1,142	1,723	755	501	922	901	987	316	109	593	689	356	177	68	236	405	422	165	271	321	222	23,741	
shad, gizzard	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	1	2	0	1	0	0	0	0	1	0	9	
shad, hickory	71	4	7	6	4	40	2	1	12	10	31	6	29	25	40	56	42	14	45	41	39	136	75	37	5	13	2	8	42	33	876	
shark, sandbar (brown)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
sharksucker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
silverside, Atlantic	0	0	0	0	0	0	0	0	1	54	3	39	0	2	0	1	2	1	0	1	0	0	0	1	2	3	1	0	0	3	114	
skate, barndoor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
skate, clearnose	0	0	3	2	1	1	3	2	8	8	1	4	1	4	20	22	18	65	59	68	22	102	36	97	37	69	1	56	280	218	1,207	
skate, little	2,751	4,614	4,303	3,847	9,471	9,349	11,902	6,479	3,495	6,051	6,714	2,372	6,203	4,068	4,305	3,686	3,340	4,311	4,242	4,071	3,044	1,317	593	1,277	682	709	281	674	1,406	583	116,138	
skate, winter	1	20	34	17	114	120	85	50	31	62	51	41	88	48	62	41	31	38	45	82	53	31	23	44	51	44	16	37	97	91	1,547	
smelt, rainbow	0	0	0	0	5	4	2	2	0	9	9	4	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	37
spot	0	34	38	10	29	0	8	2	0	124	53	3	195	10	0	45	204	13	52	1	8	0	14	0	308	1	0	5	858	1,917	3,930	
squid, long-finned	0	0	11,018	15,135	33,400	21,304	23,789	12,322	32,780	58,312	25,396	23,974	22,720	13,048	27,443	21,580	16,585	9,080	8,034	21,350	23,022	17,542	7,802	24,212	10,490	24,130	1,906	13,020	9,767	5,393	534,554	
stargazer, northern	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	
striped bass	10	13	12	30	31	59	117	38	42	81	81	165	232	319	400	397	293	214	469	383	378	469	144	422	199	466	71	243	170	200	6,146	
sturgeon, Atlantic	11	3	6	6	7	13	9	3	30	60	60	6	3	5	17	39	7	18	18	29	8	9	21	18	7	18	1	5	7	4	448	
tautog	734	773	796	624	629	791	693	501	265	164	224	61	136	190	194	217	287	319	565	225	232	179	186	280	179	163	53	106	135	161	10,061	
toadfish, oyster	3	4	9	0	0	3	4	1	0	2	0	1	0	0	3	2	6	2	8	9	1	0	1	5	3	3	0	1	0	5	76	
tomcod, Atlantic	2	1	0	8	2	3	3	4	8	5	2	4	2	1	0	1	0	0	0	0	2	0	0	0	0	1	0	2	0	0	51	
triggerfish, gray	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
weakfish	366	2,740	7,751	327	1,341	5,914	2,246	4,320	1,317	2,060	8,156	2,881	6,375	3,904	3,495	12,416	23,595	12,739	10,713	8,183	17,505	9,191	241	17,386	2,531	2,604	1	2,583	6,785	1,964	181,629	
Total	122,527	152,574	153,383	136,139	216,479	294,026	277,183	174,235	186,975	230,301	204,795	163,532	165,756	170,557	257,779	392,447	271,189	172,119	228,767	131,362	249,905	200,829	109,221	215,305	164,659	238,815	39,282	145,997	170,599	102,149	5,738,886	

Appendix 2.3. Annual total weight (kg) of finfish, lobster and squid taken in LISTS, 1992-2013.

Weights include all tows – number of tows shown in second row. Refer to Appendix 2.4 for details on number of tows conducted per month. Note: nw = not weighed.

Common name	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
(number of tows)	160	240	240	200	200	200	200	200	200	200	200	200	199	200	120	200	160	200	78	172	200	200	4,169
anchovy, bay	nw	nw	nw	nw	nw	nw	nw	5.6	12.2	3.6	6.6	13.3	10.3	5.8	8.3	14.5	7.7	35.3	2.8	10.5	8.6	6.8	151.9
anchovy, striped	nw	nw	nw	nw	0.2	0.0	0.0	6.1	0.0	1.2	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.4	0.0	0.1	0.2	0.1	8.6
Anchovy, spp (yoy-est)	nw	nw	nw	nw	nw	nw	nw	0.5	4.5	0.8	1.5	2.0	3.0	1.5	0.6	0.8	5.1	0.7	0.0	1.0	0.4	1.3	23.7
bigeye	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
bigeye, short	0.0	0.1	0.1	0.0	0.3	0.2	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
black sea bass	1.8	6.4	11.0	4.7	12.1	10.5	10.6	17.2	22.6	74.8	188.3	49.6	40.5	26.4	9.3	46.8	29.8	59.5	20.1	54.2	141.0	181.2	1,018.4
blenny, feather	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2
blue runner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	2.3	0.0	1.7	2.7	0.0	7.1
bluefish	2,462.9	2,226.1	2,341.7	1,156.1	1,118.2	977.6	899.0	1,218.0	1,408.0	751.2	1,099.7	791.6	2,140.6	1,333.8	358.6	1,801.3	641.4	1,157.4	6.1	584.7	532.7	517.7	25,524.4
bonito, Atlantic	0.0	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
burrfish, striped	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	1.0
butterfish	1,357.3	1,450.1	1,202.2	1,664.5	1,844.7	2,017.2	3,661.1	4,171.6	1,458.3	1,834.0	1,924.2	682.8	1,842.7	2,097.3	1,631.4	1,446.2	1,442.0	3,186.9	166.9	1,600.8	1,891.3	1,252.5	39,826.0
cod, Atlantic	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.1	0.0	0.0	2.8	4.7	0.9	0.0	0.0	0.0	1.0	2.1	9.2	0.0	0.0	21.2
Gadus spp. (yoy/larvae)	nw	nw	nw	nw	nw	nw	nw	nw	nw	nw	nw	nw	nw	1.5	0	0	0	1.8	0.3	0.4	0	0	4.0
cornetfish, red	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
croaker, Atlantic	0.0	2.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.1	3.2
cunner	3.7	6.2	2.1	4.4	2.6	4.1	8.1	5.9	5.3	5.9	7.2	6.7	3.7	4.1	1.3	3.0	3.6	1.8	1.3	1.9	2.8	1.8	87.5
cusck-eel, fawn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
cusck-eel, striped	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.4
dogfish, smooth	863.2	1,339.1	934.6	566.8	862.8	527.3	989.8	923.0	1,038.5	1,407.6	2,814.3	1,527.4	1,435.3	1,421.7	1,176.6	2,110.2	1,134.2	2,213.3	34.4	2,031.7	1,833.3	2,162.3	29,347.4
dogfish, spiny	30.7	58.4	199.6	0.0	2.1	13.7	44.5	51.1	9.9	128.6	48.0	239.5	104.7	102.0	47.0	122.3	127.7	545.7	16.2	203.5	62.8	91.5	2,249.5
eel, American	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	3.1
eel, American (yoy)	nw	nw	nw	nw	nw	nw	nw	nw	nw	nw	nw	nw	nw	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
eel, conger	0.1	0.2	0.0	1.2	0.1	0.0	0.0	0.5	0.0	0.3	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.3	1.2	6.1
eel, conger (yoy)	nw	nw	nw	nw	nw	nw	nw	nw	nw	nw	nw	nw	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2
filefish, orange	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
filefish, planehead	0.0	0.8	0.1	0.0	0.3	0.0	0.0	0.3	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	2.0
flounder, American plaice	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
flounder, fourspot	382.4	193.6	202.4	402.9	407.2	615.3	306.0	203.9	398.6	362.7	326.9	350.1	309.3	125.9	88.1	224.9	186.3	169.8	92.0	224.2	454.5	203.4	6,230.4
flounder, smallmouth	0.6	2.6	1.5	1.2	2.3	2.4	6.4	5.2	2.7	3.8	4.9	3.0	2.8	2.4	0.6	2.6	3.2	4.7	1.4	3.5	7.5	5.2	70.5
flounder, summer	142.1	193.1	173.0	79.6	266.4	326.0	431.3	459.8	471.3	628.1	989.3	845.7	627.2	406.1	180.5	590.9	398.0	694.4	229.6	713.0	718.5	726.6	10,290.5
flounder, windowpane	286.1	578.9	597.2	356.2	1,223.6	986.1	741.1	594.2	368.8	475.5	343.3	378.8	333.7	177.5	128.9	510.8	524.0	342.8	449.3	395.9	501.1	326.6	10,620.4
flounder, winter	1,344.8	1,898.0	2,060.9	1,614.7	3,335.0	2,439.4	2,450.3	2,011.7	1,921.4	1,993.6	1,584.1	1,421.9	839.9	566.1	271.2	951.3	751.9	524.0	450.5	613.8	604.9	576.8	30,226.2
flounder, yellowtail	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.4	1.0	0.4	0.2	0.0	0.3	0.0	0.0	3.0
glasseye snapper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.7	0.1	0.6	0.0	0.0	0.0	0.1	1.8
goatfish, red	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.8
goby, naked	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
goosefish	2.5	0.5	2.0	3.3	0.1	1.6	3.2	0.3	0.2	0.4	0.6	0.0	0.1	0.7	1.2	0.0	0.0	0.0	0.0	0.0	0.8	0.0	17.5
grubby	0.0	0.0	0.3	0.1	0.2	0.7	0.3	0.2	0.0	0.0	0.1	0.1	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	2.4
gunnel, rock	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.2	0.1	0.1	0.4	0.2	0.6	0.1	0.1	0.2	0.2	0.5	0.2	0.1	0.0	3.3

Appendix 2.3 cont.

Common name	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
(number of tows)	160	240	240	200	200	200	200	200	200	200	200	200	199	200	120	200	160	200	78	172	200	200	4,169
haddock	0.0	0.0	0.0	0.2	0.0	0.1	0.5	0.1	0.0	0.0	0.0	1.3	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.4
hake, red	127.7	254.4	63.9	145.6	95.5	80.5	217.5	226.5	162.6	109.7	206.6	73.4	51.6	56.0	37.4	200.4	141.3	59.5	64.3	25.1	148.6	61.1	2,609.2
hake, silver	22.0	21.9	127.6	61.6	20.0	70.8	88.3	99.6	28.8	152.2	89.6	13.9	27.3	7.1	37.7	14.6	208.5	50.0	35.4	40.3	171.0	23.6	1,411.8
hake, spotted	10.3	55.9	32.4	6.5	42.6	19.0	12.2	38.8	92.3	34.9	48.2	70.4	37.8	17.4	24.3	23.9	65.8	32.1	15.8	76.8	64.2	66.8	888.4
harvestfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3
herring, Atlantic	797.5	1,120.0	769.3	1,631.7	189.8	515.1	74.6	45.4	124.1	72.6	63.9	89.1	58.3	131.1	10.3	234.2	52.1	239.2	179.0	199.4	61.5	321.2	6,979.4
herring, Atlantic (yoy-est)	nw	nw	nw	nw	nw	nw	nw	nw	nw	1.5	1.9	2.8	2.4	1.2	0.2	4.2	0.4	1.9	0.3	0.5	1.2	7.3	25.8
herring, alewife	9.2	54.5	83.2	24.6	134.6	81.3	35.1	107.6	96.0	41.7	70.2	55.3	56.1	47.6	49.5	101.3	51.1	96.0	14.3	29.8	47.0	34.1	1,320.1
herring, blueback	8.5	4.7	31.2	7.5	6.2	16.5	5.1	1.1	6.8	11.1	2.4	4.0	6.5	5.4	2.5	9.1	3.2	14.6	3.4	3.2	1.6	4.3	158.9
herring, round	0.2	0.3	0.2	0.0	0.0	0.0	0.6	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.5
hogchoker	5.6	7.3	3.9	1.7	5.4	1.8	1.9	5.0	5.9	10.5	13.3	8.6	9.5	8.7	3.2	11.4	5.6	4.5	4.4	16.8	30.7	27.2	192.9
jack, crevalle	0.0	0.5	0.5	0.1	0.0	0.6	0.0	0.7	0.0	0.0	0.1	0.2	0.2	0.2	0.0	0.1	0.0	0.1	0.0	0.4	0.2	0.0	3.9
jack, yellow	0.2	0.2	0.4	2.1	0.5	0.2	0.7	1.9	0.2	0.3	1.4	0.1	0.1	3.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	11.4
kingfish, northern	0.2	1.0	0.5	2.5	0.6	0.9	1.3	0.6	0.3	0.2	0.2	0.6	0.5	0.6	0.0	0.4	0.4	0.4	0.0	3.7	8.4	2.3	25.6
lamprey, sea	0.0	1.0	0.0	0.0	0.7	0.1	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.1	0.8	0.0	0.0	0.0	0.0	0.0	4.0
lizardfish, inshore	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.5	0.1	2.2	0.1	0.0	0.0	0.1	0.4	0.2	0.5	0.2	0.0	4.6	0.0	0.0	9.3
lobster, American	1,537.9	2,700.3	1,956.1	2,141.9	2,113.5	3,800.9	3,873.9	3,397.9	2,184.5	1,531.2	1,005.7	690.9	481.5	364.3	197.9	396.5	314.1	244.0	83.6	52.0	70.0	37.3	29,175.9
lookdown	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
lumpfish	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
mackerel, Atlantic	1.0	1.3	0.9	0.1	0.5	1.7	1.1	3.1	0.8	0.0	2.5	1.9	0.0	5.7	0.0	0.8	0.0	0.4	0.0	0.0	0.0	0.0	21.8
mackerel, Spanish	1.5	5.3	6.4	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.5
menhaden, Atlantic	60.6	103.9	87.8	41.9	40.5	38.5	9.2	90.9	31.8	4.7	96.3	344.9	110.7	77.9	5.5	63.9	10.4	18.0	2.7	69.8	144.6	87.5	1,542.0
moonfish	1.5	0.6	4.1	2.1	11.6	4.6	13.4	9.6	15.0	3.8	7.4	2.3	3.4	6.0	3.5	12.0	13.4	19.5	0.0	6.3	3.6	10.0	153.7
mullet, white	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2
ocean pout	7.7	16.4	9.1	6.5	7.2	4.8	2.7	3.9	4.9	2.3	4.3	2.9	5.4	0.7	0.9	3.2	2.1	4.8	1.4	4.5	2.0	0.0	97.7
perch, silver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
perch, white	0.0	0.3	0.3	0.0	0.1	0.9	0.0	0.4	0.2	0.0	0.0	1.4	0.5	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.0	4.6
pinfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2
pipefish, northern	0.4	0.6	0.2	0.1	0.0	0.1	0.0	0.1	0.2	0.3	0.2	0.4	0.2	0.3	0.2	0.2	0.0	0.2	0.3	0.3	0.1	0.2	4.6
pollock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.8	0.1	0.5	0.0	0.1	2.0
pompano, African	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
puffer, northern	0.1	0.9	0.4	0.1	0.3	0.1	0.5	1.1	0.4	0.7	0.3	0.3	0.4	0.3	0.0	0.5	0.0	0.4	0.0	0.9	3.1	0.3	11.1
ray, bullnose ray	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	5.7
ray, roughtail stingray	0.0	0.0	0.0	0.0	0.0	50.6	3.4	0.0	0.0	2.5	24.4	0.0	4.1	0.0	0.0	0.0	3.0	0.0	0.0	13.0	5.0	0.0	106.0
rockling, fourbeard	12.8	15.7	8.5	14.7	8.6	17.3	11.6	28.8	14.7	21.5	9.7	9.2	13.0	6.8	1.5	7.6	7.1	3.9	2.9	4.0	3.5	0.2	223.6
salmon, Atlantic	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
sand lance, American	nw	0.3	0.6	0.4	0.0	0.1	0.3	0.3	0.3	0.3	0.1	0.2	0.2	0.2	0.0	0.3	7.2	2.0	5.2	7.5	0.2	0.1	25.8
sand lance, (yoy - est)	nw	0.0	0.8	0.1	0.0	0.0	0.1	0.4	0.0	0.6	0.0	0.0	0.0	0.0	2.9	0.1	0.2	2.3	0.0	3.8	0.0	0.0	11.3
scad, bigeye	0.0	0.0	0.3	0.0	0.1	0.1	0.1	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
scad, mackerel	0.2	0.0	0.4	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.0
scad, rough	0.0	4.4	0.2	0.0	1.5	2.0	0.0	0.0	0.0	0.7	0.7	0.5	0.7	1.9	0.5	0.7	0.0	2.8	0.0	6.8	1.1	1.3	25.8
scad, round	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.2	0.0	0.0	0.3	0.3	0.3	0.0	0.3	0.0	0.1	0.0	0.1	0.0	0.1	2.3
sculpin, longhorn	9.0	3.2	1.6	1.3	2.1	0.8	1.0	0.3	5.0	1.5	0.9	2.0	3.4	0.0	0.0	0.8	0.3	0.3	0.4	2.0	0.2	0.4	36.5

Appendix 2.3 cont.

Common name (number of tows)	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total	
scup	837.7	867.9	878.1	770.5	739.4	530.5	740.5	3,641.3	6,679.0	5,828.4	13,814.0	5,221.9	6,801.1	3,080.7	4,636.1	5,333.5	6,509.9	6,332.1	1,971.6	6,759.5	6,170.2	5,945.6	94,089.5	
sea raven	3.9	0.6	0.2	0.7	1.5	0.4	11.3	4.9	9.2	4.1	4.1	1.6	2.4	0.5	0.0	3.6	0.0	1.7	1.6	0.9	1.1	0.0	54.3	
seahorse, lined	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
searobin, northern	35.6	97.9	66.7	166.9	57.4	60.4	39.4	52.0	251.2	222.7	267.3	252.2	112.0	21.3	74.5	74.2	58.8	194.3	149.5	85.5	405.2	161.7	2,906.7	
searobin, striped	305.1	260.0	208.6	277.5	278.7	230.5	509.7	497.0	1,036.1	861.0	1,065.0	805.1	465.4	183.7	113.5	217.0	263.0	471.8	66.4	558.7	1,086.4	1,112.5	10,872.7	
seasnail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
sennet, northern	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1	0.2	0.0	0.0	0.7	0.0	0.2	0.0	0.4	0.0	0.1	0.3	0.0	2.7	
shad, American	63.3	138.9	165.8	81.4	36.2	66.8	60.2	117.3	25.8	9.6	40.3	40.8	24.2	18.2	6.1	15.8	20.2	28.9	8.6	17.5	25.3	15.3	1,026.5	
shad, gizzard	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.9	
shad, hickory	4.9	4.4	7.6	2.5	10.2	9.1	15.9	19.4	17.1	6.7	19.6	20.1	14.2	43.1	19.1	10.4	1.1	3.6	0.4	1.5	14.1	10.8	255.8	
sharksucker	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	
silverside, Atlantic	0.1	1.0	0.3	0.9	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.3	0.1	0.0	0.0	0.3	3.8	
skate, bamdoor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	
skate, clearnose	10.3	11.3	1.8	11.0	1.7	7.4	36.8	39.4	37.9	132.4	107.3	130.8	48.2	187.1	52.4	193.3	78.1	148.5	4.5	109.8	491.7	387.0	2,228.7	
skate, little	1,389.0	2,534.8	3,091.5	1,055.3	2,801.8	1,945.8	2,085.5	1,829.6	1,604.7	2,022.6	2,121.9	2,187.3	1,689.8	682.5	310.6	697.0	327.4	390.0	148.3	359.4	657.9	317.8	30,250.5	
skate, winter	105.3	220.9	139.2	89.2	212.7	109.7	180.7	89.8	66.5	112.2	133.5	162.1	100.3	59.9	60.0	117.8	140.8	108.5	37.7	101.2	179.8	111.2	2,639.0	
smelt, rainbow	0.0	0.6	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	
spot	0.0	10.6	4.3	0.3	14.1	1.1	0.0	5.7	17.8	1.3	7.2	0.1	0.9	0.0	1.2	0.0	21.3	0.2	0.0	0.7	107.5	195.4	389.7	
squid, long-finned	844.9	1,629.1	965.4	796.4	720.4	515.2	767.0	826.4	582.3	346.2	279.9	573.2	953.4	683.5	326.0	773.6	330.1	648.4	161.4	370.7	333.9	170.8	13,598.2	
stargazer, northern	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.2	
striped bass	89.4	210.3	198.6	185.3	373.5	509.9	484.2	815.4	602.6	472.5	855.2	770.3	811.8	675.1	418.7	888.0	456.3	897.4	173.2	721.9	278.0	421.0	11,308.6	
sturgeon, Atlantic	244.8	633.6	848.6	145.5	19.9	37.8	189.7	498.6	79.0	270.6	275.3	550.2	117.6	152.7	368.7	336.4	111.3	286.6	5.6	181.9	154.2	98.0	5,606.6	
tautog	508.3	320.0	373.9	95.1	225.9	271.8	347.1	326.6	463.5	491.2	921.1	346.0	353.7	269.2	301.4	551.4	309.4	285.4	83.1	151.7	128.9	160.8	7,285.5	
toadfish, oyster	0.0	1.2	0.0	0.5	0.0	0.0	0.9	1.8	2.5	0.4	4.7	5.0	0.8	0.0	1.2	2.0	1.9	0.8	0.0	0.2	0.0	0.9	24.8	
tomcod, Atlantic	1.3	0.8	0.3	0.8	0.3	0.1	0.0	0.7	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	4.8	
triggerfish, gray	0.0	0.9	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	
weakfish	94.8	121.2	344.5	275.7	414.9	362.0	268.2	771.3	554.5	415.0	442.0	194.8	426.9	449.9	52.2	584.8	116.1	108.7	1.0	192.6	409.2	203.7	6,804.0	
Total	14,031.0	19,406.4	18,216.5	13,905.2	17,669.1	17,291.1	19,646.7	23,279.9	21,927.8	20,878.1	31,350.9	18,959.6	20,496.9	13,526.3	11,027.8	18,715.6	14,889.7	19,649.0	4,700.1	16,639.2	17,975.9	16,060.4	390,243.2	

Appendix 2.4. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1984.

Finfish species are in order of descending count. Number of tows (sample size)=102.

species	count	%	weight	%	species	count	%	weight	%
butterfish	18,700	31.0	.	.	Atlantic mackerel	48	0.1	.	.
windowpane flounder	13,746	22.8	.	.	spotted hake	46	0.1	.	.
winter flounder	6,847	11.4	.	.	sea raven	32	0.1	.	.
bluefish	6,738	11.2	.	.	ocean pout	25	0	.	.
scup	3,225	5.4	.	.	rough scad	22	0	.	.
fourspot flounder	1,868	3.1	.	.	longhorn sculpin	12	0	.	.
little skate	1,491	2.5	.	.	black sea bass	11	0	.	.
red hake	1,323	2.2	.	.	moonfish	7	0	.	.
American shad	982	1.6	.	.	Atlantic sturgeon	6	0	.	.
blueback herring	925	1.5	.	.	round herring	5	0	.	.
striped searobin	697	1.2	.	.	spiny dogfish	4	0	.	.
silver hake	575	1.0	.	.	American eel	2	0	.	.
smooth dogfish	534	0.9	.	.	striped bass	2	0	.	.
tautog	472	0.8	.	.	oyster toadfish	2	0	.	.
northern searobin	448	0.7	.	.	goosefish	1	0	.	.
fourbeard rockling	303	0.5	.	.	northern sennet	1	0	.	.
weakfish	260	0.4	.	.	northern puffer	1	0	.	.
hogchoker	252	0.4	.	.	red goatfish	1	0	.	.
cunner	220	0.4	.	.	Total	60,230			
summer flounder	150	0.2	.	.					
alewife	108	0.2	.	.	<u>Invertebrates</u>				
hickory shad	71	0.1	.	.	American lobster	2865	100	.	.
Atlantic menhaden	67	0.1	.	.	Total	2,865			

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1985.
Finfish species are in order of descending count. Number of tows (sample size)=126.

species	count	%	weight	%	species	count	%	weight	%
butterfish	34,512	41.4	.	.	spot	26	0	.	.
scup	12,155	14.6	.	.	round herring	15	0	.	.
windowpane flounder	11,194	13.4	.	.	rough scad	14	0	.	.
winter flounder	7,980	9.6	.	.	Atlantic mackerel	13	0	.	.
bluefish	5,302	6.4	.	.	spiny dogfish	13	0	.	.
weakfish	2,650	3.2	.	.	winter skate	13	0	.	.
northern searobin	2,098	2.5	.	.	alewife	9	0	.	.
little skate	1,705	2.0	.	.	planehead filefish	7	0	.	.
fourspot flounder	1,289	1.5	.	.	rock gunnel	4	0	.	.
striped searobin	1,078	1.3	.	.	oyster toadfish	4	0	.	.
red hake	573	0.7	.	.	goosefish	3	0	.	.
Atlantic herring	504	0.6	.	.	ocean pout	3	0	.	.
smooth dogfish	405	0.5	.	.	Atlantic bonito	2	0	.	.
tautog	323	0.4	.	.	crevalle jack	1	0	.	.
American shad	280	0.3	.	.	grubby	1	0	.	.
silver hake	250	0.3	.	.	gray triggerfish	1	0	.	.
summer flounder	175	0.2	.	.	hickory shad	1	0	.	.
hogchoker	163	0.2	.	.	orange filefish	1	0	.	.
moonfish	142	0.2	.	.	northern puffer	1	0	.	.
blueback herring	100	0.1	.	.	Atlantic sturgeon	1	0	.	.
longhorn sculpin	80	0.1	.	.	Atlantic tomcod	1	0	.	.
cunner	51	0.1	.	.	Total	83,395		-	
sea raven	50	0.1	.	.					
fourbeard rockling	44	0.1	.	.					
Atlantic menhaden	38	0	.	.	<u>Invertebrates</u>				
black sea bass	35	0	.	.	American lobster	1589	100	.	.
spotted hake	27	0	.	.	Total	1,589		-	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1986.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight. Number of tows (sample size)=196.

species	count	%	weight	%	species	count	%	weight	%
butterfish	25,192	28.0	.	.	winter skate	32	0	.	.
windowpane flounder	18,848	20.9	.	.	spotted hake	30	0	.	.
winter flounder	15,341	17.0	.	.	black sea bass	28	0	.	.
scup	7,910	8.8	.	.	spot	25	0	.	.
weakfish	5,427	6.0	.	.	Atlantic mackerel	19	0	.	.
little skate	3,210	3.6	.	.	moonfish	14	0	.	.
bluefish	2,789	3.1	.	.	ocean pout	14	0	.	.
red hake	2,657	3.0	.	.	oyster toadfish	9	0	.	.
Atlantic herring	1,999	2.2	.	.	hickory shad	6	0	.	.
fourspot flounder	1,487	1.7	.	.	rough scad	5	0	.	.
striped searobin	886	1.0	.	.	Atlantic sturgeon	4	0	.	.
silver hake	723	0.8	.	.	clearnose skate	2	0	.	.
tautog	566	0.6	.	.	American eel	1	0	.	.
smooth dogfish	430	0.5	.	.	goosefish	1	0	.	.
summer flounder	414	0.5	.	.	grubby	1	0	.	.
northern searobin	396	0.4	.	.	northern pipefish	1	0	.	.
American shad	344	0.4	.	.	northern puffer	1	0	.	.
Atlantic menhaden	318	0.4	.	.	smallmouth flounder	1	0	.	.
blueback herring	256	0.3	.	.	striped bass	1	0	.	.
alewife	216	0.2	.	.	Total	90,031		-	
fourbeard rockling	123	0.1	.	.					
cunner	76	0.1	.	.					
sea raven	70	0.1	.	.	<u>Invertebrates</u>				
hogchoker	60	0.1	.	.	American lobster	2,553	28.1	.	.
longhorn sculpin	51	0.1	.	.	long-finned squid	6,537	71.9	.	.
spiny dogfish	47	0.1	.	.	Total	9,090		-	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1987.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
winter flounder	15,600	25.6	.	.	longhorn sculpin	32	0.1	.	.
butterfish	14,674	24.1	.	.	spotted hake	22	0	.	.
windowpane flounder	11,031	18.1	.	.	spiny dogfish	19	0	.	.
scup	5,029	8.3	.	.	ocean pout	14	0	.	.
bluefish	2,611	4.3	.	.	black sea bass	13	0	.	.
little skate	2,140	3.5	.	.	winter skate	13	0	.	.
red hake	1,729	2.8	.	.	striped bass	10	0	.	.
Atlantic herring	1,628	2.7	.	.	Atlantic tomcod	8	0	.	.
fourspot flounder	1,298	2.1	.	.	smallmouth flounder	7	0	.	.
silver hake	906	1.5	.	.	moonfish	6	0	.	.
alewife	754	1.2	.	.	rock gunnel	4	0	.	.
striped searobin	543	0.9	.	.	Atlantic sturgeon	4	0	.	.
summer flounder	374	0.6	.	.	spot	3	0	.	.
American shad	371	0.6	.	.	clearnose skate	2	0	.	.
tautog	363	0.6	.	.	hickory shad	2	0	.	.
Atlantic menhaden	329	0.5	.	.	Atlantic bonito	1	0	.	.
smooth dogfish	257	0.4	.	.	Atlantic mackerel	1	0	.	.
weakfish	248	0.4	.	.	round herring	1	0	.	.
fourbeard rockling	241	0.4	.	.	sea lamprey	1	0	.	.
northern searobin	220	0.4	.	.	Total	60,862		-	
sea raven	86	0.1	.	.					
blueback herring	79	0.1	.	.	Invertebrates				
cunner	79	0.1	.	.	American lobster	3,544	25.1	.	.
hogchoker	61	0.1	.	.	long-finned squid	10,552	74.9	.	.
rough scad	48	0.1	.	.	Total	14,096		-	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1988.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	45,983	36.7	.	.	ocean pout	30	0	.	.
winter flounder	25,695	20.5	.	.	Atlantic mackerel	24	0	.	.
windowpane flounder	19,497	15.6	.	.	spot	18	0	.	.
scup	10,184	8.1	.	.	black sea bass	17	0	.	.
little skate	6,539	5.2	.	.	striped bass	17	0	.	.
bluefish	3,688	2.9	.	.	yellowtail flounder	6	0	.	.
fourspot flounder	2,478	2.0	.	.	grubby	5	0	.	.
red hake	1,933	1.5	.	.	rock gunnel	5	0	.	.
weakfish	1,287	1.0	.	.	rainbow smelt	5	0	.	.
silver hake	1,210	1.0	.	.	crevalle jack	4	0	.	.
striped searobin	1,194	1.0	.	.	bigeye scad	2	0	.	.
Atlantic herring	1,193	1.0	.	.	bigeye	2	0	.	.
American shad	1,187	0.9	.	.	planehead filefish	2	0	.	.
northern searobin	474	0.4	.	.	hickory shad	2	0	.	.
tautog	455	0.4	.	.	northern puffer	2	0	.	.
smooth dogfish	385	0.3	.	.	Atlantic sturgeon	2	0	.	.
summer flounder	320	0.3	.	.	Atlantic tomcod	2	0	.	.
fourbeard rockling	302	0.2	.	.	Atlantic bonito	1	0	.	.
blueback herring	164	0.1	.	.	dwarf goatfish	1	0	.	.
alewife	153	0.1	.	.	goosefish	1	0	.	.
moonfish	137	0.1	.	.	northern pipefish	1	0	.	.
rough scad	128	0.1	.	.	short bigeye	1	0	.	.
longhorn sculpin	103	0.1	.	.	striped cusk-eel	1	0	.	.
winter skate	101	0.1	.	.	sea lamprey	1	0	.	.
spotted hake	87	0.1	.	.	Total	125,344		-	
hogchoker	75	0.1	.	.					
Atlantic menhaden	69	0.1	.	.					
sea raven	50	0	.	.	Invertebrates				
cunner	48	0	.	.	American lobster	2,114	8.5	.	.
spiny dogfish	39	0	.	.	long-finned squid	22,769	91.5	.	.
smallmouth flounder	34	0	.	.	Total	24,883		-	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1989.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	47,089	29.3	.	.	sea raven	34	0	.	.
winter flounder	32,361	20.2	.	.	black sea bass	15	0	.	.
windowpane flounder	25,109	15.6	.	.	rough scad	11	0	.	.
scup	17,391	10.8	.	.	striped bass	11	0	.	.
bluefish	8,649	5.4	.	.	yellow jack	11	0	.	.
little skate	7,079	4.4	.	.	goosefish	9	0	.	.
red hake	5,689	3.5	.	.	smallmouth flounder	9	0	.	.
weakfish	5,496	3.4	.	.	rock gunnel	8	0	.	.
American shad	1,977	1.2	.	.	grubby	7	0	.	.
fourspot flounder	1,877	1.2	.	.	spotted hake	7	0	.	.
striped searobin	1,763	1.1	.	.	rainbow smelt	4	0	.	.
silver hake	1,697	1.1	.	.	planehead filefish	3	0	.	.
Atlantic herring	1,154	0.7	.	.	Atlantic sturgeon	3	0	.	.
tautog	600	0.4	.	.	Atlantic tomcod	3	0	.	.
fourbeard rockling	397	0.2	.	.	bigeye	2	0	.	.
blueback herring	307	0.2	.	.	American eel	2	0	.	.
northern searobin	297	0.2	.	.	short bigeye	2	0	.	.
Atlantic mackerel	237	0.1	.	.	oyster toadfish	2	0	.	.
Atlantic menhaden	230	0.1	.	.	white perch	2	0	.	.
smooth dogfish	202	0.1	.	.	northern sennet	1	0	.	.
alewife	190	0.1	.	.	northern puffer	1	0	.	.
longhorn sculpin	107	0.1	.	.	banded rudderfish	1	0	.	.
cunner	106	0.1	.	.	Spanish mackerel	1	0	.	.
hogchoker	91	0.1	.	.	Total	160,581		-	
winter skate	91	0.1	.	.					
spiny dogfish	66	0	.	.					
ocean pout	58	0	.	.	Invertebrates				
bigeye scad	45	0	.	.	American lobster	3,447	19.9	.	.
moonfish	42	0	.	.	long-finned squid	13,883	80.1	.	.
summer flounder	35	0	.	.	Total	17,330		-	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1990.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
winter flounder	47,184	31.1	.	.	seasnail	8	0	.	.
butterfish	45,373	29.9	.	.	planehead filefish	7	0	.	.
scup	15,393	10.2	.	.	moonfish	7	0	.	.
windowpane flounder	9,825	6.5	.	.	rock gunnel	7	0	.	.
Atlantic herring	8,779	5.8	.	.	yellow jack	7	0	.	.
little skate	6,456	4.3	.	.	grubby	4	0	.	.
bluefish	4,688	3.1	.	.	spot	4	0	.	.
fourspot flounder	3,270	2.2	.	.	Atlantic sturgeon	4	0	.	.
silver hake	2,334	1.5	.	.	oyster toadfish	4	0	.	.
red hake	2,237	1.5	.	.	goosefish	3	0	.	.
weakfish	1,921	1.3	.	.	smallmouth flounder	3	0	.	.
striped searobin	866	0.6	.	.	Atlantic tomcod	3	0	.	.
tautog	554	0.4	.	.	clearnose skate	2	0	.	.
American shad	406	0.3	.	.	lookdown	2	0	.	.
fourbeard rockling	299	0.2	.	.	red goatfish	2	0	.	.
longhorn sculpin	243	0.2	.	.	rainbow smelt	2	0	.	.
northern searobin	232	0.2	.	.	bigeye scad	1	0	.	.
Atlantic menhaden	219	0.1	.	.	bigeye	1	0	.	.
smooth dogfish	209	0.1	.	.	hickory shad	1	0	.	.
summer flounder	170	0.1	.	.	mackerel scad	1	0	.	.
cunner	168	0.1	.	.	northern kingfish	1	0	.	.
alewife	160	0.1	.	.	northern puffer	1	0	.	.
spiny dogfish	150	0.1	.	.	red cornetfish	1	0	.	.
hogchoker	84	0.1	.	.	sandbar shark	1	0	.	.
winter skate	61	0	.	.	sea lamprey	1	0	.	.
blueback herring	46	0	.	.	yellowtail flounder	1	0	.	.
striped bass	45	0	.	.	Total	151,600			-
sea raven	42	0	.	.					
ocean pout	39	0	.	.					
black sea bass	27	0	.	.	<u>Invertebrates</u>				
spotted hake	21	0	.	.	American lobster	5,369	27.0.	.	.
Atlantic mackerel	10	0	.	.	long-finned squid	14,538	73.0.	.	.
rough scad	10	0	.	.	Total	19,907			-

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1991.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
scup	45,790	29.9	.	.	moonfish	24	0	.	.
butterfish	40,537	26.4	.	.	smallmouth flounder	20	0	.	.
winter flounder	26,623	17.4	.	.	sea raven	19	0	.	.
windowpane flounder	8,482	5.5	.	.	spiny dogfish	14	0	.	.
little skate	6,479	4.2	.	.	yellow jack	11	0	.	.
bluefish	5,845	3.8	.	.	goosefish	8	0	.	.
weakfish	4,320	2.8	.	.	northern puffer	5	0	.	.
Atlantic herring	4,003	2.6	.	.	northern kingfish	4	0	.	.
fourspot flounder	3,553	2.3	.	.	Atlantic tomcod	4	0	.	.
red hake	2,085	1.4	.	.	Atlantic sturgeon	3	0	.	.
silver hake	1,537	1.0	.	.	clearnose skate	2	0	.	.
striped searobin	865	0.6	.	.	Atlantic mackerel	2	0	.	.
northern searobin	609	0.4	.	.	mackerel scad	2	0	.	.
tautog	501	0.3	.	.	rainbow smelt	2	0	.	.
American shad	361	0.2	.	.	Spanish mackerel	2	0	.	.
Atlantic menhaden	348	0.2	.	.	spot	2	0	.	.
summer flounder	263	0.2	.	.	bigeye scad	1	0	.	.
smooth dogfish	193	0.1	.	.	planehead filefish	1	0	.	.
fourbeard rockling	163	0.1	.	.	hickory shad	1	0	.	.
longhorn sculpin	139	0.1	.	.	red goatfish	1	0	.	.
hogchoker	104	0.1	.	.	rough scad	1	0	.	.
alewife	103	0.1	.	.	sea lamprey	1	0	.	.
cunner	75	0	.	.	oyster toadfish	1	0	.	.
spotted hake	73	0	.	.	Total	153,389			-
winter skate	50	0	.	.					
ocean pout	42	0	.	.	Invertebrates				
black sea bass	39	0	.	.	American lobster	8,524	40.9	.	.
blueback herring	38	0	.	.	long-finned squid	12,322	59.1	.	.
striped bass	38	0	.	.	Total	20,846			-

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1992.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Number of tows (sample size)=160.

species	count	%	weight	%	species	count	%	weight	%
butterfish	95,961	65.7	1,357.3	11.7	black sea bass	5	0	1.8	0
scup	13,646	9.3	837.7	7.2	northern pipefish	5	0	0.4	0
winter flounder	9,548	6.5	1,344.8	11.5	Atlantic mackerel	4	0	1.0	0
bluefish	5,269	3.6	2,462.9	21.1	sea raven	4	0	3.9	0
Atlantic herring	4,565	3.1	797.5	6.8	northern kingfish	2	0	0.2	0
little skate	3,495	2.4	1,389.0	11.9	round herring	2	0	0.2	0
windowpane flounder	2,980	2.0	286.1	2.5	yellow jack	2	0	0.2	0
fourspot flounder	2,774	1.9	382.4	3.3	Atlantic silverside	1	0	0.1	0
red hake	1,606	1.1	127.7	1.1	conger eel	1	0	0.1	0
weakfish	1,317	0.9	94.8	0.8	northern puffer	1	0	0.1	0
Atlantic menhaden	1,115	0.8	60.6	0.5	Spanish mackerel	1	0	1.5	0
striped searobin	857	0.6	305.1	2.6	Total	146,035		11,648.2	
silver hake	544	0.4	22.0	0.2					
American shad	380	0.3	63.3	0.5	Invertebrates				
northern searobin	313	0.2	35.6	0.3	American lobster	8,160	19.9	1,537.9	28.6
smooth dogfish	304	0.2	863.2	7.4	blue mussel	nc	nc	1,157.1	21.5
tautog	265	0.2	508.3	4.4	long-finned squid	32,780	80.1	844.9	15.7
summer flounder	186	0.1	142.1	1.2	horseshoe crab	nc	nc	514.1	9.6
blueback herring	175	0.1	8.5	0.1	lady crab	nc	nc	375.4	7.0
fourbeard rockling	150	0.1	12.8	0.1	rock crab	nc	nc	239.1	4.5
alewife	122	0.1	9.2	0.1	boring sponge	nc	nc	225.5	4.2
spotted hake	68	0	10.3	0.1	spider crab	nc	nc	186.0	3.5
moonfish	62	0	1.5	0	starfish spp.	nc	nc	148.6	2.8
hogchoker	61	0	5.6	0	whelks	nc	nc	57.5	1.1
striped bass	42	0	89.4	0.8	flat claw hermit crab	nc	nc	34.7	0.6
longhorn sculpin	31	0	9.0	0.1	bluecrab	nc	nc	18.1	0.3
winter skate	31	0	105.3	0.9	mantis shrimp	nc	nc	10.3	0.2
cunner	30	0	3.7	0	northern moon snail	nc	nc	8.6	0.2
Atlantic sturgeon	30	0	244.8	2.1	common oyster	nc	nc	7.3	0.1
ocean pout	18	0	7.7	0.1	lion's mane jellyfish	nc	nc	2.4	0
hickory shad	12	0	4.9	0	surf clam	nc	nc	1.7	0
smallmouth flounder	12	0	0.6	0	hard clams	nc	nc	1.2	0
goosefish	10	0	2.5	0	bushy bryozoan	nc	nc	1.0	0
clearnose skate	8	0	10.3	0.1	purple sea urchin	nc	nc	0.4	0
Atlantic tomcod	8	0	1.3	0	mud crabs	nc	nc	0.3	0
mackerel scad	6	0	0.2	0	star coral	nc	nc	0.1	0
spiny dogfish	6	0	30.7	0.3	Total	40,940		5,372	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1993.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	35,361	33.0	847.8	7.1	goosefish	3	0	0.3	0
scup	18,785	17.6	581.4	4.8	American sand lance	3	0	0.3	0
winter flounder	16,090	15.0	1,855.7	15.4	Atlantic bonito	2	0	6.4	0.1
windowpane flounder	7,953	7.4	547.6	4.6	lumpfish	2	0	0.2	0
Atlantic herring	6,269	5.9	1,119.8	9.3	moonfish	2	0	0.2	0
little skate	5,186	4.8	2,172.3	18.1	sea lamprey	2	0	1.0	0
bluefish	4,402	4.1	1,343.2	11.2	Atlantic salmon	1	0	0.1	0
red hake	3,963	3.7	232.0	1.9	American eel	1	0	1.6	0
fourspot flounder	1,262	1.2	182.3	1.5	northern sennet	1	0	0.1	0
weakfish	1,142	1.1	60.3	0.5	orange filefish	1	0	0.1	0
striped searobin	1,079	1.0	165.4	1.4	round herring	1	0	0.1	0
northern searobin	935	0.9	96.8	0.8	red cornetfish	1	0	0.1	0
American shad	791	0.7	101.1	0.8	red goatfish	1	0	0.1	0
alewife	788	0.7	48.2	0.4	short bigeye	1	0	0.1	0
silver hake	500	0.5	21.1	0.2	sea raven	1	0	0.6	0
spotted hake	331	0.3	36.7	0.3	yellow jack	1	0	0.1	0
smooth dogfish	283	0.3	857.6	7.1	Total	107,035		12,012.4	
Atlantic menhaden	271	0.3	94.1	0.8					
fourbeard rockling	241	0.2	15.6	0.1	Invertebrates				
summer flounder	224	0.2	137.9	1.1	American lobster	10,306	20.6	2,173.5	34.4
tautog	157	0.1	308.2	2.6	long-finned squid	39,723	79.4	1,176.5	18.6
Spanish mackerel	136	0.1	2.2	0	blue mussel	nc	nc	945.1	15.0
blueback herring	96	0.1	4.3	0	horseshoe crab	nc	nc	673.8	10.7
rough scad	92	0.1	3.8	0	spider crab	nc	nc	511.2	8.1
striped bass	78	0.1	198.7	1.7	lady crab	nc	nc	428.0	6.8
ocean pout	66	0.1	16.4	0.1	rock crab	nc	nc	155.9	2.5
cunner	64	0.1	6.1	0.1	flat claw hermit crab	nc	nc	45.7	0.7
Atlantic sturgeon	60	0.1	633.6	5.3	starfish spp.	nc	nc	37.4	0.6
winter skate	59	0.1	213.2	1.8	boring sponge	nc	nc	36.6	0.6
spot	57	0.1	4.5	0	whelks	nc	nc	34.0	0.5
hogchoker	56	0.1	5.2	0	mantis shrimp	nc	nc	31.6	0.5
Atlantic silverside	54	0.1	1.0	0	lion's mane jellyfish	nc	nc	27.6	0.4
northern puffer	23	0	0.4	0	bluecrab	nc	nc	20.0	0.3
smallmouth flounder	23	0	2.1	0	northern moon snail	nc	nc	8.9	0.1
Atlantic croaker	20	0	1.1	0	common oyster	nc	nc	2.0	0
black sea bass	16	0	5.0	0	surf clam	nc	nc	1.0	0
spiny dogfish	14	0	58.4	0.5	hard clams	nc	nc	0.9	0
Atlantic mackerel	11	0	0.9	0	purple sea urchin	nc	nc	0.7	0
longhorn sculpin	11	0	3.2	0	arks	nc	nc	0.7	0
planehead filefish	9	0	0.7	0	mud crabs	nc	nc	0.4	0
hickory shad	9	0	4.1	0	star coral	nc	nc	0.3	0
northern pipefish	9	0	0.4	0	blood star	nc	nc	0.2	0
rainbow smelt	9	0	0.6	0	common slipper shell	nc	nc	0.2	0
crevalle jack	5	0	0.4	0	sand shrimp	nc	nc	0.1	0
northern kingfish	5	0	0.6	0	sand dollar	nc	nc	0.1	0
Atlantic tomcod	5	0	0.8	0	northern red shrimp	nc	nc	0.1	0
clearnose skate	4	0	7.7	0.1	polychaetes	nc	nc	0.1	0
white perch	4	0	0.3	0					
conger eel	3	0	0.2	0	Total	50,029		6,313	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1994.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	33,538	28.7	776.8	6.3	longhorn sculpin	7	0	1.6	0
scup	25,451	21.8	660.8	5.4	grubby	5	0	0.3	0
winter flounder	20,615	17.6	1,992.2	16.2	mackerel scad	4	0	0.4	0
bluefish	7,703	6.6	1,159.8	9.4	Atlantic silverside	3	0	0.3	0
windowpane flounder	6,062	5.2	574.5	4.7	bigeye scad	2	0	0.2	0
little skate	5,604	4.8	2,565.3	20.9	lookdown	2	0	0.2	0
Atlantic herring	3,836	3.3	768.6	6.3	northern puffer	2	0	0.2	0
weakfish	3,320	2.8	160.0	1.3	Atlantic tomcod	2	0	0.3	0
silver hake	1,703	1.5	112.9	0.9	bigeye	1	0	0.1	0
fourspot flounder	1,494	1.3	195.6	1.6	clearnose skate	1	0	1.8	0
American shad	1,289	1.1	133.2	1.1	inshore lizardfish	1	0	0.1	0
alewife	1,211	1.0	75.0	0.6	northern pipefish	1	0	0.1	0
blueback herring	1,052	0.9	26.6	0.2	rock gunnel	1	0	0.1	0
striped searobin	927	0.8	183.6	1.5	sea raven	1	0	0.2	0
northern searobin	800	0.7	63.7	0.5	white perch	1	0	0.3	0
red hake	490	0.4	54.0	0.4	yellow jack	1	0	0.1	0
smooth dogfish	310	0.3	816.3	6.6	Total	117,002		12,284.5	
Atlantic menhaden	276	0.2	61.4	0.5					
summer flounder	242	0.2	141.6	1.2	Invertebrates				
tautog	207	0.2	346.5	2.8	American lobster	7,057	31.6	1,533.9	38.6
spotted hake	148	0.1	25.7	0.2	long-finned squid	15,299	68.4	594.8	15.0
moonfish	93	0.1	2.6	0	horseshoe crab	nc	nc	386.7	9.7
fourbeard rockling	92	0.1	8.4	0.1	blue mussel	nc	nc	377.5	9.5
striped bass	81	0.1	198.6	1.6	lady crab	nc	nc	338.5	8.5
Atlantic sturgeon	60	0.1	848.6	6.9	spider crab	nc	nc	335.0	8.4
spiny dogfish	55	0	186.2	1.5	rock crab	nc	nc	136.8	3.4
ocean pout	42	0	9.1	0.1	starfish spp.	nc	nc	124.6	3.1
hogchoker	36	0	3.8	0	flat claw hermit crab	nc	nc	51.4	1.3
black sea bass	33	0	10.9	0.1	northern moon snail	nc	nc	34.6	0.9
winter skate	33	0	101.5	0.8	common oyster	nc	nc	18.4	0.5
American sand lance	25	0	0.6	0	whelks	nc	nc	14.1	0.4
Spanish mackerel	25	0	1.7	0	mantis shrimp	nc	nc	9.8	0.2
cunner	18	0	1.3	0	lion's mane jellyfish	nc	nc	4.2	0.1
smallmouth flounder	15	0	1.3	0	bluecrab	nc	nc	3.7	0.1
hickory shad	14	0	3.7	0	arks	nc	nc	3.0	0.1
rough scad	13	0	0.2	0	boring sponge	nc	nc	1.9	0
Atlantic mackerel	11	0	0.9	0	hard clams	nc	nc	1.3	0
spot	11	0	1.1	0	bushy bryozoan	nc	nc	0.6	0
rainbow smelt	9	0	0.6	0	mud crabs	nc	nc	0.3	0
crevalle jack	8	0	0.5	0	surf clam	nc	nc	0.3	0
goosefish	8	0	2.0	0	purple sea urchin	nc	nc	0.1	0
northern kingfish	7	0	0.5	0	Total	22,356		3,972	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1995.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	64,930	50.1	1,664.5	15.2	spot	3	0	0.3	0
winter flounder	15,558	12.0	1,614.7	14.7	Atlantic cod	2	0	0.1	0
scup	13,985	10.8	770.5	7.0	conger eel	2	0	1.2	0
Atlantic herring	9,135	7.0	1,631.7	14.9	haddock	2	0	0.2	0
bluefish	5,524	4.3	1,156.1	10.5	northern pipefish	2	0	0.1	0
windowpane flounder	3,815	2.9	356.2	3.2	sea raven	2	0	0.7	0
weakfish	2,881	2.2	275.7	2.5	African pompano	1	0	0.1	0
fourspot flounder	2,584	2.0	402.9	3.7	crevalle jack	1	0	0.1	0
little skate	2,372	1.8	1,055.3	9.6	grubby	1	0	0.1	0
red hake	1,977	1.5	145.6	1.3	Atlantic mackerel	1	0	0.1	0
silver hake	1,941	1.5	61.6	0.6	mackerel scad	1	0	0.1	0
northern searobin	1,317	1.0	166.9	1.5	northern puffer	1	0	0.1	0
American shad	755	0.6	81.4	0.7	oyster toadfish	1	0	0.5	0
striped searobin	682	0.5	277.5	2.5	yellowtail flounder	1	0	0.1	0
alewife	386	0.3	24.6	0.2	Total	129,609		10,966.8	
Atlantic menhaden	318	0.2	41.9	0.4	Invertebrates				
blueback herring	255	0.2	7.5	0.1	American lobster	9,944	29.3	2,141.9	55.1
fourbeard rockling	169	0.1	14.7	0.1	long-finned squid	23,974	70.7	796.4	20.5
smooth dogfish	168	0.1	566.8	5.2	lady crab	nc	nc	535.0	13.8
striped bass	165	0.1	185.3	1.7	horseshoe crab	nc	nc	116.8	3
summer flounder	121	0.1	79.6	0.7	spider crab	nc	nc	95.4	2.5
American sand lance	95	0.1	0.4	0	lion's mane jellyfish	nc	nc	78.3	2
spotted hake	72	0.1	6.5	0.1	rock crab	nc	nc	47.0	1.2
tautog	61	0	95.1	0.9	blue mussel	nc	nc	14.0	0.4
cunner	41	0	4.4	0	flat claw hermit crab	nc	nc	12.8	0.3
winter skate	41	0	89.2	0.8	boring sponge	nc	nc	11.2	0.3
Atlantic silverside	39	0	0.9	0	whelks	nc	nc	10.8	0.3
moonfish	33	0	2.1	0	mantis shrimp	nc	nc	8.1	0.2
yellow jack	32	0	2.1	0	bluecrab	nc	nc	6.0	0.2
ocean pout	30	0	6.5	0.1	northern moon snail	nc	nc	5.8	0.1
northern kingfish	25	0	2.5	0	starfish spp.	nc	nc	4.7	0.1
smallmouth flounder	19	0	1.2	0	arks	nc	nc	1.4	0
hogchoker	17	0	1.7	0	hard clams	nc	nc	0.7	0
black sea bass	12	0	4.7	0	purple sea urchin	nc	nc	0.7	0
hickory shad	6	0	2.5	0	sand shrimp	nc	nc	0.4	0
Atlantic sturgeon	6	0	145.5	1.3	ghost shrimp	nc	nc	0.3	0
longhorn sculpin	5	0	1.3	0	mud crabs	nc	nc	0.2	0
clearnose skate	4	0	11.0	0.1	common razor clam	nc	nc	0.1	0
goosefish	4	0	3.3	0	shore shrimp	nc	nc	0.1	0
rainbow smelt	4	0	0.3	0	Total	33,918		3,888	
Atlantic tomcod	4	0	0.8	0					

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1996.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	49,360	37.0	1,844.7	12.4	northern puffer	3	0	0.3	0
winter flounder	22,722	17.0	3,335.0	22.5	rock gunnel	3	0	0.2	0
scup	16,087	12.0	739.4	5.0	short bigeye	3	0	0.3	0
windowpane flounder	14,116	10.6	1,223.6	8.2	Atlantic sturgeon	3	0	19.9	0.1
bluefish	6,705	5.0	1,118.2	7.5	bigeye scad	2	0	0.1	0
weakfish	6,375	4.8	414.9	2.8	grubby	2	0	0.2	0
little skate	6,203	4.6	2,801.8	18.9	sea raven	2	0	1.5	0
fourspot flounder	2,815	2.1	407.2	2.7	Atlantic tomcod	2	0	0.3	0
alewife	1,402	1.0	134.6	0.9	clearnose skate	1	0	1.7	0
striped searobin	1,008	0.8	278.7	1.9	conger eel	1	0	0.1	0
Atlantic herring	972	0.7	189.8	1.3	gizzard shad	1	0	0.1	0
moonfish	921	0.7	11.6	0.1	goosefish	1	0	0.1	0
red hake	872	0.7	95.5	0.6	sea lamprey	1	0	0.7	0
northern searobin	672	0.5	57.4	0.4	spiny dogfish	1	0	2.1	0
American shad	501	0.4	36.2	0.2	white perch	1	0	0.1	0
silver hake	489	0.4	20.0	0.1	Total	133,546		14,835.2	
summer flounder	434	0.3	266.4	1.8					
spotted hake	384	0.3	42.6	0.3	<u>Invertebrates</u>				
smooth dogfish	275	0.2	862.8	5.8	American lobster	9,490	29.5	2,113.5	39.1
striped bass	232	0.2	373.5	2.5	lady crab	nc	nc	1,160.4	21.5
spot	195	0.1	14.1	0.1	long-finned squid	22,720	70.5	720.4	13.3
tautog	136	0.1	225.9	1.5	horseshoe crab	nc	nc	717.0	13.3
fourbeard rockling	109	0.1	8.6	0.1	spider crab	nc	nc	293.9	5.4
blueback herring	97	0.1	6.2	0	rock crab	nc	nc	162.7	3.0
Atlantic menhaden	88	0.1	40.5	0.3	lion's mane jellyfish	nc	nc	42.7	0.8
winter skate	88	0.1	212.7	1.4	blue mussel	nc	nc	42.5	0.8
hogchoker	45	0	5.4	0	flat claw hermit crab	nc	nc	39.4	0.7
smallmouth flounder	41	0	2.3	0	whelks	nc	nc	33.0	0.6
rough scad	35	0	1.5	0	mantis shrimp	nc	nc	20.9	0.4
hickory shad	29	0	10.2	0.1	boring sponge	nc	nc	19.2	0.4
black sea bass	27	0	12.1	0.1	bushy bryozoan	nc	nc	15.2	0.3
ocean pout	26	0	7.2	0	starfish spp.	nc	nc	6.2	0.1
cunner	17	0	2.6	0	arks	nc	nc	4.3	0.1
striped anchovy	11	0	0.2	0	northern moon snail	nc	nc	4.3	0.1
longhorn sculpin	7	0	2.1	0	bluecrab	nc	nc	4.0	0.1
northern kingfish	6	0	0.6	0	hard clams	nc	nc	3.2	0.1
yellow jack	6	0	0.5	0	surf clam	nc	nc	1.4	0
Atlantic mackerel	5	0	0.5	0	mud crabs	nc	nc	0.3	0
planehead filefish	3	0	0.3	0	purple sea urchin	nc	nc	0.1	0
mackerel scad	3	0	0.1	0	Total	32,210		5,405	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1997.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	70,985	50.3	2,017.2	15.5	American sand lance	2	0	0.1	0
winter flounder	14,701	10.4	2,439.4	18.8	short bigeye	2	0	0.2	0
bluefish	10,815	7.7	977.6	7.5	yellow jack	2	0	0.2	0
windowpane flounder	10,324	7.3	986.1	7.6	bigeye scad	1	0	0.1	0
scup	9,582	6.8	530.5	4.1	Atlantic cod	1	0	0.3	0
fourspot flounder	4,122	2.9	615.3	4.7	haddock	1	0	0.1	0
little skate	4,068	2.9	1,945.8	15.0	northern pipefish	1	0	0.1	0
weakfish	3,904	2.8	362.0	2.8	northern puffer	1	0	0.1	0
Atlantic herring	3,455	2.4	515.1	4.0	rougthead stingray	1	0	50.6	0.4
silver hake	1,973	1.4	70.8	0.5	sea lamprey	1	0	0.1	0
alewife	1,194	0.8	81.3	0.6	Atlantic tomcod	1	0	0.1	0
American shad	922	0.7	66.8	0.5	yellowtail flounder	1	0	0.3	0
striped searobin	819	0.6	230.5	1.8	Total	141,040		12,974.6	
red hake	748	0.5	80.5	0.6					
blueback herring	630	0.4	16.5	0.1	<u>Invertebrates</u>				
northern searobin	579	0.4	60.4	0.5	American lobster	16,467	55.3	3,800.9	64.6
summer flounder	486	0.3	326.0	2.5	lady crab	nc	nc	592.5	10.1
striped bass	319	0.2	509.9	3.9	long-finned squid	13,048	43.8	515.2	8.8
moonfish	287	0.2	4.6	0	horseshoe crab	204	0.7	472.4	8.0
fourbeard rockling	199	0.1	17.3	0.1	spider crab	nc	nc	188.3	3.2
tautog	190	0.1	271.8	2.1	rock crab	nc	nc	94.1	1.6
smooth dogfish	167	0.1	527.3	4.1	lion's mane jellyfish	nc	nc	88.0	1.5
Atlantic menhaden	116	0.1	38.5	0.3	bushy bryozoan	nc	nc	28.0	0.5
spotted hake	77	0.1	19.0	0.1	flat claw hermit crab	nc	nc	21.7	0.4
rough scad	65	0	2.0	0	boring sponge	nc	nc	16.5	0.3
smallmouth flounder	58	0	2.4	0	whelks	22	0.1	14.8	0.3
winter skate	48	0	109.7	0.8	bluecrab	33	0.1	13.6	0.2
cunner	43	0	4.1	0	mantis shrimp	nc	nc	9.3	0.2
hickory shad	25	0	9.1	0.1	starfish spp.	nc	nc	7.3	0.1
black sea bass	22	0	10.5	0.1	hard clams	nc	nc	3.8	0.1
hogchoker	15	0	1.8	0	blue mussel	nc	nc	3.5	0.1
ocean pout	15	0	4.8	0	northern moon snail	nc	nc	3.3	0.1
grubby	11	0	0.7	0	northern comb jelly	nc	nc	2.0	0
spot	10	0	1.1	0	arks	nc	nc	1.8	0
Atlantic mackerel	8	0	1.7	0	common oyster	nc	nc	1.8	0
northern kingfish	7	0	0.9	0	surf clam	nc	nc	0.9	0
spiny dogfish	7	0	13.7	0.1	common slipper shell	nc	nc	0.7	0
Atlantic sturgeon	5	0	37.8	0.3	mud crabs	nc	nc	0.6	0
clearnose skate	4	0	7.4	0.1	sand shrimp	nc	nc	0.2	0
longhorn sculpin	4	0	0.8	0	common razor clam	nc	nc	0.2	0
white perch	4	0	0.9	0	blood star	nc	nc	0.1	0
crevalle jack	3	0	0.6	0	star coral	nc	nc	0.1	0
sea raven	3	0	0.4	0	northern red shrimp	nc	nc	0.1	0
Atlantic silverside	2	0	0.1	0	shore shrimp	nc	nc	0.1	0
goosefish	2	0	1.6	0	purple sea urchin	nc	nc	0.1	0
inshore lizardfish	2	0	0.2	0	Total	29,774		5,882	
round scad	2	0	0.2	0					

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1998.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	136,926	64.0	3,661.1	24.4	goosefish	3	0	3.2	0
scup	23,742	11.1	740.5	4.9	oyster toadfish	3	0	0.9	0
winter flounder	15,697	7.3	2,450.3	16.3	gray triggerfish	2	0	2.3	0
bluefish	8,814	4.1	899.0	6.0	longhorn sculpin	2	0	1.0	0
windowpane flounder	6,483	3.0	741.1	4.9	bigeye scad	1	0	0.1	0
little skate	4,305	2.0	2,085.5	13.9	inshore lizardfish	1	0	0.1	0
weakfish	3,495	1.6	268.2	1.8	mackerel scad	1	0	0.1	0
red hake	3,015	1.4	217.5	1.4	rougtail stingray	1	0	3.4	0
fourspot flounder	1,908	0.9	306.0	2.0	Total	214,025		15,005.7	
silver hake	1,870	0.9	88.3	0.6					
striped searobin	1,321	0.6	509.7	3.4	Invertebrates				
moonfish	1,188	0.6	13.4	0.1	American lobster	16,211	36.7	3,873.9	60.2
American shad	901	0.4	60.2	0.4	long-finned squid	27,443	62.1	767.0	11.9
Atlantic herring	893	0.4	74.6	0.5	horseshoe crab	303	0.7	489.4	7.6
alewife	456	0.2	35.1	0.2	blue mussel	nc	nc	309.0	4.8
summer flounder	436	0.2	431.3	2.9	lady crab	nc	nc	291.2	4.5
striped bass	400	0.2	484.2	3.2	rock crab	nc	nc	241.4	3.8
northern searobin	360	0.2	39.4	0.3	spider crab	nc	nc	157.2	2.4
smooth dogfish	310	0.1	989.8	6.6	lion's mane jellyfish	nc	nc	63.1	1.0
Atlantic menhaden	306	0.1	9.2	0.1	flat claw hermit crab	nc	nc	56.0	0.9
blueback herring	211	0.1	5.1	0	bushy bryozoan	nc	nc	55.6	0.9
tautog	194	0.1	347.1	2.3	boring sponge	nc	nc	24.9	0.4
spotted hake	142	0.1	12.2	0.1	knobbed whelk	51	0.1	22.5	0.3
fourbeard rockling	133	0.1	11.6	0.1	starfish spp.	nc	nc	18.2	0.3
smallmouth flounder	97	0	6.4	0	bluecrab	49	0.1	12.8	0.2
cunner	65	0	8.1	0.1	channeled whelk	40	0.1	10.1	0.2
winter skate	62	0	180.7	1.2	whelks	52	0.1	9.8	0.2
hickory shad	40	0	15.9	0.1	northern moon snail	nc	nc	8.6	0.1
round herring	31	0	0.6	0	mantis shrimp	nc	nc	5.6	0.1
sea raven	30	0	11.3	0.1	common oyster	nc	nc	5.4	0.1
northern puffer	28	0	0.5	0	hard clams	nc	nc	3.7	0.1
clearnose skate	20	0	36.8	0.2	arks	nc	nc	2.0	0
black sea bass	18	0	10.6	0.1	red bearded sponge	nc	nc	1.4	0
spiny dogfish	18	0	44.5	0.3	surf clam	nc	nc	1.1	0
Atlantic sturgeon	17	0	189.7	1.3	sea grape	nc	nc	0.8	0
northern kingfish	15	0	1.3	0	mud crabs	nc	nc	0.7	0
Atlantic mackerel	13	0	1.1	0	boreal squid	18	0	0.7	0
ocean pout	13	0	2.7	0	purple sea urchin	nc	nc	0.6	0
hogchoker	12	0	1.9	0	common slipper shell	nc	nc	0.5	0
haddock	7	0	0.5	0	star coral	nc	nc	0.4	0
yellow jack	6	0	0.7	0	moon jelly	nc	nc	0.2	0
grubby	5	0	0.3	0	ghost shrimp	nc	nc	0.1	0
round scad	4	0	0.3	0	Total	44,167		6,434	
American sand lance	4	0	0.3	0					

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 1999.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	191,100	54.1	4,171.6	21.9	goosefish	2	0	0.3	0
scup	101,095	28.6	3,641.3	19.1	grubby	2	0	0.2	0
weakfish	12,416	3.5	771.3	4.0	northern pipefish	2	0	0.1	0
winter flounder	10,288	2.9	2,011.7	10.6	longhorn sculpin	2	0	0.3	0
bluefish	7,843	2.2	1,218.0	6.4	oyster toadfish	2	0	1.8	0
silver hake	5,126	1.5	99.6	0.5	Atlantic silverside	1	0	0.1	0
windowpane flounder	4,643	1.3	594.2	3.1	gizzard shad	1	0	0.1	0
little skate	3,686	1.0	1,829.6	9.6	haddock	1	0	0.1	0
red hake	2,973	0.8	226.5	1.2	round scad	1	0	0.1	0
Atlantic herring	2,511	0.7	45.4	0.2	striped cusk-eel	1	0	0.1	0
striped searobin	1,690	0.5	497.0	2.6	sharksucker	1	0	0.3	0
alewife	1,393	0.4	107.6	0.6	Spanish mackerel	1	0	0.2	0
fourspot flounder	1,393	0.4	203.9	1.1	Atlantic tomcod	1	0	0.7	0
Atlantic menhaden	1,187	0.3	90.9	0.5	white perch	1	0	0.4	0
American shad	987	0.3	117.3	0.6	Total	353,203		19,054.7	
moonfish	645	0.2	9.6	0.1					
summer flounder	582	0.2	459.8	2.4					
bay anchovy	548	0.2	5.6	0	Invertebrates				
northern searobin	547	0.2	52.0	0.3	American lobster	13,922	38.1	3,397.9	61.6
striped bass	397	0.1	815.4	4.3	long-finned squid	21,580	59.0	826.4	15.0
spotted hake	381	0.1	38.8	0.2	horseshoe crab	384	1.1	634.1	11.5
smooth dogfish	305	0.1	923.0	4.8	lady crab	nc	nc	159.7	2.9
fourbeard rockling	233	0.1	28.8	0.2	rock crab	nc	nc	118.6	2.2
tautog	217	0.1	326.6	1.7	spider crab	nc	nc	95.4	1.7
striped anchovy	216	0.1	6.1	0	bushy bryozoan	nc	nc	78.0	1.4
American sand lance	178	0.1	0.3	0	flat claw hermit crab	nc	nc	32.5	0.6
smallmouth flounder	96	0	5.2	0	knobbed whelk	61	0.2	24.8	0.4
hickory shad	56	0	19.4	0.1	bluecrab	89	0.2	21.3	0.4
cunner	51	0	5.9	0	channeled whelk	81	0.2	21.1	0.4
black sea bass	50	0	17.2	0.1	mantis shrimp	376	1.0	19.3	0.4
spot	45	0	5.7	0	boring sponge	nc	nc	19.3	0.4
winter skate	41	0	89.8	0.5	lion's mane jellyfish	61	0.2	16.7	0.3
hogchoker	39	0	5.0	0	blue mussel	nc	nc	14.1	0.3
Atlantic sturgeon	39	0	498.6	2.6	northern moon snail	nc	nc	9.1	0.2
clearnose skate	22	0	39.4	0.2	starfish spp.	nc	nc	8.8	0.2
bigeye scad	21	0	1.4	0	common oyster	nc	nc	4.7	0.1
Atlantic mackerel	21	0	3.1	0	arks	nc	nc	2.8	0.1
yellow jack	20	0	1.9	0	common slipper shell	nc	nc	1.8	0
blueback herring	19	0	1.1	0	mud crabs	nc	nc	1.7	0
ocean pout	17	0	3.9	0	hard clams	nc	nc	1.5	0
northern puffer	14	0	1.1	0	sand shrimp	nc	nc	1.0	0
spiny dogfish	10	0	51.1	0.3	purple sea urchin	nc	nc	1.0	0
sea raven	9	0	4.9	0	northern red shrimp	nc	nc	0.9	0
crevalle jack	8	0	0.7	0	surf clam	nc	nc	0.4	0
inshore lizardfish	7	0	0.5	0	sea grape	nc	nc	0.2	0
northern kingfish	6	0	0.6	0	star coral	nc	nc	0.1	0
northern sennet	6	0	0.5	0	common razor clam	nc	nc	0.1	0
planehead filefish	3	0	0.3	0	moon jelly	nc	nc	0.1	0
bigeye	2	0	0.2	0	nemerteans	nc	nc	0.1	0
conger eel	2	0	0.5	0	Total	36,554		5,514	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 2000.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
scup	101,464	44.4	6,679.0	34.9	northern kingfish	2	0	0.3	0
butterfish	60,490	26.5	1,458.3	7.6	round scad	2	0	0.2	0
weakfish	23,595	10.3	554.5	2.9	bigeye	1	0	0.1	0
winter flounder	8,867	3.9	1,921.4	10.0	Atlantic cod	1	0	0.1	0
bluefish	6,135	2.7	1,408.0	7.3	goosefish	1	0	0.2	0
little skate	3,340	1.5	1,604.7	8.4	inshore lizardfish	1	0	0.1	0
striped searobin	3,129	1.4	1,036.1	5.4	lined seahorse	1	0	0.1	0
fourspot flounder	2,590	1.1	398.6	2.1	white perch	1	0	0.2	0
windowpane flounder	2,488	1.1	368.8	1.9	yellowtail flounder	1	0	0.1	0
red hake	2,393	1.0	162.6	0.8	Total	228,425		19,156.5	
bay anchovy	2,303	1.0	12.2	0.1					
northern searobin	2,014	0.9	251.2	1.3	Invertebrates				
moonfish	1,817	0.8	15.0	0.1	American lobster	10,481	36.0	2,184.5	49.9
alewife	1,572	0.7	96.0	0.5	horseshoe crab	420	1.4	689.4	15.8
spotted hake	1,425	0.6	92.3	0.5	long-finned squid	16,585	57.0	582.3	13.3
Atlantic herring	770	0.3	124.1	0.6	lady crab	nc	nc	308.4	7.1
silver hake	679	0.3	28.8	0.2	spider crab	nc	nc	99.4	2.3
summer flounder	555	0.2	471.3	2.5	bushy bryozoan	nc	nc	95.2	2.2
Atlantic menhaden	492	0.2	31.8	0.2	rock crab	nc	nc	60.4	1.4
smooth dogfish	467	0.2	1,038.5	5.4	boring sponge	nc	nc	58.6	1.3
American shad	316	0.1	25.8	0.1	mantis shrimp	1,086	3.7	49.0	1.1
striped bass	293	0.1	602.6	3.1	blue mussel	nc	nc	36.8	0.8
tautog	287	0.1	463.5	2.4	lion's mane jellyfish	223	0.8	36.4	0.8
spot	204	0.1	17.8	0.1	channeled whelk	138	0.5	32.0	0.7
fourbeard rockling	185	0.1	14.7	0.1	knobbed whelk	76	0.3	29.9	0.7
blueback herring	143	0.1	6.8	0	starfish spp.	nc	nc	29.0	0.7
black sea bass	69	0	22.6	0.1	flat claw hermit crab	nc	nc	26.0	0.6
smallmouth flounder	61	0	2.7	0	bluecrab	104	0.4	19.3	0.4
cunner	50	0	5.3	0	northern moon snail	nc	nc	9.7	0.2
hickory shad	42	0	17.1	0.1	hydroid spp.	nc	nc	4.8	0.1
hogchoker	40	0	5.9	0	fan worm tubes	nc	nc	3.4	0.1
winter skate	31	0	66.5	0.3	hard clams	nc	nc	3.3	0.1
sea raven	19	0	9.2	0	arks	nc	nc	3.1	0.1
clearnose skate	18	0	37.9	0.2	mud crabs	nc	nc	2.8	0.1
ocean pout	18	0	4.9	0	sand shrimp	nc	nc	2.7	0.1
longhorn sculpin	14	0	5.0	0	common slipper shell	nc	nc	2.4	0.1
Atlantic sturgeon	7	0	79.0	0.4	purple sea urchin	nc	nc	2.3	0.1
oyster toadfish	6	0	2.5	0	common oyster	nc	nc	1.4	0
northern pipefish	4	0	0.2	0	sea grape	nc	nc	1.1	0
northern puffer	4	0	0.4	0	blood star	nc	nc	0.2	0
American sand lance	4	0	0.3	0	northern comb jelly	nc	nc	0.1	0
spiny dogfish	4	0	9.9	0.1	common razor clam	nc	nc	0.1	0
rock gunnel	3	0	0.2	0	northern cyclocardia	nc	nc	0.1	0
yellow jack	3	0	0.2	0	northern red shrimp	nc	nc	0.1	0
Atlantic silverside	2	0	0.1	0	surf clam	nc	nc	0.1	0
Atlantic mackerel	2	0	0.8	0	Total	29,113		4,374	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 2001.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay anchovy, striped anchovy, and American sand lance and Atlantic herring are not quantified. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
scup	58,325	37.7	5,828.4	30.7	American eel	1	0	0.6	0
butterfish	45,264	29.3	1,834.0	9.7	planehead filefish	1	0	0.1	0
weakfish	12,739	8.2	415.0	2.2	goosefish	1	0	0.4	0
winter flounder	9,826	6.4	1,993.6	10.5	naked goby	1	0	0.1	0
little skate	4,311	2.8	2,022.6	10.6	northern sennet	1	0	0.1	0
bluefish	3,986	2.6	751.2	4.0	rock gunnel	1	0	0.1	0
silver hake	3,945	2.6	152.2	0.8	red goatfish	1	0	0.1	0
windowpane flounder	3,065	2.0	475.5	2.5	rougtail stingray	1	0	2.5	0
fourspot flounder	2,167	1.4	362.7	1.9	short bigeye	1	0	0.1	0
striped searobin	2,061	1.3	861.0	4.5	yellowtail flounder	1	0	0.2	0
northern searobin	1,594	1.0	222.7	1.2	Total	154,514		18,997.8	
red hake	1,382	0.9	109.7	0.6					
summer flounder	875	0.6	628.1	3.3	<u>Finfish not ranked</u>				
alewife	638	0.4	41.7	0.2	American sand lance, yoy				
spotted hake	606	0.4	34.9	0.2	anchovy spp, yoy				
smooth dogfish	598	0.4	1,407.6	7.4	Atlantic herring, yoy				
Atlantic herring	497	0.3	72.6	0.4					
bay anchovy	443	0.3	3.6	0	<u>Invertebrates</u>				
tautog	319	0.2	491.2	2.6	American lobster	5,626	35.1	1,531.2	39.2
blueback herring	279	0.2	11.1	0.1	horseshoe crab	503	3.1	870.7	22.3
fourbeard rockling	251	0.2	21.5	0.1	long-finned squid	9,080	56.6	346.2	8.9
moonfish	225	0.1	3.8	0	spider crab	nc	nc	302.5	7.7
striped bass	214	0.1	472.5	2.5	bushy bryozoan	nc	nc	162.9	4.2
black sea bass	134	0.1	74.8	0.4	starfish spp.	nc	nc	154.7	4.0
American shad	109	0.1	9.6	0.1	rock crab	nc	nc	86.3	2.2
smallmouth flounder	98	0.1	3.8	0	blue mussel	nc	nc	84.7	2.2
Atlantic menhaden	86	0.1	4.7	0	lady crab	nc	nc	79.0	2.0
hogchoker	85	0.1	10.5	0.1	flat claw hermit crab	nc	nc	57.6	1.5
clearnose skate	65	0	132.4	0.7	knobbed whelk	118	0.7	53.3	1.4
cunner	51	0	5.9	0	channeled whelk	190	1.2	48.0	1.2
spiny dogfish	48	0	128.6	0.7	boring sponge	nc	nc	30.0	0.8
striped anchovy	47	0	1.2	0	lion's mane jellyfish	182	1.1	25.9	0.7
winter skate	38	0	112.2	0.6	northern moon snail	nc	nc	17.5	0.4
inshore lizardfish	21	0	2.2	0	mantis shrimp	304	1.9	16.5	0.4
Atlantic sturgeon	18	0	270.6	1.4	bluecrab	38	0.2	6.2	0.2
hickory shad	14	0	6.7	0	sea grape	nc	nc	6.1	0.2
spot	13	0	1.3	0	common slipper shell	nc	nc	5.3	0.1
rough scad	10	0	0.7	0	hydroid spp.	nc	nc	5.0	0.1
northern puffer	8	0	0.7	0	arks	nc	nc	4.0	0.1
sea raven	7	0	4.1	0	mud crabs	nc	nc	3.6	0.1
ocean pout	6	0	2.3	0	hard clams	nc	nc	3.0	0.1
round herring	5	0	0.1	0	sand shrimp	nc	nc	2.8	0.1
longhorn sculpin	5	0	1.5	0	common oyster	1	0	1.2	0
fawn cusk-eel	4	0	0.2	0	fan worm tubes	nc	nc	1.0	0
northern pipefish	4	0	0.3	0	purple sea urchin	nc	nc	0.8	0
American sand lance	4	0	0.3	0	moon jelly	nc	nc	0.4	0
seasnail	4	0	0.3	0	ghost shrimp	nc	nc	0.3	0
yellow jack	3	0	0.3	0	bobtail squid	1	0	0.1	0
conger eel	2	0	0.3	0	common razor clam	nc	nc	0.1	0
northern kingfish	2	0	0.2	0	northern red shrimp	nc	nc	0.1	0
oyster toadfish	2	0	0.4	0	surf clam	nc	nc	0.1	0
Atlantic silverside	1	0	0.1	0	Total	16,043		3,907	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 2002.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring are not quantified. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
scup	100,481	47.0	13,814.1	46.0	inshore lizardfish	1	0	0.1	0
butterfish	66,550	31.1	1,924.2	6.4	northern kingfish	1	0	0.2	0
weakfish	10,713	5.0	442.0	1.5	rock gunnel	1	0	0.1	0
winter flounder	6,884	3.2	1,584.1	5.3	rainbow smelt	1	0	0.1	0
little skate	4,242	2.0	2,121.9	7.1	rougtail stingray	1	0	24.4	0.1
bluefish	3,450	1.6	1,099.7	3.7	Total	213,796		30,062.0	
striped searobin	2,394	1.1	1,065.0	3.5					
northern searobin	2,123	1.0	267.3	0.9	Finfish not ranked				
red hake	2,103	1.0	206.6	0.7	anchovy spp, yoy				
silver hake	2,013	0.9	89.6	0.3	Atlantic herring, yoy				
windowpane flounder	1,991	0.9	343.3	1.1					
fourspot flounder	1,859	0.9	326.9	1.1	Invertebrates				
summer flounder	1,356	0.6	989.3	3.3	blue mussel	nc	nc	2,497.8	43.9
smooth dogfish	1,019	0.5	2,814.3	9.4	American lobster	3,880	29.7	1,005.7	17.7
bay anchovy	992	0.5	6.6	0	horseshoe crab	517	4.0	862.9	15.2
alewife	855	0.4	70.2	0.2	spider crab	nc	nc	348.4	6.1
spotted hake	798	0.4	48.2	0.2	long-finned squid	8,034	61.5	279.9	4.9
American shad	593	0.3	40.3	0.1	lady crab	nc	nc	117.0	2.1
tautog	565	0.3	921.1	3.1	starfish spp.	nc	nc	91.8	1.6
striped bass	469	0.2	855.2	2.8	bushy bryozoan	nc	nc	85.0	1.5
moonfish	424	0.2	7.4	0	boring sponge	nc	nc	83.9	1.5
black sea bass	394	0.2	188.3	0.6	rock crab	nc	nc	74.6	1.3
Atlantic menhaden	366	0.2	96.3	0.3	flat claw hermit crab	36	0.3	55.8	1.0
Atlantic herring	365	0.2	63.9	0.2	channeled whelk	174	1.3	43.6	0.8
smallmouth flounder	139	0.1	4.9	0	northern moon snail	nc	nc	40.3	0.7
fourbeard rockling	106	0	9.7	0	knobbed whelk	40	0.3	19.1	0.3
hogchoker	100	0	13.3	0	bluecrab	84	0.6	16.1	0.3
blueback herring	68	0	2.4	0	lion's mane jellyfish	71	0.5	12.3	0.2
clearnose skate	59	0	107.3	0.4	mantis shrimp	226	1.7	11.2	0.2
cunner	55	0	7.2	0	arks	nc	nc	7.8	0.1
spot	52	0	7.2	0	common slipper shell	nc	nc	7.3	0.1
hickory shad	45	0	19.6	0.1	hydroid spp.	nc	nc	7.3	0.1
winter skate	45	0	133.5	0.4	sea grape	nc	nc	5.3	0.1
Atlantic sturgeon	18	0	275.3	0.9	hard clams	3	0	5.2	0.1
spiny dogfish	17	0	48.0	0.2	mud crabs	nc	nc	4.7	0.1
ocean pout	13	0	4.3	0	purple sea urchin	nc	nc	2.3	0
yellow jack	13	0	1.4	0	sand shrimp	nc	nc	1.6	0
sea raven	11	0	4.1	0	rubbery bryozoan	nc	nc	1.0	0
rough scad	10	0	0.7	0	surf clam	nc	nc	1.0	0
oyster toadfish	8	0	4.7	0	deadman's fingers sponge	nc	nc	0.5	0
northern puffer	6	0	0.3	0	blood star	nc	nc	0.4	0
Atlantic mackerel	5	0	2.5	0	common oyster	nc	nc	0.4	0
short bigeye	5	0	0.2	0	mixed sponge species	nc	nc	0.4	0
goosefish	3	0	0.6	0	northern red shrimp	nc	nc	0.3	0
American sand lance	3	0	0.1	0	anemones	nc	nc	0.1	0
longhorn sculpin	3	0	0.9	0	bobtail squid	1	0	0.1	0
northern sennet	2	0	0.2	0	ghost shrimp	nc	nc	0.1	0
northern pipefish	2	0	0.2	0	ribbed mussel	nc	nc	0.1	0
Atlantic bonito	1	0	2.4	0	sea cucumber	1	0	0.1	0
crevalle jack	1	0	0.1	0	Total	13,067		5,691	
gizzard shad	1	0	0.1	0					
grubby	1	0	0.1	0					

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 2003.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring are not quantified. Number of tows (sample size)=160.

species	count	%	weight	%	Species	count	%	weight	%
butterfish	25,483	34.4	524.6	3.7	barndoor skate	1	0	0.4	0
scup	17,552	23.7	4,389.3	30.6	Planehead filefish	1	0	0.1	0
weakfish	5,596	7.6	131.9	0.9	rainbow smelt	1	0	0.1	0
winter flounder	4,245	5.7	1,276.5	8.9	sea lamprey	1	0	1.3	0
bluefish	3,717	5.0	655.0	4.6	Spanish mackerel	1	0	2.1	0
little skate	2,867	3.9	1,554.1	10.8	Total	74,107		14,323.6	
bay anchovy	2,254	3.0	12.5	0.1					
windowpane flounder	1,858	2.5	333.9	2.3	Finfish not ranked				
fourspot flounder	1,658	2.2	327.7	2.3	anchovy spp, yoy				
striped searobin	1,529	2.1	687.0	4.8	Atlantic herring, yoy				
northern searobin	1,468	2.0	240.7	1.7					
summer flounder	1,151	1.6	825.0	5.8	Invertebrates				
red hake	681	0.9	31.1	0.2	Horseshoe crab	399	1.7	670.5	23.2
alewife	608	0.8	49.4	0.3	spider crab	nc	nc	640.6	22.2
smooth dogfish	552	0.7	1,508.8	10.5	American lobster	1,958	8.3	479.7	16.6
spotted hake	527	0.7	41.6	0.3	long-finned squid	19,231	81.9	421.3	14.6
Atlantic herring	448	0.6	87.8	0.6	boring sponge	nc	nc	107.5	3.7
American shad	305	0.4	23.5	0.2	rock crab	nc	nc	80.9	2.8
silver hake	217	0.3	8.3	0.1	starfish spp.	nc	nc	73.7	2.6
striped bass	215	0.3	542.1	3.8	flat claw hermit crab	nc	nc	61.3	2.1
tautog	210	0.3	325.4	2.3	channeled whelk	334	1.4	58.8	2.0
Atlantic menhaden	121	0.2	16.1	0.1	bushy bryozoan	nc	nc	54.3	1.9
fourbeard rockling	111	0.1	9.0	0.1	lion's mane jellyfish	1,307	5.6	40.6	1.4
blueback herring	98	0.1	3.4	0	knobbed whelk	96	0.4	35.1	1.2
moonfish	97	0.1	1.3	0	sea grape	nc	nc	31.1	1.1
hogchoker	89	0.1	8.3	0.1	northern moon snail	nc	nc	20.9	0.7
black sea bass	57	0.1	45.7	0.3	blue mussel	nc	nc	19.7	0.7
Atlantic cod	57	0.1	2.7	0	common slipper shell	nc	nc	16.8	0.6
clearnose skate	55	0.1	105.9	0.7	lady crab	nc	nc	12.0	0.4
smallmouth flounder	38	0.1	2.4	0	hydroid spp.	nc	nc	9.6	0.3
winter skate	38	0.1	90.6	0.6	ribbed mussel	nc	nc	8.8	0.3
cunner	36	0	5.9	0	sand shrimp	nc	nc	6.8	0.2
haddock	26	0	1.3	0	arks	nc	nc	6.5	0.2
Atlantic sturgeon	23	0	391.9	2.7	mud crabs	nc	nc	6.5	0.2
hickory shad	22	0	10.3	0.1	rubbery bryozoan	nc	nc	6.0	0.2
American sand lance	19	0	0.2	0	mantis shrimp	110	0.5	4.9	0.2
ocean pout	14	0	2.9	0	bluecrab	24	0.1	4.3	0.1
rough scad	12	0	0.5	0	hard clams	nc	nc	3.9	0.1
oyster toadfish	9	0	5.0	0	star coral	nc	nc	1.9	0.1
spiny dogfish	7	0	34.8	0.2	coastal mud shrimp	4	0	0.7	0
rock gunnel	6	0	0.4	0	purple sea urchin	nc	nc	0.6	0
round scad	4	0	0.3	0	blood star	nc	nc	0.4	0
glasseye snapper	3	0	0.1	0	northern red shrimp	2	0	0.4	0
conger eel	3	0	1.1	0	Japanese shore crab	4	0	0.3	0
Atlantic mackerel	3	0	0.3	0	anemones	nc	nc	0.1	0
crevalle jack	2	0	0.2	0	sand dollar	1	0	0.1	0
northern pipefish	2	0	0.2	0	common razor clam	1	0	0.1	0
northern puffer	2	0	0.2	0	moon jelly	nc	nc	0.1	0
longhorn sculpin	2	0	0.9	0	northern cyclocardia	nc	nc	0.1	0
sea raven	2	0	1.3	0	mixed sponge species	nc	nc	0.1	0
striped anchovy	2	0	0.1	0	Total	23,471		2,887	
Atlantic silverside	1	0	0.1	0					

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 2004.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring are not quantified. Number of tows (sample size)=199.

species	count	%	weight	%	species	count	%	weight	%
butterfish	94,735	46.7	1,842.7	9.7	American plaice	1	0	0.1	0
scup	61,521	30.3	6,801.1	35.7	conger eel	1	0	0.1	0
weakfish	17,505	8.6	426.9	2.2	gizzard shad	1	0	0.1	0
bluefish	6,504	3.2	2,140.6	11.2	goosefish	1	0	0.1	0
winter flounder	4,021	2.0	839.9	4.4	pollock	1	0	0.1	0
little skate	3,044	1.5	1,689.8	8.9	rougtail stingray	1	0	4.1	0
windowpane flounder	2,275	1.1	333.7	1.8	oyster toadfish	1	0	0.8	0
bay anchovy	1,523	0.8	10.3	0.1	yellow jack	1	0	0.1	0
silver hake	1,417	0.7	27.3	0.1	Total	202,887		19,056.6	
fourspot flounder	1,406	0.7	309.3	1.6					
striped searobin	1,308	0.6	465.4	2.4	<u>Finfish not ranked</u>				
alewife	859	0.4	56.1	0.3	anchovy spp, yoy				
Atlantic herring	851	0.4	58.3	0.3	Atlantic herring, yoy				
red hake	829	0.4	51.6	0.3					
northern searobin	784	0.4	112.0	0.6	<u>Invertebrates</u>				
Atlantic menhaden	746	0.4	110.7	0.6	long-finned squid	23,022	86.5	953.4	28.8
summer flounder	644	0.3	627.2	3.3	horseshoe crab	534	2.0	873.4	26.4
smooth dogfish	503	0.2	1,435.3	7.5	American lobster	1,843	6.9	481.5	14.5
striped bass	378	0.2	811.8	4.3	spider crab	nc	nc	355.5	10.7
American shad	356	0.2	24.2	0.1	blue mussel	nc	nc	250.2	7.6
tautog	232	0.1	353.7	1.9	bushy bryozoan	nc	nc	50.9	1.5
spotted hake	230	0.1	37.8	0.2	flat claw hermit crab	nc	nc	42.4	1.3
blueback herring	218	0.1	6.5	0	channeled whelk	199	0.7	42.3	1.3
moonfish	182	0.1	3.4	0	starfish spp.	nc	nc	41.7	1.3
fourbeard rockling	173	0.1	13.0	0.1	boring sponge	nc	nc	41.7	1.3
black sea bass	124	0.1	40.5	0.2	rock crab	1	0.0	35.2	1.1
hogchoker	83	0	9.5	0	lion's mane jellyfish	803	3.0	34.0	1.0
American sand lance	70	0	0.2	0	common slipper shell	nc	nc	22.9	0.7
winter skate	53	0	100.3	0.5	sea grape	nc	nc	16.4	0.5
smallmouth flounder	50	0	2.8	0	lady crab	nc	nc	14.5	0.4
hickory shad	39	0	14.2	0.1	northern moon snail	nc	nc	11.5	0.3
spiny dogfish	38	0	104.7	0.5	knobbed whelk	21	0.1	7.7	0.2
Atlantic cod	33	0	4.7	0	mantis shrimp	159	0.6	7.0	0.2
clearnose skate	22	0	48.2	0.3	arks	nc	nc	7.0	0.2
cunner	21	0	3.7	0	mud crabs	nc	nc	5.4	0.2
ocean pout	18	0	5.4	0	sand shrimp	nc	nc	4.7	0.1
rough scad	14	0	0.7	0	bluecrab	13	0	2.8	0.1
round scad	11	0	0.3	0	hard clams	nc	nc	2.3	0.1
spot	8	0	0.9	0	surf clam	5	0	1.0	0
Atlantic sturgeon	8	0	117.6	0.6	purple sea urchin	nc	nc	0.8	0
haddock	7	0	0.6	0	mixed sponge species	nc	nc	0.6	0
sea raven	7	0	2.4	0	hydroid spp.	nc	nc	0.6	0
northern kingfish	5	0	0.5	0	deadman's fingers sponge	nc	nc	0.5	0
northern puffer	5	0	0.4	0	rubbery bryzoan	nc	nc	0.4	0
longhorn sculpin	5	0	3.4	0	star coral	nc	nc	0.3	0
seasnail	4	0	0.2	0	northern red shrimp	nc	nc	0.3	0
crevalle jack	2	0	0.2	0	northern cyclocardia	nc	nc	0.2	0
northern pipefish	2	0	0.2	0	blood star	nc	nc	0.1	0
rock gunnel	2	0	0.2	0	coastal mud shrimp	1	0	0.1	0
Atlantic tomcod	2	0	0.2	0	sea cucumber	2	0	0.1	0
white perch	2	0	0.5	0	Total	26,603		3,309.4	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 2005.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring are not quantified. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	92,996	52.2	2,097.3	16.8	haddock	2	0	0.2	0
scup	52,642	29.6	3,080.7	24.7	seasnail	2	0	0.2	0
weakfish	9,191	5.2	449.9	3.6	glasseye snapper	1	0	0.1	0
bluefish	6,532	3.7	1,333.8	10.7	inshore lizardfish	1	0	0.1	0
winter flounder	4,692	2.6	566.1	4.5	lookdown	1	0	0.1	0
windowpane flounder	1,982	1.1	177.5	1.4	pollock	1	0	0.1	0
little skate	1,317	0.7	682.5	5.5	Total	178,073		12,474.3	
Atlantic herring	1,168	0.7	131.1	1.1					
bay anchovy	814	0.5	5.8	0	Finfish not ranked				
striped searobin	757	0.4	183.7	1.5	anchovy spp, yoy				
alewife	742	0.4	47.6	0.4	Atlantic herring, yoy				
fourspot flounder	688	0.4	125.9	1					
red hake	585	0.3	56.0	0.4	Invertebrates				
summer flounder	506	0.3	406.1	3.3	blue mussel	nc	nc	971.0	32.6
striped bass	469	0.3	675.1	5.4	long-finned squid	17,542	83.2	683.5	22.9
smooth dogfish	467	0.3	1,421.7	11.4	American lobster	1,389	6.6	364.3	12.2
moonfish	356	0.2	6.0	0	horseshoe crab	161	0.8	304.2	10.2
northern searobin	265	0.1	21.3	0.2	starfish spp.	nc	nc	198.4	6.7
Atlantic menhaden	235	0.1	77.9	0.6	lion's mane jellyfish	1,806	8.6	97.3	3.3
spotted hake	234	0.1	17.4	0.1	spider crab	nc	nc	92.0	3.1
tautog	179	0.1	269.2	2.2	bushy bryozoan	nc	nc	64.6	2.2
American shad	177	0.1	18.2	0.1	lady crab	nc	nc	48.8	1.6
silver hake	165	0.1	7.1	0.1	boring sponge	nc	nc	26.1	0.9
hickory shad	136	0.1	43.1	0.3	flat claw hermit crab	nc	nc	23.1	0.8
blueback herring	111	0.1	5.4	0	channeled whelk	101	0.5	23.0	0.8
fourbeard rockling	106	0.1	6.8	0.1	common slipper shell	nc	nc	12.2	0.4
clearnose skate	102	0.1	187.1	1.5	rubbery bryozoan	nc	nc	11.0	0.4
rough scad	62	0	1.9	0	knobbed whelk	23	0.1	9.7	0.3
hogchoker	61	0	8.7	0.1	rock crab	nc	nc	9.3	0.3
smallmouth flounder	44	0	2.4	0	ribbed mussel	nc	nc	7.6	0.3
black sea bass	42	0	26.4	0.2	hard clams	nc	nc	7.2	0.2
spiny dogfish	41	0	102.0	0.8	northern moon snail	nc	nc	4.7	0.2
Atlantic mackerel	37	0	5.7	0	sea grape	nc	nc	4.5	0.2
winter skate	31	0	59.9	0.5	mantis shrimp	64	0.3	3.8	0.1
yellow jack	28	0	3.0	0	arks	nc	nc	3.5	0.1
cunner	24	0	4.1	0	hydroid spp.	nc	nc	3.4	0.1
round scad	12	0	0.3	0	mud crabs	nc	nc	2.5	0.1
Atlantic cod	10	0	0.9	0	sand shrimp	nc	nc	2.1	0.1
rock gunnel	9	0	0.6	0	deadman's fingers sponge	nc	nc	1.1	0
Atlantic sturgeon	9	0	152.7	1.2	purple sea urchin	nc	nc	0.7	0
northern sennet	8	0	0.7	0	bluecrab	3	0	0.6	0
American sand lance	6	0	0.2	0	mixed sponge species	nc	nc	0.4	0
northern puffer	5	0	0.3	0	surf clam	nc	nc	0.4	0
northern kingfish	4	0	0.6	0	star coral	nc	nc	0.3	0
northern pipefish	4	0	0.3	0	sand dollar	1	0	0.2	0
ocean pout	3	0	0.7	0	northern red shrimp	nc	nc	0.2	0
sea raven	3	0	0.5	0	boreal squid	1	0	0.1	0
crevalle jack	2	0	0.2	0	Japanese shore crab	5	0	0.1	0
gizzard shad	2	0	0.2	0	northern cyclocardia	nc	nc	0.1	0
goosefish	2	0	0.7	0	common oyster	nc	nc	0.1	0
grubby	2	0	0.2	0	Total	21,096		2,982.1	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in LISTS in 2006.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring and American sand lance are not quantified. Number of tows (sample size)=120.

species	count	%	weight	%	species	count	%	weight	%
butterfish	50,022	54.3	1,631.4	15.5					
scup	28,829	31.3	4,636.1	44.2					
bluefish	2,100	2.3	358.6	3.4	<u>Finfish not ranked</u>				
winter flounder	1,699	1.8	271.2	2.6	anchovy spp. yoy				
bay anchovy	1,492	1.6	8.3	0.1	Atlantic herring, yoy				
silver hake	1,267	1.4	37.7	0.4	American sand lance (yoy)				
windowpane flounder	1,077	1.2	128.9	1.2					
northern searobin	630	0.7	74.5	0.7					
red hake	625	0.7	37.4	0.4					
little skate	593	0.6	310.6	3	<u>Invertebrates</u>				
alewife	573	0.6	49.5	0.5	long-finned squid	7,802	83.4	326	32.5
fourspot flounder	466	0.5	88.1	0.8	horseshoe crab	109	1.2	205.8	20.5
striped searobin	366	0.4	113.5	1.1	American lobster	748	8	197.9	19.7
moonfish	361	0.4	3.5	0	boring sponge	nc	nc	51.3	5.1
smooth dogfish	332	0.4	1,176.6	11.2	spider crab	nc	nc	50.6	5
spotted hake	321	0.3	24.3	0.2	lion's mane jellyfish	558	6	45.4	4.5
weakfish	241	0.3	52.2	0.5	rock crab	nc	nc	40.4	4
summer flounder	203	0.2	180.5	1.7	bushy bryozoan	nc	nc	17.8	1.8
tautog	186	0.2	301.4	2.9	blue mussel	nc	nc	7.6	0.8
striped bass	144	0.2	418.7	4	channeled whelk	41	0.4	7.6	0.8
hickory shad	75	0.1	19.1	0.2	lady crab	nc	nc	7.5	0.7
American shad	68	0.1	6.1	0.1	deadman's fingers sponge	nc	nc	6.8	0.7
Atlantic herring	66	0.1	10.3	0.1	hydroid spp.	nc	nc	5.9	0.6
blueback herring	63	0.1	2.5	0	flat claw hermit crab	nc	nc	5.7	0.6
clearnose skate	36	0	52.4	0.5	starfish spp.	nc	nc	4.8	0.5
Atlantic menhaden	28	0	5.5	0.1	rubbery bryozoan	nc	nc	4	0.4
winter skate	23	0	60	0.6	common slipper shell	nc	nc	3.9	0.4
hogchoker	22	0	3.2	0	mantis shrimp	70	0.7	3.4	0.3
Atlantic sturgeon	21	0	368.7	3.5	mud crabs	nc	nc	2.1	0.2
black sea bass	19	0	9.3	0.1	blue crab	11	0.1	1.8	0.2
fourbeard rockling	14	0	1.5	0	knobbed whelk	5	0.1	1.2	0.1
rough scad	14	0	0.5	0	sand shrimp	nc	nc	0.6	0.1
spot	14	0	1.2	0	mixed sponge species	nc	nc	0.6	0.1
spiny dogfish	11	0	47	0.4	moon jelly	2	0	0.5	0
cunner	8	0	1.3	0	sea grape	nc	nc	0.5	0
smallmouth flounder	7	0	0.6	0	arks	nc	nc	0.4	0
ocean pout	5	0	0.9	0	purple sea urchin	2	0	0.4	0
glasseye snapper	4	0	0.1	0	star coral	nc	nc	0.3	0
inshore lizardfish	4	0	0.4	0	hard clams	1	0	0.3	0
northern pipefish	3	0	0.2	0	northern red shrimp	1	0	0.3	0
rock gunnel	2	0	0.1	0	red bearded sponge	nc	nc	0.2	0
yellow jack	2	0	0.1	0	fan worm tubes	nc	nc	0.2	0
Atlantic bonito	1	0	3.2	0	northern moon snail	nc	nc	0.2	0
planehead filefish	1	0	0.1	0	surf clam	1	0	0.2	0
goosefish	1	0	1.2	0	brown shrimp	1	0	0.1	0
pollock	1	0	0.1	0	ghost shrimp	nc	nc	0.1	0
oyster toadfish	1	0	1.2	0	Japanese shore crab	nc	nc	0.1	0
yellowtail flounder	1	0	0.4	0	northern cyclocardia	nc	nc	0.1	0
Total	92,042		10,500.2		Total	9,352		1,002.6	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in 2007.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring and American sand lance are not quantified. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
scup	75,681	42.6	5,333.5	30.4	grubby	1	0	0.1	0
butterfish	49,137	27.6	1,446.2	8.2	pollock	1	0	0.1	0
weakfish	17,386	9.8	584.8	3.3	rock gunnel	1	0	0.1	0
bluefish	9,378	5.3	1,801.3	10.3	striped burrfish	1	0	0.5	0
winter flounder	4,550	2.6	951.3	5.4	sea lamprey	1	0	0.1	0
windowpane flounder	4,051	2.3	510.8	2.9	yellowtail flounder	1	0	1.0	0
red hake	2,788	1.6	200.4	1.1					
bay anchovy	2,440	1.4	14.5	0.1	<u>Finfish not ranked</u>				
Atlantic herring	1,932	1.1	234.2	1.3	anchovy spp. yoy				
alewife	1,537	0.9	101.3	0.6	Atlantic herring, yoy				
little skate	1,277	0.7	697.0	4.0	American sand lance (yoy)				
fourspot flounder	1,094	0.6	224.9	1.3					
moonfish	979	0.6	12.0	0.1	<u>Invertebrates</u>				
striped searobin	755	0.4	217.0	1.2	long-finned squid	24,212	88.2	773.6	30.8
summer flounder	733	0.4	590.9	3.4	horseshoe crab	333	1.2	596.4	23.7
northern searobin	691	0.4	74.2	0.4	American lobster	1,648	6.0	396.5	15.8
smooth dogfish	580	0.3	2,110.2	12.0	spider crab	nc	nc	165.5	6.6
Atlantic menhaden	426	0.2	63.9	0.4	lion's mane jellyfish	660	2.4	129.8	5.2
striped bass	422	0.2	888.0	5.1	bushy bryozoan	nc	nc	107.4	4.3
spotted hake	340	0.2	23.9	0.1	mixed sponge species	nc	nc	84.5	3.4
silver hake	290	0.2	14.6	0.1	rock crab	nc	nc	41.4	1.6
tautog	280	0.2	551.4	3.1	channeled whelk	196	0.7	33.4	1.3
American shad	236	0.1	15.8	0.1	flat claw hermit crab	nc	nc	27.5	1.1
blueback herring	156	0.1	9.1	0.1	blue mussel	nc	nc	20.4	0.8
black sea bass	116	0.1	46.8	0.3	starfish spp.	nc	nc	20.3	0.8
clearnose skate	97	0.1	193.3	1.1	boring sponge	nc	nc	17.7	0.7
fourbeard rockling	87	0	7.6	0	blue crab	68	0.2	13.0	0.5
hogchoker	78	0	11.4	0.1	mantis shrimp	264	1.0	12.1	0.5
smallmouth flounder	48	0	2.6	0	deadman's fingers sponge	nc	nc	11.5	0.5
winter skate	44	0	117.8	0.7	lady crab	nc	nc	11.5	0.5
hickory shad	37	0	10.4	0.1	knobbed whelk	23	0.1	11.1	0.4
spiny dogfish	32	0	122.3	0.7	common slipper shell	nc	nc	9.3	0.4
American sand lance	30	0	0.3	0	mud crabs	nc	nc	4.3	0.2
Atlantic sturgeon	18	0	336.4	1.9	northern moon snail	nc	nc	4.3	0.2
cunner	16	0	3.0	0	sand shrimp	nc	nc	3.5	0.1
rough scad	13	0	0.7	0	sea grape	nc	nc	3.5	0.1
ocean pout	12	0	3.2	0	arks	2	0	2.7	0.1
Atlantic mackerel	9	0	0.8	0	hydroid spp.	nc	nc	2.5	0.1
glasseye snapper	8	0	0.7	0	hard clams	1	0	2.2	0.1
northern puffer	8	0	0.5	0	rubbery bryozoan	nc	nc	1.4	0.1
striped anchovy	6	0	0.1	0	common oyster	nc	nc	1.1	0
sea raven	5	0	3.6	0	surf clam	10	0	1.0	0
oyster toadfish	5	0	2.0	0	anemones	16	0.1	0.6	0
yellow jack	5	0	0.4	0	purple sea urchin	2	0	0.6	0
northern kingfish	4	0	0.4	0	red bearded sponge	nc	nc	0.5	0
round scad	3	0	0.3	0	star coral	nc	nc	0.4	0
longhorn sculpin	3	0	0.8	0	water jelly	1	0	0.3	0
American eel	2	0	0.9	0	jonah crab	1	0	0.2	0
inshore lizardfish	2	0	0.2	0	northern red shrimp	1	0	0.2	0
mackerel scad	2	0	0.1	0	blood star	nc	nc	0.1	0
northern sennet	2	0	0.2	0	coastal mud shrimp	1	0	0.1	0
northern pipefish	2	0	0.2	0	green sea urchin	1	0	0.1	0
Atlantic silverside	1	0	0.1	0	Japanese shore crab	nc	nc	0.1	0
gizzard shad	1	0	0.1	0	tunicates, misc	1	0	0.1	0
Total	177,841		17,540.3		Total	27,441		2,512.7	

Note: nc= not counted

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in 2008.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring and American sand lance are not quantified. Number of tows (sample size)=120.

species	count	%	weight	%	species	count	%	weight	%
scup	53,560	38	6,509.9	45.7	sea lamprey	1	0	0.8	0
butterfish	48,766	34.6	1,442.0	10.1	striped anchovy	1	0	0.1	0
American sand lance	7,495	5.3	7.2	0.1	Total	140,777		14,239.8	
silver hake	6,587	4.7	208.5	1.5					
winter flounder	4,973	3.5	751.9	5.3	Finfish not ranked				
windowpane flounder	3,511	2.5	524.0	3.7	anchovy spp. yoy				
weakfish	2,531	1.8	116.1	0.8	Atlantic herring, yoy				
red hake	1,723	1.2	141.3	1.0	American sand lance (yoy)				
bluefish	1,699	1.2	641.4	4.5					
spotted hake	1,267	0.9	65.8	0.5	Invertebrates				
bay anchovy	1,128	0.8	7.7	0.1	horseshoe crab	289	2.2	496.8	29.2
alewife	931	0.7	51.1	0.4	long-finned squid	10,490	80.5	330.1	19.4
fourspot flounder	902	0.6	186.3	1.3	American lobster	1,096	8.4	314.1	18.5
northern searobin	809	0.6	58.8	0.4	spider crab	nc	nc	145.8	8.6
moonfish	689	0.5	13.4	0.1	rock crab	nc	nc	64.0	3.8
little skate	682	0.5	327.4	2.3	bushy bryozoan	nc	nc	54.2	3.2
striped searobin	612	0.4	263.0	1.8	lady crab	nc	nc	36.3	2.1
summer flounder	477	0.3	398.0	2.8	starfish spp.	nc	nc	32.1	1.9
American shad	405	0.3	20.2	0.1	boring sponge	nc	nc	30.1	1.8
Atlantic herring	356	0.3	52.1	0.4	channeled whelk	177	1.4	29.3	1.7
smooth dogfish	328	0.2	1,134.2	8.0	mixed sponge species	nc	nc	27.8	1.6
spot	308	0.2	21.3	0.1	hydroid spp.	nc	nc	24.6	1.4
striped bass	199	0.1	456.3	3.2	flat claw hermit crab	nc	nc	22.8	1.3
tautog	179	0.1	309.4	2.2	common slipper shell	nc	nc	15.7	0.9
black sea bass	122	0.1	29.8	0.2	lion's mane jellyfish	520	4	14.3	0.8
smallmouth flounder	89	0.1	3.2	0	mantis shrimp	244	1.9	9.1	0.5
fourbeard rockling	81	0.1	7.1	0	sea grape	nc	nc	6.6	0.4
blueback herring	74	0.1	3.2	0	arks	124	1	6.1	0.4
winter skate	51	0	140.8	1.0	knobbed whelk	17	0.1	5.9	0.3
Atlantic menhaden	47	0	10.4	0.1	blue mussel	nc	nc	5.8	0.3
hogchoker	38	0	5.6	0	northern moon snail	1	0	5.6	0.3
clearnose skate	37	0	78.1	0.5	sand shrimp	nc	nc	4.0	0.2
spiny dogfish	35	0	127.7	0.9	blue crab	16	0.1	3.8	0.2
cunner	26	0	3.6	0	mud crabs	nc	nc	3.5	0.2
inshore lizardfish	10	0	0.5	0	rubbery bryozoan	nc	nc	3.1	0.2
ocean pout	9	0	2.1	0	common oyster	1	0	2.1	0.1
Atlantic sturgeon	7	0	111.3	0.8	hard clams	8	0.1	1.4	0.1
hickory shad	5	0	1.1	0	purple sea urchin	15	0.1	0.9	0.1
feather blenny	4	0	0.2	0	northern red shrimp	21	0.2	0.7	0
white perch	4	0	0.1	0	deadman's fingers sponge	nc	nc	0.6	0
northern kingfish	3	0	0.4	0	surf clam	9	0.1	0.6	0
oyster toadfish	3	0	1.9	0	red bearded sponge	nc	nc	0.4	0
Atlantic silverside	2	0	0.2	0	Jonah crab	2	0	0.4	0
rock gunnel	2	0	0.2	0	star coral	nc	nc	0.3	0
longhorn sculpin	2	0	0.3	0	sea cucumber	2	0	0.3	0
yellowtail flounder	2	0	0.4	0	tunicates, misc	nc	nc	0.3	0
Atlantic croaker	1	0	0.1	0	anemones	nc	nc	0.2	0
planehead filefish	1	0	0.1	0	coastal mud shrimp	1	0	0.1	0
glasseye snapper	1	0	0.1	0	green crab	1	0	0.1	0
pollock	1	0	0.1	0	moon jelly	1	0	0.1	0
rougtail stingray	1	0	3.0	0	northern cyclocardia	1	0	0.1	0
					Total	13,036		1,700.1	

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in 2009.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring and American sand lance are not quantified. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	108,087	53.6	3,186.9	17	striped cusk-eel	1	0	0.1	0
scup	46,991	23.3	6,332.1	33.8	spot	1	0	0.2	0
bay anchovy	11,128	5.5	35.3	0.2	northern stargazer	1	0	0.1	0
Atlantic herring	6,330	3.1	239.2	1.3	Atlantic tomcod	1	0	0.1	0
winter flounder	4,068	2	524.0	2.8	white perch	1	0	0.1	0
bluefish	3,657	1.8	1,157.4	6.2	yellow jack	1	0	0.1	0
weakfish	2,604	1.3	108.7	0.6	yellowtail flounder	1	0	0.2	0
moonfish	2,575	1.3	19.5	0.1	Total	201,476		18,750	
windowpane flounder	2,496	1.2	342.8	1.8					
northern searobin	2,012	1	194.3	1	Finfish not ranked				
striped searobin	1,507	0.7	471.8	2.5	anchovy spp, yoy				
American sand lance	1,227	0.6	2.0	0	Atlantic herring, yoy				
alewife	1,175	0.6	96.0	0.5	American sand lance (yoy)				
fourspot flounder	1,036	0.5	169.8	0.9					
silver hake	947	0.5	50.0	0.3	Invertebrates				
red hake	897	0.4	59.5	0.3	long-finned squid	24,130	91.4	648.4	30.2
summer flounder	881	0.4	694.4	3.7	horseshoe crab	340	1.3	645.8	30
little skate	709	0.4	390.0	2.1	American lobster	853	3.2	244	11.3
smooth dogfish	588	0.3	2,213.3	11.8	spider crab	.	.	144.1	6.7
striped bass	466	0.2	897.4	4.8	lion's mane jellyfish	641	2.4	89.3	4.2
American shad	422	0.2	28.9	0.2	lady crab	.	.	63.6	3
spotted hake	327	0.2	32.1	0.2	rock crab	.	.	42.4	2
blueback herring	291	0.1	14.6	0.1	common slipper shell	.	.	37	1.7
tautog	163	0.1	285.4	1.5	flat claw hermit crab	.	.	33.8	1.6
spiny dogfish	148	0.1	545.7	2.9	bushy bryozoan	.	.	33.3	1.5
black sea bass	121	0.1	59.5	0.3	starfish spp.	.	.	26.6	1.2
smallmouth flounder	96	0	4.7	0	channeled whelk	127	0.5	26	1.2
clearnose skate	69	0	148.5	0.8	hydroid spp.	.	.	25.7	1.2
Atlantic menhaden	69	0	18.0	0.1	knobbed whelk	39	0.1	11.6	0.5
rough scad	59	0	2.8	0	mantis shrimp	215	0.8	10.7	0.5
fourbeard rockling	47	0	3.9	0	Tubularia, spp.	.	.	9	0.4
winter skate	44	0	108.5	0.6	northern moon snail	.	.	7.2	0.3
hogchoker	39	0	4.5	0	anemones	.	.	5.6	0.3
blue runner	34	0	2.3	0	mixed sponge species	.	.	5.4	0.3
ocean pout	22	0	4.8	0	sea grape	.	.	5.0	0.2
Atlantic sturgeon	18	0	286.6	1.5	boring sponge	.	.	4.2	0.2
cunner	18	0	1.8	0	blue crab	19	0.1	4.1	0.2
pollock	18	0	0.8	0	sand shrimp	.	.	3.8	0.2
Atlantic cod	15	0	1.0	0	deadman's fingers sponge	.	.	3.5	0.2
hickory shad	13	0	3.6	0	blue mussel	8	0	3.5	0.2
northern kingfish	7	0	0.4	0	mud crabs	.	.	3.1	0.1
glasseye snapper	6	0	0.6	0	common oyster	1	0	3.1	0.1
Atlantic mackerel	5	0	0.4	0	arks	2	0	2.5	0.1
northern sennet	5	0	0.4	0	surf clam	18	0.1	1.7	0.1
northern puffer	5	0	0.4	0	hard clams	4	0	1.1	0.1
sea raven	5	0	1.7	0	red bearded sponge	.	.	0.8	0
striped anchovy	5	0	0.4	0	purple sea urchin	4	0	0.8	0
Atlantic silverside	3	0	0.3	0	rubbery bryozoan	.	.	0.6	0
oyster toadfish	3	0	0.8	0	star coral	.	.	0.2	0
inshore lizardfish	2	0	0.2	0	ghost shrimp	2	0	0.2	0
northern pipefish	2	0	0.2	0	coastal mud shrimp	2	0	0.1	0
rock gunnel	2	0	0.2	0	northern cyclocardia	1	0	0.1	0
longhorn sculpin	2	0	0.3	0	northern red shrimp	1	0	0.1	0
crevalle jack	1	0	0.1	0	sea cucumber	1	0	0.1	0
planehead filefish	1	0	0.1	0	tunicates, misc	1	0	0.1	0
round scad	1	0	0.1	0	Total	26,409		2,148.2	

Note: nc= not counted

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in 2010.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring and American sand lance are not quantified. Number of tows (sample size)=78.

species	count	%	weight	%	species	count	%	weight	%
American sand lance	13,061	35.3	5.2	0.1	<u>Invertebrates</u>				
scup	7,157	19.3	1,971.6	44.3	long-finned squid	1,906	62.9	161.4	28.4
butterfish	2,894	7.8	166.9	3.7	horseshoe crab	58	1.9	112.2	19.8
windowpane flounder	2,850	7.7	449.3	10.1	American lobster	293	9.7	83.6	14.7
winter flounder	2,579	7.0	450.5	10.1	spider crab	.	.	81.6	14.4
silver hake	1,747	4.7	35.4	0.8	bushy bryozoan	.	.	23.1	4.1
Atlantic herring	1,318	3.6	179.0	4	rock crab	.	.	16.7	2.9
northern searobin	1,128	3	149.5	3.4	starfish spp.	.	.	15.1	2.7
red hake	990	2.7	64.3	1.4	common slipper shell	.	.	11.2	2
spotted hake	665	1.8	15.8	0.4	lion's mane jellyfish	401	13.2	7.8	1.4
summer flounder	517	1.4	229.6	5.2	lady crab	.	.	7.7	1.4
bay anchovy	475	1.3	2.8	0.1	flat claw hermit crab	.	.	6.8	1.2
fourspot flounder	402	1.1	92.0	2.1	hydroid spp.	.	.	6.7	1.2
little skate	281	0.8	148.3	3.3	channeled whelk	33	1.1	4.5	0.8
alewife	172	0.5	14.3	0.3	northern moon snail	.	.	4.1	0.7
American shad	165	0.4	8.6	0.2	blue mussel	.	.	3.1	0.5
striped searobin	141	0.4	66.4	1.5	common oyster	.	.	2.9	0.5
blueback herring	101	0.3	3.4	0.1	sea grape	.	.	2.7	0.5
striped bass	71	0.2	173.2	3.9	sand shrimp	.	.	2.3	0.4
tautog	53	0.1	83.1	1.9	deadman's fingers sponge	.	.	2.3	0.4
black sea bass	37	0.1	20.1	0.5	blue crab	10	0.3	2.0	0.4
fourbeard rockling	35	0.1	2.9	0.1	arks	.	.	1.6	0.3
hogchoker	34	0.1	4.4	0.1	mud crabs	.	.	1.6	0.3
smallmouth flounder	31	0.1	1.4	0	rubbery bryozoan	.	.	1.2	0.2
rock gunnel	29	0.1	0.5	0	mantis shrimp	19	0.6	1.1	0.2
Atlantic cod	21	0.1	2.1	0	Unknown Jellyfish	300	9.9	0.8	0.1
winter skate	16	0	37.7	0.8	Tubularia, spp.	.	.	0.5	0.1
cunner	11	0	1.3	0	anemones	5	0.1	0.4	0.1
smooth dogfish	10	0	34.4	0.8	surf clam	2	0.1	0.4	0.1
Atlantic menhaden	7	0	2.7	0.1	knobbed whelk	1	0	0.3	0.1
ocean pout	6	0	1.4	0	mixed sponge species	.	.	0.3	0.1
sea raven	6	0	1.6	0	northern comb jelly	1	0	0.2	0
northern pipefish	4	0	0.3	0	purple sea urchin	4	0.1	0.2	0
spiny dogfish	3	0	16.2	0.4	boring sponge	.	.	0.1	0
bluefish	2	0	6.1	0.1	red bearded sponge	.	.	0.1	0
hickory shad	2	0	0.4	0	coastal mud shrimp	.	.	0.1	0
pollock	2	0	0.1	0	star coral	.	.	0.1	0
American plaice	1	0	0.1	0	hard clams	.	.	0.1	0
Atlantic silverside	1	0	0.1	0	sea cucumber	.	.	0.1	0
Atlantic sturgeon	1	0	5.6	0.1	Total	3,033		567.0	
clearnose skate	1	0	4.5	0.1	Note: nc= not counted				
longhorn sculpin	1	0	0.4	0					
weakfish	1	0	1.0	0					
Total	37,029		4,455						

Finfish not ranked

- anchovy spp, yoy
- Atlantic herring, yoy
- American sand lance (yoy)

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in 2011.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring and American sand lance are not quantified. Number of tows (sample size)=172.

species	count	%	weight	%	species	count	%	weight	%
butterfish	42,141	36.7	1,600.8	9.9	striped burrfish	1	0	0.5	0
scup	34,458	30.0	6,759.0	41.7	striped anchovy	1	0	0.1	0
American sand lance	9,535	8.3	7.5	0.0	silver perch	1	0	0.1	0
bay anchovy	4,693	4.1	10.5	0.1	oyster toadfish	1	0	0.2	0
winter flounder	3,092	2.7	613.8	3.8	white perch	1	0	0.1	0
windowpane flounder	2,831	2.5	395.9	2.4	white mullet	1	0	0.1	0
bluefish	2,765	2.4	584.7	3.6	yellowtail flounder	1	0	0.3	0
weakfish	2,583	2.3	192.6	1.2	Total	114,706		16,210.3	
striped searobin	1,630	1.4	558.7	3.4					
Atlantic herring	1,482	1.3	199.4	1.2	<u>Finfish not ranked</u>				
fourspot flounder	1,400	1.2	224.2	1.4	anchovy spp, yoy				
summer flounder	1,051	0.9	713.0	4.4	Atlantic herring, yoy				
silver hake	948	0.8	40.3	0.2	American sand lance (yoy)				
northern searobin	803	0.7	85.5	0.5					
spotted hake	725	0.6	76.8	0.5	<u>Invertebrates</u>				
little skate	674	0.6	359.4	2.2	horseshoe crab	257	1.7	505.2	33.5
moonfish	640	0.6	6.3	0	long-finned squid	13,020	86.4	370.7	24.6
smooth dogfish	613	0.5	2,031.7	12.5	spider crab	.	.	151.8	10.1
alewife	512	0.4	29.8	0.2	lady crab	.	.	132.4	8.8
red hake	278	0.2	25.1	0.2	American lobster	230	1.5	52.0	3.4
American shad	271	0.2	17.5	0.1	rock crab	.	.	45.5	3.0
striped bass	243	0.2	721.9	4.5	hydroid spp.	.	.	30.5	2.0
Atlantic menhaden	181	0.2	69.8	0.4	mantis shrimp	971	6.4	29.6	2.0
rough scad	150	0.1	6.8	0	bushy bryozoan	.	.	24.9	1.7
hogchoker	147	0.1	16.8	0.1	knobbed whelk	62	0.4	23.8	1.6
Atlantic cod	109	0.1	9.2	0.1	flat claw hermit crab	.	.	22.1	1.5
tautog	106	0.1	151.7	0.9	channeled whelk	99	0.7	19.0	1.3
black sea bass	91	0.1	54.2	0.3	starfish spp.	.	.	14.4	1.0
blueback herring	72	0.1	3.2	0	blue crab	69	0.5	12.4	0.8
smallmouth flounder	67	0.1	3.5	0	lion's mane jellyfish	345	2.3	11.3	0.7
spiny dogfish	58	0.1	203.5	1.3	mixed sponge species	.	.	11.0	0.7
clearnose skate	56	0	109.8	0.7	blue mussel	1	0	6.7	0.4
inshore lizardfish	43	0	4.6	0	northern moon snail	.	.	5.6	0.4
fourbeard rockling	43	0	4.0	0	boring sponge	.	.	5.5	0.4
winter skate	37	0	101.2	0.6	hard clams	.	.	5.3	0.4
northern kingfish	34	0	3.7	0	common slipper shell	.	.	5.2	0.3
ocean pout	27	0	4.5	0	sand shrimp	.	.	4.5	0.3
blue runner	24	0	1.7	0	Tubularia, spp.	.	.	3.5	0.2
cunner	14	0	1.9	0	mud crabs	.	.	2.6	0.2
northern puffer	9	0	0.9	0	rubbery bryozoan	.	.	1.7	0.1
longhorn sculpin	9	0	2.0	0	common oyster	1	0	1.6	0.1
hickory shad	8	0	1.5	0	sea grape	.	.	1.5	0.1
Atlantic sturgeon	5	0	181.9	1.1	arks	.	.	1.4	0.1
pollock	5	0	0.5	0	surf clam	7	0	1.0	0.1
spot	5	0	0.7	0	purple sea urchin	3	0	0.6	0
crevalle jack	4	0	0.4	0	red bearded sponge	.	.	0.3	0
grubby	4	0	0.1	0	northern comb jelly	.	.	0.3	0
northern pipefish	4	0	0.3	0	anemones	6	0	0.2	0
rock gunnel	4	0	0.2	0	star coral	.	.	0.2	0
conger eel	3	0	1.1	0	coastal mud shrimp	1	0	0.1	0
sea raven	3	0	0.9	0	common razor clam	1	0	0.1	0
striped cusk-eel	2	0	0.2	0	ghost shrimp	1	0	0.1	0
Atlantic tomcod	2	0	0.2	0	northern red shrimp	1	0	0.1	0
American plaice	1	0	0.1	0	polychaetes	.	.	0.1	0
Atlantic croaker	1	0	0.2	0	tunicates, misc	.	.	0.1	0
northern sennet	1	0	0.1	0	water jelly	1	0	0.1	0
round scad	1	0	0.1	0	Total	15,076		1,505.0	
rougtail stingray	1	0	13.0	0.1	Note: nc= not counted				

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in 2012.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring and American sand lance are not quantified. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	60,539	37.9	1,891.3	10.8	longhorn sculpin	1	0	0.2	0
scup	53,119	33.2	6,170.2	35.1	white perch	1	0	0.2	0
silver hake	7,519	4.7	171.0	1.0	white mullet	1	0	0.1	0
weakfish	6,785	4.2	409.2	2.3	Total	159,770		17,570.3	
bluefish	3,851	2.4	532.7	3.0					
northern searobin	3,642	2.3	405.2	2.3	Finfish not ranked				
windowpane flounder	3,536	2.2	501.1	2.9	anchovy spp, yoy				
winter flounder	3,365	2.1	604.9	3.4	Atlantic herring, yoy				
striped searobin	2,973	1.9	1,086.4	6.2	American sand lance (yoy)				
fourspot flounder	2,597	1.6	454.5	2.6					
red hake	1,720	1.1	148.6	0.8	Invertebrates				
little skate	1,406	0.9	657.9	3.7					
bay anchovy	1,296	0.8	8.6	0.0	horseshoe crab	199	1.7	385.8	30.6
summer flounder	980	0.6	718.5	4.1	long-finned squid	9,767	84.5	333.9	26.5
spot	858	0.5	107.5	0.6	spider crab	.	.	162.4	12.9
alewife	708	0.4	47.0	0.3	American lobster	349	3.0	70.0	5.6
spotted hake	626	0.4	64.2	0	boring sponge	.	.	47.9	3.8
smooth dogfish	610	0.4	1,833.3	10.4	lady crab	.	.	45.3	3.6
Atlantic herring	571	0.4	61.5	0.4	rock crab	.	.	40.7	3.2
Atlantic menhaden	426	0.3	144.6	0.8	mantis shrimp	846	7.3	26.6	2.1
black sea bass	410	0.3	141.0	0.8	bushy bryozoan	.	.	20.4	1.6
hogchoker	340	0.2	30.7	0.2	flat claw hermit crab	.	.	18.3	1.5
American shad	321	0.2	25.3	0.1	blue crab	72	0.6	14.5	1.2
clearnose skate	280	0.2	491.7	3	knobbed whelk	36	0.3	13.8	1.1
moonfish	262	0.2	3.6	0.0	channeled whelk	76	0.7	13.7	1.1
smallmouth flounder	258	0.2	7.5	0.0	blue mussel	1	0.0	9.4	0.7
striped bass	170	0.1	278.0	1.6	common slipper shell	.	.	9.4	0.7
tautog	135	0.1	128.9	0.7	mixed sponge species	.	.	7.4	0.6
winter skate	97	0.1	179.8	1	Tubularia, spp.	.	.	5.0	0.4
northern kingfish	59	0.0	8.4	0	hydroid spp.	.	.	4.8	0.4
northern puffer	47	0.0	3.1	0.0	lion's mane jellyfish	50	0.4	4.4	0.3
blueback herring	46	0	1.6	0.0	mud crabs	.	.	3.9	0.3
fourbeard rockling	43	0	3.5	0	starfish spp.	.	.	3.3	0.3
hickory shad	42	0	14.1	0	northern red shrimp	118	1.0	3.0	0.2
blue runner	27	0	2.7	0.0	northern moon snail	.	.	1.8	0.1
cunner	20	0	2.8	0	sand shrimp	.	.	1.7	0.1
rough scad	19	0	1.1	0	arks	.	.	1.4	0.1
spiny dogfish	16	0	62.8	0	hard clams	3	0	1.3	0.1
ocean pout	14	0	2.0	0	red bearded sponge	.	.	1.2	0.1
Atlantic sturgeon	7	0	154.2	1	sea grape	.	.	1.1	0.1
sea raven	5	0	1.1	0	deadman's fingers sponge	.	.	0.8	0.1
northern sennet	3	0	0.3	0	purple sea urchin	7	0	0.8	0
striped anchovy	3	0	0.2	0.0	common oyster	.	.	0.8	0
crevalle jack	2	0	0.2	0	surf clam	10	0.1	0.8	0
goosefish	2	0	0.8	0	star coral	.	.	0.4	0
pinfish	2	0	0.2	0	rubbery bryozoan	.	.	0.4	0
round herring	2	0	0.1	0	sea cucumber	3	0	0.4	0
American sand lance	2	0	0.2	0	tunicates, misc	16	0	0.4	0
African pompano	1	0	0.1	0	water jelly	4	0	0.3	0
conger eel	1	0	0.3	0	coastal mud shrimp	1	0	0.2	0
gizzard shad	1	0	0.1	0	northern comb jelly	.	.	0.1	0
northern pipefish	1	0	0.1	0	moon jelly	.	.	0.1	0
rock gunnel	1	0	0.1	0	Total	11,558		1,257.9	
rougtail stingray	1	0	5.0	0					

Note: nc= not counted

Appendix 2.4. cont. Total number and weight (kg) of finfish and invertebrates caught in 2013.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year bay and striped anchovy are neither separated by species or quantified; young-of-year Atlantic herring and American sand lance are not quantified. Number of tows (sample size)=200.

species	count	%	weight	%	species	count	%	weight	%
butterfish	29,569	35.4	1,252.5	7.9					
scup	24,961	29.9	5,945.6	37.5					
Atlantic herring	3,566	4.3	321.2	2.0	Finfish not ranked				
striped searobin	2,724	3.3	1,112.5	7.0	anchovy spp. (yoy)				
windowpane flounder	2,096	2.5	326.6	2.1	Atlantic herring, (yoy)				
weakfish	1,964	2.4	203.7	1.3	American sand lance (yoy)				
northern searobin	1,934	2.3	161.7	1.0	gadid spp. (yoy)				
spot	1,917	2.3	195.4	1.2	Invertebrates				
winter flounder	1,912	2.3	576.8	3.6	blue mussel	3	0.0	622.1	31.9
bluefish	1,829	2.2	517.7	3.3	horseshoe crab	265	3.4	531.8	27.3
bay anchovy	1,350	1.6	6.8	0.0	long-finned squid	5,393	69.6	170.8	8.8
fourspot flounder	1,144	1.4	203.4	1.3	spider crab	nc		156.5	8.0
summer flounder	1,071	1.3	726.6	4.6	lion's mane jellyfish	1,067	13.8	150.0	7.7
smooth dogfish	1,051	1.3	2,162.3	13.6	common slipper shell	nc		61.0	3.1
spotted hake	927	1.1	66.8	0.4	American lobster	144	1.9	37.3	1.9
moonfish	868	1.0	10.0	0.1	bushy bryozoan	nc		26.8	1.4
red hake	849	1.0	61.1	0.4	boring sponge	nc		26.1	1.3
little skate	583	0.7	317.8	2.0	mantis shrimp	646	8.3	21.6	1.1
silver hake	519	0.6	23.6	0.1	flat claw hermit crab	nc		21.4	1.1
black sea bass	449	0.5	181.2	1.1	knobbed whelk	51	0.7	18.7	1.0
alewife	376	0.5	34.1	0.2	channeled whelk	95	1.2	18.6	1.0
hogchoker	250	0.3	27.2	0.2	hydroid spp.	nc		13.2	0.7
Atlantic menhaden	234	0.3	87.5	0.6	lady crab	nc		13.2	0.7
American shad	222	0.3	15.3	0.1	rock crab	nc		13.0	0.7
clearnose skate	218	0.3	387.0	2.4	blue crab	52	0.7	10.4	0.5
striped bass	200	0.2	421.0	2.7	Tubularia, spp.	nc		6.7	0.3
tautog	161	0.2	160.8	1.0	common oyster	nc		5.3	0.3
smallmouth flounder	128	0.2	5.2	0.0	mud crabs	nc		3.5	0.2
winter skate	91	0.1	111.2	0.7	sand shrimp	nc		2.9	0.1
blueback herring	68	0.1	4.3	0.0	northern moon snail	nc		2.9	0.1
hickory shad	33	0.0	10.8	0.1	surf clam	8	0.1	2.4	0.1
rough scad	28	0.0	1.3	0.0	starfish spp.	1	0.0	2.1	0.1
red goatfish	21	0.0	0.5	0.0	sea grape	nc		2.1	0.1
spiny dogfish	21	0.0	91.5	0.6	arks	nc		1.9	0.1
cunner	20	0.0	1.8	0.0	hard clams	6	0.1	0.9	0.0
northern kingfish	14	0.0	2.3	0.0	comb jelly spp	nc		0.8	0.0
American sand lance	7	0.0	0.1	0.0	red bearded sponge	nc		0.6	0.0
haddock	5	0.0	0.4	0.0	rubbery bryozoan	nc		0.5	0.0
oyster toadfish	5	0.0	0.9	0.0	purple sea urchin	10	0.1	0.5	0.0
Atlantic sturgeon	4	0.0	98.0	0.6	coastal mud shrimp	4	0.1	0.3	0.0
Atlantic silverside	3	0.0	0.3	0.0	deadman's fingers sponge	nc		0.3	0.0
northern puffer	3	0.0	0.3	0.0	mixed sponge species	nc		0.3	0.0
fourbeard rockling	3	0.0	0.2	0.0	star coral	nc		0.2	0.0
bullnose ray	2	0.0	5.7	0.0	sea cucumber	2	0.0	0.2	0.0
harvestfish	2	0.0	0.2	0.0	fan worm tubes	nc		0.1	0.0
northern pipefish	2	0.0	0.2	0.0	ghost shrimp	1	0.0	0.1	0.0
conger eel	1	0.0	1.2	0.0	Japanese shore crab	1	0.0	0.1	0.0
Atlantic croaker	1	0.0	0.1	0.0	northern red shrimp	1	0.0	0.1	0.0
glasseye snapper	1	0.0	0.1	0.0	ribbed mussel	nc		0.1	0.0
pollock	1	0.0	0.1	0.0	Total	7,750		1,947.4	
round scad	1	0.0	0.1	0.0	Note: nc= not counted				
red cornetfish	1	0.0	0.1	0.0					
longhorn sculpin	1	0.0	0.4	0.0					
striped anchovy	1	0.0	0.1	0.0					
northern stargazer	1	0.0	0.1	0.0					
Total	83,413		15,843.7						

Appendix 2.5: Endangered Species Interactions: Four (4) Atlantic sturgeon were captured on three of the 200 tows completed in 2013. This yields a lower encounter rate (1.5%) than the average for the LISTS time series (2.4%). Two of the three tows occurred over transition bottom type, while the other occurred over sand bottom type. All three tows were in the 18.3-27.3m (60-90 ft) depth interval. All individuals were released alive and uninjured. Each sturgeon received a T-bar tag in the base of the left pectoral fin and were scanned for passive integrated transponders (PIT). Since no PITs were detected, a PIT was inserted near the base of each dorsal fin. All captures were reported to NMFS within 24 hours. Details for each fish are provided below:



Sample	Date	Site	Time Start	Duration (min)	Species	Total Length (mm)	Fork Length (mm)	Weight (kg)	Left Pec T-bar	Dorsal T-bar	PIT	Tissue Sample	Release time	Release lat	Release lon
SP2013084	6/13/2013	05-31	9:40	30	ATS	1,985	1,745	47.68	ADDED	ADDED	ADDED	YES	10:30:00	41.0803N	72.5310W
SP2013084	6/13/2013	05-31	9:40	30	ATS	1,403	1,210	15.60	ADDED	ADDED	ADDED	YES	10:50:00	41.0797N	72.5342W
SP2013087	6/17/2013	05-30	8:17	30	ATS	1,605	1,420	26.20	ADDED	N/A	ADDED	YES	9:19:00	41.0982N	72.5232W
FA2013013	9/11/2013	03-25	14:04	30	ATS	1,305	1,205	8.50	ADDED	N/A	ADDED	YES	14:53:00	41.0541N	72.7678W

Appendix 2.6: Cold and warm temperate species captured in LISTS. Thirty-three (33) species are included in the cold temperate group, while thirty-four (34) species are included in the warm temperate group. Cold temperate species are defined as being more abundant north of Cape Cod, MA than south of New York, behaviorally adapted to cold temperatures including subfreezing but prefers ~3-15⁰C, and spawns at lower end of temperature tolerance. Warm temperate species are defined as being more abundant south of New York than north of Cape Cod, MA, behaviorally avoids temperatures < 7-10⁰C; prefers ~11-22⁰C, and spawns at higher end of temperature tolerance.

Cold Temperate Group		Warm Temperate Group	
Common Name	Scientific Name	Common Name	Scientific Name
alewife	<i>Alosa pseudoharengus</i>	American eel	<i>Anguilla rostrata</i>
American plaice	<i>Hippoglossoides platessoides</i>	American shad	<i>Alosa sapidissima</i>
Atlantic herring	<i>Clupea harengus</i>	Atlantic bonito	<i>Sarda sarda</i>
Atlantic cod	<i>Gadus morhua</i>	Atlantic croaker	<i>Micropogonias undulatus</i>
Atlantic mackerel	<i>Scomber scombrus</i>	Atlantic silversides	<i>Menidia menidia</i>
Atlantic salmon	<i>Salmo salar</i>	black seabass	<i>Centropristis striata</i>
Atlantic seasnail	<i>Liparis atlanticus</i>	blueback herring	<i>Alosa aestivalis</i>
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	bluefish	<i>Pomatomus saltatrix</i>
Atlantic tomcod	<i>Microgadus tomcod</i>	butterfish	<i>Peprilus triacanthus</i>
barndoor skate	<i>Dipturus laevis</i>	clearnose skate	<i>Raja eglanteria</i>
cunner	<i>Tautoglabrus adspersus</i>	conger eel	<i>Conger oceanicus</i>
fawn cusk-eel	<i>Lepophidium profundorum</i>	gizzard shad	<i>Dorosoma cepedianum</i>
fourspot flounder	<i>Hippoglossina oblonga</i>	hickory shad	<i>Alosa mediocris</i>
grubby	<i>Myoxocephalus aeneus</i>	hogchoker	<i>Trinectes maculatus</i>
haddock	<i>Melanogrammus aeglefinus</i>	lined seahorse	<i>Hippocampus erectus</i>
little skate	<i>Leucoraja erinacea</i>	menhaden	<i>Brevoortia tyrannus</i>
longhorn sculpin	<i>Myoxocephalus octodecemspinosus</i>	naked goby	<i>Gobiosoma boscii</i>
lumpfish	<i>Cyclopterus lumpus</i>	northern kingfish	<i>Menticirrhus saxatilis</i>
monkfish (goosefish)	<i>Lophius americanus</i>	northern puffer	<i>Spherooides maculatus</i>
northern pipefish	<i>Syngnathus fuscus</i>	northern searobin	<i>Prionotus carolinus</i>
ocean pout	<i>Zoarces americanus</i>	oyster toadfish	<i>Opsanus tau</i>
pollock	<i>Pollachius virens</i>	scup (porgy)	<i>Stenotomus chrysops</i>
rainbow smelt	<i>Osmerus mordax</i>	sea lamprey	<i>Petromyzon marinus</i>
red hake	<i>Urophycis chuss</i>	smallmouth flounder	<i>Etropus microstomus</i>
rock gunnel	<i>Pholis gunnellus</i>	smooth dogfish	<i>Mustelus canis</i>
rockling	<i>Enchelyopus cimbrius</i>	spot	<i>Leiostomus xanthurus</i>
searaven	<i>Hemitripterus americanus</i>	spotted hake	<i>Urophycis regia</i>
spiny dogfish	<i>Squalus acanthias</i>	striped bass	<i>Morone saxatilis</i>
whiting (silver hake)	<i>Merluccius bilinearis</i>	striped cusk-eel	<i>Ophidion marginatum</i>
windowpane	<i>Scophthalmus aquosus</i>	striped searobin	<i>Prionotus evolans</i>
winter flounder	<i>Pseudopleuronectes americanus</i>	summer flounder	<i>Paralichthys dentatus</i>
winter skate	<i>Leucoraja ocellata</i>	tautog (blackfish)	<i>Tautoga onitis</i>
yellowtail flounder	<i>Limanda ferruginea</i>	white perch	<i>Morone Americana</i>
		weakfish	<i>Cynoscion regalis</i>