# JOB 5: MARINE FINFISH SURVEY

# LONG ISLAND SOUND TRAWL SURVEY

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### **JOB 5: LONG ISLAND SOUND TRAWL SURVEY (LISTS)**

## CRUISE RESULTS FROM THE 2022 SPRING AND FALL SURVEYS

### STUDY PERIOD AND AREA

The Connecticut DEEP Marine Fisheries Program completed the thirty-ninth year of the Long Island Sound Trawl Survey in 2022. The Long Island Sound Trawl Survey (LISTS) 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 (LIS) is surveyed in the spring, from April through June, and during the fall, from September through October. This report includes results through the 2022 spring and fall sampling period and provides time series information since the commencement of the survey in 1984.

## 2022 Sampling Intensity:

In 2021, the policies instituted by the State of Connecticut and CT DEEP to prevent the spread of COVID-19 were relaxed slightly, allowing for five (5) permanent staff to work aboard the *R/V John Dempsey*. The continued limitation in the crew size led to a decision to decrease the sampling intensity in the form of decreased number of samples, see Gottschall et al. 2021. However, in the fall of 2021, in hopes of being able to accomplish the standard survey, the typical forty sites were randomly selected using the standard weighting scheme based on strata. Then thirty-three (33) sites of the forty (40) were randomly selected, maintaining the minimum of 2 sites per stratum (similar to the spring). The remaining seven (7) each month were considered "optional" and would be sampled if there was sufficient time left in the month after completing 33 samples.

The goal for the 2022 sampling season was to complete the standard 40 sites per month using the same site selection methodology and intensity as the fall of 2021 described above. During April of 2022, time and staff constraints prevented a full 40 tow survey from being completed and 33 tows were conducted. A full 40 tow survey was then completed in May of 2022, however during June, only fourteen (14) sites were complete due to mechanical issues with the *R/V John Dempsey*. During the fall of 2022 (September and October), all standard 40 monthly samples were completed.

### **GOAL**

To provide long term monitoring of abundance, biomass and size composition of marine fishery resources along with environmental parameters, in order to evaluate the effects of fishing and environmental conditions on the distribution and abundance of living resources in Long Island Sound.

#### **OBJECTIVES**

- 1) Provide annual indices of counts and biomass per standard tow for 40 common species and age-specific indices of abundance for winter flounder, tautog, scup, summer flounder, bluefish (Age 0, 1+) and weakfish (Age 0, 1+).
- 2) Provide length-frequency distributions of bluefish, scup, summer flounder, winter flounder, tautog, striped bass, weakfish, black sea bass, and other ecologically important species.
- 3) Provide annual total counts and biomass for all finfish species taken and annual total biomass for all common macro-invertebrate species taken.
- 4) Provide species list for LIS based on LISTS sampling, noting the presence of additional species from other sampling conducted by the Marine Fisheries Programs.
- 5) Provide fishery independent survey data to cooperative state researchers or agencies, such as the National Marine Fisheries Service (NMFS), Atlantic States Marine Fisheries Commission (ASMFC), New England and Mid-Atlantic Fishery Management Councils (NEFMC and MAFMC, respectively), and researchers associated with state or local universities

#### 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 (LIS). A stratified-random design based on bottom type and depth interval was chosen and 40 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), plus rarely occurring species. Beginning in 2014, lengths were collected from all finfish species on each tow. In addition, at various times during the time-series, age structures were collected from bluefish, menhaden, tautog, scup, winter flounder, weakfish or summer flounder. 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 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 mesh codend (Table 5.1). 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  $1.85 \times 3.7 \text{ km}$  (1 x 2 nautical miles) sites (Figure 5.1), 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  $68 \text{ km}^2$  (20 square nautical miles), with a minimum of two sites sampled per stratum (Table 5.2, Gottschall et al. 2000). Discrete stratum areas smaller than a sample site are not sampled.

## **Sampling Procedures**

Prior to each tow, temperature ( $^{\circ}$ C) and salinity (ppt), conductivity ( $\mu$ S/m) and dissolved oxygen (mg/l) were measured using an YSI model EXO2 data sonde. 2017 was the first year the EXO2 sonde was used by LISTS, previously a hand-held YSI meter was used. The sonde records numerous water quality parameters while descending from surface to bottom and values are subsequently extracted at the depths most closely matching the 1m below surface and 0.5m above bottom depths used previously in the LISTS timeseries.

The survey's otter trawl was 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 was placed onto a sorting table and sorted by species. Finfish, lobsters and squid were 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 were 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 5.4.

For all species where length was collected, electronic measuring boards were used to capture lengths to the millimeter. For finfish, either fork or total length was collected. Lobsters were measured to 0.1 mm carapace length. Squid were measured using the mantle length (mm), horseshoe crab measurements were taken using prosomal width (mm) and whelk (knobbed and channeled) shell widths were measured in millimeters. For most analysis purposes, lengths were put into centimeter grouped bins (e.g. measurements from 100 mm to 109 mm were processed as 10 cm).

The number of individuals measured from each tow varied by species, the size of the catch and range of lengths (Table 5.3). If a species was subsampled, the length frequency of the catch was determined by multiplying the proportion of measured individuals in each centimeter interval by the total number of individuals caught. Some species were sorted and subsampled by length group so that, for example, all large individuals were measured and a subsample of small (often young-of-year) specimens was measured. All individuals not measured in a length group were counted. The length frequency of each length group was estimated as described above, i.e. the proportion of individuals in each centimeter interval of the subsample was expanded to determine the total number of individuals caught in the length group. The estimated length frequencies of each size group were then appended to complete the length frequency for that species. This procedure was often used with catches of bluefish, scup, and weakfish, which were usually dominated by young-of-year or discrete age/length classes.

Bluefish, menhaden, scup, summer flounder, tautog and winter flounder were sampled for age determination (Table 5.3):

- ♦ Bluefish: 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). However, bluefish catches are hard to predict so the number of age samples varied greatly; sometimes more than the target number was collected solely from LISTS samples but other times LISTS samples needed to be augmented with samples from the recreational fishery to meet the target number. Sufficient numbers of bluefish age samples from LIS would also make it possible to develop an LIS-specific age key, so bluefish age samples were sometimes still collected even after the target number was reached.
- ♦ Scup: Subsamples of scup, stratified by length group, were measured to the nearest mm (fork length) and scales from each individual were taken for ageing. Scup scales were removed posterior to the pectoral fin and ventral to the lateral line. The scales were pressed onto plastic laminate with an Ann Arbor roller press to obtain an impression of the scale, which was then viewed with a microfiche reader at 21x.
- ♦ Summer Flounder: Scales were taken from a subsample of summer flounder stratified by length group of fish less than 60 cm. Scales were taken from all summer flounder greater than 59 cm. At least 15 scales were removed from the caudal peduncle area. These scales were pressed and aged to supplement the NMFS age key and were also included in the formulation of the LISTS summer flounder catch-at-age matrix (see below).
- ♦ Winter Flounder: Subsamples of winter flounder, stratified by length group and area (as listed in bottom of Table 5.3), were measured to the millimeter (total length), weighed (kg) and sexed. Weight was then converted to grams. Their maturity stage was determined (NMFS 1989), and otoliths were collected for age determination later.
- ♦ Menhaden: Amendment 2 of the ASMFC Atlantic menhaden Fishery Management Plan introduced a requirement of 10 fish for age samples per 300 metric tons landed in the commercial bait fishery to support improved stock assessments. Connecticut has such a small menhaden commercial fishery that one 10-fish sample would suffice. The same

size/age component of the menhaden population taken in the commercial fishery was available to LISTS so menhaden scales were collected during LISTS sampling; 190 menhaden age samples were taken in 2022. LISTS age samples of menhaden provide one of the few fishery independent sources of age data for adult menhaden in northern waters and are therefore valuable for stock assessments. Menhaden fork length (mm) were recorded, and scales were taken about mid-body (lateral line) and below the insertion of the dorsal fin.

Tautog: The ASMFC Tautog Fishery Management Plan (FMP) requires CT DEEP to collect a minimum of 200 age structures per year. Due to the low numbers of tautog caught in LISTS in recent years (less than 250 fish), age structures were collected from most tautog taken in LISTS. Tautog were processed onboard in 2022, where their total length (mm), sex, and total weight (kg) were recorded, and age structures were collected. Weight was converted to grams in post-processing. LISTS has used opercula to age tautog since 1984 (Cooper 1967). The ASMFC Tautog Technical Committee requested that states collect paired age structures for comparison studies each year; therefore, LISTS began collecting tautog otoliths in addition to opercula in 2012. Results from an ASMFC Tautog Ageing Workshop in May 2012 indicated there was no clear benefit to switching from opercula to otoliths for Connecticut, so otoliths were collected (minimum of 50 paired structures per ASMFC) and archived for potential use in the future. Subsequent to the 2012 workshop, a study conducted by Massachusetts Division of Marine Fisheries showed pelvic fin spine sections may be a better structure (easier to read and non-lethal to collect) for ageing tautog (Elzey and Trull 2016). In 2017, LISTS started to collect tautog pelvic fin spines, archiving them for future ageing work and ceased the collection of otoliths.

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 young-of-year listed if present in the year's catch but are not quantified (Table 5.13, Appendix 5.4). 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 5.2).

Although endangered species research and monitoring work is not eligible for Sport Fish Restoration funding, there is the possibility of encountering protected species during the course of conducting the work authorized by this funding for eligible species. Aside from the handling and processing of incidental catches of protected species mandated by the NOAA Greater Atlantic Regional Fisheries Office (GARFO) Protected Species Division, no additional project resources are used on protected species work. Sampling procedures have been modified in recent years to minimize the likelihood of injury to Atlantic Sturgeon (a Federally listed endangered species since 2012). 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 27 m, gear retrieval speed is reduced to

decrease the stress induced by rapid changes in pressure. When an endangered species is detected in the net, it is removed as quickly and carefully as possible. Subsequent handling and processing of endangered species adhere to the Reasonable and Prudent Measures as well as the Terms and Conditions specified in the ESA Section 7 Biological Opinion's Incidental Take Statement issued by NOAA for CT in January 2013 (<a href="http://www.greateratlantic.fisheries.noaa.gov/protected/section7/bo/actbiops/">http://www.greateratlantic.fisheries.noaa.gov/protected/section7/bo/actbiops/</a> usfws state fisheries surveys 2013.pdf). Additionally, handling and processing of sturgeon 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., <a href="http://www.nmfs.noaa.gov/pr/pdfs/species/kahn mohead 2010.pdf">http://www.nmfs.noaa.gov/pr/pdfs/species/kahn mohead 2010.pdf</a>). Forty-seven (47) Atlantic Sturgeon were captured on six (6) of the 167 tows completed in 2022. One other protected species, loggerhead turtle, was encountered on one tow in September of 2022. All interactions with endangered species are detailed in Appendix 5.5.

## **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) was calculated for the common finfish and invertebrate species. To calculate the geometric mean, the numbers and weight per tow were logged (log<sub>e</sub>) to normalize the highly skewed catch frequencies typical of trawl surveys:

Transformed variable = ln(variable+1).

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

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

The geometric mean count per tow was calculated from 1984 - 2022 for 38 finfish species, lobster, and long-finned squid (1986 - 2022). 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 in the time-series (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, bluefish, 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 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 and bluefish was

derived using both ASMFC provided coastal keys for earlier years and LISTS keys since 2013. 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 had been converted to age, the proportion at age was 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 weakfish by using observed modes in the LISTS length frequencies to separate the two groups. Prior to 2019, a recruitment index was similarly calculated for bluefish using modal length groups, however, the ASMFC bluefish Technical Committee has accepted and has used LISTS full index-at-age for assessment purposes since 2013. The bluefish index-at-age methodology is now presented and described below.

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

- Bluefish. In 2012 a coast wide biological sampling program was initiated through ASMFC Addendum 1 of the bluefish management plan. This sampling program was initiated to address the lack of bluefish samples being collected by coastal states for use in the bluefish assessment. This was particularly a problem for the Northern States where few ages were available and contributing to the coastal key. Connecticut collected and aged bluefish samples in 1984, however few samples were collected annually after the initial Survey year. Since robust age-length keys were not available for the Long Island Sound region, until 2013, bluefish age keys for 1985-2012 were provided by the ASMFC Bluefish Technical Committee as combined coastwide annual keys for use to calculate indices-atage for those earlier years. Currently the 1984 and the 2013-2022 index-at-age uses annual fall (Sept-Oct) age keys generated by CT LISTS ageing program. In 1984, 294 samples (scales) were aged and contributed to the key, along with 1,874 samples (otoliths) from the 2013-2022 period. In 2022, age samples were taken from 129 bluefish: three (3) from the spring period and 126 from the fall period.
- ♦ Scup. Scales from 822 scup were collected in 2022; 493 from the spring cruise and 329 from the fall cruise. An index-at-age matrix was developed for 1984-2022 using spring (May-June only) and fall (September-October) LISTS data (Table 5.21). April data was omitted since few scup are taken during the month. A total of 17,816 scup aged between 1984 and 2022 were used to make year and season specific age-length keys (1 cm intervals). The 2021 scup aging was not complete in last year's report, and a pooled two-year key was used to get a preliminary index-at-age. The 2021 samples have now been aged, therefore both 2021 and 2022 index-at-age are presented in this report. Prior to 2022, 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 preceding and following the "run" year. For the terminal year, only two years were used for the pooled key. Indices-at-age were computed for both spring and fall each year. Since few scup older than age 9 are taken (less than 4% in any given year), an age 10+ group was calculated by summing indices for ages 10 and

up. To represent the full adult portion of the population an age 2+ index was 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 5.22), the average of the Chesapeake Bay and Hudson River striped bass von Bertalanffy parameters (L<sub>max</sub> = 49.9 in, K = 0.13, t₀ = 0.16, Vic Crecco, pers. comm.) were used in the rearranged von Bertalanffy equation:

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

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 2022 by apportioning the spring index by the percentage of fish at each age (Table 5.23).

- ♦ Summer flounder. Since the 2017 fall cruise, LISTS has collected representative scale samples from all size summer flounder to ensure a robust Connecticut age-key once it became known that there would be no samples from NMFS for the fall 2017 period. Prior to the fall of 2017, 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. Only summer flounder greater than or equal to 60cm were sampled from LISTS for age structures prior to the fall of 2017. The NMFS keys were supplemented with fish caught and aged by LISTS (60 cm and over). LISTS also provides the age data from these fish (> 60cm) to NMFS. Currently, the age-key is constructed using both LISTS (full size structure) and NMFS age data (Table 5.24). In 2022, 450 summer flounder were sampled: 204 from the spring (18 − 67 cm) and 246 from the fall (19 − 70 cm). 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).
- ◆ Tautog. Operculum from 296 tautog were collected in 2022; 244 from the spring cruise and 52 from the fall cruise. Ageing is not yet complete for 2021 and 2022. An index-at-age matrix was developed for 1984-2019 (Table 5.25). Annual keys were calculated by combining all months in a particular year since so few tautog are captured by LISTS. The 2021 and 2022 index-at-age matrices will be updated upon completion of the ageing, validation, and QA/QC.
- ♦ Weakfish. Age 0 and age 1+ indices were calculated for both spring (1984 2022) and fall surveys (1984 2009, 2011 2022) (Table 5.26). 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 5.57), 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. Otoliths from 243 winter flounder were collected in 2022 from the spring survey. An index-at-age matrix was developed for 1984-2022 using April and May

LISTS data (Table 5.27). June data were not used for the winter flounder matrix 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 25,218 winter flounder aged between 1984 and 2022 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 an age if the year specific key were not available for the particular length bin.

Each flounder aged as described above was also assessed for maturity stage by sex following Burnett (1989). 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 15°C (60°F), tend to spawn at the lower end of their temperature tolerance range, and are more abundant north of Long Island Sound than south of New York. Species in the warm temperate group prefer warmer temperatures (11-22°C or 50-77°F), 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 5.6). 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 or 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 scup, bluefish, and weakfish (Figure 5.16). 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 2022 Spring and Fall Surveys

In 2022, there were no longer COVID-19 policies in place limiting time and staff on the *R/V John Dempsey*. Given some uncertainty in time limitations and staff, the sampling regime put in place in 2021 was continued in 2022. Forty sites were randomly selected using the standard weighting scheme based on strata. Then thirty-three (33) of the forty (40) were randomly selected, maintaining the minimum of 2 sites per stratum. The remaining seven (7) sites each month were considered "optional" and would be sampled if there was sufficient time left in the month after completing 33 samples. In April 2022, 33 of the 40 sites were completed due to time and staffing constraints. With the addition of seasonal resource assistants in May, 40 sites were completed. The June cruise was cut short (14 sites sampled) due to the *R/V John Dempsey* having mechanical problems along with a generator replacement. Both the September and October cruises were completed, each having the standard 40 sites sampled.

As noted in previous reports, the LISTS database of counts, weights and lengths were all collected electronically. This marks the fourth year in which the system was successfully used to capture all records electronically. Paper records were only used for ancillary notes (also known as metadata) and as a backup. See Job 6 in this report for details on the LISTS transition to electronic data acquisition.

April sampling began on April 14 and ended on May 2, finishing 33 sites in nine (9) days. May sampling started on May 11 and continued until May 26, completing 40 sites in eleven (11) days underway. June sampling began on June 8 and ended on June 14, taking four (4) days underway to complete the 14 sites. The September Survey commenced on September 8 and concluded on September 27, completing 40 tows in twelve (12) days underway. The October Survey commenced on October 14 and concluded on October 28, completing 40 tows in ten (10) days underway, not including two (2) days lost to inclement weather. In total, 167 LISTS sites were completed in 46 days underway during the spring and fall 2022 surveys (Table 5.4), not including transit or changeover days (Water Quality survey to LISTS gear change).

Maps showing the sites selected versus the sites sampled during each month of sampling are provided in Figure 5.2 (April), Figure 5.3 (May), Figure 5.4 (June), Figure 5.5 (September) and Figure 5.6 (October). Within each figure the red bordered sites are the sites selected for the month, the green are the "optional 7 sites" 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 5.5 (April), Table 5.6 (May), Table 5.7 (June), Table 5.8 (September) and Table 5.9 (October). These tables provide date of sample, time, tow duration, latitude/longitude, average tow speed, distance towed and approximate area swept for each tow. Surface, bottom temperature and salinity data were collected and summarized in each months' respective table.

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 of tow time 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 survey is summarized in Table 5.10.

## Post-processing QA/QC:

Since initiating a system to electronically record data while sampling in 2018, the procedures for error checking have evolved from looking for keypunch errors (dual entry), or errors occurring from calculations from subsampling, to new post processing procedures to handle changes that may be needed after the sample is electronically recorded. Any changes needed for a particular sample are subsequently captured in a metadata file and all original databases are maintained in a daily backup stored in a monthly folder. This maintains all original files and timestamps if needed during post-processing or needed in the future. There are two main onboard datasheets for handwritten notes taken during each sample. Appropriate notes are cataloged in one of the two deck sheets in the cases where either data needs to be changed or addressed in the database. Notes taken on these datasheets to address unusual events that have occurred during the tow such as gear interactions (not cataloged in the comments of the software program), unusual catches, or follow-up notes to help with analysis afterwards. Sometimes counts and other notes are recorded to confirm and check electronically recorded records. Final age sample tallies are recorded by species on one of the handwritten summary sheets as well for cataloging samples after being delivered to the lab each day.

Post processing files are created for each cruise by combining several Access databases if needed. Most changes as described above occur on the post processed file prior to making SAS datasets. Intermediate Excel files created from certain Access table level data are also utilized to help with post processing and error checking. A final annual SAS dataset is created and stored in the same format as in prior years so that users can continue to utilize time series analysis on all data. Furthermore, some of the same error checking SAS jobs that look for outliers and calculations of predicted weight per sample (by species) can be run to confirm recorded data is correctly cataloged. These procedures ensure that all data collected while onboard and all necessary changes needed are maintained with a record trail and can be accessed in the future (record and file level timestamps and through the use of metadata files).

## 2022 sampling intensity/planning:

In 2021, the still present concern over the COVID-19 pandemic limited the crew for LISTS to 5 permanent staff and no seasonal resource assistants for the spring months. Given these constraints, plans were enacted in order to reduce the sampling to a manageable level with the reduction in staff. Two methods were considered to decrease sampling intensity, decreasing tow duration, or decreasing the number of tows done per month. It was decided that a decrease in the number of tows done per month was preferable over decreasing tow duration (Gottschall et al. 2021). By 2022, concerns over the pandemic had sufficiently diminished and the standard crew size of 6-8 staff was allowed aboard the *R/V John Dempsey*. The hope going into the year was that the regular 40 sites a month could be completed. However, since this was the first time in two

years that standard sampling was planned, the reduced sampling plan was still implemented as a backup in case unforeseen issues arise. For each month, forty sites were randomly selected using the standard weighting scheme based on strata. Then thirty-three (33) of the forty (40) were randomly selected, maintaining the minimum of 2 sites per stratum. The remaining seven (7) each month were considered "optional" and would be sampled if there was sufficient time left in the month after completing 33 samples. In April, there were no seasonal resource assistants employed and therefore staffing and timing limitations prevented the full 40 sites from being completed. Only the selected thirty-three (33) sites were completed during April (Figure 5.2). In June, mechanical failure of the *R/V Dempsey* generator forced a premature end to the cruise, and only fourteen (14) sites were completed (Figure 5.4). All other months (May, September, and October) had the full complement of 40 sites completed (Figures 5.3, 5.5 and 5.6).

The reduced sampling procedure was a temporary measure to get through the constraints given by the COVID-19 pandemic safety restrictions. Barring any more complications with staffing or timing restrictions, the standard (pre-pandemic) sampling intensity is expected to be returned in the 2023 season.

### **Cooperative Sample and Data Collection**

As resources permit, LISTS staff participate 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 such as the National Marine Fisheries Service (NMFS), Atlantic States Marine Fisheries Commission (ASMFC), New England and Mid-Atlantic Councils (Councils), and researchers or graduate students associated with state or local universities. In recent years, many requests for samples have also come from high schools, aquariums, or other educational organizations needing finfish and invertebrates for teaching purposes. Additionally, Fisheries Division staff often have sample or data requests for media or other public outreach events (see Job 11 of this report). In 2022, a significant amount of project staff time went toward fulfilling large data requests for NOAA/NMFS, ASMFC, the New England and Mid-Atlantic Councils, several state agencies, Universities, and NGO's. More than forty requests were fulfilled to these agencies and others in 2022. Samples were provided to NY Department of Environmental Conservation, NMFS, CT Health Department, Yale University, and the University of Connecticut.

## **Number of species identified**

LISTS observed 55 finfish species in 2022 (table 5.11). A cownose ray (*Rhinoptera bonasus*) was encountered by LISTS for the first time during the 2022 September cruise. There was a single individual that weighed 2.60 kg and measured 77 cm from the snout to the end of the tail. From 1984 to 2022, LISTS has identified 113 finfish species (appendix 5.1), averaging 57 species per year with a range of 43 to 70 species (figure 5.7). In addition, a total of 39 types of invertebrates were collected in 2022 (table 5.12). Most invertebrates are identified to species, however, in some cases, invertebrates were identified to genus or a higher-level taxon.

### **Total Catch**

Appendix 5.4 presents a time series (1984-2022) of the finfish species collected each year and their respective rank by numbers. Annual total biomass of invertebrates is also included in this appendix (1992-2022), ranked by weight (kg). A total of 163,951 finfish weighing 19,340.5

kg were sampled in 2022 (Table 5.13). In the spring of 2022, a total of 43,695 finfish weighing 10,791.6 kg were sampled and a total of 120,255 finfish weighing 8,548.9 kg were sampled in fall of 2022 (Table 5.14). A total of 1,791.1kg of invertebrates were taken in 2022 (Table 5.13). The total biomass of invertebrate catch taken in the spring of 2022 was 493.2 kg while a total of 1,297.9 kg of invertebrates were taken in fall (Table 5.15).

## **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 black sea bass (Table 5.37-5.38), scup (Table 5.51-5.52), and summer flounder (Table 5.55-5.56).

## Length frequencies were prepared for 22 species:

alewife	spring and fall	1989 - 2022	Table 5.28;
American shad	spring and fall	1989 - 2022	Table 5.29;
American lobster	spring and fall (M&F)	1984 - 2022	Table 5.30-Table 5.34;
Atlantic herring	spring and fall	1989 - 2022	Table 5.35;
Atlantic menhaden	spring and fall	1996 - 2022	Table 5.36;
black sea bass	spring and fall	1987 - 2022	Table 5.37, Table 5.38
blueback herring	spring and fall	1989 - 2022	Table 5.39;
bluefish	spring and fall	1984 - 2022	Table 5.40, Table 5.41;
butterfish	spring and fall	1986 - 1990, 1992 - 2022	Table 5.42;
clearnose skate	spring and fall	1993 - 2022	Table 5.43, Table 5.44;
fourspot flounder	spring and fall	1989 - 1990, 1996 - 2022	Table 5.45;
hickory shad	spring and fall	1991 - 2022	Table 5.46;
horseshoe crab	spring and fall (M&F)	1998 - 2022	Table 5.47, Table 5.48;
long-finned squid	spring and fall	1986 - 1990, 1992 - 2022	Table 5.49, Table 5.50;
scup	spring and fall	1984 - 2022	Table 5.51, Table 5.52;
striped bass	spring and fall	1984 - 2022	Table 5.53, Table 5.54;
summer flounder	spring and fall	1984 - 2022	Table 5.55, Table 5.56;
tautog	spring and fall	1984 - 2022	Table 5.57, Table 5.58;
weakfish	spring and fall	1984 - 2022	Table 5.59, Table 5.60;
windowpane flounder	spring and fall	1989, 1990, 1994 - 2022	Table 5.61, Table 5.62;
winter flounder	April-May and fall	1984 - 2022	Table 5.63, Table 5.64;
winter skate	spring and fall	1995 - 2022	Table 5.65.

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**

Relative indices of abundance, or the geometric mean counts per tow, were calculated from 1984-2022 for 38 finfish species plus lobster and long-finned squid (squid since 1986). All spring

(April-June) and fall (September-October) data were used to compute the abundance indices presented in Tables 5.16 (spring) and 5.17 (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 5.18 and 5.19, respectively). Age specific indices of abundance were calculated for selected important recreational species, including bluefish, scup, striped bass, summer flounder, and winter flounder (see below). Weakfish recruitment indices were calculated using modal analyses of the length frequencies. For each of the 38 finfish species, plots including catch per tow in numbers and biomass in kilograms are illustrated in Figures 5.8 through 5.13. These figures also include plots of each of the age specific indices and recruitment indices mentioned above. Figure 5.14 provides plots of abundance (biomass) indices for crabs (lady, rock, spider; 1992-2022), American lobster (1984-2022), horseshoe crab (1992-2022), and long-finned squid (1986-2022).

In the spring, a few species to note are windowpane flounder and little skate, which have both had a declining trend in relative abundance in recent years. For each, 2022 had the minimum relative index of abundance through the entire time series (1.12 and 0.14 count/tow respectively). Long-finned squid also saw a large drop in relative abundance in the spring compared to the 2021 spring season (2.04 and 8.81 count/tow respectively). During the fall, black seabass had a large increase in abundance compared to 2021, and the index was the maximum seen in the fall throughout the time series (2.50 count/tow). Northern sea robin also had its maximum fall abundance of the time series in 2022 (2.70 count/tow). Contrary to the spring trend, long-finned squid had a substantial increase in abundance in the fall of 2022 compared to fall 2021 (129.67 and 79.43 count/tow respectively).

## **Indices of Abundance: Important Recreational Species**

Spring and fall abundance indices are presented in Tables 5.16-5.17. Indices of abundance at age were also calculated for seven important recreational species: bluefish (Table 5.20), scup (Table 5.21), striped bass (Table 5.22 age frequency, Table 5.23 indices at age), summer flounder (Table 5.24), tautog (Table 5.25), weakfish (Table 5.26) and winter flounder (Table 5.27). 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. Summer flounder, scup and weakfish indices-at-age are calculated and presented separately for each season. Modal distributions were used to calculate recruitment indices for weakfish.

## **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 1984-2022 as an indicator of annual biological diversity or species richness. Trends in these indicators were tested for statistical significance by regression analysis. Results (Figure 5.18) show that the average number of warm temperate species captured/tow in spring and fall cruises has increased (F=66.4 and 141.2 respectively, p<0.0001); while the average number of cold temperate species has decreased, especially in spring (F=96.1, p<0.0001) but also in fall cruises (F=48.1, p<0.0001). Essentially, over the past couple decades, the finfish community structure in LIS has shifted away from the historical, two distinct winter-spring and summer-fall species assemblages and more

toward a single spring-summer-fall species assemblage better adapted to the warming bottom water temperatures (Howell and Auster 2012).

#### **MODIFICATIONS**

In late 2022, ASMFC notified CTDEEP that based on the commercial and recreational landings of weakfish, it was expected that we would not be *de minimus* in the coming year (2023). We are therefore required to collect 3 otolith samples per mt of total landings of weakfish. Since there likely is little to no opportunity to collect samples from a fishery dependent source, we plan to collect otolith samples from weakfish collected on LISTS. These samples will be representative of the length range encountered on the survey, with an expected annual total of somewhere between 50-100 samples.

As described above in the methods section of this report, tautog is aged in Connecticut using opercula, not otoliths or fin spines. After a ASMFC ageing workshop in 2012, it was recommended that states collected paired structures with opercula for potential future use. From fall 2012 through 2016 LISTS collected otoliths as the paired structure to compliment the opercula collection. From 2017 to 2022 pelvic fin spines were collected as the paired structure with opercula. The collection of opercula and fin spines from Tautog will continue for the foreseeable future, although there are no plans at this time to change the aging structure from opercula.

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# TABLES 5.1 - 5.27 LISTS

Table 5.1. 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
<b>Ground Wires</b>	18.2 m long, 6x7 wire, 9.5 mm diameter
Bridle Wires:	top legs 27.4 m long, 6x7 wire, 6.4 mm diameter
<b>Bottom Legs</b>	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 5.2. The number of sites scheduled for sampling each month within the 12 depth-bottom type strata.

	•	Depth Interval (m)											
<b>Bottom type</b>	0 - 9.0	9.1 - 18.2	18.3 - 27.3	27.4+	Totals								
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 5.3. Length and age data collected in 2022.

In addition to the species listed below, other rarely occurring species (typically totaling less than 30 fish/year each) were measured. During 2022, 23 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 (mm)	All	min of 15 / tow
American lobster	CL (0.1 mm)	All	min of 50 / tow
American shad	FL (mm)	All	min of 15 / tow
anchovy, bay	FL (mm)	All	min of 10 / tow
Atlantic herring	FL (mm)	All	min of 15 YOY and min of 30 adults / tow
Atlantic menhaden	FL (mm)	All	min of 15 / tow
Atlantic sturgeon	FL (mm)	All	All
Blueback herring	FL (mm)	All	min of 15 / tow
Bluefish	FL (mm)	All	min of 30 YOY / tow, all adults
black sea bass	TL (mm)	All	All
butterfish	FL (mm)	All	min of 15 YOY and 15 adults / tow
cunner	TL (mm)	All	All
dogfish, smooth	FL (mm)	All	All
dogfish, spiny	FL (mm)	All	All
fourspot flounder	TL (mm)	All	min of 30 / tow
hake, red	TL (mm)	All	min of 30 / tow
hake, silver (whiting)	TL (mm)	All	min of 30 / tow
hake, spotted	TL (mm)	All	min of 30 / tow
hickory shad	FL (mm)	All	All
hogchoker	TL (mm)	All	min of 30 / tow
horseshoe crab	PW (mm)	All	All
northern searobin	FL (mm)	All	min of 30 / tow
moonfish	FL (mm)	All	min of 10 / tow
smallmouth flounder	TL (mm)	All	min of 10 / tow
skate, clearnose	TL (mm)	All	min of 30 / tow
skate, little	TL (mm)	All	min of 30 / tow
skate, winter	TL (mm)	All	All
striped bass	FL (mm)	All	All
striped searobin	FL (mm)	All	min of 30 / tow
scup	FL (mm)	All	min of 15 YOY and 30 / mode for age 1+
long-finned squid	ML (mm)	All	min of 30 / tow
summer flounder	FL (mm)	All	All
tautog	TL (mm)	All	All
weakfish	FL (mm)	All	min of 15 YOY / tow, all adults
whelk, channeled	PW (mm)	All	All
whelk, knobbed	PW (mm)	All	All
windowpane flounder	TL (mm)	All	min of 50 / tow
winter flounder	TL (mm)	All	min of 100 / tow

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 50 scale samples collected from full
		length distribution.
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: for fish $<$ 60 cm, scales collected from 3 fish $/$ cm
tautog	opercular bones	Collected from a minimum of 200 fish/year.
	otoliths or pelvic fin rays	collected from minimum 50 fish/year
weakfish	scales / otoliths	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 5.4. 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. In 2017, commencement of the spring survey was delayed until late-May due to repairs to the research vessel. In 2018, April sampling was curtailed due to delays in getting the Halon fire suppression system inspected/repaired on the research vessel. No sampling was conducted in 2020 due to COVID and although sampling resumed in 2021 crew size limitations inhibited the full 40 tows being conducted each month. Thirty-three tows were selected with the same sampling intensity (stratum selection) as a typical forty tow cruise and an additional 7 samples held if time permitted (October 2021). This reduced sampling regime was continued in 2022 cruise was cut short due to mechanical issues with the R/V John Dempsey.

																				Year																				
Cruise	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	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
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	40	40	36	-	12	40	-	-	33	
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	40	40	40	24	40	40	-	33	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	40	40	40	40	40	40	-	33	14	
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	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	39	40	40	40	40	40	-	33	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	199	200	196	144	172	200	0	139	167	7,81

Table 5.5. Station information for LISTS April 2022.

Standard LISTS tows in the spring begin with SP and fall begins with FA. Number of samples was reduced to 33 due to staffing and time limitations (see 2022 sampling intensity/planning). Latitude (N) and Longitude (W) are displayed in decimal degrees. Area swept is estimated by assuming the effective sweep is 2/3rds of the footrope length.

Sample		Site	Bottom	Depth	Time	Duration			S_Temp	S_Salinity	B_Temp	B_Salinity	Avg Speed	Distance	Area Swept
Number	Date	Number	Туре	Interval	Start	(min)	Latitude	Longitude	(sfc, C)	(sfc,ppt)	(btm, C)	(btm, ppt)	(knots)	(nm)	(sq.nm)
SP2022001	4/14/2022	02-29	Т	2	12:17	30	41.0478	-72.5591	8.6	28.5	6.7	30.2	2.6	1.30399	0.00658
SP2022002	4/14/2022	04-29	Т	3	14:20	30	41.0811	-72.5427	8.4	28.5	6.6	30.3	2.3	1.1433	0.00577
SP2022003	4/18/2022	08-31	S	4	7:54	32	41.1426	-72.4476	7.6	30.1	7.6	30.2	3.4	1.83906	0.00929
SP2022004	4/18/2022	05-27	Т	3	10:51	30	41.0893	-72.6713	7.4	29.2	7.4	29.4	2.2	1.0799	0.00545
SP2022005	4/18/2022	05-28	S	3	12:47	30	41.0872	-72.608	7.7	29.9	7.6	29.9	2.4	1.21507	0.00614
SP2022006	4/18/2022	09-31	S	4	14:28	30	41.1498	-72.5045	8	30.1	7.7	30.4	3.2	1.59956	0.00808
SP2022007	4/21/2022	08-28	S	3	8:36	30	41.1476	-72.5703	7.6	29.3	7.7	29.5	2.3	1.13081	0.00571
SP2022008	4/21/2022	07-25	Т	4	10:06	30	41.1295	-72.699	7.6	29.2	7.9	29.9	3.2	1.58556	0.00801
SP2022009	4/21/2022	03-24	M	4	11:57	30	41.0582	-72.7543	7.5	29.2	7.4	29.4	3.2	1.60755	0.00812
SP2022010	4/21/2022	05-24	Т	4	13:38	30	41.0927	-72.7913	7.7	29.3	7.5	29.5	2.5	1.23976	0.00626
SP2022011	4/21/2022	10-27	Т	4	15:17	30	41.1707	-72.6996	8.2	29.4	7.8	29.9	2.6	1.3102	0.00662
SP2022012	4/22/2022	14-33	S	2	7:01	30	41.2473	-72.3452	8.2	25.5	8.1	30	1.2	0.61915	0.00313
SP2022013	4/22/2022	13-28	Т	2	9:20	30	41.2388	-72.5826	8.5	29.3	8.4	29.3	2.6	1.29795	0.00655
SP2022014	4/22/2022	14-27	Т	1	10:35	30	41.236	-72.6611	8.6	29.6	8.5	29.6	3	1.48298	0.00749
SP2022015	4/22/2022	13-33	S	1	12:53	30	41.2296	-72.4036	9.4	16.2	8.3	28.8	1.8	0.90834	0.00459
SP2022016	4/25/2022	58-23	S	1	9:32	30	40.9775	-72.777	8.9	28.8	7.7	29	3	1.48446	0.0075
SP2022017	4/25/2022	59-20	M	2	10:47	30	40.9932	-72.899	9	28.6	7.3	29.3	2.7	1.33326	0.00673
SP2022018	4/25/2022	00-18	M	3	12:04	30	41.0107	-73.0153	8.9	28.6	7.4	29.4	2.7	1.3361	0.00675
SP2022019	4/25/2022	06-21	M	3	13:47	30	41.0973	-72.9121	9.1	29.2	8	29.5	3	1.49607	0.00755
SP2022020	4/25/2022	08-19	Т	2	15:14	30	41.147	-72.9668	9	29.2	8.5	29.2	3.5	1.75542	0.00886
SP2022021	4/26/2022	02-15	M	4	8:39	30	41.0417	-73.121	8.6	28.6	7.4	29.4	3.1	1.52822	0.00772
SP2022022	4/26/2022	58-12	M	3	10:03	30	40.9842	-73.2538	9.2	28.3	7.2	28.8	3	1.50891	0.00762
SP2022023	4/26/2022	57-09	S	2	11:29	30	40.9532	-73.4063	9.9	28	8.5	28.2	2.8	1.40345	0.00709
SP2022024	4/26/2022	56-12	Т	2	13:43	12	40.9452	-73.3008	9	28.3	8.6	28.3	2.8	0.5614	0.00283
SP2022025	4/26/2022	57-14	Т	3	14:57	30	40.9583	-73.214	9.4	28.3	8.1	28.4	2.7	1.36742	0.00691
SP2022026	4/27/2022	00-14	M	4	9:03	30	41.0167	-73.1841	9	28.4	7.4	29.2	2.5	1.27384	0.00643
SP2022027	4/27/2022	01-12	M	4	11:06	30	41.0165	-73.2811	9	28.4	7.1	29.1	3	1.50309	0.00759
SP2022028	4/27/2022	01-10	Т	3	13:50	30	41.0218	-73.371	9.3	27.6	7.3	28.8	3.4	1.68681	0.00852
SP2022029	4/28/2022	11-19	M	2	8:48	30	41.1893	-73.002	9	29	9	29	2.8	1.40615	0.0071
SP2022030	4/28/2022	13-19	M	1	11:04	30	41.2308	-72.9705	9.1	29.2	9.1	29.3	2.7	1.33775	0.00676
SP2022031	4/30/2022	04-13	M	3	8:36	30	41.0721	-73.2068	9.6	28.4	8.4	28.6	3.6	1.78335	0.00901
SP2022032	4/30/2022	07-14	Т	1	10:01	30	41.1212	-73.1881	9.4	27.6	8.5	28.5	2.5	1.23313	0.00623
SP2022033	4/30/2022	13-20	M	1	12:19	30	41.2278	-72.9718	10.2	28.9	9.9	29	2.5	1.26925	0.00641

Table 5.6. Station information for LISTS May 2022.

Standard LISTS tows in the spring begin with SP and fall begins with FA. Latitude (N) and Longitude (W) are displayed in decimal degrees. Area swept is estimated by assuming the effective sweep is 2/3rds of the footrope length.

Sample		Site	Bottom	Depth	Time	Duration			S Temp	S_Salinity	B_Temp	B Salinity	Avg Speed	Distance	Area Swept
Number	Date	Number	Type	Interval	Start	(min)	Latitude	Longitude	(sfc, C)	(sfc,ppt)	(btm, C)	(btm, ppt)	(knots)	(nm)	(sq.nm)
SP2022034	5/11/2022	13-32	S	1	7:29	30	41.2305	-72.4335	9.5	27.4	9.4	28.8	3.1	1.55188	0.00784
SP2022035	5/11/2022	12-28	Т	3	8:58	30	41.213	-72.5511	9.6	27.4	9.6	27.5	2.6	1.29867	0.00656
SP2022036	5/11/2022	13-23	M	2	11:19	30	41.2302	-72.8	10.7	27.3	10.3	27.3	2.8	1.39519	0.00705
SP2022037	5/11/2022	12-27	Т	3	13:44	30	41.2007	-72.6456	11.2	27.2	10	27.2	3	1.49152	0.00753
SP2022038	5/13/2022	08-31	S	4	7:47	20	41.1426	-72.4478	10.1	27.5	9.6	28.2	3.8	1.28008	0.00646
SP2022039	5/13/2022	03-30	S	1	9:24	30	41.0446	-72.5255	10.7	27.5	10.6	27.5	3.5	1.73298	0.00875
SP2022040	5/13/2022	08-28	S	3	11:13	30	41.1487	-72.56	10	27.5	9.9	27.7	2.1	1.06471	0.00538
SP2022041	5/13/2022	09-31	S	4	12:39	30	41.1473	-72.5105	10.6	27.6	9.7	27.9	3.7	1.83069	0.00924
SP2022042	5/16/2022	07-27	S	3	8:25	30	41.1281	-72.6166	13.1	26.9	10.3	27.2	3.7	1.87373	0.00946
SP2022043	5/16/2022	04-22	M	4	10:50	30	41.0711	-72.8938	14.6	26.8	9.3	27.1	2.5	1.25144	0.00632
SP2022044	5/16/2022	05-25	Т	4	12:28	30	41.0875	-72.7601	13.1	27.1	9.9	27.3	3	1.48424	0.00749
SP2022045	5/16/2022	08-25	Т	4	14:23	30	41.1457	-72.7168	13	27.1	10.3	27.2	2.2	1.12292	0.00567
SP2022046	5/17/2022	15-34	Т	1	7:25	30	41.2506	-72.3201	12.1	25.9	10.6	29	3.2	1.62375	0.0082
SP2022047	5/17/2022	11-27	Т	3	9:44	30	41.193	-72.5986	11.7	27.2	10.7	27.5	3.7	1.84046	0.00929
SP2022048	5/17/2022	13-20	M	1	12:55	30	41.2166	-72.9401	13.7	26.9	13.2	27	2.9	1.43918	0.00727
SP2022049	5/18/2022	00-15	Т	4	8:56	30	41.0088	-73.126	12.3	26.2	9.6	27	3.2	1.6194	0.00818
SP2022050	5/18/2022	55-13	S	2	11:01	30	40.9258	-73.248	13.2	25.9	12.8	25.9	3.1	1.57386	0.00795
SP2022051	5/18/2022	56-12	Т	2	12:43	16	40.943	-73.2784	13.5	25.9	12.4	25.9	3	0.79813	0.00403
SP2022052	5/18/2022	03-14	M	3	15:09	30			12.1	26.5	10.5	26.8	2.6	1.29718	0.00655
SP2022053	5/19/2022	11-19	M	2	8:06	30	41.1995	-72.9573	13	26.8	11.6	26.9	3.2	1.61571	0.00816
SP2022054	5/19/2022	11-18	M	1	9:39	30	41.1893	-73.0165	12.1	26.4	11.9	26.8	3.5	1.75703	0.00887
SP2022055	5/19/2022	03-21	M	4	12:15	30	41.064	-72.8774	12.3	26.7	9.8	27.1	3.5	1.76261	0.0089
SP2022056	5/19/2022	03-20	M	4	14:02	30	41.0482	-72.9741	12.3	26.4	9.7	27.2	2.8	1.40322	0.00709
SP2022057	5/20/2022	05-17	Т	3	8:16	30	41.1043	-73.0302	12.4	26.6	10	26.9	2.8	1.40775	0.00711
SP2022058	5/20/2022	59-18	M	3	9:58	30	40.9978	-72.996	13.1	26.1	10.5	26.8	3.1	1.55347	0.00784
SP2022059	5/20/2022	02-17	M	4	11:54	21	41.036	-73.0711	12.9	26.3	9.8	27.1	2.2	0.77068	0.00389
SP2022060	5/23/2022	07-15	Т	1	8:14	30	41.0965	-73.1328	13.1	26.3	12.2	26.6	2.5	1.22859	0.0062
SP2022061	5/23/2022	04-13	M	3	9:59	30	41.0717	-73.2133	14.1	25.6	10.5	26.7	2.9	1.433	0.00724
SP2022062	5/23/2022	02-10	Т	2	11:27	30	41.0476	-73.3386	13	26.2	11.5	26.4	2.8	1.37935	0.00697
SP2022063	5/23/2022	57-09	S	2	13:39	30	40.9498	-73.4083	16	25.6	14	25.8	2.9	1.44591	0.0073
SP2022064	5/24/2022	59-12	M	3	9:53	30	40.9957	-73.2488	14.8	26	10.5	26.8	2.9	1.449	0.00732
SP2022065	5/24/2022	57-12	T	2	11:40	30	40.9572	-73.251	14.4	26	11.4	26.3	3.1	1.55951	0.00788
SP2022066	5/24/2022	58-12	M	3	13:31	30	40.9861	-73.2458	14.4	26	10.8	26.6	3.2	1.57711	0.00796
SP2022067	5/25/2022	11-20	Т	2	7:44	30	41.1852	-72.9753	13.8	27	12.4	26.9	3.1	1.53468	0.00775
SP2022068	5/25/2022	02-24	M	4	10:23	30	41.0411	-72.795	14.7	26.3	11.4	27.2	3.3	1.6453	0.00831
SP2022069	5/25/2022	01-25	Т	4	12:16	30	41.02	-72.7003	15	26.4	10.4	27.1	2.8	1.41084	0.00712
SP2022070	5/25/2022	13-28	Т	2	14:33	30	41.2281	-72.632	14.6	27.3	13.3	27.4	3	1.49238	0.00754
SP2022071	5/26/2022	14-28	Т	1	8:16	30	41.2485	-72.5779	13	27.6	12.8	27.8	3.6	1.80531	0.00912
SP2022072	5/26/2022	09-24	Т	3	10:06	30	41.1368	-72.7654	15.2	26.9	11.9	27.4	3.1	1.54003	0.00778
SP2022073	5/26/2022	11-23	M	2	12:10	30	41.1815	-72.8453	15.1	27	12.1	27.1	3.6	1.78872	0.00903

Table 5.7. Station information for LISTS June 2022.

Standard LISTS tows in the spring begin with SP and fall begins with FA. This cruise was cut short due to mechanical issues with the R/V John Dempsey. Latitude (N) and Longitude (W) are displayed in decimal degrees. Area swept is estimated by assuming the effective sweep is 2/3rds of the footrope length.

Sample		Site	Bottom	Depth	Time	Duration			S_Temp	S_Salinity	B_Temp	<b>B_Salinity</b>	Avg Speed	Distance	Area Swept
Number	Date	Number	Туре	Interval	Start	(min)	Latitude	Longitude	(sfc, C)	(sfc,ppt)	(btm, C)	(btm, ppt)	(knots)	(nm)	(sq.nm)
SP2022074	6/8/2022	07-31	S	4	10:56	30	41.1352	-72.4691	17.7	26.7	14.2	29.6	2.3	1.12586	0.00569
SP2022075	6/8/2022	03-27	Т	3	12:43	30	41.063	-72.629	18.3	26.9	14.1	28.4	3	1.50732	0.00761
SP2022076	6/10/2022	15-34	Т	1	7:03	30	41.2588	-72.3575	16.4	27.9	15.9	29.6	3.2	1.57879	0.00797
SP2022077	6/10/2022	17-38	Т	2	8:57	30	41.2855	-72.1555	16	29.8	15.3	30.3	2.2	1.10548	0.00558
SP2022078	6/10/2022	15-33	S	1	11:27	30	41.2567	-72.3413	16.4	28.2	15.9	28.7	1.8	0.87503	0.00442
SP2022079	6/13/2022	14-33	S	2	7:16	25	41.2466	-72.3498	16	29.4	16	29.4	3.9	1.6334	0.00825
SP2022080	6/13/2022	08-30	S	4	9:01	25	41.1485	-72.4756	16.5	28.8	16	29.1	4.1	1.71022	0.00864
SP2022081	6/13/2022	03-26	Т	3	10:48	30	41.067	-72.6631	19.1	26.4	15.4	28.1	2.8	1.4102	0.00712
SP2022082	6/13/2022	58-25	S	1	12:46	30	40.985	-72.7291	19	26.4	16	27.1	2.9	1.44004	0.00727
SP2022083	6/13/2022	06-28	S	3	14:46	30	41.1035	-72.6241	19.4	26.4	15.6	28.3	3.8	1.91174	0.00965
SP2022084	6/14/2022	06-27	S	3	8:17	30	41.1125	-72.5965	18.3	26.5	16.5	28.5	3.9	1.96421	0.00992
SP2022085	6/14/2022	00-28	Т	2	10:18	30	41.0183	-72.59	18.9	26.7	17	27.7	3.6	1.79701	0.00907
SP2022086	6/14/2022	01-25	Т	4	12:02	30	41.01	-72.7501	19.6	26.4	13.3	28.1	3.1	1.55901	0.00787
SP2022087	6/14/2022	05-26	Т	3	13:46	30	41.0873	-72.6948	18.9	26.6	15.1	27.6	3.6	1.80371	0.00911

**Table 5.8. Station information for LISTS September 2022.**Standard LISTS tows in the spring begin with SP and fall begins with FA. Latitude (N) and Longitude (W) are displayed in decimal degrees. Area swept is estimated by assuming the effective sweep is 2/3rds of the footrope length.

Sample		Site	Bottom	Depth	Time	Duration			S_Temp	S_Salinity	B_Temp	B_Salinity	Avg Speed	Distance	Area Swept
Number	Date	Number	Type	Interval	Start	(min)	Latitude	Longitude	(sfc, C)	(sfc,ppt)	(btm, C)	(btm, ppt)	(knots)	(nm)	(sq.nm)
FA2022001	9/8/2022	08-31	S	4	8:38	30	41.141	-72.4506	22.6	30.7	22.7	30.6	3.6	1.825	0.00922
FA2022002	9/8/2022	07-31	S	4	10:34	30	41.1235	-72.5192	22.8	30.4	22.7	30.4	2.6	1.30682	0.0066
FA2022003	9/8/2022	01-28	T	2	12:43	30	41.0303	-72.5801	23.3	29.8	23.1	29.9	2.4	1.19436	0.00603
FA2022004	9/8/2022	13-33	S	1	15:39	30	41.2358	-72.3447	22.4	29.9	22.3	30	2.6	1.311	0.00662
FA2022005	9/12/2022	03-28	T	3	9:02	30	41.0602	-72.5825	23.1	29.8	23.1	30.1	3.7	1.86003	0.00939
FA2022006	9/12/2022	06-28	S	3	11:21	30	41.1158	-72.5713	23	30.1	23	30.1	3.5	1.74677	0.00882
FA2022007		07-27	S	3	12:58	30	41.1278	-72.6194	23.3	30	23.1	30	2.9	1.43079	0.00723
FA2022008	9/12/2022	09-27	T	4	14:52	30	41.1548	-72.6711	23.5	29.8	23.2	30	3.6	1.78636	0.00902
FA2022009	9/14/2022	14-28	T	1	8:09	30	41.2473	-72.5776	23.2	29.4	23.2	29.5	2.9	1.4438	0.00729
FA2022010	9/14/2022	12-25	T	2	10:09	30	41.2078	-72.7151					3.4	1.68006	0.00848
FA2022011	9/14/2022	11-25	T	3	11:58	30	41.1927	-72.7327	23.4	29.5	23.2	29.8	2.7	1.36483	0.00689
FA2022012	9/14/2022	14-27	T	1	13:27	30	41.2361	-72.6583	23.3	29.6	23.2	29.6	2.8	1.41682	0.00715
FA2022013		14-33	S	2	15:32	30	41.2407	-72.396	22.6	29.4	22.2	30.6	3.3	1.64035	0.00828
FA2022014	9/15/2022	09-24	T	3	9:38	30	41.1815	-72.7828	23.2	29.4	23.4	29.6	2.9	1.45602	0.00735
FA2022015	9/15/2022	06-25	T	4	11:24	30	41.1002	-72.7551	23.2	29.5	23.3	29.7	2.1	1.06024	0.00535
FA2022016		05-23	М	4	13:12	30	41.0887	-72.8003	23.3	29.5	23.3	29.6	3.2	1.60699	0.00811
FA2022017	9/15/2022	07-25	T	4	14:49	30	41.1166	-72.7468	23.3	29.7	23.2	29.7	2.5	1.23178	0.00622
FA2022018	9/16/2022	01-24	М	4	10:00	30	41.0268	-72.759	22.9	29.2	23	29.5	2.8	1.42125	0.00718
FA2022019		58-24	S	1	12:34	30	40.9827	-72.7966	•	•	•		2.8	1.39195	0.00703
FA2022020		02-20	M	4	8:43	30	41.0475	-72.9106	22.8	29.3	22.9	29.7	2.5	1.24078	0.00627
FA2022021		59-18	М	3	10:15	30	40.9978	-72.9957	22.9	29.2	22.8	29.5	2.4	1.20974	0.00611
FA2022022		04-18	M	4	12:05	30	41.0761	-72.989	23	29.3	22.8	29.5	2.8	1.40652	0.0071
FA2022023		05-15	М	2	14:06	30	41.0937	-73.1292	23.2	29	22.7	29.1	3	1.49251	0.00754
FA2022024		02-12	M	3	8:46	30	41.0443	-73.24	22.8	29	22.8	29.5	2.6	1.31203	0.00663
FA2022025		01-10	T	3	10:51	30	41.0305	-73.3213	22.8	29	22.8	29.3	2.4	1.22105	0.00617
FA2022026		57-09	S	2	13:06	30	40.9511	-73.4088	23.3	28.6	23	28.6	2.8	1.42	0.00717
FA2022027		01-14	М	4	8:56	30	41.0185	-73.172	22.7	29.2	22.8	29.5	2.9	1.42791	0.00721
FA2022028		59-11	М	3	10:48	30	40.9997	-73.2765	23	29	22.8	29.4	2.6	1.29168	0.00652
FA2022029		06-11	М	1	12:43	30	41.1002	-73.3195	22.9	29	22.7	29.1	3.4	1.69418	0.00856
FA2022030		05-13	М	2	14:19	30	41.0901	-73.254	23.3	29	22.7	29.2	3.1	1.56718	0.00791
FA2022031		09-17	T	2	7:42	30	41.1562	-73.0713	22.6	28.7	22.6	29.1	3	1.50502	0.0076
FA2022032		13-20	М	1	9:23	30	41.2281	-72.9723	22.5	29	22.6	29	2.9	1.45761	0.00736
FA2022033		11-20	T	2	11:07	30	41.1865	-72.975	22.7	29.3	22.6	29.3	3.4	1.69583	0.00856
FA2022034		12-21	T	2	13:00	30	41.2197	-72.8694	22.6	29.1	22.7	29.1	2.1	1.04691	0.00529
FA2022035		09-21	М	2	8:18	30	41.1633	-72.9283	21	29.3	21	29.2	2.6	1.30174	0.00657
FA2022036		08-25	T	4	10:48	30	41.1365	-72.7625	21.3	29.6	21.4	29.9	2.4	1.19744	0.00605
FA2022037		08-21	М	3	8:05	30	41.1553	-72.9257	21.2	29.2	21.4	29.3	2.9	1.46243	0.00738
FA2022038		00-24	М	3	10:08	30	40.9993	-72.795	20.9	29.3	20.9	29.3	2.3	1.13437	0.00573
FA2022039		03-25	T	3	11:41	30	41.0545	-72.7574	21.3	29.8	21.3	29.8	2.7	1.32954	0.00671
FA2022040	9/27/2022	18-37	T	1	15:21	30	41.287	-72.1998	20.5	31.3	20.5	31.4	3.1	1.53538	0.00775

Table 5.9. Station information for LISTS October 2022.

Standard LISTS tows in the spring begin with SP and fall begins with FA. Latitude (N) and Longitude (W) are displayed in decimal degrees. Area swept is estimated by assuming the effective sweep is 2/3rds of the footrope length.

Sample		Site	Bottom	Depth	Time	Duration			S_Temp	S_Salinity	B_Temp	B_Salinity	Avg Speed	Distance	Area Swept
Number	Date	Number	Type	Interval	Start	(min)	Latitude	Longitude	(sfc, C)	(sfc,ppt)	(btm, C)	(btm, ppt)	(knots)	(nm)	(sq.nm)
FA2022041	10/14/2022	18-37	Т	1	9:57	30	41.2855	-72.2013	17.9	31.7	17.9	31.7	2.6	1.31723	0.00665
FA2022042	10/14/2022	17-40	Т	2	11:48	30	41.2906	-72.0771	17.7	31.9	17.5	31.9	3.2	1.57576	0.00796
FA2022043	10/14/2022	17-37	Т	1	13:26	30	41.2865	-72.1928	18.6	31.7	18.2	31.8	2.8	1.4245	0.00719
FA2022044	10/17/2022	12-35	Т	4	7:24	30	41.2148	-72.2653	17.4	30.2	17.6	31.9	1.9	0.92728	0.00468
FA2022045	10/17/2022	09-31	S	4	10:51	30			17.8	30.5	17.8	31	2.6	1.32133	0.00667
FA2022046	10/17/2022	00-27	Т	2	13:14	30	41.0175	-72.5952	18.1	29.9	18.1	30	3	1.51843	0.00767
FA2022047	10/17/2022	58-24	S	1	15:10	30	40.9753	-72.7505	17.8	29.7	18	29.8	3.1	1.54622	0.00781
FA2022048	10/18/2022	07-31	S	4	8:12	30	41.1353	-72.4693	17.8	30.6	17.7	31.1	2.1	1.03842	0.00524
FA2022049	10/18/2022	03-28	Т	3	10:04	30	41.0613	-72.5835	18	30	18.1	30.3	2.2	1.09022	0.00551
FA2022050	10/18/2022	05-27	Т	3	11:29	30	41.0887	-72.6633	18	29.8	18	29.9	3.2	1.58791	0.00802
FA2022051	10/18/2022	05-28	S	3	13:21	30	41.0872	-72.6025	18	30	18.1	30.1	2.5	1.26141	0.00637
FA2022052	10/18/2022	07-29	S	3	14:31	30	41.1122	-72.5818	18.1	30.2	18.1	30.2	2.2	1.1086	0.0056
FA2022053	10/19/2022	14-25	M	1	9:07	30	41.2372	-72.7285	17	29.5	17.1	29.7	2.7	1.35513	0.00684
FA2022054	10/19/2022	11-25	Т	3	10:49	30	41.1605	-72.7227	17.8	30	17.9	30.2	2.6	1.31637	0.00665
FA2022055	10/19/2022	09-26	Т	4	12:30	30	41.1512	-72.699	17.9	30.1	17.9	30.1	3.1	1.55737	0.00786
FA2022056	10/19/2022	10-27	Т	4	14:08	30	41.1707	-72.6948	17.7	30	17.8	30.1	2.8	1.38733	0.00701
FA2022057	10/21/2022	14-34	S	1	8:21	30	41.2451	-72.3381	16.9	31.3	17	31.4	2.7	1.33131	0.00672
FA2022058	10/21/2022	14-29	Т	2	10:30	30	41.2367	-72.5715	16.4	30.1	16.4	30.3	2.6	1.27777	0.00645
FA2022059	10/21/2022	03-21	M	4	13:28	30	41.064	-72.8783	17.2	29.7	17.5	30	2.6	1.30763	0.0066
FA2022060	10/24/2022	13-19	M	1	7:40	30	41.2035	-73.0071	15.4	29.4	15.4	29.4	2.4	1.19415	0.00603
FA2022061	10/24/2022	04-20	M	4	9:38	30	41.0851	-72.9223	17	29.8	17.1	29.9	3.1	1.53208	0.00774
FA2022062	10/24/2022	03-15	M	3	11:37	30	41.0628	-73.114	16.8	29.7	16.9	29.8	2.8	1.38355	0.00699
FA2022063	10/24/2022	01-14	M	4	13:22	30	41.0077	-73.2298	17.1	29.8	17.1	29.8	2.8	1.38047	0.00697
FA2022064	10/24/2022	06-17	Т	2	15:12	30	41.0987	-73.1016	16.1	29.3	16.3	29.5	3	1.52434	0.0077
FA2022065	10/25/2022	07-17	M	2	7:54	30	41.1292	-73.0505	16.2	29.6	16.2	29.6	4	1.97957	0.01
FA2022066	10/25/2022	59-12	M	3	10:04	30	40.9981	-73.2438	17	29.6	16.9	29.7	3.3	1.63614	0.00826
FA2022067	10/25/2022	55-13	S	2	12:07	30	40.9267	-73.2518	16.6	29.2	16.4	29.4	3	1.52366	0.00769
FA2022068	10/25/2022	57-09	S	2	14:04	30	40.9482	-73.408	16.7	29.4	16.6	29.4	2.9	1.45668	0.00736
FA2022069	10/26/2022	00-14	M	4	8:46	30	41.0165	-73.1786	17.2	29.7	17.1	29.8	3.3	1.66599	0.00841
FA2022070	10/26/2022	58-13	M	3	10:44	30	40.9807	-73.2163	17.1	29.6	17	29.7	3.1	1.56988	0.00793
FA2022071	10/26/2022	01-10	Т	3	12:51	30	41.0215	-73.3646	17.3	29.7	17	29.7	2.8	1.41089	0.00712
FA2022072	10/26/2022	01-11	M	3	14:44	30	41.034	-73.3156	17.4	29.7	16.9	29.7	3.4	1.71226	0.00865
FA2022073	10/27/2022	05-13	M	2	9:06	30	41.0963	-73.2118	16.2	29	16.8	29.6	3.3	1.67448	0.00846
FA2022074	10/27/2022	05-11	M	2	10:54	30	41.0941	-73.2966	16.4	29.3	16.7	29.5	2.2	1.0932	0.00552
FA2022075	10/27/2022	01-15	M	4	12:48	30	41.02	-73.1761	17.1	29.8	17.1	29.8	2.3	1.17022	0.00591
FA2022076	10/27/2022	08-21	M	3	15:29	30	41.1052	-72.9158	17.1	29.9	17.1	29.9	2.4	1.21484	0.00613
FA2022077	10/28/2022	09-24	Т	3	9:09	30	41.1773	-72.7853	16.4	29.8	16.5	29.8	2.5	1.25307	0.00633
FA2022078	10/28/2022	12-25	Т	2	10:49	30	41.192	-72.7753	16.4	29.7	16.4	29.5	2	0.98172	0.00496
FA2022079	10/28/2022	10-26	Т	4	12:06	30	41.1643	-72.7131	16.4	30	16.4	30	2	1.00639	0.00508
FA2022080	10/28/2022	14-27	T	1	13:31	30	41.2357	-72.6595	15.9	29.7	16	29.7	3.5	1.75458	0.00886

**Table 5.10. Samples with non-standard tow durations and reasons for incomplete tows, spring and fall 2022.** *Standard LISTS tows begin with SP (spring) or FA (fall).* 

			Bottom	Depth				
Sample	Date	Site	Type	Interval	Time	Duration	Reason	Comments
April								
SP2022024	4/26/2022	56-12	T	2	13:43	12	Speed drop	Hard hang on the starboard side. Kept the tow given time constraints and weather for the rest of the month
May							•	
SP2022038	5/13/2022	08-31	S	4	7:47	20	Strata	Ran out of room in strata
SP2022051	5/18/2022	56-12	T	2	12:43	16	Speed drop	Hung hard
SP2022059	5/20/2022	02-17	M	4	11:54	21	Speed drop	Hung on the door, bridle popped off but no damage to the net
June								
SP2022079	6/13/2022	14-33	S	2	7:16	25	Strata	Ran out of room in strata
SP2022080	6/13/2022	08-30	S	4	9:01	25	Strata	Ran out of room in strata
SEPT								
OCT								All tows this month were standard duration (30 minutes).
001								All tows this month were standard duration (30 minutes).

Table 5.11. List of finfish species observed in 2022.

Fifty-five finfish species were observed in 2022. Since 1984, one hundred-thirteen species of finfish have been identified in LISTS (see Appendix 5.1 for the full list of species).

Common Name	Scientific Name	Common Name	Scientific Name
anchovy, bay	Anchoa mitchilli	mackerel, Spanish	Scomberomorus maculatus
anchovy, striped	Anchoa hepsetus	menhaden, Atlantic	Brevoortia tyrannus
bigeye	Priacanthus arenatus	moonfish	Selene setapinnis
black sea bass	Centropristis striata	pipefish, northern	Syngnathus fuscus
blue runner	Caranx crysos	puffer, northern	Sphoeroides maculatus
bluefish	Pomatomus saltatrix	ray, cownose	Rhinoptera bonasus
butterfish	Peprilus triacanthus	rockling, fourbeard	Enchelyopus cimbrius
cod, Atlantic	Gadus morhua	sand lance, American	Ammodytes americanus
cunner	Tautogolabrus adspersus	scad, bigeye	Selar crumenophthalmus
dogfish, smooth	Mustelus canis	scad, rough	Trachurus lathami
eel, American	Anguilla rostrata	sculpin, longhorn	Myoxocephalus octodecemspin
eel, conger	Conger oceanicus	scup	Stenotomus chrysops
filefish, planehead	Monacanthus hispidus	sea raven	Hemitripterus americanus
flounder, fourspot	Paralichthys oblongus	searobin, northern	Prionotus carolinus
flounder, smallmouth	Etropus microstomus	searobin, striped	Prionotus evolans
flounder, summer	Paralichthys dentatus	seasnail	Liparis atlanticus
flounder, windowpane	Scophthalmus aquosus	shad, American	Alosa sapidissima
flounder, winter	Pseudopleuronectes american	shad, hickory	Alosa mediocris
goosefish	Lophius americanus	skate, clearnose	Raja eglanteria
hake, red	Urophycis chuss	skate, little	Leucoraja erinacea
hake, silver	Merluccius bilinearis	skate, winter	Leucoraja ocellata
hake, spotted	Urophycis regia	spot	Leiostomus xanthurus
herring, alewife	Alosa pseudoharengus	striped bass	Morone saxatilis
herring, Atlantic	Clupea harengus	sturgeon, Atlantic	Acipenser oxyrinchus
herring, blueback	Alosa aestivalis	tautog	Tautoga onitis
hogchoker	Trinectes maculatus	toadfish, oyster	Opsanus tau
kingfish, northern	Menticirrhus saxatilis	weakfish	Cynoscion regalis
mackerel, Atlantic	Scomber scombrus		

Names taken from: Common and scientific names of fishes from the United States, Canada and Mexico, Sixth Edition (Nelson et al. 2004).

Table 5.12. List of invertebrates observed in 2022.

In 2022, Thirty nine 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
anemones	anemomes spp.	polychaetes	Class polychfeta
arks	Noetia-Anadara spp.	sea grape	Molgula spp.
bryozoan, bushy	Phylum Bryozoa	sea urchin, purple	Arbacia punctulata
clam, hard clams	Artica-Mercinaria-Pitar sp.	shrimp, cleaner/peppermint	Lysmata spp.
clam, surf	Spisula solidissima	shrimp, coastal mud	Upogebia affinis
coral, star	Astrangia poculata	shrimp, mantis	Squilla empusa
crab, blue	Callinectes sapidus	shrimp, northern red	Pandalus montagui
crab, flat claw hermit	Pagurus pollicaris	shrimp, sand	Crangon septemspinosa
crab, green	Carcinus maenas	slipper shell, common	Crepidula fornicata
crab, horseshoe	Limulus polyphemus	sponge spp.	sponge spp.
crab, lady	Ovalipes ocellatus	sponge, boring	Cliona celate
crab, mud	Family Xanthidae	sponge, deadman's fingers	Haliclona spp.
crab, rock	Cancer irroratus	sponge, red bearded	Microciona prolifera
crab, spider	Libinia emarginata	squid, longfin inshore	Doryteuthis pealeii
hydroid spp.	hydroid spp.	starfish spp.	Asteriid spp.
jellyfish, lion's mane	Cyanea capillata	Tubularia hydroids	Tubularia, spp.
lobster, American	Homarus americanus	whelk, channeled	Busycotypus canaliculatus
mussel, blue	Mytilus edulis	whelk, knobbed	Busycon carica
northern moon snail	Lunatia heros	worms, fan	Myxicola infundibulum
oyster, common	Crassostrea virginica		

Table 5.13. Total number and weight (kg) of finfish and invertebrates caught in 2022.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year anchovies and Gadids are neither separated by species nor quantified; young-of-year Atlantic herring and American sand lance are not quantified. Number of tows (sample size) = 167.

species	count	<b>%</b>	weight	%	species	count	<b>%</b>	weight	%
scup	85,562	52.2	10,840.3	56.0					
butterfish	48,429	29.5	1,272.9	6.6	Finfish not ranked				
weakfish	15,050	9.2	725.4	3.8	anchovy spp, (yoy)				
northern searobin	2,021	1.2	366.1	1.9	Atlantic herring, (yoy)				
striped searobin	1,653	1.0	616.6	3.2	American sand lance (yoy)				
black sea bass	1,351	0.8	578.8	3.0	gadid spp, (yoy)				
smooth dogfish	1,331	0.8	2,054.1	10.6					
red hake	1,287	0.8	78.2	0.4					
bluefish	881	0.5	178.1	0.9	<u>Invertebrates</u>				
Atlantic menhaden	881	0.5	223.3	1.2	horseshoe crab	402	2.3	714.8	39.
silver hake	745	0.5	23.3	0.1	longfin inshore squid	15,385	86.7	701.1	39.
windowpane flounder	561	0.3	95.7	0.5	bushy bryozoan	nc		139.4	7.3
summer flounder	501	0.3	305.2	1.6	boring sponge	nc		70.3	3.9
bay anchovy	443	0.3	2.1	0.0	lion's mane jellyfish	1,134	6.4	37.9	2.
hogchoker	410	0.3	52.3	0.3	common slipper shell	nc		33.8	1.9
alewife	388	0.2	22.1	0.1	spider crab	nc		31.8	1.8
winter flounder	313	0.2	71.5	0.4	mantis shrimp	714	4.0	24.3	1.4
tautog	302	0.2	302.0	1.6	channeled whelk	44	0.2	8.2	0.5
moonfish	235	0.1	3.7	0.0	knobbed whelk	22	0.1	5.5	0.3
striped bass	211	0.1	583.1	3.0	lady crab	nc		3.5	0.2
American shad	206	0.1	19.3	0.1	flat claw hermit crab	nc		3.5	0.2
northern kingfish	190	0.1	13.4	0.1	arks	nc		2.5	0.1
smallmouth flounder	150	0.1	2.9	0.0	blue crab	14	0.1	2.1	0.1
clearnose skate	122	0.1	191.2	1.0	hard clams	18	0.1	1.4	0.1
spotted hake	110	0.1	4.5	0.0	American lobster	4	0.0	1.4	0.1
spot	105	0.1	16.6	0.1	sand shrimp	nc		1.3	0.1
northern puffer	85	0.1	2.0	0.0	deadman's fingers sponge	nc		1.2	0.1
striped anchovy	62	0.0	1.1	0.0	star coral	nc		1.0	0.1
fourspot flounder	59	0.0	14.2	0.1	fan worm tubes	nc		1.0	0.1
little skate	56	0.0	29.4	0.2	rock crab	nc		1.0	0.1
Atlantic herring	47	0.0	3.1	0.0	mud crabs	nc		0.9	0.1
Atlantic sturgeon	47	0.0	608.7	3.1	Tubularia, spp.	nc		0.8	0.0
blueback herring	39	0.0	1.0	0.0	common oyster	nc		0.4	0.0
bigeye scad	28	0.0	1.3	0.0	northern moon snail	nc		0.3	0.0
Atlantic mackerel	20	0.0	1.7	0.0	hydroid spp.	nc		0.3	0.0
Atlantic cod	15	0.0	18.7	0.1	purple sea urchin	7	0.0	0.3	0.0
blue runner	12	0.0	0.9	0.0	surf clam	5	0.0	0.2	0.0
hickory shad	7	0.0	2.5	0.0	red bearded sponge	nc	0.0	0.2	0.0
winter skate	7	0.0	5.8	0.0	polychaetes	nc		0.2	0.0
rough scad	5	0.0	0.3	0.0	blue mussel	nc		0.1	0.0
fourbeard rockling	4	0.0	0.3	0.0	cleaner/peppermint shrimp	2	0.0	0.1	0.0
goosefish	3	0.0	1.7	0.0	sea grape	nc	0.0	0.1	0.0
northern pipefish	2	0.0	0.1	0.0	starfish spp.	nc		0.1	0.0
longhorn sculpin	2	0.0	0.6	0.0	anemones	nc		0.1	0.0
Spanish mackerel	2	0.0	0.0	0.0	coastal mud shrimp	1	0.0	0.1	0.0
seasnail	2	0.0	0.1	0.0	green crab	1	0.0	0.1	0.0
	1	0.0	0.1	0.0	· ·	1	0.0	0.1	0.0
bigeye					northern red shrimp		0.0		
cownose ray	1	0.0	2.6	0.0	mixed sponge species	nc		0.1	0.0
conger eel	1	0.0	0.3	0.0	Total	17,754		1,791.0	
cunner	1	0.0	0.1	0.0					
American eel	1	0.0	0.9	0.0	Note: nc= not counted				
planehead filefish	1	0.0	0.1	0.0					

0.0

0.0

American sand lance

sea raven

oyster toadfish

0.1

0.3

0.4

0.0

0.0

0.0

Table 5.14. Total counts and weight (kg) of finfish taken in the spring and fall sampling periods, 2022. Species are listed in order of descending count. Young-of-year bay anchovy, striped anchovy, Atlantic herring, American sand lance and Gadids are not included. Number of tows (sample sizes): Spring = 87 and Fall = 80.

	Spring	<u> </u>		
species	count	%	weight	%
scup	32,458	74.3	7,492.9	69.4
butterfish	3,896	8.9	342.1	3.2
northern searobin	1,462	3.3	283.9	2.6
red hake	1,142	2.6	63.0	0.6
black sea bass	848	1.9	473.3	4.4
striped searobin	785	1.8	315.6	2.9
silver hake	658	1.5	15.0	0.1
alewife	292	0.7	18.7	0.2
winter flounder	287	0.7	65.6	0.6
tautog	250	0.6	274.7	2.5
windowpane flounder	235	0.5	43.2	0.4
smooth dogfish	215	0.5	525.9	4.9
summer flounder	210	0.5	123.6	1.1
striped bass	192	0.4	471.4	4.4
Atlantic menhaden	164	0.4	51.4	0.5
spotted hake	105	0.2	3.6	0.0
American shad	103	0.2	11.7	0.1
hogchoker	95	0.2	13.3	0.1
Atlantic herring	46	0.1	3.1	0.0
little skate	45	0.1	23.2	0.2
smallmouth flounder	40	0.1	1.0	0.0
fourspot flounder	39	0.1	10.6	0.1
weakfish	28	0.1	12.6	0.1
bay anchovy	26	0.1	0.5	0.0
clearnose skate	21	0.0	35.8	0.3
Atlantic cod	15	0.0	18.7	0.2
blueback herring	7	0.0	0.4	0.0
hickory shad	6	0.0	1.9	0.0
winter skate	5	0.0	3.4	0.0
Atlantic sturgeon	3	0.0	81.7	0.8
bluefish	3	0.0	7.0	0.1
goosefish	3	0.0	1.7	0.0
fourbeard rockling	2	0.0	0.2	0.0
longhorn sculpin	2	0.0	0.6	0.0
seasnail	2	0.0	0.1	0.0
cunner	1	0.0	0.1	0.0
northern pipefish	1	0.0	0.1	0.0
American sand lance	1	0.0	0.1	0.0
sea raven	1	0.0	0.3	0.0
striped anchovy	1	0.0	0.1	0.0
Total	43,695		10,791.6	310

	Fall			
species	count	%	weight	%
scup	53,104	44.2	3,347.4	39.2
butterfish	44,532	37.0	930.8	10.9
weakfish	15,022	12.5	712.9	8.3
smooth dogfish	1,116	0.9	1,528.2	17.9
bluefish	878	0.7	171.1	2.0
striped searobin	868	0.7	301.0	3.5
Atlantic menhaden	717	0.6	171.9	2.0
northern searobin	559	0.5	82.2	1.0
black sea bass	503	0.4	105.5	1.2
bay anchovy	417	0.3	1.7	0.0
windowpane flounder	326	0.3	52.5	0.6
hogchoker	315	0.3	39.0	0.5
summer flounder	291	0.2	181.6	2.1
moonfish	235	0.2	3.7	0.0
northern kingfish	190	0.2	13.4	0.2
red hake	145	0.1	15.2	0.2
smallmouth flounder	110	0.1	2.0	0.0
spot	105	0.1	16.6	0.2
American shad	103	0.1	7.6	0.1
clearnose skate	101	0.1	155.4	1.8
alewife	96	0.1	3.5	0.0
silver hake	87	0.1	8.3	0.1
northern puffer	85	0.1	2.0	0.0
striped anchovy	61	0.1	1.0	0.0
tautog	52	0.0	27.3	0.3
Atlantic sturgeon	44	0.0	526.9	6.2
blueback herring	32	0.0	0.6	0.0
bigeye scad	28	0.0	1.3	0.0
winter flounder	26	0.0	5.9	0.1
fourspot flounder	20	0.0	3.6	0.0
Atlantic mackerel	20	0.0	1.7	0.0
striped bass	19	0.0	111.7	1.3
blue runner	12	0.0	0.9	0.0
little skate	11	0.0	6.2	0.1
rough scad	5	0.0	0.3	0.0
spotted hake	5	0.0	0.9	0.0
fourbeard rockling	2	0.0	0.1	0.0
Spanish mackerel	2	0.0	0.1	0.0
winter skate	2	0.0	2.4	0.0
Atlantic herring	1	0.0	0.1	0.0
bigeye	1	0.0	0.1	0.0
cownose ray	1	0.0	2.6	0.0
conger eel	1	0.0	0.3	0.0
American eel	1	0.0	0.9	0.0
planehead filefish	1	0.0	0.1	0.0
hickory shad	1	0.0	0.6	0.0
northern pipefish	1	0.0	0.1	0.0
oyster toadfish	1	0.0	0.4	0.0
Total	120,255		8,548.9	

Table 5.15. Total catch of invertebrates taken in the spring and fall sampling periods, 2022. Species are ranked by total weight (kg). Number of tows (sample sizes): Spring = 87 and Fall = 80.

	Spring			
species	count	%	weight	%
horseshoe crab	127	6.7	207.96	42.2
bushy bryozoan	nc		123.89	25.1
longfin inshore squid	507	27	43.56	8.8
lion's mane jellyfish	1,133	60	37.86	7.7
spider crab	nc		29.91	6.1
boring sponge	nc		22.74	4.6
common slipper shell	nc		6.67	1.4
channeled whelk	23	1.2	4.61	0.9
lady crab	nc		2.89	0.6
mantis shrimp	82	4.3	2.82	0.6
knobbed whelk	9	0.5	1.99	0.4
sand shrimp	nc		1.25	0.3
flat claw hermit crab	nc		1.17	0.2
blue crab	8	0	1.09	0.2
rock crab	nc		0.84	0.2
Tubularia, spp.	nc		0.8	0.2
mud crabs	nc		0.55	0.1
deadman's fingers sponge	nc		0.49	0.1
hard clams	5	0.3	0.41	0.1
hydroid spp.	nc		0.26	0.1
arks	nc		0.25	0.1
star coral	nc		0.2	0
red bearded sponge	nc		0.17	0
northern moon snail	nc		0.15	0
American lobster	1	0.1	0.12	0
purple sea urchin	2	0.1	0.11	0
sea grape	nc		0.1	0
starfish spp.	nc		0.09	0
coastal mud shrimp	1	0.1	0.05	0
blue mussel	nc		0.05	0
northern red shrimp	1	0.1	0.05	0
mixed sponge species	nc		0.05	0
Total	1,899		493.2	_

	Fall			
species	count	%	weight	%
longfin inshore squid	14,878	93.8	657.5	50.7
horseshoe crab	275	1.7	506.9	39.1
boring sponge	nc		47.6	3.7
common slipper shell	nc		27.1	2.1
mantis shrimp	632	4.0	21.5	1.7
bushy bryozoan	nc		15.6	1.2
channeled whelk	21	0.1	3.6	0.3
knobbed whelk	13	0.1	3.5	0.3
flat claw hermit crab	nc		2.3	0.2
arks	nc		2.3	0.2
spider crab	nc		1.9	0.1
American lobster	3	0.0	1.2	0.1
fan worm tubes	nc		1.0	0.1
hard clams	13	0.1	1.0	0.1
blue crab	6	0.0	1.0	0.1
star coral	nc		0.8	0.1
deadman's fingers sponge	nc		0.7	0.1
lady crab	nc		0.6	0.0
common oyster	nc		0.4	0.0
mud crabs	nc		0.4	0.0
surf clam	5	0.0	0.2	0.0
northern moon snail	nc		0.2	0.0
polychaetes	nc		0.2	0.0
rock crab	nc		0.2	0.0
purple sea urchin	5	0.0	0.2	0.0
cleaner/peppermint shrimp	2	0.0	0.1	0.0
blue mussel	nc		0.1	0.0
anemones	nc		0.1	0.0
green crab	1	0.0	0.1	0.0
lion's mane jellyfish	1	0.0	0.1	0.0
Total	15,855		1,297.9	

Note: nc= not counted

Table 5.16. Spring indices of abundance for selected species, 1984-2022.

The geometric mean count per tow was calculated for 38 finfish and 2 invertebrates using April-June data. An asterisk next to the species name and time series mean, indicates that the spring index is a better estimate than the fall index (Simpson et al. 1991). Two asterisks indicate that both the spring and the fall indices provide good estimates. There was no spring sampling in 2020.

										Spi	ing									
Species	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
alewife *	0.43	0.10	0.66	1.00	0.47	0.72	0.54	0.39	0.39	0.84	1.83	0.96	2.18	1.44	1.11	1.89	1.53	0.75	0.95	1.14
black sea bass *	0.16	0.27	0.12	0.05	0.04	0.08	0.10	0.07	0.03	0.07	0.12	0.07	0.11	0.10	0.04	0.08	0.22	0.25	0.67	0.21
bluefish	0.00	0.02	0.19	0.07	0.11	0.07	0.09	0.52	0.31	0.05	0.07	0.03	0.07	0.18	0.12	0.24	0.08	0.07	0.30	0.16
butterfish	8.92	0.62	2.38	0.25	0.46	0.80	1.60	2.17	2.60	0.48	1.71	1.06	3.22	6.16	6.51	1.90	3.35	2.94	7.09	3.17
cunner *	1.28	0.29	0.28	0.22	0.16	0.29	0.55	0.25	0.11	0.20	0.07	0.16	0.07	0.15	0.18	0.18	0.17	0.20	0.25	0.11
dogfish, smooth	0.39	0.46	0.45	0.21	0.49	0.48	0.34	0.46	0.56	0.26	0.60	0.33	0.44	0.24	0.47	0.54	0.53	0.55	1.19	0.63
dogfish, spiny *	0.00	0.15	0.14	0.07	0.12	0.18	0.19	0.06	0.04	0.01	0.06	0.00	0.00	0.01	0.01	0.01	0.00	0.04	0.02	0.03
flounder, fourspot *	18.18	10.55	3.15	2.38	4.62	4.14	6.53	8.46	9.33	2.37	2.59	5.00	4.82	7.54	4.34	3.53	4.57	3.83	4.82	2.78
flounder, summer	0.63	0.44	0.95	1.06	0.50	0.10	0.35	0.64	0.55	0.51	0.86	0.28	0.96	1.00	1.30	1.44	1.79	1.75	3.19	3.42
flounder, windowpane *	172.27	119.82	67.82	40.33	66.02	101.71	39.74	30.87	13.17	24.71	23.54	10.69	37.47	30.43	24.27	14.19	8.11	9.04	5.44	4.90
flounder, winter *	111.96	66.81	61.50	67.92	100.96	135.23	170.12	118.95	54.31	53.34	74.35	48.11	93.05	57.41	59.36	32.80	33.67	46.40	25.49	21.22
hake, red *	15.04	3.02	4.67	3.84	3.64	13.12	4.75	4.35	4.83	6.00	0.89	4.12	1.49	1.41	6.28	7.21	4.01	2.64	5.11	1.18
hake, silver *	7.53	1.83	1.19	2.48	2.25	4.86	5.53	3.87	2.67	1.56	1.73	4.88	1.15	4.32	4.64	12.57	2.28	7.64	5.92	0.76
hake, spotted	0.00	0.00	0.02	0.01	0.22	0.01	0.02	0.22	0.08	0.07	0.02	0.21	0.31	0.25	0.26	1.11	2.68	1.52	2.05	1.18
herring, Atlantic *	0.00	0.58	1.12	2.77	2.16	2.27	5.73	4.91	2.73	7.24	2.95	4.23	1.70	2.53	1.06	0.99	1.21	0.85	0.41	0.49
herring, blueback	5.42	0.30	0.34	0.14	0.03	0.05	0.08	0.11	0.20	0.08	0.55	0.29	0.28	0.25	0.15	0.02	0.37	0.19	0.15	0.27
hogchoker	0.63	0.45	0.14	0.15	0.18	0.21	0.17	0.14	0.24	0.08	0.11	0.03	0.10	0.05	0.03	0.06	0.11	0.10	0.15	0.15
kingfish, northern	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00
lobster, American**	7.09	3.10	2.76	3.30	2.24	3.76	5.33	7.74	7.88	6.72	4.10	8.36	6.77	7.67	18.52	12.49	11.01	7.56	6.31	3.89
menhaden, Atlantic	0.09	0.11	0.18	0.39	0.17	0.14	0.10	0.03	0.14	0.07	0.05	0.11	0.02	0.02	0.00	0.01	0.03	0.00	0.13	0.01
moonfish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ocean pout *	0.21	0.04	0.06	0.06	0.07	0.12	0.14	0.14	0.14	0.23	0.10	0.09	0.11	0.08	0.06	0.06	0.08	0.03	0.06	0.06
rockling, fourbeard*	2.87	0.37	0.43	0.56	0.61	0.88	0.82	0.58	0.80	0.59	0.27	0.58	0.33	0.60	0.47	0.66	0.55	0.57	0.37	0.36
scad, rough	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sculpin, longhorn *	0.20	0.33	0.18	0.15	0.15	0.24	0.65	0.39	0.12	0.06	0.04	0.03	0.04	0.02	0.01	0.01	0.06	0.02	0.02	0.01
scup	2.80	5.65	3.40	1.17	1.11	2.77	2.25	3.09	1.75	1.32	1.88	5.24	3.25	3.23	4.25	2.22	28.46	7.20	50.42	4.84
sea raven*	0.36	0.37	0.29	0.37	0.17	0.11	0.19	0.09	0.03	0.01	0.01	0.01	0.01	0.01	0.10	0.04	0.08	0.04	0.06	0.01
searobin, northern *	6.48	14.38	0.82	0.71	1.13	0.85	0.62	1.36	1.18	1.26	1.21	1.07	1.26	1.73	0.72	1.03	2.66	1.55	2.67	1.16
searobin, striped	1.30	1.78	1.33	0.60	0.57	0.66	0.71	1.55	1.52	0.46	0.93	1.28	0.82	0.71	1.48	1.82	3.69	2.36	3.83	1.85
shad, American	0.10	1.36	0.57	0.92	0.44	0.90	0.34	0.54	0.75	0.29	0.68	0.49	0.48	1.08	0.86	0.80	0.38	0.08	0.61	0.20
shad, hickory	0.52	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.02	0.01	0.02	0.01	0.07	0.05	0.09	0.12	0.09	0.04	0.15	0.09
skate, clearnose	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.02	0.03	0.10	0.04
skate, little *	5.71	7.22	7.19	5.34	15.51	21.24	11.50	25.19	12.41	12.03	16.96	6.58	18.78	11.23	11.65	7.56	6.21	8.03	7.63	7.03
skate, winter*	0.00	0.12	0.15	0.07	0.37	0.34	0.22	0.23	0.18	0.23	0.14	0.12	0.24	0.16	0.24	0.17	0.16	0.10	0.13	0.16
spot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
squid, long-finned**	nc	nc	3.24	2.56	9.37	4.98	7.87	7.18	6.44	4.23	3.82	6.21	3.24	5.14	3.33	3.49	2.70	2.73	3.22	2.50
striped bass *	0.02	0.00	0.00	0.05	0.04	0.06	0.16	0.15	0.22	0.27	0.30	0.59	0.63	0.85	0.97	1.10	0.84	0.61	1.30	0.87
sturgeon, Atlantic	0.06	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.03	0.02	0.03	0.01	0.01	0.01	0.05	0.04	0.02	0.01	0.05	0.00
tautog *	2.75	1.47	1.50	0.71	0.65	1.09	1.00	0.92	0.82	0.42	0.44	0.15	0.49	0.40	0.42	0.40	0.57	0.70	0.91	0.52
weakfish	0.02	0.00	0.07	0.01	0.04	0.03	0.05	0.18	0.12	0.06	0.03	0.11	0.12	0.27	0.24	0.28	0.11	0.17	0.12	0.02

### Table 5.16 Continued. Spring indices of abundance for selected species, 1984-2022.

The geometric mean count per tow was calculated for 38 finfish and 2 invertebrates using April-June data. An asterisk next to the species name and time series mean, indicates that the spring index is a better estimate than the fall index (Simpson et al. 1991). Two asterisks indicate that both the spring and the fall indices provide good estimates. There was no spring sampling in 2020.

										Spring										84-21
Species	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Mean
alewife *	1.86	1.30	0.78	1.62	1.32	1.04	1.29	0.94	0.77	1.06	0.88	0.77	1.71	0.07	1.20	1.57	-	0.17	0.93	1.02
black sea bass *	0.22	0.07	0.05	0.26	0.22	0.32	0.28	0.27	0.83	0.97	2.73	1.94	1.78	4.56	4.17	3.79	-	5.25	3.49	0.83
bluefish	0.11	0.11	0.22	0.16	0.08	0.24	0.01	0.17	0.07	0.11	0.03	0.02	0.05	0.05	0.04	0.01	-	0.05	0.03	
butterfish	2.10	2.27	18.67	3.48	4.64	9.44	1.99	15.64	13.44	3.38	2.87	3.26	14.13	11.14	5.99	1.91	-	10.46	3.41	
cunner *	0.07	0.08	0.06	0.05	0.10	0.05	0.08	0.08	0.06	0.06	0.00	0.06	0.02	0.03	0.03	0.00	-	0.03	0.01	0.16
dogfish, smooth	0.53	0.44	1.33	0.64	0.87	1.05	0.09	1.51	0.82	0.80	0.78	0.87	1.80	2.90	1.58	1.12	-	3.11	0.54	
dogfish, spiny *	0.03	0.03	0.09	0.12	0.07	0.43	0.03	0.19	0.06	0.08	0.06	0.09	0.04	0.03	0.03	0.02	-	0.00	0.00	0.07
flounder, fourspot *	2.56	1.14	1.86	3.37	2.94	1.71	1.52	4.09	5.45	2.26	1.90	0.87	1.82	1.90	2.09	1.89	-	1.19	0.23	4.11
flounder, summer	1.84	0.80	0.61	2.51	1.61	1.93	2.69	3.85	3.06	3.24	3.00	1.64	1.36	1.66	2.64	4.85	-	4.16	1.47	
flounder, windowpane *	5.96	2.29	2.98	15.65	10.11	7.08	11.40	9.39	9.85	5.96	5.02	3.26	3.41	4.33	4.17	4.68	-	3.13	1.12	25.76
flounder, winter *	16.45	17.47	7.50	20.58	22.34	18.98	20.88	16.68	12.02	6.35	4.10	3.93	3.40	0.76	2.41	1.50	_	1.44	1.57	43.51
hake, red *	1.37	1.06	1.30	3.85	3.37	1.48	3.27	0.60	3.35	1.35	0.70	0.26	1.05	0.66	1.05	2.58	-	1.49	2.52	3.42
hake, silver *	2.63	0.57	4.75	0.98	19.08	2.30	5.24	2.10	19.45	1.47	1.08	0.25	1.71	1.51	1.70	12.45	-	2.49	2.30	4.31
hake, spotted	0.65	0.37	1.47	1.04	3.15	0.65	1.89	1.84	1.60	2.15	1.03	0.43	4.92	5.12	2.66	6.10	-	3.89	0.53	
herring, Atlantic *	0.53	1.33	0.31	1.66	0.77	1.82	2.56	1.57	0.73	2.64	1.44	0.69	0.69	0.11	0.77	1.01	-	0.25	0.24	1.75
herring, blueback	0.46	0.33	0.13	0.29	0.21	0.43	0.37	0.14	0.13	0.26	0.15	0.42	0.28	0.00	0.28	0.28	-	0.04	0.04	
hogchoker	0.19	0.11	0.08	0.17	0.13	0.11	0.15	0.24	0.29	0.32	0.40	0.21	0.49	1.22	0.97	0.70	-	1.17	0.50	
kingfish, northern	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.01	0.00	0.01	0.05	0.01	0.00	0.03	-	0.06	0.00	
lobster, American**	2.50	2.43	1.94	3.22	2.72	1.40	1.30	0.79	0.97	0.44	0.45	0.31	0.33	0.08	0.09	0.10	-	0.04	0.01	4.21
menhaden, Atlantic	0.02	0.01	0.04	0.13	0.05	0.07	0.05	0.11	0.63	0.37	0.62	0.66	1.04	0.74	0.25	0.38	-	0.68	0.51	
moonfish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	
ocean pout *	0.06	0.02	0.04	0.05	0.04	0.08	0.04	0.10	0.05	0.00	0.00	0.01	0.00	0.00	0.00	0.00	-	0.00	0.00	0.07
rockling, fourbeard*	0.48	0.35	0.09	0.35	0.26	0.18	0.17	0.19	0.16	0.02	0.02	0.08	0.02	0.00	0.01	0.09	-	0.09	0.02	0.43
scad, rough	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	
sculpin, longhorn *	0.03	0.00	0.00	0.02	0.01	0.01	0.01	0.04	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	-	0.01	0.01	0.08
scup	8.12	3.48	59.05	10.00	19.87	21.92	6.88	22.34	50.24	14.23	14.96	10.13	131.15	362.67	104.70	46.67	-	195.21	68.07	32.92
sea raven*	0.04	0.02	0.00	0.03	0.00	0.02	0.05	0.02	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	-	0.00	0.01	0.07
searobin, northern *	0.80	0.32	1.19	0.82	1.32	1.73	1.52	1.16	5.05	1.90	1.68	0.57	1.82	4.13	2.18	6.83	-	7.48	3.50	2.28
searobin, striped	1.40	0.31	0.89	0.95	1.07	2.14	0.77	2.96	5.01	2.80	2.50	1.92	5.91	14.42	5.75	6.33	_	11.05	2.74	
shad, American	0.34	0.28	0.25	0.44	0.57	0.57	0.53	0.49	0.46	0.43	0.41	0.48	0.85	0.03	0.32	0.54	-	0.12	0.49	
shad, hickory	0.10	0.25	0.27	0.12	0.02	0.03	0.02	0.01	0.07	0.03	0.11	0.04	0.08	0.02	0.02	0.04	-	0.02	0.04	
skate, clearnose	0.03	0.01	0.07	0.09	0.06	0.08	0.01	0.08	0.39	0.12	0.15	0.15	0.28	0.19	0.14	0.32	-	0.54	0.11	
skate, little *	6.54	1.65	1.40	2.82	1.56	1.03	1.02	1.15	2.15	1.11	1.08	0.61	0.43	0.55	0.52	0.84	-	0.22	0.14	6.75
skate, winter*	0.21	0.09	0.13	0.15	0.12	0.15	0.10	0.14	0.32	0.28	0.26	0.09	0.07	0.05	0.02	0.18	-	0.16	0.04	0.16
spot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89	0.00	0.00	0.00	0.00	0.01	0.00	-	0.00	0.00	
squid, long-finned**	9.43	4.76	11.55	2.14	3.45	6.57	3.20	4.10	3.34	1.47	4.09	3.93	5.97	6.80	4.57	1.46	-	8.81	2.04	4.80
striped bass *	0.56	1.17	0.61	1.02	0.57	0.60	0.40	0.48	0.43	0.67	0.41	0.20	0.48	0.34	0.57	0.91	-	0.38	0.92	0.5
sturgeon, Atlantic	0.00	0.02	0.05	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.00	0.00	0.02	0.00	0.00	0.01	-	0.07	0.02	
tautog *	0.54	0.57	0.64	0.48	0.50	0.40	0.25	0.38	0.44	0.43	0.51	0.47	0.59	0.43	0.62	0.59	-	0.72	0.78	0.67
weakfish	0.10	0.17	0.14	0.07	0.03	0.05	0.01	0.08	0.50	0.32	0.11	0.02	0.55	0.57	0.04	0.34	-	0.88	0.15	

Table 5.17. Fall indices of abundance for selected species, 1984-2022.

The geometric mean count per tow was calculated for 38 finfish and 2 invertebrates using September-October data. An asterisk next to the species name and a time series mean, indicates that the fall index provides a better estimate than the spring index (Simpson et al. 1991). Two asterisks indicate that both the spring and the fall indices provide good estimates. There was no fall sampling in 2010 and 2020.

										F	all									
Species	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
alewife	0.42	0.01	0.05	0.04	0.19	0.16	0.11	0.07	0.19	0.40	0.66	0.16	0.24	1.23	0.11	0.42	0.25	0.55	0.22	0.58
black sea bass	0.03	0.11	0.01	0.03	0.05	0.01	0.06	0.14	0.01	0.04	0.06	0.01	0.05	0.03	0.07	0.23	0.18	0.43	1.01	0.15
bluefish *	23.41	19.01	13.66	14.32	15.49	26.25	23.88	33.43	25.22	18.92	32.06	24.46	20.80	37.90	31.41	45.31	20.57	24.24	18.75	28.53
butterfish *	51.93	89.72	63.41	60.09	146.67	174.87	154.65	170.59	301.72	87.73	93.05	320.06	173.74	186.62	355.49	477.91	125.97	142.89	165.07	112.86
cunner	0.09	0.05	0.05	0.06	0.05	0.06	0.05	0.08	0.09	0.05	0.05	0.03	0.01	0.05	0.08	0.06	0.07	0.04	0.03	0.06
dogfish, smooth *	2.47	1.92	1.43	0.81	0.91	0.41	0.55	0.46	0.78	0.95	0.49	0.46	0.80	0.59	0.72	0.93	1.88	1.69	3.58	3.10
dogfish, spiny	0.04	0.00	0.00	0.03	0.01	0.00	0.12	0.00	0.02	0.05	0.10	0.00	0.01	0.04	0.07	0.03	0.04	0.16	0.05	0.00
flounder, fourspot	1.18	1.03	0.50	0.37	1.73	0.80	1.47	0.74	1.44	1.55	1.33	0.44	2.05	3.29	1.63	1.19	1.15	1.17	1.09	0.96
flounder, summer *	0.99	1.19	1.73	1.40	1.42	0.14	0.87	1.26	1.02	1.11	0.55	0.54	2.19	2.50	1.72	2.68	1.91	4.42	6.12	3.39
flounder, windowpane	22.11	11.56	7.32	6.85	12.10	8.68	7.19	4.71	6.79	9.48	3.89	2.43	28.13	13.36	4.64	2.53	2.81	1.81	1.86	3.39
flounder, winter	7.31	2.75	3.86	5.42	10.07	11.03	15.42	6.10	6.41	9.32	6.13	3.77	12.29	7.75	6.69	8.66	7.08	3.07	1.74	1.25
hake, red	0.74	0.33	1.00	0.37	0.75	1.14	0.44	0.33	0.39	1.81	0.59	0.20	1.62	0.89	0.53	0.29	1.20	0.41	0.15	0.73
hake, silver	0.55	0.23	1.65	0.01	0.30	0.60	0.96	0.32	0.48	0.20	3.34	0.22	0.06	0.80	0.07	0.16	0.09	0.07	0.07	0.18
hake, spotted *	0.28	0.17	0.21	0.14	0.10	0.05	0.11	0.03	0.39	1.48	0.50	0.16	1.68	0.12	0.41	0.61	1.18	0.35	0.86	1.95
herring, Atlantic	0.00	0.00	0.01	0.02	0.40	0.08	0.04	0.03	1.47	0.14	0.14	0.00	0.19	0.06	0.25	0.00	0.02	0.00	0.00	0.38
herring, blueback *	0.38	0.16	0.07	0.13	0.53	0.34	0.10	0.04	0.08	0.11	0.93	0.27	0.05	0.75	0.16	0.06	0.06	0.20	0.06	0.10
hogchoker *	0.90	0.56	0.21	0.17	0.30	0.17	0.22	0.38	0.15	0.18	0.05	0.07	0.18	0.05	0.05	0.19	0.10	0.15	0.21	0.26
kingfish, northern *	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.02	0.06	0.03	0.19	0.04	0.04	0.12	0.05	0.01	0.02	0.01	0.00
lobster, American **	7.41	3.33	4.75	5.95	3.54	3.75	7.29	9.90	9.52	11.50	10.13	8.05	10.07	19.60	10.47	11.18	6.83	4.28	2.68	3.03
menhaden, Atlantic *	0.23	0.15	0.79	0.14	0.13	0.45	0.66	0.59	2.00	0.40	1.02	0.56	0.43	0.57	0.73	1.08	0.97	0.32	0.76	0.95
moonfish *	0.05	0.33	0.11	0.04	0.41	0.10	0.04	0.17	0.22	0.04	0.34	0.25	1.99	0.91	2.08	1.15	2.11	0.82	1.36	0.69
ocean pout	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
rockling, fourbeard	0.08	0.01	0.04	0.05	0.21	0.15	0.07	0.04	0.06	0.03	0.06	0.01	0.11	0.07	0.03	0.04	0.12	0.03	0.01	0.04
scad, rough *	0.13	0.08	0.03	0.27	0.42	0.08	0.07	0.04	0.00	0.03	0.03	0.00	0.11	0.07	0.00	0.00	0.00	0.03	0.07	0.14
sculpin, longhorn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
scupiii, iongnorii	10.72	30.97	25.76	18.54	39.70	65.09	69.48	311.57	83.73	77.06	92.52	59.14	61.46	41.28	103.27	537.68	521.10	177.64		152.23
sea raven	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
searobin, northern	0.20	0.22	0.31	0.03	0.38	0.18	0.43	0.43	0.15	0.25	0.80	0.12	0.27	0.14	0.93	0.62	0.47	1.15	1.25	0.51
searobin, striped *	2.75	3.44	1.64	0.90	3.44	3.83	2.39	1.97	2.75	4.44	2.00	0.12	4.03	2.62	3.68	4.48	5.68	3.34	4.85	6.44
shad. American *	3.13	0.19	0.27	0.29	2.66	3.10	0.65	0.72	0.54	1.11	1.84	1.90	0.27	0.91	1.22	1.73	0.55	0.41	0.76	0.75
shad, hickory *	0.02	0.19	0.27	0.29	0.00	0.00	0.03	0.72	0.05	0.04	0.10	0.04	0.27	0.10	0.05	0.12	0.09	0.41	0.76	0.73
skate, clearnose *	0.02	0.00	0.03	0.01	0.00	0.00	0.01	0.00	0.05	0.04	0.10	0.04	0.03	0.10	0.03	0.12	0.09	0.03	0.04	0.03
skate, little	4.41	3.62	4.01	2.72	8.13	4.31	7.50	5.24	5.52	10.00	6.41	3.37	11.55	6.90	7.73	5.23	5.25	5.07	5.39	2.99
*	0.00	0.01	0.00	0.00	0.03	0.03	0.05	0.02	0.07	0.09	0.41	0.07	0.17	0.90	0.05	0.06	0.01	0.13	0.13	0.00
skate, winter			0.00	0.00	0.03	0.03	0.05	0.02	0.07	0.09	0.12	0.07	0.17	0.08	0.05	0.06	0.61	0.13	0.13	0.00
spot *	0.00	0.18					69.12								202.29		109.87		35.48	269.32
squid, long-finned **	nc 0.01	nc	27.40	28.60	159.16	85.60		62.97	172.95	272.11	127.96		180.99	68.57		132.50		60.18		
striped bass	0.01	0.00	0.01	0.01	0.03	0.00	0.00	0.05	0.05	0.09	0.06	0.08	0.13	0.40	0.18	0.23	0.27	0.23	0.37	0.12
sturgeon, Atlantic *	0.03	0.01	0.03	0.03	0.00	0.02	0.02	0.01	0.08	0.08	0.06	0.02	0.01	0.02	0.02	0.07	0.03	0.08	0.05	0.10
tautog	0.72	0.32	0.22	0.50	0.25	0.17	0.16	0.23	0.20	0.15	0.14	0.11	0.07	0.11	0.23	0.36	0.23	0.20	0.26	0.37
weakfish *	1.55	6.35	13.56	0.73	3.54	8.69	5.71	12.11	3.22	4.18	11.21	5.64	15.49	12.93	5.28	31.36	63.42	40.51	41.45	49.46

#### Table 5.17 Continued. Fall indices of abundance for selected species, 1984-2022.

The geometric mean count per tow was calculated for 38 finfish and 2 invertebrates using September-October data. An asterisk next to the species name and a time series mean, indicates that the fall index provides a better estimate than the spring index (Simpson et al. 1991). Two asterisks indicate that both the spring and the fall indices provide good estimates. There was no fall sampling in 2010 and 2020.

										Fall										84-21
Species	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Mean
alewife	0.26	0.43	0.05	0.95	0.42	0.18	-	0.43	0.07	0.40	0.18	0.64	0.11	0.15	0.19	0.34	-	0.41	0.10	
black sea bass	0.35	0.17	0.24	0.36	0.93	0.26	-	0.29	1.49	0.99	1.35	0.65	1.37	0.91	1.29	1.86	-	1.63	2.50	
bluefish *	29.13	18.89	15.66	30.66	14.28	18.11	-	11.10	15.06	9.71	18.61	8.42	11.25	8.05	4.00	11.19	-	7.24	4.61	20.25
butterfish *	175.37	197.24	140.23	154.53	181.71	409.75	-	39.62	132.47	60.24	132.54	96.23	172.44	116.05	101.39	111.46	-	97.42	104.45	160.38
cunner	0.04	0.05	0.02	0.01	0.05	0.05	-	0.01	0.03	0.01	0.02	0.01	0.00	0.00	0.00	0.00	-	0.02	0.00	
dogfish, smooth *	1.44	1.41	0.94	2.27	0.63	1.13	-	1.43	2.41	4.13	5.78	7.30	5.24	8.29	7.17	6.01	-	8.03	8.19	2.46
dogfish, spiny	0.18	0.22	0.00	0.00	0.11	0.08	-	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	-	0.00	0.00	
flounder, fourspot	1.14	1.11	0.65	0.73	1.30	1.82	-	1.35	0.81	0.42	0.86	0.41	0.24	0.04	0.48	0.20	-	0.23	0.16	
flounder, summer *	1.95	2.41	1.35	1.89	3.09	3.12	-	2.56	3.74	3.07	1.71	2.03	1.92	1.35	2.43	1.44	-	3.05	2.59	2.06
flounder, windowpane	2.27	6.14	1.54	3.65	7.95	5.59	-	5.32	3.38	3.13	2.42	1.67	1.10	1.01	2.19	1.17	-	1.57	1.41	
flounder, winter	2.19	2.15	0.94	0.82	2.26	1.55	-	1.27	1.37	0.33	0.44	0.81	0.28	0.09	0.14	0.11	-	0.32	0.16	
hake, red	0.76	0.45	0.33	0.54	0.41	0.90	-	0.60	0.21	0.39	0.66	1.14	0.01	0.16	0.41	0.57	-	0.36	0.68	
hake, silver	0.18	0.09	0.64	0.04	0.28	0.18	-	0.41	0.40	0.12	0.11	0.16	0.02	0.12	0.35	0.41	-	0.13	0.56	
hake, spotted *	0.14	0.32	0.56	0.39	0.69	1.11	-	2.62	1.15	1.93	1.49	0.91	0.74	2.04	3.72	1.80	-	2.14	0.04	0.90
herring, Atlantic	0.02	0.02	0.03	0.02	0.02	0.06	-	0.04	0.00	0.03	0.03	0.10	0.00	0.00	0.07	0.00	-	0.00	0.01	
herring, blueback *	0.09	0.06	0.15	0.24	0.05	0.09	_	0.08	0.01	0.00	0.04	0.17	0.21	0.24	0.04	0.06	_	0.04	0.05	0.17
hogchoker *	0.15	0.13	0.11	0.20	0.12	0.09	_	0.59	0.94	0.65	0.67	1.06	0.89	1.18	2.55	1.15	-	3.10	1.76	0.50
kingfish, northern *	0.04	0.03	0.00	0.04	0.05	0.05	_	0.21	0.24	0.09	0.23	0.38	0.16	0.08	0.34	0.08	-	0.41	0.37	0.09
lobster, American **	3.68	2.10	1.48	1.21	2.07	1.82	_	0.38	0.29	0.16	0.09	0.08	0.02	0.02	0.01	0.00	-	0.02	0.03	4.63
menhaden, Atlantic *	1.63	0.94	0.23	0.80	0.47	0.28	_	0.74	0.94	0.39	0.61	2.49	0.80	0.43	0.75	2.20	-	0.48	2.02	0.75
moonfish *	0.74	1.55	1.51	1.66	5.08	10.03	_	1.50	0.79	2.62	3.92	1.06	0.77	1.16	0.79	4.57	-	4.48	0.82	1.54
ocean pout	0.00	0.00	0.00	0.00	0.00	0.00	_	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	
rockling, fourbeard	0.04	0.01	0.00	0.02	0.06	0.04	_	0.03	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	-	0.00	0.02	
scad, rough *	0.09	0.19	0.15	0.08	0.00	0.38	_	0.32	0.12	0.14	0.04	0.37	0.01	0.06	0.00	0.00	-	0.08	0.03	0.11
sculpin, longhorn	0.00	0.00	0.00	0.00	0.00	0.00	_	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	_	0.00	0.00	
scup *	291.46		116.75	475.29	303.26	139.38	_	198.23		40.68	182.58	422.23	307.01	212.15	228.62	129.46	_	221.80	404.31	187.34
sea raven	0.00	0.00	0.00	0.00	0.00	0.00	_	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	
searobin, northern	1.03	0.68	0.21	1.05	1.11	0.88	_	1.19	2.07	1.56	2.70	0.84	1.24	0.79	2.32	1.38	-	2.57	2.70	
searobin, striped *	4.67	3.26	0.81	2.25	3.66	3.54	_	4.10	7.06	5.29	5.83	6.93	3.51	3.13	6.34	3.50	-	6.56	4.66	3.77
shad, American *	0.95	0.54	0.12	0.38	0.41	0.46	-	0.42	0.44	0.31	0.20	0.71	0.85	0.63	0.80	1.43	-	1.36	0.42	0.92
shad, hickory *	0.13	0.25	0.24	0.08	0.03	0.06	_	0.05	0.19	0.16	0.04	0.02	0.02	0.02	0.03	0.03	_	0.11	0.01	0.07
skate, clearnose *	0.10	0.48	0.23	0.44	0.38	0.24	_	0.27	0.73	0.68	0.34	0.47	0.43	0.36	0.33	0.29	-	0.58	0.66	0.22
skate, little	3.12	3.90	1.03	1.09	1.28	0.99	_	0.84	1.14	0.63	0.82	0.55	0.48	0.20	0.26	0.05	-	0.14	0.05	
skate, winter	0.07	0.10	0.00	0.06	0.21	0.10	_	0.05	0.17	0.12	0.09	0.04	0.02	0.10	0.00	0.01	-	0.02	0.02	
spot *	0.07	0.00	0.19	0.00	2.67	0.01	_	0.04	1.60	1.70	0.16	0.10	0.07	0.62	0.19	0.34	-	0.34	0.52	0.32
squid, long-finned **	94.47	81.12	70.58	179.39	114.99	187.15	_	85.68	62.53	32.59	112.67	195.00	94.57	114.90	100.45	82.66	-	79.43	129.67	114.96
striped bass	0.77	0.25	0.47	0.38	0.44	0.30	_	0.24	0.17	0.26	0.17	0.26	0.14	0.16	0.40	0.27	_	0.07	0.09	
sturgeon, Atlantic *	0.04	0.03	0.10	0.05	0.06	0.10	_	0.02	0.02	0.01	0.05	0.01	0.06	0.01	0.05	0.05	_	0.07	0.07	0.04
tautog	0.16	0.19	0.20	0.13	0.23	0.08	_	0.07	0.14	0.15	0.18	0.15	0.23	0.09	0.28	0.28	_	0.27	0.24	0.01
weakfish *	59.07	26.00	1.50		9.11	6.65	_	12.27	22.27	7.50	41.56	31.05	6.33	8.37	25.84	15.44	_	28.88	35.07	19.51

**Table 5.18. Finfish and invertebrate biomass indices for the spring sampling period, 1992-2022.**The geometric mean weight (kg) per tow was calculated for 38 finfish and 15 invertebrate species for the spring (April-June) sampling period. There was no spring in 2020.

															5	Spring															
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
alewife	0.06	0.17	0.32	0.15	0.50	0.25	0.20	0.37	0.34	0.15	0.25	0.19	0.25	0.22	0.21	0.31	0.22	0.24	0.16	0.17	0.17	0.20	0.18	0.12	0.37	0.01	0.30	0.30	-	0.04	0.1
black sea bass	0.01	0.03	0.06	0.03	0.06	0.06	0.02	0.05	0.07	0.17	0.40	0.17	0.15	0.07	0.04	0.14	0.10	0.21	0.18	0.18	0.34	0.43	1.37	1.44	1.48	3.05	2.20	2.21	-	2.69	2.05
bluefish	0.45	0.08	0.13	0.04	0.10	0.23	0.17	0.35	0.09	0.08	0.36	0.20	0.12	0.14	0.23	0.21	0.11	0.30	0.03	0.24	0.11	0.18	0.03	0.01	0.05	0.05	0.02	0.00	-	0.05	0.04
butterfish	0.43	0.10	0.31	0.19	0.73	1.27	1.06	0.52	0.69	0.79	1.48	0.64	0.41	0.55	2.30	0.66	1.06	1.37	0.49	2.69	1.87	0.66	0.61	0.66	2.03	1.54	1.06	0.49	-	1.49	0.83
cunner	0.02	0.04	0.01	0.03	0.02	0.03	0.04	0.04	0.03	0.04	0.05	0.03	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.00	-	0.01	0.00
dogfish, smooth	1.04	0.44	1.14	0.63	0.83	0.42	0.90	1.05	0.85	0.82	2.31	1.10	0.87	0.77	2.83	1.14	1.88	2.07	0.18	2.90	1.68	1.32	1.27	1.41	3.21	6.17	2.58	1.99	-	6.05	0.98
dogfish, spiny	0.10	0.02	0.12	0.00	0.00	0.01	0.03	0.02	0.00	0.08	0.06	0.07	0.07	0.05	0.21	0.25	0.15	0.84	0.07	0.37	0.11	0.16	0.12	0.20	0.09	0.09	0.05	0.06	-	0.00	0.00
flounder, fourspot	2.19	0.75	0.75	1.48	1.37	2.08	1.28	0.96	1.31	1.28	1.35	1.01	1.03	0.44	0.60	1.05	0.93	0.64	0.62	1.23	1.60	0.75	0.65	0.34	0.61	0.59	0.74	0.71	-	0.43	0.09
flounder, summer	0.35	0.27	0.48	0.16	0.53	0.60	1.15	1.09	1.35	1.21	2.38	2.45	1.69	0.67	0.61	1.72	1.44	1.40	1.28	2.73	2.22	2.16	2.09	1.07	1.05	1.36	1.48	1.94	-	2.63	0.90
flounder, windowpane	1.96	2.53	2.96	1.60	4.76	4.16	3.21	2.38	1.69	1.97	1.31	1.21	1.32	0.54	0.63	2.51	2.04	1.29	2.20	1.86	1.74	1.32	1.26	0.78	0.56	0.71	0.86	1.06	-	0.80	0.32
flounder, winter	8.72	7.54	9.44	6.51	14.61	10.63	9.65	6.67	7.46	9.77	6.31	6.64	3.87	2.94	1.65	4.99	3.84	2.94	4.26	3.60	2.72	2.26	1.46	1.01	0.82	0.26	0.77	0.45	-	0.40	0.43
hake, red	0.78	0.85	0.14	0.66	0.21	0.33	0.94	1.05	0.59	0.45	0.96	0.13	0.20	0.22	0.25	0.67	0.61	0.23	0.47	0.09	0.65	0.24	0.11	0.03	0.24	0.10	0.13	0.35	-	0.23	0.42
hake, silver	0.20	0.14	0.40	0.36	0.12	0.39	0.48	0.56	0.19	0.54	0.52	0.06	0.16	0.05	0.33	0.10	1.02	0.27	0.33	0.26	0.87	0.15	0.07	0.03	0.20	0.13	0.12	0.71	-	0.23	0.14
hake, spotted	0.01	0.01	0.00	0.02	0.03	0.09	0.03	0.13	0.27	0.17	0.20	0.13	0.18	0.05	0.14	0.11	0.31	0.07	0.14	0.21	0.22	0.20	0.15	0.05	0.53	0.50	0.30	0.54	-	0.28	0.04
herring, Atlantic	1.06	2.03	1.09	1.77	0.55	0.88	0.25	0.22	0.42	0.26	0.14	0.19	0.12	0.32	0.09	0.55	0.19	0.37	0.65	0.30	0.17	0.60	0.32	0.18	0.16	0.02	0.16	0.40	_	0.01	0.03
herring, blueback	0.05	0.02	0.06	0.03	0.04	0.04	0.02	0.00	0.04	0.02	0.01	0.02	0.04	0.04	0.02	0.04	0.02	0.06	0.04	0.02	0.01	0.03	0.02	0.03	0.02	0.00	0.07	0.03	-	0.00	0.00
hogchoker	0.04	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.03	0.04	0.04	0.04	0.04	0.03	0.02	0.05	0.03	0.02	0.04	0.06	0.07	0.09	0.10	0.05	0.14	0.28	0.26	0.18	-	0.26	0.12
kingfish, northern	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.01	-	0.02	0.00
menhaden, Atlantic	0.07	0.03	0.03	0.04	0.01	0.01	0.00	0.00	0.02	0.00	0.03	0.01	0.01	0.00	0.02	0.07	0.03	0.04	0.03	0.07	0.29	0.22	0.37	0.39	0.23	0.39	0.15	0.23	_	0.34	0.25
moonfish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	_	0.00	0.00
ocean pout	0.07	0.09	0.04	0.04	0.04	0.03	0.02	0.02	0.03	0.01	0.03	0.02	0.03	0.00	0.01	0.02	0.01	0.03	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	_	0.00	0.00
rockling, fourbeard	0.07	0.10	0.05	0.10	0.04	0.03	0.02	0.02	0.09	0.12	0.05	0.02	0.03	0.05	0.01	0.02	0.01	0.03	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
scad, rough	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	=	0.02	0.00
scau, rough sculpin, longhorn	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00
1	0.08	0.02	0.51	0.65	0.01	0.01	0.01	0.56	4.56	2.85	13.16	2.28	3.93	1.65	10.41	3.35	5.88	6.40	3.14	9.55	9.99	6.47	5.61	3.53	20.25	58.66	27.33	15.36	-	39.53	19.73
scup		0.49	0.00	0.00	0.73	0.73	0.73	0.03	0.05	0.02	0.03	0.01	0.01	0.00	0.00	0.02	0.00		0.02	0.01	0.01	0.00	0.01	0.00	0.00	0.00		0.00	-	0.00	0.00
sea raven	0.03					0.00											0.00	0.01						0.00			0.00		-	0.00	
searobin, northern	0.26	0.35	0.28	0.27	0.28	0.33	0.17	0.22	0.70	0.51	0.51	0.40	0.29	0.08	0.35	0.26	0.23	0.44	0.52	0.30	0.81	0.34	0.39	0.22	0.50	0.98	0.71	1.17	-	1.81	0.96
searobin, striped	0.86	0.30	0.51	0.77	0.46	0.40	0.87	1.14	1.99	1.40	2.21	1.21	0.97	0.22	0.49	0.56	0.65	1.34	0.47	1.81	2.25	1.54	1.53	1.21	3.13	6.54	3.09	3.10	-	4.92	1.50
shad, American	0.29	0.09	0.21	0.10	0.11	0.23	0.13	0.20	0.05	0.01	0.11	0.03	0.04	0.05	0.05	0.07	0.08	0.07	0.07	0.07	0.10	0.06	0.07	0.06	0.15	0.01	0.03	0.07	-	0.02	0.10
shad, hickory	0.01	0.01	0.01	0.01	0.03	0.02	0.05	0.06	0.05	0.03	0.09	0.05	0.04	0.10	0.11	0.05	0.00	0.01	0.00	0.00	0.02	0.01	0.05	0.02	0.03	0.01	0.01	0.01	-	0.01	0.02
skate, clearnose	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.04	0.06	0.13	0.07	0.04	0.02	0.08	0.12	0.08	0.11	0.02	0.11	0.54	0.17	0.21	0.23	0.39	0.30	0.21	0.48	-	0.85	0.15
skate, little	5.89	5.99	8.87	3.38	9.35	6.00	6.27	4.25	3.43	4.47	4.56	4.35	4.01	1.05	0.91	1.82	0.97	0.71	0.66	0.79	1.34	0.74	0.71	0.41	0.30	0.37	0.33	0.58	-	0.15	0.09
skate, winter	0.37	0.52	0.28	0.21	0.46	0.29	0.46	0.27	0.25	0.21	0.25	0.24	0.28	0.12	0.22	0.23	0.19	0.23	0.15	0.25	0.46	0.25	0.33	0.12	0.10	0.05	0.02	0.23	-	0.14	0.03
spot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00
striped bass	0.31	0.43	0.45	0.49	0.77	1.13	1.15	1.86	1.13	0.93	2.10	1.38	0.87	1.52	1.27	1.37	0.86	0.93	0.66	0.96	0.58	0.98	0.54	0.29	0.50	0.57	0.81	1.11	-	0.59	1.66
sturgeon, Atlantic	0.05	0.05	0.08	0.03	0.02	0.04	0.13	0.08	0.05	0.03	0.16	0.00	0.00	0.05	0.15	0.06	0.02	0.02	0.02	0.08	0.10	0.06	0.00	0.00	0.07	0.00	0.00	0.03	-	0.29	0.08
tautog	1.00	0.51	0.51	0.19	0.63	0.42	0.49	0.51	0.59	0.78	1.09	0.61	0.62	0.65	0.84	0.61	0.60	0.51	0.30	0.44	0.38	0.40	0.51	0.42	0.53	0.48	0.56	0.54	-	0.59	0.68
weakfish	0.11	0.03	0.01	0.05	0.06	0.15	0.20	0.31	0.12	0.11	0.12	0.03	0.04	0.09	0.12	0.08	0.02	0.04	0.01	0.04	0.39	0.22	0.08	0.01	0.23	0.33	0.02	0.11	-	0.44	0.09
Invertebrates																															
crab, blue	0.03	0.02	0.00	0.02	0.00	0.02	0.02	0.03	0.04	0.01	0.04	0.01	0.01	0.00	0.01	0.04	0.02	0.00	0.02	0.03	0.04	0.03	0.00	0.00	0.02	0.04	0.02	0.01	-	0.05	0.01
crab, flat claw hermit	0.15	0.08	0.18	0.02	0.09	0.04	0.10	0.10	0.07	0.12	0.14	0.32	0.17	0.05	0.04	0.11	0.09	0.12	0.08	0.09	0.05	0.07	0.07	0.03	0.03	0.03	0.06	0.04	-	0.10	0.01
crab, horseshoe	0.35	0.45	0.60	0.13	0.61	0.33	0.55	0.80	0.74	0.94	0.76	1.33	0.96	0.39	0.25	0.86	0.62	0.65	0.52	0.81	0.55	0.70	0.45	0.38	0.29	0.15	0.80	0.67	-	0.87	0.78
crab, lady	0.25	0.23	0.16	0.18	0.50	0.50	0.39	0.16	0.13	0.04	0.07	0.01	0.01	0.01	0.04	0.02	0.02	0.01	0.06	0.11	0.06	0.01	0.01	0.01	0.00	0.03	0.01	0.01		0.01	0.03
crab, rock	1.17	0.61	0.64	0.14	0.45	0.32	1.04	0.55	0.25	0.35	0.31	0.36	0.14	0.05	0.16	0.16	0.20	0.18	0.13	0.25	0.16	0.06	0.03	0.02	0.05	0.01	0.02	0.01	_	0.02	0.01
crab, spider	0.98	1.08	1.22	0.32	0.45	0.52	0.69	0.39	0.35	1.02	1.30	1.85	1.42	0.36	0.27	0.55	0.57	0.46	0.70	0.78	0.74	0.62	0.55	0.42	0.72	0.69	0.51	0.56	_	0.57	0.23
jellyfish, lion's mane	0.01	0.11	0.01	0.15	0.10	0.08	0.19	0.06	0.06	0.03	0.02	0.23	0.14	0.38	0.11	0.00	0.10	0.03	0.08	0.78	0.74	0.16	0.14	0.42	0.72	0.03	0.09	0.03	_	0.04	0.29
lobster, American	2.80	2.32	1.53	3.24	2.72	3.02	6.56	4.95	3.90	3.04	2.55	1.48	1.03	1.00	0.11	1.24	1.18	0.62	0.55	0.30	0.33	0.17	0.14	0.03	0.01	0.03	0.03	0.05	_	0.04	0.00
mussel, blue	0.31	0.01	0.07	0.03	0.03	0.01	0.05	0.03	0.04	0.01	0.17	0.08	0.11	0.09	0.04	0.04	0.02	0.02	0.02	0.30	0.33	0.17	0.13	0.12	0.13	0.03	0.03	0.00	-	0.02	0.00
,	0.05	0.01		0.03	0.03	0.01	0.03	0.05		0.01						0.04			0.02	0.02		0.00	0.08	0.02					-	0.01	0.00
northern moon shell			0.12						0.05		0.10	0.10	0.06	0.02	0.00		0.03	0.04			0.01				0.01	0.01	0.01	0.01	-		
oyster, common	0.04	0.00	0.06	0.00	0.00	0.01	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.01	-	0.00	0.00
shrimp, mantis	0.06	0.13	0.05	0.05	0.04	0.03	0.03	0.07	0.18	0.08	0.04	0.03	0.03	0.01	0.02	0.05	0.04	0.04	0.01	0.07	0.05	0.05	0.03	0.02	0.04	0.06	0.02	0.01	-	0.04	0.03
squid, long-finned	1.01	0.91	0.67	0.89	0.55	0.99	0.41	0.62	0.51	0.41	0.42	0.42	1.69	1.08	1.41	0.33	0.40	0.92	0.77	0.61	0.43	0.20	0.76	0.55	0.80	0.61	0.66	0.31	-	0.83	0.35
starfish sp.	0.22	0.13	0.06	0.02	0.03	0.03	0.05	0.04	0.06	0.28	0.24	0.29	0.12	0.06	0.03	0.09	0.13	0.11	0.12	0.09	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	-	0.00	0.00
whelks	0.16	0.04	0.07	0.01	0.07	0.03	0.06	0.08	0.09	0.13	0.12	0.31	0.15	0.05	0.05	0.12	0.11	0.08	0.05	0.13	0.06	0.10	0.05	0.03	0.06	0.04	0.03	0.03	-	0.24	0.05

**Table 5.19. Finfish and invertebrate biomass indices for the fall sampling period, 1992-2022.**The geometric mean weight (kg) per tow was calculated for 38 finfish and 15 invertebrate species for the fall (Sept-Oct) sampling period. There was no fall sampling in 2010 and 2020.

																Fall															
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
alewife	0.03	0.08	0.10	0.02	0.04	0.22	0.02	0.07	0.02	0.09	0.03	0.09	0.04	0.05	0.01	0.14	0.04	0.02	-	0.06	0.01	0.03	0.03	0.10	0.01	0.01	0.01	0.04	-	0.04	0.02
black sea bass	0.01	0.01	0.01	0.00	0.01	0.01	0.05	0.07	0.07	0.23	0.31	0.08	0.08	0.08	0.07	0.14	0.23	0.07	-	0.15	0.33	0.46	0.82	0.49	0.59	0.47	0.71	0.91	-	0.89	0.69
bluefish	16.39	9.91	9.45	8.09	7.62	6.53	5.06	8.51	8.34	6.11	7.87	8.99	16.39	8.75	3.92	9.74	9.19	6.40	-	3.84	3.72	2.73	3.91	2.06	2.97	1.65	1.20	1.86	-	1.28	1.00
butterfish	6.31	4.12	3.40	10.26	9.30	6.97	13.27	15.43	4.45	7.80	6.56	3.47	6.24	7.85	7.73	5.82	8.97	14.39	-	2.81	6.14	3.62	5.97	4.08	6.58	5.56	5.69	4.98	-	4.50	4.58
cunner	0.02	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.01	-	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.01	0.00
dogfish, smooth	1.20	1.75	0.76	0.85	1.16	1.09	1.32	1.27	2.85	3.02	6.09	6.18	2.95	2.70	2.46	6.23	1.25	2.80	-	3.66	4.69	7.93	11.05	11.70	8.30	14.82	9.57	10.66	-	10.76	9.74
dogfish, spiny	0.03	0.08	0.18	0.00	0.01	0.05	0.10	0.05	0.06	0.24	0.07	0.00	0.27	0.34	0.00	0.00	0.18	0.18	-	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	-	0.00	0.00
flounder, fourspot	0.14	0.16	0.14	0.08	0.48	0.24	0.19	0.14	0.35	0.17	0.25	0.30	0.29	0.19	0.06	0.19	0.16	0.21	-	0.11	0.14	0.05	0.10	0.06	0.06	0.02	0.16	0.07	-	0.06	0.04
flounder, summer	0.87	0.85	0.47	0.43	1.61	1.84	1.77	2.27	1.77	3.19	4.41	3.27	1.74	1.93	1.36	1.65	1.97	2.41	-	1.82	2.74	2.18	1.41	1.54	1.69	0.97	1.58	0.95	-	2.16	1.62
flounder, windowpane	0.51	0.73	0.42	0.32	2.11	1.30	0.61	0.38	0.45	0.30	0.38	0.43	0.26	0.57	0.29	0.42	0.98	0.64	-	0.68	0.61	0.57	0.47	0.37	0.26	0.28	0.44	0.29	-	0.43	0.36
flounder, winter	0.84	0.99	0.78	0.45	1.56	1.04	0.87	1.37	1.28	0.62	0.55	0.34	0.32	0.41	0.16	0.22	0.49	0.26	-	0.28	0.40	0.11	0.17	0.22	0.11	0.03	0.06	0.03	-	0.10	0.05
hake, red	0.11	0.34	0.19	0.04	0.48	0.18	0.10	0.06	0.32	0.07	0.02	0.19	0.14	0.10	0.06	0.12	0.09	0.13	-	0.14	0.04	0.08	0.14	0.28	0.00	0.04	0.09	0.09	-	0.08	0.14
hake, silver	0.04	0.02	0.28	0.02	0.01	0.06	0.01	0.03	0.01	0.01	0.01	0.02	0.02	0.01	0.08	0.01	0.03	0.02	-	0.04	0.05	0.02	0.01	0.03	0.00	0.02	0.06	0.05	-	0.02	0.09
hake, spotted	0.09	0.30	0.15	0.04	0.37	0.03	0.08	0.17	0.34	0.09	0.19	0.41	0.03	0.08	0.17	0.10	0.16	0.23	-	0.53	0.27	0.38	0.36	0.28	0.14	0.51	0.96	0.51	-	0.54	0.01
herring, Atlantic	0.07	0.01	0.01	0.00	0.02	0.01	0.02	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.01	-	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	-	0.00	0.00
herring, blueback	0.01	0.01	0.12	0.03	0.01	0.09	0.02	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.03	0.00	0.01	-	0.01	0.00	0.00	0.01	0.03	0.05	0.03	0.00	0.00	-	0.00	0.01
hogchoker	0.02	0.03	0.01	0.01	0.04	0.01	0.01	0.04	0.02	0.03	0.05	0.04	0.03	0.03	0.02	0.04	0.02	0.02	-	0.11	0.17	0.11	0.10	0.23	0.17	0.24	0.53	0.22	-	0.60	0.36
kingfish, northern	0.00	0.01	0.00	0.03	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	-	0.04	0.04	0.02	0.03	0.07	0.03	0.02	0.08	0.01	-	0.05	0.08
menhaden, Atlantic	0.36	0.22	0.36	0.25	0.25	0.24	0.09	0.39	0.22	0.05	0.35	0.25	0.49	0.43	0.06	0.29	0.12	0.10	-	0.39	0.47	0.18	0.31	0.99	0.17	0.18	0.35	1.00	-	0.24	0.83
moonfish	0.02	0.00	0.03	0.03	0.12	0.05	0.13	0.09	0.13	0.04	0.08	0.03	0.04	0.07	0.07	0.11	0.27	0.21	-	0.07	0.04	0.11	0.20	0.12	0.06	0.05	0.03	0.23	-	0.25	0.04
ocean pout	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00
rockling, fourbeard	0.01	0.00	0.01	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00
scad, rough		0.03		0.00	0.02	0.01	0.00			0.00			0.01	0.02	0.01	0.00		0.03	-			0.01		0.00	0.00	0.01			-	0.00	0.00
sculpin, longhorn	0.00 4.96	3.72	0.00	4.63	3.68	2.49	4.50	0.00 22.72	0.00 30.76	11.28	0.00	0.00 28.95	16.31	13.79	0.00 10.49	24.42	0.00 16.53	13.73	-	0.00 20.28	0.00 13.54	0.00 6.47	0.00 10.71	20.95	22.28	0.00 13.68	0.00 20.09	0.00 15.91	-	17.69	23.29
scup sea raven	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00
searobin, northern	0.00	0.05	0.06	0.00	0.00	0.00	0.08	0.06	0.08	0.00	0.18	0.00	0.00	0.00	0.05	0.08	0.09	0.00	-	0.11	0.00	0.23	0.00	0.00	0.00	0.20	0.51	0.36	-	0.70	0.55
searobin, striped	0.02	0.54	0.32	0.02	0.81	0.60	1.04	1.37	1.59	1.27	2.12	2.43	0.11	0.82	0.03	0.08	0.09	0.61	-	1.12	2.81	2.66	2.26	2.84	1.72	1.74	2.91	1.82	-	3.03	1.98
shad, American	0.14	0.35	0.32	0.43	0.06	0.16	0.26	0.42	0.14	0.07	0.16	0.17	0.15	0.10	0.02	0.05	0.08	0.11		0.09	0.08	0.06	0.03	0.12	0.14	0.13	0.14	0.19	_	0.23	0.07
shad, hickory	0.03	0.02	0.04	0.02	0.05	0.05	0.02	0.07	0.05	0.02	0.02	0.05	0.13	0.14	0.11	0.03	0.01	0.02	_	0.01	0.09	0.08	0.03	0.01	0.01	0.01	0.02	0.02	_	0.06	0.01
skate, clearnose	0.06	0.05	0.01	0.04	0.01	0.05	0.02	0.15	0.05	0.53	0.30	0.46	0.17	0.71	0.30	0.69	0.64	0.40	_	0.41	1.01	0.93	0.54	0.66	0.65	0.60	0.50	0.43	_	0.79	0.92
skate, little	2.47	4.61	3.47	1.78	5.66	3.81	4.06	2.85	2.92	2.88	3.00	1.96	2.02	2.32	0.67	0.65	0.82	0.64	_	0.58	0.66	0.44	0.58	0.38	0.32	0.14	0.17	0.03	_	0.07	0.04
skate, winter	0.11	0.15	0.21	0.09	0.25	0.10	0.09	0.08	0.01	0.21	0.21	0.00	0.11	0.16	0.00	0.12	0.31	0.18	_	0.07	0.20	0.15	0.12	0.05	0.02	0.14	0.00	0.01	_	0.01	0.02
spot	0.00	0.07	0.03	0.00	0.14	0.01	0.00	0.06	0.13	0.01	0.08	0.00	0.01	0.00	0.03	0.00	0.34	0.00	_	0.01	0.41	0.47	0.02	0.02	0.02	0.11	0.03	0.08	_	0.09	0.14
striped bass	0.09	0.16	0.11	0.15	0.21	0.68	0.38	0.39	0.51	0.48	0.70	0.26	1.25	0.48	0.88	0.64	0.79	0.61	_	0.43	0.26	0.44	0.26	0.38	0.20	0.30	0.52	0.42	_	0.11	0.19
sturgeon, Atlantic	0.21	0.19	0.13	0.10	0.02	0.06	0.04	0.21	0.08	0.23	0.18	0.27	0.09	0.12	0.23	0.13	0.21	0.29	_	0.10	0.10	0.03	0.11	0.04	0.27	0.05	0.18	0.19	_	0.25	0.16
tautog	0.22	0.22	0.15	0.09	0.07	0.14	0.27	0.31	0.30	0.20	0.27	0.43	0.21	0.23	0.23	0.16	0.20	0.07	_	0.05	0.08	0.11	0.12	0.08	0.19	0.07	0.17	0.20	_	0.20	0.15
weakfish	0.47	0.56	1.26	1.27	1.88	1.70	0.94	3.39	3.17	2.41	2.86	1.72	2.85	2.52	0.42	3.51	1.17	0.66	-	1.37	1.88	0.99	2.13	3.12	1.07	1.10	1.80	1.45	-	2.93	3.50
Invertebrates																															
crab, blue	0.15	0.17	0.05	0.04	0.04	0.11	0.10	0.17	0.11	0.05	0.10	0.06	0.02	0.00	0.01	0.07	0.02	0.04	_	0.09	0.07	0.05	0.02	0.04	0.02	0.01	0.01	0.03	-	0.05	0.01
crab, flat claw hermit	0.17	0.40	0.15	0.11	0.26	0.16	0.35	0.16	0.17	0.33	0.30	0.13	0.18	0.16	0.05	0.12	0.24	0.16	_	0.12	0.13	0.12	0.02	0.04	0.06	0.06	0.04	0.02	-	0.07	0.03
crab, horseshoe	1.01	1.16	0.55	0.32	1.27	1.32	0.93	1.09	1.31	1.39	1.76	1.67	1.93	0.93	1.00	1.40	1.92	1.21	_	1.25	0.65	1.21	0.87	0.58	0.75	0.95	1.72	0.82	-	1.77	1.85
crab, lady	1.52	1.58	1.52	1.56	3.54	1.84	0.82	0.48	0.60	0.17	0.14	0.10	0.08	0.14	0.07	0.07	0.25	0.18	_	0.30	0.20	0.07	0.06	0.02	0.02	0.01	0.01	0.00	-	0.00	0.01
crab, rock	0.58	0.55	0.18	0.09	0.45	0.32	0.37	0.22	0.19	0.13	0.12	0.04	0.08	0.02	0.10	0.04	0.28	0.09	_	0.09	0.05	0.03	0.01	0.00	0.00	0.00	0.00	0.00	_	0.01	0.00
crab, spider	0.53	1.89	0.46	0.25	0.71	0.42	0.25	0.24	0.21	0.30	0.27	0.47	0.32	0.13	0.10	0.15	0.25	0.29	-	0.21	0.18	0.21	0.10	0.07	0.13	0.12	0.11	0.04	-	0.08	0.02
jellyfish, lion's mane	0.02	0.01	0.03	0.17	0.18	0.50	0.17	0.03	0.22	0.17	0.10	0.01	0.13	0.12	0.46	0.45	0.02	0.58	-	0.01	0.03	0.59	0.07	0.00	0.43	0.01	0.04	0.52	_	0.11	0.00
lobster, American	3.17	4.11	3.58	3.03	3.48	7.22	4.24	4.16	2.65	1.91	1.10	1.28	1.46	0.84	0.61	0.51	0.80	0.77	-	0.12	0.10	0.06	0.04	0.04	0.01	0.01	0.00	0.00	-	0.01	0.01
mussel, blue	0.07	0.06	0.12	0.02	0.00	0.01	0.09	0.00	0.04	0.12	0.11	0.02	0.10	0.10	0.02	0.07	0.04	0.03	-	0.03	0.02	0.16	0.06	0.01	0.00	0.01	0.00	0.00	-	0.00	0.00
northern moon shell	0.03	0.02	0.03	0.01	0.01	0.00	0.02	0.01	0.00	0.04	0.10	0.00	0.00	0.01	0.00	0.00	0.03	0.01	-	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00
oyster, common	0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	-	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.01	0.00
shrimp, mantis	0.05	0.08	0.02	0.02	0.13	0.06	0.02	0.09	0.18	0.05	0.06	0.02	0.04	0.03	0.04	0.06	0.08	0.06	-	0.22	0.20	0.14	0.11	0.08	0.05	0.03	0.11	0.07	-	0.26	0.19
squid, long-finned	5.00	7.92	4.71	4.68	5.53	2.20	6.40	6.06	4.05	2.39	1.81	5.88	3.38	3.47	2.15	6.51	4.29	4.25	-	2.52	2.28	1.25	4.01	10.03	3.17	4.73	3.18	2.83	-	3.22	5.88
	0.11	0.08	0.07	0.00	0.01	0.02	0.05	0.02	0.12	0.22	0.09	0.01	0.10	0.11	0.02	0.05	0.09	0.06	-	0.03	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00
starfish sp.																															

Table 5.20. Bluefish indices-at-age, 1984-2022.

The 1984 and the 2013-2022 index-at-age uses annual fall age keys generated by CT LISTS ageing program. Bluefish age keys for 1985-2012 were provided by the ASMFC Bluefish Technical Committee as a combined coastwide annual age keys to calculate LISTS indices-at-age for those earlier years.

Year	season	month	Count	PosTow	Tows	GmMn	Age_0	Age_1	Age_2	Age_3	Age_4	Age_5	Age_6+
1984	FA	Sept/Oct	6,738	84.3	70	23.41	22.4685	0.4116	0.3505	0.1412	0.0243	0.0035	0.0104
1985	FA	Sept/Oct	5,301	87.5	80	19.01	16.9779	0.9518	0.6274	0.2463	0.1456	0.0220	0.0390
1986	FA	Sept/Oct	2,738	92.5	80	13.66	10.8225	1.1835	1.1699	0.1894	0.1280	0.0877	0.0790
1987	FA	Sept/Oct	2,598	93.8	80	14.32	12.1667	1.0064	0.5081	0.3841	0.1321	0.0576	0.0648
1988	FA	Sept/Oct	3,645	93.8	80	15.49	14.2650	0.2111	0.4901	0.1368	0.1703	0.1254	0.0912
1989	FA	Sept/Oct	8,636	88.8	80	26.25	24.9977	0.5751	0.4599	0.0425	0.0196	0.0685	0.0869
1990	FA	Sept/Oct	4,671	93.8	80	23.88	19.3666	2.9695	0.9283	0.1631	0.1284	0.1223	0.2017
1991	FA	Sept/Oct	5,699	98.8	80	33.43	28.4939	1.2789	3.2666	0.1210	0.0555	0.0504	0.1637
1992	FA	Sept/Oct	5,226	97.5	80	25.22	18.8709	1.7599	2.7891	1.3239	0.1818	0.0627	0.2317
1993	FA	Sept/Oct	6,456	91.7	120	18.92	16.7760	0.1098	1.0323	0.3212	0.5663	0.0299	0.0844
1994		Sept/Oct	16,233	93.3	120	32.06	30.5234	0.7623	0.2411	0.1622	0.1373	0.1689	0.0649
1995	FA	Sept/Oct	5,518	92.5	80	24.46	21.6960	1.9621	0.5967	0.0547	0.0447	0.0405	0.0652
1996	FA	Sept/Oct	6,689	91.3	80	20.80	19.8048	0.2200	0.4129	0.2472	0.0132	0.0249	0.0770
1997	FA	Sept/Oct	10,777	92.5	80	37.90	36.5917	0.6024	0.4773	0.0739	0.0668	0.0281	0.0598
1998	FA	Sept/Oct	8,791	91.3	80	31.41	29.8708	0.9734	0.3787	0.1585	0.0107	0.0042	0.0137
1999	FA	Sept/Oct	7,792	96.3	80	45.31	41.8775	2.8916	0.2241	0.2034	0.0501	0.0078	0.0556
2000	FA	Sept/Oct	6,109	92.5	80	20.57	17.2805	2.0259	1.0717	0.1481	0.0011	0.0276	0.0150
2001	FA	Sept/Oct	3,957	93.8	80	24.24	21.4720	1.1260	1.4031	0.1838	0.0204	0.0107	0.0240
2002	FA	Sept/Oct	3,394	90.0	80	18.75	14.0065	3.7885	0.6379	0.0941	0.0192	0.0795	0.1243
2003	FA	Sept/Oct	3,682	92.5	40	28.53	27.3383	0.4251	0.6026	0.0731	0.0206	0.0320	0.0382
2004	FA	Sept/Oct	6,485	90.0	80	29.13	21.4523	5.5148	1.4559	0.3311	0.0677	0.1634	0.1448
2005	FA	Sept/Oct	6,507	88.8	80	18.89	17.7693	0.0868	0.6550	0.2072	0.0884	0.0454	0.0379
2006	FA	Sept/Oct	2,062	92.5	40	15.66	14.2436	0.4875	0.5471	0.2876	0.0639	0.0076	0.0228
2007	FA	Sept/Oct	9,339	87.5	80	30.66	27.2623	1.9842	0.7193	0.4278	0.1097	0.0680	0.0888
2008	FA	Sept/Oct	1,670	97.5	40	14.28	11.8308	0.5624	1.0856	0.3673	0.1193	0.1527	0.1620
2009		Sept/Oct	3,604	97.5	80	18.12	15.6865	0.5196	0.4317	0.8120	0.2967	0.0685	0.2950
2010	FA		No	Fall Sampl	ing	-	-	-	-	-	-	-	
2011	FA	Sept/Oct	2,737	83.8	80	11.10	10.2076	0.2344	0.2097	0.1741	0.1643	0.0465	0.0634
2012	FA	Sept/Oct	3,832	90.0	80	15.06	14.3422	0.2676	0.1849	0.1286	0.0809	0.0220	0.0339
2013		Sept/Oct	1,809	86.3	80		8.8888	0.0322	0.4112	0.1846	0.0886	0.0403	0.0644
2014	FA	Sept/Oct	4,451	91.1	79	18.61	18.1376	0.2111	0.0689	0.0627	0.0669	0.0418	0.0209
2015	FA	Sept/Oct	2,647	81.3	80	8.42	8.2516	0.0222	0.0604	0.0127	0.0222	0.0318	0.0191
2016	FA	Sept/Oct	2,785	82.5	80		8.5035	1.5980	0.4246	0.5751	0.0656	0.0210	0.0622
2017	FA	Sept/Oct	2,397	75.0	80	8.05	7.9290	0.0403	0.0303	0.0336	0.0101	0.0000	0.0067
2018	FA	Sept/Oct	697	82.5	80	4.00	3.4097	0.5346	0.0313	0.0206	0.0037	0.0000	0.0000
2019	FA	Sept/Oct	2,047	86.3	80	11.19	10.7158	0.3030	0.1289	0.0273	0.0000	0.0000	0.0109
2020	FA		No	Fall Sampl	ing	-	-	-	-	-	-	-	-
2021	FA	Sept/Oct	1,197	82.2	73	7.24	6.9376	0.0415	0.1637	0.0615	0.0297	0.0000	0.0000
2022	FA	Sept/Oct	878	77.5	80	4.61	4.4105	0.0665	0.0123	0.0420	0.0461	0.0256	0.0070

Table 5.21. Scup spring indices-at-age, 1984-2022.

Spring (May and June) catch and age data were used to determine the geometric mean indices-at-age<sup>1</sup>. The spring age keys were used to expand length frequencies to age frequencies and then the spring 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+ index<sup>2</sup>.

						Sprin	g (May-J	une)					
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
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
2014	60.483	45.822	0	14.661	10.635	23.833	5.069	1.504	2.323	1.486	0.608	0.319	0.045
2015	36.141	17.961	0	18.180	5.546	3.985	5.037	1.747	0.570	0.595	0.266	0.121	0.093
2016	972.305	318.511	0	653.794	191.206	68.931	15.618	29.868	5.192	3.221	2.646	1.294	0.535
2017	362.667	328.064	0	34.603	208.316	81.228	14.656	7.525	11.522	1.836	1.186	0.939	0.856
2018	200.594	190.608	0	9.986	39.936	110.787	29.408	2.909	4.540	2.077	0.547	0.243	0.161
2019	144.077	135.292	0	8.785	15.153	41.432	57.186	13.972	2.997	2.713	0.888	0.652	0.300
2020								ng Survey i					
2021	195.205	152.564	0	42.642	13.155	34.715	19.836	32.287	39.430	9.590	2.817	0.550	0.184
2022	290.529	232.420	0	58.109	52.631	35.413	36.046	36.182	48.413	19.310	3.761	0.431	0.235
84-21													
Mean	83.847	52.840	0.000	31.006	21.938	17.201	6.340	3.587	2.371	0.857	0.332	0.136	0.078

<sup>(1)</sup> In some years, less than the number of scheduled tows were conducted in some months (Table 5.4).

<sup>(2)</sup> Fish in the age 10+ group include: 6 fish taken 1984-1988, 7 fish taken 2002-2010, 63 taken in 2011, 25 taken in 2012, 24 taken in 2013, 10 taken in 2014, 27 fish in 2015, 28 fish in 2016, 44 fish in 2017, 31 fish in 2018, 40 fish in 2019, 20 fish in 2021, and 18 fish in 2022. The oldest scup aged were two 15-year-old fish taken in 2015.

Table 5.21. Scup fall indices-at-age, 1984-2022 cont.

Fall (September and October) catch and age data were used to determine the geometric mean indices-at-age<sup>1</sup>. The fall age keys were used to expand length frequencies to age frequencies and then the 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+ index<sup>2</sup>.

						Fal	l (Sept-O	ct)					
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	
2001	177.641	20.239	140.506	16.897	18.421	1.607	0.186	0.025	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	
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	
2005	424.063	18.183	373.318	32.562	8.144	2.437	4.015	1.505	1.689	0.332	0.060	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	
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	
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	
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	
2010						****		l Survey in		*****	******	****	
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	
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	
2014	182.583	14.003	144.702	23.878	4.325	6.505	1.188	0.426	0.808	0.476	0.193	0.051	
2015	422.228	31.773	330.498	59.957	14.802	4.859	8.230	1.723	0.551	0.917	0.410	0.209	
2016	307.010	97.769	55.695	153.546	54.808	18.187	9.458	10.490	2.765	1.150	0.700	0.195	
2017	212.145	47.700	127.558	36.887	28.211	11.197	2.266	2.209	2.492	0.448	0.589	0.196	
2018	228.622	87.177	120.894	20.552	24.723	45.670	12.192	3.010	1.246	0.201	0.089	0.029	
2019	129.462	48.567	56.796	24.100	5.216	12.116	19.092	9.836	1.138	0.637	0.422	0.090	
2020	12732		20	250	0.210	12.110		l Survey in		0.007	022	0.070	0.021
2021	221.801	47.953	151.255	22.5930	3.0203	11.7284	7.2471	14.1725	8.9239	2.4591	0.2955	0.0718	0.034
2022	404.306	56.011	299.930	48.365	6.852	8.467	15.071	14.902	8.771	1.026	0.2733	0.068	
84-21	101.500	30.011	277.730	10.505	0.052	0.107	13.071	11.702	0.771	1.020	0.770	0.000	0.077
Mean	187.337	22.366	130.156	34.815	10.210	6.063	3.280	1.683	0.731	0.253	0.102	0.031	0.012

<sup>(1)</sup> In some years, less than the number of scheduled tows were conducted in some months (Table 5.4).

<sup>(2)</sup> Fish in the age 10+ group include: 2 fish taken 1984-1993, 12 fish taken 2002-2006, 97 fish taken 2007-2012, 18 taken in 2013, 29 taken in 2014, 60 fish in 2015, 43 fish in both 2016 and 2017, 14 fish in 2017, 39 fish in both 2018 and 2019 and 41 fish taken in 2022. The oldest scup aged were two 15-year-old fish taken in 2015.

Table 5.22. Age frequency of striped bass taken in spring, 1984-2022.

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

																			Yea	ır																			
Age	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
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	0	0	2	0	0	2	-	0	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	4	2	71	4	7	26	-	16	17
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	94	13	5	10	62	115	-	41	12
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	73	23	19	13	41	272	-	18	51
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	20	17	23	8	5	35	-	15	59
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	6	1	2	3	5	7	-	8	30
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	1	1	3	3	9	4	-	1	14
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	5	1	0	3	5	2	-	0	5
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	1	0	2	1	0	0	-	0	2
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	1	0	1	0	0	0	-	1	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	0	1	0	1	0	0	-	0	0
12	0	0	0	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	1	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0
14	0	0	0	0	0	0	0	0	0	0	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
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	205	59	129	46	136	463	-	100	192

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

Table 5.23. Striped bass indices-at-age, 1984-2022.

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 5.18) by the percentage of fish in each age.

								Spri	ng						
Year	Index	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14
1984	0.02	0	0	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	0	0
1986	0.00	0	0	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	0	0
1988	0.04	0	0.0057	0.0057	0.0229	0	0.0057	0	0	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	0	0
1990	0.16	0	0.1042	0.0298	0.0074	0.0037	0.0112	0	0	0	0.0037	0	0	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	0	0
1992	0.22	0	0.0259	0.0518	0.0841	0.0324	0.0065	0	0.0129	0.0065	0	0	0	0	0
1993	0.27	0.0093	0.0140	0.0326	0.0745	0.0652	0.0372	0.0326	0.0047	0.0047	0	0	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	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	0	0
1996	0.63	0.0103	0.0411	0.3321	0.1267	0.0479	0.0240	0.0274	0.0068	0.0103	0	0.0034	0	0	0
1997	0.85	0	0.1286	0.4143	0.1429	0.0607	0.0500	0.0321	0.0143	0.0071	0	0	0	0	0
1998	0.97	0	0.3189	0.3269	0.1822	0.0750	0.0536	0.0080	0.0027	0.0027	0	0	0	0	0
1999	1.10	0	0.1346	0.2857	0.1379	0.3119	0.1510	0.0558	0.0131	0	0.0033	0.0033	0	0	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	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	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	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	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	0	0
2005	1.17	0	0.6100	0.1497	0.1636	0.0915	0.0776	0.0444	0.0250	0.0028	0	0.0028	0	0	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	0	0
2007	1.02	0.0071	0.1629	0.3860	0.1558	0.1558	0.0992	0.0319	0.0106	0.0035	0.0106	0	0	0	0
2008	0.57	0.0394	0.0717	0.0538	0.1721	0.1470	0.0394	0.0251	0.0108	0.0036	0.0072	0	0	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	0	0
2010	0.40	0	0.0169	0.0394	0.0958	0.1352	0.0620	0.0338	0.0113	0	0	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	0	0
2012	0.43	0.0381	0.1595	0.0451	0.0451	0.0659	0.0416	0.0173	0.0104	0.0069	0	0.0035	0.0029	0	0
2013	0.67	0	0.2052	0.1382	0.0879	0.0503	0.0670	0.0419	0.0628	0.0042	0.0084	0.0042	0	0	0
2014	0.41	0	0.0080	0.1880	0.1460	0.0400	0.0120	0.0020	0.0100	0.0020	0.0020	0.0000	0	0	0
2015	0.20	0	0.0068	0.0441	0.0780	0.0576	0.0034	0.0034	0.0034	0.0000	0.0000	0.0034	0	0	0
2016	0.48	0.0074	0.2642	0.0186	0.0707	0.0856	0.0074	0.0112	0.0000	0.0074	0.0037	0.0031	0.0037	0	0
2017	0.34	0	0.0296	0.0739	0.0961	0.0591	0.0222	0.0222	0.0222	0.0074	0.0000	0.0074	0.0057	0	0
2018	0.57	0	0.0291	0.2580	0.1706	0.0208	0.0208	0.0374	0.0208	0.0074	0.0000	0.0074	0	0	0.0083
2019	0.91	0.0039	0.0511	0.2260	0.5346	0.0688	0.0138	0.0079	0.0039	0	0	0	0	0	0
2020	***		******					g Survey in		Ü	Ü	Ü	Ü		
2021	0.38	0	0.0608	0.1558	0.0684	0.0570	0.0304	0.0038	0.0000	0	0.0038	0	0	0	0
2022	0.92	0	0.0815	0.0575	0.2444	0.2827	0.1438	0.0671	0.0240	0.0096	0.0096	0	0	0	0
84-21	****				**= * * *			******							
mean		0.0039	0.1174	0.1208	0.0988	0.0739	0.0495	0.0254	0.0110	0.0044	0.0022	0.0010	0.0002	0.0000	0.0002
		0.0007	V-1227-T	0.1200	0.0700	3.0.07	0.0.,0	J.U. T	0.0110	0.00.7	0.00	0.0010	0.000	0.0000	0.000

### Table 5.24. Summer flounder indices-at-age, 1984-2022.

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. In 2015-2022, LISTS age data for all size fish captured were incorporated into the age key. Indices-at-age were determined for each season by apportioning the spring and fall overall indices (from Table 5.18 and Table 5.19) by the percentage of fish in each age.

							Sp	ring						
Year	0-12	Age 0	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	0.6291	0	0.3236	0.2610	0.0445	0	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	0
1986	0.9510	0	0.7700	0.0892	0.0742	0.0126	0.0050	0	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	0
1988	0.4986	0	0.2317	0.2232	0.0352	0.0085	0	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	0
1990	0.3475	0	0.3053	0.0201	0.0156	0.0065	0	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	0
1992	0.5546	0	0.3182	0.1906	0.0229	0	0.0229	0	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	0
1994	0.8601	0	0.4959	0.3136	0.0324	0	0	0	0.0182	0	0	0	0	0
1995	0.2796	0	0.2023	0.0608	0.0110	0	0	0	0.0055	0	0	0	0	0
1996	0.9609	0	0.6216	0.2370	0.0868	0	0.0052	0	0.0103	0	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	0
1998	1.3067	0	0.0734	0.5952	0.4693	0.1167	0.0324	0.0197	0	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	0
2000	1.7898	0	0.3805	0.7853	0.4240	0.0538	0.1316	0.0092	0	0.0054	0	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	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	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	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	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	0
2006	0.6129	0	0.0383	0.3597	0.0676	0.0654	0.0337	0.0263	0.0168	0.0051	0	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	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	0
2009	1.9295	0	0.7772	0.3770	0.2905	0.1804	0.1949	0.0700	0.0258	0.0101	0.0036	0	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	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	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	0
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	0
2014	3.0018	0	0.9679	0.7073	0.4854	0.4332	0.2981	0.0466	0.0369	0.0126	0.0072	0.0022	0.0022	0.0022
2015	1.6341	0	0.7770	0.3569	0.2050	0.1232	0.0904	0.0487	0.0176	0.0093	0.0017	0.0018	0.0020	0.0005
2016	1.3568	0	0.1449	0.4154	0.3449	0.1985	0.0952	0.0771	0.0503	0.0216	0.0055	0.0006	0.0028	0
2017	1.6498	0	0.5364	0.4108	0.3073	0.1483	0.1105	0.0495	0.0463	0.0235	0.0074	0.0098	0	0
2018	2.6395	0	1.5411	0.4948	0.2277	0.1749	0.0985	0.0390	0.0146	0.0182	0.0170	0.0083	0.0054	0
2019	4.8467	0	3.4315	0.7787	0.289	0.0957	0.1194	0.0673	0.0275	0.0144	0.0121	0.0057	0.0033	0.0021
2020							No Spring S	urvey in 2020						
2021	4.1610	0	1.0825	1.1891	0.9064	0.4908	0.2332	0.1153	0.0463	0.0464	0.0222	0	0.0055	0.0233
2022	1.4691	0	0.4765	0.2859	0.2683	0.1889	0.1314	0.0605	0.0316	0.0068	0.0089	0.0089	0.0014	0
84-21														
Mean	1.7066	0.0000	0.6887	0.4469	0.2734	0.1499	0.0788	0.0350	0.0172	0.0092	0.0038	0.0019	0.0012	0.0008

							I	Fall						
Year	0-12	Age 0	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	0.9888	0	0.5648	0.3269	0.0713	0.0140	0.0042	0.0042	0.0034	0	0	0	0	0
1985	1.1931	0.2453	0.3605	0.4984	0.0804	0	0.0085	0	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	0
1987	1.3963	0.0749	1.0573	0.2309	0.0305	0.0027	0	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	0
1989	0.1363	0	0.0227	0.1051	0.0085	0	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	0
1991	1.2557	0.0363	0.8141	0.3457	0.0432	0.0082	0.0041	0.0041	0	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	0
1993	1.1113	0.0842	0.8371	0.1490	0.0362	0.0029	0	0.0019	0	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	0
1995	0.5408	0.0424	0.3812	0.1043	0.0090	0.0039	0	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	0
1997	2.4980	0.0693	0.8494	1.2261	0.3016	0.0321	0.0099	0.0084	0.0012	0	0	0	0	0
1998	1.7153	0	0.3251	1.0456	0.2867	0.0392	0.0187	0	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	0
2000	1.9134	0.1151	0.5117	0.8244	0.2971	0.1122	0.0433	0.0067	0	0.0029	0	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	0
2002	6.1211	0.4415	3.0870	1.9304	0.4769	0.1216	0.0429	0.0168	0.0040	0	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	0
2004	1.9537	0.2545	0.3848	0.7551	0.4398	0.0804	0.0241	0.0150	0	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	0
2006	1.3148	0.0976	0.2170	0.5915	0.2299	0.0957	0.0435	0.0214	0.0182	0	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	0
2008	3.0853	0.7816	0.4848	0.9581	0.4458	0.3256	0.0804	0.0090	0	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	0
2010							No Fall Su	rvey in 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	0
2012	3.7358	0.1633	0.4592	0.8283	1.4239	0.5848	0.1836	0.0631	0.0296	0	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	0
2014	1.7086	0.1231	0.4034	0.3945	0.3620	0.2825	0.0823	0.0294	0.0205	0.0078	0	0.0031	0	0
2015	2.0218	0.0547	0.5740	0.6717	0.3957	0.1830	0.0821	0.0347	0.0135	0.0086	0	0.0038	0	0
2016	1.9198	0.0361	0.2401	0.6223	0.5563	0.2687	0.1223	0.0319	0.0421	0	0	0	0	0
2017	1.3544	0.2231	0.6948	0.1862	0.1197	0.0746	0.0320	0.0160	0.0000	0.0080	0	0	0	0
2018	2.4292	0.3096	0.8139	0.6373	0.2754	0.2147	0.1076	0.0161	0.0274	0.0181	0.0053	0.0015	0.0023	0
2019	1.4351	0.0180	0.6459	0.4507	0.1263	0.0855	0.0486	0.0184	0.0118	0.0157	0.0077	0.0043	0.0000	0
2020							No Fall Su	rvey in 2020						
2021	3.0464	0.2913	0.5946	0.8952	0.6809	0.3288	0.1296	0.0646	0.0177	0.0302	0.0071	0	0.0064	0
2022	2.5945	0.4015	0.7963	0.7179	0.2873	0.2086	0.1233	0.0109	0.0194	0.0087	0.0124	0.0055	0.0027	0

#### Table 5.25. Tautog indices-at-age, 1984-2019.

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 5.18 and Table 5.19) 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. Note: The 2021/2022\* ageing is not yet complete.

1984 1985 1986 1987 1988 1989	3.4690 1.7967 1.7201	0.0109	0.0816 0.0212	0.1898	0.3030	0.4584	0.4941	0.2911	0.2861	0.3101	0.3531
1986 1987 1988 1989	1.7201		0.0212								
1987 1988 1989				0.0964	0.1888	0.1655	0.1280	0.1833	0.3004	0.2020	0.0902
1987 1988 1989		0.0010	0.0277	0.0971	0.0481	0.1025	0.2009	0.2409	0.2453	0.2864	0.1016
1988 1989		0.0243	0.0799	0.0589	0.0594	0.1002	0.1353	0.1911	0.1348	0.0955	0.0522
1989	1.2128										
	0.9007	0.0034	0.0335	0.0467	0.0714	0.0446	0.0399	0.0755	0.1007	0.1641	0.0790
	1.2590	0	0.0443	0.0691	0.1353	0.0885	0.1154	0.1495	0.1600	0.1046	0.0817
	1.1613	0.0112	0.0830	0.1559	0.1112	0.1145	0.0498	0.0502	0.1245	0.0872	0.0623
1991	1.1469	0.0055	0.0279	0.0548	0.1181	0.1241	0.1487	0.0931	0.1253	0.1071	0.1067
1992	1.0253	0.0188	0.0495	0.0715	0.0410	0.0489	0.1230	0.1323	0.0849	0.0632	0.0636
1993	0.5695	0.0035	0.0216	0.0519	0.0299	0.0160	0.0606	0.0595	0.0423	0.0489	0.0522
1994	0.5837	0.0094	0.0373	0.0320	0.0675	0.0555	0.0551	0.0555	0.0799	0.0516	0.0312
1995	0.2530	0.0033	0.0094	0.0087	0.0296	0.0609	0.0265	0.0214	0.0346	0.0150	0.0219
1996	0.5628	0.0073	0.0518	0.0305	0.0086	0.0762	0.0452	0.0654	0.0712	0.0667	0.0609
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	0.8003	0.0008	0.0469	0.0577	0.0831	0.0739	0.1402	0.1376	0.0897	0.0392	0.0467
2001	0.8947	0.0062	0.0308	0.0859	0.0830	0.1294	0.1197	0.1193	0.1058	0.0715	0.0454
2002	1.1665	0.0103	0.0234	0.0596	0.1011	0.1748	0.1972	0.1895	0.2091	0.0739	0.0419
2003	0.8976	0.0032	0.0130	0.0077	0.0597	0.1485	0.2385	0.1596	0.0893	0.0778	0.0185
2004	0.6936	0.0067	0.0213	0.0152	0.0359	0.0709	0.1930	0.1096	0.0494	0.0812	0.0441
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	0.0035	0.0125	0.0173	0.0459	0.0478	0.0608	0.0918	0.0935	0.0966	0.0533
2008	0.7268	0.0065	0.0272	0.0435	0.0620	0.0848	0.1164	0.0708	0.0649	0.0831	0.0640
2009	0.4821	0.0143	0.0368	0.0067	0.0026	0.0394	0.0681	0.1013	0.0658	0.0319	0.0324
2010	0.2472	0.01.0	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	0.0270	0.1148	0.0919	0.0808	0.0635	0.0389	0.0384	0.0499	0.0489	0.0115
2013	0.5781	0.0075	0.0653	0.0561	0.1211	0.0857	0.0912	0.0532	0.0386	0.0215	0.0214
2014	0.6958	0	0.0281	0.1540	0.0854	0.1112	0.1286	0.0754	0.0522	0.0243	0.0185
					0.0834	0.1112	0.1280				0.0183
2015	0.6160	0.0422	0.0494	0.0714				0.0900	0.0584	0.0266	
2016	0.8239	0.0005	0.0914	0.0961	0.1033	0.1003	0.1522	0.1358	0.0749	0.0414	0.0100
2017	0.5218	0.0132	0.0200	0.0942	0.0476	0.0338	0.0610	0.0746	0.0474	0.0272	0.0408
2018	0.8975	0.0191	0.0813	0.1399	0.1183	0.1756	0.1086	0.1071	0.0710	0.0238	0.0042
2019	0.8710	0.0141	0.0751	0.1179	0.1237	0.1328	0.1148	0.1068	0.0667	0.0639	0.0312
2020					No	Spring or Fa	all Sampling				
2021*	0.9865	Ageing Not 0	Complete								
2022*	1.0209	Ageing Not (	Complete								
	1.0207	rigeing riot i	complete								
34-20	0.0013	0.0000	0.0440								
	0.8813	0.0098	0.0440	0.0674	0.0778	0.0972	0.1164	0.1075	0.0992	0.0751	0.0512
34-20	0.8813	0.0098	0.0440	0.0674	0.0778	0.0972	0.1164	0.1073	0.0992	0.0751	0.0312
34-20	0.8813	0.0098	0.0440	0.0674	0.0778	0.0972	0.1164	0.1073	0.0992	0.0731	0.0312
34-20	0.8813	0.0098	0.0440	0.0674	0.0778	0.0972 Age	0.1164	0.1073	0.0992	0.0721	0.0312
34-20 Mean	0.8813					Age					
34-20 Mean Year	0.8813	11	12	13	14	Age 15	16	17	18	19	20+
34-20 Mean Year 1984	0.8813	11 0.1257	12 0.2280	13 0.0932	14 0.0506	Age 15 0.0447	16 0.0322	17 0.0467	18 0.0155	19 0.0006	<b>20</b> + 0.0536
34-20 Mean Year	0.8813	11	12	13	14	Age 15	16	17	18	19	20+
34-20 Mean Year 1984	0.8813	11 0.1257	12 0.2280	13 0.0932	14 0.0506	Age 15 0.0447	16 0.0322	17 0.0467	18 0.0155	19 0.0006	<b>20</b> + 0.0536
Year 1984 1985 1986	0.8813	11 0.1257 0.1595 0.1422	12 0.2280 0.0982 0.0863	13 0.0932 0.0226 0.0375	14 0.0506 0.0994 0.0521	Age 15 0.0447 0 0.0232	16 0.0322 0.0249 0.0071	17 0.0467 0.0039 0.0114	18 0.0155 0.0124 0.0003	19 0.0006 0 0.0023	20+ 0.0536 0 0.0062
Year 1984 1985 1986 1987	0.8813	11 0.1257 0.1595 0.1422 0.0606	12 0.2280 0.0982 0.0863 0.0543	13 0.0932 0.0226 0.0375 0.0478	14 0.0506 0.0994 0.0521 0.0313	Age 15 0.0447 0 0.0232 0.0245	16 0.0322 0.0249 0.0071 0.0267	17 0.0467 0.0039 0.0114 0.0104	18 0.0155 0.0124 0.0003 0.0004	19 0.0006 0 0.0023 0.0048	20+ 0.0536 0 0.0062 0.0204
Year 1984 1985 1986 1987	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469	12 0.2280 0.0982 0.0863 0.0543 0.0395	13 0.0932 0.0226 0.0375 0.0478 0.0295	14 0.0506 0.0994 0.0521 0.0313 0.0225	Age 15 0.0447 0 0.0232 0.0245 0.0493	16 0.0322 0.0249 0.0071 0.0267 0.0086	17 0.0467 0.0039 0.0114 0.0104 0.0063	18 0.0155 0.0124 0.0003 0.0004 0.0055	19 0.0006 0 0.0023 0.0048 0.0052	20+ 0.0536 0 0.0062 0.0204 0.0286
Year 1984 1985 1986 1987 1988 1989	0.8813	11 0.1257 0.1595 0.1422 0.0606	12 0.2280 0.0982 0.0863 0.0543	13 0.0932 0.0226 0.0375 0.0478	14 0.0506 0.0994 0.0521 0.0313	Age 15 0.0447 0 0.0232 0.0245	16 0.0322 0.0249 0.0071 0.0267	17 0.0467 0.0039 0.0114 0.0104	18 0.0155 0.0124 0.0003 0.0004	19 0.0006 0 0.0023 0.0048	20+ 0.0536 0 0.0062 0.0204
Year 1984 1985 1986 1987 1988 1989	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469	12 0.2280 0.0982 0.0863 0.0543 0.0395	13 0.0932 0.0226 0.0375 0.0478 0.0295	14 0.0506 0.0994 0.0521 0.0313 0.0225	Age 15 0.0447 0 0.0232 0.0245 0.0493	16 0.0322 0.0249 0.0071 0.0267 0.0086	17 0.0467 0.0039 0.0114 0.0104 0.0063	18 0.0155 0.0124 0.0003 0.0004 0.0055	19 0.0006 0 0.0023 0.0048 0.0052	20+ 0.0536 0 0.0062 0.0204 0.0286
Year 1984 1985 1986 1987 1988 1989 1990	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979	12 0.2280 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568	0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169	19 0.0006 0 0.0023 0.0048 0.0052 0 0.0035	20+ 0.0536 0 0.0062 0.0204 0.0286 0.0136 0.0034
Year 1984 1985 1986 1987 1988 1989 1990	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609	12 0.2280 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117	19 0.0006 0 0.0023 0.0048 0.0052 0 0.0035 0.0080	20+ 0.0536 0 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150
Year 1984 1985 1986 1987 1988 1989 1990 1991	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599	12 0.2280 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0236	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0167	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298	19 0.0006 0 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167	20+ 0.0536 0 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0078
Year 1984 1985 1986 1987 1988 1989 1990	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609	12 0.2280 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581 0.0129	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117	19 0.0006 0 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097	20+ 0.0536 0 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0368	0.2280 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512	0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0236 0.0157	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152	17 0.0467 0.0039 0.0114 0.0063 0.0067 0.0089 0.0159 0.0167 0.0129	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097	19 0.0006 0 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167	20+ 0.0536 0 0.0062 0.0204 0.0136 0.0136 0.0034 0.0150 0.0078
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993	0.8813	0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0368 0.0234	12 0.2280 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0361 0.0581 0.0129 0.0118	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0236 0.0157 0.0118	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0159 0.0159 0.0167 0.0129	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097 0.0047	19 0.0006 0 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097	20+ 0.0536 0 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0078 0
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0368 0.0234 0.0336	12 0.2280 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351 0.0238	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0129 0.0118	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0334 0.0220 0.0216 0.0236 0.0157 0.0118	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0228 0.0152 0.0096	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0129 0.0129 0.0024	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097 0.0047	19 0.0006 0 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0070	20+ 0.0536 0 0.0062 0.0284 0.0136 0.0136 0.0034 0.0150 0.0077 0.0077
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1993 1995	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0569 0.0368 0.0234 0.0036 0.0234	12 0.2280 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351 0.0236 0.0036 0.0036	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0391 0.0361 0.0581 0.0129 0.0129 0.0048	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0236 0.0157 0.0157 0.0199	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0909	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0167 0.0124 0.0036 0.0087	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0167 0.0298 0.0997 0.0047 0	19 0.0006 0 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097 0.0097 0.00001	20+ 0.0536 0 0.0062 0.0204 0.0136 0.0136 0.0034 0.0150 0.0078 0.0071 0.0073
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0368 0.0234 0.0336	12 0.2280 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351 0.0238	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0129 0.0118	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0334 0.0220 0.0216 0.0236 0.0157 0.0118	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0228 0.0152 0.0096	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0129 0.0129 0.0024	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097 0.0047	19 0.0006 0 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0070	20+ 0.0536 0 0.0062 0.0284 0.0136 0.0136 0.0034 0.0150 0.0077 0.0077
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1993 1995	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0569 0.0368 0.0234 0.0036 0.0234	12 0.2280 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351 0.0236 0.0036 0.0036	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0391 0.0361 0.0581 0.0129 0.0129 0.0048	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0236 0.0157 0.0157 0.0199	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0909	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0167 0.0124 0.0036 0.0087	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0167 0.0298 0.0997 0.0047 0	19 0.0006 0 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097 0.0097 0.00001	20+ 0.0536 0 0.0062 0.0204 0.0136 0.0136 0.0034 0.0150 0.0078 0.0071 0.0073
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0599 0.0979 0.0609 0.0368 0.0234 0.0230 0.0230	12 0.2280 0.09863 0.0543 0.03543 0.0932 0.0932 0.0375 0.0258 0.0512 0.0351 0.0238 0.0036 0.0126 0.0119 0.01164	13 0.0932 0.0226 0.0237 0.0478 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0104 0.0055	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0236 0.0157 0.0118 0	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0229 0.0007 0.0208 0.0152 0.0096 0.0090	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0129 0.0024 0.0036 0.0087 0.0085	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097 0.0047 0.0004	19 0.0006 0 0.0023 0.0048 0.0052 0.0080 0.0167 0.0097 0.0097 0.0070 0	20+ 0.0536 0 0.0062 0.0204 0.0136 0.0136 0.0034 0.0150 0.0071 0.0071 0.0036 0.0002 0
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0559 0.0599 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0192	12 0.2280 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351 0.0238 0.0126 0.0119 0.0164	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0395 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.03681 0.0581 0.0129 0.0118 0.0048 0.0048	Age 15 0.0447 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0157 0.0118 0.0099 0.0121 0.0099	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0090 0.0071 0.0090	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0159 0.0159 0.0129 0.0024 0.0036 0.0087 0.0055 0.0055	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097 0.0047 0 0.0004 0.0004 0.0004 0.0004	19 0.0006 0.0023 0.0048 0.0052 0 0.0035 0.0085 0.0080 0.0167 0.0097 0.0070 0.0001	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.00150 0.0078 0.0071 0.0036 0.0002 0.0027
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0338 0.0234 0.0036 0.0230 0.0230 0.0072 0.0191	12 0.2280 0.0982 0.0983 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0331 0.0238 0.0126 0.0119 0.0119 0.0164	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0104 0.0055 0.0087	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048 0.0048	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0 0.0084	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0090 0.0071 0.0027 0.0027	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0129 0.0129 0.0024 0.0086 0.0087 0.0085 0.0085 0.0085	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0169 0.0117 0.0298 0.0097 0.0047 0 0.0004 0.00024 0 0.00024 0	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0007 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0036 0.0002 0 0.0027 0.0027 0.0040
Year 1984 1985 1986 1987 1988 1989 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0368 0.0234 0.0234 0.0230 0.0072 0.0192 0.0191 0.0213 0.0213	12 0.2280 0.09863 0.0543 0.03543 0.0335 0.03375 0.0258 0.0512 0.0351 0.0238 0.0036 0.0126 0.0119 0.0164 0.0090 0.0130	13 0.0932 0.0226 0.0375 0.0478 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0104 0.0055 0.0085	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0129 0.0118 0 0.0048 0.0055 0.0029 0.0101 0.0029	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0236 0.0157 0.0118 0 0.0099 0.0121 0 0.0094	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0152 0.0096 0 0.0090 0.0071 0.0027 0.0104 0.0104	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0129 0.0024 0.0036 0.0085 0.0085 0.0033 0.0035	18 0.0155 0.0125 0.0124 0.0003 0.0004 0.0055 0.0169 0.0117 0.0297 0.0004 0.0024 0.0024 0.0029 0.0029 0.0001	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0036 0.0002 0 0.0027 0 0.0040 0.0032
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 1998	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0338 0.0234 0.0036 0.0230 0.0230 0.0072 0.0191	12 0.2280 0.0982 0.0983 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0331 0.0238 0.0126 0.0119 0.0119 0.0164	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0104 0.0055 0.0087	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048 0.0048	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0 0.0084	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0090 0.0071 0.0027 0.0027	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0129 0.0129 0.0024 0.0086 0.0087 0.0085 0.0085 0.0085	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0169 0.0117 0.0298 0.0097 0.0047 0 0.0004 0.00024 0 0.00024 0	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0007 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0036 0.0002 0 0.0027 0.0027 0.0040
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2000 2002	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0599 0.0599 0.0369 0.0234 0.0036 0.0230 0.0072 0.0191 0.0191 0.0213 0.0407 0.0257	12 0.2280 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351 0.0238 0.0126 0.0119 0.0164 0.0090 0.0130 0.0164	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0073 0.0103 0.0103 0.0103 0.0055 0.0087	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0361 0.0581 0.0129 0.0118 0 0.0048 0.0048 0.0055 0.0029 0.0101 0.0029	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0236 0.0157 0.0118 0 0.0099 0.0121 0 0 0.0084 0.0053 0.0147	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0996 0.0090 0.0071 0.0027 0.0028	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0159 0.0024 0.0036 0.0087 0.0055 0.0030 0.0053	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.017 0.0298 0.0097 0.0044 0.0024 0.0029 0.0029	19 0.0006 0 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097 0.0070 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0036 0.0002 0 0.0007 0 0.0020 0 0.0020 0 0.0020 0 0.0020 0 0.0020
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 2000 2001 2002 2002	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0191 0.0213 0.0407 0.0257	12 0.2280 0.0982 0.0983 0.0543 0.0343 0.0395 0.0375 0.0258 0.0315 0.0238 0.0036 0.0126 0.0119 0.0164 0.0090 0.0130 0.0161 0.0185 0.0088	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0440 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0144 0.0055 0.0087 0.0123 0.0152	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0129 0.0118 0.0048 0.0048 0.0048 0.0004 0.00004 0.00004 0.00004	Age 15 0.0447 0.0232 0.0245 0.0493 0.0220 0.0216 0.0236 0.0157 0.0118 0 0.0099 0.0121 0 0.0084 0.0084 0.0053 0.0147	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0071 0.0071 0.0071 0.00104 0.0105 0.0104	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0167 0.0129 0.0024 0.0036 0.0035 0.0035 0.0035 0.0035 0.0036 0.0036	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0148 0.0169 0.0117 0.0298 0.0097 0.0047 0.0004 0.0024 0 0.0024 0 0.0029	19 0.0006 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097 0.0070 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0036 0.00027 0.00027 0.0040 0.00032 0.00032 0.00032 0.00052
Year 1984 1985 1986 1987 1988 1989 1991 1992 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0368 0.0234 0.0036 0.0230 0.0230 0.0072 0.0192 0.0192 0.0192 0.0407 0.024	12 0.2280 0.09863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0513 0.0238 0.0036 0.0126 0.0119 0.0164 0.0190 0.0130 0.01185 0.0088	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0104 0.0055 0.0085 0.01023 0.0152	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048 0.0055 0.0029 0.0101 0.0040 0.0004 0.0004	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.02245 0.0236 0.0157 0.0118 0 0.0099 0.0121 0100099 0.0121 0100099 0.0121 0100099 0.00084 0.0053 0.0147 0.0028	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0 0.0090 0.0071 0.0027 0.0007 0.0104 0.0105 0.0032	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0167 0.0129 0.0024 0.0036 0.0085 0.0036 0.0036 0.0036 0.0023 0.0036 0.0036	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0148 0.0169 0.0117 0.0298 0.0007 0.0047 0 0.0004 0.0024 0 0.00001 0 0.0001 0 0.0001	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0.0027 0.0026 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0027 0 0.0027 0 0.0040 0.0032 0.0032 0.0052 0.0031 0.00027
Vear 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0368 0.0234 0.0036 0.0207 0.0191 0.0213 0.0407 0.0257 0.0274 0.0257	12 0.2280 0.09863 0.0543 0.03543 0.0932 0.0937 0.0258 0.0512 0.0351 0.0238 0.0036 0.0119 0.0164 0.0090 0.0130 0.0161 0.0185 0.00821	13 0.0932 0.0236 0.0237 0.0478 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581 0.0129 0.0118 0.0048 0.0055 0.0029 0.0101 0.0040 0.0004 0.0070 0.0184 0.0003 0.0003	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0226 0.0157 0.0118 0 0.0099 0.0121 0 0 0.0084 0.0053 0.0147 0.0029 0.0028	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.02249 0.0007 0.0208 0.0152 0.0096 0 0.0090 0 0.0090 0 0.0090 0 0.0090 0 0.0124 0.0105 0.0039 0.0124 0.0039	17 0.0467 0.0036 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0129 0.0024 0.0036 0.0085 0.0035 0.0030 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097 0.0004 0.0024 0.0029 0.0029 0.0001 0.0029 0.0001	19 0.0006 0.0023 0.0048 0.0052 0.0080 0.0167 0.0070 0.0001 0 0.0001 0 0.0026 0 0	20+ 0.0536 0 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0036 0.0027 0 0.0027 0 0.0040 0.0032 0.0052 0.0031 0.0052
Year 1984 1985 1986 1987 1988 1989 1991 1992 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0368 0.0234 0.0036 0.0230 0.0230 0.0072 0.0192 0.0192 0.0192 0.0407 0.024	12 0.2280 0.09863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0513 0.0238 0.0036 0.0126 0.0119 0.0164 0.0190 0.0130 0.01185 0.0088	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0104 0.0055 0.0085 0.01023 0.0152	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048 0.0055 0.0029 0.0101 0.0040 0.0004 0.0004	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.02245 0.0236 0.0157 0.0118 0 0.0099 0.0121 0100099 0.0121 0100099 0.0121 0100099 0.00084 0.0053 0.0147 0.0028	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0 0.0090 0.0071 0.0027 0.0007 0.0104 0.0105 0.0032	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0167 0.0129 0.0024 0.0036 0.0085 0.0036 0.0036 0.0036 0.0023 0.0036 0.0036	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0148 0.0169 0.0117 0.0298 0.0007 0.0047 0 0.0004 0.0024 0 0.00001 0 0.0001 0 0.0001	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0.0027 0.0026 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0027 0 0.0027 0 0.0040 0.0032 0.0032 0.0052 0.0031 0.00027
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 2000 2001 2002 2003 2004 2006	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0599 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0191 0.0213 0.0407 0.0257 0.0257 0.0257	12 0.2280 0.0982 0.0983 0.0543 0.0345 0.0932 0.0375 0.0258 0.0512 0.0351 0.0238 0.0036 0.0126 0.0119 0.0164 0.0090 0.0130 0.0165 0.0088 0.0221 0.0257	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0123 0.0152 0.0107 0.0059 0.0119	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0129 0.0118 0.0048 0.0048 0.0055 0.0005 0.0004 0.0005 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004	Age 15 0.0447 0.0232 0.0245 0.0938 0.0220 0.0216 0.0236 0.0157 0.0118 0 0.0099 0.0121 0 0.0084 0.0053 0.0147 0.0029 0.0028 0.0028 0.0037	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.02249 0.0007 0.0208 0.0152 0.0096 0 0.0090 0 0.0090 0 0.0090 0 0.0090 0 0.0124 0.0105 0.0039 0.0124 0.0039	17 0.0467 0.0036 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0129 0.0024 0.0036 0.0085 0.0035 0.0030 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036 0.0036	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097 0.0004 0.0024 0.0029 0.0029 0.0001 0.0029 0.0001	19 0.0006 0.0023 0.0048 0.0052 0.0080 0.0167 0.0070 0.0001 0 0.0001 0 0.0026 0 0	20+ 0.0536 0 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0036 0.0027 0 0.0027 0 0.0040 0.0032 0.0052 0.0031 0.0052
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0398 0.0234 0.0036 0.0230 0.0072 0.0191 0.0213 0.0407 0.0257 0.0274 0.0204 0.0347 0.0347	12 0.2280 0.0982 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351 0.0238 0.00164 0.0109 0.0164 0.0090 0.0130 0.0161 0.0188 0.0221 0.0250 0.0250	13 0.0932 0.0226 0.0237 0.0478 0.0430 0.0568 0.0339 0.0440 0.0331 0.0071 0.0073 0.0144 0.0055 0.0087 0.0123 0.0152 0.0152 0.01059 0.0119 0.0037 0.0037	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048 0.0049 0.0101 0.0004 0.0004 0.0003 0.01184 0.0003 0.0037 0.0108	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0220 0.0216 0.0157 0.0118 0 0 0.0099 0.0121 0 0.0084 0.0053 0.0140 0.0053 0.0147 0.0028 0 0 0.0038	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0090 0.0071 0.0027 0.0027 0.00104 0.0105 0.0032 0	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0129 0.0129 0.0024 0.0086 0.0085 0.0030 0.0023 0.0023 0.0026 0	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0148 0.0169 0.0117 0.0298 0.0097 0.0047 0 0.0004 0.00024 0 0.00029 0 0.0001 0.0003 0 0.0003	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0.0027 0.0026 0 0 0 0 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0027 0 0.0027 0.0040 0.0032 0.0052 0.0052 0.0052 0.0052 0.0052
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2006 2007 2008	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0368 0.0234 0.0036 0.0230 0.0072 0.0192 0.0191 0.0213 0.0407 0.0257 0.0274 0.0257 0.0274 0.0257 0.0274 0.0368	12 0.2280 0.09863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0511 0.0238 0.0036 0.0126 0.0119 0.0164 0.0090 0.0130 0.0161 0.0185 0.0088 0.00221 0.0257 0.02056 0.01266 0.0225	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0518 0 0.0188 0.0048 0.0048 0.0055 0.0029 0.01010 0.0004 0.0003 0.0003 0.0003 0.0003	Age 15 0.0447 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0.0093 0.0147 0.0029 0.0028 0 0.0028 0 0.0037	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0096 0.0152 0.0096 0 0.0090 0.0097 0.0104 0.0105 0.0039 0.0104 0.0032 0 0 0.0106 0	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0129 0.0024 0.0036 0.0085 0.0033 0.0033 0.0036 0.0026 0.	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0007 0.0004 0.00024 0.00024 0.00001 0.00001 0.00003 0.00003	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0077 0.0077 0.0007 0 0.0001 0 0 0.0027 0.0026 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0031 0.0071 0.0036 0.0071 0.0036 0.0027 0 0.0040 0.0032 0.0052 0.0040 0.0052 0.0040 0.0040 0.0052
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2003 2004 2005 2006 2007 2008	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0191 0.0213 0.0407 0.0213 0.0407 0.0191 0.0213 0.0407 0.0191 0.0213 0.0407 0.0257 0.0274 0.0284 0.0324 0.0324 0.0324 0.0325 0.0403 0.	12 0.2280 0.0982 0.0983 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351 0.0238 0.0126 0.0119 0.0164 0.0190 0.0161 0.0185 0.0088 0.0221 0.0257 0.0200 0.0156 0.0025	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0123 0.0152 0.0157 0.0107 0.0059 0.0119 0.0037	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0129 0.0118 0.0048 0.0048 0.0059 0.0101 0.0003 0.	Age 15 0.0447 0.0232 0.0245 0.0493 0.0236 0.0157 0.0118 0.0099 0.0121 0.00084 0.0053 0.0147 0.0029 0.0028 0.0037 0.0019 0.0098	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0071 0.0027 0 0.0104 0.0105 0.0039 0.0124 0.0032 0 0.0116 0 0.0032	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0129 0.0129 0.0024 0.0086 0.0085 0.0030 0.0023 0.0023 0.0026 0	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097 0.0047 0.0024 0.0029 0.0001 0 0.0029 0.0001 0 0.0029 0.0003 0 0.0019 0 0.0019	19 0.0006 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097 0.0070 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0136 0.0071 0.0036 0.0002 0 0.0027 0 0.0025 0.0031 0.0027 0 0.0027 0 0.0032 0.0052 0.0052 0.0053
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2006 2007 2008	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0368 0.0234 0.0036 0.0230 0.0072 0.0192 0.0191 0.0213 0.0407 0.0257 0.0274 0.0257 0.0274 0.0257 0.0274 0.0368	12 0.2280 0.09863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0511 0.0238 0.0036 0.0126 0.0119 0.0164 0.0090 0.0130 0.0161 0.0185 0.0088 0.00221 0.0257 0.02056 0.01266 0.0225	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0518 0 0.0188 0.0048 0.0048 0.0055 0.0029 0.01010 0.0004 0.0003 0.0003 0.0003 0.0003	Age 15 0.0447 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0.0093 0.0147 0.0029 0.0028 0 0.0028 0 0.0037	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0096 0.0152 0.0096 0 0.0090 0.0097 0.0104 0.0105 0.0039 0.0104 0.0032 0 0 0.0106 0	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0129 0.0024 0.0036 0.0085 0.0033 0.0033 0.0036 0.0026 0.	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0007 0.0004 0.00024 0.00024 0.00001 0.00001 0.00003 0.00003	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0077 0.0077 0.0007 0 0.0001 0 0 0.0027 0.0026 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0031 0.0071 0.0036 0.0071 0.0036 0.0027 0 0.0040 0.0032 0.0052 0.0040 0.0052 0.0040 0.0040 0.0052
Year 1984 1985 1986 1987 1988 1989 1991 1992 1993 1994 1995 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0338 0.0234 0.0033 0.0072 0.0191 0.0213 0.0407 0.0257 0.0274 0.0204 0.0343 0.0294 0.0332 0.0322 0.0332 0.0322	12 0.2280 0.0982 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0331 0.0238 0.00161 0.0119 0.0164 0.0190 0.0130 0.0161 0.0188 0.0221 0.0257 0.0200 0.0156 0.0225 0.0064	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0440 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0144 0.0055 0.0103 0.0152 0.0107 0.0152 0.0107 0.0194 0.0037 0.0194 0.0037 0.0194 0.0037 0.0194 0.0037 0.0194 0.0037 0.0194 0.0048	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048 0.0055 0.0029 0.0101 0.0004 0.0004 0.0003 0.0108 0.0108 0.0108 0.0108 0.0108 0.0108 0.0108 0.0108 0.0108 0.0108 0.0108 0.0109	Age 15 0.0447 0.0232 0.0245 0.0493 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0.0084 0.0093 0.0140 0.0093 0.0140 0.0098 0.0038	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0071 0.0027 0.0027 0.00104 0.0105 0.0032 0.0016 0.0032 0 0.0116 0 0.00116 0	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0167 0.0129 0.0024 0.0030 0.0023 0.0030 0.0023 0.0026 0 0 0 0 0 0.0016	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0148 0.0169 0.0117 0.0298 0.0097 0.0047 0 0.0004 0.00024 0 0.00029 0 0.0003 0 0.0003 0 0.0001 0 0.0003	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0070 0 0 0.0001 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0036 0.0027 0.0027 0.0040 0.0032 0.0052 0.0052 0.0052 0.0052 0.0052 0.00652 0.00652 0.00652 0.00652 0.00652 0.00652 0.00652 0.00652 0.00652 0.00652 0.00652 0.00652 0.00652 0.00652 0.00652 0.00652
Year 1984 1985 1986 1987 1988 1989 1991 1992 1993 1994 1995 1996 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011	0.8813	11 0.1257 0.1597 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0192 0.0192 0.0192 0.0407 0.0274 0.0274 0.0244 0.0347 0.0294 0.0322 0.0329 0.0329 0.0329 0.0329 0.0329 0.0343	12 0.2280 0.09863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0513 0.0238 0.00166 0.0126 0.0119 0.0164 0.0090 0.0130 0.0161 0.0185 0.0088 0.00221 0.0257 0.0200 0.0156 0.0225 0.0064 0.0125 0.0064	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0123 0.0152 0.0107 0.0059 0.0119 0.0039 0.0119 0.0039 0.0119 0.0039 0.0119 0.0039 0.0119 0.0039 0.0119 0.0039 0.0119 0.0039 0.0194 0.0228 0.0091 0.0080	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048 0.0055 0.0029 0.0101 0.0004 0.0070 0.0104 0.0003 0.0101 0.00108 0.0108 0.0103	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.02245 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0.0098 0.0028 0 0.0028 0 0.0028 0 0.0038 0.0147 0.0029 0.0028 0 0.0039 0.0028 0 0.0039 0.0028 0 0.0039 0.0028 0 0.0039 0.0040	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0 0.0071 0.0027 0.0007 0.0104 0.0105 0.0032 0.0104 0.0105 0.0032 0.0116 0 0.0116 0 0.0116 0 0.0032	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0057 0.0089 0.0159 0.0167 0.0129 0.0024 0.0036 0.0037 0 0.0023 0.0036 0 0 0.0026 0 0 0.0026 0 0 0.0011 0 0.0011	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0124 0.0017 0.0024 0.00024 0.00020 0.0001 0.00001 0.00001 0.0000000000	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0.0027 0.0026 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0027 0 0.0027 0 0.0040 0.0032 0.0052 0.0031 0.0052 0.0031 0.0027
Vear 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2006 2007 2008 2009 2010 2011 2012	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0599 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0191 0.0213 0.0407 0.0257 0.0274 0.0247 0.0247 0.0348 0.0234 0.0192 0.0343 0.0192 0.0343 0.0192 0.0343 0.0192	12 0.2280 0.0982 0.0983 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351 0.0238 0.0126 0.0119 0.0164 0.0190 0.0161 0.0185 0.0088 0.0221 0.0257 0.0200 0.0156 0.0126 0.0126 0.0126 0.0126 0.0127 0.0007	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0391 0.00440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0152 0.0087 0.0152 0.0097 0.0194 0.0059 0.0194 0.0039 0.0039 0.0039 0.0039 0.0028	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048 0.0055 0.0029 0.0101 0.0004 0.0070 0.0184 0.0003 0.0037 0 0.0103 0.0103 0.0103 0.0103 0.0103 0.0103 0.0104 0.0005 0.0104 0.0005 0.0106 0.0006	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0 0.0084 0.0053 0.0147 0.0029 0.0028 0.0037 0.0019 0.0098 0.0070 0.0046 0.0046 0.0040	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0996 0.0071 0.0027 0 0.0104 0.0105 0.0032 0 0.0124 0.0032 0 0 0.0116 0 0.0032	17 0.0467 0.0039 0.0114 0.0104 0.0067 0.0089 0.0157 0.0129 0.0024 0.0036 0.0087 0 0 0.0055 0.0030 0.0023 0.0026 0 0 0 0.0011 0 0.0011	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097 0.0047 0.0024 0.0029 0.0001 0 0.0029 0.0001 0 0.0029 0.0001 0 0.0029 0.0001	19 0.0006 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0036 0.0002 0 0.0072 0 0.0022 0 0.0022 0 0.0022 0 0.0022 0 0.0022 0 0.0022 0 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.00020 0.00020 0.00020 0.00020 0.00000
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 2006 2007 2008 2010 2011 2011	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0191 0.0213 0.0407 0.0257 0.0257 0.0257 0.0259 0.0388 0.0234 0.0338 0.0234 0.0338 0.0234 0.03407 0.0213 0.0407 0.0257 0	12 0.2280 0.0982 0.0982 0.0863 0.0543 0.0351 0.0258 0.0512 0.0351 0.0238 0.0036 0.0126 0.0119 0.0164 0.0090 0.0130 0.0165 0.0088 0.0221 0.0257 0.0200 0.0156 0.02257 0.0200 0.0156 0.00264 0.0139 0.0161 0.0077 0	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0440 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0144 0.0055 0.0123 0.0152 0.0107 0.0059 0.0119 0.0037 0.0194 0.02281 0.0048 0.0080 0.0080	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0129 0.0118 0.0048 0.0048 0.0048 0.0058 0.0029 0.0101 0.0004 0.0030 0.0184 0.0003 0.0184 0.0003 0.0184 0.0003 0.0037 0 0.0108 0.0108 0.0108 0.0108 0.0108 0.0108 0.0033	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.02245 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0.0098 0.0028 0 0.0028 0 0.0028 0 0.0038 0.0147 0.0029 0.0028 0 0.0039 0.0028 0 0.0039 0.0028 0 0.0039 0.0028 0 0.0039 0.0040	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0 0.0071 0.0027 0.0007 0.0104 0.0105 0.0032 0.0104 0.0105 0.0032 0.0116 0 0.0116 0 0.0116 0 0.0032	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0159 0.0167 0.0129 0.0024 0.0036 0.0087 0.0053 0.0023 0.0026 0.0026 0.0000 0.0016	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0148 0.0169 0.0117 0.0298 0.0097 0.0047 0.0024 0 0.0024 0 0.0029 0.0001 0 0.0029 0.0003 0 0.0019 0 0.0019 0 0.0080 0 0	19 0.0006 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097 0.0070 0 0 0.00027 0.0026 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0204 0.0136 0.0136 0.0034 0.0150 0.0071 0.0032 0.00022 0 0.0027 0 0.0040 0.0032 0.0052 0.0052 0.0052 0.0053 0.0071 0.0060 0.0060 0.0060 0.0060 0.0060 0.0060 0.0060 0.00600 0.00600 0.00600 0.006000 0.00600000000
Vear 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2006 2007 2008 2009 2010 2011 2012	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0599 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0191 0.0213 0.0407 0.0257 0.0274 0.0247 0.0247 0.0348 0.0234 0.0192 0.0343 0.0192 0.0343 0.0192 0.0343 0.0192	12 0.2280 0.0982 0.0983 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351 0.0238 0.0126 0.0119 0.0164 0.0190 0.0161 0.0185 0.0088 0.0221 0.0257 0.0200 0.0156 0.0126 0.0126 0.0126 0.0126 0.0127 0.0007	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0391 0.00440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0152 0.0087 0.0152 0.0097 0.0194 0.0059 0.0194 0.0039 0.0039 0.0039 0.0039 0.0028	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048 0.0055 0.0029 0.0101 0.0004 0.0070 0.0184 0.0003 0.0037 0 0.0103 0.0103 0.0103 0.0103 0.0103 0.0103 0.0104 0.0005 0.0104 0.0005 0.0106 0.0006	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0 0.0084 0.0053 0.0147 0.0029 0.0028 0.0037 0.0019 0.0098 0.0070 0.0046 0.0046 0.0040	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0996 0.0071 0.0027 0 0.0104 0.0105 0.0032 0 0.0124 0.0032 0 0 0.0116 0 0.0032	17 0.0467 0.0039 0.0114 0.0104 0.0067 0.0089 0.0157 0.0129 0.0024 0.0036 0.0087 0 0 0.0055 0.0030 0.0023 0.0026 0 0 0 0.0011 0 0.0011	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097 0.0047 0.0024 0.0029 0.0001 0 0.0029 0.0001 0 0.0029 0.0001 0 0.0029 0.0001	19 0.0006 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0036 0.0002 0 0.0072 0 0.0022 0 0.0022 0 0.0022 0 0.0022 0 0.0022 0 0.0022 0 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.00020 0.00020 0.00020 0.00020 0.00020 0.00020 0.00020 0.00020 0.00000
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Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 2000 2001 2002 2003 2004 2005 2006 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0192 0.0191 0.0213 0.0407 0.0257 0.0274 0.0284 0.0344 0.0346 0.0347 0.0192 0.0192 0.0192 0.0192 0.0192 0.0193 0.0036	12 0.2280 0.0982 0.0983 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351 0.0238 0.0126 0.0119 0.0164 0.0090 0.0130 0.0161 0.0257 0.0200 0.0152 0.0255 0.0200 0.0156 0.0027 0.00064 0.0139 0.0161 0.0077	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.01123 0.0152 0.0087 0.0123 0.0152 0.0097 0.0199 0.0039 0.0037 0.0194 0.0028 0.0091 0.0048 0.0098 0.0038 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048 0.0055 0.0029 0.0101 0.0004 0.0003 0.0037 0.0108 0.01063 0.01063 0.01063 0.01063 0.01063 0.01063 0.001063 0.001063 0.00033 0.00033 0.00033	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.03348 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0 0.0084 0.0053 0.0147 0.0029 0.0028 0.0037 0.00147 0.0029 0.0038 0.0037 0.00098 0.0070 0.0046 0.0038 0.0046 0.0033 0 0 0	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0966 0.0090 0.0071 0.0027 0 0.0104 0.0105 0.0032 0 0.0116 0 0.0032 0 0.0032 0 0.0033	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0167 0.0024 0.0036 0.0087 0 0.0055 0.0030 0.0023 0.0023 0.0026 0 0 0.0011 0 0.0011 0 0.0011 0 0 0.0011	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097 0.0047 0.0029 0.0001 0 0.0029 0 0.0001 0 0.0029 0 0.0019 0 0.0019 0 0 0.0019 0 0 0.0019 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	19 0.0006 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0036 0.0002 0 0.0027 0 0.0027 0 0.0027 0 0 0.0027 0 0 0.0027 0 0 0.0027 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1997 1998 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2010 2011 2012 2013 2014 2015 2016	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0191 0.0213 0.0407 0.0257 0.0274 0.0204 0.0343 0.0343 0.0340 0.0340 0.0340 0.0340 0.0341 0.0347 0.0266 0.0407	12 0.2280 0.0982 0.0982 0.0863 0.0543 0.0351 0.0238 0.0351 0.0238 0.0036 0.0126 0.0119 0.0161 0.0185 0.0088 0.0221 0.0257 0.0200 0.0156 0.0126 0.0129 0.0161 0.0097 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0144 0.0055 0.0087 0.0123 0.0152 0.0107 0.0059 0.0119 0.0039 0.0109 0.0039 0.0037 0.0194 0.0228 0.0091 0.0048 0.00080 0.0038 0.0048	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0129 0.0118 0.0048 0.0058 0.0029 0.0101 0.0004 0.0070 0.0184 0.0003 0.0108	Age 15 0.0447 0.0232 0.0245 0.0938 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0.0084 0.0053 0.0147 0.0029 0.0028 0.0037 0.0019 0.00084 0.0037 0.0019 0.00084 0.0037 0.0019 0.00084 0.0037 0.0019 0.00084 0.0037 0.0019 0.00086 0.0037 0.0019 0.00086 0.0037 0.0019 0.00086 0.0037 0.0019 0.00086 0.0037 0.0019 0.00086 0.0033	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0071 0.0027 0 0.0104 0.0103 0 0.0116 0.0032 0 0.0116 0.0033 0 0 0.0033	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0159 0.0167 0.0129 0.0024 0.0036 0.0087 0 0 0.0056 0.0030 0.0023 0.0026 0 0 0.0016 0 0.0016 0 0.0040 0 0.0016 0 0.0046	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0029 0.0004 0.0024 0.0024 0.0029 0.0001 0 0.0029 0.0001 0 0.0019 0 0.0019 0 0.0080 0 0 0	19 0.0006 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0038 0.0071 0.0032 0.0071 0.0032 0.00027 0.0040 0.0027 0 0.0027 0 0.0027 0 0.0020 0 0.0027 0 0.0020 0 0.0020 0 0.0000 0 0.0000 0 0 0
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 2000 2001 2002 2003 2004 2005 2006 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0192 0.0191 0.0213 0.0407 0.0257 0.0274 0.0284 0.0344 0.0346 0.0347 0.0192 0.0192 0.0192 0.0192 0.0192 0.0193 0.0036	12 0.2280 0.0982 0.0983 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0351 0.0238 0.0126 0.0119 0.0164 0.0090 0.0130 0.0161 0.0257 0.0200 0.0152 0.0255 0.0200 0.0156 0.0027 0.00064 0.0139 0.0161 0.0077	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.01123 0.0152 0.0087 0.0123 0.0152 0.0097 0.0199 0.0039 0.0037 0.0194 0.0028 0.0091 0.0048 0.0098 0.0038 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088 0.0088	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048 0.0055 0.0029 0.0101 0.0004 0.0003 0.0037 0.0108 0.01063 0.01063 0.01063 0.01063 0.01063 0.01063 0.001063 0.001063 0.00033 0.00033 0.00033	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.03348 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0 0.0084 0.0053 0.0147 0.0029 0.0028 0.0037 0.00147 0.0029 0.0038 0.0037 0.00098 0.0070 0.0046 0.0038 0.0046 0.0033 0 0 0	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0966 0.0090 0.0071 0.0027 0 0.0104 0.0105 0.0032 0 0.0116 0 0.0032 0 0.0032 0 0.0033	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0167 0.0024 0.0036 0.0087 0 0.0055 0.0030 0.0023 0.0023 0.0026 0 0 0.0011 0 0.0011 0 0.0011 0 0 0.0011	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0048 0.0169 0.0117 0.0298 0.0097 0.0047 0.0029 0.0001 0 0.0029 0 0.0001 0 0.0029 0 0.0019 0 0.0019 0 0 0.0019 0 0 0.0019 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	19 0.0006 0.0023 0.0048 0.0052 0 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0034 0.0150 0.0071 0.0036 0.0002 0 0.0027 0 0.0027 0 0.0027 0 0 0.0027 0 0 0.0027 0 0 0.0027 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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 2014 2015 2016 2017	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0368 0.0234 0.0036 0.0231 0.0072 0.0191 0.0213 0.0407 0.0257 0.0274 0.0204 0.0343 0.0294 0.03322 0.0343 0.0192 0.0167 0 0 0.0066 0.0148 0.0066 0.0148 0.0066 0.0056	12 0.2280 0.0982 0.0982 0.0863 0.0543 0.0395 0.0375 0.0258 0.0512 0.0331 0.0331 0.0338 0.00161 0.0188 0.0221 0.0258 0.0161 0.0188 0.0221 0.0250 0.0161 0.0189 0.0161 0.0186 0.0126 0.0199 0.0130 0.0161 0.0185 0.0023 0.0136	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0144 0.0055 0.0087 0.0123 0.0152 0.0107 0.0059 0.0119 0.0037 0.0194 0.0228 0.0091 0.0048 0.0080 0.0080 0.0033 0.0046 0.0033	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0581 0.0129 0.0118 0.0048 0.0048 0.0005 0.0029 0.0101 0.0004 0.0070 0.0184 0.0003 0.0184 0.0003 0.01063 0.0163 0.0217 0.0046 0.0080 0.00203 0.0033 0.0033 0.0033	Age 15 0.0447 0.0232 0.0245 0.0938 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0.0084 0.0053 0.0147 0.0029 0.0028 0.0037 0.0019 0.00084 0.0037 0.0019 0.00084 0.0037 0.0019 0.00084 0.0037 0.0019 0.00084 0.0037 0.0019 0.00086 0.0037 0.0019 0.00086 0.0037 0.0019 0.00086 0.0037 0.0019 0.00086 0.0037 0.0019 0.00086 0.0033	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0071 0.0027 0.0027 0.0028 0.0104 0.0105 0.0032 0 0.0116 0 0.0032 0 0.0116 0 0.0033 0 0.0033 0 0.0033	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0067 0.0089 0.0159 0.0167 0.0024 0.0023 0.0023 0.0023 0.0026 0 0 0.0026 0 0 0.0016 0 0.0016 0 0 0.0016	18 0.0155 0.0124 0.0003 0.0004 0.0055 0.0117 0.0298 0.0017 0.0004 0.0024 0.0024 0.00029 0.0001 0.0001 0.0009 0.0001 0.0009 0.0001 0.0009	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0.0027 0.0026 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0204 0.0286 0.0136 0.0038 0.0071 0.0032 0.0071 0.0032 0.00027 0.0040 0.0027 0 0.0027 0 0.0027 0 0.0020 0 0.0027 0 0.0020 0 0.0020 0 0.0000 0 0.0000 0 0 0
Year 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 2001 2002 2003 2004 2005 2006 2007 2008 2009 2011 2012 2013 2014 2015 2016 2017 2018	0.8813	11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0192 0.0191 0.0213 0.0407 0.0257 0.0274 0.0347 0.0234 0.0340 0.0347 0.0192 0.0191 0.0213 0.0407 0.0257 0.0274 0.0347 0.0192 0.0191 0.0101 0.0101 0.0101 0.00101 0.00060 0.0056 0.01048 0.0060 0.0056	12 0.2280 0.09863 0.0543 0.03952 0.0375 0.0258 0.0512 0.03351 0.0238 0.00164 0.01064	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0103 0.0123 0.0152 0.0107 0.0059 0.0119 0.0039 0.0194 0.0228 0.0091 0.0038 0.0048 0.0080 0.0033 0.0044 0.0033 0.0044 0.0033 0.0044 0.0033 0.0044 0.0033	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0325 0.0581 0.0129 0.0118 0.0048 0.0048 0.0058 0.0029 0.0101 0.0004 0.0070 0.0184 0.0003 0.0184 0.0003 0.0184 0.0003 0.0103 0.0104 0.0003 0.0104 0.0003 0.0037 0.0108 0.0108 0.0109	Age 15 0.0447 0 0.0232 0.0245 0.0493 0.0348 0.0220 0.0216 0.0157 0.0118 0 0.0099 0.0121 0 0.0098 0.0053 0.0147 0.0028 0 0.0028 0 0.0038 0.0033 0.0140 0.0038 0.0033 0.0033 0.0033 0.0033 0.0040 0.0038 0.0033 0.0040 0.0038 0.0033	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0071 0.0027 0 0.0104 0.0103 0 0.0116 0.0032 0 0.0116 0.0033 0 0 0.0033	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0057 0.0089 0.0159 0.0167 0.0129 0.0024 0.0036 0.0036 0.0036 0.0023 0.0036 0.0026 0 0.0016 0.0040 0 0.0040 0 0.0040	18 0.0155 0.0124 0.003 0.0047 0.0047 0.0047 0.0049 0.00117 0.0298 0.0097 0.0047 0 0.0001 0 0.0001 0 0.0001 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0 0.0009 0 0 0.0009 0 0 0 0	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0.0027 0.0026 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0062 0.0204 0.0136 0.0136 0.0071 0.0036 0.0072 0 0.0073 0 0.0071 0 0.0027 0 0.0027 0 0 0.0027 0 0 0.0027 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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Vear 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019		11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0192 0.0191 0.0213 0.0407 0.0257 0.0274 0.0347 0.0234 0.0340 0.0347 0.0192 0.0191 0.0213 0.0407 0.0257 0.0274 0.0347 0.0192 0.0191 0.0101 0.0101 0.0101 0.00101 0.00060 0.0056 0.01048 0.0060 0.0056	12 0.2280 0.0982 0.0982 0.0982 0.0375 0.0258 0.0512 0.0331 0.0331 0.0238 0.00161 0.0190 0.0100 0.0006	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0103 0.0123 0.0152 0.0107 0.0059 0.0119 0.0039 0.0194 0.0228 0.0091 0.0038 0.0048 0.0080 0.0033 0.0044 0.0033 0.0044 0.0033 0.0044 0.0033 0.0044 0.0033	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0129 0.0118 0.0048 0.0058 0.0029 0.0101 0.0004 0.0070 0.0184 0.0003 0.01217 0.0046 0.0030 0.0108	Age 15 0.0447 0.0232 0.0245 0.0493 0.0236 0.0157 0.0118 0.0099 0.0121 0 0.0084 0.0053 0.0147 0.0029 0.0028 0.0037 0.0019 0.0098 0.00033 0.0033 0.0033 0.0033 0.0033 0.0033 0.0033	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0071 0.0027 0 0.0104 0.0105 0.0032 0 0.0116 0.0032 0 0.0033 0 0.0033 0 0.0033 0 0.0023 0 0.0023	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0057 0.0089 0.0159 0.0167 0.0129 0.0024 0.0036 0.0036 0.0036 0.0023 0.0036 0.0026 0 0.0016 0.0040 0 0.0040 0 0.0040	18 0.0155 0.0124 0.003 0.0047 0.0047 0.0047 0.0049 0.00117 0.0298 0.0097 0.0047 0 0.0001 0 0.0001 0 0.0001 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0 0.0009 0 0 0.0009 0 0 0 0	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0.0027 0.0026 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0062 0.0204 0.0136 0.0136 0.0071 0.0036 0.0072 0 0.0073 0 0.0071 0 0.0027 0 0.0027 0 0 0.0027 0 0 0.0027 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Year 1984 1985 1986 1987 1988 1989 1991 1992 1993 1994 1995 1996 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021*		11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0192 0.0191 0.0213 0.0407 0.0257 0.0274 0.0204 0.0347 0.0183 0.0294 0.0322 0.0194 0.0322 0.0167 0 0.0066 0.0148 0.0060 0.0056 0.0148 0.0060 0.0056 0.0148 0.0060	12 0.2280 0.0982 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0238 0.0016 0.0126 0.0119 0.0164 0.0090 0.0130 0.0161 0.0188 0.0221 0.0257 0.0200 0.0156 0.0225 0.0064 0.0130 0.0161 0.0077 0.0016 0.0023 0.0161 0.0077 0.0016 0.0023 0.0161 0.0077	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0103 0.0123 0.0152 0.0107 0.0059 0.0119 0.0039 0.0194 0.0228 0.0091 0.0038 0.0048 0.0080 0.0033 0.0044 0.0033 0.0044 0.0033 0.0044 0.0033 0.0044 0.0033	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0129 0.0118 0.0048 0.0058 0.0029 0.0101 0.0004 0.0070 0.0184 0.0003 0.01217 0.0046 0.0030 0.0108	Age 15 0.0447 0.0232 0.0245 0.0493 0.0236 0.0157 0.0118 0.0099 0.0121 0 0.0084 0.0053 0.0147 0.0029 0.0028 0.0037 0.0019 0.0098 0.00033 0.0033 0.0033 0.0033 0.0033 0.0033 0.0033	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0071 0.0027 0 0.0104 0.0105 0.0032 0 0.0116 0.0032 0 0.0033 0 0.0033 0 0.0033 0 0.0023 0 0.0023	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0057 0.0089 0.0159 0.0167 0.0129 0.0024 0.0036 0.0036 0.0036 0.0023 0.0036 0.0026 0 0.0016 0.0040 0 0.0040 0 0.0040	18 0.0155 0.0124 0.003 0.0047 0.0047 0.0047 0.0049 0.00117 0.0298 0.0097 0.0047 0 0.0001 0 0.0001 0 0.0001 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0 0.0009 0 0 0.0009 0 0 0 0	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0.0027 0.0026 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0062 0.0204 0.0136 0.0136 0.0071 0.0036 0.0072 0 0.0073 0 0.0071 0 0.0027 0 0.0027 0 0 0.0027 0 0 0.0027 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Vear 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 2000 2001 2002 2003 2004 2005 2006 2007 2002 2011 2012 2013 2014 2015 2016 2017 2018 2019 20201		11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0368 0.0234 0.0034 0.0034 0.00213 0.0407 0.0213 0.0407 0.0257 0.0192 0.0191 0.0213 0.0407 0.0257 0.0192 0.0191 0.0213 0.0407 0.0257 0.0192 0.0191 0.0213	12 0.2280 0.0982 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0238 0.0016 0.0126 0.0119 0.0164 0.0090 0.0130 0.0161 0.0188 0.0221 0.0257 0.0200 0.0156 0.0225 0.0064 0.0130 0.0161 0.0077 0.0016 0.0023 0.0161 0.0077 0.0016 0.0023 0.0161 0.0077	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0103 0.0123 0.0152 0.0107 0.0059 0.0119 0.0039 0.0194 0.0228 0.0091 0.0038 0.0048 0.0080 0.0033 0.0044 0.0033 0.0044 0.0033 0.0044 0.0033 0.0044 0.0033	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0129 0.0118 0.0048 0.0058 0.0029 0.0101 0.0004 0.0070 0.0184 0.0003 0.01217 0.0046 0.0030 0.0108	Age 15 0.0447 0.0232 0.0245 0.0493 0.0236 0.0157 0.0118 0.0099 0.0121 0 0.0084 0.0053 0.0147 0.0029 0.0028 0.0037 0.0019 0.0098 0.00033 0.0033 0.0033 0.0033 0.0033 0.0033 0.0033	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0071 0.0027 0 0.0104 0.0105 0.0032 0 0.0116 0.0032 0 0.0033 0 0.0033 0 0.0033 0 0.0023 0 0.0023	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0057 0.0089 0.0159 0.0167 0.0129 0.0024 0.0036 0.0036 0.0036 0.0023 0.0036 0.0026 0 0.0016 0.0040 0 0.0040 0 0.0040	18 0.0155 0.0124 0.003 0.0047 0.0047 0.0047 0.0049 0.00117 0.0298 0.0097 0.0047 0 0.0001 0 0.0001 0 0.0001 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0 0.0009 0 0 0.0009 0 0 0 0	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0.0027 0.0026 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0062 0.0204 0.0136 0.0136 0.0071 0.0036 0.0072 0 0.0073 0 0.0071 0 0.0027 0 0.0027 0 0 0.0027 0 0 0.0027 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Year 1984 1985 1986 1987 1988 1989 1991 1992 1993 1994 1995 1996 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021*		11 0.1257 0.1595 0.1422 0.0606 0.0469 0.0569 0.0979 0.0609 0.0599 0.0368 0.0234 0.0036 0.0230 0.0072 0.0192 0.0191 0.0213 0.0407 0.0257 0.0274 0.0204 0.0347 0.0183 0.0294 0.0322 0.0194 0.0322 0.0167 0 0.0066 0.0148 0.0060 0.0056 0.0148 0.0060 0.0056 0.0148 0.0060	12 0.2280 0.0982 0.0982 0.0863 0.0543 0.0395 0.0932 0.0375 0.0258 0.0512 0.0238 0.0016 0.0126 0.0119 0.0164 0.0090 0.0130 0.0161 0.0188 0.0221 0.0257 0.0200 0.0156 0.0225 0.0064 0.0130 0.0161 0.0077 0.0016 0.0023 0.0161 0.0077 0.0016 0.0023 0.0161 0.0077	13 0.0932 0.0226 0.0375 0.0478 0.0295 0.0430 0.0568 0.0399 0.0440 0.0351 0.0071 0.0073 0.0103 0.0103 0.0103 0.0123 0.0152 0.0107 0.0059 0.0119 0.0039 0.0194 0.0228 0.0091 0.0038 0.0048 0.0080 0.0033 0.0044 0.0033 0.0044 0.0033 0.0044 0.0033 0.0044 0.0033	14 0.0506 0.0994 0.0521 0.0313 0.0225 0.0404 0.0397 0.0361 0.0129 0.0118 0.0048 0.0058 0.0029 0.0101 0.0004 0.0070 0.0184 0.0003 0.01217 0.0046 0.0030 0.0108	Age 15 0.0447 0.0232 0.0245 0.0493 0.0236 0.0157 0.0118 0.0099 0.0121 0 0.0084 0.0053 0.0147 0.0029 0.0028 0.0037 0.0019 0.0098 0.00033 0.0033 0.0033 0.0033 0.0033 0.0033 0.0033	16 0.0322 0.0249 0.0071 0.0267 0.0086 0.0172 0.0249 0.0007 0.0208 0.0152 0.0096 0.0071 0.0027 0 0.0104 0.0105 0.0032 0 0.0116 0.0032 0 0.0033 0 0.0033 0 0.0033 0 0.0023 0 0.0023	17 0.0467 0.0039 0.0114 0.0104 0.0063 0.0057 0.0089 0.0159 0.0167 0.0129 0.0024 0.0036 0.0036 0.0036 0.0023 0.0036 0.0026 0 0.0016 0.0040 0 0.0040 0 0.0040	18 0.0155 0.0124 0.003 0.0047 0.0047 0.0047 0.0049 0.00117 0.0298 0.0097 0.0047 0 0.0001 0 0.0001 0 0.0001 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0.0009 0 0 0.0009 0 0 0.0009 0 0 0 0	19 0.0006 0.0023 0.0048 0.0052 0.0035 0.0080 0.0167 0.0097 0.0070 0 0.0001 0 0 0.0027 0.0026 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20+ 0.0536 0.0062 0.0062 0.0204 0.0136 0.0136 0.0071 0.0036 0.0072 0 0.0073 0 0.0071 0 0.0027 0 0.0027 0 0 0.0027 0 0 0.0027 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Table 5.26. Weakfish age 0 and age 1+ indices of abundance, 1984-2022.

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.

	Fa	11	Fa	11	Spr	ing
Year	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
2014	41.53	2.27	0.08	0.12	0.17	0.23
2015	30.91	3.11	0.46	0.35	0.03	0.11
2016	5.87	0.73	0.81	0.59	0.85	0.43
2017	8.20	0.94	0.43	0.40	0.57	0.42
2018	25.66	1.68	0.56	0.40	0.04	0.12
2019	14.33	0.74	1.26	0.79	0.53	0.28
2020	-	-	-	-	-	-
2021	27.94	2.21	1.50	1.10	0.88	0.56
2022	34.83	3.49	0.60	0.58	0.25	0.24
84-21						
mean	19.23	1.40	0.39	0.39	0.22	0.24

#### Table 5.27. Winter flounder indices-at-age, 1984-2022.

The Long Island Sound Trawl Survey April and May catch and age data was used to calculate the geometric mean indices-at-age. An April-May age key was used to convert lengths to ages, and an overall April-May index (the ages 1-13 index in the table) was apportioned by the percentage of fish at age. The 4+ index is the sum of indices ages 4-13 and represents the abundance of winter flounder that are recruited to the fishery. The age-0 indices were obtained from the Estuarine Seine Survey (Job 8).

Catch-at	-age: nu	mbers							April-N	lay						
Year	1 - 13	4+	Age 0	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13
1984	111.96	27.91	-	8.21	44.01	31.83	20.96	4.23	1.23	0.67	0.74	0.04	0.01	0.03	0	0
1985	83.58	18.13	-	4.11	28.46	32.88	14.17	2.33	0.82	0.45	0.19	0.11	0.04	0.02	0	0
1986	63.65	15.43	-	6.69	26.00	15.53	12.26	2.05	0.50	0.24	0.24	0.10	0.01	0.03	0	0
1987	79.92	13.35	-	7.32	44.69	14.56	5.05	6.55	1.28	0.11	0.24	0.13	0	0	0	0
1988	137.59	12.13	15.40	14.49	71.87	39.10	8.59	1.83	1.46	0.16	0.04	0.02	0.02	0	0	0
1989	148.19	14.97	1.66	13.56	78.43	41.23	10.85	2.84	0.98	0.14	0.09	0.06	0.01	0	0	0
1990	223.09	15.29	2.80	11.31	131.52	64.97	8.97	4.09	1.96	0.19	0.05	0	0.02	0	0	0
1991	150.20	14.31	5.23	8.52	66.99	60.39	9.31	4.05	0.80	0.14	0	0	0	0.01	0	0
1992	61.39	10.49	11.90	6.80	31.32	12.78	8.97	1.10	0.36	0.05	0	0	0	0	0	0
1993	63.60	9.16	5.68	19.11	19.87	15.46	4.81	3.24	0.80	0.15	0.11	0.04	0.01	0	0	0
1994	84.44	4.87	14.23	9.57	64.14	5.86	3.01	1.14	0.49	0.17	0.05	0.01	0.01	0	0	0
1995	50.12	2.31	10.10	14.35	23.69	9.77	1.36	0.63	0.20	0.08	0.02	0.02	0.00	0	0	0
1996	110.62	15.92	19.22	11.46	59.07	24.17	14.41	0.97	0.28	0.14	0.06	0.04	0.01	0	0	0
1997	71.31	13.84	7.47	12.53	25.53	19.41	9.45	3.76	0.51	0.07	0.03	0.01	0.01	0.01	0	0
1998	72.91	17.06	9.16	11.22	32.40	12.23	12.67	3.15	0.99	0.14	0.02	0.07	0	0	0	0
1999	41.35	11.10	8.70	6.56	12.42	11.27	6.09	3.20	1.14	0.61	0.04	0.01	0.02	0	0	0
2000	45.41	13.25	4.33	7.11	16.66	8.40	7.70	3.42	1.53	0.31	0.26	0.01	0.01	0	0.01	0
2001	54.50	15.61	1.34	8.45	19.60	10.85	8.06	5.46	1.28	0.68	0.05	0.08	0	0	0	0
2002	43.71	7.99	3.06	6.27	19.90	9.56	4.43	1.95	1.02	0.35	0.11	0.03	0.10	0	0	0
2003	27.84	8.83	8.07	2.47	7.83	8.71	4.79	1.95	0.77	0.82	0.29	0.07	0.14	0	0	0
2004	20.46	6.81	10.96	6.32	3.88	3.45	3.88	1.92	0.64	0.21	0.11	0.03	0.01	0	0	0.01
2005	16.10	2.03	5.63	7.06	6.18	0.84	0.81	0.67	0.21	0.16	0.10	0.05	0.01	0.01	0	0
2006	5.59	0.74	0.93	1.14	2.60	1.10	0.19	0.14	0.17	0.09	0.01	0.09	0.03	0.02	0	0
2007	28.68	4.16	4.73	2.98	10.83	10.70	3.10	0.61	0.15	0.11	0.12	0.04	0.01	0.01	0.01	0
2008	24.11	4.97	1.97	11.46	3.49	4.18	4.12	0.65	0.12	0.04	0.03	0.01	0	0	0.01	0
2009	22.65	2.86	0.77	7.56	11.21	1.02	1.31	1.21	0.22	0.06	0.04	0	0.01	0	0.01	0
2010	20.88	1.84	0.96	6.64	8.45	3.94	0.71	0.57	0.44	0.11	0.01	0	0	0	0	0
2011	27.95	5.55	1.12	6.54	9.34	6.53	3.66	1.15	0.30	0.39	0.04	0	0	0	0	0
2012	15.80	2.83	0.29	4.84	5.61	2.51	1.97	0.62	0.09	0.06	0.05	0.03	0	0	0	0
2013	10.08	4.03	0.27	0.61	3.50	1.94	1.96	1.33	0.48	0.10	0.08	0.05	0.02	0	0	0
2014	5.90	2.34	0.47	0.84	0.64	2.08	1.36	0.62	0.26	0.06	0.03	0.01	0	0	0	0
2015	3.94	1.92	0.64	0.89	0.85	0.29	0.64	0.65	0.22	0.27	0.11	0.02	0	0.005	0.01	0
2016	3.98	1.32	0.63	1.02	0.98	0.66	0.32	0.46	0.16	0.11	0.17	0.06	0	0	0	0
2017	0.99	0.25	1.03	0.02	0.32	0.40	0.20	0	0.02	0	0.02	0	0	0	0	0
2018	3.59	1.28	0.42	0.96	0.50	0.86	0.81	0.24	0.06	0.09	0.03	0.01	0.03	0	0	0
2019	1.85	0.52	0.69	0.52	0.57	0.25	0.24	0.18	0.03	0.01	0.03	0.01	0.01	0	0	0
2020	-	-	0.42						No Spring S	Survey in						
2021	2.44	0.44	0.43	0.96	0.80	0.39	0.17	0.03	0.05	0.04	0	0	0	0	0	0
2022	1.64	0.43	0.27	0.42	0.34	0.46	0.25	0.09	0.02	0.03	0.02	0.01	0	0	0	0
84-21																
Mean	52.44	8.27	4.73	6.77	24.17	13.25	5.44	1.86	0.60	0.21	0.10	0.03	0.02	0.00	0.00	0.00

Catch-a	t-age: bio	omass (k	(g)						April-N	<b>I</b> ay						
Year	1-13	4+	Age 0	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13
1984	15.68	7.81	NA	0.31	3.06	4.50	5.18	1.51	0.49	0.30	0.28	0.03	0.01	0.01	0	0
1985	13.91	5.96	NA	0.15	2.54	5.26	3.97	0.97	0.46	0.33	0.11	0.08	0.03	0.02	0	0
1986	10.33	5.39	NA	0.24	2.16	2.55	3.68	0.88	0.32	0.21	0.16	0.09	0.01	0.03	0	0
1987	11.76	4.94	NA	0.30	4.03	2.50	1.39	2.59	0.64	0.08	0.14	0.09	0	0	0	0
1988	18.28	4.51	NA	0.54	6.06	7.17	2.64	0.93	0.74	0.12	0.03	0.02	0.03	0	0	0
1989	22.62	5.64	NA	0.43	7.99	8.56	3.62	1.32	0.47	0.10	0.07	0.05	0.01	0	0	0
1990	29.01	7.09	NA	0.33	10.37	11.21	3.79	2.19	0.89	0.14	0.04	0	0.04	0	0	0
1991	24.59	5.54	NA	0.32	6.82	11.92	3.53	1.47	0.43	0.10	0	0	0	0.01	0	0
1992	12.29	4.79	NA	0.27	3.82	3.41	3.81	0.71	0.25	0.02	0	0	0	0	0	0
1993	10.26	4.43	NA	0.54	1.93	3.36	1.96	1.73	0.51	0.11	0.08	0.04	0.01	0	0	0
1994	12.20	2.95	NA	0.34	7.13	1.79	1.51	0.77	0.43	0.16	0.06	0.01	0.01	0	0	0
1995	7.72	1.39	NA	0.51	2.70	3.12	0.71	0.39	0.18	0.08	0.02	0.01	0.01	0	0	0
1996	20.41	7.36	NA	0.41	6.11	6.53	6.32	0.61	0.22	0.12	0.06	0.03	0.01	0	0	0
1997	15.53	6.96	NA	0.48	2.61	5.48	4.26	2.23	0.36	0.07	0.03	0.01	0.01	0.01	0	0
1998	14.66	7.28	NA	0.36	3.59	3.43	4.88	1.64	0.60	0.09	0.02	0.05	0	0	0	0
1999	10.29	5.32	NA	0.23	1.41	3.33	2.60	1.59	0.69	0.39	0.02	0.00	0.03	0	0	0
2000	12.63	7.22	NA	0.32	2.31	2.78	3.68	2.05	0.96	0.29	0.21	0.01	0.01	0	0.01	0
2001	14.02	7.94	NA	0.27	2.33	3.48	3.39	3.05	0.87	0.51	0.05	0.07	0	0	0	0
2002	10.83	4.41	NA	0.31	3.05	3.06	2.13	1.12	0.70	0.28	0.09	0.02	0.07	0	0	0
2003	8.87	5.03	NA	0.09	0.96	2.79	2.35	1.21	0.50	0.59	0.23	0.06	0.08	0	0	0
2004	6.11	4.19	NA	0.19	0.53	1.20	2.13	1.24	0.50	0.18	0.10	0.02	0.01	0	0	0.01
2005	3.37	1.75	NA	0.28	0.96	0.38	0.57	0.61	0.22	0.17	0.09	0.06	0.02	0.01	0	0
2006	1.82	0.71	NA	0.06	0.48	0.58	0.16	0.13	0.17	0.08	0.02	0.09	0.05	0.02	0	0
2007	7.02	2.34	NA	0.12	1.18	3.38	1.55	0.37	0.14	0.10	0.11	0.03	0.01	0.01	0.01	0
2008	5.08	3.00	NA	0.39	0.39	1.30	2.31	0.47	0.11	0.05	0.04	0.01	0	0	0.01	0
2009	3.96	1.89	NA	0.28	1.48	0.32	0.68	0.88	0.20	0.05	0.04	0	0.01	0	0.02	0
2010	4.26	1.38	NA	0.24	1.16	1.49	0.40	0.45	0.42	0.10	0.01	0	0	0	0	0
2011	6.72	3.19	NA	0.23	1.34	1.96	1.81	0.78	0.22	0.35	0.04	0	0	0	0	0
2012	3.88	1.85	NA	0.20	0.93	0.90	1.13	0.47	0.09	0.06	0.06	0	0	0	0	0
2013	3.42	2.45	NA	0.02	0.37	0.57	0.98	0.86	0.39	0.07	0.08	0.06	0	0	0	0
2014	2.33	1.48	NA	0.03	0.09	0.73	0.74	0.44	0.21	0.06	0.03	0.01	0	0	0	0
2015	1.19	0.99	NA	0.02	0.09	0.08	0.27	0.33	0.13	0.16	0.07	0.01	0	0.01	0.004	0
2016	1.08	0.73	NA	0.03	0.13	0.19	0.14	0.25	0.10	0.07	0.10	0.04	0.03	0	0	0
2017	0.34	0.14	NA	0.00	0.04	0.16	0.10	0	0.02	0	0.02	0	0	0	0	0
2018	1.22	0.83	NA	0.03	0.06	0.30	0.46	0.16	0.06	0.09	0.02	0.01	0.03	0	0	0
2019	0.60	0.38	NA	0.02	0.10	0.10	0.13	0.13	0.04	0.01	0.04	0.01	0.01	0	0	0
2020	-	-	NA						No Spring						-	-
2021	0.67	0.22	NA	0.06	0.19	0.19	0.10	0.02	0.06	0.04	0	0	0	0	0	0
2022	0.48	0.24	NA	0.02	0.05	0.17	0.12	0.05	0.01	0.03	0.01	0.01	0	0	0	0
84-21																
Mean	9.43	3.77	NA	0.24	2.45	2.97	2.14	0.99	0.37	0.15	0.07	0.03	0.01	0.00	0.00	0.00
	7.43	2.11	11/1				2.14									

Note years with non-standard # of tows: 1984: April = 0 tows, May = 13 tows, and 19 tows in June used to increase sample size; 1985: April = 0 tows, May = 41 tows; 1992 and 2006: April = 0 tows, May = 40; 1996: April = 17 tows, May = 63 tows; 2005: April = 35 tows, May = 45 tows; 2007: April = 35 tows, May = 45 tows; 2008: April = 36, and May = 44 tows; 2010: May = 38 tows; 2011: April = 12 tows; 2016: April = 36 tows; 2017: April = 0 tows, May = 24 tows; 2018: Apr=12 tows, May 40 tows; 2020 No sampling; 2021: April = 0 tows, May = 33 tows; 2022: April=33 tows, May=40 tows.

## TABLES 5.28 - 5.65 LENGTH FREQUENCIES LISTS

Table 5.28. Alewife length frequencies, spring and fall, 1 cm intervals, 1989–2022.

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

																	S	pring																
length	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
5	0	0	0	0	0	0	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
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	0	1	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	0	3	1	0	0	1	-	0	0
8	0	0	0	0	18	3	3	0	0	0	2	9	16	0	3	1	2	0	0	4	1	10	0	1	3	2	12	9	0	1	17	-	0	0
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	7	5	11	27	0	4	40	-	0	0
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	16	7	16	81	0	4	28	-	1	1
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	11	16	13	230	0	33	61	-	0	3
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	19	15	7	303	0	46	119	-	1	17
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	18	24	6	181	0	67	224	-	0	34
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	14	33	6	351	0	111	230	-	0	49
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	12	48	7	407	0	103	181	-	0	49
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	5	53	5	375	0	119	70	-	1	36
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	10	16	5	353	0	50	32	-	0	29
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	21	30	5	263	6	53	9	-	3	6
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	22	24	9	89	1	61	61	-	2	18
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	10	50	3	32	0	90	124	-	4	16
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	28	58	9	51	1	132	55	-	6	14
22	4	2	8	2	10	26	12	103	48	18	47	41	18	46	25	48	18	18	41	14	29	22	10	24	34	25	20	21	0	83	22	-	2	6
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	39	8	17	7	0	31	25	-	4	8
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	15	18	12	4	0	24	22	-	1	6
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	4	12	10	3	0	6	13	-	4	0
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	3	4	7	4	0	3	4	-	0	0
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	0	1	1	3	0	0	1	-	0	0
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	0	0	0	0	0	0	0	-	0	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	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	0	0	0	1	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	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	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	291	449	185	2,796	8	1,021	1,340	-	29	292

																		Fall																
length	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
5	0	0	0	0	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
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	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	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	0	0	0	0	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	1	3	0	0	2	0	-	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	2	9	0	1	2	0	-	2	2
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	0	23	0	0	11	5	-	8	5
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	7	32	0	9	9	1	-	20	7
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	27	88	0	12	4	2	-	30	32
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	48	26	3	3	0	3	-	11	37
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	12	53	8	1	1	15	-	6	10
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	4	37	4	2	0	24	-	3	1
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	0	11	0	0	1	7	-	7	1
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	2	14	0	2	0	1	-	7	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	0	3	0	0	0	0	-	1	0
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	0	0	0	0	0	1	-	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	0	1	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	0	0	0	0	0	0	-	1	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	1	1	0	0	0	1	-	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	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	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	0	0	0	0	-	0	1
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	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	-	148	10	83	104	301	15	30	34	60	-	96	96

Table 5.29. American shad length frequencies, spring, 1 cm intervals, 1989-2022.

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

																		pring																
length															2003			2006		2008						2014			2017			2020	2021	
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	1	0	0	0	0	0	-	0	0
9	0	0		0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	-	0	0
8	0	0	-	0	2	2	4	0	0	5	1	1	0	0	1	0	3	0	0	0	0	0	0	0	1	0	0	2	0	1	2	-	0	0
10	0	0		0	6	0	13	0	6	4	4	4	2	13	5	7	3	0	0	0	1	0	0	0	10	7	21	14	0	9	8	-	0	1
10	0	0		1	4	1	12	1	12	11	12	22	1	30	3	,	6	0	0	7	6	5	1	0	31	21	21	38	0	-	12	-	1.5	3
11	0	0		2	3	1	4	4	12	16	9	24	0	71	10	1	5	0	5	19	6	7	4	3	17	20	18	51	0	6	19	-	15	3
12	0	0		3 5	3	1	9	4	14	36	10	17	2	57	5	3	4	0	9	25	13	6	8	12	23	20	23	68	1	13	16	-	17	9
13	4			7		3	-	5	45	49	21	12	0	30	6	11	6	0	11	53	24	15	20	23	15	12	4	135	1	10	22	-	10	
14	13	0			2	6	10	83	54	54	24	8	0	20	0	21	14	6	20	98	29	30	41	42	10	7	5	65	0	9	16	-	2	
15	36 20	1 4		10 7	4	16	12	108	123	55	41	13	2	20	0	24	11	32	34	82	37	47	59	64	10	2	8	61	0	8	14	-	3	
16		-			4	36	32	117	194	43	30	17	4	31	1	3	3	13	25	34	26	39	16	32	9	2		56		-	-	-	5	6
17	9	4	-	16	6	36	36	37	125	53	22	15	0	18	2	3	1	1	18	17	14	8	9	14	2	1	3	95	0	0	3	-	3	4
18	5	3		17	3	103	27	32	55	22	10	9	0	14	0	1	0	4	7	9	12	2	3	5	2	0	2	54	0	1	2	-	0	2
19	0	2		16	3	271	13	15	7	11	10	4	0	3	0	1	0	1	1	2	3	3	0	0	0	1	0	32	0	0	1	-	1	4
20	1	1	2	13	2	118	5	3	1	1	17	1	0	2	1	1	4	0	1	0	2	0	0	0	1	1	0	16	0	0	2	-	1	5
21	0	2		12	4	40	1	6	1	0	18	0	0	2	3	1	2	0	2	3	1	2	1	0	0	0	1	0	0	0	8	-	2	7
22	0	1	14	6	3	,	0	6	2	7	31	0	0	5	2	3	6	0	1	3	1	0	0	2	8	8	7	1	0	3	12	-	0	12
23	0	2		14	2	11	2	10	3	1	18	4	0	2	5	1	1	0	3	0	3	0	0	8	0	8	12	2	0	-	4	-	0	10
24	0	0	-	4	1	3	0	9	0	2	10	2	2	3	0	0	2	0	4	0	0	1	0	12	0	1	4	2	0	3	15	-	0	1
25	0	2	2	3	0	3	0	5	1	5	4	0	1	1	0	0	1	0	3	0	0	0	0	10	1	1	1	2	0	0	2	-	0	
26	0	1	. 1	0	0	2	0	4	0	1	1	1	0	0	0	0	2	0	3	0	0	0	0	3	0	0	0	1	0	0	1	-	0	- 1
27	0	0		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2	0	0	0	0	0	-	0	(
28	0	0		0	0	1	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	(
29	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	
30	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	(
31	0	0		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	0	0	-	0	
32	0	0		0	0	0	0	0	2	0	3	0	0	1	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	1	1	0	0	3	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	-	0	(
34	0	1	. 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	(
35	0	0		1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0	1	-	0	(
36	0	0		1	0	0	0	0	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	(
37	0	0		1	0	1	0	0	2	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	-	0	(
38	1	0		0	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	(
39	0	0		3	1	2	1	0	0	0	4	0	0	2	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	-	0	(
40	1	0		2	0	1	1	0	1	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	(
41	0	0	-	3	2	2	1	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	(
42	0	0	1	4	2	0	0	0	1	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	-	0	(
43	0	0	0	0	0	1	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	-	0	(
44	0	0		2	2	2	2	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	(
45	1	0	0	5	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	(
46	0	0	0	2	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	(
47	0	0	0	0	0	1	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	-	0	
48	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	0	0	0	0	0	0	-	0	
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	0	0	0	0	-	0	(
50	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
Total	91	24	202	163	61	675	189	451	669	379	313	157	14	336	44	83	79	60	151	353	179	165	162	233	142	120	114	697	3	69	164		65	103

Table 5.30. American shad length frequencies, fall, 1 cm intervals, 1989-2022.

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

																		Fall																
length	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
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	1	0		0	0
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	1	0	0	0	0	0	-	0	0
8	0	0	2	0	0	1	0	0	2	1	1	0	0	0	0	1	2	0	0	2	0	-	1	2	0	3	0	0	0	2	0	-	0	0
9	0	0	5	1	2	5	7	0	4	0	4	0	1	1	4	4	2	0	2	2	0	-	3	2	0	6	0	2	0	1	2	-	1	0
10	0	1	1	2	3	6	9	0	9	5	5	0	3	1	5	5	0	0	5	3	10	-	2	3	0	2	4	4	2	1	1	_	0	0
11	0	0	3	3	20	20	7	1	11	9	22	0	1	0	9	1	3	0	14	1	17	_	2	1	0	0	9	1	4	2	0	-	0	4
12	0	0	5	11	29	96	12	5	20	9	28	0	1	0	18	3	4	0	15	1	12	_	1	2	1	1	9	1	9	0	0	-	0	5
13	0	0	2	10	25	112	12	2	8	4	16	0	0	0	4	1	1	0	11	2	11	-	1	0	0	1	9	3	3	1	0	_	1	10
14	0	0	2	2	23	173	12	2	5	2	5	0	0	0	0	2	0	0	6	0	28	_	1	0	0	1	4	3	0	2	0	-	0	12
15	0	0	2	0	10	72	2	0	0	2	1	0	0	0	0	0	0	0	7	0	8	_	1	0	2	4	3	6	0	3	12	-	8	10
16	0	0	1	0	7	18	1	0	4	9	1	0	1	1	1	10	1	0	2	0	2	_	3	1	1	0	1	18	3	4	66	_	22	0
17	0	0	21	7	3	2	1	0	8	54	12	2	4	10	14	67	2	1	0	0	1	_	3	1	7	0	1	62	6	9	149	_	68	3
18	0	3	57	8	6	17	24	0	19	114	37	1	15	86	37	73	10	3	2	1	19	_	17	1	10	3	4	74	19	14	63	_	121	11
19	32	31	36	33	47	40	60	0	49	176	92	15	32	113	84	83	13	3	3	5	23	_	18	4	21	6	22	60	30	34	24	_	94	16
20	65	102	17	57	160	93	163	5	63	108	109	51	23	38	72	15	30	0	4	11	50	_	21	16	22	6	43	10	61	40	19	_	16	12
21	63	40	5	45	306	136	172	10	36	15	143	53	11	6	9	6	16	0	4	17	39	_	21	36	10	3	19	1	63	32	6	_	5	8
22	28	26	0	26	302	113	64	11	9	0	139	33	3	0	6	0	13	1	6	7	22	_	11	18	5	1	17	0	23	10	4	_	1	6
23	2	1	0	4	92	84	19	8	3	0	39	6	0	0	0	0	1	0	2	0	3	_	3	3	0	0	10	0	4	5	0	_	0	3
24	0	0	0	1	24	42	2	2	0	0	13	0	1	0	0	1	0	0	0	0	0		0	0	0	2	5	0	0	0	1		0	3
25	0	0	0	0	0	8	1	2	0	0	13	0	0	0	0	0	0	0	0	0	0	_	0	0	0	0	1	0	0	0	0	=	0	0
26	0	0	0	3	0	6	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
27	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	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	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	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	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	0	0	0	0	0	0	-	0	0
32	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	-	0	0
34	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	-	0	0
36	0	0	0	0	0	0	0	0	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
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	0	0	-	0	-	0	0
38 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	0	0	0	-	0	0
		-				0				0	-	-									0	-	-	-		-				-	-	-	0	
40	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
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	-	0	0
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	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	0	0	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	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	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	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	0	0	0	-	0	0
48	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	-	0	0
50	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
Total	191	204	159	214	1,061	1,047	568	48	252	508	673	161	96	256	263	274	98	8	83	52	245	-	109	90	79	40	161	245	227	161	347	-	338	103

Table 5.31. American lobster length frequencies-spring, female, 1 mm intervals, 1984–2022. Lobsters were measured from each tow.

Female	1004	1985	1006	1987 1	1000	1000	1000	1991 19	02 100	2 100	1005	1006	1007	1000 1	000 2	2000 20	001 20	Sprii 02 200		2005	2006	2007 2	2009 20	100 20	10 201	2012	2012 20	14 20	15 2014	2017	2010	2010 3	2020 20	021 2022
Length 16	(32)	(46)	(116)		(120)	(120)	(120)	(120) (8	0) (12)	0) (120)	(120)	(120)	(120)	(120)	120)		20) (12	0) (120	) (119) O	(120)	(80)	(120)	(120) (1	20) (7	(92)	(120)	(120) (13	20) (12	0) (116)		(92)	(120)	(0) (6	6) (87)
17	0	0	0	1	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
18 19	0	0	0	0	0	0	0	0	0	0	0 0	2	0	0	0	1	0	0	0	0 0	0	0	0	0	0	0 0	0	0	0	0 0		0	-	0 0
21 22	0	0	0	0	0	0	0	0	0	2	0 2	0	4	0	2	4	0	0	0	0 0 1 0	1	0	0	0	0	0 0	0	0	0	0 0	0	0		0 0
23 24	0	0	0	0	0	0	0	0	0		0 1 0	3 2	1	1	2	6	0	0	0	0 0	0	0	0	0	0	0 0	1	0	0	0 0	0	0	-	0 0
25	1	0	0	0	0	0	1	0	0	1	0 1	1	0	3	2	0	0		0	0 0	0	0	0	1	0	0 0	0	0	-	0 0	0	0	-	0 0
26 27	0	0	0	0	0	0	0	0	0	0	0 0 0	6 7	9 12	3 4	6	9	0	0	1	0 0 0 0	0	0	0	0	0	0 0	0	0	0	0 0	0	0	-	0 0
28 29	0	2	0	0	1	0	0	3	0	1	1 0 0 0		8 14	6	10 8	11 13	1	0	0	0 0 1 0	0	1	0	0	0	0 0	1	0	0	0 0		0	-	0 0
30	0	0	0	1	1	0	11	6	0	5	3 0		12	95	2	19	2	0	1	0 0	0	1	0	0	0	1 5	0	0	0	0 0	0	0	-	0 0
31 32	0	0	0	1	0	0	13	7	2	20	0 2		22 13	19 18	16 21	20 23	2	2	1	1 0	0	0	0	0		0 0 0 0	1	1	0	0 0	) 0	0	-	0 0
33 34	0	1	0	2	2	6	8 5	0	5 15	4	6 21 0 18		13 22	35 64	18 8	8 37	3	0	2	1 1	0	5	1	0		2 0 0 0	0	0	0	0 0	0	0	-	0 0
35	4	4	3	2	0	0	9	1	4	6	4 22	15	22	59	22	48 48	3	5	2	1 2	0	4	0	1	0	0 1	0	1	0	1 0	0	0	-	0 0
36 37	5	3 4	2	11	0	0	10	9	6		0 8 1 27	21	21 42	41 58	26 29	36	2	3	4	0 0	0	3	3	0		0 4	0	0	0	0 0		0	-	0 0
38 39	2	0	0	7	2	4	6	11 8	13 12	17 9	1 49 4 22	10 16	31 39	72 73	42 34	35 53	7	10	2	3 0	1	5 10	3	0	2	1 2	0	3	0	0 0	0	0	-	0 0
40	1	4	2	10	4	4	7	6		28	8 41	18	30	98	23	68	8	10	6	5 2	3	11	1	0	3	1 1	0	3	1	0 0	0	0	-	0 0
41 42	2	3 6	3	18 8	1	3	22 17	9 22	9		8 18 1 46	18	17 33	71 143	36 54	58 65	11 11	8 18	5	2 2 6 0	2 0	13 5	2	0	1	0 1 1 1	2	2	1	0 0	0	0	-	0 0
43 44	1	1 1	1 2	22 16	6	11	19 13	16 12		13 1 25	1 53 9 61		44 32	59 43	50 38	84 117	9 19	6 15	8	6 4 4 5	1 4	7	1	2	0	0 3 1 4	0	0	1	0 0		0	-	0 0
45 46	0	2	1	9 12	1	12 8	11	12	5	24	8 38 2 34	22	36 42	135 88	35 64	138 102	9	14	3	3 2	2	9	0	0		0 1 2 3	1	2	0	0 0	0	0	-	0 0
47	2	1	4	31	2	14	4	21	8	40	8 59	35	53	70	77	91	18	20 2	25	7 2	5	11	3	1	0	1 5	0	4	0	0 0	0	0	-	0 0
48 49	2	4	2	15 10	6 4	20 7	22 13	17 28		35 1 67 1	2 54 5 37		56 55	104 198	59 90	72 89	11 8		9	7 6 5 1	2	7	3 2	5	0	2 1 5 6	3	3	0	0 0	0	0	-	0 0
50 51	6	1	6	7 8	4	7 15	16 33	18	5	40 2		43	67 88	139 133	63 95	104 109		21 1	13	6 2 5 2	0	10 16	6	1	0	3 2	1	3	-	0 0	_	1	-	0 0
52	9	8	3	15	3	14	29	45	32	35 3	3 58	57	73	165	89	125	40	25	11	6 4	3	13	3	3	1	0 4	3	4	2	0 0	0	0	-	0 1
53 54	10	4	6	20 15	2	19 22	14 38	35			9 44	45	82 87	167 140	89 84	83 152	30	41 1	9	6 6 6 7	2	14 9	3	3	0	0 2	0	1	0	0 0	0	0	-	0 0
55 56	9	2	8 11	14 12	3 14	9 15	26 31	19 47		47 1 60 1	7 59 7 64		82 98	191 152	91 99	132 85				8 9 0 14	11 2	20 20	6 7	7		2 4 0 4	0	4	0	0 0		0	-	0 0
57	10	3	6	10	11	23	24	57	61	79 2	4 46	60	95	159	156	102	44	28	11	7 10	7	17	12	6	1	2 0	3	3	0	0 1	0	0		0 0
58 59	10	18	7	15 14	6 7	25 29	38 13	51	28	52 3		66	111 97	144 144	118 147	118 105	45	32	11 1 12 1	2 11	7 9	15 15	4	3		1 3 0 12	2	2	0	0 0	0	2	-	0 0
60 61	6 5	12 14	11 11	19 8	9	25 15	34 33			57 3 56 4	0 91 4 62		97 92	114 181	102 160	97 79				6 10 6 20	3 13	24 28	6 7	4	2	3 2 2 3	1	0	0	1 0	0	0	-	0 0
62 63	12 4	9	5 10	11 27	4	12 27	57 56	33	34	75 4		67	94 96	118 133	116 136	75 66	59	46	13 1		9	22 23	10 11	7	2	2 4	0	0		0 0	0	0	-	0 0
64	10	16	9	16	8	13	38	33	41	75 2	4 64	91	86	176	148	110	75	46 2	23 1	1 16	8	25	10	6	1	1 0	1	2	2	0 0	0	0	-	0 0
65 66	9	7 15	9 18	29 25	15 10	25 21	46 43			68 2 86 2	8 72 6 84		110 116	169 147	160 121	84 99			10 I	6 19 9 9	12 3	16 21	13 23	10		0 0	0	2	0	0 0	0	0	-	0 0
67 68	6 21	20 10	22 12	21 43	14 11	31 14	33 41			52 2		62	98 94	148 142	171 158	90 107	72 49		16 2 19 2		9 14	17 21	8 15	4	4	1 7 2 1	0	3	0	1 1	0	0	-	0 0
69	10	8	18	33	16	16	36	78	56	58 3	0 71	57	107	148	188	76	79	52 2	28 1	6 13	1	13	19	10	2	2 1	0	1	0	0 0		1	-	0 0
70 71	15 10	5 11	14 12	30 21	13 12	29 13	51 29	59 48		67 2 67 4	7 79 4 92		119 125	157 117	177 166	86 91			25 2 24 1		6 10	23 23	20 14	6	3	0 1 4 2	2	2	0	2 0		0	-	0 0
72 73	11 13	6	20 18	18 13	8 14	24 20	40 47			61 3 54 3	0 77 7 97		107 107	157 171	177 164	98 99			20 1	3 22 7 17	10 8	30 23	15 18	8	6	1 2	4	2	1	2 1	0	0	-	0 0
74	10 15		17 17	20 28	8	24 20	24 67				9 60		130 103	153 181	215 196	104 124	66		25 1		9	17 17	13 14	6		0 2	0	2		0 0		0	-	0 0
75 76	14	12 9	20	14	8	25	67	71	41	38 2	4 78	69	114	229	185	102	59	45	15	9 16	11	13	25	5	9	0 4	0	1	0	0 0	0	0	-	0 0
77 78	9 24	5 9	15 15	19 14	15 13	32 49	41 60	77 57		44 2 64 2	0 102 2 90		95 110	160 177	195 176	109 93	52 48		23 I 18	6 13 7 9	17 15	16 16	11 16	6 10	3	2 1 4 1	0	2	0	0 0	0	0	-	0 0
79 80	23 22	6	24 18	21 10	10 11	55 35	42 34	64 45		52 3 71 4	0 77		117 92	179 180	203 200	98 91			11 1 16 1		13 11	14 15	12 8	14 7	3	2 3	2	0	1 2	1 0	0	0	-	0 0
81	10	2	7	15	13	19	69	56	49	48 3	4 72	86	148	170	140	85	62	33	11 1	5 9	9	12	16	2		2 0	1	1	0	1 0	0	0	-	0 0
82 83	9	5	5	9 8	5	15 7	28 25	22	16	35 2 7	7 15	31	110 28	108	106 59	47	25	17	4	8 6 4 7	5	14 9	10 14	4 9		0 1 1 1	0	0	1	2 0			-	0 0
84 85	3 5	1 2	7 5	9	6	11 3	15 11	12 5	7		4 11 8 17	19 20	20 28	7 22	33 9	14 15	18 9	18 7	4	4 5 5 1	3	5	7 6	7 2	2	0 3	3	0	0	1 0	0	0	-	0 0
86 87	9	3	6	3	6	8	14 17	14	3		2 11 5 16	23	24 13	23 12	10 9	12	8	11	2	0 3	0	2	7	1		0 0 0 2	0	0	0	0 0		0	-	0 0
88	2	3	8	3	9	9	6	11	3		2 7	13	18	17	5	1	9	1	0	1 0	0	2	5	3	2	0 0	0	0	0	2 0	0	0	-	0 0
89 90	3 15	6	5	8	5 8	8	12 5	10 8	12	3	2 16 3 9	12 15	16 10	13 11	11 10	8 7	9	5	1	1 1 4 2	0	1	4	0	0	0 0	0	0	0	0 0	0	0	-	0 0
91 92	5	1 2	1 0	6 2	2	5	11	8	1	3	0 5	7	11	6	3 2	2	4 2	7	0	0 2	1	0	0	3	2	0 1	0	0	0	0 0	0	0	-	0 0
93	0	1	2	1	2	1	2	1	0	0	1 0	6	3	0	2	5	0	1	0	0 0	1 0	0	1	0	3	0 0	0	1	0	0 0	0	0	-	0 0
94 95	0	0	1	2	2	3	8	4	0	0	5 1 0 0		0	6	0	0	1		0	0 0	0	1	0	0	0	0 0	0	0	0	0 0	0	0	-	0 0
96 97	0	1	0	0	3	2	0	0	0	0	0 0 0	0 2	4	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
98 99	2	2	0	1	0	1	1	0	1		0 0		3	0	0	0	0			0 0	0	0	0	0		0 0	0	0		0 0			-	0 0
100	0	0	0	0	1	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
101 102	1 2	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
103 104	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
105	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
106 109	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		0	-	0 0
110 111	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
112	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
Total legal size	451	335	469 81.0	838	405	914 81.8		1,946 1,5	Jou 2,3	JU 1,13	1 3,052	4,83/		82.6	,/31 4	•,595 2,	v11 1,	,-ro 7(	9 48		296 83.3	737	<b>449</b> 84.1	238	144 €	9 139	56	90	30 3 85.7	6 3	7	- 1	0	1 1

Table 5.32. American lobster length frequencies—fall, female, 1 mm intervals, 1984–2022. Lobsters were measured from each tow.

Female	1004	1005	1006	1007	1988	1000	1990	1001	1002	1003	1004	1005	1007	1007	1000	1000	2000	2001		Fall	2004	2005	2007	2007	2000	2000	2010	2011	2012	2012	2014	2015	2016	2017	2010	2010	2020	2021	
Length 16	(70)	(80)	1986 (80)	(80)	(80)	(80)	(80)	(80)	(80)	1993 (120)	(120)	(80)	(80)	(80)	(80)	(80) 0	2000 (80)	(80)	(80)	(40)	(80)	(80)	(40)	(80)	(40)	(80)	(0)	(80)	(80)	(80)	(79)	(80)	(80)	(80)	(80)	(80)	(0)	2021 (73) 0	(80)
17 20	0	0		0	0				0	0	0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
21 22	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
23 24	0	0		0	0				0	0	1	0	1 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
25 26	0	0		0	0		0		0	0	0 4	1	2	0	0	0	0	1	0	0	1	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
27 28	0	0		0	0		0	0 0	0	3 1	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	-	0	0	0	0	0	0	0	0	0		0	0
29 30	0	0		0	0	1 0	1 4	0 0	0	3 5	3	0	0	2 7	0	0	0	0	0	0	0	0	0	0	0		-	0	2	0	0	0	0	0	0	0		0	0
31 32	0	0	1	0	0	0	3	0	7 15	11 4	8 13	1	5	4 5	0	0	1	1	0	0	1 0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
33 34	0	0	0	2	1 2		3		9 16	2 3	2 17	0	0	1 8	1	5 8	0	0	0	0	0	0	0	0	1	0	-	1	0	0	0	0	0	0	0	0	-	0	0
35 36	0	0	6	1	0		3	0	23 31	5	16 26	3	8	6	0	2	1	0	0	0	1	0	0	0	0	0	-	1	0	0	0	0	0	0	0	0	-	0	0
37 38	4	0	2	0	3	2	10		19 24	2	19 23	5	5 18	7	1 2	8	1	0	1	0	1	1	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
39 40	6	0	10	1	1	0	9	15	32 35	6	22 24	0	7 23	22 15	2	4	1	2	1	0	0	0	2	0	0		-	0	0	0	0	0	0	0	0	0		0	0
41 42	3	0	0	5	2		19	21	32 52	22	52 43	8 7	39 24	15	7	13 17	2	0	0	1 0	2 2	1	0	0	0	0	- 1	1 0	0	0	0	0	0	0	0	0		0	0
43 44	5 29	0	2	4	4	2		23	30 32	39	52 63	16 14	20	25 47	5	15 17	3	0	1 2	1	1 2	4	0	0	0	0	1	0	1	0	0	0	0	0	0	0	-	0	0
45 46	18 10	0	7	3 11	2	0	12	25	50 42	17	57 63	22	38 33	32 50	7	27 18	4	2	2	1	0	1	1	0	0	1	-	0	1	0	0	0	0	0	0	0	-	0	0
46 47 48	21 10	7	3	11 12 14	2 8	12 18	18	52	42 47 58	44	63 41 69	27 28	32 33	42 58	5 14	16 15	2	1	0	1 0	2 2	0 2	0	0	0		-	1	0	0	0	0	0	0	0	0	-	0	0
49 50	29 27	6		14	15 12	11	15	27	77 52		47 69	47 54	19 28	71 61	11	27	10 10	2	4	2	4 2	1	1 3	0	0	1	-	0	0	1	0	0	0	0	0	0	-	0	1
51 52	35 26	8	2	12 15	3	11	10	44	73 66		94 59	45 51	41 42	49 120	15 18	30 34	13 13	6	3	1	2	2 2	0	0	1	0	-	0	1 0	0	0	0	0	0	0	0	-	0	0
53 54	33 16	8	3	22	10 12	7	22	55	82 61		55 76	43	42 43 58	106	29 17	18 45	16 28	9	3	1	6	10	2	3	1 2	3	-	0	0	1	0	0	0	0	0	0	-	0	0
55 56	23 45	10 10	27	11 21 36	12 2 10	6	22	59	58 82	59	54 74	39 45	45 41	102 90	48 23	32 32	18 33	9	1	3	7	8	1	1	3	1	-	3	2	0	0	0	0	0	0	0	-	0	0
57	16	15	16	18	7	7	15	52	71	71	78	50	44	121	24	39	22	13	5	2	13	5	2	1	10	6	-	2	0	0	0	0	0	0	0	0	-	0	0
58 59	23 21	16	13	19 26	13	23	30	79	63 66	110	79 84	69 48	47 46	114	29 35	31 36	23 28	14	5	6	10	4	4	0	2	5	-	0	2	1	0	0	0	0	0	0	-	0	0
61	30 10	18	17	18 24	12	14	37	46	53 52	91	70 79	53 51	51 56	119	29 34	35 37	34 27	9	5	2	12	7	2	1	5	6	-	1	1	0	0	0	0	0	0	0	-	0	0
62 63	27 31	16 14	13	21	14	20	22	53	53 66	130	117 93	44 58	53 41	133 126	39 51	44 45	32 29	19 19	6	6	10 16	12	4	4	4	5	-	0	1	0	0	0	0	0	0	0	-	0	0
64 65	25 17	10 9	39	29 24	23 15	28	26	77	38 44	93	86 89	79 49	38 43	139 146	34 49	44 42	29 37	21 18	9	12 6	15	9	1	2	3	9	-	0	0	0	0	0	0	0	0	0		0	0
66 67	24 17	26 24	33	23 11	15 19	16	29	38	56 43	78	87 106	82 51	53 38	126 117	51 26	43 53	26 31	19 17	5 8	5 11	10 14	6	2	3	3	8	-	0	1	0	0	0	0	0	0	0	-	0	0
68 69	15 13	8 18	15	18 27	22 26	32	21	34	42 61	104	77 85	48 38	55 50	124 136	54 54	44 47	37 30	19 22	4	8	16	12	5	6	4	3	-	0	0	0	0	0	0	0	0	0	-	0	0
70 71	63 26	18 21	28	27 34	34 33	40	30	50	51 50		63 87	60 62	55 87	128 127	47 50	35 40	34 20	23 20	17	6	13 14	5	0	2	3	6	-	2	0	0	0	0	0	0	0	0	-	0	0
72 73	27 21	16 29	42	32 24	13 18	15	58	46	31 33		85 69	38 60	49 40	150 106	41 41	53 47	32 36	25 24	11 9	12 6	10 10	5	2	6	4	5	-	0	0 0	0	0	2	0	0	0	0	-	0	0
74 75	31 39	17 14	25	29 24	14 14	12	21	31	39 25	66	73 84	44 31	38 58	111 122	37 67	49 50	39 29	19 28	12 7	7	16 16	5	3	7	3	1	-	1	0	1	0	0	0	0	0	0	-	0	0
76 77	31 17	14 16	10	36 26	14 13	14	17	37	35 40	74	50 72	38 36	57 23	113 64	47 41	43 31	26 22	21 18	10	8	15 18	5	3	4	0	3 1	-	0	0	0	0	0	0	0	0	0	-	0	0
78 79	27 26	17 19	16	27 37	27 31	13	29	33	19 26	72	53 42	19 28	34 28	96 91	43 34	38 28	20 32	33 21	6	15 9	5 12	8 6	2	2 5	3	5	-	0	0	0	0	0	0	0	0	0	-	0	0
80 81	33 13	11 7	13	20 14	23 5	10	12	18	23 24	36	26 38	25 36	44 41	91 61	25 25	32 28	26 20	19 20	14 2	4	16 3	4	0	0	1 2	4 5	-	0 3	0	0	0	0	0	0	0	0	-	0	0
82 83	10	5	8	12	6	12	8	3	10	39 17	26 11	12	31	20	10	6	13	7	4	5	2	9	3 1	2 5	0	5 4	-	0	0	0	0	0	0	0	0	0	-	0	0
84 85	9	1	8	6	9	3	6	17	7	8	20	5	5	17	5	2	5	3	1	0	2	1	0	1	2		-	0	0	0	0	0	0	0	0	0	-	0	0
86 87	11	6	9	10 8	23	4	10 18		5	10 16	14 20	1	6 8	12 11	3	5	5	3	0	0	2	2	0	0	0	1	-	0	0 0	0	0	0	0	0	0	0	-	0	0
88 89	3	4		9	7	3	5	9	9 8	13	12	5	13	10	7	3	3	3	0	0	0	4	0	0	1	0	-	0	0	0	0	0	0	0	0	0	-	0	0
90 91	8	1	3 2	6 5	0	1	6	1 0	5 3	0	15 5	9	5	3	2	2	1	0	0	0	0	0	0	0	0	1	-	0	0	0	0	0	0	0	0	0	-	0	0
92 93	2	2	0	2	1 2	1 0		-	7	1	6 8	0	3	4	2	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
94 95	0	0	0	1	6	0	1	0	1 0		2 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	0	-	0	0
96 97	3 15	0	0	1	1 1	0	1	0 0	0	0	2 1	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
98 99	2	1	0	1 0	1 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
100 101	0	1	0	1 1	1 0		0	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	0	-	0	0
102 103	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
104 105	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
107 111	1 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
113 117	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
Total legal size:	1,089	523	759 81.0	907	622	688		1,917	2,301	3,264	3,198	1,795	1,979	<b>4,196</b> 82.		1,511	957	596	223	195		225 83.3	84	94 84.		150	-	31	20	18	4	9	<b>0</b> 85.7	0	0	0	0	0	1

Table 5.33. American lobster length frequencies—spring, male, 1 mm intervals, 1984–2022. Lobsters were measured from each tow.

Male	1984			1987		1989					1993	1994	1995	1996	1997	1998	1999	2000		2002	Spring 2003	2004	2005					2010	2011	2012		2014					2019	2020	2021	2022
Length 16	(32)	0	(116)	(120)	(120)	(120)	(120)	0	0	0	0	(120)	0	0	(120)	(120)	(120) 0	(120)	(120)	(120)	(120)	(119)	(120)	(80)	(120)	(120)	(120)	(78)	(92)	(120)	0	0	(120)	(116)	(64)	(92) 0	(92)	(0)	(66)	(87)
19 20	0	0	0	0	0	0	)	0	0	0	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	-	0	(
21 22	0	0	0	0	0	0	)	0	0	0	0	0	0	3	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	(
23 24	0	0	0	0		0		0	0	2	0	2	0	1	1 0	6	0	0	0	0	0		0	0	0	0		0	0	0	0	0	0	0	0	0	0	-	0	(
25 26	0	0	0	0		0		0	0	0	0 4	0	0	4	3	4	6	4	0	0	0		0	0	1 0	0		0	2	0	0	0	0	0	0	0	0	-	0	(
27 28	0	0	0	0				0	0	1	9	2	0	2	1	2	1 2	1 12	2	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	-	0	(
29 30	0	0	0	0				0	0	0 5	9	0	0	2 10	3	5 2	0	9	3	1	0	0	0	0	0	0		0	3	0	0	1	0	0	0	0	0	-	0	(
31 32	0	1 0	0	1	- 1			0	8	4	3	2	0	8	13 12	14 11	7 16	18	3		0	0	1	1	1 2	0	0	0	0	1	0	1	0	0	0	0	0	-	0	(
33 34	0	2	1	2	0	0		1	9	0	6	4	15 27	6 19	9	4 52	15	16	3 2	9	3	0	1 0	0	1 5	1	0	0	1	0	0	0	0	0	0	0	0	-	0	
35	2	0	2	0	0	0		4	5	9	5	1	20	12	22	26	23	33	2	5	2		0	1	2	0	0	0	1	2	0	1	0	0	0	0	0	-	0	
36 37	2	4 1	2	5	0	7			23	5 9	7 12	4	17 15	13 20	24 32	34 58	19 35	32	6 5	3	2	4	2	0	6 7	0	0	0	1	3	0	0	0	0	0	0	0	-	0	
38 39	0	1 0	0	5 10				14	5	7	26 15	4	18 31	18 15	21 20	93 33	12 20		3 11		4	3	2	2	7 8	0		0	1 0	4	0	0	1 0	0	0	0	0	-	0	
40 41	0	2 2	0	7		8		3	5 8	12 7	17 4	7 10	25 28	21 19	41 41	32 75	20 46		8		2 7	0	1 0	2	4 6	2	0	1 2	3	3 2	2	1 0	2 2	0	0	1	0	-	0	
42 43	4	2 2	0 1	3 16	1 0	9		13	10 9	13 12	42 23	7 5	39 52	18 26	46 24	125 70	36 51		14 5		10 10		5 2	0	16 8	3	2	0 1	3	4 2	1	2	0	1	0	0	0	-	0	
44 45	3	0	1	15	1	3	- 1	10	11	6	42 45	9	17 39	21	50	170 76	44	110	10 17	15	9	1	0	4	12	2	1	3	3	2	0	3	1 2	1	0	1	1	-	0	
46 47	0	2	2 2	24	2			7	12	25 47	37 32	9	32 54	22	66 66	155 146	71 87	74	19 17	18	18	4	3	2	11	0		1	3	2	0	6	0	0	0	0	0	-	0	
48	6	6	5	9	1	8	2	20	17	7	23	6	45	32 32	78	93	60	57	22	29	6	3	6	5	16 8	4	2	2	0	2	1	5	1	0	0	0	0	-	0	
49 50	9 7	3	4	24 19	4		1	10	21	21 25	40 30	19 21	46 29	18 35	82 61	120 66	87 83	110	16 34	22	8 16		6	4	16 9	4	2	0	0 2	2	0	3	2	0	0	0	0	-	0	
51 52	3	4 5	4	12 12	2	15	2	23		16 25	75 37	16 31	62 49	45 52	57 75	158 81	90 80	100	24 27	27	19 14		8 6	9	10 12	3	5 2	2	0	7	0	2	0	0	0	0	0	-	0	
53 54	5 10	9	7 16	17 14		10 14			33 45	16 36	41 43	26 29	60 74	50 49	56 74	138 210	69 79		25 33		11 26	5 15	7 6	5 5	19 21	6 5	4	1 1	0 4	2 4	1 2	1 0	1	0	0	1	0	-	0	
55 56	5	3 12	6 11	18 17		23			42 38	27 37	50 44	27 14	46 70	51 54	82 83	101 130	101 82		38 37		18 19		9 11	6	12	5	3	2	1 2	3	4	4	0	1	0	0	0	-	0	
57 58	1 12	7	10	26 10	11		3	86	30	12	51 47	27 35	54 41	60 83	68 96	145 111	93 111	95	43 43	35	22		6	5	21 13	4	3	3	3	1	1 2	2	2	1	0	0	2	-	0	
59	3	13	7	12	14	25	2	29	57	27	88	34	71	56	67	63	144	89	43	43	13	6	11	10	24	9	7	4	2	3	0	1	1	0	0	0	0	-	0	
60 61	9	14	14 16	29 12	10	22	3	39	56	37 46	42 62	34 34	94 77	84 59	156 102	121 176	105 123	83		36	24 28	14	10	6 14	16 11	11		3	3	5	2	3	0	0	0	0	1	-	0	
62 63	11 18	10 15	13 16	15 28	8	24	5	52	78 65	36 54	65 44	54 36	57 59	58 60	127 101	152 167	117 132	73	69 54	44	20 24	16	12 13	7 13	12 19	16 19		6	0 2	5	3	4	2	0	0	0	0	-	0	
64 65	8 13	16 8	12 11	26 20						43 36	63 73	27 33	73 77	90 73	95 97	153 165	133 111		69 75		26 30		14 17	8	22 16	16 16		8 2	3 1	5 5	1	0	5	0	0	1	1	-	0	
66 67	5 1	10 5	11 11	26 26						31 44	71 39	23 21	39 69	73 60	107 118	223 182	129 149		56 77		23 24		15 14	6	22 33	23 19		6	2	0 10	1	0	2	3	1	0	0	-	0	
68 69	5 8	10 9	13 10	12 19	7	21	3	33	80	48 46	26 43	34 32	67 57	64 79	100 101	147 156	116 140	81	82 73	32	36 25	22	23 20	11 8	20 16	19 11	10	5	0	0	1 2	2	2 2	1	0	0	1	-	1	
70 71	8	11	14	23	7	34	3	88	50	51	27 48	24 42	60 85	77 58	99 91	158 112	152 152	85	73 71	44		21	16 20	9	15	21	11	5	2	5	1	2	0	1 2	1	1	1	-	0	
72	6	17	13	14	17		4	10	93	42 42	37	41	59	85	111	145	105	72	62	42	23	13	11	8	25	15	7	4	3	5	2	0	2	0	0	0	1	- 1	1	
73 74	14	5	10 27	21	11	45	4	10	74	36	34 32	33	93 67	64 71	82 92	122	109	74		40	15 35	15	16	2	13 15	14	9	5	3	4	2	1	1	2	0	0	0	-	0	
75 76	6 12	3	13 20	15 16	18	18	3	33	79	40 23	48 32	21 23	84 47	62 48	73 67	81 143	120 122	49	72 69	50	25	9	14	6 4	19 13	11	3	4	2	5	0	0	3	1	0	0	0	-	0	
77 78	9 18	7	10 18	14 9		22 33				31 29	24 38	12 20	50 55	54 35	66 46	115 113	97 90	37	63 56		24 14		17 8	2 4	8 9	14 13		6 0	2	6 3	0	0	0	0	0	0	0	-	0	
79 80	7 5	9 6	15 9	21 22	15 5				77 49	19 22	41 19	30 32	36 52	43 37	64 57	129 77	83 63		57 67		14 19		9 10	7 6	13 15	7		6 7	4 0	0	4	0	0	1	0	0	0	-	0	
81 82	8	0	9	11 10		34		21	53 39	34 25	31 13	19 13	43 51	27 27	70 62	118 97	67 83		45 36	41 31	11 10	6 7	8	5 1	11 16	9	10 2	3 2	1	1 1	2	0	0	1	1	0	0	-	0	
83 84	9	0 1	5 8	9 12		18		12	33 33	24 9	6 7	7	15 26	15 8	47 34	33 28	41 29	37 24	25 23		4 8	8 7	4	7	2 8	8 10	6	0	3 2	0	1 2	1	0	1	0	0	0	-	0	
85 86	3	2	6	8		26		9	28 28	6	3	0	14 15	4	49	18 19	20	26	23 23	18	2	8	3	5	5	1		1 2	1	0	0	0	1 0	0	0	0	0	-	0	
87 88	3	0	1	13		9	•	4	31	0	0	6	3	6	30 32	37 15	23	11	15 10	8	3	3	1	2	1	7	4	0	2	0	1 3	0	0	0	0	0	0	-	0	
89	5	0	2	2		2		6	21	5	0	2	11	3	33	28	23	13	10	8	2	1	3	2	0	4	4	2	0	0	0	0	0	0	0	0	0	-	0	
90 91	4	0	0	7	5 4	7	,	5	24 26	6	1	0	7	2	30 25	25 11	24 20	11	11	8	3	1	4	0	0	3	4 2	0	1	0	0	1	0	1	0	0	0	-	0	
92 93	2	0 0	2	6	2 1	10		0	24 5	0	3	0 0	8	11	23 6	15 27	9 4	13	10 9	4	1 0	0	1	1 0	5	0		0 0	1 0	1 1	0	0	0	0	0	0	0	-	0	
94 95	0	2 0	1 0	3 5		-		0	9	1 0	0	0 2	9	2	7	16 5	17 8		9		3 2	2	0	1 0	0	3	0	0	1	0	0	0	0	0	0	0	1 0	-	0	
96 97	0	0		1 2				2 2	8	1 4	1	0	6	0	1	8	4		2 2	3	0		0	0	0	0		0	0	0	0	0	0	0	0	0	0	-	0	
98 99	0	0	0	3	0	0	)	1	1 2	0	0	1 0	0	0	2	0	0	1	0	2	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1 0	-	0	
100 101	0	0	0	1	0	0	)	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	
102	0	0	0	0	0	0	)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	
103 104	0	0	0	0	0	0	)	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0	-	0	
105 106	0	0		0	0		)	0	0	0	0	0	0	0	0	0	0	0		0	0		0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	-	0	
107 108	0	0	0	0		0		0	0	0	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 Total	317	295	436	854	375	1,030	1.36	0 2.4	0 429 1	0 371	0 1,906	0 1.064	2,690	0	3,875	6,112	4,554		2,198		843	541	439	266	698	451	231	149	99	154	64	77	51	36	0	0	18	- 0	0	
gal size		2,3	81.0	954	5.5		1.8	7,7	,-		,	,	-,-/-	,		82.6	.,4	-,024	-,.,0	-,000	040	544	/	83.3		84.1	201	,		-54			- 54	85.7			.0	3		

Table 5.34. American lobster length frequencies—fall, male, 1 mm intervals, 1984–2022. Lobsters were measured from each tow.

Male	1004	1005	1007	1007	1000	1000	1000	1001	1002	1003	1004	1005	1007	1007	1000	1000	2000	2001	2002	Fall 2003	2004	2005	2006	2007	2000	2000	2010	2011	2012	2012	2014	2015	2017	2017	2010	2010 2020	2021	
Length 16	(70)	1985 (80)	(80)	(80)	(80)	(80)	1990 (80)	(80)	(80)	(120)	(120)	(80)	(80)	1997 (80)	(80)	(80)	(80)	(80)	(80)	(40)	(80)	(80)	(40)	(80)	(40)	(80)	(0)	(80)	(80)	(80)	(79)	(80)	(80)	(80)	(80)	(80) (0)	(73)	(80)
25	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	
26 27	0	0 0	0	0	0	0	0	0	1	9	1 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
28 29	1	2	0	0	0	0	3	0	0	3 6	0	0	3	1	0	0	0	0	0	0	0	1	0	0	0	0	-	0	0	0	0	0	0	0	0	0 -	0	0
30 31	0	0	0	0	0	0	3	0	3 4	0	4	0	3	2	0	0	0	0	0	0	0	1	0	0	0	0	-	0	0	0	0	0	0	0	0	0 -	0	0
32	4	0	0	4	0	0	0	5	13	2	3	0	4	5	2	2	0	0	0	0	1	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0 -	0	0
33 34	1	0	0	2 2	1	0		1	13	0 4	11	0	11 4	1	1	1	1	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0 -	0	0 0
35 36	3	0	0	1	0	0	3 5	7 8	13 25	15 8	12 21	1	8 7	3 14	0	4 1	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0 -	0	0 0
37 38	3	0	6	0	1	1	7	4	38 40	4	21 34	1	11 17	7 14	0	2	0	0	0	0	0	1	0	0	0	0	-	0	0	0	0	0	0	0	0	0 -	0	0
39	0	0	2	1	2	1	5	8	34	5	25	4	16	28	7	17	3	0	1	0	0	1	0	0	1	0	-	0	0	0	0	0	0	0	0	0 -	0	0
40 41	6	0	6	2	4	5		8 13	35 43	21 14	35 54	6 5	15 11	14 24	5	7 6	1	0	2	0	0	0	2	0	0	0	-	0	0	0	0	0	0	0	0	0 -	0	0 0
42 43	4	6	2	0	11	3	12	13 7	43 49	34 17	55 56	5 12	29 23	25 41	9	8 21	5	0	1	1	2	1	0	0	1	0	-	1 0	1	0	0	0	0	0	0	0 -	0	0
44	4	1	1	5	11	1	6	13	35	13	63	26	16	40	5	19	3	2	1	1	3	0	0	0	0	2	-	2	0	0	0	0	0	0	0	0 -	0	0
45 46	2	2	1	7	4	10 14	10	42 31	44 44	34 19	43 58	20 33	44 18	53 35	7	18 16	5	2	3	0	0	2	0	0	0 2	1	-	2	0	0	0	0	0	0	0	0 -	0	0 0
47 48	13 15	4	3 5	10 7	10 14	5 4	16 16	14 10	66 67	60 49	26 72	26 19	33 49	41 72	13 8	20 20	7	2 9	2	1 0	2	3 2	0	1	1	0	-	0	2	0	0	0	0	0	0	0 -	0	0
49 50	4 13	2 5	10	8 21	2	12 11		45 37	48 63	100 56	56 55	33 53	30 28	48 56	10 15	37 44	9	1	0	1	6	3	2	0	1	2	-	0	0	0	0	0	0	0	0	0 -	0	0 0
51	51	6	5	17	10	11	24	46	74	30	88	27	22	88	21	37	18	6	3	3	3	0	1	0	0	1	-	0	1	0	0	0	0	0	0	0 -	0	0
52 53	15 13	5 9	11	17 30	3 5	16 15	22	43 57	65 55	78 83	82 83	56 61	30 37	80 103	36 29	42 29	9 15	8	3	0	3 7	4 1	0	1	1 0	3 1	-	0	0	0	0	0	0	0	0	0 -	0	0 0
54 55	24 23	12 4	19 17	26 23	21 13	17 26	25 25	76 47	47 83	59 84	97 70	59 80	30 32	116 96	23 26	43 46	21 38	7	2 2	3 2	8 12	5	2	1	3	3 7	-	1	1	0	0	0	0	0	0	0 -	0	0
56 57	18		25	18 30	13 26	13 18	13	37 43	65 64	104 101	90 79	52 92	43 27	89 111	39 44	39 42	21 27	10 10	3	4	10	3	3	0	2 2	6	-	0	0	0	0	0	0	0	0	0 -	0	0
58	29	15	24	23	13	30	34	51	68	68	107	58	48	80	42	57	21	10	8	5	6	7	3	1	1	5	-	1	0	0	0	0	0	0	0	0 -	0	0
59 60	47 16	8 6	26 11	31 26	16 7	14 26	39	43 56	86 77	109 103	78 109	76 69	40 30	143 134	33 56	54 61	29 37	24 9	10 9	8 7	10 13	13 7	6 2	5	0	6	-	0	0	0	0	0	0	0	0	0 -	0	0
61 62	23 50	5 17	10 26	25 23	30 10	12 13		57 37	68 57	138 125	120 92	78 80	59 42	128 145	53 57	64 49	44 28	15 19	8 10	5	17	8	5	4	1	3	-	0	0	0	0	0	0	0	0	0 -	0	0
63	14	18		20 24	15	19	28	63	68 74	144	107	74	41	149	60	63	39 42	29	15	7	4	9	5	4	1	10	-	2	0	0	0	0	0	0	0	0 -	0	0
64 65	28 36	17 10	39	31	35 20	19 16	39		49	87 107	106 83	73 75	77 73	138 161	57 75	68 48	37	35 34	17	10	19 14	12 14	3	4	2 6	11	-	0	1	0	0	0	0	0	0	0 -	0	0 0
66 67	22 14	13 16		41 28	31 21	27 24		60 78	59 82	81 108	87 119	93 63	40 46	130 136	63 51	61 38	41	24 38	12 13	7	21 17	6 12	4 2	2	6 7	11 14	-	3	1	1	1	0	1	0	0	0 -	0	0
68 69	16 46	18 13		31 32	17 31	19 30		71 51	69 81	107 131	79 101	55 75	34 28	113 121	67 52	61 54	57 41	33 21	21 20	7 11	15 23	12 10	5	5	4	16	-	0	4	1	0	0	0	0	0	0 -	0	0
70	32	11	28	31	14	24	26	63	56	117	112	79	36	122	60	78	42	22	12	8	30	7	1	4	3	6	-	3	0	0	1	0	0	0	0	0 -	0	0
71 72	8 23	14 20	25 31	23 36	21 29	25 19	24 33		63 61	115 86	83 76	52 65	63 66	126 86	69 77	75 64	48 47	47 52	21 13	13 9	20 19	10	6	9	4	12 8	-	0	0	2	0	0	0	0	0	0 -	0	0 0
73 74	40 36	18 18	42 22	29 25	13 22	42 19		53 28	44 69	85 130	83 108	51 56	44 42	98 99	54 64	70 65	47 37	32 39	6 21	5 14	20 10	9	0	3 8	4	9 12	-	1	0	0	0	1	0	0	0	0 -	0	0
75 76	9 21	8 15	23	18 25	16 12	28 36		38 37	53 33	101 75	97 66	58 37	35 32	99 88	62 55	63 66	39 33	33 28	14 14	6	23 16	12	0	3	1	11	-	1	1	0	0	0	0	0	0	0 -	0	0
77	13	6	23	19	33	18	32	28	53	79	52	55	37	94	55	60	31	33	17	3	7	9	5	6	2	7	-	0	0	0	0	0	0	0	0	0 -	0	0
78 79	28 5	12 13		32 33	13	29 19		36 56	46 48	70 61	55 66	59 43	33 47	76 81	46 52	54 59	28 35	38 35	11 17	5 6	8 9	3 4	2	5	4	2 6	-	2	1 2	0	0	0	0	0	0	0 -	0	0 0
80 81	15 23	18 11	13 18	20 10	22	15 17	38	40	49 39	102 47	53 66	39 46	29 32	78 83	44 37	51 52	34 25	26 18	7 14	5	5 12	7	3	4	0	3	-	0	0	0	0	0	0	0	0	0 -	0	
82 83	7	7	20 12	10	6	6	21	19	21	46	26 25	41	15 10	57	34	29	23	21	10	3	8	5	3	5	4	5	-	0	0	0	0	0	0	0	0	0 -	0	0
84	6 4	2	13	5	8	10	6	10	29	26 12	15	23 31	8	19	6	15	7	6	1	2	3	2	0	4	1	1	-	0	0	0	0	0	0	0	0	0 -	0	0 (
85 86	7	2 5	15 11	5	10 5	3	14 8	15 2	39 10	11 10	13 30	17 26	5 14	12 20	4 7	10 10	8	3	0	0	3 2	0	0	0	2	0	-	0	0	0	0	0	0	0	0	0 -	0	0 0
87 88	5	0	15 12	5	7	6	17 26	2	16 16	8	13 25	15 13	4	16 14	6	17	3 7	1	0	0	0	3	0	1	0	1	-	0	0	0	1	0	0	0	0	0 -	0	0
89	7	5	9	5	9	7	7	4 8	19	9	20	17	10	15	8	12	5	0	0	0	0	0	0	0	0	2	-	0	0	0	0	0	0	1	0	0 -	0	0 0
90 91	18 4	3 2	13 14	5	5 2	7 11	5	7	10 12	17	22 15	10 6	5	15	4	7	6	0	0	0	1	0	0	1	0	2	-	0	0	0	0	0	0	0	0	0 -	1	0 0
92 93	7	0	8	4	14 6	1	3 6	2 5	10 7	3	19 12	6 12	3	10 8	4	5	1	0	0	0	0	0	0	0	2	0	-	0	0	0	0	0	0	0	0	0 -	0	0
94 95	1	1	2	1	0	1	4	2	3	2	12	2	1	6	0	2	1	0	0	0	1	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0 -	0	0
96	0	0	3	1	0	14	0	0	1	4	1	2	0	4	4	1	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0 -	0	0
97 98	13	0	4 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
99 100	0	1 ()	4	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
101 102	0	0	1	1	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
103	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
104 105	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
106 107	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	1	-	0	0	0	0	0	0	0	0	0 -	0	0 0
Total	930	436	888	945	712			2,043	2,853	3,563	3,673	2,406	1,750			2,107	1,202	814	375	200	454	266	101	126		235	-	31	34	6	8	2	2	2	1		0 2	
legal size:			81.0			81	1.8	Щ.						82.	6							83.3		84	.1								85.7					

Table 5.35. Atlantic herring length frequencies, spring and fall, 1 cm intervals, 1989-2022.

From 1989 - 2013, Atlantic herring lengths were recorded from the first three tows of each day; since 2014, lengths have been recorded from every tow.

																	Sprii																	
length	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003			2006		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
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	2	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	3	2	0	0	5	5	-	0	0
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	29	51	18	2	79	37	-	78	18
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	0	7	5	1	10	20	-	33	10
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	2	1	3	2	4	28	-	3	1
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	1	0	3	0	5	16	-	0	0
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	2	0	0	1	0	2	-	0	0
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	5	0	0	0	1	0	-	0	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	46	0	0	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	492	0	0	0	0	0	-	0	0
13	0	8	0	0	215	8	0	0	5	0	0	0	0	0	0	1	3	0	0	0	0	5	1	1	0	483	0	0	0	0	0	-	0	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	200	0	0	0	0	0	-	0	0
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	48	1	0	0	0	0	-	0	0
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	6	4	0	0	0	0	-	0	0
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	0	2	0	-	0	0
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	95	8	41	0	4	1	-	0	0
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	85	39	63	0	2	0	-	0	0
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	52	47	36	0	1	0	-	0	1
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	16	60	10	0	1	0	-	0	0
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	4	58	3	0	12	2	-	0	1
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	60	29	10	0	25	8	-	0	8
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	71	90	30	2	19	5	-	0	1
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	30	90	47	1	44	55	-	0	2
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	50	72	47	0	55	332	-	0	3
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	30	34	10	1	59	523	-	0	1
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	4	16	9	0	8	206	-	0	0
29	2	247	319	492	550	387	337	37	82	21	25	69	29	52	52	1	40	3	47	15	44	26	48	4	1	0	1	0	0	1	53	-	0	0
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	0	0	0	0	0	0	-	0	0
31	2	127	139	77	129	29	14	4	15	2	0	0	4	0	8	1	0	0	0	2	6	0	2	0	0	0	0	0	0	0	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	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	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	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	1,834	612	339	10	337	1,293	-	114	46

																	Fal	l																
length	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
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	0	0	0	0	1	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	0	0	0	0	0	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	0	0	0	0	1	0	-	0	0
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	0	0	0	0	5	0	-	0	0
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	0	2	0	0	1	0	-	0	0
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	0	1	0	0	0	0	-	0	1
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	0	0	0	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	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	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	1	3	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	2	2	0	0	0	0	-	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	0	6	0	0	1	0	-	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	0	1	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	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	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	0	0	0	0	0	0	-	0	0
23	0	0	0	0	2	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
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	0	1	0	0	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	0	1	0	0	1	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	2	0	0	1	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	0	0	1	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	0	0	1	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	3	19	0	0	14	0	-	0	1

Table 5.36. Atlantic menhaden length frequency, spring and fall, 1 cm intervals, 1996-2022.

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.

														Sprin	g												
length	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	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	32	0	0	0	-	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0	0	0	-	0	0
9	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	125	0	0	0	-	0	0
10	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	7	0	0	0	115	0	0	0	-	0	0
11	0	0	0	1	0	0	13	0	0	0	0	0	0	0	0	0	3	0	0	0	72	0	0	0	-	0	0
12	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	15	0	0	0	39	0	0	0	-	0	0
13	0	0	0	0	0	0	6	0	0	0	2	0	0	0	0	0	8	0	0	0	8	0	0	0	-	0	0
14	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	5	0	0	0	3	0	0	0	-	0	0
15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	-	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0	0	-	0	0
17	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
18	0	0	0	0	0	0	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	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	-	0	0
20	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
21	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	0
22	0	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
23	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	3
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	-	2	10
25	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	1	0	0	1	1	1	0	1	-	3	19
26	0	0	0	0	0	0	1	0	0	0	0	4	0	0	0	0	2	3	6	0	3	8	9	6	-	18	16
27	0	0	0	0	0	0	1	0	0	0	0	6	2	3	1	4	14	25	46	24	10	15	10	21	-	36	41
28	0	1	0	0	1	0	1	0	0	0	0	5	4	9	5	10	33	32	81	53	23	36	22	33	-	38	44
29	0	1	0	0	1	0	0	1	3	0	1	5	2	2	1	18	53	59	79	75	34	40	17	35	-	28	20
30	0	1	0	0	0	0	1	1	0	0	0	4	1	5	0	10	28	27	34	54	13	18	13	35	-	13	10
31	0	3	0	0	0	0	0	0	1	0	2	4	1	0	0	1	12	13	19	20	3	4	3	2	-	2	0
32	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	1	0	1	2	1	0	0	0	-	0	0
33	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-	0	0
34	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
35	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
36	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	1	0	-	0	0
38	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	0
Total	0	6	0	1	9	0	47	2	5	1	5	33	10	19	7	43	195	162	267	229	557	122	77	134	0	140	164

														Fall													
length	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
4	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
5	0	0	0	0	0	0	0	2	0	0	0	1	0	0	-	0	0	0	0	1	0	0	0	2	-	0	0
6	0	0	0	0	0	0	0	17	1	0	0	24	0	0	-	0	1	1	0	1	0	2	0	4	-	0	0
7	1	0	0	20	12	0	2	32	26	0	1	39	2	0	-	0	0	0	0	34	1	9	1	4	-	1	0
8	0	1	18	51	73	0	6	22	178	11	0	32	2	2	-	0	0	0	0	58	1	10	0	2	-	0	0
9	0	11	53	152	128	0	8	9	135	22	0	12	6	0	-	0	0	0	0	73	0	8	0	0	-	0	1
10	1	5	120	471	125	1	9	1	143	19	0	34	3	3	-	0	1	0	2	70	0	3	1	4	-	0	0
11	0	6	49	337	51	25	14	1	47	13	2	51	2	4	-	0	0	0	1	30	2	1	0	6	-	0	0
12	0	11	44	25	35	30	10	1	18	9	8	24	1	5	-	6	0	4	5	22	11	3	2	1	-	0	1
13	0	0	20	2	15	16	14	4	1	1	1	49	0	4	-	7	1	5	0	5	42	7	3	1	-	1	0
14	0	2	0	0	6	7	20	2	0	3	2	7	0	3	-	9	0	4	0	2	112	3	1	1	-	0	2
15	0	0	0	0	2	4	24	0	0	1	0	1	1	5	-	6	1	1	0	0	90	1	2	0	-	0	0
16	0	0	0	0	2	0	8	0	0	2	1	1	4	4	-	3	0	1	0	0	19	0	0	0	-	0	0
17	0	0	0	0	3	0	12	0	0	0	0	0	3	0	-	0	1	0	0	0	2	0	0	0	-	0	0
18	0	0	0	0	0	0	17	0	0	0	0	0	0	1	-	0	2	0	0	0	0	0	0	0	-	0	0
19	0	0	0	0	0	0	16	0	0	0	0	0	0	1	-	0	2	0	0	0	0	0	0	0	-	0	0
20 21	0	0	0	1	0	0	2	0	0	0	0	0	0	0	-	0	2	0	0	0	0	0	0	0	-	0	0
21	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 10
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0		2	83
24	0	0	0	1	0	0	0	0	0	0	0	0	0	0	_	0	0	0	0	3	1	2	1	1		9	149
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	_	0	0	1	7	5	1	2	4	12	_	11	162
26	0	0	0	0	0	0	1	0	0	0	0	3	0	0	_	0	7	2	2	14	2	3	13	34	_	22	126
27	2	0	0	0	0	0	1	0	0	1	0	21	9	4	_	4	27	6	68	131	11	11	24	101	_	56	98
28	3	1	0	3	0	0	2	0	3	4	0	35	2	7	_	18	68	13	164	249	17	22	47	180	_	43	67
29	23	17	0	6	1	0	18	5	10	21	2	31	1	1	_	48	66	12	132	233	4	14	35	192	_	15	16
30	30	25	0	28	3	0	29	8	44	54	2	18	0	5	_	30	35	14	63	100	1	11	8	93	_	2	2
31	11	17	1	42	7	1	39	8	65	43	2	7	0	2	-	4	11	5	2	18	0	4	8	38	-	0	0
32	2	6	1	27	12	0	27	3	51	21	1	2	0	0	-	2	0	1	9	2	0	1	1	5	-	0	0
33	0	1	0	19	4	2	25	2	10	5	0	0	0	0	-	0	0	0	0	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	0	0	0	0	0	0	-	0	0
35	0	0	0	0	1	0	5	0	1	1	0	0	0	0		0	0	0	0	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	455	1,051	317	117	151	681	-	162	717

Table 5.37. Black sea bass length frequencies, spring, 1 cm intervals, 1986-2022. Since 1987, black sea bass have been measured from every tow.

																					Spring																	
length			987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999		2001	2002		2004	2005			2008	2009	2010		2012					2017	2018	2019	2020	2021	_
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	0	0	0	0	0	1	-	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	-	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	4	0	0	0	0	0	0	0	0	-	1	0	1	0	0	0	0	6		0	1
8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	8	0	0	0	0	1	1	2	0		3	0	2	0	0	0	0	13	_	0	5
9		0	0	0	0	0	2	0	0	0	0	0	0	0	1	2	0	9	0	0	0	0	1	1	1	0		9	2	2	0	0	0	1	2	-	0	7
10		0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	5	0	0	0	0	7	7	2	0	0	8	2	9	0	0	0	2	4	-	1	5
11		0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	0	0	0	0	1	2	1	0	0	11	0	10	0	0	0	0	4	-	0	1
12		0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	5	0	0	0	0	1	2	2	0	1	14	0	2	1	2	0	1	3	-	0	3
13		0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	9	0	0	0	0	2	1	1	0	1	12	1	0	0	0	0	2	1	-	0	1
14		0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	1	0	0	0	0	-	2	0	0	0	0	1	0	1	-	2	0
15		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	2	0	0	0	7	2	0	-	9	0
16 17		0	0	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	0	0	0	9 14	2	0	-	13	1
18		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	1	1	0	0	6	1	0	1	15	1	0	-	13	2
19		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0		0	14	1	1	0	12	9	0		12	2
20		0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0		0	24	9	0	2	22	15	3	_	12	3
21		0	0	0	1	0	0	0	0	1	0	1	0	0	1	1	0	1	1	1	0	0	1	1	0	0		1	33	9	2	0	23	7	2	_	16	3
22		0	2	0	1	0	0	0	1	1	0	1	0	0	0	1	2	0	1	0	0	1	4	2	2	1	2	2	34	6	0	2	14	24	4	-	16	5
23		0	1	0	0	2	0	0	1	1	0	3	0	1	0	1	0	1	2	1	0	0	4	3	3	1	2	4	22	10	8	2	13	25	2	-	10	1
24		0	3	0	0	0	0	1	1	3	3	2	1	2	1	8	1	5	4	0	0	0	0	0	3	1	2	1	12	19	1	5	8	27	5	-	14	5
25		2	0	0	2	0	0	1	2	2	1	0	2	1	0	0	0	2	0	1	0	0	4	1	2	0	2	1	11	39	4	6	3	51	9	-	32	14
26		0	0	1	0	1	0	1	0	1	3	0	1	1	0	1	5	2	0	1	0	0	1	2	1	1	0	3	3	67	6	4	3	87	20	-	37	31
27		0	0	0	0	0	0	0	0	1	1	0	1	1	2	2	4	1	0	1	0	0	1	0	0	2		6	2	93	7	5	2	124	33	-	66	33
28		1	0	0	0	4	0	0	1	0		0	0	0	0	3	0	2	0	1	0	1	1	0	2	0	-	3	2	125	5	2	2	155	81	-	76	46
29 30		0	0	0	0	0	0	0	0	0		0	0	0	0	0	3	2	0	6 4	0	0	0	0	2	4		3 2	0	152 139	17 41	2	1 14	132 100	92 119	-	53 24	48
31		0	0	0	0	1	0	0	0	0	-	0	1	1	1	0	3	10	0	7	0	0	0	3	2	2	-	3	1	96	51	8	6	79	138	-	31	60 59
32		0	0	2	0	1	0	0	2	1	0	1	4	0	1	1	3	15	1	5	0	0	4	5	2	3	_	6	6	91	94	12	10	30	141		16	58
33		0	0	1	0	1	0	0	0	2	0	2	1	0	0	1	11	12	1	3	0	0	1	2	2	0		7	5	43	91	27	10	32	128	_	14	61
34		2	0	0	1	1	0	0	0	1	0	1	1	1	1	3	6	11	1	2	0	0	3	3	4	6	1	10	9	49	106	50	13	22	108	-	25	60
35		0	0	0	0	0	0	0	1	0	0	1	3	0	0	1	7	11	2	1	1	0	5	0	4	1	3	6	4	19	129	57	13	19	90	-	25	49
36		1	0	1	0	1	0	0	1	1	2	1	0	0	1	0	3	13	0	3	4	0	5	0	7	0	2	7	8	14	107	89	31	14	51	-	41	31
37		0	0	0	0	1	0	0	0	0	0	1	1	0	2	0	5	6	2	0	1	0	1	1	3	2		3	10	11	81	110	52	18	42	-	34	21
38		1	0	1	0	0	1	0	0	0	0	0	0	0	1	3	2	11	3	0	1	0	1	0	4	2	•	8	4	9	62	102	60	21	20	-	38	35
39		1	0	0	0	0	2	0	0	2	0	1	0	0	0	0	3	13	1	0	1	0	0	1	7	0		12	6	3	56	72	60	22	20	-	38	23
40		0	0	0	1	0	1	0	0	0	0	3	0	0	0	1	2	15	2		0	0	2	0	4	0		4	9	6	38	77	80	23	17	-	31	25
41 42		0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	3	11 11	4	4	4	0	0	0	5 7	2	2 2	11	8	8	37 21	69 67	62 44	17 30	23 19	-	16	19 21
42		0	0	0	1	0	0	0	0	0	1	0	0	0	1	1	0	5	3	2	2	0	1	1	3	0		6	1	0	9	53	44	34	11	-	15 12	23
43		2	0	0	1	0	2	0	0	0	-	0	0	0	0	0	0	5	2	1	1	1	0	0	0	0		2	3	1	10	36	44	22	19	-	10	13
45		1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	7	0	1	0	0	1	1	0	1	0	3	2	1	4	36	25	24	11	_	7	6
46		0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	6	2	1	0	0	0	1	0	0		2	2	2	2	25	24	22	17	-	6	16
47		0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	5	0	2	0	0	1	0	2	0	0	2	1	3	1	10	17	23	13	-	14	12
48		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	1	0	1	4	15	14	8	15	-	9	8
49		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	1	0	0	0	0	0	1	3	0	4	10	20	8	12	-	5	8
50		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	0	0	2	2	11	9	5	-	3	10
51		0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	-	0	1	1	2	0	10	5	4	-	4	4
52		0	0	0	1	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	1	4	6	6	-	1	4
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	1	0	0	0	0	0	1	3	6	2	-	1	4
54 55		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 0	1	0	0	1 2	2	1	-	0	0
55 56		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	0	0	2	1	2	-	0	0
56 57		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	0	0	-	0	0
58		0	0	0	0	0	0	0	0	0				0	0	0	0	0	0	0	0	0		0		0		0	0	0	0	0	0	0	0	-	0	0
59		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
Total	1	2	8	8	12	19	16	3						8	16	47	67	239	46		19	7				36		186	263	1.058	1,004	971	826	1,266	1.322	-	810	849

# Table 5.38. Black sea bass length frequencies, fall, 1 cm intervals, 1986-2022. Since 1987, black sea bass have been measured from every tow.

-																					Fall																	
length		198	7 19	988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998			2001	2002		2004			2007	2008	2009	2010					2015			2018	2019	2020	2021	
3	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0 1	0	0 2	0	0	0	-	0	0	3	0	1	0	0 2	1 2	1	-	2	0
5	0		0	0	0	0	1	0	0	1	0		0	0	0	0	1	2	0	3	1	0	0	0	1	_	4	0	2	0	0	2	0	2	1	_	3	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	5	1	1	1	3	0	_	0	0
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	2	1	0	5	5	3	_	1	1
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	2	1	0	4	1	2	-	1	0
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	4	0	1	5	2	0	-	0	4
10	0		0	0	0	0	2	0	0	1	0	0	0	0	0	0	1	3	0	5	2	0	2	0	0	-	0	2	0	0	0	0	0	1	1	-	1	2
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	0	0	0	0	0	2	-	0	1
12	0		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	-	0	3	0	0	0	3	0	0	1	-	0	2
13 14	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	0	-	0	14	0	0	0	22	1	0	14	-	3	18
15	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	_	0	21	0	0	0	19	1	0	12	_	2	56
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	0	0	15	2	0	12	_	2	58
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	0	0	19	2	0	14	-	3	76
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	0	0	5	6	0	14	-	1	71
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	0	0	11	9	1	14	-	3	39
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	0	0	5	6	0	7	-	3	18
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	2	0	2	2	2	4	-	1	8
22 23	0		0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	5 4	0	0	0	0	2	4	3	-	0	3	8 11	1 2	0	0	3	0	1	-	11 18	0
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	1	0	0	10	4	0		14	0
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	1	0	1	5	3	1	_	13	5
26	0	)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	-	1	0	18	2	0	1	9	2	0	_	9	4
27	0	)	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	1	0	2	-	1	1	15	3	3	5	8	3	0	-	12	3
28	0	)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	4	2	0	-	1	2	13	10	2	2	7	12	2	-	8	5
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	13	2	6	3	14	2	-	7	10
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	10	1	3	3	14	7	-	9	18
31 32	0		0	0	0	1	0	2	0	0	0	0	0	0	0	1	0	1	1	0	0	0	2 2	1	0	-	4	1	4	21	4 5	2	4	17 15	6	-	13	11
33	0		0	0	0	2	0	0	0	0		0	0	0	0	3	2	0	0	0	2	0	0	0	0	-	1	1	4	14 23	3	1	0	15	8 11	-	22 15	15 8
34	0		0	1	0	2	0	0	0	0		0	0	0	0	0	2	2	0	0	1	0	1	1	0	-	1	1	0	21	9	4	0	8	20	-	9	7
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	27	11	3	0	12	18	_	4	8
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	20	8	3	1	11	16	-	8	5
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	12	6	2	2	2	13	-	6	7
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	11	5	6	0	3	11	-	7	1
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	7	8	7	2	0	9	-	15	4
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 2	8	13	7	2	0	6	-	12	4
41 42	0		0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3	0	0	2	0	2	0	0	-	3	4	3	4 2	5	10	3	0	3	-	3	2
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	3	4	4	2	1	4	-	2	2
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	0	2	5	4	2	0	_	4	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	1	1	0	2	2	0	-	5	4
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	0	1	3	5	0	3	-	4	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	1	0	5	3	1	0	-	3	3
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	0	0	2	5	3	3	-	2	1
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	0	0	6	3	2	1	-	0	1
50 51	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	2	0	2	6	2	1	-	1	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	1	1	0	0	0	1	1	-	0	1
53	0	)	0	0	0	0	0	0	0	n	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
54	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	1	1	0	0	0	0	1	0	_	0	0
55	0	)	0	0	0	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
56	0	)	0	0	0	0	0	0	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
57	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
58	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
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	239	104	207	151	166	261	-	276	503

Table 5.39. Blueback herring length frequencies, spring and fall, 1 cm intervals, 1989-2022.

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

																		Spring																
length	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
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	2	6	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	1	17	3	0	0	4	-	0	0
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	8	30	13	0	0	17	-	0	0
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	3	24	45	0	9	17	-	1	0
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	1	32	52	0	22	27	-	5	0
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	2	29	40	0	37	7	-	0	1
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	2	10	23	0	4	7	-	0	0
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	0	3	5	0	3	2	-	0	3
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	0	0	1	0	6	2	-	0	1
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	0	0	1	0	24	1	-	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	0	0	0	0	78	0	-	0	0
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	6	0	1	0	162	2	-	0	0
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	11	1	2	0	143	3	-	0	0
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	4	0	0	0	42	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	3	0	0	0	23	1	-	0	0
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	2	1	0	0	15	3	-	0	0
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	2	0	1	0	6	4	-	0	0
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	0	0	0	0	0	11	-	0	1
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	0	0	0	0	0	2	-	0	0
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	0	0	0	0	0	1	-	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	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	0	0	0	0	0	1	-	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	47	153	187	0	574	113	-	6	7

																		Fall																
length	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
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	4	0	-	0	0
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	0	0	0	0	2	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	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	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	0	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	0	0	0	1	0	0	-	0	2
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	0	1	0	1	0	0	-	0	10
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	0	1	0	0	0	0	-	0	7
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	1	0	0	3	0	1	-	0	5
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	1	0	17	0	0	5	-	1	3
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	2	26	151	31	0	4	-	2	1
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	3	60	92	37	0	0	-	3	3
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	1	6	1	14	0	0	-	0	1
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	2	0	0	1	0	0	-	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	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	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	0	0	0	0	0	0	-	0	0
21 22	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	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	0	0	0	0	0	0	-	0	0
23	0	1	0	0	1	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
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	0	0	0	0	0	0	-	0	0
Total	140	2	0	27	76	827	172	7	292	72	8	8	227	12	9	42	8	14	55	3	18		25	1	0	10	94	261	88	6	10		6	32
10181	140		,	21	70	027	1/4		272	12			221	12	,	42		14	33		10		23	1	U	10	24	201	- 00	U	10			32

Table 5.40. Bluefish length frequencies, spring, 1 cm intervals, 1984-2022. Bluefish lengths were recorded from every tow.

																				oring																		
length 23	1984	1985	1986 0	1987 0	1988	1989 0	1990 0	1991 0	1992 0	1993 0	1994 0	1995 0	1996 0	1997 0	1998 0	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 0	2011 0	2012	2013	2014 0	2015	2016	2017	2018	2019	2020 2	2021 2022 1 0
24	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	2	0	-	1 0
25	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	3	0	1	0	0	0	0	1	0	0	0	0	0	-	0 0
26 27	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0	1	0	0	0	1	8	1	3	0	0	0	0	1	0	1	0	0	0	-	0 0
28	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	4	0	0	7	0	0	0	0	0	0	0	0	1	0		0 0
29	0	0	2	0	0	0	1	2	0	0	0	1	1	1	0	1	4	0	1	0	0	0	1	0	0	3	0	0	0	0	0	0	1	0	0	0	-	0 0
30	0	0	0	0	0	0	0	7	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2	1	0	0	0	0	1	0	0	0	1	0	0	0	-	0 0
31	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	1	0	0	0	0	0	0	-	0 0
32	0	0	1	0	0	0	0	11	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	-	0 0
33 34	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	1	0	0	2	0	0	0	0	0	0	0	-	0 0
35	0	0	0	1	0	0	0	9	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	1	0	0	0	1	2	0	1	0	0	0	0	0		0 0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	1	-	0 0
37	0	0	0	0	0	0	0	10	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	-	0 0
38	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	0	1	0	1	1	0	0	0	0	0	0	0	-	0 0
39 40	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	-	0 0
41	0	0	1	0	0	0	1	6	0	0	0	1	0	0	0	4	0	3	5	4	0	5	0	0	0	0	0	0	0	0	0	0	0	1	0	0		0 0
42	0	0	1	1	1	0	0	14	1	0	0	0	0	2	2	2	0	3	5	4	1	1	0	1	3	0	0	1	1	1	0	0	0	4	0	0	-	0 0
43	0	0	1	0	0	0	0	12	0	0	0	0	1	1	0	1	1	6	8	3	0	1	0	0	4	0	0	3	1	2	0	0	0	0	0	0	-	0 0
44	0	0	1	0	0	0	0	10	3	0	0	0	1	0	2	2	0	1	3	1	0	1	1	2	7	0	0	0	0	0	0	0	1	3	0	0	-	0 0
45	0	0	0	0	0	0	1	7	1	0	0	1	1	0	1	0	0	4	3	2	0	0	1	1	3	0	0	4	0	2	0	0	0	1	0	0	-	1 1
46 47	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	4	0	0	0	0	1	0	1	0	0	0	0	0	0		0 0
48	0	0	1	1	0	0	0	3	3	1	0	0	0	0	1	1	1	1	0	0	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	_	0 0
49	0	0	2	1	3	0	0	1	2	2	0	0	0	0	0	5	0	1	3	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	-	1 0
50	0	0	2	1	1	1	0	1	8	0	0	0	2	4	2	3	1	0	5	1	1	0	3	1	1	0	0	1	0	1	0	0	0	0	0	0	-	0 0
51	0	0	0	0	4	1	1	6	4	2	0	0	1	6	1	3	0	1	4	3	5	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	-	0 0
52 53	0	0	2	2	3	1	0	5	3	1	1	0	2	3	0	6	2	0	3	3	1	1	4	1	0	3	0	2	1	2	0	0	1	0	1	0	-	0 0
54	0	0	3	0	4	0	0	2	0	0	1	0	0	1	0	2	0	1	4	1	1	2	0	0	0	0	0	2	0	1	0	0	0	0	0	0		0 0
55	0	0	1	1	7	0	1	2	0	1	0	0	3	1	1	1	1	0	2	0	0	0	0	3	1	4	0	1	0	1	0	0	0	0	0	0	-	1 0
56	0	0	2	2	3	0	0	0	0	1	0	1	0	1	3	1	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	1	0	0	0	-	0 0
57	0	0	1	0	5	0	0	2	1	1	0	0	0	0	0	1	0	1	0	1	0	1	2	0	1	1	0	0	0	0	0	0	0	0	0	0	-	0 0
58 59	0	1	0	0	3	1	1	0	0	1	0	0	0	0	0	1	1	0	0	1 2	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	-	0 0
60	0	0	0	0	1	1	0	0	1	0	1	0	0	2	0	1	0	0	0	1	0	0	0	1	1	3	1	1	0	0	1	0	0	0	0	0		0 2
61	0	0	3	0	1	1	0	0	1	1	3	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	-	0 0
62	0	0	0	0	1	0	0	1	0	0	3	0	0	0	1	0	0	0	0	1	0	1	0	1	1	1	0	0	0	0	0	0	1	0	0	0	-	0 0
63	0	0	1	0	0	0	0	0	1	1	1	0	0	0	2	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	-	0 0
64 65	0	0	1	1	0	1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	-	0 0
66	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	1	0	1	0	1	0	0	0	0	0	0	0		0 0
67	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	4	0	0	1	1	0	0	0	0	0	0	-	0 0
68	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	1	0	0	1	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	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	-	0 0
70 71	0	0	1	0	0	0	1	2	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0 0
72	0	0	1	0	0	1	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	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	1	0	0	0	0	0	0	0	0	0	0	0	0	-	0 0
74	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
75	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	0	0	0	0	0	0	0	-	0 0
76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0 0
77 78	0	0	1 2	0	0	0	0	1	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
79	0	0	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	0	1	0	0	0	0	0	0	-	0 0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Ó	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0 0
82	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
Total	0	1	35	13	43	13	17	147	42	13	12	6	15	38	23	51	26	29	56	36	18	25	39	39	29	52	2	28	19	20	6	3	8	11	5	1	_	6 3

Table 5.41. Bluefish length frequencies, fall, 1 cm intervals, 1984-2022. Bluefish lengths were recorded from every tow.

																				Fall																			
length 5	1984 0	1985 0	1986 0	1987 0	1988 0	1989 0	1990 0	1991 0	1992 0	1993 0	1994 0	1995 0	1996 0	1997 0	1998 0	1999 0	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	2004 0	2005 0	2006 1	<b>2007</b> 0	2008 0	<b>2009</b> 0	2010	2011 0	2012 0	2013 0	2014 0	2015 0	2016 0	2017 0	2018 0	2019 0	2020	0	2022 0
6	1	1	0	0	0	0	0	0 2	0 33	0	0	0	0	0	1 12	2 2	0	0	0	0	0	0	0 2	0	0	0	-	0	0	0	0	0	0	0	0	1	-	0	0
8	1	5	0	2	0	0	0	14	96	1	11	1	0	13	85	40	0	15	1	0	3	1	3	1	0	1	-	0	0	0	4	0	0	0	0	4	-	1	1
9 10	1	6	0	3 16	3	0	3 21	38 115	228 184	4 27	71 183	0	0	135 941	344 647	252 720	2 14	25 89	8 56	8 33	15 342	76 308	8 76	30 86	0	28 93	-	0	1	0	2 42	2 13	1 16	0 12	0	14 43	-	1	2
11	38	13	13	79	76	76	53	200	290	56	1266	156	3	2006	1127	484	50	213	96	70	730	421	239	41	19	317		2	10	12	167	110	93	75	9	43 59	-	27	10 18
12	350	52	20	108	270	249	57	280	269	171	2842	397	10	2905	2008	338	42	136	149	77	748	451	349	157	120	442	-	15	36	22	363	170	268	191	27	122	-	76	46
13 14	958 1483	96 556	45 138	322 500	332 183	494 596	49 99	260 202	123 96	432 283	2880 2023	428 154	54 93	1258 518	1558 834	316 337	168 284	122 122	250 216	33 12	420 299	499 273	64 131	379 231	301 483	324 136	-	40 132	90 157	71 250	495 576	229 373	334 182	323 273	56 24	226 235	-	137 106	83 89
15	1076	1232	376	482	151	903	409	241	401	149	1763	61	510	351	433	300	126	336	126	32	129	117	110	134	225	120	-	196	501	486	305	484	121	214	17	213	-	97	130
16 17	1028 770	1284 783	533 399	399 147	307 472	1187 1155	540 643	405 681	566 495	146 552	1033 829	145 497	1399 1924	469 536	160 127	503 361	155 216	679 568	70 36	200 460	113 161	231 389	172 229	328 821	45 22	475 630	-	476 603	871 761	363 204	181 404	439 217	111 106	62 156	26 23	183 153	-	73 104	112 88
18	246	351	258	92	458	1380	729	589	498	1177	512	902	1227	407	97	190	476	363	33	697	241	668	181	1664	49	350	-	491	523	126	638	155	116	297	14	173	-	129	34
19 20	180 182	204 64	128 125	26 6	322 360	1057 499	493 280	574 383	340 208	1268 854	529 482	995 602	618 329	363 188	114 117	244 446	724 1270	307 228	116 247	790 681	315 348	859 751	106 79	1733 1379	40 49	116 63	-	278 168	272 185	53 37	466 330	138 46	198 229	323 226	48 49	179 152	-	139	22 22
21	64	32	44	13	172	404	227	245	56	320	321	333	158	144	82	467	976	164	370	330	328	437	29	772	20	20	-	72	127	14	156	50	172	108	82	89	-	48	16
22 23	38 30	12	48 38	7	171 22	149 49	102 48	270 128	25 3	119 95	336 133	148	17 15	98 56	115 100	490 606	491 350	90 71	407 316	97 7	293 257	268 161	43 21	518 335	7	7	-	34 18	75 36	9	115 43	51 68	159 103	46 27	101 48	64 32	-	50 28	36 37
24	19	15	9	3	12	11	49	119	1	33	184	7	3	16	181	515	230	49	236	2	214	119	22	151	2	1	-	18	30	1	25	27	76	12	34	9	-	17	50
25	0	9	6	2	6	7	14	92 27	0	33	81 54	7	4	9	189 108	517 311	107	27 14	120 29	0	126 42	59 25	6	69 16	0	1	-	3	18	0	17	18	24 26	8	19	4	-	6	28
26 27	2	0	0	0	0	5	4	5	0	2	8	2	0	0	59	165	0	4	21	0	11	7	8	2	0	0	-	0	2	0	0	1	1	2	7	1	-	3	12
28 29	0	0	0	0	0	0	0	1	0	0	1	0	0	0	4	44 10	0	5	1	0	8	0	2	1	0	0	-	1	2	0	0	0	1	0	2	0	-	1	2
30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	10	0	0	1	0	1	0	0	1	0	1		0	0	0	1	1	2	0	2	1	-	0	0
31	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	-	0	0	0	0	0	3	0	0	1	-	0	0
32 33	0	0	0	2	0	0	4	0	0	0	0	2	0	0	0	0	0	0	1 2	0	4 10	0	2	0	0	0	-	0	2	0	4	0	3 4	0	6	5	-	0	0
34	0	0	0	1	0	0	8	0	1	0	0	5	0	0	1	0	0	0	7	0	39	0	3	0	0	0	-	1	3	0	5	0	3	0	8	6	-	0	0
35 36	0	0	0	3	1	0	9 11	0	2	0	0	17 31	0	1	0	0	0	0	6 12	1 2	41 58	0	1 12	3	0	1	-	0	1 2	0	4	0	10	2	11 15	16 10	-	0	0
37	3	6	1	13	1	0	29	0	19	0	4	61	0	1	1	1	2	12	15	4	129	0	15	5	3	26	-	3	3	0	17	0	10	5	19	10	-	1	2
38 39	11 14	16 50	5 30	18 38	1	1	70 75	6 12	44 74	0	7 23	81 111	2	18 34	8 20	2	13 18	21 31	24 44	7 13	197 231	0	32 18	11 34	17 25	59 52	-	5 13	11	2	12	1	19 23	2	22 10	4	-	1	4
40	40	72	57	48	12	22	127	38	85	7	57	80	11	60	31	3	46	55	82	9	159	8	17	43	24	55		13	11	1	2	2	42	2	2	2	-	13	2
41 42	24 18	61 39	62 81	36 25	12 16	50 51	118 101	92 110	84 55	12 16	58 75	45 25	7 12	49 37	15 15	12	83 50	35 18	70 57	6	53 22	7 22	8	35 37	11	29 25	-	10 19	9	2	0	5	27 14	2	0	1	-	7	0
43	14	24	20	16	15	50	55	118	22	26	50	12	10	15	13	6	23	13	29	7	11	21	2	31	7	10	-	16	6	1	4	3	2	1	0	0	-	3	1
44 45	5	8	12	13 8	22 10	24 10	20 5	82 55	17 18	36 44	20 12	7	10 13	12	12 18	0	11 5	6	8	3	7 8	31 26	0	24 16	5	8	-	8	3	2	2	1	0	0	0	0	-	2	0
46	8	3	27	5	9	13	8	35	21	38	3	6	18	2	16	2	2	11	2	8	12	21	0	12	6	0	-	7	3	2	0	1	2	0	0	2	-	1	0
47	5	8	36	4	16	6	17	34 44	51 72	37 35	4	13	43 45	4	13 15	5	7	4	6	6 10	16	17	1	13 15	5	3	-	1	4	5	0	1	5	1	1	1	-	1	0
48 49	18	28 27	24 28	6	11 8	10 11	5 12	44	107	35 46	8	12	45 29	16 11	18	4	9	17	6	9	21 26	14 20	3	15 16	11	7	-	10	2	22	0	0	3	1	0	6	-	1	0
50	13	27	25	9	11	9	17	43	112	26	5	12	26	6	10	0	15	17	6	9	33	31	3	12	15	10	-	3	3	13	0	1	8	1	1	4	-	1	0
51 52	12 16	31 27	18 14	5 2	5 9	10 18	19 10	30 11	98 101	24 22	8 17	18	12 10	10 4	14 5	7 4	17 26	8	13	4	26 10	26 13	7	14 11	14 14	11	-	5	4 5	6	0	2	11	2	0	0	-	2	1
53	15	17	7	12	9	14	6	10	61	4	25	7	7	6	3	6	14	4	6	3	12	9	5	11	14	4	-	1	3	7	0	0	19	0	0	0	-	0	0
54 55	11	16	7 2	16	2	12	1	5	54 36	10	36 20	5	8	4	6	3	8	3	5	0	13 18	4	5	10	8	2		3	2	2	2	2	29 32	0	0	0	-	0	0
56	8	7	2	15	1	9	1	0	28	12	17	3	5	1	1	3	1	3	3	7	14	3	2	1	3	2	-	1	3	5	0	0	17	0	0	0	-	4	1
57 58	5	2	2	15	0	3	0	3	26 16	21 33	15	0	5 4	7	1 3	7	2	1	9	1	34 25	11	5	4	0 4	6	-	0	0	3	0	1	11	0	0	0	-	0	1
59	2	3	8	5	6	2	0	1	13	35	7	1	4	2	3	9	0	5	7	3	14	10	2	10	1	5	-	2	3	0	8	1	9	0	1	0	-	1	3
60 61	5	8 12	3	6	4	1	2	5	4	67 41	9 11	4	4	4	3	2	6	5	2	3	11	5	3	22 10	4	7	-	1	0	3	5	0	7	0	2	1	-	0	0
62	2	3	3	3	5	2	2	3	7	34	8	4	2	1	5	2	1	3	2	1	11	13	0	18	4	5	-	0	1	3	1	0	6	3	0	0	-	0	0
63 64	0	10	8 10	2	10	2	7	3	4	20 27	12 12	1	0	4	5	1	5	0	4	2	10 12	14	2	6 13	6	3	-	3	4	4	2	0	17	2	0	0	-	1	0
65	0	6	1	3	8	1	6	0	8	3	27	3	0	2	4	1	3	2	4	0	10	10	2	10	5	7	-	0	0	3	0	1	14	0	0	0	-	0	0
66	0	5	7	2	7	2	9	0	1	8	28	3	1	1	4	0	4	1	5	0	6	6	1	8	5	6	-	0	0	1	4	0	10	0	0	0	-	1	3
67 68	1	6	5	5	13	6	4	4	0	8	21 30	3	0	0	1	3	3	2	3	1	5	7	0	5	6	12 11		2	2	4	4	4	2	1	0	0	-	0	4
69	0	1	3	5	4	4	8	5	4	1	5	1	2	1	1	3	0	3	4	0	7	3	0	6	4	11	-	1	1	2	0	3	2	1	0	0	-	0	0
70 71	0	0	4	3 1	4	13	5 10	4	6 5	0	10 7	3	3	0	0	3	3 5	0	5	0	5 1	0	0	0	8	11 15	-	4	0	3	3 1	3	0	1	0	0	-	0	1 2
72	1	1	2	3	4	3	9	3	6	5	4	2	0	2	1	0	1	1	3	1	4	1	0	3	2	11	-	6	1	4	1	1	3	0	0	0	-	0	1
73 74	0	1	1 2	5 1	3	4	7	2	9 10	6	3	2	1	2	0 2	0	1	1	1	0	2	2 2	0	2	1	9	-	2	4	1 2	1	2	1	0	0	0	-	0	0
75	2	1	3	2	9	2	8	5	7	6	2	1	2	1	2	4	0	1	0	1	0	2	0	0	0	8	-	2	2	1	1	1	6	0	0	1	-	0	0
76 77	0	2	1	1	2	3	7	6	3	3	5	2	3	2	0	1	0	0	2	0	2	1	0	0	1	2	-	2	0	1 2	2	2	1 2	0	0	0	-	0	1
78	0	2	2	1	0	2	1	1	2	3	2	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1	-	2	0	0	1	0	4	2	0	0	-	0	0
79	0	0	0	0	1	1	0	1	2	3	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	-	1	0	0	0	0	4	0	0	0	-	0	0
80 81	0	0	0	0	0	1	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	1	1	0	0	0	0	1	0	0	-	0	0
82	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	1	-	0	0
Total	6.738	5.300	2,740	2,598	3,645	8,636	4,671	5,699	5.225	6.459	16.232	5.514	6.688	10.776	8.789	7.788	6.112	3.957	3.395	3,681	6.489	6 506	2 064	9 336	1.667	3 604	-	2,735	3.829	1.809	4 452	2 650	2 785	2 395	698	2,046		1,197	878

Table 5.42. Butterfish length frequencies, 1 cm intervals, spring and fall, 1986-1990, 1992-2022.

4,244 14,108 25,796 13,082 13,946 69,300 32,464 44,599 38,034 32,826 40,750 83,503 126,680 47,245 29,196 46,433 17,312 61,962 65,980 27,775 32,293 28,951 79,627

Prior to 2014, length frequencies of butterfish were taken from the first three tows of each day; since 2014, lengths have been recorded from every tow.

																		Spring																		
length	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	1	2	4	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0
4	0	0	0	0	0	0	0	2	0	0	0	0	3	0	9	0	15	0	1	1	8	1	5	0	3	3	3	3	0	2	2	0	1	-	0	0
5	0	0	0	0	0	2	0	6	0	2	0	0	4	0	51	1	29	1	0	1	5	3	53	0	9	2	39	20	7	16	40	2	4	-	4	0
6	0	0	0	0	0	0	0	35	0	21	3	0	0	0	207	0	7	20	0	2	0	1	276	1	35	6	109	35	65	9	110	13	0	-	11	0
7	0	0	0	2	0	0	0	57	1	7	0	3	0	0	202	0	3	95	1	0	0	3	233	0	50	0	218	26	62	2	93	0	0	-	24	0
8	0	0	0	2	0	0	0	18	0	0	0 57	0	0	1	107	0	0	101	2	4	12	0	228	0	34 7	3 279	76	14	35	2	8	33	4 11	-	16 12	10 45
10	4	0	0	0	0	0	0	4	4	0	165	5 183	4 10	0	15	4	4 10	47 146	0 10	61 201	73	1 53	197 225	198 530	2	768	4 13	40 231	50	26 539	,	33 46	23	-	77	93
11	29	0	0	269	5	16	2	28	20	19	618	622	16	84	51	44	130	427	27	540	292	74	461	291	28	1,523	95	718	463	2916	46	269	23 14	-	201	405
12	39	0	3	208	7	32	17	45	80	190	1,005	656	55	961	272	202	616	433	216	1,632	794	409	1,426	47	217	1,323	427	608	1063	6194	231	902	32	-	465	513
13	26	0	6	34	16	88	25	75	62	485	1,598	466	152	1,265	317	656	546	201		3,108	531	976	1,196	110	1,347	1,214	639	326	668	3693	595	785	146	-	444	375
14	61	0	7	2	28	111	10	76	30	327	1,296	190	145	317	145	990	129	71	425	1,690	130	739	439	237	1,819	735	531	188	552	1807	371	262	108		349	210
15	66	0	27	3	26	50	9	117	24	255	1.033	173	122	122	236	851	137	64	234	493	234	646	237	376	1,443	396	200	107	443	1288	332	172	91	_	176	248
16	57	0	20	10	26	49	25	156	44	275	951	267	148	31	381	669	155	126	124	173	190	654	201	301	1,228	330	149	278	387	1064	498		224	_	226	483
17	25	0	14	7	38	41	23	92	25	178	654	175	137	47	332	490	64	107	81	104	146	396	154	61	982	237	149	313	311	645	502	279	226	_	239	471
18	20	0	0	0	18	38	10	44	14	83	307	88	106	28	284	335	36	50	71	72	85	405	113	41	599	83	129	252	359	261	182	156	187	-	174	293
19	7	0	0	4	16	27	4	9	3	48	110	70	24	23	128	249	26	21	59	84	22	179	49	5	286	35	13	150	265	45	65	93	181	-	238	422
20	0	0	1	2	7	10	0	4	1	13	72	29	27	21	53	142	16	9	12	27	18	56	9	13	67	40	14	37	39	5	7	35	70	-	149	236
21	4	0	0	1	5	1	0	0	0	2	22	3	8	7	7	26	4	1	4	1	0	1	7	0	33	0	0	7	10	1	1	3	14	-	44	81
22	4	0	0	0	7	0	1	0	0	0	0	5	3	0	1	4	4	1	0	0	0	0	0	0	0	0	0	0	6	0	1	1	4	-	13	8
23	0	0	0	0	1	2	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	-	1	1
24	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	1	0	0	0	0	-	0	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	1	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	3	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	1	0	0	0	0	0	0	0	0	-	0	0
Total	342	0	78	584	200	469	127	768	315	1,905	7,906	2,935	965	2,907	2,804	4,666	1,933	1,921	1,710	8,196	2,544	4,598	5,509	2,211	8,191	7,143	2,808	3,353	4,788	18,515	3,099	3,296	1,340		2,863	3,894
																		Fall																		
length	1986	1987	1988	1989	1990	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Fall 2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
length 2	1986 0	1987 1	1988 0	1989 0	<b>1990</b>	1992 0	1993 0	<b>1994</b>	1995 0	<b>1996</b>	1997 0	1998 0	<b>1999</b> 0	2000	2001	<b>2002</b>	2003		2005	<b>2006</b>	2007	2008	2009	2010	<b>2011</b>	2012	<b>2013</b>	<b>2014</b> 0	<b>2015</b> 0	<b>2016</b>	<b>2017</b> 0	2018	2019	2020	<b>2021</b>	2022
		1987 1 0	1988 0 0	1989 0 0	1990 0 0	1992 0 0	1993 0 0	1994 0 0	1995 0 3					2000 0 0	2001 0 0	2002 0 0		2004			2007 0 0	2008 0 0	2009 0 0	2010			2013 0 0	2014 0 0	2015 0 0	2016 0 0			2019 0 1	2020		2022 0 0
2	0	1	0	0	0	0	1993 0 0 20	1994 0 0	1995 0 3 8	0	0	0	0	2000 0 0	2001 0 0 16	0	0	<b>2004</b> 0	0	0	0	2008 0 0	2009 0 0 6	2010	0	0	0	2014 0 0 0	2015 0 0	2016 0 0 5	0		2019 0 1 7	2020	0	0
2	0 0 0	1 0 2 3	0 0 87 1,141	0 0 0 23	0 0 0 3	0 0 0 475	0 0 20 436	0 0 1 16	0 3 8 268	0 0 2 180	0 0 2 33	0 0 1 20	0 2 3 13	0 0 0 72	0 0 16 69	0 0 15 53	0 0 0 52	0 2 7 29	0 0 0 260	0 0 1 2	0 0 15 152	0 0 0 29	0 0 6 324	2010	0 24 0 78	0 0 10 64	0 0 8 71	0 0 0 80	0 0 0 108	0 0 5 98	0 0 30 85	0 0 4 98	0 1 7 49	2020	0 0 1 9	0 0 8 64
2	0 0 0 0	1 0 2 3 10	0 0 87 1,141 5,778	0 0 0 23 144	0 0 0 3 62	0 0 0 475 2,429	0 0 20 436 3,144	0 0 1 16 197	0 3 8 268 426	0 0 2 180 601	0 0 2 33 461	0 0 1 20 317	0 2 3 13 250	0 0 0 72 334	0 0 16 69 409	0 0 15 53 616	0 0 0 52 685	2004 0 2 7 29 710	0 0 0 260 658	0 0 1 2 34	0 0 15 152 1,270	0 0 0 29 230	0 0 6 324 1,997	2010	0 24 0 78 345	0 0 10 64 280	0 0 8 71 662	0 0 0 80 802	0 0 0 108 981	0 0 5 98 151	0 0 30 85 304	0 0 4 98 818	0 1 7 49 519	2020	0 0 1 9 345	0 0 8 64 556
2	0 0 0 0 0	1 0 2 3 10 146	0 87 1,141 5,778 5,728	0 0 0 23 144 678	0 0 0 3 62 173	0 0 0 475 2,429 13,780	0 20 436 3,144 4,344	0 0 1 16 197 1,701	0 3 8 268 426 5,055	0 0 2 180 601 1,540	0 0 2 33 461 1,614	0 0 1 20 317 920	0 2 3 13 250 3,755	0 0 0 72 334 2,709	0 0 16 69 409 1,405	0 0 15 53 616 1,842	0 0 0 52 685 4,972	2004 0 2 7 29 710 9,342	0 0 0 260 658 2,991	0 0 1 2 34 162	0 0 15 152 1,270 1,951	0 0 0 29 230 771	0 6 324 1,997 9,132	2010 - - - - -	0 24 0 78 345 1,075	0 0 10 64 280 1,559	0 8 71 662 2,164	0 0 0 80 802 3,546	0 0 0 108 981 12,643	0 0 5 98 151 2,448	0 30 85 304 862	0 0 4 98	0 1 7 49 519 2,722	2020	0 0 1 9 345 2,594	0 8 64 556 1,701
2	0 0 0 0 0 12 117	1 0 2 3 10 146 1,093	0 87 1,141 5,778 5,728 4,844	0 0 0 23 144 678 1,425	0 0 0 3 62 173 471	0 0 475 2,429 13,780 22,246	0 20 436 3,144 4,344 5,983	0 1 16 197 1,701 7,653	0 3 8 268 426 5,055 11,919	0 0 2 180 601 1,540 3,292	0 2 33 461 1,614 5,449	0 0 1 20 317 920 4,070	0 2 3 13 250 3,755 24,915	0 0 72 334 2,709 8,904	0 16 69 409 1,405 3,196	0 0 15 53 616 1,842 7,453	0 0 52 685 4,972 5,630	2004 0 2 7 29 710 9,342 18,524 1	0 0 0 260 658 2,991 14,062	0 0 1 2 34 162 1,060	0 15 152 1,270 1,951 4,508	0 0 0 29 230 771 4,744	0 6 324 1,997 9,132 18,840	-	0 24 0 78 345 1,075 3,621	0 0 10 64 280 1,559 5,148	0 8 71 662 2,164 2,395	0 0 80 802 3,546 14,503	0 0 0 108 981 12,643 23,067	0 5 98 151 2,448 8,977	0 30 85 304 862 3,402	0 4 98 818 3,639 4,866	0 1 7 49 519 2,722 8,628	- - - - -	0 0 1 9 345 2,594 7,517	0 8 64 556 1,701 7,059
2	0 0 0 0 0 12 117 277	1 0 2 3 10 146 1,093 2,236	0 87 1,141 5,778 5,728 4,844 5,489	0 0 0 23 144 678 1,425 3,196	0 0 0 3 62 173 471 2,515	0 0 0 475 2,429 13,780 22,246 22,133	0 20 436 3,144 4,344 5,983 7,781	0 0 1 16 197 1,701 7,653 17,663	0 3 8 268 426 5,055 11,919 12,110	0 0 2 180 601 1,540 3,292 5,856	0 0 2 33 461 1,614 5,449 11,122	0 0 1 20 317 920 4,070 14,691	0 2 3 13 250 3,755 24,915 53,739	0 0 72 334 2,709 8,904 16,392	0 16 69 409 1,405 3,196 4,444	0 0 15 53 616 1,842 7,453 14,401	0 0 52 685 4,972 5,630 3,067	2004 0 2 7 29 710 9,342 18,524 1 13,237 1	0 0 0 260 658 2,991 14,062 18,276	0 0 1 2 34 162 1,060 4,647	0 0 15 152 1,270 1,951 4,508 5,086	0 0 0 29 230 771 4,744 8,864	0 0 6 324 1,997 9,132 18,840 16,054	2010 - - - - - - - -	0 24 0 78 345 1,075 3,621 5,715	0 0 10 64 280 1,559 5,148 7,742	0 8 71 662 2,164 2,395 2,127	0 0 0 80 802 3,546 14,503 20,159	0 0 108 981 12,643 23,067 6,886	0 0 5 98 151 2,448 8,977 13,489	0 30 85 304 862 3,402 5,562	0 0 4 98 818 3,639 4,866 5,006	0 1 7 49 519 2,722 8,628 12,747	2020	0 0 1 9 345 2,594 7,517 8,766	0 0 8 64 556 1,701 7,059 16,548
2 3 4 5 6 7 8 9	0 0 0 0 0 12 117 277 1,143	1 0 2 3 10 146 1,093 2,236 2,017	0 0 87 1,141 5,778 5,728 4,844 5,489 1,068	0 0 0 23 144 678 1,425 3,196 4,927	0 0 0 3 62 173 471 2,515 5,886	0 0 475 2,429 13,780 22,246 22,133 6,614	0 20 436 3,144 4,344 5,983 7,781 4,001	0 0 1 16 197 1,701 7,653 17,663 8,178	0 3 8 268 426 5,055 11,919 12,110 3,765	0 0 2 180 601 1,540 3,292 5,856 6,674	0 0 2 33 461 1,614 5,449 11,122 10,645	0 0 1 20 317 920 4,070 14,691 29,516	0 2 3 13 250 3,755 24,915 53,739 31,244	0 0 72 334 2,709 8,904 16,392 13,110	0 0 16 69 409 1,405 3,196 4,444 6,002	0 0 15 53 616 1,842 7,453 14,401 14,408	0 0 52 685 4,972 5,630 3,067 832	2004 0 2 7 29 710 9,342 18,524 1 13,237 1 13,284 1	0 0 0 260 658 2,991 14,062 18,276 16,897	0 0 1 2 34 162 1,060 4,647 9,830	0 15 152 1,270 1,951 4,508 5,086 7,584	0 0 0 29 230 771 4,744 8,864 6,576	0 6 324 1,997 9,132 18,840 16,054 5,377	-	0 24 0 78 345 1,075 3,621 5,715 3,197	0 0 10 64 280 1,559 5,148 7,742 7,792	0 8 71 662 2,164 2,395 2,127 1,662	0 0 0 80 802 3,546 14,503 20,159 14,199	0 0 0 108 981 12,643 23,067 6,886 613	0 0 5 98 151 2,448 8,977 13,489 11,727	0 30 85 304 862 3,402 5,562 8,036	0 0 4 98 818 3,639 4,866 5,006 8,296	0 1 7 49 519 2,722 8,628 12,747 10,391	- - - - -	0 0 1 9 345 2,594 7,517 8,766 9,054	0 0 8 64 556 1,701 7,059 16,548 13,339
2 3 4 5 6 7 8 9	0 0 0 0 0 12 117 277 1,143 919	1 0 2 3 10 146 1,093 2,236 2,017 1,204	0 87 1,141 5,778 5,728 4,844 5,489 1,068 477	0 0 0 23 144 678 1,425 3,196 4,927 1,661	0 0 0 3 62 173 471 2,515 5,886 2,781	0 0 475 2,429 13,780 22,246 22,133 6,614 634	0 20 436 3,144 4,344 5,983 7,781 4,001 871	0 0 1 16 197 1,701 7,653 17,663 8,178 2,414	0 3 8 268 426 5,055 11,919 12,110 3,765 832	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050	0 0 1 20 317 920 4,070 14,691 29,516 23,892	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496	0 0 72 334 2,709 8,904 16,392 13,110 3,528	0 0 16 69 409 1,405 3,196 4,444 6,002 2,997	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682	0 0 52 685 4,972 5,630 3,067 832 294	2004 0 2 7 29 710 9,342 18,524 13,237 13,284 14,193	0 0 0 260 658 2,991 14,062 18,276 16,897 8,203	0 0 1 2 34 162 1,060 4,647 9,830 5,929	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404	0 0 0 29 230 771 4,744 8,864 6,576 4,103	0 6 324 1,997 9,132 18,840 16,054 5,377 1,678	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451	0 0 8 71 662 2,164 2,395 2,127 1,662 798	0 0 80 802 3,546 14,503 20,159 14,199 5,337	0 0 0 108 981 12,643 23,067 6,886 613 666	0 0 5 98 151 2,448 8,977 13,489 11,727 4,517	0 30 85 304 862 3,402 5,562 8,036 5,992	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175	0 1 7 49 519 2,722 8,628 12,747 10,391 4,438	- - - - -	0 0 1 9 345 2,594 7,517 8,766 9,054 4,500	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478
2 3 4 5 6 7 8 9 10	0 0 0 0 0 12 117 277 1,143 919 623	1 0 2 3 10 146 1,093 2,236 2,017 1,204 1,041	0 87 1,141 5,778 5,728 4,844 5,489 1,068 477 51	0 0 0 23 144 678 1,425 3,196 4,927 1,661 216	0 0 0 3 62 173 471 2,515 5,886 2,781 827	0 0 475 2,429 13,780 22,246 22,133 6,614 634 65	0 20 436 3,144 4,344 5,983 7,781 4,001 871 360	0 0 1 16 197 1,701 7,653 17,663 8,178 2,414 1,951	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849	0 0 1 20 317 920 4,070 14,691 29,516 23,892 7,162	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009	0 0 72 334 2,709 8,904 16,392 13,110 3,528 915	0 0 16 69 409 1,405 3,196 4,444 6,002 2,997 2,004	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430	0 0 52 685 4,972 5,630 3,067 832 294 639	2004 0 2 7 29 710 9,342 18,524 13,237 13,284 14,193 982	0 0 0 260 658 2,991 14,062 18,276 16,897 8,203 2,391	0 0 1 2 34 162 1,060 4,647 9,830 5,929 3,266	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614	0 0 29 230 771 4,744 8,864 6,576 4,103 1,812	0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382	0 0 80 802 3,546 14,503 20,159 14,199 5,337 1,474	0 0 0 108 981 12,643 23,067 6,886 613 666 959	0 0 5 98 151 2,448 8,977 13,489 11,727 4,517 1,032	0 30 85 304 862 3,402 5,562 8,036 5,992 2,949	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175 4,394	0 1 7 49 519 2,722 8,628 12,747 10,391 4,438 927	- - - - -	0 0 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618
2 3 4 5 6 7 8 9 10 11 12 13	0 0 0 0 0 12 117 277 1,143 919 623 409	1 0 2 3 10 146 1,093 2,236 2,017 1,204 1,041 2,477	0 0 87 1,141 5,778 5,728 4,844 5,489 1,068 477 51 204	0 0 0 23 144 678 1,425 3,196 4,927 1,661 216 45	0 0 0 3 62 173 471 2,515 5,886 2,781 827 212	0 0 475 2,429 13,780 22,246 22,133 6,614 634 65 94	0 0 20 436 3,144 4,344 5,983 7,781 4,001 871 360 2,400	0 0 1 16 197 1,701 7,653 17,663 8,178 2,414 1,951 2,610	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346 131	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344 976	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849 818	0 0 1 20 317 920 4,070 14,691 29,516 23,892 7,162 675	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009 1,156	0 0 72 334 2,709 8,904 16,392 13,110 3,528 915 306	0 0 16 69 409 1,405 3,196 4,444 6,002 2,997 2,004 1,714	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430 264	0 0 0 52 685 4,972 5,630 3,067 832 294 639 570	2004 0 2 7 29 710 9,342 18,524 113,237 113,284 1,193 982 218	0 0 260 658 2,991 14,062 18,276 16,897 8,203 2,391 1,265	0 0 1 2 34 162 1,060 4,647 9,830 5,929 3,266 1,173	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614 1,122	0 0 29 230 771 4,744 8,864 6,576 4,103 1,812 457	0 0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041 9,925	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451 2,295	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426 647	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382 867	0 0 80 802 3,546 14,503 20,159 14,199 5,337 1,474 781	0 0 0 108 981 12,643 23,067 6,886 613 666 959 836	0 0 5 98 151 2,448 8,977 13,489 11,727 4,517 1,032 88	0 0 30 85 304 862 3,402 5,562 8,036 5,992 2,949 669	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175 4,394 1,070	0 1 7 49 519 2,722 8,628 12,747 10,391 4,438 927 487		0 0 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407 545	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618 123
2 3 4 5 6 7 8 9 10 11 12 13	0 0 0 0 0 12 117 277 1,143 919 623 409 259	1 0 2 3 10 146 1,093 2,236 2,017 1,204 1,041 2,477 1,946	0 0 87 1,141 5,778 5,728 4,844 5,489 1,068 477 51 204 172	0 0 0 23 144 678 1,425 3,196 4,927 1,661 216 45 144	0 0 0 3 62 173 471 2,515 5,886 2,781 827 212 52	0 0 475 2,429 13,780 22,246 22,133 6,614 634 65 94 50	0 0 20 436 3,144 4,344 5,983 7,781 4,001 871 360 2,400 1,721	0 0 1 16 197 1,701 7,653 17,663 8,178 2,414 1,951 2,610 1,238	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346 131 273	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344 976 2,072	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849 818 289	0 0 1 20 317 920 4,070 14,691 29,516 23,892 7,162 675 498	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009 1,156 481	0 0 72 334 2,709 8,904 16,392 13,110 3,528 915 306 93	0 0 16 69 409 1,405 3,196 4,444 6,002 2,997 2,004 1,714 2,307	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430 264 247	0 0 52 685 4,972 5,630 3,067 832 294 639 570 231	2004 0 2 7 29 710 9,342 18,524 1 13,237 1 13,284 1 4,193 982 218 350	0 0 0 260 658 2,991 14,062 18,276 16,897 8,203 2,391 1,265 212	0 0 1 2 34 162 1,060 4,647 9,830 5,929 3,266 1,173 281	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614 1,122 278	0 0 0 29 230 771 4,744 8,864 6,576 4,103 1,812 457 4	0 0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041 9,925 6,842	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451 2,295 729	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426 647 429	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382 867 2,684	0 0 80 802 3,546 14,503 20,159 14,199 5,337 1,474 781 1,657	0 0 0 108 981 12,643 23,067 6,886 613 666 959 836 384	0 0 5 98 151 2,448 8,977 13,489 11,727 4,517 1,032 88 317	0 0 30 85 304 862 3,402 5,562 8,036 5,992 2,949 669 138	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175 4,394 1,070 301	0 1 7 49 519 2,722 8,628 12,747 10,391 4,438 927 487 233		0 0 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407 545 228	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618 123 90
2 3 4 5 6 7 8 9 10 11 12 13 14 15	0 0 0 0 0 12 117 277 1,143 919 623 409 259 95	1 0 2 3 10 146 1,093 2,236 2,017 1,204 1,041 2,477 1,946 1,334	0 0 87 1,141 5,778 5,728 4,844 5,489 1,068 477 51 204 172 196	0 0 0 23 144 678 1,425 3,196 4,927 1,661 216 45 144	0 0 0 3 62 173 471 2,515 5,886 2,781 827 212 52 234	0 0 475 2,429 13,780 22,246 22,133 6,614 634 65 94 50	0 0 20 436 3,144 4,344 5,983 7,781 4,001 871 360 2,400 1,721 797	0 0 1 16 197 1,701 7,653 17,663 8,178 2,414 1,951 2,610 1,238 679	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346 131 273 597	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344 976 2,072 2,104	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849 818 289 197	0 0 1 20 317 920 4,070 14,691 29,516 23,892 7,162 675 498 272	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009 1,156 481 212	0 0 72 334 2,709 8,904 16,392 13,110 3,528 915 306 93 30	0 0 16 69 409 1,405 3,196 4,444 6,002 2,997 2,004 1,714 2,307 2,026	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430 264 247 190	0 0 0 52 685 4,972 5,630 3,067 832 294 639 570 231 95	2004 0 2 7 29 710 9,342 18,524 113,237 113,284 4,193 982 218 350 420	0 0 0 260 658 2,991 14,062 18,276 16,897 8,203 2,391 1,265 212 188	0 0 1 2 34 1,060 4,647 9,830 5,929 3,266 1,173 281 184	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614 1,122 278 405	0 0 0 29 230 771 4,744 8,864 6,576 4,103 1,812 457 4	0 0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041 9,925 6,842 2,211	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451 2,295 729 240	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426 647 429 670	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382 867 2,684 2,051	0 0 0 80 802 3,546 14,503 20,159 14,199 5,337 1,474 781 1,657 1,342	0 0 0 108 981 12,643 23,067 6,886 613 666 959 836 384 627	0 0 5 98 151 2,448 8,977 13,489 11,727 4,517 1,032 88 317 928	0 0 30 85 304 862 3,402 5,562 8,036 5,992 2,949 669 138 351	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175 4,394 1,070 301 330	0 1 7 49 519 2,722 8,628 12,747 10,391 4,438 927 487 233 150		0 0 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407 545 228 137	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618 123 90 377
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	0 0 0 0 0 12 117 277 1,143 919 623 409 259 95 106	1 0 2 3 10 146 1,093 2,236 2,017 1,204 1,041 2,477 1,946 1,334 387	0 0 87 1,141 5,778 5,728 4,844 5,489 1,068 477 51 204 172 196 197	0 0 0 23 144 678 1,425 3,196 4,927 1,661 216 45 144 139 210	0 0 0 3 62 173 471 2,515 5,886 2,781 827 212 52 234 415	0 0 0 475 2,429 13,780 22,246 22,133 6,614 634 65 94 50 101 177	0 0 20 436 3,144 4,344 5,983 7,781 4,001 871 360 2,400 1,721 797 390	0 0 1 16 197 1,701 7,653 17,663 8,178 2,414 1,951 2,610 1,238 679 41	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346 131 273 597 951	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344 976 2,072 2,104 1,196	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849 818 289 197 238	0 0 1 20 317 920 4,070 14,691 29,516 23,892 7,162 675 498 272 388	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009 1,156 481 212 92	0 0 72 334 2,709 8,904 16,392 13,110 3,528 915 306 93 30 151	0 0 16 69 409 1,405 3,196 4,444 6,002 2,997 2,004 1,714 2,307 2,026 1,521	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430 264 247 190 85	0 0 0 52 685 4,972 5,630 3,067 832 294 639 570 231 95 156	2004 0 2 7 29 710 9,342 18,524 13,237 13,284 4,193 982 218 350 420 320	0 0 0 260 658 2,991 14,062 18,276 16,897 8,203 2,391 11,265 212 188 203	0 0 1 2 34 162 1,060 4,647 9,830 5,929 3,266 1,173 281 184 688	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614 1,122 278 405 420	0 0 0 29 230 771 4,744 8,864 6,576 4,103 1,812 457 4 131 368	0 0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041 9,925 6,842 2,211 1,167	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451 2,295 729 240 103	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426 647 429 670 1,296	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382 867 2,684 2,051 1,224	0 0 0 80 802 3,546 14,503 20,159 14,199 5,337 1,474 781 1,657 1,342 836	0 0 0 108 981 12,643 23,067 6,886 613 666 959 836 384 627 366	0 0 5 98 151 2,448 8,977 13,489 11,727 4,517 1,032 88 317 928 1,963	0 0 30 85 304 862 3,402 5,562 8,036 5,992 2,949 669 138 351 1,232	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175 4,394 1,070 301 330 438	0 1 7 49 519 2,722 8,628 12,747 10,391 4,438 927 487 233 150 155		0 0 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407 545 228 137 80	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618 123 90 377 250
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	0 0 0 0 0 12 117 277 1,143 919 623 409 259 95 106 184	1 0 2 3 10 146 1,093 2,236 2,017 1,204 1,041 2,477 1,946 1,334 387 124	0 0 87 1,141 5,778 5,728 4,844 5,489 1,068 477 51 204 172 196 197 228	0 0 0 23 144 678 1,425 3,196 4,927 1,661 216 45 144 139 210	0 0 0 3 62 173 471 2,515 5,886 2,781 827 212 52 234 415 133	0 0 475 2,429 13,780 22,246 22,133 6,614 634 65 94 50 101 177 130	0 0 20 436 3,144 4,344 5,983 7,781 4,001 871 360 2,400 1,721 797 390 124	0 0 1 16 197 1,701 7,653 17,663 8,178 2,414 1,951 2,610 1,238 679 41	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346 131 273 597 951 853	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344 976 2,072 2,104 1,196 392	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849 818 289 197 238 335	0 0 1 20 317 920 4,070 14,691 29,516 23,892 7,162 675 498 272 388 574	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009 1,156 481 212 92 158	0 0 0 72 334 2,709 8,904 16,392 13,110 3,528 915 306 93 30 151 392	0 0 16 69 409 1,405 3,196 4,444 6,002 2,997 2,004 1,714 2,307 2,026 1,521 391	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430 264 247 190 85 152	0 0 0 52 685 4,972 5,630 3,067 832 294 639 570 231 95 156 66	2004 0 2 7 79 710 9,342 18,524 113,237 113,284 14,193 982 218 350 420 320 208	0 0 0 260 658 2,991 14,062 18,276 16,897 8,203 2,391 1,265 212 188 203 137	0 0 1 2 34 162 1,060 4,647 9,830 5,929 3,266 1,173 281 184 688 398	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614 1,122 278 405 420 228	0 0 0 29 230 771 4,744 8,864 6,576 4,103 1,812 457 4 131 368 539	0 0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041 9,925 6,842 2,211 1,167 836	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451 2,295 729 240 103 120	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426 647 429 670 1,296 1,318	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382 867 2,684 2,051 1,224 990	0 0 0 80 802 3,546 14,503 20,159 14,199 5,337 1,474 781 1,657 1,342 836 502	0 0 0 108 981 12,643 23,067 6,886 613 666 959 836 384 627 366 176	0 0 5 98 151 2,448 8,977 13,489 11,727 4,517 1,032 88 317 928 1,963 1,069	0 30 85 304 862 3,402 5,562 8,036 5,992 2,949 669 138 351 1,232 1,031	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175 4,394 1,070 301 330 438 340	0 1 7 49 519 2,722 8,628 12,747 10,391 4,438 927 487 233 150 155 157		0 0 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407 545 228 137 80 89	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618 123 90 377 250
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	0 0 0 0 0 12 117 277 1,143 919 623 409 259 95 106 184 48	1 0 2 3 10 146 1,093 2,236 2,017 1,204 1,041 2,477 1,946 1,334 387 124 59	0 0 87 1,141 5,772 5,728 4,844 5,489 1,068 477 51 204 172 196 197 228 115	0 0 0 23 144 678 1,425 3,196 4,927 1,661 216 45 144 139 210 117	0 0 0 3 62 173 471 2,515 5,886 2,781 827 212 52 234 415 133 83	0 0 475 2,429 13,780 22,246 22,133 6,614 634 65 94 50 101 177 130 347	0 0 20 436 3,144 4,344 5,983 7,781 4,001 871 360 2,400 1,721 797 390 124 54	0 0 1 16 197 1,701 7,653 17,663 8,178 2,414 1,951 2,610 1,238 679 41	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346 131 273 597 951 853 429	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344 976 2,072 2,104 1,196 392 59	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849 818 289 197 238 335 407	0 0 1 20 317 920 4,070 14,691 29,516 23,892 7,162 675 498 272 388 272 388 574 168	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009 1,156 481 212 92 158 80	0 0 72 334 2,709 8,904 16,392 13,110 3,528 915 306 93 30 151 392 198	0 0 16 69 409 3,196 4,444 6,002 2,997 2,004 1,714 2,307 2,026 1,521 391 310	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430 264 247 190 85 152 266	0 0 0 52 685 4,972 5,630 3,067 832 294 639 570 231 95 156	2004 0 2 7 29 710 9,342 113,237 1 13,284 4,193 982 218 350 420 320 208 89	0 0 0 0 658 2,991 14,062 18,276 16,897 8,203 2,391 1,265 212 188 203 137 177	0 0 1 2 34 162 1,060 4,647 9,830 5,929 3,266 1,173 281 184 688 398 77	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614 1,122 278 405 420 228 145	0 0 0 29 230 771 4,744 8,864 6,576 4,103 1,812 457 4 131 368 539 243	0 0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041 9,925 6,842 2,211 1,167	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451 2,295 729 240 103 120 84	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426 647 429 670 1,296 1,318 749	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382 867 2,684 2,051 1,224 990 821	0 0 0 80 802 3,546 14,503 20,159 14,199 5,337 1,474 781 1,657 1,342 836 502 550	0 0 0 108 981 12,643 23,067 6,886 613 666 959 836 384 627 366 176 74	0 0 5 98 12,448 8,977 13,489 11,727 4,517 1,032 88 317 928 1,963 1,069 167	0 0 30 85 304 862 3,402 5,562 8,036 5,992 2,949 669 138 351 1,232 1,031 797	0 0 4 98 818 3,639 4,866 5,006 8,296 8,296 4,394 1,070 301 330 438 340 448	0 1 7 49 519 2,722 8,628 12,747 10,391 4,438 927 487 233 150 155 157 207		0 0 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407 545 228 137 80 89 119	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618 123 90 377 250 111
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	0 0 0 0 0 12 117 277 1,143 919 623 409 259 95 106 184	1 0 2 3 10 146 1,093 2,236 2,017 1,204 1,041 2,477 1,946 1,334 387 124	0 0 87 1,141 5,778 5,728 4,844 5,489 1,068 477 51 204 172 196 197 228	0 0 0 23 144 678 1,425 3,196 4,927 1,661 216 45 144 139 210	0 0 0 3 62 173 471 2,515 5,886 2,781 827 212 52 234 415 133	0 0 475 2,429 13,780 22,246 22,133 6,614 634 65 94 50 101 177 130	0 0 20 436 3,144 4,344 5,983 7,781 4,001 871 360 2,400 1,721 797 390 124	0 0 1 16 17,701 7,653 17,663 8,178 2,414 1,951 2,610 1,238 679 41 144 110	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346 131 273 597 951 853	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344 976 2,072 2,104 1,196 392 59 34	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849 818 289 197 238 335 407 211	0 0 1 20 317 920 4,070 14,691 29,516 23,892 7,162 675 498 272 388 574 168 263	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009 1,156 481 212 92 158	0 0 0 72 334 2,709 8,904 16,392 13,110 3,528 915 306 93 30 151 392	0 0 16 69 409 1,405 3,196 4,444 6,002 2,997 2,004 1,714 2,307 2,026 1,521 391 310 199	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430 264 247 190 85 152 266 206	0 0 0 52 685 4,972 5,630 3,067 832 294 639 570 231 95 156 66 8	2004 0 2 7 29 710 9,342 113,237 113,284 1 4,193 982 218 350 420 320 208 89 29	0 0 0 260 658 2,991 14,062 18,276 16,897 8,203 2,391 1,265 212 188 203 137 177 44	0 0 1 2 34 162 1,060 4,647 9,830 5,929 3,266 1,173 281 184 688 398	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614 1,122 278 405 420 228	0 0 0 29 230 771 4,744 8,864 6,576 4,103 1,812 457 4 131 368 539	0 0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041 9,925 6,842 2,211 1,167 836 117	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451 2,295 729 240 103 120	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426 647 429 670 1,296 1,318	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382 867 2,684 2,051 1,224 990 821 175	0 0 0 80 802 3,546 14,503 14,199 5,337 1,474 781 1,657 1,342 836 502 550 188	0 0 0 108 981 12,643 23,067 6,886 613 666 959 836 384 627 366 176 74 62	0 0 5 98 151 2,448 8,977 13,489 11,727 4,517 1,032 88 317 928 1,963 1,069	0 0 30 85 304 862 3,402 5,562 8,036 5,992 2,949 138 351 1,232 1,031 797 651	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175 4,394 1,070 301 330 438 340 448 316	0 1 7 49 519 2,722 8,628 12,747 10,391 4,438 927 487 233 150 155 157		0 0 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407 545 228 137 80 89 119	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618 123 90 377 250 111 93 63
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	0 0 0 0 0 12 117 277 1,143 919 623 409 259 95 106 184 48 30 4	1 0 2 3 10 146 1,093 2,236 2,017 1,204 1,041 2,477 1,946 1,334 387 124 59	0 0 87 1,141 5,778 5,728 4,844 5,489 1,068 477 51 204 172 196 197 228 115	0 0 0 23 144 678 1,425 3,196 4,927 1,661 216 45 144 139 210 117 102 27	0 0 0 3 62 173 471 2,515 5,886 2,781 827 212 52 234 415 133 83	0 0 0 475 2,429 13,780 22,246 22,133 6,614 65 94 50 101 177 130 347 16	0 0 20 436 3,144 4,344 5,983 7,781 4,001 871 360 2,400 1,721 797 390 124 54	0 0 1 16 17,701 7,653 17,663 8,178 2,414 1,951 2,610 1,238 679 41 144 110	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346 131 273 597 951 853 429 68	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344 976 2,072 2,104 1,196 392 59	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849 818 289 197 238 335 407 211 20	0 0 1 20 317 920 4,070 14,691 29,516 23,892 7,162 675 498 272 388 574 168 263 14	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009 1,156 481 212 92 158 80 62 7	0 0 0 72 334 2,709 8,904 16,392 13,110 3,528 915 306 93 30 151 392 198 106	0 0 16 69 1,405 3,196 4,444 6,002 2,997 2,004 1,714 2,307 2,026 1,521 391 310 199 155	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430 264 247 190 85 152 266 206 94	0 0 0 52 685 4,972 5,630 3,067 832 294 639 570 231 95 156 66 8	2004 0 2 7 29 710 9,342 113,237 1 13,284 4,193 982 218 350 420 320 208 89	0 0 0 0 658 2,991 14,062 18,276 16,897 8,203 2,391 1,265 212 188 203 137 177	0 0 1 2 34 162 1,060 4,647 9,830 5,929 3,266 1,173 281 184 688 398 77 39	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614 1,122 278 405 420 228 145	0 0 0 29 230 771 4,744 8,864 6,576 4,103 1,812 457 4 131 368 539 243 11	0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041 9,925 6,842 2,211 1,167 836 117 63	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451 2,295 729 240 103 120 84	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426 647 429 670 1,296 1,318 749 105	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382 867 2,684 2,051 1,224 990 821	0 0 0 80 802 3,546 14,503 20,159 14,199 5,337 1,474 781 1,657 1,342 836 502 550	0 0 0 108 981 12,643 23,067 6,886 613 666 959 836 384 627 366 176 74 62	0 0 5 98 12,448 8,977 13,489 11,727 4,517 1,032 88 317 928 1,963 1,069 167	0 0 30 85 304 862 3,402 5,562 8,036 5,992 2,949 669 138 351 1,232 1,031 797	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175 4,394 1,070 301 1 330 438 340 448 316 160	0 1 7 49 519 2,722 8,628 12,747 110,391 4,438 927 487 233 150 155 157 207 156 68		0 0 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407 545 228 137 80 89 119	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618 123 93 377 250 111 93 63 32
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	0 0 0 0 0 12 117 277 1,143 919 623 409 259 95 106 184 48 30	1 0 2 3 10 146 1,093 2,236 2,017 1,204 1,041 2,477 1,946 1,334 387 124 59 10 8	0 0 87 1,141 5,778 5,728 4,844 5,489 1,068 477 51 204 172 196 197 228 115 29	0 0 0 23 144 678 1,425 3,196 4,927 1,661 216 45 144 139 210 117 102 27 26	0 0 0 3 62 173 471 2,515 5,886 2,781 827 212 234 415 133 83 91 8	0 0 0 475 2,429 13,780 22,246 22,133 6,614 65 94 50 101 177 130 347 16	0 0 20 436 3,144 4,344 5,983 7,781 4,001 871 360 2,400 1,721 797 390 124 54	0 0 1 16 17,701 7,653 17,663 8,178 2,414 1,951 2,610 1,238 679 41 144 110	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346 131 273 597 951 853 429 68	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344 976 2,072 2,104 1,196 392 59 34	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849 818 289 197 238 335 407 211	0 0 1 20 317 920 4,070 14,691 29,516 23,892 7,162 675 498 272 388 574 168 263	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009 1,156 481 212 92 158 80 62	0 0 0 72 334 2,709 8,904 16,392 13,110 3,528 915 306 93 30 151 392 198 106	0 0 16 69 409 1,405 3,196 4,444 6,002 2,997 2,004 1,714 2,307 2,026 1,521 391 310 199	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430 264 247 190 85 152 266 206	0 0 0 52 685 4,972 5,630 3,067 832 294 639 570 231 95 156 66 8	2004 0 2 7 29 710 9,342 113,237 113,284 1 4,193 982 218 350 420 320 208 89 29	0 0 0 260 658 2,991 14,062 18,276 16,897 8,203 2,391 11,265 212 188 203 137 177 44	0 0 1 2 34 162 1,060 4,647 9,830 5,929 3,266 1,173 281 184 688 398 77 39 3	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614 1,122 278 405 420 228 145 110	0 0 0 29 230 771 4,744 8,864 6,576 4,103 1,812 457 4 131 368 539 243 11	0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041 9,925 6,842 2,211 1,167 836 117 63	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451 2,295 729 240 103 120 84	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426 647 429 670 1,296 1,318 749 105 66	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382 867 2,684 2,051 1,224 990 821 175 30	0 0 0 80 802 3,546 14,503 14,199 5,337 1,474 781 1,657 1,342 836 502 550 188	0 0 0 108 981 12,643 23,067 6,886 613 666 959 836 384 627 366 176 74 62	0 0 5 98 12,448 8,977 13,489 11,727 4,517 1,032 88 317 928 1,963 1,069 167	0 0 30 85 304 862 3,402 5,562 8,036 5,992 2,949 138 351 1,232 1,031 797 651 220	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175 4,394 1,070 301 330 438 340 448 316	0 1 7 49 519 2,722 8,628 12,747 110,391 4,438 927 487 233 150 155 157 207		0 0 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407 545 228 137 80 89 119 101 82	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618 123 90 377 250 111 93 63
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	0 0 0 0 0 12 117 277 1,143 919 623 409 259 95 106 184 48 30 4	1 0 2 3 10 146 1,093 2,236 2,2017 1,204 1,041 2,477 1,946 1,334 387 124 59 10 8	0 0 87 1,141 5,778 5,728 4,844 5,489 1,068 477 51 204 172 196 197 228 115 19 2	0 0 0 23 144 678 1,425 3,196 4,927 1,661 216 45 144 139 210 117 102 27 26	0 0 0 3 62 173 471 2,515 5,886 2,781 827 212 234 415 133 83 91 8	0 0 0 475 2,429 13,780 22,246 22,133 6,614 65 94 50 101 177 130 347 16	0 0 20 436 3,144 4,344 5,983 7,781 4,001 871 360 2,400 1,721 797 390 124 54	0 0 1 16 17,701 7,653 17,663 8,178 2,414 1,951 2,610 1,238 679 41 144 110	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346 131 273 597 951 853 429 68	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344 976 2,072 2,104 1,196 392 59 341 0	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849 818 289 197 238 335 407 211 20	0 0 1 20 317 920 4,070 14,691 29,516 23,892 7,162 675 498 272 388 574 168 263 14	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009 1,156 481 212 92 158 80 62 7 6	0 0 0 72 334 2,709 8,904 16,392 13,110 3,528 915 306 93 30 151 392 198 106	0 0 16 69 1,405 3,196 4,444 6,002 2,997 2,004 1,714 2,307 2,026 1,521 391 310 199 155	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430 264 247 190 85 152 266 206 94	0 0 0 52 685 4,972 5,630 3,067 832 294 639 570 231 95 156 66 8	2004 0 2 7 29 710 9,342 113,237 113,284 1 4,193 982 218 350 420 320 208 89 29	0 0 0 260 658 2,991 14,062 18,276 16,897 8,203 2,391 11,265 212 188 203 137 177 44	0 0 1 2 34 162 1,060 4,647 9,830 5,929 3,266 1,173 281 184 688 398 77 39 0	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614 1,122 278 405 420 228 145 110	0 0 0 29 230 771 4,744 8,864 6,576 4,103 1,812 457 4 131 368 539 243 11	0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041 9,925 6,842 2,211 1,167 836 117	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451 2,295 729 240 103 120 84	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426 647 429 670 1,296 1,318 749 105 66	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382 867 2,684 2,051 1,224 990 821 175 30	0 0 0 80 802 3,546 14,503 14,199 5,337 1,474 781 1,657 1,342 836 502 550 188	0 0 0 108 981 12,643 23,067 6,886 613 666 959 836 384 627 366 176 74 62	0 0 5 98 12,448 8,977 13,489 11,727 4,517 1,032 88 317 928 1,963 1,069 167	0 0 30 85 304 862 3,402 5,562 8,036 5,992 2,949 138 351 1,232 1,031 797 651 220	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175 4,394 1,070 301 1 330 438 340 448 316 160	0 1 7 49 519 2,722 8,628 12,747 110,391 4,438 927 487 233 150 155 157 207 156 68		0 0 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407 545 228 137 80 89 119 101 82	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618 123 90 377 250 111 93 63 32 16
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	0 0 0 0 0 12 117 277 1,143 919 623 409 259 95 106 184 48 30 4 18	1 0 2 3 10 146 1,093 2,236 2,017 1,204 1,041 1,041 1,334 387 124 59 10 8 2 0	0 0 87 1,141 5,778 5,728 4,844 1,068 477 51 204 172 196 197 228 115 19 2 0	0 0 0 0 23 144 678 1,425 3,196 4,927 1,661 216 45 144 139 210 117 102 27 26 0 2	0 0 0 3 62 173 471 2,515 5,886 2,781 827 212 234 415 133 83 91 8	0 0 0 475 2,429 13,780 22,246 22,133 6,614 65 94 50 101 177 130 347 16	0 0 20 436 3,144 4,344 5,983 7,781 4,001 871 360 2,400 1,721 797 390 124 54	0 0 1 16 17,701 7,653 17,663 8,178 2,414 1,951 2,610 1,238 679 41 144 110	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346 131 273 597 951 853 429 68	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344 976 2,072 2,104 1,196 392 59 341 0	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849 818 289 197 238 335 407 211 20 0	0 0 1 20 317 920 920 14,691 29,516 23,892 7,162 675 498 272 388 272 388 274 168 263 14 62 0	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009 1,156 481 212 92 158 80 62 7	0 0 0 72 334 2,709 8,904 16,392 13,110 3,528 915 306 93 30 151 392 198 106	0 0 16 69 1,405 3,196 4,444 6,002 2,997 2,004 1,714 2,307 2,026 1,521 391 310 199 155	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430 264 247 190 85 152 266 206 94	0 0 0 52 685 4,972 5,630 3,067 832 294 639 570 231 95 156 66 8	2004 0 2 7 29 710 9,342 113,237 113,284 1 4,193 982 218 350 420 320 208 89 29	0 0 0 260 658 2,991 14,062 18,276 16,897 8,203 2,391 11,265 212 188 203 137 177 44	0 0 1 2 34 162 1,060 4,647 9,830 5,929 3,266 1,173 281 184 688 398 77 39 0	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614 1,122 278 405 420 228 145 110	0 0 0 29 230 771 4,744 8,864 6,576 4,103 1,812 457 4 131 368 539 243 11	0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041 9,925 6,842 2,211 1,167 836 117	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451 2,295 729 240 103 120 84	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426 647 429 670 1,296 1,318 749 105 66	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382 867 2,684 2,051 1,224 990 821 175 30	0 0 0 80 802 3,546 14,503 14,199 5,337 1,474 781 1,657 1,342 836 502 550 188	0 0 0 108 981 12,643 23,067 6,886 613 666 959 836 384 627 366 176 74 62	0 0 5 98 12,448 8,977 13,489 11,727 4,517 1,032 88 317 928 1,963 1,069 167	0 0 30 85 304 862 3,402 5,562 8,036 5,992 2,949 138 351 1,232 1,031 797 651 220	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175 4,394 1,070 301 1 330 438 340 448 316 160	0 1 7 49 519 2,722 8,628 12,747 110,391 4,438 927 487 233 150 155 157 207 156 68		0 0 1 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407 545 228 137 80 89 119 101 82 14 6	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618 123 90 377 250 111 93 63 32 16
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	0 0 0 0 0 12 117 277 1,143 919 623 409 259 95 106 184 48 30 4 18	1 0 2 3 10 146 1,093 2,236 2,017 1,204 1,041 2,477 1,946 1,334 387 124 59 10 8 2 0 0 0	0 0 87 1,141 5,778 5,728 4,844 1,068 477 51 1204 172 196 197 228 115 19 2 0	0 0 0 0 23 144 678 1,425 3,196 4,927 1,661 216 45 144 139 210 117 102 27 26 0 2	0 0 0 3 62 173 471 2,515 5,886 2,781 827 212 234 415 133 83 91 8	0 0 0 475 2,429 13,780 22,246 22,133 6,614 65 94 50 101 177 130 347 16	0 0 20 436 3,144 4,344 5,983 7,781 4,001 871 360 2,400 1,721 797 390 124 54	0 0 1 16 17,701 7,653 17,663 8,178 2,414 1,951 2,610 1,238 679 41 144 110	0 3 8 268 426 5,055 11,919 12,110 3,765 832 346 131 273 597 951 853 429 68	0 0 2 180 601 1,540 3,292 5,856 6,674 5,493 2,344 976 2,072 2,104 1,196 392 59 341 0	0 0 2 33 461 1,614 5,449 11,122 10,645 6,050 2,849 818 289 197 238 335 407 211 20 0	0 0 1 20 317 920 920 14,691 29,516 23,892 7,162 675 498 272 388 272 388 274 168 263 14 62 0	0 2 3 13 250 3,755 24,915 53,739 31,244 8,496 2,009 1,156 481 212 92 158 80 62 7	0 0 0 72 334 2,709 8,904 16,392 13,110 3,528 915 306 93 30 151 392 198 106	0 0 16 69 1,405 3,196 4,444 6,002 2,997 2,004 1,714 2,307 2,026 1,521 391 310 199 155	0 0 15 53 616 1,842 7,453 14,401 14,408 5,682 430 264 247 190 85 152 266 206 94	0 0 0 52 685 4,972 5,630 3,067 832 294 639 570 231 95 156 66 8	2004 0 2 7 29 710 9,342 113,237 113,284 1 4,193 982 218 350 420 320 208 89 29	0 0 0 260 658 2,991 14,062 18,276 16,897 8,203 2,391 11,265 212 188 203 137 177 44	0 0 1 2 34 162 1,060 4,647 9,830 5,929 3,266 1,173 281 184 688 398 77 39 0	0 0 15 152 1,270 1,951 4,508 5,086 7,584 6,404 2,614 1,122 278 405 420 228 145 110	0 0 0 29 230 771 4,744 8,864 6,576 4,103 1,812 457 4 131 368 539 243 11	0 6 324 1,997 9,132 18,840 16,054 5,377 1,678 5,041 9,925 6,842 2,211 1,167 836 117	-	0 24 0 78 345 1,075 3,621 5,715 3,197 648 2,451 2,295 729 240 103 120 84	0 0 10 64 280 1,559 5,148 7,742 7,792 3,451 1,426 647 429 670 1,296 1,318 749 105 66	0 0 8 71 662 2,164 2,395 2,127 1,662 798 382 867 2,684 2,051 1,224 990 821 175 30	0 0 0 80 802 3,546 14,503 14,199 5,337 1,474 781 1,657 1,342 836 502 550 188	0 0 0 108 981 12,643 23,067 6,886 613 666 959 836 384 627 366 176 74 62	0 0 5 98 12,448 8,977 13,489 11,727 4,517 1,032 88 317 928 1,963 1,069 167	0 0 30 85 304 862 3,402 5,562 8,036 5,992 2,949 138 351 1,232 1,031 797 651 220	0 0 4 98 818 3,639 4,866 5,006 8,296 8,175 4,394 1,070 301 1 330 438 340 448 316 160	0 1 7 49 519 2,722 8,628 12,747 110,391 4,438 927 487 233 150 155 157 207 156 68		0 0 1 1 9 345 2,594 7,517 8,766 9,054 4,500 1,407 545 228 137 80 89 119 101 82 14 6	0 0 8 64 556 1,701 7,059 16,548 13,339 3,478 618 123 90 377 250 111 93 33 63 32 16

Table 5.43. Clearnose skate length frequencies, spring, 1 cm intervals, 1993-2022.

															ing															
length 30	1993 0	1994 0	1995	1996 0	1997 0	<b>1998</b> 0	1999 :	<b>2000</b>	2001		<b>2003</b>	2004 0	<b>2005</b> 0	<b>2006</b> 0	<b>2007</b> 0	2008	<b>2009</b> 0	<b>2010</b>		2012	<b>2013</b>	0	2015 0	2016	<b>2017</b> 0		2019 0	2020	2021	
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	-	1	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	1	_	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	_	1	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	1
47	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	_	0	0
48	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
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	-	0	0
50	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	-	0	0
51	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	0
52	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	1	0	-	4	1
53	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0		0	0	1	0	0	1	0	-	2	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	1	4	2	0	0	0	0	-	1	0
55	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	-	1	0
56	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0		1	2	0	1	0	0	2	-	2	0
57	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0		1	0	1	0	0	0	0	-	1	0
58	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	1	0	2	0	0	1	-	1	0
59	0	0	0	0	0	0	0	0	0	4	1	0	0	1	2	0	0	0	1	0	0	1	0	3	0	0	4	-	3	0
60	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	0	0		0	1	0	2	1	0	0	-	0	2
61 62	0	0	1	0	0	0	1 2	0	0	2	0	0	0	0 2	1	0	0	0	0	7 5	0	2	2	5 4	1 2	1	2	-	3 5	1 0
63	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	1	0	0	1	3	1	1	1	3	1	2	3	-	2	0
64	0	0	0	0	0	0	0	1	0	3	0	1	0	0	1	0	1	0	1	9	0	3	2	3	0	1	0	-	8	1
65	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	2	1	0	1	4	0	2	1	2	0	2	5	-	6	3
66	0	0	0	0	0	0	0	0	0	1	2	0	0	0	3	0	1	0	4	4	2	3	1	1	2	0	4	_	5	1
67	0	0	0	0	0	0	0	0	1	2	0	0	0	1	1	1	2	0	1	9	4	1	1	4	1	1	7	_	2	1
68	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2	1	0	1	6	2	3	2	4	0	1	6	_	8	2
69	0	0	0	0	0	0	0	0	1	4	0	1	1	0	4	0	2	0	0		2	4	2	5	1	1	4	_	0	3
70	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	4	0	3	5	3	4	1	3	2	2	3	_	1	1
71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	1	1	5	2	3	3	-	2	0
72	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	1	0	0	3	1	2	1	2	2	0	3	-	2	0
73	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	5	0	0	1	4	0	0	1	-	0	1
74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	1	1	1	0	1	0	1	-	0	0
75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	2	1	1	0	-	2	1
76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1	-	4	1
77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	-	2	0
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2	0	0	2	0	-	3	0
79	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	2	1	-	2	0
80	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	3	-	1	0
81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	1	0	0	1	-	2	0
82	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	0	1	-	0	0
83	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	-	0	1
84	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	-	0	0
85 86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1 2	-	4	0
86 87	0	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
87 88	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
89	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
90	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
91	0	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
92	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
Total	0	0	1	0	0	0	5	3	6	31	8	5	2	9	22	12	21	1	13	95	24	42	35	64	19	23	69		84	21

Table 5.44. Clearnose skate length frequencies, fall, 1 cm intervals, 1993-2022.

															all															
length				1996		1998															2013					2018	2019	2020	2021	
16 19	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 0	0	-	0	0
20	0	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
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	1	-	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	1	0	0	-	0	0
41 43	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
43	0	0	0	0	0	1	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
45	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	0	0	-	0	1
46	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
47	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	-	1	0
48 49	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	0	0	0	-	2	2
50	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	1	-	2	1
51	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	-	1	2
52	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	-	1	3
53	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	-	0	2
54	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	1	3	2	0	3	3	1	3	2	-	2	1
55 56	0	0	0	0	0	0	0	0	1	0	0	0	2	2	1 2	1	0	0	0	3	2 2	0	3 5	1 2	0	0	1	-	2	2
56 57	0	0	0	0	0	0	0	0	0	1	2	0	4	0	0	0	1	0	1	4	1	0	4	0	0	0	1	-	3	5 3
58	0	0	0	0	0	1	0	2	2	3	0	0	4	1	1	0	0	0	1	5	3	0	3	0	0	3	2	-	4	3
59	2	0	0	0	0	1	0	1	3	0	0	0	1	2	0	0	0	0	3	1	4	2	8	0	0	1	0	-	2	4
60	0	0	0	0	0	0	0	1	2	0	0	0	7	3	1	0	1	0	1	4	2	1	4	4	1	0	4	-	6	4
61 62	0	0	0	0	0	0	1	0	4	1	2	1	7 7	3 1	1 2	0	1 2	0	3	9	4 7	0 2	6	1 5	3 2	3 2	2	-	2 2	6 7
63	0	0	0	0	0	2	3	1	0	2	0	0	2	2	1	2	1	0	3	9	12	0	2	1	2	4	2	-	4	2
64	0	0	0	0	0	0	3	1	5	5	2	0	3	0	3	0	1	0	2	9	16	2	8	6	5	4	0	-	3	4
65	0	0	0	0	0	3	1	2	1	1	2	1	7	1	6	1	6	0	1	14	12	3	2	1	3	1	3	-	7	5
66	0	0	1	0	1	4	0	0	5	2	9	3	4	0	5	3	3	0	5	12	12	3	8	2	3	1	1	-	3	4
67 68	0	0	0	1 0	0	1	2	1	3	2	5 4	4	6 5	2	3 8	2	4	0	1 5	17 11	17 17	4	2 5	6 6	0 2	3	1 4	-	5 5	7 4
69	0	0	0	0	0	0	0	3	3	0	3	1	11	2	6	0	1	0	3	11	19	8	3	6	6	1	1	-	2	2
70	0	0	0	0	0	0	0	0	5	0	2	1	6	2	2	1	3	0	1	12	18	7	6	3	4	1	3	-	4	1
71	0	0	0	0	0	0	0	0	4	0	5	1	2	1	5	2	1	0	1	9	10	3	5	3	1	6	1	-	3	3
72	0	0	0	0	0	0	0	1	1	0	3	1	6	0	3	2	5	0	2	5	6	2	2	2	1	2	1	-	3	4
73 74	0	0	0	0	0	0	0	0	3	3 1	1	0	1	1 0	3 5	1	2	0	0 4	3 5	10 2	3 2	3	5 2	2	3 2	1	-	1 2	2
75	0	0	0	0	0	1	0	1	1	2	0	0	2	0	4	1	2	0	1	4	4	1	2	2	2	3	0	-	0	2
76	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	1	2	0	2	1	1	2	1	3	-	0	2
77	0	0	2	0	0	0	0	0	1	4	0	0	0	0	3	1	0	0	0	4	1	1	0	1	0	3	0	-	0	1
78 79	0	0	0	0	0	0	1	0	2	0	0	0 2	0	0	0	0	0	0	0	3	1	3 2	0	1	0	0	0	-	1 2	0 2
80	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	0	0	1	1	1	1	0	3	1	0	-	0	0
81	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	1	0	0	1	0	0	2	0	0	1	2	-	0	0
82	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0	0	1	0	1	1	0	0	0	-	0	1
83 84	0	0	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	0	0	1	0	0	2	1	0	1	1	-	1	1
85	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	1	0	0	0	2	0	0	-	0	0
86	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	-	0	1
87	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	-	1	0
88	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	0	1	-	0	0
89 90	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1 0	2	0	0	-	0	0
90 91	0	0	0	0	0	0	0	0	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	1	0	0	0	0	0	0		0	0	0	0	0	1	1	0	0	0	0	0	-	1	0
93	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	1	-	0	0
94	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
95 96	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	1	0	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	0	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	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	0	0	0	0	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	62	96	69	53	57	43	-	81	101

Table 5.45. Fourspot flounder length frequencies, spring and fall, 2 cm intervals (midpoint given), 1989, 1990, 1996-2022.

Prior to 2014, Fourspot flounder lengths were recorded from the first three tows of each day; since 2014, lengths have been recorded from every tow.

															Spring														
length	1989	1990	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021
13	2	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	-	0	0
15	5	2	0	0	5	5	0	0	3	0	3	0	0	0	0	0	0	0	0	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	1	0	3	0	0	0	-	0	0
19	19	19	8	16	14	61	22	5	89	8	8	0	6	7	7	4	2	1	24	2	6	3	12	2	0	2	-	2	0
21	17	42	31	60	13	28	26	4	99	6	4	1	18	11	9	10	3	10	42	11	5	1	51	6	0	3	-	2	0
23	11	341	198	161	16	32	239	42	33	8	4	14	24	9	17	6	5	45	56	20	9	1	79	10	7	0	-	6	1
25	56	528	279	353	105	72	422	181	84	124	26	71	29	44	39	37	33	157	258	185	64	19	211	53	37	14	-	16	2
27	103	225	208	456	209	97	256	300	199	228	82	75	33	105	81	91	55	150	441	209	172	52	235	105	137	75	-	24	8
29	120	139	193	392	233	81	201	245	191	187	129	64	44	170	108	127	55	107	461	189	179	87	185	104	188	152	-	56	10
31	89	60	117	192	137	66	139	153	175	163	178	68	61	121	94	90	69	93	303	139	107	77	111	48	146	126	-	31	5
33	51	27	54	76	60	60	81	45	89	88	113	52	36	52	70	51	36	49	92	100	78	41	69	15	65	123	-	28	7
35	8	33	15	22	16	25	39	11	26	47	35	31	13	43	34	31	24	27	31	27	29	26	39	9	13	34	-	15	4
37	2	12	6	3	4	7	12	8	7	12	5	11	4	9	11	7	9	9	4	16	8	6	10	6	6	8	-	11	0
39	0	4	3	0	2	1	1	2	3	6	2	3	1	7	2	0	4	5	0	0	0	3	2	0	1	1	-	0	2
41	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0	0	0	1	0	0	0	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	0	0	0	0	0	0	-	0	0
45	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
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	659	316	1,007	358	600	538	-	191	39

															Fall														
length	1989	1990	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021
5	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	1	-	0	0	0	0	0	0	0	0	0	-	0	0
7	0	1	0	1	4	0	0	1	0	0	1	0	2	0	0	1	-	1	0	1	1	0	0	0	0	0	-	0	0
9	5	0	0	23	19	0	2	2	0	4	1	0	2	1	1	7	-	4	0	0	3	1	0	0	0	0	-	0	0
11	9	4	2	46	27	5	4	17	5	2	12	4	5	0	7	16	-	17	3	1	11	3	0	0	1	0	-	0	1
13	10	15	5	68	22	24	6	25	3	3	9	9	13	2	8	59	-	28	4	11	26	20	3	0	5	2	-	2	2
15	6	17	35	55	21	42	5	15	9	0	13	17	4	5	11	45	-	22	13	10	47	23	9	0	4	0	-	5	0
17	0	0	42	16	3	16	1	0	3	0	1	26	3	2	16	20	-	4	12	2	49	11	8	0	3	0	-	2	3
19	0	0	22	0	0	4	1	0	1	0	0	2	0	0	7	6	-	0	0	4	5	1	2	0	0	0	-	0	1
21	0	0	0	2	2	3	2	0	2	0	1	0	0	1	0	0	-	0	0	1	0	0	0	0	0	0	-	0	0
23	1	2	9	2	5	0	17	1	5	0	0	0	1	1	0	1	-	0	0	0	1	0	3	0	1	0	-	1	0
25	0	3	42	7	16	5	58	3	7	3	4	1	0	6	1	2	-	2	3	0	1	0	1	0	5	0	-	0	0
27	0	7	41	10	22	4	77	5	13	7	6	5	0	7	1	6	-	1	9	2	4	1	4	1	19	2	-	1	5
29	0	3	24	5	22	5	54	10	18	11	13	5	0	20	6	8	-	1	11	2	4	4	9	3	32	9	-	8	0
31	0	1	20	3	6	3	25	1	18	4	30	6	0	12	5	6	-	1	6	2	8	2	6	0	25	8	-	7	4
33	0	0	6	1	1	1	7	1	13	7	19	2	1	3	1	11	-	3	6	0	0	5	1	2	10	9	-	8	0
35	0	0	4	0	1	0	5	0	6	5	6	7	0	4	4	1	-	2	2	2	1	0	2	1	3	1	-	0	4
37	0	0	0	0	0	0	2	1	3	0	2	0	0	0	0	1	-	1	0	0	0	0	1	0	2	0	-	0	0
39	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	-	0	0	0	0	0	0	0	0	0	-	0	0
Total	31	53	252	239	171	112	266	83	106	46	118	85	33	64	68	192	-	87	69	38	161	71	49	7	110	31	-	34	20

**Table 5.46.** Hickory shad length frequencies, spring and fall, 1 cm intervals, 1991-2022. Hickory shad were measured from every tow, with the exception of one fish in each of fall 1996, fall 1997, and fall 1998.

																S	pring															
ngth	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2
15	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	
16	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	
17	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3	0	0	0	0	0	1	0	0	0	0	0	0	0	-	0	
18	0	0	0	1	0	1	0	0	2	0	0	0	0	0	1	7	1	2	1	0	0	0	0	0	0	0	0	0	0	-	0	
19	0	0	0	1	0	0	1	0	0	0	0	0	0	3	5	6	0	1	1	0	0	0	0	0	0	0	0	0	3	-	0	
20	0	0	0	0	0	2	0	2	0	0	0	0	0	2	4	2	0	0	0	0	1	2	0	0	0	2	0	0	2	-	0	
21	0	0	0	0	0	1	0	0	0	0	0	0	0	2	3	1	1	0	0	1	0	1	0	1	0	1	0	0	0	-	0	
22	0	0	0	0	0	0	0	0	1	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	-	0	
23	0	0	1	0	0	0	0	0	1	0	0	0	1	2	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	-	0	
4	1	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	1	0	0	0	0	0	1	0	0	1	0	0	0	-	0	
25	0	0	0	0	0	0	0	2	0	0	0	0	0	1	1	6	5	0	0	0	0	0	1	1	0	0	0	0	0	-	1	
26	0	0	0	0	0	0	0	1	0	0	0	2	0	0	6	5	2	0	0	0	0	2	0	3	0	0	1	0	0	-	0	
27	0	0	0	0	0	0	1	0	1	0	0	1	0	0	18	3	5	0	1	0	0	3	0	2	0	0	0	1	0	-	1	
8	0	0	0	1	0	1	1	1	2	2	0	4	1	0	14	3	3	0	1	1	0	1	3	4	1	1	0	0	0	-	0	
9	0	0	0	0	0	0	2	4	1	7	0	5	0	2	5	2	1	0	1	0	0	1	0	1	1	1	1	0	0	-	0	
0	0	0	1	1	1	0	1	5	1	5	0	5	3	1	6	5	2	0	0	0	0	1	0	4	0	4	0	0	1	-	0	
1	0	0	0	0	1	1	1	2	1	4	0	2	0	0	1	0	2	0	1	0	0	0	0	1	0	2	0	0	0	-	0	
2	0	2	0	0	0	3	0	6	6	2	1	2	1	1	0	5	1	0	0	0	0	0	0	1	1	0	0	0	0	-	0	
3	0	0	0	0	0	2	1	2	3	1	0	3	2	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	-	0	
4	0	0	0	0	0	0	1	3	1	2	2	1	3	1	2	1	1	0	0	0	0	0	0	1	2	1	0	0	1	-	0	
5	0	0	1	0	0	1	0	2	2	2	0	4	2	2	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	-	0	
6	0	0	0	0	0	0	0	2	1	1	0	4	1	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	-	0	
7	0	0	0	0	0	0	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	_	0	
8	0	0	0	0	0	0	0	1	0	0	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	_	0	
9	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	0	0	0	0	0	1	1	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	0	0	0	0	0	0	0	0	1	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	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	_	0	
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	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	0	0	0	0	0	0	_	0	
6	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	
tal	1	2	3	4	2	12	9	34	24	26	10	40	16	20	75	53	27	3	6	2	1	14	5	20	9	16	2	2	7		2	-

																	Fall															
length	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
19	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
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
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	0	0	-	0	0
22	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	0	0	0	-	0	0
23	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	-	2	1	0	0	0	0	0	0	0	-	0	0
24	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	-	2	1	0	0	0	0	0	0	1	-	0	0
25	0	0	0	6	0	1	1	0	2	0	0	0	0	0	2	1	2	0	0	-	0	2	0	0	0	1	0	0	0	-	0	0
26	0	1	2	8	0	3	1	0	5	0	0	0	0	4	3	0	0	0	0	-	3	1	0	0	0	0	0	0	0	-	1	0
27	0	0	0	3	0	2	0	0	5	2	0	1	0	3	0	1	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
28	0	1	0	1	0	3	0	0	2	0	0	1	0	1	1	1	0	0	2	-	0	1	3	0	0	0	0	0	0	-	2	0
29	0	0	0	2	0	0	0	0	0	2	0	0	0	1	2	3	0	0	0	-	0	4	7	0	1	1	1	0	0	-	0	0
30	0	1	0	1	1	0	1	0	0	0	0	0	0	0	8	7	2	0	3	-	0	3	7	2	0	0	0	1	0	-	0	0
31	0	0	1	0	1	0	2	1	2	0	0	0	1	0	15	1	2	0	2	-	0	7	5	1	0	0	0	2	0	-	4	0
32	0	1	0	0	1	2	2	1	7	3	1	0	2	0	12	1	1	0	0	-	0	3	1	0	1	0	1	0	0	-	5	0
33	0	2	1	2	0	1	3	2	2	2	3	1	2	1	5	0	1	2	0	-	0	1	1	1	0	0	0	1	0	-	2	0
34	0	2	0	0	1	4	2	0	3	4	0	1	1	0	5	1	0	0	0	-	0	4	1	1	1	0	0	0	3	-	1	0
35	0	0	2	0	0	0	0	0	0	2	0	0	0	2	1	1	0	0	0	-	0	0	1	0	0	0	0	0	0	-	6	1
36	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2	1	0	0	0	-	0	1	1	1	0	0	0	0	0	-	0	0
37	0	1	1	0	0	0	1	0	2	1	0	0	0	1	2	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	1	0
38	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	1	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	0	-	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	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	1	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
Total	0	10	7	27	4	16	15	5	32	16	4	5	6	18	60	22	10	2	7	_	7	29	27	6	3	2	2	4	4	-	22	1

**Table 5.47.** Horseshoe crab length frequencies by sex, spring, 1 cm intervals, 1998-2022. *Horseshoe crabs were measured (prosomal width) from every tow.* 

												Sprin	g												
Sex	length	1998* 🐧 199	9 200	0 2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
F	13		1	0 0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	-	0	0
F	14 No	sex recorded	1	3 0	1	2	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	-	1	0
F		the spring of	0	0 0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	-	1	0
F		98	1	0 0	3	2	1	1	0	0	1	0	0	0	1	0	2	0	0	0	0	1	-	2	1
F	17 '-			0 2	2	1	4	1	0	1	1	0	0	0	1	0	0	1	0	0	0	2	-	4	4
F	18			1 0	3	2	4	0	0	2	1	1	0	0	0	2	3	1	0	0	0	1	-	4	3
F	19			1 2	2	5	5	0	0	3	4	1	0	0	2	0	5	1	2	0	3	3	-	2	2
F	20			2 0	7	1	2	3	0	3	2	0	0	1	2	0	4	0	0	0	0	4	-	6	1
F	21			2 1	8	6	2	1	0	3	8	1	0	3	5	4	5	3	4	0	3	4	-	4	9
F	22			6 4	13	10	7	2	0	10	4	6	0	3	3	2	3	3	2	0	0	8	-	3	4
F	23	1			19	22	17	3	2	9	14	4	3	4	9	7	14	7	4	4	8	4	-	7	5
F	24	1		7 15	32	29	25	5	4	15	11	12	6	3	15	19	13	3	5	3	8	9	-	11	10
F	25	1			25	22	20	8	5	11	16	10	9	9	14	19	11	11	14	4	13	12	-	10	12
F	26	2			26	22	23	3	2	16	12	10	4	16	14	17	26	9	4	0	9	11	-	11	12
F	27	1		9 18	18	18	18	8	4	10	9	9	5	18	11	8	22	10	6	2	11	13	-	9	6
F	28			6 9	6	7	4	2	2	5	4	10	3	8	10	13	9	3	2	1	8	7	-	13	6
F	29			0 3	4	4	4	0	3	5	1	3	4	1	3	2	3	1	0	1	4	2	-	1	0
F	30			0 3	2	0	0	3	2	0	2	1	1	4	0	1	1	1	0	0	0	0	-	1	0
F	31			0 0	0	4	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	-	0	1
F	32		0	0 0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0		0	1
M	14		0	0 0	0	0	0	0	0	1	0	0	0	0	0	0	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	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	0	0	1	0	-	0	0
M	17		5	2 4	7	9	9	0	0	3	2	3	0	1	5	0	1	1	1	0	2	2	-	2	2
M	18	1	1	8 12	19	24	21	2	0	17	10	3	2	5	7	6	9	4	3	1	4	5	-	1	7
M	19	2	2 1	3 32	42	25	33	3	0	19	12	10	7	7	8	16	17	7	5	1	3	13	-	11	15
M	20	1	5 1	6 30	20	33	31	7	0	21	10	11	7	15	13	10	13	12	2	0	12	14	-	17	10
M	21	1		5 13	14	16	10	1	0	6	12	5	3	3	9	6	6	7	1	0	8	6	-	0	9
M	22			5 7	6	7	6	2	0	4	2	1	1	4	5	3	1	0	0	0	2	2	-	11	6
M	23			0 3	1	4	2	1	0	0	1	1	0	0	0	2	1	0	0	0	2	1	-	1	1
M	24		_	1 1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	-	0	0
M	25		0	0 0	0	0	1	2	0	0	0	0	0	0	0	0	3	1	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	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	0	0	0	-	0	0
M	28		0	0 0	0	0	0	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	1	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	0	0	0	0	-	0	0
U	22			0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0
Total		51 20	4 12	5 228	285	285	251	60	25	166	141	104	57	105	138	138	173	88	55	17	101	126	-	133	127

\*note: horseshoe crabs were not sexed during the spring of 1998.

Table 5.48. Horseshoe crab length frequencies by sex, fall, 1 cm intervals, 1998-2022. Horseshoe crabs were measured (prosomal width) from every tow.

-													Fall													
Sex	length	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
F	13	0	0	2	0	0	0	3	0	1	0	0	0	-	0	0	0	0	0	2	0	0	0	-	0	0
F	14	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	1	0
F	15	0	0	0	0	2	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	1	1	-	1	0
F	16	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	1	0	-	5	1
F	17	1	1	0	0	2	1	0	1	1	0	1	0	-	0	0	0	0	1	0	0	0	0	-	2	5
F	18	0	2	0	1	0	1	1	1	0	0	0	0	-	0	0	0	0	1	1	1	0	1	-	2	4
F	19	3	2	2	2	0	1	0	0	1	0	1	1	-	0	0	0	2	1	0	0	2	0	-	5	6
F	20	5	1	1	4	4	2	3	0	2	0	0	2	-	0	0	0	0	1	1	1	0	1	-	1	3
F	21	3	2	2	3	1	4	6	3	1	1	1	0	-	0	0	0	1	2	1	0	1	0	-	3	3
F	22	3	8	13	13	10	3	9	4	1	2	6	6	-	6	0	2	2	0	1	1	1	4	-	4	5
F	23	8	15	15	12	8	8	13	10	7	7	6	14	-	6	2	3	4	6	9	6	5	5	-	11	14
F	24	7	19	30	27	21	9	24	10	6	17	14	22	-	18	10	12	8	10	14	4	13	4	-	16	28
F F	25	17	12	20	31	33	13	19	6	12	26	17	17	-	19	9	11	11	7	17	13	23	8	-	14	21
F	26	19	23 7	33	31	18	9	29	12	10	22	15	24	-	25	16	27	10	9	12	12	26	20	-	22	22
r	27	14	4	21	22	18	7	22	8	3	17	11	28	-	16	5	15	10	3	9	12	19	7	-	15	29
r F	28 29	2 2	-	10 2	8 5	13 2	6	15	5	4	8	11 1	22 5	-	11	3	10	6	5	6	9	13	6	-	15 5	19
r F	30	0	3 1	1	2	0	3 2	8	2	0	2	0	2	-	2	4	2 2	0	1	2	2 2	1	1	-	3 1	11 4
r F	31	0	1	0	0	0	0	0	2	0	0	0	1	-	0	1	0	1	0	1	0	0	0	-	0	1
F	32	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0		0	1
F	33	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	-	0	0
	J4	0	Ů	0	0			0	0			0							0						0	
M	11	0	0	0	1	0	0	0	0	0	0	0	0	_	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	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	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	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	0	0	0	0	0	0	-	0	1
M	16	0	0	2	1	5	3	0	0	0	1	1	0	-	1	0	0	0	0	0	0	0	0	-	2	0
M	17	6	5	7	6	3	5	11	0	1	3	1	2	-	3	0	1	1	1	1	1	3	3	-	7	2
M	18	12	14	28	18	14	15	21	3	9	3	9	18	-	13	4	2	5	1	7	2	2	5	-	16	12
M	19	10	20	39	27	31	11	39	13	4	12	21	14	-	9	4	6	13	3	5	6	8	8	-	13	25
M	20	20	23	35	32	22	8	30	12	9	19	23	31	-	10	1	17	4	9	7	8	18	10	-	26	27
M	21	6	11	18	15	9	4	15	4	2	10	6	13	-	7	1	7	6	4	8	8	10	2	-	9	19
M	22	5	3	8	4	6	0	10	2	5	6	2	5	-	6	0	5	0	1	3	4	6	1	-	7	11
M	23	0	0	3	2	6	1	1	0	2	3	1	3	-	0	1	2	0	0	1	1	0	1	-	1	1
M	24	0	0	1	3	0	0	1	0	1	2	0	2	-	0	0	0	0	0	0	1	0	1	-	0	0
M	25	0	0	2	0	0	0	0	0	0	0	0	1	-	0	0	1	0	0	0	0	0	0	-	0	0
M	26	2	0	0	3	0	0	0	0	1	0	0	1	-	0	0	0	0	0	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	0	0	0	0	-	0	0
M	28	0	0	0	0	0	0	0	1	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
M	29	0	0	0	1	0	0	0	0	0	0	0	0	-	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	125	87	66	109	94	155	90	-	204	275

Table 5.49. Long-finned squid length frequencies, spring, 1 cm intervals, 1986-1990, 1992-2022.

From 1986 – 1990, and 1992-2013, Length frequencies of squid taken from the first three tows of each day; since 2014, lengths have been recorded from every tow.

																		Sprin	ıg																	
length	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
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	0	0	0	2	2	0	-	3	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	5	2	4	17	33	9	-	10	8
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	35	36	29	35	65	43	-	107	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	63	111	70	59	123	37	-	168	13
6	0	6	53	0	0	8	99 96	117	175	23 33	46	444	20	31 20	15	36 27	6	88	20	13	35	148	141 74	9	45	64	31	62	117	63	45	86	24	-	125 77	9
,	2	10	60 30	0	0	20	96 49	108	178	34	45 42	324 290	18		24 26	36	12	65	4	9	21	66 55	30	9	42 15	40 31	22 22	41 38	58 52	52	33	89 52	17 27	-	44	12 15
0	2	2	40	2	0	20	49	63 83	141 170	40	42	159	18 43	13 24	41	18	26	51 24	6	12	19 30	55 54	63	4	23	59	31	38 44	45	48 39	26 27	58	14	-	39	18
10	2	9	53	1	0	17	47	71	248	55	51	135	47	18	52	41	24	59	10	30	50	106	67	40	38	130	57	32	83	70	38	61	38	-	67	27
11	1	23	76	4	1	28	60	141	367	75	69	67	82	39	74	49	33	84	28	61	53	173	163	72	39	155	75	40	125	144	49	86	29	-	102	32
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	70	213	229	61	89	58		118	45
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	99	155	313	75	95	62	_	75	25
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	136	166	251	92	109	58	-	81	43
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	146	95	160	65	78	68	-	61	44
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	195	70	90	54	85	39	-	75	34
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	113	86	90	32	54	34	-	36	42
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	71	54	88	22	47	27	-	22	12
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	65	45	70	14	39	18	-	10	23
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	77	45	67	21	26	16	-	26	10
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	46	36	26	13	24	17	-	15	8
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	61	26	42	7	15	12	-	16	13
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	53	10	32	12	21	9	-	12	9
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	28	5	16	7	13	12	-	16	12
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	30	1	14	5	10	7	-	4	8
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	29	1	8	0	8	4	-	11	9
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	12	0	4	5	6	3	-	6	10
28	2	133	19 10	32	51	11	27	3	0	1	10	0	2	1	4	2	0	15	9	6	1	1	4	1	0	5	0	14	1	0	1	6	4	-	7	4
29 30	5	86		8	30 31	15	,	2	,	3	14	3	5	0	2	5	2	3	3	4	1	1	2	0	0	2	0	9	0	0	0	0	2	-	2	3
31	3	121 78	24 14	12	51	3	1 0	2	9	1	14	0	1	0	1	8	0	11	2	2	1	0	3	0		2	0	6	0	0	0	2	0	-	2	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	2	0	0	0	0	0	-	0	0
33	0	25	7	7	6	0	0	1	5	0	5	0	1	1	0	1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	-	2	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	2	0	0	0	0	0	-	2	0
35	1	38	0	0	ź	0	0	1	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
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	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	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	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	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	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	1,625	1,638	2,020	817	1,382	688	-	1,347	507

Table 5.50. Long-finned squid length frequencies, fall, 1 cm intervals, 1986-1990, 1992-2022.

From 1986 – 1990, and 1992-2013, Length frequencies of squid taken from the first three tows of each day; since 2014, lengths have been recorded from every tow.

																		Fal	ı																	
length	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
<1	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	0	0	0	0	0	-	2	3
1	0	13 31	0	12	0	40	0	0	25	24	0	20	29	0	0	4	0	0	10	12 74	0	22	14 90	-	12	10	67	0	30	60 95	68 175	30 83	135	-	43 46	101 133
2	0	126	59	112	74	266	014	80	156	57	125	115	104	53	26	80	90	170	91	107	20	87	343	-	80	101	51	25	85	91	108	293	262	-	10	119
4	0	320	212	468	278	1.507	2.336	477	460	598	491	642	362	384	230	261	886	693	763	249	420	294	939		618	469	127	517	208	322	279	1,222	937		273	273
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	1.443	634	1.066	838	2.328	1.908		718	643
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	1.814	1,818	1,475	1,650	2,342	1,867	_	1,257	1,571
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	1,560	2,753	1,566	1,854	1,701	1,630		1,280	1,838
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	1,394	3,618	1,633	1,805	1,041	1,270	-	1,390	1,901
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	1,366	3,465	1,327	1,465	712	867	-	1,015	1,817
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	1,198	3,348	1,015	1,234	536	507	-	720	1,526
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	862	3,227	611	1,092	424	270	-	574	1,392
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		2,233	545	780	313	139	-	297	988
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	315	1,698	240	548	209	99	-	247	709
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	253	1,340	132	427	194	95	-	185	451
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	213	767	88	279	105	46	-	116	285
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	106	489	42	257	79	54	-	43	403
17	0	14	0	10	4	0	73	75	15	16	13	23	120 82	101 34	8	6	0	1	24	17	103	5	2	-	7	8	6	50 53	266	64	216	72	38	-	45	227
18 19	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	37	282 93	14	119	33	14	-	15	176 132
20	0	13	0	5	1	0	2	7	0	0	1	1	22	2	2	4	0	4	2	11	2	0	0	-	0	1	0	21	156	,	60	17	24	-	13	63
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	- 6	42	0	26	1.2	0	-	2	42
22	0	2	0	3	1	0	0	11	0	6	0	1	17	ó	0	0	0	0	1	0	0	0	0		0	2	1	0	42	0	14	7	7		1	41
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	0	28	0	4	1	2	_	0	17
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	0	1	0	3	0	0	-	1	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	0	4	0	0	2	0	-	0	21
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	0	1	0	0	1	0	-	0	1
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	0	1	0	0	0	0	-	0	6
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	0	1	0	0	0	0	-	0	1
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	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	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	0	0	0	0	0	0	0	0	-	0	0
32	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	-	0	0
34	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	-	0	0
36	0	0	0	0	0	0	0	0	0	0	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	100	5.703	0	2.126	0	0	0	0	12.446	12.002	0	0	0	11.010	0	0	12.7(1	12.245	12.765	0	10.264	5.005	12.020	-	7.04	7.206	2244	0	0	0	12.250	2	10.240		0.206	14.000
Total	180	5,/83	3,689	3,136	2,976	21,872	26,877	16,233	13,446	13,903	6,795	16,/67	13,111	11,018	5,563	5,615	13,/61	12,245	12,/65	4,441	19,364	5,085	13,829	-	7,864	5,306	3,244	11,813	26,594	10,402	13,370	11,/62	10,249		8,306	14,880

Table 5.51. Scup length frequencies, spring, 1 cm intervals, 1984-2022. Lengths were recorded from every tow.

																				Spring																			
length	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
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	0	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	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	0	0	72	8	0	3	-	4	20
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	15	32	2,674	27	15	102	-	101	193
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	77	435	15,025	475	340	373	-	746	793
10	8 10	138	377	46	160	2,523	270	514 1.365	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	455	2,585	27,025	1,615	1,191	729	-		2,136
11 12		362	724	38	144	2,075	493 280		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	1,007	3,918	23,949	1,143	796	553	-		2,089 868
12	5	194	427 122	9	31	312 87	280 56	576	18	3	23	809 108	826 397	151 36	712 359	131 51	8,815 4,041	586 265	1,706 722	33 25	1	62	1,263 888	486 78	950 586	3,418 1,141	,	178 77	2,589 1,241	300 93	1,402 623	2,111 785	12,415 6,004	644 622	241 60	185 78	-	539 242	372
13	2	31	64	4	0	72	22	122	18	4	23	20	29	25	154	16	1.043	104	498	25	2	19	626	76	357	561	1	16	262	74	123	/85 86	2.758	2,738	314	78 36	-	162	148
15	2	4	4	11	4	137	40	3	3	77	7	20	29	11	66	10	201	220	247	7	42	5 56	251	298	426	593	40	19	62	98	108	60	2,758 556	8,588	1.836	141	-	65	492
16	9	47	26	65	19	121	202		3	217	40	3	- 61	49	24	13	48	1.349	1.035	121	327	129	722	1.177	1.971	1.430	222	100	52	504	226	229	3.003	7.944	3,322	751	-		2,039
17	37	91	91	119	40	105	310	63	40	217	1/12	11	264	123	57	75	229	4.517	2.943	415	485	129	1 670	1,177	3,916	2.151	614	215	206	1.343	669	784	9.775	3.796	5,607	1.098	-		2,059
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	2.764	755	1.319	10.201	1.916	10.492	995	-		1.092
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	3,058	520	1.196	5.162	1.282		2,155		1,298	742
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	1.402	718	593	1.389	3.012		5.114			1,092
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	1.539	371	618	3,939		6,183			1,837
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	2,305	510	1,214	3,105		4,696			2,440
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	1,674	699	1,311	1,618	2,679	3,222			2,377
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	711	802	1,012	917	1,699	2,229			2,821
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	326	896	1,010	612	1,030	1,696	-	1,991	2,996
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	379	847	1,220	564	664	1,144	-	1,389	2,033
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	338	426	1,367	590	431	720	-	797	1,341
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	316	243	1,206	722	439	541	-	438	970
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	346	155	741	530	472	407	-	311	514
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	299	158	435	390	278	308	-	188	378
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	227	118	324	195	200	207	-	141	253
32	0	2	1	0	1	1	1	0	1	0	0	1	0	0	0	3	3	2	10	11	28	41	317	126	68	32	15	123	174	310	174	148	262	154	132	138	-	71	124
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	100	102	166	99	72	52	-	33	74
34	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	3	1	4	2	8	1	30	37	47	16	4	44	63	106	61	63	127	60	43	37	-	19	42
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	20	31	109	55	26	27	-	18	23
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	1/	23	8	34	48	14	12	/	-	6	8
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2		4	8	1	15	6	8	1	8	41	8	4	3	-	2	2
38 39	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	3	10	28	8	3	4	-	1	0
40	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		2		0	3		2	0	1	-	0	0
40 41	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	2	3	0	0	0	1	-	0	1
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	2	0	0	0	1	1	-	0	0
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	1	0	0	0	0	0	0	0	0	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	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	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	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	1	0	0	0	0	0	0	0	0	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	15,528	19,760	131,250	47,392	53,127	33,937	- 2	24,331	32.461

Table 5.52. Scup length frequencies, fall, 1 cm intervals, 1984-2022. Lengths were recorded from every tow.

																				Fall																			
length	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
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	0	0	0	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	0	0	2	0	24	0	-	11	2
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	11	21	4	40	317	34	-	39	35
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	204	799	55	136	691	253	-	462	439
6	295	249	626	1,193	625	612	340	1,805	1,516	554 4.383	931	210	788	338	1,246	1,041	991	1,891	2,132	573	4,723	4,122	389	1,303	9	1,106	-	705	567	116	1,033	3,154	370	622	1,756	1,211			1,923
,	627 345	588 1,827	753 507	491 499	1,782 2,264	1,367	640 2.152	4,923 11,168	1,554 2,595	9.063	5,217 11,585	219 602	2.048	1,020	4.330	4,570 9.886	4,228 7,464	5,003 7,327	5,571 9,315	1,589 701	8,721 10,637	9,683 11,328	942 1.442	4,516 10,576	3.092	2,923 3,078	-	1,769 3,977	1,849 4,036	180 563	4,259 7,657	8,512 15,560	1,759 3,354	2,740 4.964	2,464 4,353	2,398			7,796 14,172
	719	2,637	210	434	2,204	1,703	3.806	13.883	936	9,003	13,327	1.867	3.502	1,310	4,530	18.224	9,302	5.369	10.102		10,037	8,808	1,442	13.782	6.383	1.316	-	4.882	5.961	1275		11,241	1.747	5.374	4,333	1.608		5,106	
10	262	2,025	84	77	656	798	2,728	5,539	250	5,754	4,712	1,916	2.667	1.184	.,	29.863	6.831	2.837	6,754	33		5,295	-,	10,376	7.196	610		2.365	5,770	701	3,654	5,762	697	2.624	1,109	571			3,990
11	8	1.064	19	12	81	95	601	1.191	78	814	432	606	525	499		20.073	1.806	888	2.020	3	1.896	1.973	126	2.547	1.733	75		632	2.695	375	1.526	2.094	1.073	676	373	115			1,200
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	362	532	3,881	456	60	142	_	835	392
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	205	281	6.261	1.054	206	584	_	413	994
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	230	1,335	5,499	1,202	592	1,188	-		1,988
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	537	2,361	3,665	1,117	556	1,101	-	759	1,579
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	589	2,667	1,753	744	338	540	-	453	537
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	416	1,813	575	1,039	334	147	-	194	193
18	27	170	188	29	81	87	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	271	735	799	1,329	941	81	-	70	282
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	143	218	1,942	1,027	1,849	197	-	135	469
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	190	241	3,058	435	2,377	572	-	403	326
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	151	397	1,819	451	1,885	1,150	-	691	461
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	201	479	802	513	1,251	1,774	-	769	663
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	335	337	667	409	816	1,459	-	934	919
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	358	248	722	250	550	836	-		1,190
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	277	313	576	196	380	520	-		1,159
26 27	38 38	53 64	13	28	10	3	10	19	17	10	11	0	0	4	2	13	35	55	271 184	720 558	878 790	173 212	42 23	170	147	107	-	643 502	106 122	162 129	190 100	516 400	672 798	173 133	211	308 177	-	613 325	874 435
28	31	18	12	30	2	1	2	13	12	10	-	0	2	1	1	19	20	11	184	261	790	212	15	70	99	128	-	383	116	108	100	232	615	198	152	1//	-	227	286
29	31	21	12	7	0	0	1	1	13	4	2	0	0	0	3	2	13	14	32	101	433	174	23	32	50	86	-	341	59	135	57	145	564	159	97	90	-	97	122
30	8	16	2	1	0	0	0	0	0	3	0	0	0	0	0	0	13	4	22	75	122	101	36	27	51	35		196	63	116	88	95	299	91	70	78		75	62
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	64	98	157	91	33	30		44	53
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	49	76	94	47	17	17		26	32
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	22	67	58	33	8	11	-	23	7
34	0	1	0	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	7	18	40	31	5	8	-	11	8
35	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	1	1	6	7	-	10	0	7	4	12	9	13	3	2	-	2	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	3	5	2	3	1	2	-	6	1
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	0	5	0	0	0	0	-	1	0
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	1	0	3	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	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	0	0	0	0	-	0	0	0	1	0	0	0	0	0	-	0	0
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	30,172	60,772	44,388	28,370	28,083	19,679	- 3	30,378	53,102

**Table 5.53.** Striped bass length frequencies, spring, 2 cm intervals (midpoint given), 1984–2022.

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.

																				Sprii																			
length		1985	1986	1987	1988	1989	9 19	90 1		1992	1993	1994	1995	1996	1997	1998	1999	2000			2003		2005			2008		2010	2011	2012	2013	2014	2015	2016	2017			2020 2021	
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	2	0	0	0	0	0	0	0 -	0	0
13 15	0	0	0	0	0	(	D D	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0 - 1 -	0	0
17	0	0	0	0	. 0	(	n.	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	1 2	0	0	0	1	0	0	0 -	0	0
19	0	0	0	0	0	(	n.	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	5	0	0	5	0	0	0	1	0	0	1 -	0	2
21	0	0	0	0			,	3	0	0	0	0	4	1	0	2	1	3	0	8	0	0	1	0	0	0	21	0	0	5	3	0	0	3	0	0	2 -	0	0
23	0	0	0	0	0	1	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	0	1	10	0	0	0 -	2	1
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	1	0	15	2	1	0 -	5	7
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	0	0	9	1	1	6 -	1	0
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	2	0	21	1	1	9 -	3	3
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	1	1	9	0	3	7 -	4	3
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	1	0	3	0	7	4 -	4	1
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	5	2	1	1	6	3 -	8	1
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	12	2	3	2	13	3 -	15	
39	0	0	0	0	0	1	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	33	0	1	2	13	12 -	6	0
41	0	0	0	0	0	2	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	31	5	0	3	14	31 -	5	5
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	12	4	0	2	10	61 -	3	4
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	12	1	3	2	13	81 -	4	5
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	22	6	3	5	7	75 -	4	7
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	19	6	1	1	9	55 -	2	16
51	0	0	0	0	0	1	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	13	4	6	4	6	37 -	5	14
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	6	6	6	1	6	22 -	3	10
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	10	7	8	1	0	19 -	3	11
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	2	1	6	2	0	7 -	6	22
59	0	0	0	2	0	1	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	3	5	3	3	2	4 -	5	9
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	4	4	6	1	0	4 -	1	11
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	2	1	1	1	3	4 -	2	9
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	2	0	1	1	0	5 -	3	10
67	0	0	0	0	0	1	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	1	0	0	0	1	1 -	3	11
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	2	0	0	1	2	1 -	0	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	1	0	1	1	5	2 -	1	6
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	0	1	0	0	3	0 -	0	2
75	0	0	0	0	0	(	0	0	0	0	3	1	0	0	0	0	6	1	2	4	10	5	5	1	3	0	3	4	8	3	2	1	0	1	2	2	2 -	0	7
77	0	0	0	0	0	(	0	0	0	0	1	0	1	0	0	0	1	3	5	2	0	6	1	5	2	1	1	0	9	0	2	0	0	1	1	2	0 -	1	2
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	5	0	0	0	0	2 -	0	2
81	0	0	0	0	0	(	0	0	0	1	1	0	0	0	1	1	2	2	0	4	0	2	4	1	2	2	0	1	1	2	5	0	0	0	1	2	0 -	0	1
83	0	0	0	0	0	(	0	0	0	0	0	1	0	0	0	0	1	0	1	1	4	0	1	1	1	0	0	0	1	0	3	0	1	0	2	3	0 -	0	1
85	0	0	0	U	0	(	0	0	2	0	0	0	0	2	1	0	0	0	1	3	2	0	1	0	0	0	0	0	1	1	0	1	0	0	1	0	0 -	0	1
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	0	0	0	0	0	0 -	0	1
89 91	0	0	0	0	0	(	U O	1	0	0	0	0	0	0	0	U	0	0	0	0	1	0	0	5	0	0	0	0	0	1	1	0	0	0	0	0	0 -	0	1
91	0	0	0	0	. 0	(	n.	0	1	0	0	0	1	0	0	0	1	1	0	1	0	0	0	0	3	1	0	0	0	0	2	1	0	0	0	0	0 -	0	1
95 95	0	0	0	0	0	(	n.	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	1	0	0	0	1	1	0	1	0	0	0	0 -	0	0
95 97	0	0	0	0	. 0	(	n.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0 -	0	0
97	0	0	0	0	. 0	(	n.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0 -	0	0
101	0	0	0	0	. 0		n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 -	0	0
101	0	0	0	0	0		n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	1	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	0	0	0	1	0 -	0	
Total	0	0	0	8		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	205	59	128	46	137	461	0 100	

Table 5.54. Striped bass length frequencies, fall, 2 cm intervals (midpoint given), 1984–2022. All striped bass taken in the Survey were measured on each tow.

																					Fall																				
ngth		1985	1986	198	7 19	88 1	989	1990	1991			93 1	994	1995	1996	1997	1998	1999				2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2016	2017			2020	2021	_ 2
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	-	1	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	0	-	1	1	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	0	0	0	0	0	0	0	0	0	-	7	2	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	-	13	1	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	-	9	1	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	0	0	-	4	2	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	0	0	-	0	0	0	0	0	0	0	1	0	-	0	
35	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	0	0	0	0	0	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	-	1	4	0	0	0	0	0	0	0	-	0	
39	0	0	0		0	0	0	0	0	(	-	0	0	0	0	2	0	0	0	0	0	0	4	0	0	0	0	0	-	1	0	0	0	0	0	0	2	4	-	0	
41	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	0	3	0	0	12	2	-	0	
43	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	0	0	0	0	14	1	-	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	-	0	1	3	0	1	0	1	21	2	-	0	
47	0	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	5	6	0	4	25	9	-	0	
49	0	0	0		0	0	0	0	0	(	-	1	0	0	9	9	2	9	1	0	0	0	14	2	4	22	1	1	-	0	6	5	3	5	0	1	17	4	-	1	
51	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	4	16	0	2	10	13	-	0	
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	7	18	1	4	11	7	-	2	
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	6	26	3	1	6	7	-	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	8	15	4	2	2	5	-	0	
9	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	4	14	5	0	1	2	-	2	
1	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	4	10	10	1	3	6	-	0	
3	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	2	1	4	1	1	1	-	0	
5	0	0	0		0	1	0	0	0	2	2	1	1	0	0	2	0	4	6	5	3	0	7	2	2	7	1	6	-	6	0	2	1	4	4	1	0	1	-	0	
7	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	0	5	2	3	0	0	-	0	
)	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	1	1	2	1	0	1	-	0	
1	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	1	1	1	0	0	1	-	0	
3	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	0	0	0	2	1	0	-	0	
;	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	1	1	0	0	2	0	-	1	
7	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	1	0	0	1	1	2	-	0	
9	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	0	0	0	0	0	0	-	1	
1	0	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	1	1	1	-	0	
3	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	0	0	0	0	0	0	-	0	
5	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	0	1	0	1	0	0	-	0	
7	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	0	0	0	0	0	1	-	0	
9	0	0	0		0	0	0	0	0	(	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	-	1	0	0	1	0	0	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	0	0	1	1	0	1	-	0	0	0	0	0	0	0	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	1	0	1	-	0	0	0	0	0	0	0	1	0	-	0	
5	0	0	0		0	0	0	0	0	(	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	2	-	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	2	1	5	-	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	2	0	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	0	0	0	0	0	0	0	1	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	2	0	0	-	0	0	0	0	0	0	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	2	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	0	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	0	0	(	0	0	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	
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	
3	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	_	0	
			1			10	0	0	6	-		22	16	15	48	80	37	62	64	28	56	8	243	47	47	131	39	83		77	46	40	49	128	36	27	132	72			

## **Table 5.55. Summer flounder length frequencies, spring, 1 cm intervals, 1984-2022.** *All summer flounder taken in the Survey were measured, with the exception of one fish in 1990.*

length	1004	1005	1986	1007	1000	1000	1000	1001	1002	1002	1004	1005	1006	1007	1000	1000	2000	2001	2002	Sprin 2003		2005	2007	2007	2000	2000	2010	2011	2012	2012	2014	2015	2017	2017	2010	2019 2	2020 20	021 202
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	0	0	0	0	0	0	-	0
12	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
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	-	0
14	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	1	-	0
15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	1	0	0	0	0	7	-	0
16 17	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14 14	0	0	4	0	0	0	0	0	0	0	0	5	-	0
18	0	0	0	19	0	0	1	0	0	0	0	0	1	0	0	0	2	0	0	2	1	0	0	26	0	1	3	0	0	0	0	2	0	0	0	15		0
19	0	0	0	17	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	11	1	2	7	0	0	0	1	3	1	0	1	11	_	0
20	0	0	5	22	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	0	0	0	0	25	3	8	9	1	0	9	3	4	0	0	3	26	-	1
21	0	0	6	17	0	0	0	0	0	0	3	2	1	0	0	0	1	0	0	3	0	0	0	21	2	8	12	0	0	6	2	15	0	0	12	38	-	3
22	0	0	6	21	0	0	1	0	1	0	4	1	1	0	0	0	0	2	1	3	0	1	0	16	1	11	16	1	2	12	6	13	0	0	10	56	-	0
23	0	0	4	10	1	0	0	3	1	0	5	0	1	2	0	0	0	4	0	9	1	1	1	21	2	10	21	3	0	9	9	22	0	0	8	85	-	4
24	0	0	9	13	1	0	0	2	0	3	8	0	1	3	0	0	3	3	0	6	0	0	0	18	4	21	35	5	2	20	13	26	0	1	28	89	-	10
25 26	2	0	13 16	20 13	5	0	2	4	1	6 11	12 18	1	1	1	1	2	3	2 12	2	21 32	3	3 5	0	3 5	3 8	22 25	51 48	16 20	2	22 20	16 21	40 43	3 2	5 10	32 45	117 97	-	5 5 1
27	6	0	27	12	15	0	5	6	5	11	14	2	9	9	2	8	4	14	9	47	6	9	0	6	5	30	45	30	15	38	40	45	5	8	41	80		12 1
28	5	0	18	5	7	0	9	6	12	9	1	1	17	9	3	7	9	31	17	63	8	5	0	9	13	28	40	37	24	28	43	31	5	8	40	82		24
29	2	0	21	1	11	0	6	11	2	6	9	8	28	13	2	24	13	29	33	72	17	5	2	10	21	25	38	53	32	28	49	25	9	24	38	37	-	18
30	4	1	8	0	1	0	9	14	7	4	7	8	22	16	3	23	15	31	40	61	9	8	2	9	12	16	23	37	20	13	42	22	9	5	38	23	-	19
31	5	0	9	3	17	0	10	9	5	8	12	4	22	11	1	20	8	22	49	42	5	11	3	10	16	8	14	55	31	20	32	27	16	6	18	27	-	19
32	0	4	9	1	6	1	5	6	7	5	9	2	7	15	3	11	14	8	36	31	12	9	10		13	13	6	33	25	17	27	15	9	4	8	26		18 1
33	0	3	4	4	6	0	7	4	1	2	13	0	7	10	4	11	14	8	20	24	6	6	11	3	12	13	4	37	19	19	37	10	11	7	7	34		27
34 35	0 2	6	3	1	6	1	0	4	1	6	8	1	4	4	6 5	12 11	12 10	5 5	20 21	26 23	5 8	8	7 10	6	8 6	15 5	5 2	35 46	22 36	13 23	28 23	10 11	13 10	10 8	11 8	26 22		22 16
36	0	2	2	1	3	2	1	3	1	1	14	0	4	8	16	14	18	9	30	41	16	7	5	3 4	6	15	13	42	29	26	29	13	20	9	11	31		32
37	1	1	2	4	5	0	0	3	1	2	6	1	6	12	12	12	17	11	27	35	18	1	9	8	4	13	3	27	31	38	19	17	5	2	5	31		24
38	2	1	2	2	3	1	1	3	1	4	3	0	7	8	21	13	24	5	23	37	26	3	7	8	10	19	14	32	30	36	20	16	7	10	12	27		34 1
39	1	2	1	2	2	0	1	2	1	3	4	0	5	8	17	5	12	7	38	34	25	6	3	14	4	17	6	23	37	25	13	11	10	5	13	21		17
40	0	3	4	1	4	0	1	3	4	2	1	2	2	6	22	6	17	10	29	42	22	7	3	15	6	18	6	17	17	38	18	14	12	5	8	10	-	17
41	1	0	3	0	4	2	0	3	1	2	5	1	3	4	13	8	16	8	23	35	26	6	2	11	11	17	6	21	17	30	15	8	5	4	7	12	-	16
42	0	1	1	0	1	1	0	0	2	3	6	5	5	2	13	10	16	14	14	31	23	5	3	10	7	14	5	10	21	29	15	15	5	5	8	7	-	11
43	0	0	2	0	1	1	0	0	0	1	0	2	1	4	9	6	6	10	14	27	25	5	2	20	6	14	8	15	22	17	15	5	9	2	12	13	-	9
44 45	0	0	1	1	1	0	0	4	0	0	1 2	0	2	2	8	5	18 11	,	14 7	18 15	16 2	4	2	13 13	5	14 16	3	9 10	14 9	21 18	10 13	8	5	3	1	7	-	14 13
46	0	0	2	1	1	1	0	4	1	1	3	0	0	4	3	4	8	9	8	25	18	6	1	13	7	10	10	14	14	18	10	6	9	4	6	1		7
47	0	0	1	2	2	0	1	0	1	0	0	0	1	2	6	6	10	5	12	18	10	5	2	12	7	4	6	12	10	11	6	6	5	5	3	3	-	7
48	0	0	1	1	1	0	0	1	0	0	1	0	0	2	8	8	1	8	7	13	16	5	2	18	5	9	7	15	14	14	10	7	4	5	4	3	-	7
49	1	0	0	0	0	2	0	1	1	0	1	1	3	0	4	9	6	2	7	19	10	1	1	18	4	4	3	5	9	6	7	3	5	5	4	4	-	5
50	0	0	2	0	0	0	0	1	1	0	1	0	0	2	5	6	5	4	10	12	3	5	3	20	11	4	4	9	7	8	12	6	2	3	2	1	-	7
51	0	0	3	0	1	0	0	0	0	0	0	0	1	1	10	3	3	8	9	7	10	3	4	6	4	12	5	6	8	10	4	2	6	1	5	0	-	5
52	0	0	1	0	1	0	2	0	0	1	1	2	0	2	0	4	3	4	6	11	8	3	4	8	11 4	5	0	7	6	6	9	0	2	2	3	4	-	2
53 54	0	2	0	0	1	0	0	0	0	1	0	0	3	3	5	5	5	3	4 10	10	8	3	0	2	10	3	1	11 8	2	6	7	8	1 2	2	3	2	-	2
55	0	0	1	0	0	1	0	0	0	1	1	0	1	1	1	3	3	5	4	6	6	1	2	6	8	6	1	7	4	7	10	1	2	1	2	2		3
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	5	7	2	3	1	1	9	13	8	0	7	1	3	7	3	1	2	5	5	-	3
57	0	0	0	0	0	1	1	0	0	0	2	0	0	1	3	3	2	3	5	7	0	1	0	4	1	8	2	7	2	3	7	4	2	1	4	2	-	1
58	0	0	0	0	1	0	0	0	0	1	0	0	1	1	1	6	5	1	2	6	4	3	0	4	4	8	1	6	3	5	1	2	4	3	6	3	-	0
59	0	0	0	0	0	1	0	0	0	1	0	0	1	2	2	2	3	1	4	7	4	1	1	1	1	9	2	1	5	4	2	5	1	2	1	1	-	0
60	0	1	0	0	0	0	0	0	0	1	1	0	1	0	1	2	0	1	4	1	2	2	0	1	2	4	2	3	0	2	2	0	1	1	0	2	-	1
61	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	1	4	3	2	4	3 7	1	0	1	2	3	1	4	1	1	2	0	0	0	1	1	-	1
62 63	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	4	4	2	0	0	0	2	4	0	3	4	2	2	0	1 2	1	2	0	-	1
64	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	3	0	6	1	1	0	3	1	4	1	2	3	1	1	1	0	0	1	0	-	0
65	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	2	3	1	0	0	4	2	0	5	2	2	4	0	1	1	0	1	1	-	0
66	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	2	2	2	0	0	1	0	1	1	0	0	1	1	1	1	0	0	1	-	2
67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	2	0	1	0	1	0	0	6	0	0	0	0	0	0	0	1	-	0
68	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	3	2	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	-	0
69	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	2	0	0	1	0	0	0	2	1	1	0	0	0	-	0
70	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	1	1	2	0	0	1	0	0	-	0
71 72	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	5	4	0	0	0	0	1	0	0	2	1	0	1	0	1	0	-	1
73	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	0	2	0	0	0	0	0	0	1	-	0
74	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	1	0	1	0	_	0
75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	-	0
76	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	0	0	0	0	0	0	0	-	2
77	0	0	0	0	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
78	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	0	-	0
Total	33	32	189	203	118	18	67	110	72	101	188	51	186	188	230	290	336	341	588	964	416	171	110	513	297	538	514	758	570	699	676	541	236	184	484	1,121	0 4	447 21

**Table 5.56. Summer flounder length frequencies, fall, 1 cm intervals, 1984-2022.** *All summer flounder taken in the Survey were measured, with the exception of two fish in 1985.* 

																				Fa																			
length 11	1984	1985	1986	1987	1988	1989	1990	1991 0	1992	1993	1994	1995	1996	1997 0	1998	1999 0	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	<b>2016</b> 0	2017	2018	2019	2020	2021	2022
12	0	0	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	0	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	1	0	0	0	-	0	0	0	0	0	0	0		0	-	0	0
14		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	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	0	3	2	0	1	-	0	0	0	0	0	0	0	1	0	-	0	0
16	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	1	0	-	0	0
17	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	2	-	0	0	0	0	0	0	0	2	0	-	0	0
18	0	2	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	1	2	-	0	0	0	0	0	0	0	0	0	-	0	0
19	0	1	1 2	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	0	0	0	0	0	0	-	0	1
20 21	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	2	4	-	0	0	0	0	0	0	1	2	0	-	2	2
22	0	2	1	0	0	0	0	0	0	1	0	1	2	0	0	0	0	1	3	0	1	0	0	0	5	1	_	0	0	1	3	0	2	2	0	0		5	8
23		2	2	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	4	0	2	2	0	0	6	5	_	0	2	5	1	0	3	0	5	0	-	4	2
24	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	2	3	3	-	1	0	1	0	0	0	1	4	0	-	4	4
25	0	4	0	0	0	0	0	2	0	4	0	0	1	0	0	1	1	0	4	0	4	0	0	1	2	4	-	2	1	4	3	0	2	1	2	1	-	4	5
26	0	3	1	1	0	0	0	0	0	1	0	0	0	0	0	2	3	1	5	0	2	1	0	4	8	6	-	1	2	1	1	1	0	5	8	0	-	2	5
27	0	3	2	0	0	0	1	1	0	0	0	0	0	0	0	1	8	0	12	0	3	1	0	0	9	8	-	3	1	3	0	0	3	4	3	0	-	3	8
28	0	2	1	3	0	0	0	0	0	0	1	0	1	0	0	1	0	0	12	0	1	0	0	1	1	2	-	4	3	6	1	0	0	6	4	2	-	4	7
29	0	0	1	4	0	0	0	1	0	1	0	0	0	0	0	0	2	1	7	0	9	1	0	5	7	4	-	1	2	7	4	5	1	7	6	4	-	4	20
30 31	0	2	1	2	2	0	0	0	0	0	1	0	1 2	1	0	1 2	2	13	8 5	0	1 4	2	0	14	.5 2	1 4	-	3	3	10 16	2	6	0	5 6	8 10	10	-	4	11
31	3	0	7	13	4	0	0	2	0	3	4	5	2	7	0	5	2	9	6	0	3	15	2	10	1	3	-	8	12	26	4	10	2	7	11	14		10	11
33		0	3	17	6	0	3	1	3	5	4	3	10	10	1	11	1	19	8	3	3	18	3	4	1	5	-	21		19	6	17	6	8	17		-	15	6
34		1	21	15	7	0	5	3	5	16	5	7	18	17	8	6	3	37	23	6	1	31	2	12	0	17	-	25		17	4	9	10				-	15	12
35	14	3	12	20	13	0	5	8	9	13	2	6	15	20	3	12	5	67	47	9	2	24	0	7	1	17	-	10	27	16	8	15	11	10	19	13	-	20	19
36	12	4	21	16	18	0	6	14	12	8	3	4	16	17	4	22	14	54	52	10	3	20	1	11	1	20	-	23	32	20	12	16	9	10	22	7	-	22	17
37	9	13	23	12	23	0	8	7	7	23	7	2	17	27	6	17	9	55		19	3	17	5	4	7	14	-	15		17	15	24	14			17	-	21	25
38		7	18	11	18	0	5	12	7	13	8	3	18	38	8	24	13	49	92	12	5	17	5	3	12	18	-	28		14	17	20	12		13	16	-	25	22
39	5	3	17	10	19	0	6	15	8	16	17	3	20	34	9	26	20	32		16	13	15	4	6	17	22	-	26		11	12	20	12		15	6	-	20	22
40 41	11 5	5	10 16	9	21 15	0	8 10	22 8	3	24 12	7	5 11	30 19	26 28	7 14	27 25	18 13	39 23		8	12 9	26 31	8 2	7 12	16 20	19 15	-	22 19		25 21	13 10	27 16	15	7	10	4	-	14 19	9 12
42		11	18	1	12	1	9	5	6	10	3	5	14	16	20	29	20	16		10	14	18	7	9	17	16		15		12	8	8	19	3	3	6		15	4
43		13	8	4	9	0	9	8	7	6	1	4	9	11	14	14	11	12		12	11	12	9	8	10	13	_	12		15	5	13	13		8	8	-	18	5
44	2	7	4	2	10	0	6	9	7	2	2	0	5	4	15	10	7	3		10	14	13	8	8	5	11	-	11		16	11	10	11	3	2	6	-	16	6
45	1	9	5	1	8	1	9	4	2	4	3	2	10	6	17	12	6	13	31	11	18	12	5	6	4	9	-	6	15	17	3	5	9	2	3	6	-	18	8
46	0	8	5	1	7	0	3	0	4	8	1	1	7	5	20	4	1	9	22	8	16	8	2	4	3	18	-	2	7	9	6	7	11	5	6	3	-	13	3
47	2	3	1	5	1	3	0	5	2	3	6	1	6	6	16	4	7	6	13	10	13	7	2	4	2	9	-	4	8	7	2	8	5	3	5	2	-	8	4
48	1	6	0	2	2	2	2	1	3	1	4	0	4	2	10	1	12	14		6	16	6	4	6	3	14	-	5	7	8	3	4	9	4	1	2	-	10	3
49 50	2	6	2	0	1	1	1	2	5	2	3	1	4	5	5	3	6	10	13	4	10	9	4	7	2	6	-	3	12	11	1	2	8	5	3	0	-	5	4 6
51	1	0	2	1	0	1	0	3	2	3	0	2	5	1	4	3	6	10	7	4	3	5	0	9	1	2		1	12	6	3	3	3	0	3	0		3	2
52	0	1	0	0	0	2	1	3	3	2	1	0	2	2	1	7	4	3	4	2	7	4	4	7	0	7	_	1	5	1	3	3	4	2	2	1		2	2
53	1	0	2	2	1	2	0	4	1	1	0	0	1	3	6	5	3	5	1	3	0	4	0	8	1	3	-	0	6	7	3	0	2	3	4	0	-	0	2
54	0	2	1	0	0	0	1	3	2	0	0	1	0	2	1	1	4	5	0	0	1	0	2	3	0	4	-	3	2	5	1	5	1	1	4	1	-	3	2
55	1	0	0	2	1	0	1	1	0	1	0	1	0	1	3	2	1	4	1	2	3	3	0	4	0	4	-	1	12	3	2	1	4	2	0	0	-	0	1
56		0	1	2	1	0	0	0	1	1	0	0	0	2	0	0	1	3	5	1	3	0	0	2	1	1	-	0	0	3	1	1	2	0	1	0	-	1	0
57	2	0	0	0	0	0	1	0	0	1	1	1	1	0	2	2	1	2	5	1	1	1	2	1	0	1	-	1	0	1	2	1	1	1	3	2	-	1	2
58 59	0	0	0	0	1	0	1	0	0	1	2	0	0	2	1	4	2	1	6	3	1 2	0	0	4	0	0	-	1	0	2	1	2	1	1	0	1	-	0	0
59 60	0	0	0	1	0	0	0	0	0	1	0	0	0	1	1	1	1		0	2	0	1	0	0	0	4	-	0	1	1	1	0	2	2	0	1	-	0	1
61	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	2	0	3	-	1	0	1	1	0	0	1	0	1		1	0
62	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	1	1	2	1	0	0	1	0	0	3	_	1	0	0	0	0	0	0	1	0	-	0	0
63	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	1	1	0	0	1	0	0	-	0	0	1	0	0	2	0	1	0	-	0	0
64	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2	0	0	1	1	1	0	0	1	0	0	0	-	0	0	1	0	0	0	0	2	0	-	0	0
65	0	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	1	0	1	1	0	0	0	-	0	0
66		0	0	0	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
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	0	0	0	0	0	0	0	-	0	1
68	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	1	0	1	0	0	0	-	0	0
69 70		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	1	0	0	0	0	1	-	0	1
70	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	0		0	0
72	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	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	1	-	0	0	0	0	0	0	0	0	0	-	0	0
74		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
75		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
Total	117	141	225	171	203	16	102	152	114	193	93	70	248	299	206	293	220	532	770	189	228	331	95	217	177	343	-	293	409	377	184	268	223	170	268	187	0	346	291

Table 5.57. Tautog length frequencies, spring, 1 cm intervals, 1984-2022. *All tautog taken in the Survey were measured.* 

length	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Sprin 2003		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
7	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
8	0	0	0	0	0	0		) 2	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	1
10		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
11	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	0	0	0	1	0	0	0	0	1	-	0	0
12		0	1	0	0	0		) 1	1	0	0	0	0	0	0	1	1	1	0	0	-	2	0	1	0	0	0	0	0	0	0	1	1	0	0	0	-	1	1
13		0	0	1	1	0	4	1	0	1	0	0	2	1	0	0	0	2	0	0	0	3	0	0	0	1	0	1	4	2	1	1	2	0	1	0	-	0	1
14 15		0	2	2	0	4	3	7 1	1	0	2	0	0	2	0	0	2	2	1	0	) 1	0	0	1	0	2	0	0 2	0	0	1	0	5	0	2	0	-	2	0
16		0	0	3	1	3	6	5 1	0	0	2	0	3	3	0	0	0	1	1	C		1	0		2	1	0	0	2	2	0	1	3	0	0	5	-	0	1
17		1	2	3	2	3	8	3	3	1	2	0	0	2	0	0	5	2	2	1	0	2	3	0	0	0	0	0	4	1	3	3	1	0	2	2	-	1	1
18	2	2	0	3	4	3	14	1 7	4	4	1	1	0	4	1	0	4	2	2	C	0	0	0	0	1	1	1	1	3	2	1	0	5	0	0	3	-	0	1
19		0	2	3	4	11	11	1 6	2	1	1	0	2	1	0	3	0	6	2	2	2 0	0	0	2	1	0	0	0	2	0	0	1	9	0	2	7	-	7	1
20 21		2	2	0	3	7	15 12		2	1	2	1	0	2	1	0	1	3	1	1	0 2	2	0		2	0	0	1	3	9	6	2	3	0	4	7	-	2	2
21		5	0	1	7	11			1	5	1	1	0	5	2	0	3	6	0	1	0	1	3	0	1	0	1	3	3	4	3	5	0	2	3	5	-	3	3
23		0	6	4	4	12			2	2	5	1	0	2	2	1	4	7	5			2	2	2	2	0	0	3	6	1	1	8	1	2	3	4	-	2	4
24		1	3	1	4	8	8	3 3	0	3	5	1	1	0	2	1	1	6	6	2	2 2	2	2	5	1	0	3	1	1	5	6	1	3	1	2	7	-	3	3
25	6	8	2	4	4	7	7	7 5	4	1	2	1	1	7	1	2	4	5	6	2	2 1	2	2	1	2	1	1	2	3	4	4	6	2	1	7	4	-	3	3
26		4	7	0	2	4	15	5 6	0	3	1	0	0	2	2	1	2	7	3	0	) 3	1	2	1	2	0	0	1	8	3	8	2	8	2	10	9	-	4	5
27 28		3	8	2	2	9 11		6	1	1	3	1	0	2	6	2	6 4	1	8	3	3 1	0 4	0	2	1 2	0	0	5	0	2	3	7	8	3	4	4	-	8	5
29		7	3	3	4	7	12	1 2	3	3	7	1	2	3	2	1	3	0	4	3	1 1	3	1	4	6	0	0	0	4	4	2	6	5	0	3	11		5	4
30		4	9	3	2	15	10	) 6	1	3	1	1	1	4	2	1	2	3	12	3	6	1	5	2	1	0	0	1	1	4	5	6	5	1	12	10	_	9	4
31	9	3	6	2	8	5	12	2 1	1	3	4	0	1	5	1	0	1	6	9	3	3 4	2	4	1	1	2	1	2	4	3	4	11	9	0	4	11	-	4	6
32		3	6	6	4	6	6	5 5	2	0	2	1	3	7	9	3	2	3	13	10	) 9	4	3	5	2	2	2	1	6	3	2	8	8	0	5	9	-	6	1
33		4	7	8	4	6		7 7	3	1	4	0	2	4	0	6	6	6	18	8	3	4	4	3	2	4	0	0	3	2	5	13	7	4	9	9	-	7	16
34		7	12	4	5	11	6	5 6 9 10	2	0	2	0	2	9	3	3	6	5	13	5		1	5	3	4	3	1	2	1	6	6	12	7	2	9	9	-	11	11
35 36		4	6 17	3 13	10 13	5 11	7	7 10	2	2	3	1	4	4	3	2	3 11	14	15 17	7	1 6	5	7	6	4	5	2	3	2	2	5	13 10	16 13	3	7	15 13	-	3	21 19
37		8	22	13	12	8		5 11	2	1	5	1	4	4	1	7	9	6	23	12		8	5	4	6	4	2	2	0	5	11	16	8	2	9	7	-	8	16
38		10	17	11	14	5	14	1 18	10	3	4	1	2	1	3	5	11	7	22	8		4	5	2	4	6	3	2	9	5	12	19	9	3	4	16	-	9	18
39	8	5	18	7	6	14		7 7	3	2	8	2	9	5	5	5	8	10	25	7		9	9	3	17	6	6	3	2	9	6	14	12	3	12	9	-	16	13
40	8	8	38	8	14	22			8	2	7	2	4	2	7	4	10	11	27	10		8	9	9	2	5	1	5	4	5	1	8	11	4	7	7	-	4	9
41 42		6 14	27 22	12 10	12 19	16 21			6	3	5	2	9	3	7	3 10	18 16	16 12	28 24	5 15		10 6	3	7 13	6	16 12		5	2	5	8	21 13	16 10	0	5	9	-	4	14 10
43		9	28	9	18	24		5 8	10	7	5	1	5	8	6	9	11	17	24	9		5	8	14	3	9	2	4	4	5	5	12	8	3	7	7		3	11
44		6	31	12	20	27			11	1	9	1	1	7	8	5	17	12	37	3		5	6		8	11	2	4	1	3	4	14	8	3	5	9	-	7	10
45		21	23	12	15	25			10	10	6	1	6	5	9	12	11	11	33	13		5	9		7	5	2	3	2	6	2	10	6	3	1	8	-	2	8
46		9	22	10	17	31			10	1	8	1	2	6	3	5	8	10	28	11	8	7	7	15	10	8	0	3	4	1	4	7	3	2	3	7	-	1	4
47		9	37	11	23	22			15	7	10	3	6	5	7	7	9	10	18	7	7 1	7	10	17	4	3	4	2	2	2	4	10	0	1	1	8	-	2	2
48 49		13 11	25 12	8	21 19	31 29			7 7	6	12	0	3	7	6	8	5 5	8	20	3	1 3	10 5	11	13 14	0	4	1	2	I	3	1	2	3	2	3	3	-	2	3 6
50		5	10	5	16				9	6	7	1	2	2	7	7	3	10	8	7	1 5	4	4		7	10	2	5	2	2	3 1	5	3	0	1	2		1	3
51		12	21	5	19	12			11	3	6	2	6	1	7	2	4	7	10	1	. 6	4	5	10	3	2	1	2	2	0	5	2	0	1	2	1	-	0	2
52	10	8	5	7	14	10	20	10	8	6	7	0	2	3	7	3	5	4	8	3	3 2	1	8	5	5	2	2	3	1	1	2	2	2	2	0	0	-	1	0
53		4	11	3	11	17			8	2	2	1	4	4	2	0	1	5	8	1	0	1	2	5	3	5	0	2	2	1	0	1	0	1	2	1	-	1	1
54		3	6	6	12	8	14		6	6	3	1	7	4	5	2	2	1	5	1	. 5	2	3	6	5	4	2	2	0	0	1	0	2	1	1	0	-	0	0
55		0	5	5	11	13		) 5	7	2	3	2	1	3	2	2	6	4	5	1	0	0	4	8	3	2	1	0	1	0	0	0	0	0	1	1	-	0	1
56 57		0	11	8	7	9		1 8	3 7	1	1	0	3	2		3	0 7	0	1	1	5 1	0	0	-	2	1	0	0	0	2	0	0	0	0	0	0		0	0
58		2	0	3	3	6	2	2 4	4	1	2	0	1	1	0	2	2	1	2	1	. 0	0	0	2	0	0	0	1	0	0	0	2	0	0	1	0		1	0
59		1	3	2	3	5	6	5 3	3	3	2	0	0	0	0	0	0	2	3	C	) 1	0	0	2	3	0	0	0	0	1	0	0	0	0	1	0	-	1	0
60	2	0	1	0	2	2	1	1 2	1	1	1	0	0	1	0	0	0	1	0	0	) 1	0	0	2	1	0	1	0	0	0	0	0	0	0	0	0	-	0	0
61	1	2	0	2	3	2	1	1	2	1	0	0	0	1	1	0	0	0	1	0	) 1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	-	0	0
62 63	0	0	1	3	0	1	2	2 1	1	1	0	0	0	0	0	0	0	0	1	0	) 0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	-	0	0
64	0	0	0	0	0	3	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
65	-	0	0	0	0	0		) 0	0	0	0	0	0	0	0	0	0	0	0			0	0	-	0	0	0	0	0	0	0	0	0	0	0	0		0	0
66		0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	C		0	0	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			0	0			0		0	0	0	0	0	0	0	0	0	-	0	0
68		0	0	0	0	0		, ,	0	0	0	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	337	234	514	258	411	566	528	3 407	226	129	189	40	113	168	151	139	245	277	521	183	207	149	170	247	153	150	52	93	115	133	160	283	254	63	177	270	-	167	251

Table 5.58. Tautog length frequencies, fall, 1 cm intervals, 1984-2022. *All tautog taken in the Survey were measured.* 

-																				Fall																			
length	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
11	0	0	0	0	0	0	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
12	0	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	0	0	0	0	0	1	0	-	0	0
13	1	0	0	3	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
14	0	0	0	0	0	0	0	0	0	0	2	1	2	0	0	2	1	0	0	0	0	0	0	0	1	0	-	0	1	0	1	4	0	1	1	1	-	0	1
15 16	1	0	0	2	0	0	0	0	3	0	0	0	0	0	0	2	1	0	0	0	0	0	1	0	0	0	-	1	1	0	0	0	1	0	1	0	-	1	1
16	1	0	0	1	1	0	2	0	0	1	0	0	0	0	0	1 2	0	1	1	0	0	0	0	0	0	0	-	0	1	2	2	1	0	0	1	0	-	0	2
18	2	0	0	2	1	0	2	1	0	0	3	0	0	0	1	4	0	1	0	1	1	1	0	0	0	2		2	1	3	0	1	2	1	1	1		3	1
19	2	0	0	2	0	0	0	0	0	1	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	_	1	1	0	1	0	1	0	3	1	_	1	2
20	3	0	0	0	0	0	0	0	0	0	1	0	0	0	1	4	1	0	1	0	0	0	0	0	1	0	_	1	0	1	0	2	1	0	2	1	_	2	3
21	2	2	0	5	0	0	0	1	2	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	-	0	1	0	0	1	0	0	2	1	-	1	2
22	3	0	2	1	2	0	1	0	0	0	1	0	1	0	0	2	0	0	0	0	0	2	0	0	0	0	-	0	1	0	3	1	3	0	0	3	-	1	0
23	2	0	2	1	1	0	0	0	0	0	0	0	5	0	2	5	0	1	1	0	0	0	0	0	0	1	-	0	1	0	0	0	1	1	5	4	-	4	4
24	5	0	0	0	2	1	2	0	3	0	1	0	5	2	0	0	0	0	1	0	0	0	0	1	0	0	-	0	0	0	3	3	1	0	4	5	-	1	1
25	4	0	2	2	0	0	0	0	0	2	0	0	0	2	0	1	0	0	0	0	1	0	0	0	1	0	-	2	2	0	3	2	0	2	1	4	-	1	2
26	0	3	0	3	3	2	0	0	0	0	0	0	0	2	1	3	2	0	1	0	0	0	1	0	0	0	-	0	1	0	1	0	2	0	3	5	-	4	3
27	3	0	0	1	0	0	0	0	1	0	2	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	-	1	3	3	0	0	1	2	2	2	-	0	1
28	1	1	3	0	0	0	2	0	2	1	0	0	0	1	2	4	0	4	1	0	0	1	0	0	0	0	-	0	0	0	0	2	4	0	4	7	-	0	3
29	5	1	3	0	1	0	1	2	2	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	-	0	0	1	1	1	0	1	4	6	-	1	2
30	5	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	1	1	1	0	0	2	1	2	0	-	0	2	0	3	1	3	0	3	2	-	1	2
31 32	3	1	0	0	0	0	0	0	1	0	1	3	0	1	0	0	0	3	0	1	0	0	0	0	0	0	-	0	0	2	2	0	2	1	2	3	-	2	4
33	5	1	3	2	2	0	1	0	0	0	0	0	0	0	2	3	0	0	1	1	0	0	0	0	1	1	-	1	0	3	2	0	5	0	2	5		10	2
34	3	3	2	2	0	1	1	3	2	0	2	2	0	0	2	1	0	1	0	2	1	0	0	0	1	0		0	0	2	3	0	0	0	0	5		4	2
35	3	3	2	0	0	1	2	0	0	0	0	1	2	1	2	1	2	6	0	1	1	1	1	0	1	1		0	0	1	0	0	0	0	0	6		0	3
36	4	1	0	1	0	0	0	6	4	0	0	1	0	1	0	2	2	3	1	0	1	0	0	3	0	0	_	0	0	2	0	0	4	0	1	5	_	4	1
37	7	3	0	1	0	2	0	1	0	0	0	0	2	0	1	5	2	0	3	1	0	3	0	0	2	0	-	0	0	1	3	0	4	0	0	4	-	3	2
38	3	7	1	1	1	0	0	2	2	2	1	0	0	0	1	5	1	0	4	3	2	3	2	0	0	0	-	0	0	4	0	0	1	0	4	4	-	5	2
39	5	4	2	3	0	1	0	5	2	2	1	1	1	0	0	5	1	1	1	2	0	2	2	0	0	0	-	0	0	1	2	0	2	1	1	6	-	1	0
40	8	4	3	0	0	2	1	5	1	0	2	1	0	2	0	5	4	1	1	3	0	3	0	2	1	0	-	0	0	0	0	0	0	0	1	4	-	0	1
41	7	6	2	7	1	0	1	4	0	1	1	1	0	0	0	2	3	2	4	3	3	0	2	1	1	2	-	0	2	0	1	0	1	0	1	4	-	2	0
42	3	4	1	7	3	3	0	2	1	1	2	1	0	0	1	3	1	4	3	0	1	0	0	1	0	0	-	0	0	1	0	1	2	0	0	1	-	1	1
43	3	10	4	3	2	2	1	7	0	1	0	1	1	1	2	2	1	1	1	2	4	0	0	3	0	1	-	0	0	0	0	0	0	0	0	1	-	0	1
44	3	3	1	2	1	4	1	6	1	5	0	1	0	1	1	2	1	0	2	0	1	1	0	0	2	0	-	0	0	1	0	0	0	0	0	1	-	0	1
45 46	3	2	2	5	1	4	1	3	0	0	1	0	0	0	1	2	1	3	2	3	1	2	0	1	2	0	-	0	0	0	0	0	0	1	0	0	-	0	0
46	5 4	5	2	2	2	1	1	2	1	4	2	1	1	1	4	0	1	0	4	0	1	2	0	1	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
48	2	4	0	7	2	1	1		0	1	1	0	0	2	2	0	1	1	2	1	0	0	1	1	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
49	4	1	0	4	0	0	0	0	0	5	1	0	0	1	2	0	3	1	0	0	1	0	0	1	1	0		0	0	1	0	0	0	0	0	0		0	0
50	3	2	2	4	5	0	0	7	1	0	1	0	0	0	2	1	3	1	0	1	0	0	0	0	0	0	_	2	0	0	1	0	0	0	1	0	_	0	0
51	0	0	2	4	2	1	1	7	1	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	3	0	-	0	0	0	0	0	0	0	0	0	-	0	0
52	3	1	1	5	1	0	0	1	1	2	2	0	0	0	2	0	0	0	0	1	2	0	1	3	1	1	-	0	0	0	0	0	1	0	0	0	-	0	0
53	1	0	4	1	0	1	0	1	0	1	3	0	0	0	0	1	1	1	0	0	0	0	0	2	1	0	-	0	0	0	0	0	0	0	0	0	-	0	0
54	0	3	0	1	0	0	0	2	1	3	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
55	3	0	1	2	1	0	3	0	0	3	0	0	0	0	0	1	2	0	0	1	0	0	0	1	0	0	-	0	0	0	0	0	0	1	0	0	-	0	0
56	1	1	1	3	1	1	0	2	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
57	1	0	0	5	0	1	0	6	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	-	0	0	0	0	0	0	0	0	0	-	0	0
58	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
59	0	1	1	2	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	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
61 62	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
63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	0	0
64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	-	0	0
65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	_	0	0	0	0	0	0	0	0	0	_	0	0
66	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
Total	132	84	52	106	40	32	25	91	36	36	36	21	23	21	41	79	39	41	43	29	24	27	15	28	24	12	-	11	22	30	36	23	46	14	52	101		59	52

Table 5.59. Weakfish length frequencies, spring, 2 cm intervals (midpoint given), 1984-2022. Weakfish were measured from every tow.

-																					Spring																			
length	1984	1985	1986	1987	1988	1989	1990	199	1 19	92 1	1993 1	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
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	0	0	0	0	0	0	-	0	0
17	0	0	0	0	0	0	0		0	0	0	0	0	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	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	2	0	2	1	3	0	1	11	2	1	8	-	74	0
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	0	3	93	6	0	50	-	73	2
23	0	0	0	0	0	0	0		0	1	0	0	3	0	0	1	0	0	1	2	1	9	3	6	1	0	1	0	2	5	8	1	0	73	6	0	20	-	13	5
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	0	0	15	9	1	4	-	3	1
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	5	0	4	7	0	1	-	1	1
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	1	0	5	7	0	2	-	1	0
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	4	0	4	4	1	2	-	2	2
33	0	0	0	0	0	0	0	1	2	0	3	2	1	5	19	10	10	1	5	0	0	0	11	0	3	0	0	0	0	17	1	0	0	10	13	1	6	-	3	1
35	0	0	0	0	0	1	1	1.	3	0	0	0	0	4	11	4	3	1	2	1	0	0	0	0	1	0	0	0	1	28	2	1	0	9	12	0	4	-	5	7
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	1	0	13	8	2	10	-	3	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	2	0	15	6	0	6	-	4	1
41	0	0	0	0	0	0	0		0	0	0	0	0	0	4	7	3	0	2	1	0	0	0	1	6	0	0	0	1	15	3	0	0	5	2	1	1	-	6	1
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	0	0	1	0	0	0	-	11	0
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	4	0	0	0	0	0	-	7	0
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	1	0	1	1	0	0	-	14	0
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	0	0	0	0	0	0	-	7	2
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	0	0	0	3	0	1	-	5	1
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	0	0	0	1	0	1	-	4	1
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	0	1	0	0	0	1	-	0	0
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	0	0	0	0	0	0	-	0	0
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	1	0	0	0	0	0	-	0	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	0	0	0	0	0	0	-	0	0
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	1	0	1	0	1	0	0	0	-	0	0
65	0	0	0	0	0	3	0		0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	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	0	1	0	0	0	-	0	0
69	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	4	0	3	0	0	1	0	0	0	0	0	0	0	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	0	1	2	0	0	0	0	0	0	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	0	2	1	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	-	0	0
75	0	0	0	0	1	0	0		0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	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	0	0	0	0	0	-	0	0
79	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	1	0	0	0	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	0	0	0	0	0	0	2	0	0	0	0	0	0	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	0	0	0	0	0	-	0	0
Total	1	0	9	2	6	5	9	5	1	18	11	13	28	43	81	92	85	29	59	28	5	28	96	26	31	6	10	1	16	187	86	24	5	261	88	7	117		239	28

Table 5.60. Weakfish length frequencies, fall, 2 cm intervals (midpoint given), 1984-2022. Weakfish were measured from every tow, with the exceptions of 968 juveniles in 1988 and 863 juveniles in 1989 that were not measured.

\$\$\frac{3}{5}\$\$ 0\$\$ 2\$\$ 0\$\$\qq\$\qqq\$\qqqq\$\qqqqq\$\qqqqqqqqqqqqq																					Fall																			
5 0 0 0 0 0 0 2 1 0 0 0 0 2 1 0 0 0 0 2 1 0 0 0 0	length	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
9 15 70 488 15 8 10 83 46 2 0 48 22 16 48 22 16 48 45 49 20 8 10 18 18 18 18 18 18 18 18 18 18 18 18 18	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	0	0	0	0	0	0	-	0	0
9 15 70 448 15 37 247 30 11 28 76 127 48 10 43 15 72 47 30 11 28 76 127 48 10 43 17 75 15 58 1 10 48 128 16 29 18 129 18	5	-	0		0	2	1	0	0	0	1	-	2	0	3	0	-			0	6	0	0	1	-	0	0	-	0	6	0	-	1	0	0	0	8	-	0	0
1 2	7		3		0	13		2	0	48	22		34	-	92	0	-	-,		2			8	3		9	9	-	9	81			10		1			-	48	16
13	-							39	11	218						27		. ,	,		-,	1,263	11	-		18		-										-	515	366
15																110		7,488	- ,	-,	1,186	4,329						-		,		, .	305		588	,				
17							, .					,			270		,	3,650	,	,	1,108	. ,.	, .		,			-		,		,	1,071		1,419	,				
19						17	,							,			,	, .	,	. ,	,	. ,	,					-		,		. ,	,	,	,					
21					2	2										,	,	, .		,								-		,		,	. ,		,					
28				20	4	0	102										,	,									2	-											362	
25		1		10	1	0	1	6		0	6		111	107	106						29			1		129	1	-	8					124			0		65	493
27		1		10	0	0	1	0	65	ź	0	,,,	3	0	5	0			5		0		26	0		6	0		1	8	27			1	.0		2		34	64
29		0		0	0	0	0	0	0.5	2	0	0	0	0	0	0		0	2	13	0	0	1	0		0	1	-	0	1	0	3	1	7	3	3	15		6	0
31  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		-	1	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0	11	0	0	0	0	1	0	0	_	9	0	1	0	0	22	18	4	51	_	25	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	1	0	0	0	0	0	1	1	0	0	1	0	0	1	0	0	3	0	0	7	_	10	6	5	1	14			28	111	_	67	4
37		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	1	20	44		33	92	_	106	12
37		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	14	-	21	18	22	0	16	45		21	33	-	83	17
41		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	1	15	22	10	11	9	-	39	19
43	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	2	16	9	10	7	9	-	16	19
45	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	3	6	6	8	2	3	-	2	7
47	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	0	2	5	11	0	5	-	2	6
49 0 1 1 1 0 0 0 0 1 1 22 0 1 1 4 5 5 1 10 22 9 1 1 8 0 0 0 0 3 3 0 1 1 0 1 0 0 1 0 4 0 0 5 7 7 1 8 8 5 5 5 1 1 0 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0	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	1	1	6	6	3	5	-	6	3
51         4         1         1         1         0         0         0         26         1         0         0         4         3         2         1         5         0	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	0	0	4	4	1	8	-	12	10
53		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	0	0	5	7	1	8	-	20	7
55  0		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	0	0	3	8	1	4	-	24	8
57		1	0	0	0	1	0	0	19	2	2	0	0	0	2	1	0	0	2	0	0	0	0	0	0	0	1	-	6	7	2	0	1	5	3	0	0	-	15	6
59		0	1	1	0	0	0	1	4	1	0	0	0	0	4	2	3	0	2	1	0	0	0	2	0	0	0	-	2	4	1	0	0	1	0	1	2	-	9	3
61  0  1  0  0  0  0  0  0  0  0  0  1  3  0  0  0  0  0  0  0  0  0  0  0  0		1	2	0	0	2	0	0	0	3	0	0	0	0	2	2	4	2	0	1	0	0	0	1	0	0	0	-	2	1	1	0	0	0	0	0	0	-	6	1
63 0 0 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	2	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	-	0	2	5	0	0	0	1	1	0	-	4	0
65		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	0	0	0	0	0	0	-	2	2
67  0  2  1  0  0  0  1  0  0  0  1  0  0  0  0		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	0	0	0	0	0	0	-	0	1
69		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	0	0	0	1	0	0	-	0	0
71		0	2	1	0	0	0	1	0	0	0	0	U	0	0	0	5	1	0	0	0	0	0	0	0	0	U	-	U	0	0	0	0	0	0	0	U	-	0	0
73		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	0	0	0	0	0	U	-	0	0
75		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	0	0	0	0	0	0	-	0	0
77		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	0	0	0	0	0	0		0	0
79			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	0	0	0	0	0	0		0	0
81 3 0 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		2	2	3	0	0	1	0	0	0	U.	0	0	0	0	0	U.	n O	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	U.	n	0	-	0	0
83		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	0	0	0	n	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	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	0	0	0	n	0	0		0	0
87 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		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	0	0	0	n	0	0	-	0	0
89 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	_	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	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	_	0	0	0	0	0	0	0	0	0	_	0	0
1018 - 840. 85C. 118.6 VLAD 10.01 C49.0 18.6 VCA 10C. 10C PVCA 1.8.7 LVCA 1.0.7 LVCA	Total		2,650		246	234	4,628	1,911		1,299	2,047	8,141	2,850		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	-		6,599	1,878	10,455	10,070	4,429	5,813	7,538	3,648		8,421	15,024

Table 5.61. Windowpane flounder length frequencies, spring, 1 cm intervals, 1989, 1990, 1994-2022.

Prior to 2014, lengths were recorded from the first three tows of each day; since 2014, lengths have been recorded from every tow.

															S	pring															
length	1989	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002		2004	2005	2006		2008	2009	2010	2011			2014			2017	2018	2019	2020	2021	2022
4	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	-	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	2	3	1	0	2	0	-	0	0
0	0	0	0	0	0	2	0	2	5	1	1	10	2	0	0	1	0	4	4	9	0	0	10	2	8	1	8	6	-	0	0
0	0	0 2	0	0	1 2	4 5	2	3	17 27	7	6	22 23	3 6	0	0	7 31	3 5	8 17	9 10	20	5 19	0 10	7 41	0 2	26 47	5 26	10 15	11 21	-	2	3 7
0	0	40	16	3	2	9	5	2	11	10	21	20	11	0	0	18	6	10	13	24	16	4	31	1	133	34	31	32	-	9	10
10	25	66	67	12	34	15	7	8	17	13	12	11	19	7	2	4	11	23	8	10	10	16	24	3	168	56	24	28		15	14
11	69	96	169	86	79	37	19	20	5	29	8	3	24	12	1	4	11	8	7	11	10	20	8	3	105	42	24	19	_	23	9
12	89	74	305	148	162	76	60	40	3	23	10	7	25	16	7	8	17	4	20	2	0	16	10	3	77	16	6	13	_	18	1
13	337	53	362	259	288	136	131	37	10	29	5	9	58	25	12	22	13	6	72	9	3	8	15	9	35	11	5	3	-	12	1
14	430	66	232	189	381	309	200	45	11	26	8	13	100	22	34	28	44	17	93	7	7	10	18	4	17	8	10	1	-	9	0
15	414	124	152	180	487	362	211	96	24	43	15	13	101	23	42	60	51	37	107	15	32	19	15	11	9	0	5	3	-	4	1
16	305	180	126	89	310	606	177	123	27	55	12	15	72	37	36	107	119	62	117	19	64	16	21	25	2	1	9	4	-	5	0
17	174	212	209	70	331	754	130	165	23	73	9	15	65	22	48	129	137	97	166	23	81	17	26	36	4	0	5	9	-	7	0
18	78	178	372	99	339	588	165	160	32	94	24	23	56	4	45	132	116	90	104	58	133	20	37	32	4	4	12	20	-	6	4
19	65	132	357	139	548	440	260	194	26	78	19	26	45	16	20	110	101	75	124	58	155	30	37	46	7	9	19	39	-	4	3
20	174	144	289	143	604	366	362	386	75	89	15	31	60	13	24	130	76	51	76	47	135	40	71	27	16	8	23	77	-	14	8
21	216	116	217	85	567	429	461	357	136	95	22	45	32	22	24	186	122	50	88	66	97	62	75	26	16	10	59	82	-	18	5
22	299	143	139	82	401	438	311	301	166	232	45	50	42	29	27	246	155	63	172	75	97	121	102	49	30	23	70	96	-	35	12
23	319	108	163	57	409	368	229	217	138	290	110	92	39	42	28	181	216	92	198	107	117	140	170	57	49	33	85	112	-	46	13
24	270	103	147	54	280	323	227	217	125	245	141	123	66	36	41	158	132	84	199	122	128	166	229	95	79	31	80	143	-	82	18
25	177	87	183	54	236	231	188	206	121	208	133	111	109	47	31	162	118	82	155	134	121	142	228	96	83	52	79	126	-	59	42
26 27	189 138	103	184	70 56	235 187	191 222	178 162	136 161	106	126	114	76 88	100 86	52 49	52 37	186 104	103	67 60	161 148	120 103	118 102	138	175 145	108 89	87	59	75 54	97 85	-	74 44	31 13
28	148	79 38	138 70	44	117	145	138	97	91 56	88 83	69 62	68	71	29	38	104	100 111	45	103	69	102	86 55	111	50	68 36	41 24	41	60	-	37	18
29	78	26	68	24	97	98	67	53	47	59	41	37	48	24	24	65	52	30	146	42	70	41	56	42	14	25	31	38	-	30	11
30	99	35	42	27	66	75	58	42	37	39	42	35	51	20	14	33	46	24	51	24	45	27	27	21	10	9	11	23		7	6
31	50	20	25	12	31	23	34	39	12	25	19	22	32	13	8	14	22	11	67	25	33	12	21	13	5	9	8	15	_	3	1
32	8	15	13	4	25	12	13	26	16	21	17	9	16	5	2	23	19	6	21	7	7	6	11	4	2	2	3	6	_	6	4
33	16	3	2	9	5	8	6	3	8	15	7	2	10	1	3	2	5	1	33	14	13	8	5	3	2	2	3	1	_	3	1
34	0	5	5	0	4	1	1	1	2	5	4	4	9	3	0	4	5	2	20	11	11	4	9	0	4	0	1	1	-	1	0
35	0	4	5	1	3	0	3	4	5	10	2	4	5	0	0	3	3	3	11	1	4	2	5	3	1	1	1	1	-	0	0
36	0	4	2	2	1	1	0	0	1	2	0	5	0	2	0	0	1	0	0	0	1	0	1	0	0	0	0	0	-	0	0
37	0	0	0	1	0	0	3	1	1	2	2	1	1	0	0	0	0	0	8	0	0	0	0	0	0	0	0	1	-	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	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	1	0	1	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	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	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	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	1,744	863	1,146	542	810	1,173	-	574	236

Table 5.62. Windowpane flounder length frequencies, fall, 1 cm intervals, 1989, 1990, 1994-2022.

Prior to 2014, lengths were recorded from the first three tows of each day; since 2014, lengths have been recorded from every tow.

																Fall															
length	1989	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
6	1	0	1	0	0	0	0	0	3	1	0	0	3	0	0	0	0	1	-	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	-	0	0
8	8	3	18	5	24	15	1	0	6	9	0	5	11	14	5	4	0	15	-	4	2	2	1	0	0	0	0	0	-	0	0
9	25	2	28	6	70	17	2	2	2	2	0	21	15	49	2	6	2	15	-	2	3	1	4	3	0	0	0	0	-	0	0
10	18	11	78	10	165	50	2	4	3	9	1	20	22	67	1	14	5	17	-	9	6	7	9	1	0	0	2	0	-	3	1
11	15	9	60	22	227	75	31	11	7	14	0	13	27	111	5	18	3	24	-	19	1	7	13	1	2	0	2	0	-	2	1
12	16	12	50	15	270	107	33	6	9	9	1	6	16	155	2	26	15	29	-	31	5	6	7	0	1	0	0	3	-	2	3
13	23	6	30	10	285	173	47	3	11	9	6	0	14	145	8	44	43	19	-	19	10	10	14	0	5	0	4	1	-	2	1
14	33	14	11	13	306	154	48	5	23	6	0	4	8	109	3	36	58	27	-	36	14	10	14	4	9	3	5	1	-	4	5
15	58	23	23	9	250	110	39	6	18	3	5	8	3	62	2	37	38	25	-	43	18	11	10	12	15	3	19	7	-	3	4
16	140	38	15	16	181	60	34	3	11	3	5	9	3	33	0	30	28	31	-	41	19	13	24	8	24	5	24	7	-	4	6
17	188	44	35	26	112	78	33	11	30	7	14	4	9	12	7	21	20	35	-	72	37	13	19	11	66	16	45	11	-	5	6
18	91	53	47	48	101	119	54	11	15	12	8	11	2	8	19	19	16	47	-	70	19	19	28	16	63	34	57	27	-	9	16
19	46	46	49	47	145	179	95	44	29	6	10	7	11	20	32	26	10	45	-	52	44	31	12	19	86	48	39	28	-	4	28
20	49	28	39	48	131	213	96	67	30	13	9	6	18	30	39	39	31	24	-	41	50	29	18	18	62	93	29	36	-	9	30
21	21	11	23	24	125	165	69	38	52	18	9	11	35	50	25	36	40	28	-	35	87	23	27	21	20	86	23	21	-	16	44
22	14	14	16	19	65	123	37	18	28	22	21	2	25	48	25	42	25	26	-	51	58	28	34	23	8	51	20	12	-	9	31
23	3	10	20	6	67	63	32	12	37	30	39	6	10	14	12	32	27	20	-	47	79	30	43	29	13	24	34	12	-	18	22
24	9	4	7	9	25	49	13	11	33	19	39	11	15	13	9	19	32	23	-	40	45	15	55	24	9	8	43	16	-	21	15
25	4	3	6	3	22	28	9	6	18	19	25	14	8	10	10	6	9	9	-	16	24	29	50	28	14	13	43	20	-	26	23
26	2	0	8	3	19	29	9	4	16	9	10	18	4	3	4	8	16	6	-	18	22	17	29	25	15	15	29	15	-	17	25
27	6	2	3	1	11	17	8	3	5	11	12	17	4	5	3	4	5	4	-	7	14	16	21	24	21	8	19	12	-	28	24
28	2	1	4	1	3	12	1	1	4	5	6	9	2	3	3	3	2	7	-	9	1	13	7	5	5	12	8	11	-	15	14
29	2	2	0	1	2	17	0	1	6	3	1	4	2	3	1	3	2	1	-	2	0	2	4	9	5	5	4	7	-	20	9
30	2	1	2	1	0	5	0	0	1	2	2	2	0	1	1	0	0	0	-	3	1	2	2	2	2	6	3	1	-	12	7
31	0	0	0	0	0	0	0	0	0	1	0	3	1	2	0	0	2	1	-	0	0	1	1	3	0	0	1	2	-	5	8
32	1	0	0	1	0	0	0	0	0	0	0	2	0	1	0	0	0	1	-	0	1	0	0	0	0	0	1	1	-	1	0
33	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	-	1	2
34	0	0	0	0	0	0	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	782	337	578	344	2,613	1,858	694	267	397	242	223	215	268	968	218	473	429	484	-	668	560	335	446	286	445	430	454	252	-	236	326

Table 5.63. Winter flounder length frequencies, April-May, 1 cm intervals, 1984-2022. Winter flounder were measured from every tow.

																		Ap	ril-May																			-	
length	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	2014	2015	2016	2017	2018	2019	2020	2021	2022
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	0	0	0	0	0	0	-	0	0
6	0	0	0	0	0	0	0	0	0	7	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
7	0	0	0	0	0	0	0	0	0	36	4	2	3	0	0	1	0	2	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0
8	0	0	5	8	3	1	10	3	1	72	26	28	4	2	5	7	2	5	0	1	5	5	0	1	6	2	1	1	0	0	1	0	1	0	0	0	-	0	0
9	1	7	6	52	16	17	38	29	7	208	41	97	21	15	41	18	3	20	4	2	22	32	0	2	19	13	7	6	7	0	6	4	4	0	0	1	-	0	0
10	3	9	35	49	29	70	139	54	18	433	137	307	61	75	128	50	23	55	5	11	36	73	5	10	85	42	35	21	22	3	12	6	7	0	6	3	-	2	0
11	26	28	188	114	135	312	375	121	75	698	442	618	246	260	283	135	84	161	34	28	129	164	6	37	238	147	117	67	72	12	20	28	22	0	15	15	-	1	5
12	35	127	455	239	359	628	1,117	228	136	921	835	877	461	528	492	252	145	256	88	57 50	174	278	55	73	367	229	179	113 110	139	20	46	37	28	0	34 25	22	-	8	12
13	149	284	617 733	483 820	869 1,378	954 1,260	2,563	342	170 180	713 528	1,006 1,149	772 854	582 788	497 517	554 488	252 225	169 185	239 223	148 132	50 54	188 132	337	48 39	91 80	322 233	220	174 152	107	162 128	12 16	33	42 42	51 48	0	25	17	-	- 11	18 16
14 15	196 255	219 308	808	1,060	1,882	1,424	3,243 3,847	729 1,127	254	526	1,149	792	956	484	481	204	177	162	148	50	81	209 163	19	80	142	169 119	146	68	101	25	20 24	27	48	2	14	14	-	11	12
16	177	467	771	1,033	1,819	1,424		1,169	323	485	1,487	766	992	553	574	214	210	159	174	66	53	128	19	163	136	155	109	53	67	39	12	10	29	1	2	10	-	12	4
17	182	473	763	1,033	1,953	1,651	3,544	1,568	373	501	1,540	698	1,099	599	713	290	254	245	160	76	41	122	40	180	74	147	112	53	60	52	17	10	21	0	2	0	-	12	8
18	153	574	730	1,026	1,507	1,724	3,145	1,508	398	580	1,467	692	1,149	666	658	313	248	251	206	86	65	108	52	203	85	237	138	73	65	99	13	30	20	0	5	6	-	2	4
19	117	794	780	855	1,596	1,532	3,054	1,690	397	542	1,217	632	1,032	574	622	283	327	313	317	142	72	117	41	242	94	214	130	73	58	99	11	26	28	2	8	20		12	6
20	169	607	665	666	1,136	1,462	2,434	1,676	344	624	896	515	1,032	529	685	296	311	362	364	174	59	148	65	246	51	232	160	101	110	108	12	22	16	2	9	12	-	4	3
21	108	591	600	592	1,045	1,358	1,904	1,493	277	626	742	469	821	429	592	320	314	308	353	127	79	125	54	194	59	166	109	122	122	77	8	18	22	2	á	14		6	2
22	104	486	534	552	963	1,407	1,481	1,332	302	549	556	367	795	444	524	218	289	306	353	87	53	69	45	156	56	129	108	118	133	66	24	15	22	1	6	14	_	10	7
23	63	479	521	442	897	1,160	1,416	1,099	212	426	359	346	676	402	486	290	266	233	337	84	48	71	28	135	67	100	72	84	141	41	21	13	15	0	8	9	-	13	10
24	81	346	427	377	748	971	1,092	1,113	278	418	310	311	701	401	544	260	218	205	395	79	47	51	22	128	55	48	89	109	82	34	28	14	27	3	9	9	_	6	3
25	74	318	341	374	520	1,015	1,018	939	202	349	296	318	692	377	529	344	228	244	311	97	46	49	28	137	60	44	92	105	69	35	40	13	25	3	12	11	_	7	10
26	90	187	375	333	541	982	846	858	242	383	219	231	719	461	527	304	223	249	285	129	61	36	13	144	62	42	58	95	58	35	35	10	25	1	6	11	-	4	7
27	62	232	240	281	420	736	639	788	181	320	216	318	568	496	505	360	251	259	259	150	84	36	23	168	81	39	67	102	82	50	58	7	20	1	12	14	-	5	9
28	43	129	244	230	366	648	586	598	181	197	173	260	549	416	518	418	252	311	187	170	92	25	29	168	84	35	75	72	52	51	66	14	34	3	7	6	-	8	22
29	29	86	189	220	253	502	525	511	160	221	122	244	460	401	466	389	285	326	248	200	103	32	17	200	73	28	77	81	70	78	66	22	38	4	15	12	-	3	16
30	42	70	178	154	266	339	305	397	133	178	103	180	540	365	448	362	279	299	215	206	96	35	20	186	86	28	52	72	58	47	71	22	34	2	18	11	-	7	15
31	24	71	124	151	120	247	307	241	96	200	117	130	367	313	323	321	300	286	201	166	112	33	27	136	93	32	55	58	56	59	81	38	17	4	18	9	-	12	14
32	20	85	77	113	169	163	171	157	98	142	91	76	375	260	277	249	227	228	171	167	95	38	28	133	87	42	45	65	47	61	60	48	33	3	16	19	-	5	6
33	7	69	86	61	111	73	218	108	60	139	72	63	267	193	195	228	262	172	155	138	122	45	20	87	90	36	34	79	63	75	69	50	43	0	19	12	-	3	7
34	7	45	56	85	69	47	113	107	38	159	65	42	190	166	140	191	220	189	109	116	94	48	20	74	99	43	37	51	51	80	59	69	43	0	18	10	-	3	8
35	12	19	42	47	54	68	70	65	35	112	52	30	119	136	136	159	195	189	107	115	88	31	20	50	80	45	28	50	42	76	48	58	53	2	21	10	-	5	7
36	4	11	39	53	33	65	44	30	26	79	49	33	84	89	79	103	150	143	94	73	91	34	18	53	61	44	28	26	37	66	42	38	27	0	13	9	-	1	6
37	4	8	15	20	25	20	24	25	26	36	25	12	50	68	32	90	120	133	60	53	93	27	15	24	36	20	25	27	27	61	41	31	20	2	6	4	-	2	2
38	0	15	17	19	15	18	48	7	4	10	21	16	28	37	37	35	80	77	59	79	46	25	4	17	18	17	16	23	18	43	32	19	7	0	10	7	-	2	3
39	0	4	18	11	22	3	18	13	0	17	15	14	12	18	13	18	54	70	24	44	56	25	6	9	6	9	14	16	18	27	28	9	9	0	3	0	-	1	3
40	0	0	18	8	9	8	12	9	3	3	16	7	13	10	5	20	16	35	32	38	34	11	3	2	7	5	19	16	7	29	22	12	8	0	2	4	-	0	2
41	0	0	3	0	6	7	3	1 5	0	5	6	3	1	6	3	14 4	20	26	11	17	18	7		9	5	4	9	7	2	21	15	1	9	0	4	1	-	0	1
42 43	0	1	3	0	8	3	8		0	2	6	3	6	2	2	4	11	10	9	12	9	9	1	9	2	2	4		2	6	4	2	1	0	3	3	-	0	1
43	0		4	3	3			1	1	2	0	1	2	0		2	11	3	4	13	7	3	0	3	3	- 2	0	2	3	,	4	3	2	0	3	2	-	- 1	0
45	0	1	4	0	2	0	0	1	0	0	0	0	0	0	0	3	4	0	2	3	,	2	1	2	1	0	2	1	1	0	4	0	0	0	2		-	0	0
46	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	2	2	0	2	1	0	0	0	1	0	0	2	0	0	0	0	-	0	0
46	0	0	0	0	0	0	2	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	0	1		0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	-	0	0
49	0	0	0	1	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
50	0	0	0	0	0	0	0	0	0	1	1	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
51	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
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	0	0	0	0	0	0	0	0	0	0	0	_	0	0
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	1	0	0	0	0	0	0	0	0	0	0	-	0	0
Total	2 227	7 152	10 707	11,543	10 350	22.455	37,996	20.283	5 221	11 440	15,565	11 124	16 445	10.700	12 106	7.246	6 412	6.755	5 763	2 160	2 6 4 0	2 759	833	2 626	2 127	2,887	2 576	2,235	2 224	1 617	1 152	826	850	40	364	345		183	250

Table 5.64. Winter flounder length frequencies, fall, 1 cm intervals, 1984-2022. Winter flounder were measured from every tow.

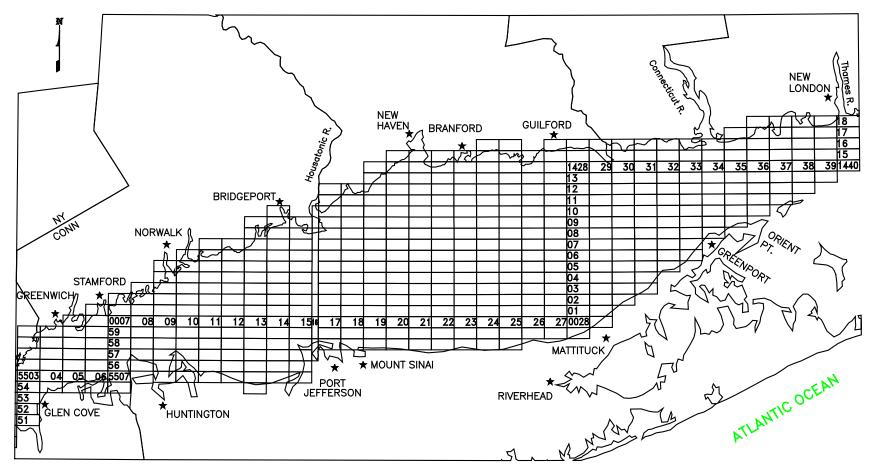
																			Fall																				
length	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	-	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	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	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	0	1	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	0	0	0	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	-	1	0	0	0	0	0	0	0	0	-	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	2	0	0	0	0	0	0	0	-	0	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	-	2	4	0	1	3	0	0	0	0	-	0	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	-	5	14	0	3	8	0	0	0	0	-	1	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	-	7	38	1	3	12	6	0	0	0	-	2	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	-	19	59	3	7	12	11	0	2	1	-	3	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	-	28	62	3	12	21	5	1	0	4	-	3	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	-	22	61	5	9	10	1	0	0	1	-	4	1
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	-	25	50	6	12	9	5	1	0	3	-	1	2
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	-	18	26	4	10	9	7	0	1	0	-	2	0
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	-	11	25	3	8	4	4	1	0	0	-	2	7
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	-	11	16	0	8	9	4	0	1	0	-	3	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	-	5	15	3	3	10	6	1	0	1	-	2	1
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	-	7	22	2	2	3	1	0	2	1	-	2	0
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	-	4	20	4	4	10	6	0	0	0	-	0	0
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	-	4	30	2	5	5	3	1	0	1	-	1	0
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	-	2	20	5	2	2	1	1	1	0	-	1	2
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	-	7	20	3	9	2	5	1	1	0	-	2	0
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	-	6	16	2	3	1	4	2	0	0	-	4	0
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	-	5	7	3	4	4	2	1	1	0	-	2	1
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	-	3	5	4	5	3	5	1	1	0	-	0	0
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	-	2	7	1	2	5	5	1	1	0	-	0	0
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	-	2	7	3	1	3	0	0	0	0	-	1	1
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	-	2	4	1	2	5	2	0	1	0	-	0	0
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	-	3	4	1	1	1	1	0	1	0	-	1	0
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	-	1	5	1	2	2	2	0	1	0	-	0	0
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	-	4	0	1	2	0	2	1	1	0	-	0	0
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	-	2	2	0	2	3	5	0	1	1	-	1	1
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	-	1	4	0	1	8	3	0	0	0	-	1	0
39	2	0	0	0	0	0	0	0	0	3	0	0	0	1	0	1	1	3	5	0	2	2	0	0	2	0	-	0	1	0	1	1	0	0	0	0	-	2	1
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	1	0	0	0	0	-	1	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	-	1	1	0	2	1	0	0	0	0	-	0	1
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	1	0	0	0	0	0	-	0	1
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	3	0	0	0	1	-	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	1	0	0	0	1	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	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	-	1	0	0	0	0	0	0	0	0	-	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	1 600	1 364	907	527	262	392	557	108	213	387	351	-	211	547	61	128	170	97	13	17	14		42	26

Table 5.65. Winter skate length frequencies, spring and fall, 2 cm intervals (midpoint given), 1995-2022. 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.

														Spri	ng													
length	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
27	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	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	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	1	-	0	0
33	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	-	0	1
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	1	0	0	0	1	2	-	1	1
37	0	0	0	0	0	0	1	0	0	3	0	0	1	1	1	1	1	7	7	2	0	0	1	0	0	-	3	0
39	0	0	0	0	0	0	0	1	2	2	0	0	1	0	1	0	1	5	3	3	2	1	2	0	5	-	6	1
41	0	0	0	0	0	0	0	1	1	2	0	0	1	1	1	2	0	4	3	5	1	0	0	1	2	-	0	0
43	0	0	0	0	0	3	0	0	2		0	0	0 2	1	2	2	0	0 7	9 5	3	0	0	0	0	0	-	2 2	0
45		0	0	0	0	2	0	0	0	6 4	3	0	3	0	0	0	1	,	3	4 5	0	1	0	0	0	-	0	0
49	0	0	0	0	0	2	0	0	1	2	3	1	3	2	2	0	0	3	2	7	1	0	0	0	2	-	1	1
51	0	1	0	1	0	0	0	1	1	0	1	0	0	0	1	0	0	3	3	2	1	2	0	0	3	-	3	1
53	0	0	0	0	1	3	1	0	1	0	0	1	1	0	1	0	0	1	3	6	2	1	0	0	2		0	0
55	0	0	2	3	1	1	0	0	1	1	1	4	3	0	1	0	0	2	5	5	4	1	0	0	0	_	1	0
57	1	2	4	3	2	0	0	0	6	0	0	i	2	1	3	0	2	2	4	2	3	1	1	0	1	_	0	0
59	5	4	1	5	3	2	0	1	1	2	0	1	0	0	2	1	0	2	2	3	2	2	0	0	3	_	0	0
61	1	5	2	1	0	0	3	1	1	1	3	1	1	3	2	0	1	2	4	1	1	1	0	0	1	_	0	0
63	2	2	2	4	1	0	0	1	2	3	2	2	0	1	1	0	2	1	3	1	1	0	0	0	0	_	0	0
65	4	2	4	7	0	0	0	0	0	0	1	1	1	2	0	0	2	3	2	0	0	1	0	0	0	-	0	0
67	1	1	2	2	1	1	0	1	1	1	3	3	0	1	1	1	2	3	2	2	0	0	0	0	3	-	0	0
69	2	0	1	4	2	0	0	1	4	1	0	1	2	3	2	0	3	1	2	4	0	1	1	0	0	-	0	0
71	1	3	2	3	1	2	2	1	2	2	0	1	2	3	0	0	0	4	1	1	2	0	0	0	3	-	0	0
73	0	3	0	0	0	1	2	4	0	2	1	4	3	1	1	1	3	5	2	3	0	3	0	0	1	-	0	0
75	4	4	1	5	3	1	2	1	3	1	0	1	4	3	3	4	3	5	0	0	1	0	0	1	2	-	0	0
77	0	2	3	6	7	2	1	1	1	1	0	0	2	4	0	1	2	0	1	3	1	0	0	0	2	-	0	0
79	1	2	1	4	1	1	2	3	1	1	1	0	4	3	2	1	4	2	0	0	1	0	1	0	3	-	0	0
81	0	4	0	3	2	1	1	2	3	3	0	1	1	1	1	0	2	3	0	1	0	0	0	0	0	-	1	0
83	0	3	0	2	0	0	1	0	1	1	0	0	1	0	3	1	1	4	0	2	1	0	0	0	0	-	0	0
85	0	2	1	1	0	3	1	2	1	0	0	0	0	0	0	0	0	3	1	0	1	0	0	0	0	-	0	0
87	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	-	0	0
89	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	-	1	0
91	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
93	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0
95 Total	22	0	0	55	0	29	18	26	37	45	0	0	27	0	32	0	30	77	72	0	0	0	0	0	39		21	5
iotal	22	40	27	55	26	29	18	26	37	45	18	23	37	35	32	16	30	77	72	67	25	15	6	3	39	-	21	

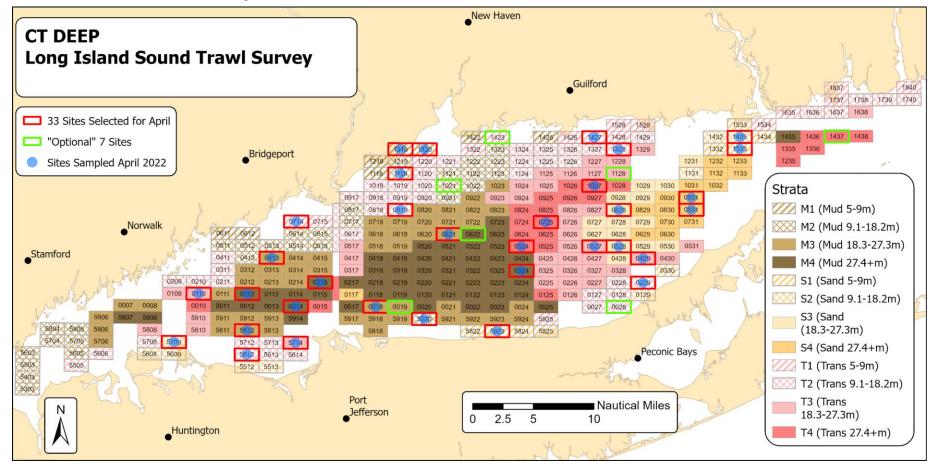
														Fa	II .													
length	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-	0	0	0	0	0	0	0	0	0	-	0	1
39	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	-	0	2	0	0	0	0	0	0	0	-	0	0
41	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-	0	1	0	0	0	0	1	0	0	-	0	0
43	0	0	2	0	0	0	0	2	0	0	0	0	0	1	0	-	2	1	1	0	1	0	0	0	0	-	1	0
45	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	-	0	4	3	2	1	0	1	0	1	-	0	0
47	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	-	0	1	0	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	1	0	0	0	0	0	-	0	0
51	0	0	1	0	2	0	2	0	0	0	0	0	0	1	0	-	0	2	1	0	0	0	0	0	0	-	0	0
53	2	0	2	1	0	0	1	1	0	0	1	0	0	0	0	-	0	2	0	1	0	0	0	0	0	-	0	0
55	1	2	1	0	1	0	4	0	0	0	0	0	0	1	0	-	0	0	1	2	0	1	0	0	0	-	0	0
57	2	6	2	0	0	0	0	3	0	0	2	0	0	1	1	-	3	0	0	0	0	0	1	0	0	-	0	0
59	2	2	2	1	0	0	1	1	0	0	0	0	0	0	1	-	0	1	0	0	1	1	0	0	0	-	0	0
61	0	5	0	0	0	0	3	0	0	0	0	0	1	0	0	-	0	0	1	1	1	0	1	0	0	-	0	0
63	1	4	1	0	0	0	1	0	0	0	2	0	0	0	0	-	0	0	1	1	0	0	0	0	0	-	0	0
65	2	3	0	1	1	0	0	1	0	3	0	0	0	1	1	-	1	0	0	0	0	0	1	0	0	-	0	1
67	1	2	2	1	0	0	2	0	0	0	3	0	1	1	1	-	0	0	1	2	1	0	1	0	0	-	0	0
69	0	2	1	1	0	0	0	1	0	0	0	0	1	1	1	-	0	1	3	0	0	0	2	0	0	-	0	0
71	0	0	0	0	0	0	0	1	0	2	0	0	2	1	1	-	0	0	1	2	0	0	2	0	0	-	0	0
73	0	2	1	1	1	0	0	2	0	1	1	0	0	0	0	-	1	1	0	1	0	0	0	0	0	-	0	0
75	1	3	1	0	1	0	1	1	0	1	1	0	1	1	1	-	0	1	0	0	0	0	2	0	0	-	0	0
77	0	1	0	0	0	0	1	2	0	1	0	0	0	2	0	-	0	0	0	0	0	0	0	0	0	-	0	0
79	0	0	0	0	0	0	1	1	0	0	0	0	0	1	1	-	0	0	0	0	0	0	0	0	0	-	0	0
81	0	0	0	1	0	0	1	1	0	0	1	0	1	1	1	-	0	1	0	0	0	0	0	0	0	-	0	0
83	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	-	0	1	0	0	0	0	0	0	0	-	0	0
85	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
87	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	-	0	0	0	0	0	0	0	0	0	-	0	0
Total	15	37	19	7	7	1	20	19	0	9	13	0	7	16	11	-	7	20	17	14	5	2	13	0	1	-	2	2

## FIGURES 5.1 - 5.18 LISTS



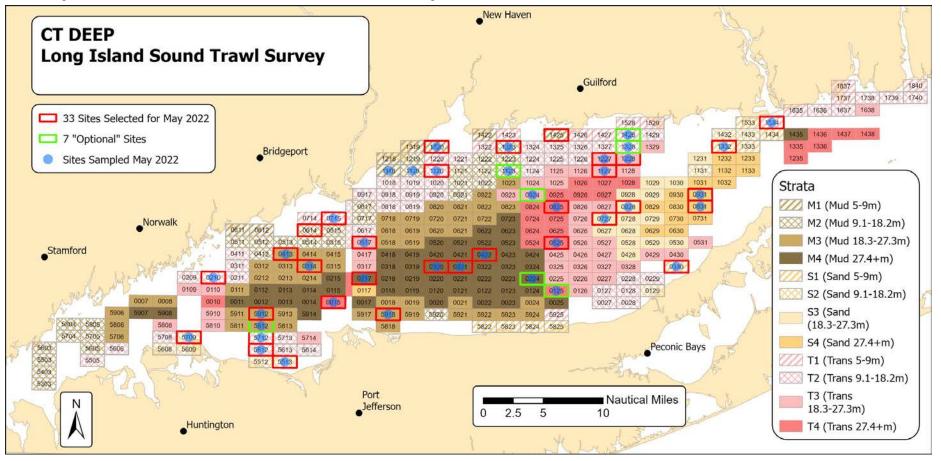
**Figure 5.1. Trawl Survey site grid.** Each sampling site is 1x2 nmi (nautical miles). A four-digit number identifies the site: the first two digits are the row numbers (corresponding to minutes of latitude) and the last two digits are the column numbers (corresponding to two nautical miles in length 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 5.2.** April 2022 sites selected and sampled. The standard 40 sites were selected for this month. The red outlined rectangles are the 33 of the 40 sites selected to allow for reduced sampling if needed, as described in text. The green outlined rectangles are the remaining 7 sites selected that were considered "optional" and to be done if time permitted after completing the first 33 (red) sites. 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.



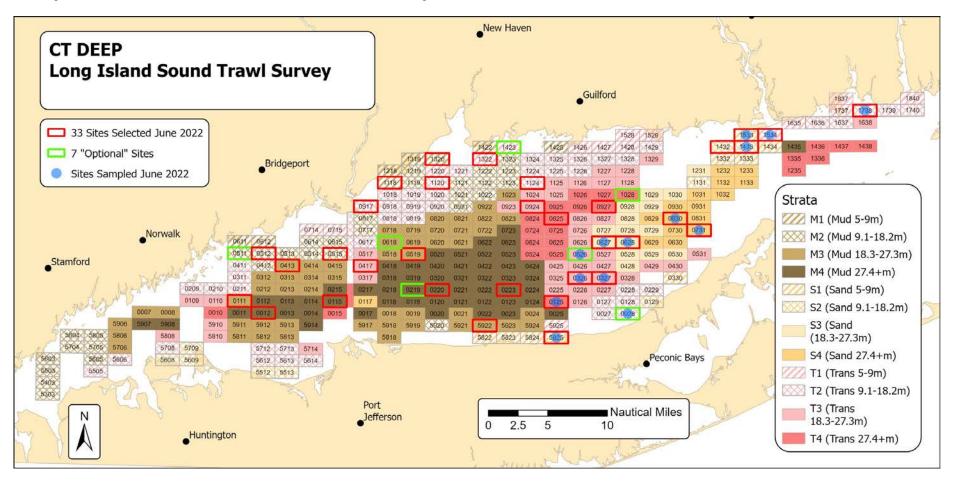
Sample	Site Sampled	Sampled Strata	Site Selected	Selected Strata	Reason Moved
					No sites were moved during this cruise

**Figure 5.3. May 2022 sites selected and sampled.** The standard 40 sites were selected for this month. The red outlined rectangles are the 33 of the 40 sites selected to allow for reduced sampling if needed, as described in text. The green outlined rectangles are the remaining 7 sites selected that were considered "optional" and to be done if time permitted after completing the first 33 (red) sites. 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.



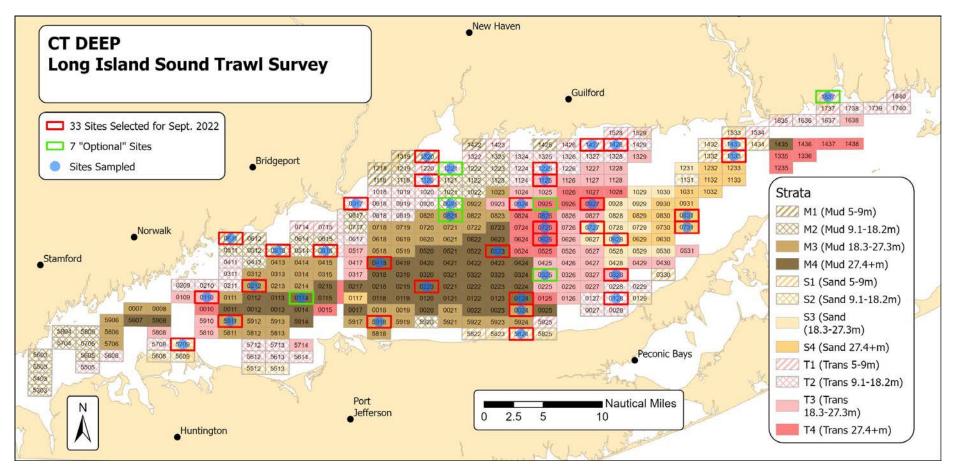
Sample	Site Sampled	Sampled Strata	Site Selected	Selected Strata	Reason Moved
SP2022053	1119	M2	0614	M2	1119 was sampled instead of 1118, moved 0614 so that we could keep the tow
SP2022054	1118	M1	1425	M1	Too many pots in the area of 1425 to attempt tow

**Figure 5.4. June 2022 sites selected and sampled.** The standard 40 sites were selected for this month. The red outlined rectangles are the 33 of the 40 sites selected to allow for reduced sampling if needed, as described in text. The green outlined rectangles are the remaining 7 sites selected that were considered "optional" and to be done if time permitted after completing the first 33 (red) sites. 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.



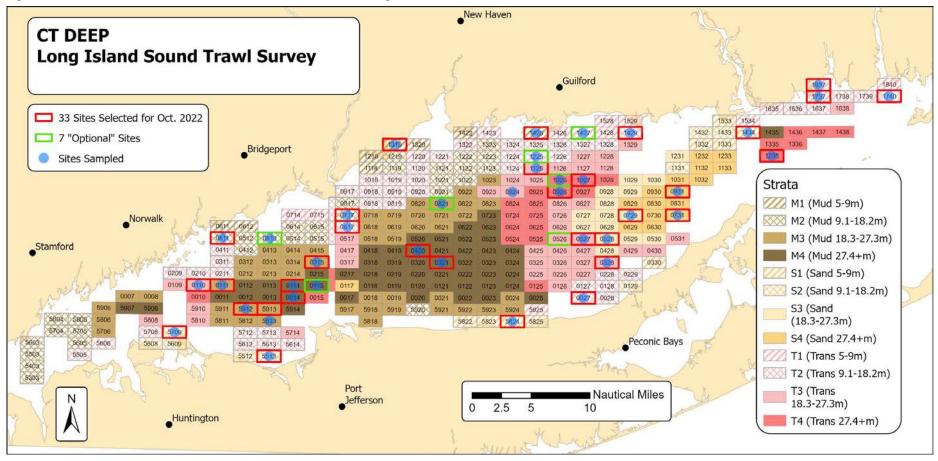
Sample	Site Sampled	Sampled Strata	Site Selected	Selected Strata	Reason Moved
					No sites were moved during this cruise

**Figure 5.5. September 2022 sites selected and sampled.** The standard 40 sites were selected for this month. The red outlined rectangles are the 33 of the 40 sites selected to allow for reduced sampling if needed, as described in text. The green outlined rectangles are the remaining 7 sites selected that were considered "optional" and to be done if time permitted after completing the first 33 (red) sites. 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
FA2022036	0825	T4	0925	T4	Weather was not conducive to a N-S tow

**Figure 5.6. October 2022 sites selected and sampled.** The standard 40 sites were selected for this month. The red outlined rectangles are the 33 of the 40 sites selected to allow for reduced sampling if needed, as described in text. The green outlined rectangles are the remaining 7 sites selected that were considered "optional" and to be done if time permitted after completing the first 33 (red) sites. 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
FA2022070	5813	М3	5923	М3	Typo on original map, moved site to one with recent towpaths
FA2022077	0924	Т3	0526	Т3	Weather was more conducive to a N-S tow

**Figure 5.7. Number of finfish species observed annually, 1984-2022.** *Note: not all years have the same number of tows. See Table 5.4 for details on number of tows completed each year. Average number of finfish species caught per year is 57.3 for the time-series* 

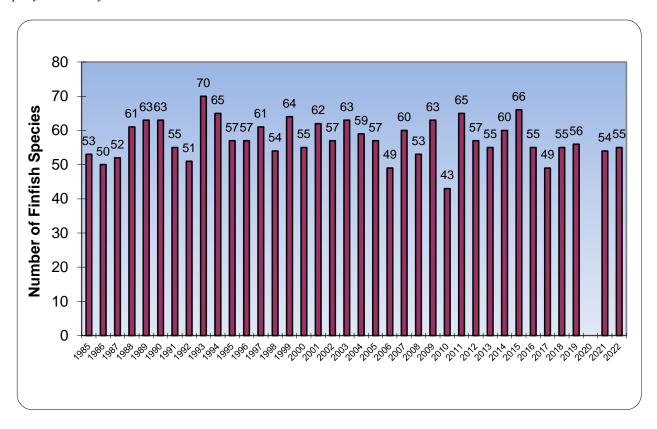


Figure 5.8. Plots of abundance indices for: black sea bass, bluefish (total, age 0, and ages 1+), butterfish, cunner, and dogfish (smooth and spiny).

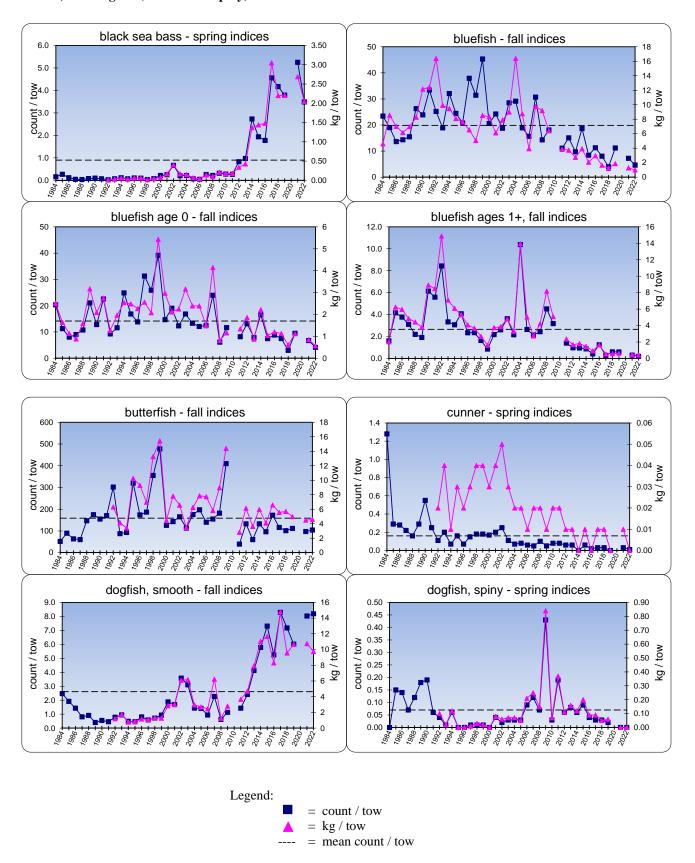


Figure 5.9. Plots of abundance indices for: flounders (fourspot, summer, windowpane, winter, and winter ages 4+) and hakes (red, silver, and spotted).

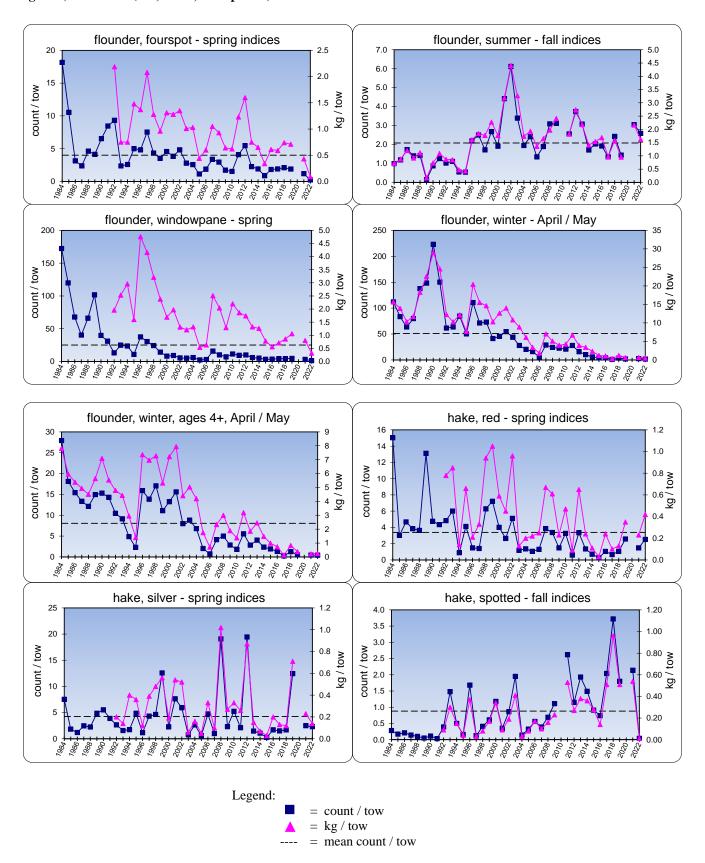


Figure 5.10. Plots of abundance indices for: herrings (alewife, Atlantic, and blueback), hogchoker, Northern kingfish, Atlantic menhaden, moonfish, and ocean pout.

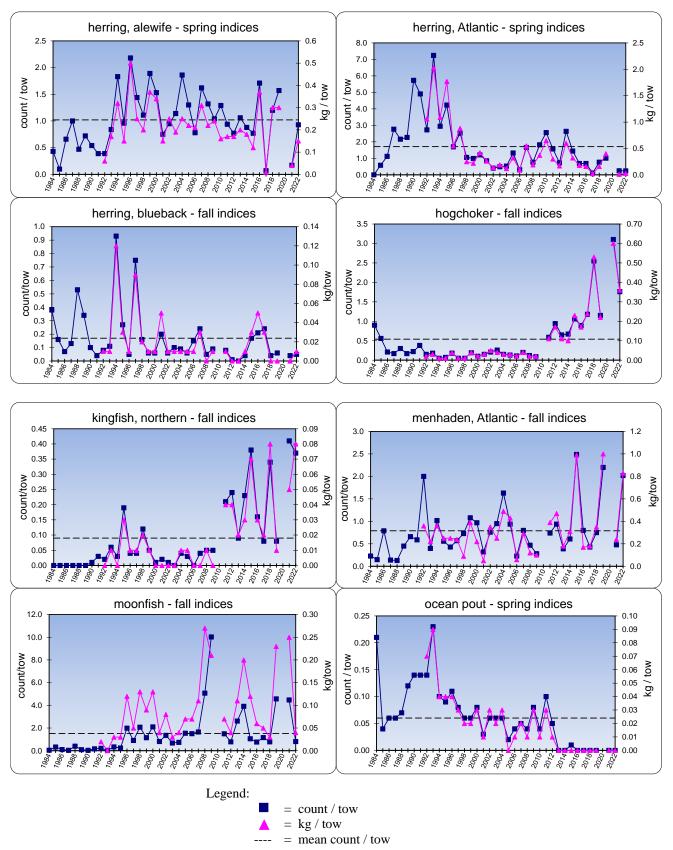


Figure 5.11. Plots of abundance indices for: four beard rockling, rough scad, longhorn sculpin, sea raven, and scup (all ages, age 0, and ages 2+).

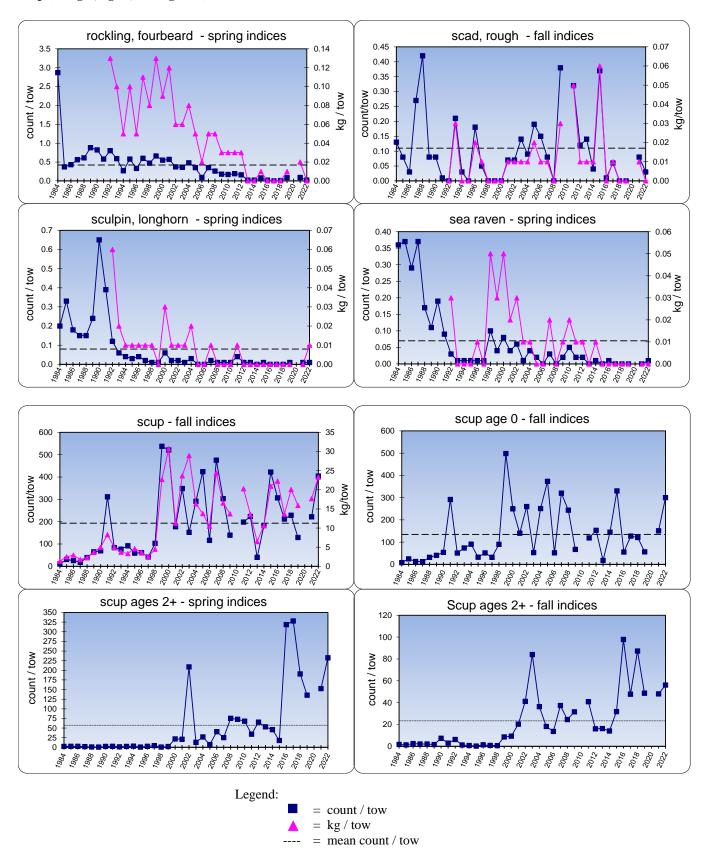


Figure 5.12. Plots of abundance indices for: searobins (striped and northern), shad (American and hickory), skates (clearnose, little, and winter), and spot.

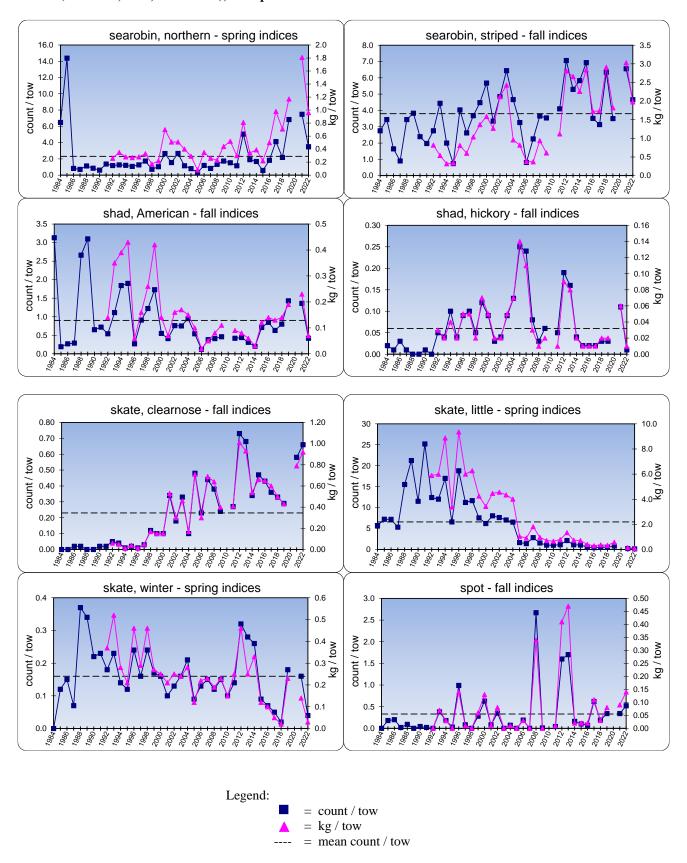


Figure 5.13. Plots of abundance indices for: striped bass, Atlantic sturgeon, tautog, and weakfish (all ages, age 0, and ages 1+).

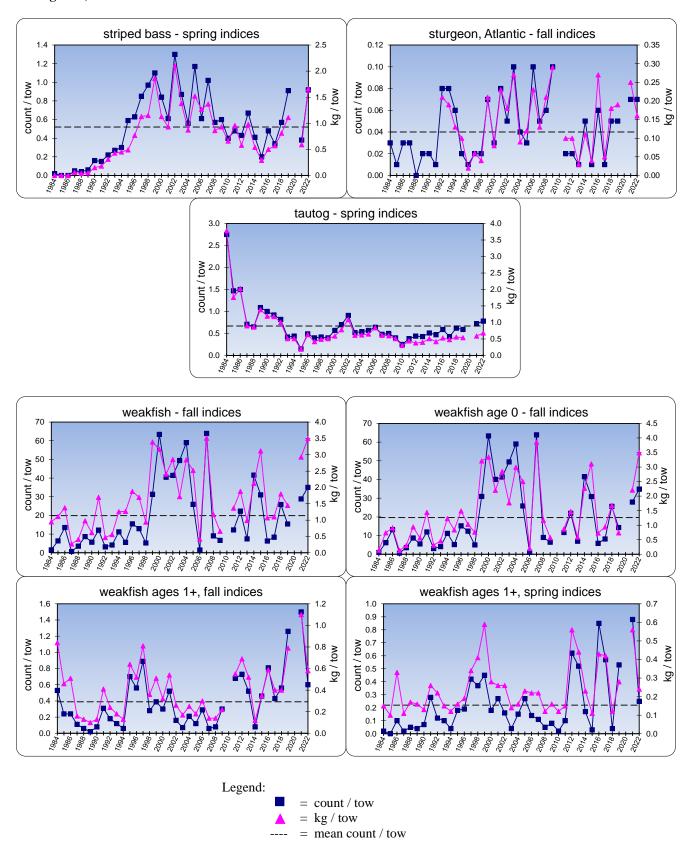
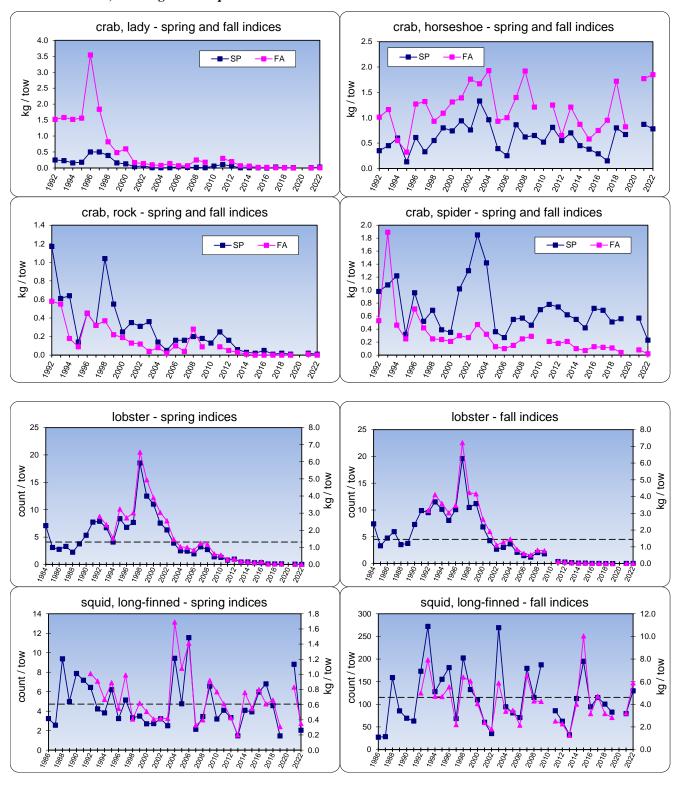
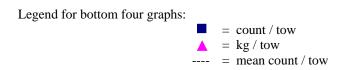
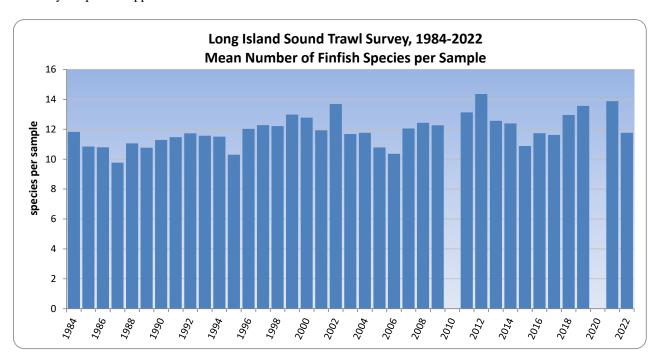


Figure 5.14. Plots of abundance and biomass indices for: crabs (lady, rock, and spider), horseshoe crab, American lobster, and long-finned squid.





**Figure 5.15. Mean number of finfish species per sample, spring and fall, 1984-2022.** This index measures the diversity of species supported within the Sound's various habitats.



**Figure 5.16. Open water forage abundance, 1992-2022.** 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 14.43 kg/tow (red line).

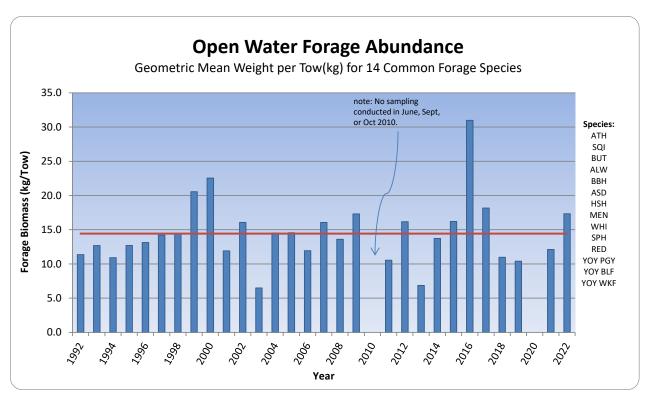
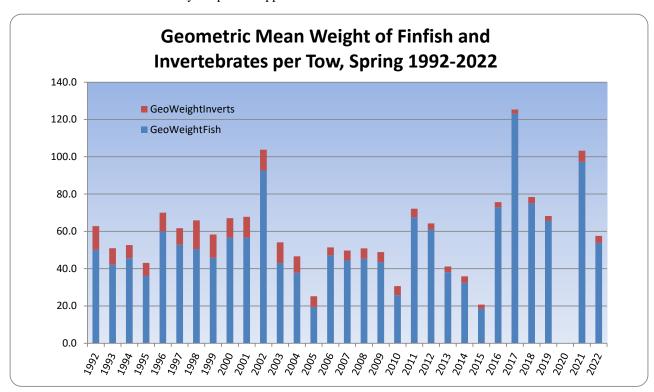


Figure 5.17. Geometric mean biomass of finfish and invertebrates per sample, spring and fall, 1992-2022. This index measures the diversity of species supported within the Sound's various habitats.



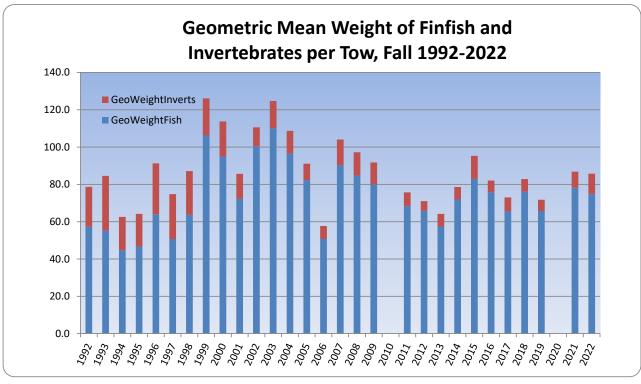
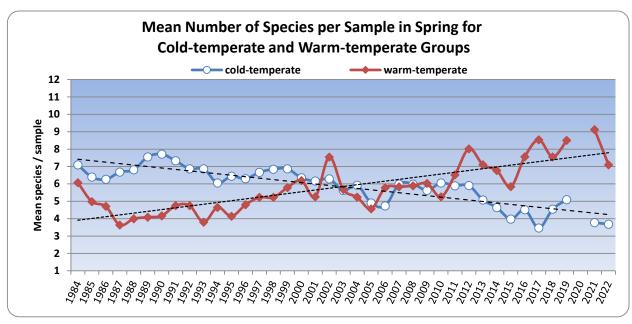
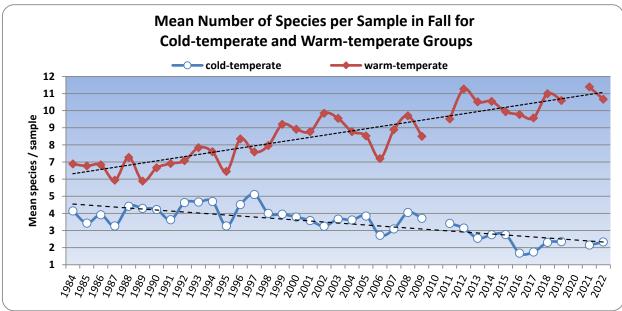


Figure 5.18. Trends in the number of cold temperate versus warm temperate species per sample captured in spring and fall, 1984-2022. See Appendix 2.5 for list of species included in analysis.





# APPENDICES LISTS

# Appendix 5.1. List of finfish species identified by A *Study of Marine Recreational Fisheries in Connecticut* (F54R) and other CT DEEP Marine Fisheries programs. LISTS has collected one hundred-thirteen (113) finfish species from 1984-2022.

This appendix contains a list of 158 species identified from all sampling programs conducted since 1984 **except** Marine Angler Surveys (Jobs 1-3). Species are listed alphabetically by common name (Nelson et al. 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	S with EPA	1986-1990	used LISTS net
ESS (F54R) IS (F54R)	Estuarine Seine Survey Inshore Survey of Juvenile Winter F	lounder	1988 to present 1990-1994	7.6m (25 ft) beach seine beam trawls (also a little data from 1995-1996)
ISS (non-F54R & F54R)	Inshore Seine Surveys in CT and/or		1979 to present	15.2m (50 ft) bag seine set by boat
LISTS (F54R)	Long Island Sound Trawl Survey	111111010	1984 to present	14m (50 ft) trawls with 2" codend mesh
MISC	misc sampling conducted on R/V De	empsey	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) SS (F54R)	Study of Nearshore Finfish Habitat Summer Survey		1995-1996 1991-1993, 1996	plankton net 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	Anchoa mitchilli	LISTS;NI	RRWS;ESS;ISS;IS;SS	S;NCA;MISC
anchovy, striped	Anchoa hepsetus	LISTS;ES	SS;IS;SS	
banded rudderfish	Seriola zonata	LISTS;ES	SS	
bass, largemouth	Micropterus salmoides	ISS;ESS;	TN;CTR	
bass, rock	Ambloplites rupestris	ISS; TN;0	CTR	
bass, smallmouth	Micropterus dolomieu	ISS; TN;0	CTR	
bass, striped	Morone saxatilis	LISTS;NI	RRWS;ESS;ISS; SS;N	NCA;MISC;EPA;TN;CTR
bigeye	Priacanthus arenatus	LISTS;IS		
bigeye, short	Pristigenys alta	LISTS		
black sea bass	Centropristis striata	LISTS;NI	RRWS;ESS;IS; SS;NO	CA;MISC;EPA
blenny, feather	Hypsoblennius hentz	LISTS;ES		
bluefish	Pomatomus saltatrix	LISTS;NI	RRWS;ESS;ISS;SS;M	IISC;EPA;CTR
bluegill	Lepomis macrochirus	TN;CTR		
bonefish	Albula vulpes	ISS		
bonito, Atlantic	Sarda sarda	LISTS;EF	PA	
bullhead, brown	Ameiurus nebulosus	ISS;NCA		
burrfish, striped	Chilomycterus schoepfi	LISTS;ES		
burrfish, web	Chilomycterus antillarum	ESS		
butterfish	Peprilus triacanthus	LISTS;NI	RRWS;ESS;ISS;IS; S	S;NCA;MISC;EPA
butterfly fish, banded	Chaetodon striatus	ESS		
carp	Cyprinus carpio	ISS;NCA	;TN;CTR	
catfish, channel	Ictalurus punctatus	ISS;NCA		
catfish, white	Ameiurus catus	NCA;TN;		
cod, Atlantic	Gadus morhua	LISTS;SS		
cornetfish, bluespotted	Fistularia tabacaria	LISTS;ES		
cornetfish, red	Fistularia petimba	LISTS;IS		
crappie, black	Pomoxis nigromaculatus	ISS;NCA		
crappie, white	Pomoxis annularis	TN;CTR	, ,, -,	
croaker, Atlantic	Micropogonias undulates	LISTS;IS	S:IS	
cunner	Tautogolabrus adspersus	,	RRWS;ESS;ISS;IS; S	S:MISC:EPA
cusk-eel, fawn	Lepophidium profundorum	LISTS		
cusk-eel, striped	Ophidion marginatum	LISTS;SS		
dace	Rhinichthys spp.	ISS		
darter, tessellated	Etheostoma olmstedi	ISS		
dogfish, smooth	Mustelus canis		RRWS;ESS;IS;SS;MI	SC:EPA
dogfish, spiny	Squalus acanthias		RRWS;MISC	~ - , <del></del>
drum, black	Pogonias cromis	LISTS		
eel, American	Anguilla rostrata		RRWS-ESS-ISS-IS-SM	NFH;SS;NCA;EPA;TN;CTR
eel, conger	Conger oceanicus	LISTS;IS		111,00,11011,0111,0111
fallfish	Semotilus corporalis	ISS	,~~,	
filefish, orange	Aluterus schoepfi	LISTS;IS	22.	
filefish, planehead	Stephanolepis hispidus	LISTS;EF		
filefish serayled	Alutomis somintus	1013,11	11	

IS

Aluterus scriptus

filefish, scrawled

#### Appendix 5.1 cont.

Common Name	Scientific Name	Survey
lounder, American plaice	Hippoglossoides platessoides	LISTS
lounder, fourspot	Paralichthys oblongus	LISTS;NRRWS;IS;SS;MISC;EPA
lounder, smallmouth	Etropus microstomus	LISTS;NRRWS;ESS;IS;SS;NCA;MISC
lounder, summer	Paralichthys dentatus	LISTS;NRRWS;ESS;ISS;IS;SS;NCA;MISC;EPA;TN;CTR
lounder, windowpane	Scophthalmus aquosus	LISTS;NRRWS;ESS;ISS;IS;SS;NCA;MISC;EPA;TN;CTR
lounder, winter	Pseudopleuronectes americanus	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS;NCA;MISC;EPA;TN;CTR
lounder, yellowtail	Limanda ferruginea	LISTS;IS
coatfish, dwarf	Upeneus parvus	LISTS
goatfish, red	Mullus auratus	LISTS
goby, code	Gobiosoma robustum	IS
oby, naked	Gobiosoma bosc	LISTS;ESS;ISS;IS
goldfish	Carassius auratus	CTR
goosefish	Lophius americanus	LISTS;IS;SS;MISC
grubby	Myoxocephalus aeneus	LISTS;ESS;ISS;IS;SNFH;SS;EPA
gunnel, banded	Pholis fasciata	ESS;IS
gunnel, rock	Pholis gunnellus	LISTS;ESS;ISS;IS;SNFH;SS
gurnard, flying	Dactylopterus volitans	ESS
naddock	Melanogrammus aeglefinus	LISTS;SS
nake, red	Urophycis chuss	LISTS;NRRWS;IS;SS;MISC;EPA
nake, silver	Merluccius bilinearis	LISTS;NRRWS;SS;MISC;EPA
nake, spotted	Urophycis regia	LISTS;NRRWS;ESS;IS;SS;MISC;EPA
narvestfish	Peprilus paru	LISTS
nerring, Atlantic	Clupea harengus	LISTS;NRRWS;ISS;IS;SNFH;SS;MISC;EPA
nerring, Atlantic thread	Opisthonema oglinum	LISTS
nerring, alewife	Alosa pseudoharengus	LISTS;NRRWS;ESS;ISS;SNFH;SS;MISC;EPA;TN;CTR
nerring, blueback	Alosa aestivalis	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS;EPA;TN;CTR
nerring, round	Etrumeus teres	LISTS;EPA
ogchoker	Trinectes maculatus	LISTS;NRRWS;ESS;ISS;IS;SS;MISC;EPA;TN
ack, blue runner	Caranx crysos	LISTS;EPA;ESS;ISS
ack, crevalle	Caranx hippos	LISTS;NRRWS;ESS;ISS;EPA
ack, yellow	Caranx happos Caranx bartholomaei	LISTS;NRRWS;ESS;IS;MISC;EPA
tillifish, rainwater	Lucania parva	ESS
killifish, striped	Fundulus majalis	ESS;IS
kingfish, northern	Menticirrhus saxatilis	LISTS;NRRWS;ESS;ISS;IS;SS;EPA
amprey, sea	Petromyzon marinus	LISTS;IS;TN
izardfish, inshore	Synodus foetens	LISTS;NRRWS;ESS;ISS;IS;SS;MISC
ookdown	Selene vomer	LISTS;ISS
umpfish	Cyclopterus lumpus	LISTS;IS;SNFH
nackerel, Atlantic	Scomber scombrus	LISTS;ISS;SS;EPA
nackerel, Spanish	Scomberomorus maculatus	LISTS;SS;EPA
nenhaden, Atlantic	Brevoortia tyrannus	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS;NCA;MISC;EPA
ninnow, sheepshead	Cyprinodon variegatus	ESS;ISS
noonfish	Selene setapinnis	LISTS;NRRWS;ESS;SS;MISC;EPA
nullet, striped	Mugil cephalus	ISS
nullet, white	Mugil curema	LISTS;ESS;ISS
nummichog	Fundulus heteroclitus	ESS;ISS;IS
eedlefish, Atlantic	Strongylura marina	ESS;ISS
cean pout	Zoarces americanus	LISTS;NRRWS;MISC;EPA
yster toadfish	Opsanus tau	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS;EPA
erch, white	Morone americana	LISTS;NRRWS;ESS;ISS;IS;SNFH;NCA;TN;CTR
perch, yellow	Perca flavescens	ISS;SNFH;TN;CTR
perch, silver	Bairdiella chrysoura	LISTS;ESS
pickerel, chain	Esox niger	ISS;TN
oike, northern	Esox lucius	ISS;TN;CTR
oinfish	Lagodon rhomboides	LISTS
pipefish, northern	Syngnathus fuscus	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS;NCA;EPA
-	Pollachius virens	
oollock	Alectis ciliaris	LISTS;NRRWS;SNFH;SS;EPA
oompano, African		LISTS;ISS
ouffer, northern	Sphoeroides maculatus	LISTS;NRRWS;ESS;ISS;IS;SS

### Appendix 5.1 cont.

Common Name	Scientific Name	Survey
Puffer, smooth	Lagocephalus laevigatus	LISTS
pumpkinseed	Lepomis gibbosus	ESS;ISS;NCA;TN;CTR
radiated shanny	Ulvaria subbifurcata	SNFH
ray, bluntmose stingray	Dasyatis say	LISTS
ray, bullnose	Myliobatis freminvillei	LISTS
ray, cownose	Rhinoptera bonasus	LISTS
ray, roughtail stingray	Dasyatis centroura	LISTS
rockling, fourbeard	Enchelyopus cimbrius	LISTS;NRRWS;ESS;IS;SNFH;SS;MISC;EPA
salmon, Atlantic	Salmo salar	LISTS;TN
sand lance, American	Ammodytes americanus	LISTS;ESS;IS;SNFH;SS
scad, bigeye	Selar crumenophthalmus	LISTS;SS;MISC
scad, mackerel	Decapterus macarellus	LISTS;SS
scad, rough	Trachurus lathami	LISTS;NRRWS;SS;MISC;EPA
scad, round	Decapterus punctatus	LISTS;NRRWS;ESS
sculpin, longhorn	Myoxocephalus octodecemspinosus	LISTS;NRRWS;ISS;SNFH;MISC
scup	Stenotomus chrysops	LISTS;NRRWS;ESS;ISS;IS;SS;NCA;MISC;EPA
sea raven	Hemitripterus americanus	LISTS;SNFH;MISC;EPA
seahorse, lined	Hippocampus erectus	LISTS;ESS;IS
searobin, northern	Prionotus carolinus	LISTS;NRRWS;ESS;IS;SNFH;SS;MISC;EPA
searobin, striped	Prionotus evolans	LISTS;NRRWS;ESS;ISS;IS;SS;NCA;MISC;EPA
seasnail	Liparis atlanticus	LISTS;SNFH
sennet, northern	Sphyraena borealis	LISTS;ESS
shad, American	Alosa sapidissima	LISTS;NRRWS;ESS;ISS;SS;MISC;EPA;TN;CTR
shad, gizzard	Dorosoma cepedianum	LISTS;NRRWS;ESS;ISS;TN
	Alosa mediocris	LISTS;NRRWS;ISS;SS;MISC;EPA;CTR
shark, sand tiger shark	Carcharias taurus	LISTS
shark, sandbar (brown) shark	Carcharhinus plumbeus	LISTS
sharksucker	Echeneis naucrates	LISTS
shiner, golden	Notemigonus crysoleucas	ISS;TN
	Notropis hudsonius	ISS;NCA;TN;CTR
silverside, Atlantic	Menidia menidia	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS;MISC;EPA
silverside, inland	Menidia beryllina	SNFH
skate, barndoor	Dipturus laevis	LISTS
skate, clearnose	Raja eglanteria	LISTS;NRRWS;IS
skate, little	Leucoraja erinacea	LISTS;NRRWS;ESS;IS;SS;NCA;MISC;EPA;CTR
skate, winter	Leucoraja ocellata	LISTS;NRRWS;SS;MISC
skilletfish	Gobiesox strumosus	ESS
smelt, rainbow	Osmerus mordax	LISTS;ESS;IS;SNFH;SS;TN;CTR
snapper, glasseye	Heteropriacanthus cruentatus	LISTS
snapper, grey	Lutjanus griseus	ESS;IS
snapper, mahogany	Lutjanus mahogoni	LISTS
spot	Leiostomus xanthurus	LISTS;NRRWS;ESS;ISS;IS;SS;MISC;EPA
stargazer, northern	Astroscopus guttatus	LISTS;ESS
stickleback, blackspotted	Gasterosteus wheatlandi	ESS
stickleback, four-spine	Apeltes quadracus	ESS;IS
stickleback, nine-spine	Pungitius pungitius	ESS;IS
stickleback, three-spine	Gasterosteus aculeatus	ESS;IS;TN
_	Acipenser oxyrinchus	LISTS
_	Catostomus commersonii	ISS;NCA;TN;CTR
tautog	Tautoga onitis	LISTS;NRRWS;ESS;ISS;IS;SS;NCA;MISC;EPA
	Microgadus tomcod	LISTS;NRRWS;ESS;ISS;IS;SNFH;SS;EPA;CTR
	Balistes capriscus	LISTS
	Salvelinus fontinalis	TN;CTR
trout, brook	<i>j</i>	
	Salmo trutta	CTR;ISS
trout, brown		CTR;ISS ISS;ESS;TN

Appendix 5.2. Annual total count of finfish, lobster, horseshoe crab and squid taken in the LISTS, 1984-2022.

Counts include all tows- number of tows conducted shown in second row. Refer to Appendix 5.4 for details on number of tows conducted per month. Note: nc = not counted. Anchovy spp., (yoy), Atlantic herring (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
(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	160	200	78
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
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
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
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
bigeye, short	1	2	0	0	1	2	0	0	0 5	1	1	0	3	2	10	0	0	124	204	0	0	0 42	0	0	122	0	0 37
black sea bass	34 0	53 0	44 0	24	22 0	21	39 0	39 0	0	20 0	34 0	12 0	27 0	22	18	50 0	69 0	134	394 0	64	124 0	42	19 0	116 0	122 4	121 0	0
blenny, feather 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
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
bonito, Atlantic	0	2	0,712	1	1	12,500	0,173	0,043	0,200	2	0	0,524	0,703	0,013	0,014	0	0,133	0,,,00	1	0,700	0,504	0,552	2,100	0,570	0	0,057	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	1	0	0	0
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
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
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	36	0	0	0	34	8
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
cornte fish, blue spotted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
crab, horseshoe	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	204/Fall	303	384	420	503	517	450	534	161	109	333	289	340	58
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	1	0	0
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
cusk-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
cusk-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
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
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
drum, black	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
eel, American eel, american (yoy/larvae)	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0 nc	nc	nc	nc	0	0	0	1	0	0	0
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
eel, conger (yoy/larvae)	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
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
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
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
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
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
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
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
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
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
glasseye snapper	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
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
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
goby, naked	0	0 8	0	0	0	0 15	0	0	0 10	0 4	0	0	0	0	0	0 2	0	1	0	0	0	0 2	0	0	0	0	0
goosefish grubby	0	8	1	1	1	9	3	0	0	0	8	4	2	11	5	2	0	0	3	2	0	2	0	1	0	0	0
gunnel, rock	0	6	0	6	5	10	0	0	0	0	1	0	3	0	0	0	3	1	1	6	2	9	2	1	2	2	29
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
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
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
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
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
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
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
herring, Atlantic (yoy-est)	0	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
herring, Atlantic thread	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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
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
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
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
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
lamprey, sea	0	0	0	1	1	0	1	1	0	2	0	0	1	1	0	0	0	0	0	1	0	0	0	1	1	0	0
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

# Appendix 5.2 cont.

Common name	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
(number of tows)	172	200	200	199	200	196	144	172	200	0	139	167	7,805
anchovy, bay	4,693	1,296	1,350	1,424	399	1,239	1,069	641	1,346	-	1,618	443	41,238
anchovy, striped	1	3	1	0	2	8	0	222	21	-	326	62	934
anchovy, spp (yoy-est)	2,382	93	2,004	9,786	19,220	2,536	12,888	2,492	1,391	-	243	702	107,446
bigeye	0	0	0	0	1	0	1	0	3	-	0	1	16
bigeye, short	0	0	0	0	1	0	0	0	0	-	1	0	21
black sea bass	91	410	449	1,295	1,109	1,181	980	1,434	1,584	-	1,089	1,351	12,681
blenny, feather	0	0	0	0	0	0	0	0	0	-	0	0	4
blue runner	24	27	0	10	68	15	1	195	59	-	13	12	463
bluefish	2,765	3,851	1,829	4,457	2,650	2,793	2,408	702	2,048	-	1,203	881	199,045
bonito, Atlantic	0	0	0	0	0	0	0	0	0	-	0	0	9
burrfish, striped	1	0	0	0	0	0	0	0	0	-	1	0	3
butterfish	42,141	60,539	29,569	69,372	53,265	65,596	35,814	42,025	43,434	-	38,461	48,429	2,383,659
cod, Atlantic	109	0	0	5	5	1	4	11	15	-	14	15	321
Gadus spp. (yoy/larvae)	17	0	0	5	16	2	0	17	7	-	3	6	151
cornetfish, red	0	0	1	0	14	0	0	0	0	-	0	0	17
cornte fish, blue spotted	0	0	0	1	0	0	0	0	0	-	0	0	1
crab, horseshoe	257	199	265	261	159	164	112	264	218	-	339	402	7,243
croaker, Atlantic	1	0	1	2	6	0	0	1	0	_	0	0	56
cunner	14	20	20	2	13	4	4	4	0	_	5	1	2,038
cusk-eel, fawn	0	0	0	0	0	0	0	0	2	_	0	0	6
cusk-eel, striped	2	0	0	6	0	3	0	1	0	_	0	0	15
dogfish, smooth	613	610	1,051	1,197	1,438	1,338	1,624	1,598	1,243	_	1,728	1,331	26,099
dogfish, spiny	58	16	21	15	19	9	3	5	4	_	0	0	2,281
drum, black	0	0	0	1	0	0	2	0	0	_	0	0	3
eel, American	0	0	0	0	0	0	0	0	1	_	0	1	1
eel, american (yoy/larvae)	0	0	0	0	3	0	0	0	0	_	0	0	4
eel, conger	3	1	1	0	1	0	0	0	2		1	1	24
eel, conger (yoy/larvae)	0	1	0	0	0	0	0	1	0	_	0	2	5
filefish, orange	0	0	0	0	0	0	0	0	0	_	0	0	4
filefish, planehead	0	0	0	4	2	0	0	1	1	_	4	1	122
-	1	0	0	0	0	0	0	0	0	_	0	0	3
flounder, American plaice flounder, fourspot	1,400	2,597	1,144	820	386	1,056	366	711	570	-	224	59	68,052
	67									_	191		
flounder, smallmouth		258	128	152	73	148	44	86	186			150	2,659
flounder, summer	1,051	980	1,071	859	808	462	354	753	1,309	=	796	501	22,360
flounder, windowpane	2,831	3,536	2,096	2,191	1,150	1,593	974	1,266	1,427	-	812	561	268,422
flounder, winter	3,092	3,365	1,912	1,372	1,340	1,108	112	500	422	-	266	313	435,846
flounder, yellowtail	1	0	0	0	2	0	0	0	0	-	0	0	20
glasseye snapper	0	0	1	0	2	0	1	0	0	-	0	0	27
goatfish, dwarf	0	0	0	0	0	0	0	0	0	=	0	0	
goatfish, red	0	0	21	1	0	0	0	0	0	-	0	0	29
goby, naked	0	0	0	0	0	0	1	0	0	-	0	0	2
goosefish	0	2	0	0	2	70	0	1	2	=	0	3	162
grubby	4	0	0	0	0	0	0	0	0	-	0	0	59
gunnel, rock	4	1	0	0	1	0	0	0	0	-	0	0	105
haddock	0	0	5	0	0	1	0	1	0	-	0	0	52
hake, red	278	1,720	849	398	480	668	152	361	1,215	-	533	1,287	65,782
hake, silver	948	7,519	519	323	100	891	309	450	4,348	-	565	745	69,175
hake, spotted	725	626	927	505	302	2,456	1,253	1,015	2,027	-	886	110	20,184
harvestfish	0	1	2	0	0	0	0	2	1	-	0	0	6
herring, alewife	512	708	376	555	485	2,811	38	1,052	1,401	-	125	388	28,228
herring, Atlantic	1,482	571	3,566	1,838	630	340	10	352	1,294	-	114	47	96,025
herring, Atlantic (yoy-est)	48	623	11,196	487	587	817	1,341	1,207	952	-	0	41	46,001
herring, Atlantic thread	0	0	0	0	1	0	0	0	0	-	0	0	1
herring, blueback	72	46	68	58	249	448	89	579	124	-	12	39	9,075
herring, round	0	2	0	0	1	0	0	0	0	-	0	0	87
hogchoker	147	340	250	246	255	354	391	811	383	-	704	410	6,657
jack, crevalle	4	2	0	2	4	1	1	6	4	-	4	0	70
jack, yellow	0	0	0	0	0	0	0	0	0	-	0	0	186
kingfish, northern	34	59	14	51	97	31	11	75	14	-	76	190	765
lamprey, sea	0	0	0	0	1	0	0	0	0	-	0	0	12
lizardfish, inshore	43	0	0	30	0	4	1	7	2		116	0	258

# Appendix 5.2 cont.

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
(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	160	200	78
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
lookdown	0	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
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
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
mackerel, Spanish	0	0	0	0	0	11	0	2	1 115	233	106	0	0	0	0	1 107	0	0	0	1	0	0	0	0	0	0	0
menhaden, Atlantic moonfish	161 7	304 226	718 23	600	335 142	623 60	407 10	348 24	1,115	298	411 149	318 33	88 921	116 287	306 1,188	1,187 645	492 1,817	86 225	366 424	799 133	746 182	235 356	28 361	426 979	47 689	69 2,575	0
mullet, white	0	0	0	0	0	0	0	0	62 0	0	0	0	0	0	1,100	043	0	0	0	0	0	0	0	0	009	2,373	0
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
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
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
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
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
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
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
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
puffer, smooth	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ray, bluntnose stingray	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
ray, cownose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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
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
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
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
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
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
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
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
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
sculpin, longhorn	14	82 18.054	51 16,449	32	107 12,566	107 37,642	263 21.193	139 45,790	31	11 32,218	7 38.456	5 13,985	7 16.087	9,582	22.742	101.095	14	5 58.325	100 401	5 26,926	5 61.521	0 52,642	0 28.829	75,681	53,560	2 46,991	7.157
scup	8,806	18,054		9,761 88		37,642	21,193	. ,	13,646	32,218	38,456	13,985	16,087	9,582	23,742	101,095	101,464	58,325 7	100,481	26,926	61,521	32,642	28,829	/5,681	53,560	46,991	7,157
sea raven sea turtle, kemp's ridley	57 0	39	70 0	0.0	52	0	0	19	0	1	0	0	0	3	0	9	0	0	0	0	0	0	0	0	0	0	0
sea turtle, loggerhead	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
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
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
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
seasnail	0	0	0	0	2,000	0	8	0	0	0	0	0	0	0.0	0	0	0	4	2,57.	0	4	2	0	0	0	0	0
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
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
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
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
shark, sand tiger	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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
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
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
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
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
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
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
snapper, mahogany	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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
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
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
sturgeon, Atlantic	11	3	706	6	620	13	602	501	30	60	60	6	126	100	17	39	7	18	18	29	8	170	21	18	7	18	1 53
tautog	734	773	796	624	629	791 3	693	501	265 0	164	224	61	136	190	194	217	287	319 2	565 8	225	232	179 0	186	280	179	163	0
toadfish, oyster	2	4	0	8	0	3	4	1	8	5	0	1 4	2	0	0	1	6	0	8	0	2	0	0	5	0	3	0
tomcod, Atlantic	0	1	0	8	2	0	0	4	8	5	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
triggerfish, gray 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
Total	122,527	152,574	153,383	136,139	216,479	294,027	2,240	4,320 174,235	1,317	2,060	204,795	163,532	165,756	170,761	258,082	392,831	23,393	172,622	229,284	131,812	250,439	200,991	109,330	215,638	164,948	2,004	39,340
iviai	122,52/	102,014	100,000	130,139	210,479	294,027	211,103	174,233	100,970	230,301	204,790	103,532	100,700	170,701	200,002	392,031	4/1,000	1/2,022	429,204	131,012	200,439	200,991	109,330	£10,030	104,946	239,134	J9,J4U

# Appendix 5.2 cont.

Common name	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
(number of tows)	172	200	200	199	200	196	144	172	200	0	139	167	7,805
obster, American	230	349	144	178	92	74	12	15	25	-	6	4	181,09
ookdown	0	0	0	1	0	0	0	0	0	-	0	0	
umpfish	0	0	0	0	0	0	0	0	0	-	0	0	
mackerel, Atlantic	0	0	0	2	4	0	3	10	0	-	5	20	79
mackerel, Spanish	0	0	0	0	0	0	1	1	65	-	2	2	42
menhaden, Atlantic	181	426	234	723	1,279	876	239	227	815	_	303	881	16,81
moonfish	640	262	868	2,200	891	265	273	143	2,270	_	2,255	235	21,83
mullet, white	1	1	0	0	0	0	0	0	0	_	0	0	-
ocean pout	27	14	0	0	2	0	0	0	0	_	0	0	62
perch, silver	1	0	0	2	0	0	0	0	0	_	0	0	
perch, white	1	1	0	1	0	0	0	0	2		0	0	3
		2		0			0	0	0	-	0		
pinfish	0		0		0	1				-		0	
pipefish, northern	4	1	2	1	2	0	0	3	5	-	0	2	9
pollock	5	0	1	0	0	1	0	0	0	-	0	0	5
pompano, African	0	0	0	0	0	0	0	0	0	-	0	0	
puffer, northern	9	47	3	10	11	5	4	5	9	-	56	85	38
puffer, smooth	0	0	0	0	0	0	0	0	1	-	0	0	
ray, bluntnose stingray	0	0	0	0	0	1	0	0	0	-	0	0	
ray, bullnose ray	0	0	2	0	0	0	0	0	0	_	0	0	
ray, cownose	0	0	0	0	0	0	0	0	0	0	0	1	
ray, roughtail stingray	1	1	0	0	1	1	0	2	1	_	0	0	1
	43	43	3	4	20	3	0	1	20		10	4	5,44
rockling, fourbeard rudderfish, banded	0	0	0	1	0	0	0	0	0	-	0	0	5,44
salmon, Atlantic	0	0	0	0	0	0	0	0	0	-	0	0	
sand lance, American	9,535	2	7	12	4	0	7	0	0	-	1	1	31,79
sand lance, (yoy-est)	15,600	0	0	0	0	0	0	0	0	-	200	1	35,539
scad, bigeye	0	0	0	0	3	0	0	0	0	-	3	28	14
scad, mackerel	0	0	0	1	0	0	0	0	0	-	21	0	4
scad, rough	150	19	28	5	144	1	7	0	0	-	11	5	1,25
scad, round	1	0	1	1	1	0	0	0	0	-	0	0	4
sculpin, longhorn	9	1	1	0	2	0	0	0	1	_	1	2	92
scup	34,457	53,119	24,961	45,705	80,534	175,632	75,763	81,228	53,617	_	54,698	85,562	1,797,925
	3	5 5	0	1	00,554	173,032	0	0	0		0	1	55
sea raven		0	0			0			0		0	0	33
sea turtle, kemp's ridley	0			0	1		0	0		-			
sea turtle, loggerhead	0	0	0	0	0	0	0	0	0	-	2	1	
seahorse, lined	0	0	0	0	0	0	0	0	0	-	0	0	
searobin, northern	803	3,642	1,934	2,584	805	3,178	1,430	2,949	3,112	-	4,135	2,021	51,52
searobin, striped	1,630	2,973	2,724	2,544	2,728	5,886	3,942	4,223	3,181	-	3,460	1,653	74,13
seasnail	0	0	0	0	0	0	0	0	0	-	0	2	2
sennet, northern	1	3	0	0	0	2	0	0	1	-	0	0	3
shad, American	271	321	222	162	275	944	230	230	512	-	403	206	26,702
shad, gizzard	0	1	0	0	0	0	0	0	0	_	0	0	•
shad, hickory	8	42	33	30	12	18	4	6	11	_	24	7	98
	0	0	0	0	0	10	0	0	0		1	0	
shark, sand tiger						-					-		
shark, sandbar (brown)	0	0	0	0	0	0	0	0	0	-	0	0	
sharksucker	0	0	0	0	0	0	0	0	0	-	0	0	
silverside, Atlantic	0	0	3	1	5	3	0	0	0	-	0	0	12
skate, barndoor	0	0	0	0	0	0	0	0	0	-	0	0	
skate, clearnose	56	280	218	104	131	134	73	81	113	-	165	122	2,13
skate, little	674	1,406	583	770	387	377	113	151	418	-	50	56	118,45
skate, winter	37	97	91	82	30	17	19	3	41	-	24	7	1,77
smelt, rainbow	0	0	0	0	0	0	0	0	0	_	0	0	3
snapper, mahogany	0	0	0	0	1	0	0	0	0	_	0	0	
spot	5	858	1,917	20	14	12	114	36	66	_	90	105	4,38
squid, long-finned	13,020	9,767	5,393	13,436	28,266	12.424	14,186	13,146	10.934		9,652	15,385	651,98
									- ,	-			
stargazer, northern	0	0	1	0	0	0	0	1	0	-	0	0	
striped bass	243	170	200	255	187	167	73	269	535	-	109	211	7,952
sturgeon, Atlantic	5	7	4	13	1	12	1	7	9	-	19	47	55
tautog	106	135	161	194	308	306	77	230	373	-	225	302	12,07
toadfish, oyster	1	0	5	2	2	4	1	2	4	-	10	1	10
tomcod, Atlantic	2	0	0	0	0	0	0	0	0	-	0	0	
triggerfish, gray	0	0	0	0	0	0	0	0	0	_	0	0	
weakfish	2,583	6,785	1,964	10,477	10,077	4,689	5,904	7,544	3,766	_	8,661	15,050	247,797
Total	146,254	170,798	102,413	177,250	211,566	293,181	162,833	169,361	146,967		135,078	180,493	7,220,939
	140,234	110,190	104,413	111,200	211,000	433,101	102,000	105,301	190,301		100,010	100,493	1,440,93

 $Total\ count\ of\ finfish, lobster, horseshoe\ crab\ and\ squid\ taken\ in\ the\ LISTS, 1984-2022.$ 

, 1101 3 631	ioc ci ab a	na squia aixe.
<b>Year</b>	Tows	<b>Total Count</b>
1984	200	122,527
1985	246	152,574
1986	316	153,383
1987	320	136,139
1988	320	216,479
1989	320	294,027
1990	297	277,183
1991	200	174,235
1992	160	186,975
1993	240	230,301
1994	240	204,795
1995	200	163,532
1996	200	165,756
1997	200	170,761
1998	200	258,082
1999	200	392,831
2000	200	271,608
2001	200	172,622
2002	200	229,284
2003	200	131,812
2004	199	250,439
2005	200	200,991
2006	120	109,330
2007	200	215,638
2008	160	164,948
2009	200	239,154
2010	78	39,340
2011	172	146,254
2012	200	170,798
2013	200	102,413
2014	199	177,250
2015	200	211,566
2016	196	293,181
2017	144	162,833
2018	172	169,361
2019	200	146,967
2020	0	-
2021	139	135,078
2022	167	180,493
	7,805	7,220,939

Appendix 5.3. Annual total weight (kg) of finfish, lobster, horseshoe crab and squid taken in LISTS, 1992-2022.

Weights include all tows – number of tows shown in second row. Refer to Appendix 5.4 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	2014	2015	2016	2017	2018	2019	2020	2021	2022	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	199	200	196	144	172	200	0	139	167	5,586
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	9.4	3.1	8.7	7.7	3.3	6.6	-	6.0	2.1	198.8
anchovy, striped	nw nw	nw nw	nw nw	nw	0.2 nw	0.0 nw	0.0 nw	6.1	0.0 4.5	1.2 0.8	0.0 1.5	0.1 2.0	0.0 3.0	0.0 1.5	0.0	0.1	0.1 5.1	0.4	0.0	0.1	0.2	0.1	0.0 2.6	0.1 3.3	0.5 3.1	0.0 7.9	4.1 1.7	0.4 1.4	-	3.7 0.4	1.1 0.7	18.5 44.8
Anchovy, spp (yoy-est) bigeye	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	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	0.0	0.1	0.0	0.1	0.0	0.2	- 1	0.0	0.7	0.9
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	0.0	0.1	0.0	0.0	0.0	0.0	-	0.1	0.0	1.2
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	543.3	678.0	823.4	714.8	690.7	816.7	-	521.6	578.8	6,385.7
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	0.0	0.0	0.0	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	0.0 899.0	0.0	0.0	0.0	0.0 1.099.7	0.0	2.140.6	0.0	0.1	0.3	0.0	2.3	0.0	1.7	2.7	0.0	0.9	6.7 324.4	1.5	0.1	19.9	3.8	-	1.0	0.9 178.1	41.9 28,488.8
bluefish bonito. Atlantic	2,462.9	2,226.1	2,341.7	1,156.1	0.0	977.6	0.0	1,218.0	1,408.0	751.2 0.0	2.4	0.0	2,140.6	1,333.8	358.6	1,801.3	641.4	1,157.4	6.1 0.0	584.7	532.7	517.7	522.7	0.0	1,118.7	263.6	161.4	224.5	-	0.0	0.0	28,488.8 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	0.0	0.0	0.0	0.0	0.0	0.0	- 1	0.3	0.0	1.3
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	1,707.6	1,011.2	2,036.1	1,426.0	1,412.7	1,114.1	-	1,034.8	1,272.9	50,841.4
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	0.3	4.7	4.9	0.1	3.2	5.1	-	2.0	18.7	60.2
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	0.4	1.1	0.2	0	0.4	0.2	-	0.1	0.2	6.6
cornetfish, red corntefish, blue spotted	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	0.0	0.6	0.0	0.0	0.0	0.0	-	0.0	0.0	0.8 0.1
crab, horseshoe	514.1	807.9	463.1	116.8	717	472.4	489.4	634.1	689.4	870.7	862.9	751	873.4	304.2	205.8	596.4	496.8	645.8	112.2	505.2	385.8	531.8	497.3	288.3	315.5	224.4	512.3	391.9	-	583.3	714.8	15,574.0
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	0.2	1.5	0.0	0.0	0.1	0.0	-	0.0	0.0	5.0
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	0.2	1.8	0.5	0.5	0.5	0.0	-	0.9	0.1	92.0
cusk-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	0.0	0.0	0.0	0.0	0.0	0.1	-	0.0	0.0	0.3
cusk-eel, striped	0.0 863.2	0.0 1.339.1	0.0 934.6	0.0 566.8	0.0 862.8	0.0 527.3	0.0 989.8	0.1 923.0	0.0	0.0	0.0 2.814.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1 2.213.3	0.0 34.4	2.031.7	0.0	0.0 2.162.3	0.6	0.0 2.804.1	0.1 2.785.6	0.0	0.1 3.024.9	0.0 2.957.2	-	0.0 2.909.3	2.054.1	1.2 52.073.1
dogfish, smooth dogfish, spiny	30.7	58.4	199.6	0.0	2.1	13.7	989.8 44.5	51.1	9.9	1,407.6	48.0	239.5	1,435.3	1,421.7 102.0	1,176.6 47.0	2,110.2 122.3	1,134.2 127.7	545.7	16.2	2,031.7	62.8	91.5	2,799.2 62.2	2,804.1	43.6	3,391.3 15.6	16.7	2,957.2		2,909.3	2,054.1	2,492.2
drum, black	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	0.2	0	0		0.0	0.0	0.3
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	0.0	0.0	0.0	0.0	0.0	0.6	-	0.0	0.9	4.6
eel, American (yoy)	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	0.0	0.0	0.2	0.0	0.0	0.0	0.0	-	0.0	0.0	0.3
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	0.0	0.3	0.0	0.0	0.0	0.3	-	0.2	0.3	7.2
eel, conger (yoy) filefish, orange	nw 0.0	nw 0.1	nw 0.1	nw 0.0	nw 0.0	nw 0.0	nw 0.0	nw 0.0	nw 0.0	nw 0.0	nw 0.0	nw 0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-	0.0	0.1	0.4 0.2
filefish, planehead	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	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	3.1
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	0.0	0.0	0.0	0.0	0.0	0.0	-	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	145.0	76.3	175.3	67.9	147.6	147.8	-	51.2	14.2	7,055.7
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	6.0	3.6	4.2	2.0	2.9	4.1	-	4.3	2.9	100.5
flounder, summer flounder, windowpane	142.1 286.1	193.1 578.9	173.0 597.2	79.6 356.2	266.4 1.223.6	326.0 986.1	431.3 741.1	459.8 594.2	471.3 368.8	628.1 475.5	989.3 343.3	845.7 378.8	627.2 333.7	406.1 177.5	180.5 128.9	590.9 510.8	398.0 524.0	694.4 342.8	229.6 449.3	713.0 395.9	718.5 501.1	726.6 326.6	567.4 365.6	449.3 191.1	386.4 154.7	244.0 127.1	397.0 189.6	464.3 242.5	-	511.2 142.8	305.2 95.7	13,615.3 12,129.5
flounder, windowpane 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	459.7	319.7	261.0	27.7	132.2	103.1	-	55.9	71.5	31,657.0
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	0.0	0.7	0.0	0.0	0.0	0.0	-	0.0	0.0	3.7
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	0.0	0.1	0.0	0.1	0.0	0.0	-	0.0	0.0	2.0
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	0.1	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.9
goby, naked goosefish	0.0 2.5	0.0	0.0 2.0	0.0 3.3	0.0	0.0 1.6	0.0 3.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0 1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 23.3	0.1	0.0	0.0	-	0.0	0.0	0.2 44.3
grubby	0.0	0.0	0.3	0.1	0.1	0.7	0.3	0.3	0.2	0.0	0.0	0.1	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	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	0.0	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	3.4
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	0.0	0.0	0.1	0.0	1.6	0.0	-	0.0	0.0	5.1
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	33.5	44.5	50.3	11.9	25.8	77.5	-	35.9	78.2	2,966.8
hake, silver	22.0 10.3	21.9	127.6 32.4	61.6	20.0 42.6	70.8	88.3	99.6	28.8 92.3	152.2	89.6 48.2	13.9 70.4	27.3 37.8	7.1	37.7 24.3	14.6 23.9	208.5 65.8	50.0 32.1	35.4 15.8	40.3	171.0 64.2	23.6	10.6	6.5	32.9	12.3	18.3 151.7	126.1	-	21.2 73.4	23.3 4.5	1,663.0 1,620.9
hake, spotted harvestfish	0.0	55.9 0.0	0.0	6.5 0.0	0.0	19.0 0.0	12.2	38.8	92.3	34.9 0.0	0.0	0.0	0.0	17.4	0.0	0.0	0.0	0.0	0.0	76.8 0.0	0.1	66.8 0.2	59.5 0.0	40.1 0.0	113.8	111.2 0.0	0.2	178.3		0.0	0.0	0.6
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	91.2	71.8	37.1	1.1	45.0	302.7	-	0.5	3.1	7,531.9
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	0.5	1.3	1.3	0.7	1.5	0.9	-	0	0.4	32.4
herring, Atlantic thread	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
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	43.2	30.5	132.0	2.0	87.5	86.1	-	7.4	22.1	1,730.9
herring, blueback herring, round	8.5 0.2	4.7 0.3	31.2 0.2	7.5 0.0	6.2	16.5	5.1 0.6	1.1	6.8	0.1	2.4 0.0	4.0 0.0	6.5	5.4 0.0	2.5 0.0	9.1 0.0	3.2	14.6	3.4 0.0	3.2 0.0	1.6 0.1	4.3 0.0	4.2 0.0	7.1 0.1	12.2	3.5 0.0	36.5 0.0	6.0 0.0	-	0.4	1.0	229.8 1.6
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	27.8	31.2	41.8	50.1	98.9	50.8	-	87.5	52.3	633.3
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	0.2	0.4	0.1	0.1	0.5	0.2	-	0.2	0.0	5.6
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	0.0	0.0	0.0	0.0	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	3.2	7.1	4.8	2.3	9.9	1.9	-	6.5	13.4	74.7
lamprey, sea lizardfish, inshore	0.0	1.0 0.0	0.0	0.0	0.7	0.1	0.0	0.0	0.0	0.0 2.2	0.0	1.3	0.0	0.0	0.0	0.1	0.8	0.0	0.0	0.0 4.6	0.0	0.0	0.0 2.8	1.2 0.0	0.0	0.0	0.0 0.5	0.0	-	0.0 9.3	0.0	5.2 22.4
lizardrish, inshore 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	2.8 31.5	24.0	25.2	4.0	3.8	7.6	-	2.4	1.4	29,275.8
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	0.1	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.5
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	0.0	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	0.2	0.4	0.0	1.3	0.7	0.0	-	0.3	1.7	26.4

# Appendix 5.3 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	2014	2015	2016	2017	2018	2019	2020	2021	2022	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	199	200	196	144	172	200	0	139	167	5,586
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	0.0	0.0	0.0	0.1	0.1	3.7	-	0.3	0.1	19.8
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	267.8	361.2	69.4	72.2	80.5	280.7	-	95.3	223.3	2,992.4
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	23.2	14.6	5.2	4.2	2.6	22.6	-	28.6	3.7	258.4
mullet, white	0.0 7.7	0.0 16.4	0.0 9.1	0.0 6.5	0.0 7.2	0.0	0.0	0.0 3.9	0.0 4.9	0.0 2.3	0.0 4.3	0.0 2.9	0.0 5.4	0.0	0.0	0.0 3.2	0.0 2.1	0.0 4.8	0.0	0.1 4.5	0.1 2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.2
ocean pout perch, silver	0.0	0.0	0.0	0.0	0.0	4.8 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.9	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	98.2 0.3
perch, white	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	5.0
pinfish	0.0	0.0	0.5	0.0	0.0	0.9	0.0	0.4	0.2	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	0.2	0.0	0.0	0.0	0.0	0.2	-	0.0	0.0	0.3
pipefish, northern	0.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.4	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1	5.4
pollock	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.1	0.2	0.0	0.2	0.0	0.2	0.3	0.2	0.2	0.0	0.2	0.3	0.5	0.0	0.2	0.1	0.2	0.0	0.0	0.2	0.2	-	0.0	0.1	2.1
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	0.1	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	0.1
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	1.3	0.8	0.9	0.7	0.3	1.4	_	2.1	2.0	20.6
puffer, smooth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
ray, bluntnose stingray	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.6
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	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	5.7
ray, cownose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	2.6	2.6
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	0.0	7.8	45.4	0.0	18.9	16.8	-	0.0	0.0	194.9
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	0.4	2.0	0.3	0.0	0.1	1.3	-	1.2	0.3	229.2
rudderfish, banded	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	-	0.0	0.0	0.4
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	0.0	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	0.2	0.1	0.0	0.1	0.0	0.0	-	0.1	0.1	26.4
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	0.0	0.0	0.0	0.0	0.0	0.0	-	0.1	0.1	11.5
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	0.0	0.3	0.0	0.0	0.0	0.0	-	0.2	1.3	3.8
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	0.1	0.0	0.0	0.0	0.0	0.0	-	0.4	0.0	1.5
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	0.5	7.1	0.1	0.6	0.0	0.0	-	0.5	0.3	34.9
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	0.1	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	2.5
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	0.0	0.7	0.0	0.0	0.0	0.1	-	0.3	0.6	38.2
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	5,161.4	6,045.5	16,006.0	9,616.8	12,947.0	11,169.0	-	8,184.6	10,840.0	174,059.8
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	1.5	0.0	0.2	0.0	0.0	0.0	-	0.0	0.3	56.3
sea turtle, kemp's ridley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	-	0.0	0.0	3.8
sea turtle, loggerhead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	136.1	75.0	
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	0.0	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	225.9	133.2	452.1	196.2	460.8	450.5	-	727.1	366.1	5,918.6
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	1,020.8	1,058.2	1,964.4	1,400.0	1,582.6	1,264.4	-	1,281.7	616.6	21,061.4
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	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1	0.8
sennet, northern	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.5 117.3	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	0.0	0.0	0.2	0.0	0.0	0.1	-	0.0	0.0	3.0
shad, American	63.3	138.9	165.8	81.4	36.2	66.8	60.2	0.1	25.8 0.0	9.6 0.0	40.3 0.1	40.8	24.2	18.2 0.2	6.1	15.8	20.2	28.9	8.6 0.0	17.5 0.0	25.3 0.1	15.3	12.3	24.7	46.2	21.0	17.6 0.0	32.3 0.0	-	26.6	19.3	1,226.5 0.9
shad, gizzard	4.9			2.5	10.2	9.1			17.1			20.1	14.2	43.1				3.6					10.5		4.2		2.2		-		2.5	294.2
shad, hickory	0.0	4.4 0.0	7.6 0.0	0.0	0.0	0.0	15.9	19.4	0.0	6.7 0.0	19.6 0.0	0.0	0.0	0.0	19.1	10.4	1.1	0.0	0.4	1.5 0.0	14.1	10.8	0.0	5.5 0.0	21.8	1.3	0.0	3.1 0.0	-	9.1 8.4	0.0	294.2
shark, sand tiger sharksucker	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	1.0	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	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	4.6
skate, barndoor	0.0	0.0	0.0	0.9	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	0.0	0.0	0.0	0.0	0.0	0.1	0.4	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	207.7	225.0	228.7	147.1	149.8	213.8		278.7	191.2	3,870.7
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	428.2	192.0	193.1	63.0	82.4	220.9	-	24.8	29.4	31,484.3
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	133.8	51.8	31.6	34.1	4.1	72.7		21.3	5.8	2,994.2
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	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	1.7
snapper, mahogany	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.1
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	1.8	1.7	1.7	10.5	3.8	8.2	-	11.4	16.6	445.4
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	582.3	1,366.2	464.4	584.5	408.8	368.4	-	360.3	701.1	18,434.2
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	0.0	0.0	0.0	0.0	0.2	0.0	-	0.0	0.0	0.4
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	407.5	405.2	261.9	186.8	457.4	773.6	-	164.6	583.1	14,548.7
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	272.4	15.8	318.3	60.9	98.6	104.7	-	378.6	608.7	7,464.6
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	192.5	339.7	288.5	99.0	209.0	351.9	-	193.9	302.0	9,262.0
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	0.6	0.9	1.7	0.3	0.8	1.1	-	3.8	0.4	34.4
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	0.0	0.0	0.0	0.0	0.0	0.0	-	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	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	334.8	530.4	297.6	311.2	270.2	245.5		612.4	725.4	10,131.5
Total	14,545,1	20,214,3	18.679.6	14.022.0	18.386.1	17,763.5	20.136.1	23,914.0	22,617.2	21,748.8	32,213.8	19,710.6	21,370.3	13,830.5	11,233.6	19,312.0	15,386.5	20,294.8	4,812.3	17,144.4	18,361.7	16,592.2	17,288.4	17,313.4	29,304.2	19,532.4	24,002.8	22,955.2	0.0	18,797.8	20,834.7	572,318.3

Appendix 5.4. 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	ē	
scup	3,225	5.4			rough scad	22	0	ē	
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		<u>.</u>
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		<u>.</u>
Atlantic menhaden	67	0.1		<u>_</u>	Total	2,865		-	

Appendix 5.4. 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 5.4. 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 5.4. 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			<b>Invertebrates</b>				
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 5.4. 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	ē		black sea bass	17	0		
little skate	6,539	5.2	ē		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	ě	
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	ě	
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			<u>Invertebrates</u>				
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 5.4. 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	<b>%</b>	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		•		- <del></del>			
spiny dogfish	66	0		•					
ocean pout	58	0		•	<u>Invertebrates</u>				
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 5.4. 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			Invertebrates				
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 5.4. 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 5.4. 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	<u>Invertebrates</u>				
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 5.4. 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	<b>%</b>	weight	<b>%</b>	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	0	12,012.4	
Atlantic menhaden	271	0.3	94.1	0.8	Total	107,033		12,012.4	
fourbeard rockling	241	0.2	15.6	0.1	T 4 1 4				
summer flounder	224	0.2	137.9	1.1	<u>Invertebrates</u>	10.206	20.6	0.170.5	24.4
tautog	157	0.1	308.2	2.6	American lobster	10,306	20.6	2,173.5	34.4
Spanish mackerel	136	0.1	2.2	0	long-finned squid	39,723	79.4	1,176.5	18.6
blueback herring	96	0.1	4.3	0	blue mussel	nc	nc	945.1	15.0
rough scad	92	0.1	3.8	0	horseshoe crab	nc	nc	673.8	10.7
striped bass	78	0.1	198.7	1.7	spider crab	nc	nc	511.2	8.1
ocean pout	66	0.1	16.4	0.1	lady crab	nc	nc	428.0	6.8
cunner	64	0.1	6.1	0.1	rock crab	nc	nc	155.9	2.5
Atlantic sturgeon	60	0.1	633.6	5.3	flat claw hermit crab	nc	nc	45.7	0.7
winter skate	59	0.1	213.2	1.8	starfish spp.	nc	nc	37.4	0.6
spot	57	0.1	4.5	0	boring sponge	nc	nc	36.6	0.6
hogchoker	56	0.1	5.2	0	whelks	nc	nc	34.0	0.5
Atlantic silverside	54	0.1	1.0	0	mantis shrimp	nc	nc	31.6	0.5
northern puffer	23	0	0.4	0	lion's mane jellyfish	nc	nc	27.6	0.4
smallmouth flounder	23	0	2.1	0	bluecrab	nc	nc	20.0	0.3
Atlantic croaker	20	0	1.1	0	northern moon snail	nc	nc	8.9	0.1
black sea bass	16	0	5.0	0	common oyster	nc	nc	2.0	0
spiny dogfish	14	0	58.4	0.5	surf clam	nc	nc	1.0	0
Atlantic mackerel	11	0	0.9	0	hard clams	nc	nc	0.9	0
longhorn sculpin	11	0	3.2	0	purple sea urchin	nc	nc	0.7	0
planehead filefish	9	0	0.7	0	arks	nc	nc	0.7	0
hickory shad	9	0	4.1	0	mud crabs	nc	nc	0.4	0
northern pipefish	9	0	0.4	0	star coral	nc	nc	0.3	0
rainbow smelt	9	0	0.6	0	blood star	nc	nc	0.2	0
crevalle jack	5	0	0.4	0	common slipper shell	nc	nc	0.2	0
northern kingfish	5	0	0.6	0	sand shrimp	nc	nc	0.1	0
Atlantic tomcod	5	0	0.8	0	sand dollar	nc	nc	0.1	0
clearnose skate	4	0	7.7	0.1	northern red shrimp	nc	nc	0.1	0
white perch	4	0	0.3	0	polychaetes	nc	nc	0.1	0
conger eel	3	0	0.2	0	Total	50,029		6,313	

Appendix 5.4. 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	<u>Invertebrates</u>				
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 5.4. 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					
blueback herring	255	0.2	7.5	0.1	<u>Invertebrates</u>				
fourbeard rockling	169	0.1	14.7	0.1	American lobster	9,944	29.3	2,141.9	55.1
smooth dogfish	168	0.1	566.8	5.2	long-finned squid	23,974	70.7	796.4	20.5
striped bass	165	0.1	185.3	1.7	lady crab	nc	nc	535.0	13.8
summer flounder	121	0.1	79.6	0.7	horseshoe crab	nc	nc	116.8	3
American sand lance	95	0.1	0.4	0	spider crab	nc	nc	95.4	2.5
spotted hake	72	0.1	6.5	0.1	lion's mane jellyfish	nc	nc	78.3	2
tautog	61	0	95.1	0.9	rock crab	nc	nc	47.0	1.2
cunner	41	0	4.4	0	blue mussel	nc	nc	14.0	0.4
winter skate	41	0	89.2	0.8	flat claw hermit crab	nc	nc	12.8	0.3
Atlantic silverside	39	0	0.9	0	boring sponge	nc	nc	11.2	0.3
moonfish	33	0	2.1	0	whelks	nc	nc	10.8	0.3
yellow jack	32	0	2.1	0	mantis shrimp	nc	nc	8.1	0.2
ocean pout	30	0	6.5	0.1	bluecrab	nc	nc	6.0	0.2
northern kingfish	25	0	2.5	0	northern moon snail	nc	nc	5.8	0.1
smallmouth flounder	19	0	1.2	0	starfish spp.	nc	nc	4.7	0.1
hogchoker	17	0	1.7	0	arks	nc	nc	1.4	0
black sea bass	12	0	4.7	0	hard clams	nc	nc	0.7	0
hickory shad	6	0	2.5	0	purple sea urchin	nc	nc	0.7	0
Atlantic sturgeon	6	0	145.5	1.3	sand shrimp	nc	nc	0.4	0
longhorn sculpin	5	0	1.3	0	ghost shrimp	nc	nc	0.3	0
clearnose skate	4	0	11.0	0.1	mud crabs	nc	nc	0.2	0
goosefish	4	0	3.3	0	common razor clam	nc	nc	0.1	0
rainbow smelt	4	0	0.3	0	shore shrimp	nc	nc	0.1	0
Atlantic tomcod	4	0	0.8	0	Total	33,918		3,888	

Appendix 5.4. 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 5.4. 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	roughtail 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	0.3	16.5	0.0					
northern searobin	579	0.4	60.4	0.5	<u>Invertebrates</u>				
summer flounder	486	0.3	326.0	2.5	American lobster	16,467	55.3	3,800.9	64.6
striped bass	319	0.3	509.9	3.9	lady crab	nc	nc	592.5	10.1
moonfish	287	0.2	4.6	0	long-finned squid	13,048	43.8	515.2	8.8
fourbeard rockling	199	0.2	17.3	0.1	horseshoe crab	204	0.7	472.4	8.0
C	199	0.1	271.8	2.1				188.3	3.2
tautog	190 167	0.1	527.3	4.1	spider crab rock crab	nc	nc	94.1	1.6
smooth dogfish Atlantic menhaden		0.1	38.5	0.3		nc	nc	94.1 88.0	1.5
	116				lion's mane jellyfish	nc	nc		
spotted hake	77	0.1	19.0	0.1	bushy bryozoan	nc	nc	28.0	0.5
rough scad	65	0	2.0	0	flat claw hermit crab	nc	nc	21.7	0.4
smallmouth flounder	58	0	2.4	0	boring sponge	nc	nc	16.5	0.3
winter skate	48	0	109.7	0.8	whelks	22	0.1	14.8	0.3
cunner	43	0	4.1	0	bluecrab	33	0.1	13.6	0.2
hickory shad	25	0	9.1	0.1	mantis shrimp	nc	nc	9.3	0.2
black sea bass	22	0	10.5	0.1	starfish spp.	nc	nc	7.3	0.1
hogchoker	15	0	1.8	0	hard clams	nc	nc	3.8	0.1
ocean pout	15	0	4.8	0	blue mussel	nc	nc	3.5	0.1
grubby	11	0	0.7	0	northern moon snail	nc	nc	3.3	0.1
spot	10	0	1.1	0	northern comb jelly	nc	nc	2.0	0
Atlantic mackerel	8	0	1.7	0	arks	nc	nc	1.8	0
northern kingfish	7	0	0.9	0	common oyster	nc	nc	1.8	0
spiny dogfish	7	0	13.7	0.1	surf clam	nc	nc	0.9	0
Atlantic sturgeon	5	0	37.8	0.3	common slipper shell	nc	nc	0.7	0
clearnose skate	4	0	7.4	0.1	mud crabs	nc	nc	0.6	0
longhorn sculpin	4	0	0.8	0	sand shrimp	nc	nc	0.2	0
white perch	4	0	0.9	0	common razor clam	nc	nc	0.2	0
crevalle jack	3	0	0.6	0	blood star	nc	nc	0.1	0
sea raven	3	0	0.4	0	star coral	nc	nc	0.1	0
Atlantic silverside	2	0	0.1	0	northern red shrimp	nc	nc	0.1	0
goosefish	2	0	1.6	0	shore shrimp	nc	nc	0.1	0
inshore lizardfish	2	0	0.2	0	purple sea urchin	nc	nc	0.1	0
round scad	2	0	0.2	0	Total	29,774		5,882	

Appendix 5.4. 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	roughtail 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					
moonfish	1,188	0.6	13.4	0.1	<u>Invertebrates</u>				
American shad	901	0.4	60.2	0.4	American lobster	16,211	36.7	3,873.9	60.2
Atlantic herring	893	0.4	74.6	0.5	long-finned squid	27,443	62.1	767.0	11.9
alewife	456	0.2	35.1	0.2	horseshoe crab	303	0.7	489.4	7.6
summer flounder	436	0.2	431.3	2.9	blue mussel	nc	nc	309.0	4.8
striped bass	400	0.2	484.2	3.2	lady crab	nc	nc	291.2	4.5
northern searobin	360	0.2	39.4	0.3	rock crab	nc	nc	241.4	3.8
smooth dogfish	310	0.1	989.8	6.6	spider crab	nc	nc	157.2	2.4
Atlantic menhaden	306	0.1	9.2	0.1	lion's mane jellyfish	nc	nc	63.1	1.0
blueback herring	211	0.1	5.1	0	flat claw hermit crab	nc	nc	56.0	0.9
tautog	194	0.1	347.1	2.3	bushy bryozoan	nc	nc	55.6	0.9
spotted hake	142	0.1	12.2	0.1	boring sponge	nc	nc	24.9	0.4
fourbeard rockling	133	0.1	11.6	0.1	knobbed whelk	51	0.1	22.5	0.3
smallmouth flounder	97	0	6.4	0	starfish spp.	nc	nc	18.2	0.3
cunner	65	0	8.1	0.1	bluecrab	49	0.1	12.8	0.2
winter skate	62	0	180.7	1.2	channeled whelk	40	0.1	10.1	0.2
hickory shad	40	0	15.9	0.1	whelks	52	0.1	9.8	0.2
round herring	31	0	0.6	0	northern moon snail	nc	nc	8.6	0.1
sea raven	30	0	11.3	0.1	mantis shrimp	nc	nc	5.6	0.1
northern puffer	28	0	0.5	0	common oyster	nc	nc	5.4	0.1
clearnose skate	20	0	36.8	0.2	hard clams	nc	nc	3.7	0.1
black sea bass	18	0	10.6	0.1	arks	nc	nc	2.0	0
spiny dogfish	18	0	44.5	0.3	red bearded sponge	nc	nc	1.4	0
Atlantic sturgeon	17	0	189.7	1.3	surf clam	nc	nc	1.1	0
northern kingfish	15	0	1.3	0	sea grape	nc	nc	0.8	0
Atlantic mackerel	13	0	1.1	0	mud crabs	nc	nc	0.7	0
ocean pout	13	0	2.7	0	boreal squid	18	0	0.7	0
hogchoker	12	0	1.9	0	purple sea urchin	nc	nc	0.6	0
haddock	7	0	0.5	0	common slipper shell	nc	nc	0.5	0
yellow jack	6	0	0.7	0	star coral	nc	nc	0.4	0
grubby	5	0	0.3	0	moon jelly	nc	nc	0.2	0
round scad	4	0	0.3	0	ghost shrimp	nc	nc	0.1	0
American sand lance	4	0	0.3	0	Total	44,167	-10	6,434	

Appendix 5.4. 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		,		<u></u>	
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 5.4. 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	<u>Invertebrates</u>				
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 5.4. 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	roughtail 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	Finfish not ranked				
alewife	638	0.4	41.7	0.2	American sand lance, you	v			
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	<i>U.</i> <b>J</b>				
bay anchovy	443	0.3	3.6	0	Invertebrates				
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	0.1	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	0.7	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	0.7	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	0.0	mantis shrimp	304	1.9	16.5	0.4
Atlantic sturgeon	18	0	270.6	1.4	bluecrab	38	0.2	6.2	0.4
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	0.1
fawn cusk-eel	4	0	0.2	0	fan worm tubes			1.0	0
northern pipefish	4	0	0.2	0	purple sea urchin	nc	nc	0.8	0
American sand lance	4	0	0.3	0	moon jelly	nc	nc	0.8	0
seasnail	4	0	0.3	0	ghost shrimp	nc	nc	0.4	0
	3	0	0.3		bobtail squid	nc 1	nc 0	0.3	
yellow jack conger eel	2	0	0.3	0	•			0.1	0
C				0	common razor clam	nc	nc		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	<u>Total</u>	16,043		3,907	

Appendix 5.4. 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	roughtail 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					
red hake	2,103	1.0	206.6	0.7	Finfish not ranked				
silver hake	2,013	0.9	89.6	0.3	anchovy spp, yoy				
windowpane flounder	1,991	0.9	343.3	1.1	Atlantic herring, yoy				
fourspot flounder	1,859	0.9	326.9	1.1	C/ 7 7				
summer flounder	1,356	0.6	989.3	3.3					
smooth dogfish	1,019	0.5	2,814.3	9.4	Invertebrates				
bay anchovy	992	0.5	6.6	0	blue mussel	nc	nc	2,497.8	43.9
alewife	855	0.4	70.2	0.2	American lobster	3,880	29.7	1,005.7	17.7
spotted hake	798	0.4	48.2	0.2	horseshoe crab	517	4.0	862.9	15.2
American shad	593	0.3	40.3	0.1	spider crab	nc	nc	348.4	6.1
tautog	565	0.3	921.1	3.1	long-finned squid	8,034	61.5	279.9	4.9
striped bass	469	0.2	855.2	2.8	lady crab	nc	nc	117.0	2.1
moonfish	424	0.2	7.4	0	starfish spp.	nc	nc	91.8	1.6
black sea bass	394	0.2	188.3	0.6	bushy bryozoan	nc	nc	85.0	1.5
Atlantic menhaden	366	0.2	96.3	0.3	boring sponge	nc	nc	83.9	1.5
Atlantic herring	365	0.2	63.9	0.3	rock crab	nc	nc	74.6	1.3
smallmouth flounder	139	0.2	4.9	0.2	flat claw hermit crab	36	0.3	55.8	1.0
fourbeard rockling	106	0.1	9.7	0	channeled whelk	174	1.3	43.6	0.8
hogchoker	100	0	13.3	0	northern moon snail			40.3	0.7
blueback herring	68	0	2.4	0	knobbed whelk	nc 40	nc 0.3	40.3 19.1	0.7
•	59	0	107.3	0.4		84	0.5	16.1	0.3
clearnose skate	55		7.2	0.4	bluecrab			12.3	0.3
cunner		0			lion's mane jellyfish	71	0.5		
spot	52	0	7.2	0	mantis shrimp	226	1.7	11.2	0.2
hickory shad	45	0	19.6	0.1	arks	nc	nc	7.8	0.1
winter skate	45	0	133.5	0.4	common slipper shell	nc	nc	7.3	0.1
Atlantic sturgeon	18	0	275.3	0.9	hydroid spp.	nc	nc	7.3	0.1
spiny dogfish	17	0	48.0	0.2	sea grape	nc	nc	5.3	0.1
ocean pout	13	0	4.3	0	hard clams	3	0	5.2	0.1
yellow jack	13	0	1.4	0	mud crabs	nc	nc	4.7	0.1
sea raven	11	0	4.1	0	purple sea urchin	nc	nc	2.3	0
rough scad	10	0	0.7	0	sand shrimp	nc	nc	1.6	0
oyster toadfish	8	0	4.7	0	rubbery bryzoan	nc	nc	1.0	0
northern puffer	6	0	0.3	0	surf clam	nc	nc	1.0	0
Atlantic mackerel	5	0	2.5	0	deadman's fingers sponge	nc	nc	0.5	0
short bigeye	5	0	0.2	0	blood star	nc	nc	0.4	0
goosefish	3	0	0.6	0	common oyster	nc	nc	0.4	0
American sand lance	3	0	0.1	0	mixed sponge species	nc	nc	0.4	0
longhorn sculpin	3	0	0.9	0	northern red shrimp	nc	nc	0.3	0
northern sennet	2	0	0.2	0	anemones	nc	nc	0.1	0
northern pipefish	2	0	0.2	0	bobtail squid	1	0	0.1	0
Atlantic bonito	1	0	2.4	0	ghost shrimp	nc	nc	0.1	0
crevalle jack	1	0	0.1	0	ribbed mussel	nc	nc	0.1	0
gizzard shad	1	0	0.1	0	sea cucumber	1	0	0.1	0
grubby	1	0	0.1	0	Total	13,067		5,691	

Appendix 5.4. 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					
red hake	681	0.9	31.1	0.2	<u>Invertebrates</u>				
alewife	608	0.8	49.4	0.3	Horseshoe crab	399	1.7	670.5	23.2
smooth dogfish	552	0.7	1,508.8	10.5	spider crab	nc	nc	640.6	22.2
spotted hake	527	0.7	41.6	0.3	American lobster	1,958	8.3	479.7	16.6
Atlantic herring	448	0.6	87.8	0.6	long-finned squid	19,231	81.9	421.3	14.6
American shad	305	0.4	23.5	0.2	boring sponge	nc	nc	107.5	3.7
silver hake	217	0.3	8.3	0.1	rock crab	nc	nc	80.9	2.8
striped bass	215	0.3	542.1	3.8	starfish spp.	nc	nc	73.7	2.6
tautog	210	0.3	325.4	2.3	flat claw hermit crab	nc	nc	61.3	2.1
Atlantic menhaden	121	0.2	16.1	0.1	channeled whelk	334	1.4	58.8	2.0
fourbeard rockling	111	0.1	9.0	0.1	bushy bryozoan	nc	nc	54.3	1.9
blueback herring	98	0.1	3.4	0	lion's mane jellyfish	1,307	5.6	40.6	1.4
moonfish	97	0.1	1.3	0	knobbed whelk	96	0.4	35.1	1.2
hogchoker	89	0.1	8.3	0.1	sea grape	nc	nc	31.1	1.1
black sea bass	57	0.1	45.7	0.3	northern moon snail	nc	nc	20.9	0.7
Atlantic cod	57	0.1	2.7	0	blue mussel	nc	nc	19.7	0.7
clearnose skate	55	0.1	105.9	0.7	common slipper shell	nc	nc	16.8	0.6
smallmouth flounder	38	0.1	2.4	0	lady crab	nc	nc	12.0	0.4
winter skate	38	0.1	90.6	0.6	hydroid spp.	nc	nc	9.6	0.3
cunner	36	0	5.9	0	ribbed mussel	nc	nc	8.8	0.3
haddock	26	0	1.3	0	sand shrimp	nc	nc	6.8	0.2
Atlantic sturgeon	23	0	391.9	2.7	arks	nc	nc	6.5	0.2
hickory shad	22	0	10.3	0.1	mud crabs	nc	nc	6.5	0.2
American sand lance	19	0	0.2	0	rubbery bryzoan	nc	nc	6.0	0.2
ocean pout	14	0	2.9	0	mantis shrimp	110	0.5	4.9	0.2
rough scad	12	0	0.5	0	bluecrab	24	0.1	4.3	0.1
oyster toadfish	9	0	5.0	0	hard clams	nc	nc	3.9	0.1
spiny dogfish	7	0	34.8	0.2	star coral	nc	nc	1.9	0.1
rock gunnel	6	0	0.4	0	coastal mud shrimp	4	0	0.7	0
round scad	4	0	0.3	0	purple sea urchin	nc	nc	0.6	0
glasseye snapper	3	0	0.1	0	blood star	nc	nc	0.4	0
conger eel	3	0	1.1	0	northern red shrimp	2	0	0.4	0
Atlantic mackerel	3	0	0.3	0	Japanese shore crab	4	0	0.3	0
crevalle jack	2	0	0.2	0	anemones	nc	nc	0.1	0
northern pipefish	2	0	0.2	0	sand dollar	1	0	0.1	0
northern puffer	2	0	0.2	0	common razor clam	1	0	0.1	0
longhorn sculpin	2	0	0.9	0	moon jelly	nc	nc	0.1	0
sea raven	2	0	1.3	0	northern cyclocardia	nc	nc	0.1	0
striped anchovy	2	0	0.1	0	mixed sponge species	nc	nc	0.1	0
Atlantic silverside	1	0	0.1	0	Total	23,471		2,887	

Appendix 5.4. 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	roughtail 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	Finfish not ranked				
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	<i>5.1.1</i>				
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	0.0	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	0.3	0	rubbery bryzoan	nc	nc	0.3	0
longhorn sculpin	5	0	3.4	0	star coral	nc	nc	0.4	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	0.3	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 2	0	0.1	0
white perch	2	0	0.5	0	Total	26,603		3,309.4	

Appendix 5.4. 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	2, 3, 3				
red hake	585	0.3	56.0	0.4	<u>Invertebrates</u>				
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 bryzoan	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			1.1	0.1
Atlantic sturgeon	9	0	152.7	1.2	purple sea urchin	nc	nc	0.7	0
northern sennet	8	0	0.7	0	bluecrab	nc 3	nc 0	0.7	0
American sand lance	6	0	0.7	0	mixed sponge species			0.0	0
	5	0	0.2	0	surf clam	nc	nc	0.4	0
northern puffer						nc	nc		
northern kingfish	4	0	0.6 0.3	0	star coral sand dollar	nc 1	nc 0	0.3 0.2	0
northern pipefish	4					1			
ocean pout	3	0	0.7	0	northern red shrimp	nc 1	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 5.4. 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	Finfish not ranked				
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	0.2	19.1	0.2	lady crab			7.5	0.3
American shad	68	0.1	6.1	0.2	deadman's fingers sponge	nc	nc	6.8	0.7
		0.1	10.3			nc	nc		0.7
Atlantic herring	66 63		2.5	0.1	hydroid spp. flat claw hermit crab	nc	nc	5.9 5.7	
blueback herring		0.1				nc	nc		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 bryzoan	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 5.4. 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	Finfish not ranked				
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	0.2	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	0.1	starfish spp.			20.4	0.8
clearnose skate	97	0.1	193.3	1.1		nc	nc	20.3 17.7	0.8
	97 87	0.1		0	boring sponge blue crab	nc	nc 0.2	17.7	0.7
fourbeard rockling	78	0	7.6 11.4	0.1		68 264	1.0	12.1	0.5
hogchoker smallmouth flounder	78 48		2.6	0.1	mantis shrimp	264			0.5
		0			deadman's fingers sponge	nc	nc	11.5	
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 bryzoan	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
<u></u>	177,841		17,540.3		Total	27,441	~	2,512.7	

Appendix 5.4. 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.

alewife 931 0.7 51.1 0.4 long-finned squid 10,490 80.5 330.1	species	count	%	weight	%	species	count	%	weight	%
American sand lance	scup	53,560	38	6,509.9	45.7	sea lamprey	1	0	0.8	0
silver hake	butterfish	48,766	34.6	1,442.0	10.1	striped anchovy	1	0	0.1	0
winter flounder	American sand lance	7,495	5.3	7.2	0.1	Total	140,777		14,239.8	
weakfish 2,531 1.8 116.1 0.8 Atlantic herring, yoy weakfish 1,699 1.2 641.4 4.5    spyanchovy 1,128 0.8 7.7 0.1 brossphoe crab 289 2.2 496.8 alewife    splengthy 1,128 0.8 7.7 0.1 brossphoe crab 289 2.2 496.8 alewife    spotted hake 1,267 0.9 65.8 0.5 Invertebrates    bay anchovy 1,128 0.8 7.7 0.1 brossphoe crab 289 2.2 496.8 alewife    spotted hake 1,267 0.9 65.8 0.5 Invertebrates    bay anchovy 1,128 0.8 7.7 0.1 brossphoe crab 289 2.2 496.8 alewife    spotted hake 1,267 0.9 6.5 8.8 0.5 Invertebrates    bay anchovy 1,128 0.8 7.7 0.1 brossphoe crab 289 2.2 496.8 alewife    spotted hake 1,267 0.9 6.5 8.8 0.5 Invertebrates    bay anchovy 1,128 0.8 7.7 0.1 brossphoe crab 289 2.2 496.8 alewife    spott of lounder 902 0.6 186.3 1.3 American lobster 1,096 8.4 314,1 northern searobin 809 0.6 58.8 0.4 spider crab ne ne ne 145.8 moonfish 689 0.5 13.4 0.1 rock crab ne ne ne 64.0 interest    striped searobin 612 0.4 263.0 1.8 lady crab ne ne ne 24.2 striped searobin 612 0.4 263.0 1.8 lady crab ne ne ne 24.4 striped searobin 612 0.4 263.0 1.8 lady crab ne ne ne 22.1 American shad 405 0.3 20.2 0.1 boring sponge ne ne ne 32.1 American shad 405 0.3 52.1 0.4 channeted whelk 177 1.4 29.3 smooth dogfish 328 0.2 1,134.2 8.0 mixed sponge species ne ne ne 22.8 starfish spp. ne ne ne 22.8 starting the starting spot    striped bass 199 0.1 456.3 3.2 flat claw hermit crab ne ne ne 24.6 striped bass 199 0.1 456.3 3.2 flat claw hermit crab ne ne ne 24.6 striped bass 122 0.1 29.8 0.2 libros mane jellyfish 520 4 14.3 smallmouth flounder 89 0.1 3.2 0 mantis shrimp 244 1.9 9.1 fourbeard rockling 81 0.1 7.1 0 sea grape ne ne ne 6.6 blueback herring 74 0.1 3.2 0 mantis shrimp 244 1.9 9.1 fourbeard rockling 81 0.1 7.1 0 sea grape ne ne ne 5.8 hogehoker 38 0.5 6 0 northern moon shall 1 0 0 5.6 clearnose skate 37 0 78.1 0.5 sand shrimp ne ne ne 2.0 sand shrimp ne ne ne 0.5 8.8 hogehoker 1 0 0 0.1 100 graphs saruching 15 0.1 0.9 propies aurchin 15 0.1 0.9 refeater blenny 4 0 0.2 0 northern moon shall 1 0 0 0.1 0.9 propies aurchin ne ne ne 0.2 2 p	silver hake	6,587	4.7	208.5	1.5					
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           bag anchovy         1,128         0.8         7.7         0.1         horsesshoe crab         289         2.2         496.8           alewife         931         0.7         51.1         0.4         long-finned squid         10,490         80.5         330.1           fourspot flounder         902         0.6         186.3         1.3         American lobster         1,096         8.4         314.1           monorifish         689         0.5         13.4         0.1         rock crab         nc         nc         64.0           striped searobin         612         0.4         263.0         1.8         lady crab         nc         nc         64.0           striped searobin         612         0.4         263.0         1.8         lady crab         nc         nc         76.2	winter flounder	4,973	3.5	751.9	5.3	Finfish not ranked				
red hake 1,723 1.2 141.3 1.0 American sand lance (yoy) bluefish 1,699 1.2 641.4 4.5 bay anchovy 1,128 0.8 7.7 0.1 horseshoc crab 289 2.2 496.8 alewife 931 0.7 51.1 0.4 long-finned squid 10,490 80.5 330.1 fourspot flounder 902 0.6 186.3 1.3 American lobster 1,096 8.4 314.1 northern searobin 809 0.6 58.8 0.4 spider crab nc nc 145.8 moonfish 689 0.5 13.4 0.1 rock crab nc nc nc 64.0 little skate 682 0.5 327.4 2.3 bushy bryozoan nc nc nc 64.0 little skate 682 0.5 327.4 2.3 bushy bryozoan nc nc nc 36.3 striped searobin 612 0.4 263.0 1.8 lady crab nc nc nc 36.3 summer flounder 477 0.3 398.0 2.8 staffish spp. nc nc 32.1 American shad 405 0.3 20.2 0.1 boring sponge nc nc nc 30.1 Atlantic herring 356 0.3 52.1 0.4 channeled whelk 177 1.4 29.3 smooth dogfish 328 0.2 1,134.2 8.0 mixed sponge species nc nc 27.8 spot 308 0.2 21.3 0.1 hydroid spp. nc nc 22.8 statutog 179 0.1 309.4 2.2 common slipper shell nc nc 22.8 tautog 179 0.1 309.4 2.2 common slipper shell nc nc 22.8 tautog 179 0.1 309.4 2.2 common slipper shell nc nc 15.7 fourbeard rockling 81 0.1 7.1 0 sea garge nc nc nc 6.6 blueback herring 74 0.1 3.2 0 mants shrimp 244 1.9 9.1 fourbeard rockling 81 0.1 7.1 0 sea garge nc nc nc 6.6 blueback herring 74 0.1 3.2 0 mants shrimp 1.4 1.0 5.6 clearnose skate 37 0 78.1 0.5 sand shrimp nc nc nc 8.8 hogelofish 35 0 127.7 0.9 blue crab nc nc 6.6 blueback herring 74 0.1 3.2 0 mants shrimp nc nc nc 6.6 clearnose skate 37 0 78.1 0.5 sand shrimp nc nc nc 6.8 hogelofish 35 0 127.7 0.9 blue crab nc nc nc 3.5 inshore lizardish 10 0 0.5 0 nuber by bryozoan nc nc nc 6.0 hogelofish 35 0 127.7 0.9 blue crab nc nc nc 3.5 inshore lizardish 10 0 0.4 0.0 under crab nc nc nc 3.5 inshore lizardish 10 0 0.5 0 nuber by bryozoan nc nc nc 0.4 Atlantic renhaden 47 0 10.1 0 deadman's fingers sponge nc nc nc 0.4 Atlantic surgeon 7 0 111.3 0.8 hard clarms nc nc nc 3.5 inshore lizardish 3 0 0.4 0 under crab nc nc nc 0.6 northern kingfish 3 0 0.4 0 0.0 under clarb nc nc nc 0.3 longhorm sculpin 2 0 0.2 0 0.0 northern red shrimp 2 1 0.0 0.4 Atlantic silversi	windowpane flounder	3,511	2.5	524.0	3.7	anchovy spp, yoy				
bluefish 1,699 1.2 641.4 4.5 spotted hake 1,267 0.9 65.8 0.5 Invertebrates busy anchovy 1,128 0.8 7.7 0.1 horseshoe crab 289 2.2 496.8 alewife 931 0.7 51.1 0.4 long-finned squid 10,490 80.5 330.1 foursport flounder 902 0.6 186.3 1.3 American lobster 1,096 8.4 314.1 northern searchin 809 0.6 58.8 0.4 spider crab ne ne 145.8 moonfish 689 0.5 327.4 2.3 bushy bryozoan ne ne 64.0 title skate 682 0.5 327.4 2.3 bushy bryozoan ne ne 36.3 summer flounder 477 0.3 398.0 2.8 starfish spp. ne ne ne 32.1 American shad 405 0.3 520.2 0.1 boring sponge ne ne ne 32.1 American shad 405 0.3 52.1 0.4 channeled whelk 177 1.4 29.3 smooth dogfish 328 0.2 1,134.2 8.0 mixed sponge species ne ne 27.8 spot 308 0.2 2.1 3 0.1 hydroid spp. ne ne ne 22.8 striped bass 199 0.1 456.3 3.2 flat claw hermit crab ne ne 22.8 straiged base bass 122 0.1 29.8 0.2 lion's mane jellyfish 520 4 14.3 smallmouth flounder 89 0.1 3.2 0 mantis shrimp 244 1.9 9.1 fourbeard rockling 81 0.1 7.1 0 sea grape ne ne ne 5.8 hogehoker 38 0.5 1.3 4.0 mantis shrimp ne ne ne 5.8 hogehoker 38 0.5 1.0 4 lada shrimp ne ne ne 5.8 hogehoker 38 0.5 0.3 0.2 1 lon's mane jellyfish 520 4 14.3 smallmouth flounder 69 0.1 3.2 0 arks 124 1 6.1 winter skate 51 0.140.8 1.0 knobbed whelk 17 0.1 5.9 though should supply on the skate 37 0.78.1 0.5 sand shrimp ne ne ne 0.5 8. hogehoker 38 0.5 0.0 northern moon smail 1 0 0.5 6 clearnose skate 37 0.78.1 0.5 sand shrimp ne ne ne 0.3 1.5 hogehoker 4 0.0 1.1 0.0 purple sea urchin 15 0.1 0.9 feather brenon 44 0.0 0.1 0.0 deadman's fingers sponge ne ne ne 0.3 1.0 hydroid supply shad 50 0.1 1.1 0.0 purple sea urchin 15 0.1 0.0 0.1 purple sea urchin 15 0.1 0.0 0.	weakfish	2,531	1.8	116.1	0.8	Atlantic herring, yoy				
bluefish	red hake	1,723	1.2	141.3	1.0	American sand lance (yoy)				
Day anchovy	bluefish	1,699	1.2	641.4	4.5	<b>,</b>				
alewife 931 0.7 51.1 0.4 long-finned squid 10,490 80.5 330.1 fourspot flounder 902 0.6 186.3 1.3 American lobster 1.096 8.4 314.1 northern searobin 809 0.6 58.8 0.4 spider rab nc nc nc 145.8 moonfish 689 0.5 13.4 0.1 rock crab nc nc nc 64.0 little skate 682 0.5 327.4 2.3 bushy bryozoan nc nc nc 54.2 striped searobin 612 0.4 263.0 1.8 lady crab nc nc nc 36.3 summer flounder 477 0.3 398.0 2.8 starfish spp. nc nc nc 36.3 summer flounder 477 0.3 398.0 2.8 starfish spp. nc nc nc 32.1 American shad 405 0.3 20.2 0.1 boring sponge nc nc nc 30.1 Atlantic herring 356 0.3 52.1 0.4 channeled whelk 177 1.4 29.3 smooth dogfish 328 0.2 1.134.2 8.0 mixed sponge species nc nc 27.8 spot 308 0.2 21.3 0.1 hydroid spp. nc nc nc 24.6 striped bass 199 0.1 456.3 3.2 flat claw hermit crab nc nc nc 22.8 tautog 179 0.1 309.4 2.2 common slipper shell nc nc nc 15.7 black sea bas 122 0.1 29.8 0.2 lion's mane jellyfish 520 4 14.3 smallmouth flounder 89 0.1 3.2 0 manis shrimp 244 1.9 9.1 fourbeard rockling 81 0.1 7.1 0 sea grape nc nc nc 6.6 blueback herring 74 0.1 3.2 0 arks 124 1 6.1 blueback herring 74 0.1 3.2 0 manis shrimp 244 1.9 9.1 fourbeard rockling 81 0.1 7.1 0 sea grape nc nc nc 5.8 hogehoker 38 0.5 5.6 0 northern moon snail 1 0 5.6 lotaennose skate 37 0 10.4 0.1 blue mussel nc nc nc 5.8 hogehoker 38 0.5 5.6 0 northern moon snail 1 0 5.6 lotaennose skate 37 0 78.1 0.5 sand shrimp nc nc nc 0.3 1.3 lotaennose skate 37 0 78.1 0.5 sand shrimp nc nc nc 0.3 1.0 sea grape nc nc nc 0.3 1.0 spiny dogfish 35 0 127.7 0.9 blue crab 16 0.1 3.8 urner 2.2 0.0 0.2 0 northern moon snail 1 0 0.5 0 0.1 1.3 0 0.0 0 0.1 1.3 0 0.0 0 0.1 0.1	spotted hake	1,267	0.9	65.8	0.5	<u>Invertebrates</u>				
Fourspot flounder   902	bay anchovy	1,128	0.8	7.7	0.1	horseshoe crab	289	2.2	496.8	29.2
northern searobin         809         0.6         58.8         0.4         spider crab         nc         nc         nc         145.8           moonfish         689         0.5         13.4         0.1         rock crab         nc         nc         nc         64.0           little skate         682         0.5         327.4         2.3         busbly byzozoan         nc         nc         54.2           striped searobin         612         0.4         263.0         1.8         lady crab         nc         nc         36.3           summer flounder         477         0.3         398.0         2.8         stafrish spp.         nc         nc         nc         32.1           Allantic herring         356         0.3         52.1         0.4         channeled whelk         177         1.4         29.3           smooth dogfish         328         0.2         1134.2         8.0         mixed sponge species         nc         nc         27.8           spot         338         0.2         21.34.2         8.0         mixed sponge species         nc         nc         22.8           statutog         179         0.1         309.4         2.2         common sli	alewife	931	0.7	51.1	0.4	long-finned squid	10,490	80.5	330.1	19.4
moonfish         689         0.5         13.4         0.1         rock crab         nc         nc         64.0           little skate         682         0.5         327.4         2.3         bushy bryozoan         nc         nc         54.2           striped searobin         612         0.4         263.0         1.8         lady crab         nc         nc         36.3           summer flounder         477         0.3         398.0         2.8         starfish spp.         nc         nc         30.1           Atlantic herring         356         0.3         52.1         0.4         channeled whelk         177         1.4         29.3           smooth dogfish         328         0.2         1,134.2         8.0         mixed sponge species         nc         nc         nc         27.8           spot         308         0.2         21.3         0.1         hydroid spp.         nc         nc         nc         22.8           striped bass         199         0.1         350.3         2.2         common slipper shell         nc         nc         nc         22.8           striped bass         199         0.1         350.3         2.2         lins man jell	fourspot flounder	902	0.6	186.3	1.3	•	1,096	8.4	314.1	18.5
little skate         682         0.5         327.4         2.3         bushy bryozoan         nc         nc         54.2           striped searobin         612         0.4         263.0         1.8         lady crab         nc         nc         36.3           summer flounder         477         0.3         398.0         2.8         starfish spp.         nc         nc         32.1           American shad         405         0.3         20.2         0.1         boring sponge         nc         nc         nc         30.1           Atlantic herring         356         0.3         52.1         0.4         channeled whelk         177         1.4         29.3           spot         308         0.2         21.134.2         8.0         mixed sponge species         nc         nc         27.8           spot         308         0.2         21.3         0.1         hydroid spp.         nc         nc         22.8           striped bass         199         0.1         456.3         3.2         0.1         hydroid spp.         nc         nc         22.8           statutog         179         0.1         360.3         2.2         common slipper shell         nc <td></td> <td>809</td> <td>0.6</td> <td>58.8</td> <td>0.4</td> <td>spider crab</td> <td>nc</td> <td>nc</td> <td>145.8</td> <td>8.6</td>		809	0.6	58.8	0.4	spider crab	nc	nc	145.8	8.6
little skate         682         0.5         327.4         2.3         bushy bryozoan         nc         nc         54.2           striped searobin         612         0.4         263.0         1.8         lady crab         nc         nc         36.3           summer flounder         477         0.3         398.0         2.8         starfish spp.         nc         nc         32.1           American shad         405         0.3         20.2         0.1         boring sponge         nc         nc         nc         30.1           Atlantic herring         356         0.3         52.1         0.4         channeled whelk         177         1.4         29.3           spot         308         0.2         21.13.4         0.1         hydroid spp.         nc         nc         22.6           striped bass         199         0.1         456.3         3.2         0.1         hydroid spp.         nc         nc         c         22.8           striped bass         199         0.1         456.3         3.2         0.2         lion's mane jellyfish         50         4         14.3           stautous         179         0.1         3.2         0	moonfish	689	0.5	13.4	0.1	rock crab	nc	nc	64.0	3.8
striped searobin 612 0.4 263.0 1.8 lady crab nc nc 36.3 summer flounder 477 0.3 398.0 2.8 starfish spp. nc nc nc 32.1 Adancican shad 405 0.3 20.2 0.1 boring sponge nc nc nc 32.1 Adantic herring 356 0.3 52.1 0.4 channeled whelk 177 1.4 29.3 smooth dogfish 328 0.2 1.134.2 8.0 mixed sponge species nc nc 27.8 spot 308 0.2 21.3 0.1 hydroid spp. nc nc nc 24.6 striped bass 199 0.1 456.3 3.2 flat claw hermit crab nc nc c 22.8 tautog 179 0.1 309.4 2.2 common slipper shell nc nc nc 15.7 black sea bass 122 0.1 29.8 0.2 lion's mane jellyfish 520 4 14.3 smallmouth flounder 89 0.1 3.2 0 mantis shrimp 244 1.9 9.1 fourbeard rockling 81 0.1 7.1 0 sea grape nc nc nc 6.6 blueback herring 74 0.1 3.2 0 arks 124 1 6.1 winter skate 51 0 140.8 1.0 knobbed whelk 177 0.1 5.9 Adantic menhaden 47 0 10.4 0.1 blue mussel nc nc nc 5.8 hogehoker 38 0 5.6 0 northern moon snail 1 0 5.6 clearnose skate 37 0 78.1 0.5 sand shrimp nc nc nc 3.5 inshore lizardfish 10 0 0.5 0 rudbery bryzoan nc nc nc 3.5 inshore lizardfish 10 0 0.5 0 rudbery bryzoan nc nc nc 3.5 inshore lizardfish 10 0 0.5 0 rudbery bryzoan nc nc nc 3.1 cocean pout 9 0 2.1 0 common oyster 1 0 2.1 Adantic sturgeon 7 0 111.3 0.8 hard clams 8 0.1 1.4 hickory shad 5 0 1.1 0 purple sea urchin 15 0.1 0.9 feather blenny 4 0 0.2 0 northern kingfish 3 0 0.4 0 surf clams 9 0.1 1.4 hickory shad 5 0 1.1 0 purple sea urchin 15 0.1 0.9 feather blenny 4 0 0.2 0 star coral nc nc nc 0.4 Adantic sturgeon 7 0 111.3 0.8 hard clams 8 0.1 1.4 hickory shad 5 0 0.1 1.0 deadman's fingers sponge nc nc nc 0.6 northern kingfish 3 0 0.4 0 surf clam 9 0.1 0.6 oxposter toadfish 1 0 0.1 0 deadman's fingers sponge nc nc nc 0.3 longhorn sculpin 2 0 0.2 0 star coral nc nc nc 0.3 longhorn sculpin 2 0 0.2 0 star coral nc nc nc 0.3 longhorn sculpin 2 0 0.2 0 star coral nc nc nc 0.3 longhorn sculpin 2 0 0.2 0 star coral nc nc nc 0.3 longhorn sculpin 2 0 0.4 0 tunicates, misc nc nc nc 0.3 longhore scape nc nc nc 0.4 planeteed filefish 1 0 0.1 0 or noon jelly 1 0 0.1 0.1 nc noon jelly 1 0 0.1	little skate	682	0.5	327.4			nc	nc	54.2	3.2
summer flounder	striped searobin	612	0.4	263.0	1.8	• •	nc	nc	36.3	2.1
American shad         405         0.3         20.2         0.1         boring sponge         nc         nc         30.1           Atlantic herring         356         0.3         52.1         0.4         channeled whelk         177         1.4         29.3           smooth dogfish         328         0.2         1,134.2         8.0         mixed sponge species         nc         nc         27.8           spot         308         0.2         21.3         0.1         hydroid spp.         nc         nc         24.6           striped bass         199         0.1         456.3         3.2         flat claw hermit crab         nc         nc         nc         nc         24.6           black sea bass         122         0.1         30.4         2.2         common slipper shell         nc         nc         nc         nc         15.7         15.7         15.7         14.3         35.0         4         14.3         33.0         4         14.3         33.0         4         14.3         33.0         4         14.3         33.0         4         14.3         33.0         4         14.3         33.0         4         14.1         14.3         34.1         34.1         <	summer flounder	477	0.3	398.0	2.8	•	nc	nc	32.1	1.9
Atlantic herring 356 0.3 52.1 0.4 channeled whelk 177 1.4 29.3 smooth dogfish 328 0.2 1,134.2 8.0 mixed sponge species nc nc nc 27.8 spot 308 0.2 21.3 0.1 hydroid spp. nc nc nc 24.6 striped bass 199 0.1 456.3 3.2 flat claw hermit crab nc nc nc 22.8 tautog 179 0.1 309.4 2.2 common slipper shell nc nc nc 15.7 black sea bass 122 0.1 29.8 0.2 lion's mane jellyfish 520 4 14.3 smallmouth flounder 89 0.1 3.2 0 mantis shrimp 244 1.9 9.1 fourheard rockling 81 0.1 7.1 0 sea grape nc nc nc 6.6 blueback herring 74 0.1 3.2 0 arks 124 1 6.1 winter skate 51 0 140.8 1.0 knobbed whelk 17 0.1 5.9 Atlantic menhaden 47 0 10.4 0.1 blue mussel nc nc nc 5.8 hogehoker 38 0 5.6 0 northern moon snail 1 0 5.6 clearnose skate 37 0 78.1 0.5 sand shrimp nc nc nc 3.5 clearnose skate 37 0 78.1 0.5 sand shrimp nc nc nc 3.5 inshore lizardfish 10 0 0.5 0 rubbery bryzoan nc nc nc 3.1 ocean pout 9 0 2.1 0 common oyster 1 0 2.1 Atlantic sturgeon 7 0 111.3 0.8 hard clams 8 0.1 1.4 Atlantic sturgeon 7 0 111.3 0.8 hard clams 8 0.1 1.4 hickory shad 5 0 1.1 0 purple sea urchin 15 0.1 0.4 Atlantic silvereid 2 0 0.2 0 sarf clams 9 0.1 10.4 Other northern kingfish 3 0 0.4 0 surf clams 9 0.1 10.4 Other northern kingfish 3 0 0.4 0 surf clams 9 0.1 0.4 Other northern kingfish 3 0 0.4 0 surf clams 9 0.1 0.6 Oystet toadfish 1 0 0.2 0 sarf clams 1 0 0.4 Other northern kingfish 3 0 0.4 0 surf clam 9 0.1 0.6 Oystet toadfish 1 0 0.1 0 deadman's fingers sponge nc nc nc 0.4 Atlantic silverside 2 0 0.2 0 star coral nc nc nc 0.3 Atlantic silverside 2 0 0.2 0 star coral nc nc nc 0.3 Inglanetaed filefish 1 0 0.1 0 coastal mud shrimp 1 0 0.1 pulp lease urchin 1.5 0.1 0.5 planehead filefish 1 0 0.1 0 green crab 1 0 0.1 planehead filefish 1 0 0.1 orthern leads and non-leily 1 0 0.1 planehead filefish 1 0 0.1 orthern leads and non-leily 1 0 0.1 planehead filefish 1 0 0.1 orthern leads and non-leily 1 0 0.1 planehead filefish 1 0 0.1 orthern leads and non-leily 1 0 0.1 orthern leads and non-leily 1 0 0.1 orthernesh planehead filefish 1 0 0.1 orthernesh planehead filefish 1 0						**				1.8
smooth dogfish         328         0.2         1,134.2         8.0         mixed sponge species         nc         nc         27.8           spot         308         0.2         21.3         0.1         hydroid spp.         nc         nc         24.6           striped bass         199         0.1         456.3         3.2         flat claw hermit crab         nc         nc         nc         22.8           tatutog         179         0.1         309.4         2.2         common slipper shell         nc         nc         nc         15.7           black sea bass         122         0.1         39.9         0.2         lion's mane jellyfish         520         4         14.3           smallmouth flounder         89         0.1         3.2         0         mantis shrimp         244         1.9         9.1           fourbeard rockling         81         0.1         7.1         0         sea grape         nc         nc         6.6           blueback herring         74         0.1         3.2         0         arks         124         1         6.1           winter skate         51         0         140.8         1.0         knobbed whelk         17										1.7
spot         308         0.2         21.3         0.1         hydroid spp.         nc         nc         24.6           striped bass         199         0.1         456.3         3.2         flat claw hermit crab         nc         nc         22.8           tautog         179         0.1         309.4         2.2         common slipper shell         nc         nc         15.7           black sea bass         122         0.1         309.4         2.2         common slipper shell         nc         nc         15.7           black sea bass         122         0.1         3.2         0         mant sishrimp         244         1.9         9.1           fourbeard rockling         81         0.1         7.1         0         sea grape         nc         nc         6.6           blueback herring         74         0.1         3.2         0         arks         124         1         6.1           winter skate         51         0         140.8         1.0         knobbed whelk         17         0.1         5.9           Atlantic menhaden         47         0         10.4         0.1         blue mussel         nc         nc         nc         5.8<	ě									1.6
Striped bass   199	•									1.4
tautog 179 0.1 309.4 2.2 common slipper shell nc nc nc 15.7 black sea bass 122 0.1 29.8 0.2 lion's mane jellyfish 520 4 14.3 smallmouth flounder 89 0.1 3.2 0 mantis shrimp 244 1.9 9.1 fourbeard rockling 81 0.1 7.1 0 sea grape nc nc nc 6.6 blueback herring 74 0.1 3.2 0 arks 124 1 6.1 winter skate 51 0 140.8 1.0 knobbed whelk 17 0.1 5.9 Atlantic menhaden 47 0 10.4 0.1 blue mussel nc nc nc 5.8 hogehoker 38 0 5.6 0 northern moon snail 1 0 5.6 clearnose skate 37 0 78.1 0.5 sand shrimp nc nc nc 4.0 spiny dogfish 35 0 127.7 0.9 blue crab 16 0.1 3.8 cunner 26 0 3.6 0 mud crabs nc nc nc 3.5 inshore lizardfish 10 0 0.5 0 rubbery bryzoan nc nc 3.1 ocean pout 9 0 2.1 0 common oyster 1 0 2.1 Atlantic sturgeon 7 0 111.3 0.8 hard clams 8 0.1 1.4 hickory shad 5 0 1.1 0 purple sea urchin 15 0.1 0.9 feather blenny 4 0 0.2 0 northern red shrimp 21 0.2 0.7 white perch 4 0 0.1 0 deadman's fingers sponge nc nc nc northern kingfish 3 0 1.9 0 red bearded sponge nc nc nc 0.3 longhorn sculpin 2 0 0.2 0 star coral nc nc nc 0.3 longhorn sculpin 2 0 0.4 Atlantic silverside 2 0 0.2 0 star coral nc nc nc 0.3 longhorn sculpin 2 0 0.1 0.6 opsigned filesh 1 0 0.1 0 each and mud shrimp 1 0 0.1 pulpelaender 1 0 0.3 ac accumber 2 0 0.3 pulled the filesh 1 0 0.1 on ocastal mud shrimp 1 0 0.1 pulpelaender 1 1 0 0.1 pulpel	•									1.3
black sea bass	•									0.9
smallmouth flounder         89         0.1         3.2         0         mantis shrimp         244         1.9         9.1           fourbeard rockling         81         0.1         7.1         0         sea grape         nc         nc         6.6           blueback herring         74         0.1         3.2         0         arks         124         1         6.1           winter skate         51         0         140.8         1.0         knobbed whelk         17         0.1         5.9           Atlantic menhaden         47         0         10.4         0.1         blue mussel         nc         nc         5.8           hogchoker         38         0         5.6         0         northern moon snail         1         0         5.6           clearnose skate         37         0         78.1         0.5         sand shrimp         nc         nc         nc         5.6           clearnose skate         37         0         78.1         0.5         sand shrimp         nc         nc         nc         nc         nc         nc         nc         nc         nc         3.8         cunner         nc         nc         nc         nc <td>•</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.8</td>	•									0.8
fourbeard rockling fourbeard rock fourbeard fourbeard rockling fourbea										0.5
blueback herring 74 0.1 3.2 0 arks 124 1 6.1 winter skate 51 0 140.8 1.0 knobbed whelk 17 0.1 5.9 Atlantic menhaden 47 0 10.4 0.1 blue mussel nc nc nc 5.8 hogchoker 38 0 5.6 0 northern moon snail 1 0 5.6 clearnose skate 37 0 78.1 0.5 sand shrimp nc nc nc 4.0 spiny dogfish 35 0 127.7 0.9 blue crab 16 0.1 3.8 cunner 26 0 3.6 0 mud crabs nc nc nc 3.5 inshore lizardfish 10 0 0.5 0 rubbery bryzoan nc nc 3.1 ocean pout 9 0 2.1 0 common oyster 1 0 2.1 Atlantic sturgeon 7 0 111.3 0.8 hard clams 8 0.1 1.4 hickory shad 5 0 1.1 0 purple sea urchin 15 0.1 0.9 feather blenny 4 0 0.2 0 northern red shrimp 12 0.2 0.7 white perch 4 0 0.1 0 deadman's fingers sponge nc nc nc 0.6 northern kingfish 3 0 1.9 0 red bearded sponge nc nc nc 0.4 Atlantic silverside 2 0 0.2 0 Jonah crab 2 0 0.4 rock gunnel 2 0 0.3 0 sea cucumber 2 0 0.3 out 10 0.3 vellowriside 10 0.1 0 anemones nc nc nc 0.3 longhorn sculpin 2 0 0.1 0 anemones nc nc nc 0.3 longhorn sculpin 1 0 0.1 0 deather shrimp 1 0 0.1 pulped and shrimp 1 0 0.3 longhorn sculpin 1 0 0.1 pulped and shrimp 1 0 0.3 longhorn sculpin 1 0 0.1 pulped and shrimp 1 1 0						•				0.4
winter skate         51         0         140.8         1.0         knobbed whelk         17         0.1         5.9           Atlantic menhaden         47         0         10.4         0.1         blue mussel         nc         nc         5.8           hogchoker         38         0         5.6         0         northern moon snail         1         0         5.6           clearnose skate         37         0         78.1         0.5         sand shrimp         nc         nc         4.0           spiny dogfish         35         0         127.7         0.9         blue crab         16         0.1         3.8           cunner         26         0         3.6         0         mud crabs         nc         nc         nc         3.5           inshore lizardfish         10         0         0.5         0         rubbery bryzoan         nc         nc         nc         3.1           ocean pout         9         0         2.1         0         common oyster         1         0         2.1           Atlantic sturgeon         7         0         111.3         0.8         hard clams         8         0.1         1.4	•									0.4
Atlantic menhaden         47         0         10.4         0.1         blue mussel         nc         nc         5.8           hogchoker         38         0         5.6         0         northern moon snail         1         0         5.6           clearnose skate         37         0         78.1         0.5         sand shrimp         nc         nc         4.0           spiny dogfish         35         0         127.7         0.9         blue crab         16         0.1         3.8           cunner         26         0         3.6         0         mud crabs         nc         nc         nc         3.5           inshore lizardfish         10         0         0.5         0         rubbery bryzoan         nc         nc         nc         3.1           ocean pout         9         0         2.1         0         common oyster         1         0         2.1           Atlantic sturgeon         7         0         111.3         0.8         hard clams         8         0.1         1.4           hickory shad         5         0         1.1         0         purple sea urchin         15         0.1         0.9	•									0.4
hogchoker         38         0         5.6         0         northern moon snail         1         0         5.6           clearnose skate         37         0         78.1         0.5         sand shrimp         nc         nc         4.0           spiny dogfish         35         0         127.7         0.9         blue crab         16         0.1         3.8           cunner         26         0         3.6         0         mud crabs         nc         nc         3.5           inshore lizardfish         10         0         0.5         0         rubbery bryzoan         nc         nc         3.1           ocean pout         9         0         2.1         0         common oyster         1         0         2.1           Atlantic sturgeon         7         0         111.3         0.8         hard clams         8         0.1         1.4           hickory shad         5         0         1.1         0         purple sea urchin         15         0.1         0.9           feather blenny         4         0         0.2         0         northern red shrimp         21         0.2         0.7           white perch         <										0.3
Clearnose skate   37										0.3
spiny dogfish         35         0         127.7         0.9         blue crab         16         0.1         3.8           cunner         26         0         3.6         0         mud crabs         nc         nc         nc         3.5           inshore lizardfish         10         0         0.5         0         rubbery bryzoan         nc         nc         nc         3.1           ocean pout         9         0         2.1         0         common oyster         1         0         2.1           Atlantic sturgeon         7         0         111.3         0.8         hard clams         8         0.1         1.4           hickory shad         5         0         1.1         0         purple sea urchin         15         0.1         0.9           feather blenny         4         0         0.2         0         northern red shrimp         21         0.2         0.7           white perch         4         0         0.1         0         deadman's fingers sponge         nc         nc         nc         0.6           oyster toadfish         3         0         1.9         0         red bearded sponge         nc         nc	•									0.2
cunner         26         0         3.6         0         mud crabs         nc         nc         nc         3.5           inshore lizardfish         10         0         0.5         0         rubbery bryzoan         nc         nc         3.1           ocean pout         9         0         2.1         0         common oyster         1         0         2.1           Atlantic sturgeon         7         0         111.3         0.8         hard clams         8         0.1         1.4           hickory shad         5         0         1.1         0         purple sea urchin         15         0.1         0.9           feather blenny         4         0         0.2         0         northern red shrimp         21         0.2         0.7           white perch         4         0         0.1         0         deadman's fingers sponge         nc         nc         0.6           northern kingfish         3         0         0.4         0         surf clam         9         0.1         0.6           oyster toadfish         3         0         1.9         0         red bearded sponge         nc         nc         nc         0.4 <td></td> <td></td> <td></td> <td></td> <td></td> <td>*</td> <td></td> <td></td> <td></td> <td>0.2</td>						*				0.2
inshore lizardfish 10 0 0.5 0 rubbery bryzoan nc nc 3.1 ocean pout 9 0 2.1 0 common oyster 1 0 2.1 Atlantic sturgeon 7 0 111.3 0.8 hard clams 8 0.1 1.4 hickory shad 5 0 1.1 0 purple sea urchin 15 0.1 0.9 feather blenny 4 0 0.2 0 northern red shrimp 21 0.2 0.7 white perch 4 0 0.1 0 deadman's fingers sponge nc nc nc 0.6 northern kingfish 3 0 0.4 0 surf clam 9 0.1 0.6 oyster toadfish 3 0 1.9 0 red bearded sponge nc nc nc 0.4 Atlantic silverside 2 0 0.2 0 Jonah crab 2 0 0.4 rock gunnel 2 0 0.2 0 star coral nc nc 0.3 longhorn sculpin 2 0 0.3 0 sea cucumber 2 0 0.3 oysterloader 1 0 0.1 0 anemones nc nc nc 0.2 planehead filefish 1 0 0.1 0 anemones nc nc nc 0.2 planehead filefish 1 0 0.1 0 green crab 1 0 0.1 pollock 1 0 0.1										0.2
ocean pout         9         0         2.1         0         common oyster         1         0         2.1           Atlantic sturgeon         7         0         111.3         0.8         hard clams         8         0.1         1.4           hickory shad         5         0         1.1         0         purple sea urchin         15         0.1         0.9           feather blenny         4         0         0.2         0         northern red shrimp         21         0.2         0.7           white perch         4         0         0.1         0         deadman's fingers sponge         nc         nc         0.6           northern kingfish         3         0         0.4         0         surf clam         9         0.1         0.6           oyster toadfish         3         0         1.9         0         red bearded sponge         nc         nc         nc         0.4           Atlantic silverside         2         0         0.2         0         Jonah crab         2         0         0.4           rock gunnel         2         0         0.2         0         star coral         nc         nc         nc         nc <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.2</td></td<>										0.2
Atlantic sturgeon         7         0         111.3         0.8         hard clams         8         0.1         1.4           hickory shad         5         0         1.1         0         purple sea urchin         15         0.1         0.9           feather blenny         4         0         0.2         0         northern red shrimp         21         0.2         0.7           white perch         4         0         0.1         0         deadman's fingers sponge         nc         nc         0.6           northern kingfish         3         0         0.4         0         surf clam         9         0.1         0.6           oyster toadfish         3         0         1.9         0         red bearded sponge         nc         nc         nc         0.4           Atlantic silverside         2         0         0.2         0         Jonah crab         2         0         0.4           rock gunnel         2         0         0.2         0         star coral         nc         nc         nc         0.3           longhorn sculpin         2         0         0.4         0         tunicates, misc         nc         nc         nc						* *				0.2
hickory shad 5 0 1.1 0 purple sea urchin 15 0.1 0.9 feather blenny 4 0 0.2 0 northern red shrimp 21 0.2 0.7 white perch 4 0 0.1 0 deadman's fingers sponge nc nc nc 0.6 northern kingfish 3 0 0.4 0 surf clam 9 0.1 0.6 oyster toadfish 3 0 1.9 0 red bearded sponge nc nc nc 0.4 Atlantic silverside 2 0 0.2 0 Jonah crab 2 0 0.4 rock gunnel 2 0 0.2 0 star coral nc nc 0.3 longhorn sculpin 2 0 0.3 0 sea cucumber 2 0 0.3 oyellowtail flounder 2 0 0.4 0 tunicates, misc nc nc 0.3 Atlantic croaker 1 0 0.1 0 anemones nc nc 0.2 planehead filefish 1 0 0.1 0 green crab 1 0 0.1 glasseye snapper 1 0 0.1 0 green crab 1 0 0.1 pollock 1 0 0.1	•					•				0.1
feather blenny         4         0         0.2         0         northern red shrimp         21         0.2         0.7           white perch         4         0         0.1         0         deadman's fingers sponge         nc         nc         0.6           northern kingfish         3         0         0.4         0         surf clam         9         0.1         0.6           oyster toadfish         3         0         1.9         0         red bearded sponge         nc         nc         0.4           Atlantic silverside         2         0         0.2         0         Jonah crab         2         0         0.4           rock gunnel         2         0         0.2         0         star coral         nc         nc         nc         0.3           longhorn sculpin         2         0         0.3         0         sea cucumber         2         0         0.3           yellowtail flounder         2         0         0.4         0         tunicates, misc         nc         nc         nc         0.2           planehead filefish         1         0         0.1         0         anemones         nc         nc         0.1	•									0.1
white perch         4         0         0.1         0         deadman's fingers sponge         nc         nc         0.6           northern kingfish         3         0         0.4         0         surf clam         9         0.1         0.6           oyster toadfish         3         0         1.9         0         red bearded sponge         nc         nc         0.4           Atlantic silverside         2         0         0.2         0         Jonah crab         2         0         0.4           rock gunnel         2         0         0.2         0         star coral         nc         nc         nc         0.3           longhorn sculpin         2         0         0.3         0         sea cucumber         2         0         0.3           yellowtail flounder         2         0         0.4         0         tunicates, misc         nc         nc         nc         0.3           Atlantic croaker         1         0         0.1         0         anemones         nc         nc         0.2           planehead filefish         1         0         0.1         0         green crab         1         0         0.1 <t< td=""><td>•</td><td></td><td></td><td></td><td></td><td>* *</td><td></td><td></td><td></td><td>0.1</td></t<>	•					* *				0.1
northern kingfish         3         0         0.4         0         surf clam         9         0.1         0.6           oyster toadfish         3         0         1.9         0         red bearded sponge         nc         nc         0.4           Atlantic silverside         2         0         0.2         0         Jonah crab         2         0         0.4           rock gunnel         2         0         0.2         0         star coral         nc         nc         nc         0.3           longhorn sculpin         2         0         0.3         0         sea cucumber         2         0         0.3           yellowtail flounder         2         0         0.4         0         tunicates, misc         nc         nc         nc         0.3           Atlantic croaker         1         0         0.1         0         anemones         nc         nc         0.2           planehead filefish         1         0         0.1         0         coastal mud shrimp         1         0         0.1           glasseye snapper         1         0         0.1         0         moon jelly         1         0         0.1	•					•				0
oyster toadfish         3         0         1.9         0         red bearded sponge         nc         nc         0.4           Atlantic silverside         2         0         0.2         0         Jonah crab         2         0         0.4           rock gunnel         2         0         0.2         0         star coral         nc         nc         0.3           longhorn sculpin         2         0         0.3         0         sea cucumber         2         0         0.3           yellowtail flounder         2         0         0.4         0         tunicates, misc         nc         nc         nc         0.3           Atlantic croaker         1         0         0.1         0         anemones         nc         nc         nc         0.2           planehead filefish         1         0         0.1         0         coastal mud shrimp         1         0         0.1           glasseye snapper         1         0         0.1         0         moon jelly         1         0         0.1	_	•								0
Atlantic silverside         2         0         0.2         0         Jonah crab         2         0         0.4           rock gunnel         2         0         0.2         0         star coral         nc         nc         0.3           longhorn sculpin         2         0         0.3         0         sea cucumber         2         0         0.3           yellowtail flounder         2         0         0.4         0         tunicates, misc         nc         nc         nc         0.3           Atlantic croaker         1         0         0.1         0         anemones         nc         nc         0.2           planehead filefish         1         0         0.1         0         coastal mud shrimp         1         0         0.1           glasseye snapper         1         0         0.1         0         moon jelly         1         0         0.1	-									
rock gunnel         2         0         0.2         0         star coral         nc         nc         0.3           longhorn sculpin         2         0         0.3         0         sea cucumber         2         0         0.3           yellowtail flounder         2         0         0.4         0         tunicates, misc         nc         nc         nc         0.3           Atlantic croaker         1         0         0.1         0         anemones         nc         nc         0.2           planehead filefish         1         0         0.1         0         coastal mud shrimp         1         0         0.1           glasseye snapper         1         0         0.1         0         green crab         1         0         0.1           pollock         1         0         0.1         0         moon jelly         1         0         0.1	-									0
longhorn sculpin         2         0         0.3         0         sea cucumber         2         0         0.3           yellowtail flounder         2         0         0.4         0         tunicates, misc         nc         nc         0.3           Atlantic croaker         1         0         0.1         0         anemones         nc         nc         nc         0.2           planehead filefish         1         0         0.1         0         coastal mud shrimp         1         0         0.1           glasseye snapper         1         0         0.1         0         green crab         1         0         0.1           pollock         1         0         0.1         0         moon jelly         1         0         0.1										0
yellowtail flounder         2         0         0.4         0         tunicates, misc         nc         nc         0.3           Atlantic croaker         1         0         0.1         0         anemones         nc         nc         0.2           planehead filefish         1         0         0.1         0         coastal mud shrimp         1         0         0.1           glasseye snapper         1         0         0.1         0         green crab         1         0         0.1           pollock         1         0         0.1         0         moon jelly         1         0         0.1	-									0
Atlantic croaker         1         0         0.1         0         anemones         nc         nc         0.2           planehead filefish         1         0         0.1         0         coastal mud shrimp         1         0         0.1           glasseye snapper         1         0         0.1         0         green crab         1         0         0.1           pollock         1         0         0.1         0         moon jelly         1         0         0.1										0
planehead filefish         1         0         0.1         0         coastal mud shrimp         1         0         0.1           glasseye snapper         1         0         0.1         0         green crab         1         0         0.1           pollock         1         0         0.1         0         moon jelly         1         0         0.1						*				0
glasseye snapper 1 0 0.1 0 green crab 1 0 0.1 pollock 1 0 0.1 0 moon jelly 1 0 0.1										0
pollock 1 0 0.1 0 moon jelly 1 0 0.1		_				1				0
						=				0
roughtail stingray 1 0 3.0 0 northern cyclocardia 1 0 0.1	=									0
Total 13,036 1,700.1	roughtail stingray	1	0	3.0	0			0		0

Appendix 5.4. 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	3,7				
silver hake	947	0.5	50.0	0.3	<u>Invertebrates</u>				
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	0.1	4.7	0.5	channeled whelk	127	0.5	26	1.2
clearnose skate	69	0	148.5	0.8	hydroid spp	127	0.5	25.7	1.2
Atlantic menhaden	69	0	18.0	0.8	knobbed whelk	39	0.1	11.6	0.5
rough scad	59	0	2.8	0.1	mantis shrimp	215	0.1	10.7	0.5
fourbeard rockling	47	0	3.9	0	Tubularia, spp	213	0.0	9	0.3
winter skate	44	0	108.5	0.6	northern moon snail .	•		7.2	0.4
	39	0	4.5	0.0		•		5.6	0.3
hogchoker	34	0	2.3	0	anemones .	•		5.4	0.3
blue runner	22	0	4.8	0	mixed sponge species .	•		5.0	0.3
ocean pout	18	0	286.6	1.5	sea grape .	•		4.2	0.2
Atlantic sturgeon	18	0	1.8	0	boring sponge . blue crab	19	0.1	4.2	0.2
cunner	18	0		0		19	0.1		0.2
pollock			0.8		sand shrimp .	•		3.8	
Atlantic cod	15	0	1.0	0	deadman's fingers sponge .		0	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 bryzoan .	•		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 5.4. 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	<b>%</b>	weight	%	species	count	<b>%</b>	weight	%
American sand lance	13,061	35.3	5.2	0.1	Invertebrates				
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 bryzoan .			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	C
northern pipefish	4	0	0.3	0	purple sea urchin	4	0.1	0.2	C
spiny dogfish	3	0	16.2	0.4	boring sponge .			0.1	C
bluefish	2	0	6.1	0.1	red bearded sponge .			0.1	C
hickory shad	2	0	0.4	0	coastal mud shrimp .			0.1	C
pollock	2	0	0.1	0	star coral .			0.1	C
American plaice	1	0	0.1	0	hard clams .			0.1	C
Atlantic silverside	1	0	0.1	0	sea cucumber .			0.1	C
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					

## Finfish not ranked

Total

anchovy spp, yoy Atlantic herring, yoy American sand lance (yoy) 37,029

4,455

Appendix 5.4. 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	Finfish not ranked				
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 bryzoan .		0	1.7	0.1
longhorn sculpin	9	0	2.0	0	common oyster	1	0	1.6	0.1
hickory shad	8 5	0	1.5 181.9		sea grape .	•		1.5	0.1 0.1
Atlantic sturgeon	5	0	0.5	1.1	arks .	7	0	1.4 1.0	0.1
pollock	5	0	0.3	0	surf clam	3	0	0.6	0.1
spot	4	0	0.7	0	purple sea urchin	3	U	0.6	0
crevalle jack	4	0			red bearded sponge .	•			
grubby	4	0	0.1	0	northern comb jelly . anemones	6	0	0.3 0.2	0
northern pipefish rock gunnel	4	0	0.3 0.2	0	star coral .		U	0.2	0
conger eel	3	0	1.1	0	coastal mud shrimp	1	0	0.2	0
sea raven	3	0	0.9	0	coastai mud shriinp common razor clam	1	0	0.1	0
striped cusk-eel	2	0	0.9	0	ghost shrimp	1	0	0.1	0
•	2	0	0.2	0		1	0	0.1	0
Atlantic tomcod	1	0			northern red shrimp polychaetes .	1	U	0.1	0
American plaice		0	0.1	0		•			
Atlantic croaker	1	0	0.2	0	tunicates, misc .	. 1	0	0.1	0
northern sennet			0.1		water jelly	15.056	U	0.1	0
round scad	1	0	0.1	0	Total	15,076		1,505.0	
roughtail stingray	1	0	13.0	0.1	Note: nc= not counted				

Appendix 5.4. 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	<u>Invertebrates</u>				
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	0.0	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 bryzoan .	·		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	0.1	0	coastal mud shrimp	1	0	0.3	0
gizzard shad	1	0	0.3	0	northern comb jelly .	1	Ü	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	0
roughtail stingray	1	0	5.0	0	Note: nc= not counted	11,550		1,401.7	

Appendix 5.4. 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 gadids, 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	Finfish not ranked				
Atlantic herring	3,566	4.3	321.2	2.0	anchovy spp, (yoy)				
striped searobin	2,724	3.3	1,112.5	7.0	Atlantic herring, (yoy)				
windowpane flounder	2,096	2.5	326.6	2.1	American sand lance (yoy)				
weakfish	1,964	2.4	203.7	1.3	gadid spp, (yoy)				
northern searobin	1,934	2.3	161.7	1.0					
spot	1,917	2.3	195.4	1.2	<u>Invertebrates</u>				
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 bryzoan	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					
	_								

0.0

0.0

0.0

83,413

longhorn sculpin striped anchovy

northern stargazer

Total

0.4

0.1

0.1

15,843.7

0.0

0.0

Appendix 5.4. cont. Total number and weight (kg) of finfish and invertebrates caught in 2014.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year gadids, 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)=199.

species	count	%	weight	%	species	count	%	weight	%
butterfish	69,372	45.3	1,707.6	10.6					
scup	45,705	29.9	5,161.4	31.9	Finfish not ranked				
weakfish	10,477	6.8	334.8	2.1	anchovy spp, (yoy)				
bluefish	4,457	2.9	522.7	3.2	Atlantic herring, (yoy)				
northern searobin	2,584	1.7	225.9	1.4	American sand lance (yoy)				
striped searobin	2,544	1.7	1,020.8	6.3	gadid spp, (yoy)				
moonfish	2,200	1.4	23.2	0.1					
windowpane flounder	2,191	1.4	365.6	2.3	<u>Invertebrates</u>				
Atlantic herring	1,838	1.2	91.2	0.6	longfin inshore squid	13,436	86.3	582.3	37.9
bay anchovy	1,424	0.9	9.4	0.1	horseshoe crab	261	1.7	497.3	32.4
winter flounder	1,372	0.9	459.7	2.8	spider crab	nc		145.6	9.5
black sea bass	1,295	0.8	543.3	3.4	blue mussel	nc		52.2	3.4
smooth dogfish	1,197	0.8	2,799.2	17.3	lion's mane jellyfish	1,262	8.1	48.2	3.1
summer flounder	859	0.6	567.4	3.5	American lobster	178	1.1	31.5	2.1
fourspot flounder	820	0.5	145.0	0.9	bushy bryozoan	nc		24.8	1.6
little skate	770	0.5	428.2	2.6	mixed sponge species	nc		20.6	1.3
Atlantic menhaden	723	0.5	267.8	1.7	common slipper shell	nc		18.8	1.2
alewife	555	0.4	43.2	0.3	mantis shrimp	332	2.1	14.4	0.9
spotted hake	505	0.3	59.5	0.4	flat claw hermit crab	nc	2.1	14.0	0.9
red hake	398	0.3	33.5	0.2	knobbed whelk	34	0.2	12.3	0.8
silver hake	323	0.2	10.6	0.1	lady crab	nc	0.2	9.3	0.6
striped bass	255	0.2	407.5	2.5	sea grape	nc		7.3	0.5
hogchoker	246	0.2	27.8	0.2	channeled whelk	29	0.2	5.9	0.3
tautog	194	0.2	192.5	1.2	hydroid spp.	nc	0.2	5.3	0.4
American shad	162	0.1	12.3	0.1	rock crab	nc		4.8	0.3
smallmouth flounder	152	0.1	6.0	0.0	northern moon snail	nc		4.6	0.3
clearnose skate	104	0.1	207.7	1.3	Tubularia, spp.	nc		4.6	0.3
winter skate	82	0.1	133.8	0.8	• • •	nc		4.3	0.3
		0.1			boring sponge				0.3
blueback herring	58 51	0.0	4.2 3.2	0.0	sand shrimp blue crab	nc 18	0.1	4.1 3.0	0.3
northern kingfish							0.1		
hickory shad	30	0.0	10.5	0.1	arks	nc		2.7	0.2
inshore lizardfish	30	0.0	2.8	0.0	mud crabs	nc	0.0	2.6	0.2
spot	20	0.0	1.8	0.0	starfish spp.	2	0.0	1.6	0.1
spiny dogfish	15	0.0	62.2	0.4	ribbed mussel	nc		1.6	0.1
Atlantic sturgeon	13	0.0	272.4	1.7	comb jelly spp	nc		1.4	0.1
American sand lance	12	0.0	0.2	0.0	star coral	nc		0.7	0.0
blue runner	10	0.0	0.9	0.0	purple sea urchin	4	0.0	0.6	0.0
northern puffer	10	0.0	1.3	0.0	surf clam	4	0.0	0.5	0.0
striped cusk-eel	6	0.0	0.6	0.0	coastal mud shrimp	1	0.0	0.3	0.0
Atlantic cod	5	0.0	0.3	0.0	rubbery bryzoan	nc		0.3	0.0
rough scad	5	0.0	0.5	0.0	tunicates, misc	nc		0.3	0.0
planehead filefish	4	0.0	0.4	0.0	anemones	5	0.0	0.2	0.0
fourbeard rockling	4	0.0	0.4	0.0	brown shrimp	2	0.0	0.2	0.0
crevalle jack	2	0.0	0.2	0.0	common razor clam	1	0.0	0.2	0.0
Atlantic croaker	2	0.0	0.2	0.0	hard clams	nc		0.2	0.0
cunner	2	0.0	0.2	0.0	common oyster	nc		0.2	0.0
Atlantic mackerel	2	0.0	0.2	0.0	red bearded sponge	nc		0.1	0.0
silver perch	2	0.0	0.2	0.0	deadman's fingers sponge	nc		0.1	0.0
oyster toadfish	2	0.0	0.6	0.0	ghost shrimp	1	0.0	0.1	0.0
Atlantic silverside	1	0.0	0.1	0.0	water jelly	1	0.0	0.1	0.0
black drum	1	0.0	0.1	0.0	Total	15,571		1,529.2	
blue spotted cornetfish	1	0.0	0.1	0.0	Note: nc= not counted			<u> </u>	
lookdown	1	0.0	0.1	0.0					
mackerel scad	1	0.0	0.1	0.0					
northern pipefish	1	0.0	0.1	0.0					
round scad	1	0.0	0.1	0.0					
1 + 6:-1-	1	0.0	0.1	0.0					

0.0

0.0

0.0

0.0

153,100

0.1

0.4

1.5

0.2

16,173.8

0.0

0.0

0.0

0.0

red goatfish banded rudderfish

sea raven

Total

white perch

Appendix 5.4. cont. . Total number and weight (kg) of finfish and invertebrates caught in 2015.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year gadids, 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	80,534	49.3	6,045.5	38.7	round scad	1	0.0	0.1	0.0
butterfish	53,265	32.6	1,011.2	6.5	rock gunnel	1	0.0	0.1	0.0
weakfish	10,077	6.2	530.4	3.4	roughtail stingray	1	0.0	7.8	0.0
striped searobin	2,728	1.7	1,058.2	6.8	short bigeye	1	0.0	0.1	0.0
bluefish	2,650	1.6	324.4	2.1	sea lamprey	1	0.0	1.2	0.0
smooth dogfish	1,438	0.9	2,804.1	17.9	Atlantic thread herring	1	0.0	0.1	0.0
winter flounder	1,340	0.8	319.7	2.0	Total	163,223		15,625	
Atlantic menhaden	1,279	0.8	361.2	2.3					
windowpane flounder	1,150	0.7	191.1	1.2	Finfish not ranked				
black sea bass	1,109	0.7	678.0	4.3	anchovy spp, (yoy)				
moonfish	891	0.5	14.6	0.1	Atlantic herring, (yoy)				
summer flounder	808	0.5	449.3	2.9	American sand lance (yoy)				
northern searobin	805	0.5	133.2	0.9	gadid spp, (yoy)				
Atlantic herring	630	0.4	71.8	0.5	2 11, 3 3,				
alewife	485	0.3	30.5	0.2	<u>Invertebrates</u>				
red hake	480	0.3	44.5	0.3	longfin inshore squid	28,266	97.0	1366.2	69.6
bay anchovy	399	0.2	3.1	0.0	horseshoe crab	159	0.5	288.3	14.7
little skate	387	0.2	192.0	1.2	spider crab	nc		133.3	6.8
fourspot flounder	386	0.2	76.3	0.5	common slipper shell	nc		29.8	1.5
tautog	308	0.2	339.7	2.2	American lobster	92	0.3	24.0	1.2
spotted hake	302	0.2	40.1	0.3	knobbed whelk	37	0.1	15.7	0.8
American shad	275	0.2	24.7	0.3	bushy bryozoan	nc	0.1	10.1	0.5
hogchoker	255	0.2	31.2	0.2	mantis shrimp	187	0.6	9.8	0.5
=	249	0.2	7.1	0.2	flat claw hermit crab	nc	0.0	8.1	0.3
blueback herring	187	0.2	405.2			1	0.0		0.4
striped bass				2.6	sea grape		0.0	7.8	
rough scad clearnose skate	144	0.1	7.1	0.0	boring sponge	nc 247	1.2	7.6	0.4
	131	0.1	225.0	1.4	lion's mane jellyfish	347	1.2	6.5	0.3
silver hake	100	0.1	6.5	0.0	mixed sponge species	nc	0.1	6.3	0.3
northern kingfish	97 72	0.1	7.1	0.0	channeled whelk	26	0.1	5.8	0.3
smallmouth flounder	73	0.0	3.6	0.0	blue crab	22	0.1	4.7	0.2
blue runner	68	0.0	6.7	0.0	blue mussel	nc	0.0	4.2	0.2
winter skate	30	0.0	51.8	0.3	northern moon snail	1	0.0	4.0	0.2
fourbeard rockling	20	0.0	2.0	0.0	hydroid spp.	nc		3.9	0.2
spiny dogfish	19	0.0	80.8	0.5	rock crab	nc		3.8	0.2
red cornetfish	14	0.0	0.6	0.0	sand shrimp	nc		3.7	0.2
spot	14	0.0	1.7	0.0	mud crabs	nc		2.9	0.1
cunner	13	0.0	1.8	0.0	starfish spp.	nc		2.5	0.1
hickory shad	12	0.0	5.5	0.0	lady crab	nc		2.4	0.1
northern puffer	11	0.0	0.8	0.0	arks	nc		1.5	0.1
Atlantic croaker	6	0.0	1.5	0.0	common oyster	nc		0.8	0.0
Atlantic silverside	5	0.0	0.4	0.0	rubbery bryzoan	nc		0.7	0.0
Atlantic cod	5	0.0	4.7	0.0	Tubularia, spp.	nc		0.5	0.0
crevalle jack	4	0.0	0.4	0.0	coastal mud shrimp	2	0.0	0.4	0.0
Atlantic mackerel	4	0.0	0.4	0.0	surf clam	2	0.0	0.4	0.0
American sand lance	4	0.0	0.1	0.0	red bearded sponge	nc		0.3	0.0
bigeye scad	3	0.0	0.3	0.0	deadman's fingers sponge	nc		0.3	0.0
planehead filefish	2	0.0	0.2	0.0	fan worm tubes	nc		0.3	0.0
glasseye snapper	2	0.0	0.1	0.0	hard clams	1	0.0	0.3	0.0
goosefish	2	0.0	0.1	0.0	polychaetes	nc		0.3	0.0
ocean pout	2	0.0	0.5	0.0	brown shrimp	2	0.0	0.2	0.0
northern pipefish	2	0.0	0.2	0.0	comb jelly spp	nc		0.2	0.0
longhorn sculpin	2	0.0	0.7	0.0	star coral	nc		0.2	0.0
striped anchovy	2	0.0	0.1	0.0	ghost shrimp	1	0.0	0.2	0.0
oyster toadfish	2	0.0	0.9	0.0	purple sea urchin	2	0.0	0.2	0.0
yellowtail flounder	2	0.0	0.7	0.0	anemones	nc		0.1	0.0
Atlantic sturgeon	1	0.0	15.8	0.1	sand dollar	1	0.0	0.1	0.0
bigeye	1	0.0	0.1	0.0	common razor clam	1	0.0	0.1	0.0
conger eel	1	0.0	0.3	0.0	tunicates, misc	nc		0.1	0.0
mahogany snapper	1	0.0	0.1	0.0	Total	29,150		1,958.6	0.0
round herring	1	0.0	0.1	0.0	Note: nc= not counted	,150		1,750.0	

Appendix 5.4. cont. . Total number and weight (kg) of finfish and invertebrates caught in 2016.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year gadids, 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)=196.

species	count	%	weight	%	species	count	%	weight	%
scup	175,632	63.4	16,006.2	56.2					
butterfish	65,596	23.7	2,036.1	7.1	Finfish not ranked				
striped searobin	5,886	2.1	1,964.4	6.9	anchovy spp, (yoy)				
weakfish	4,689	1.7	297.6	1.0	Atlantic herring, (yoy)				
northern searobin	3,178	1.1	452.1	1.6	American sand lance (yoy)				
alewife	2,811	1.0	132.0	0.5	gadid spp, (yoy)				
bluefish	2,793	1.0	1,118.7	3.9					
spotted hake	2,456	0.9	113.8	0.4	<u>Invertebrates</u>				
windowpane flounder	1,593	0.6	154.7	0.5	longfin inshore squid	12,424	94.1	464.4	41.1
smooth dogfish	1,338	0.5	2,785.6	9.8	horseshoe crab	164	1.2	315.5	28.0
bay anchovy	1,239	0.4	8.7	0.0	spider crab	nc		140.6	12.5
black sea bass	1,181	0.4	823.4	2.9	lion's mane jellyfish	221	1.7	72.1	6.4
winter flounder	1,108	0.4	261.0	0.9	American lobster	74	0.6	25.2	2.2
fourspot flounder	1,056	0.4	175.3	0.6	common slipper shell	nc		19.2	1.7
American shad	944	0.3	46.2	0.2	bushy bryozoan	nc		11.2	1.0
silver hake	891	0.3	32.9	0.1	mantis shrimp	206	1.6	9.5	0.8
Atlantic menhaden	876	0.3	69.4	0.2	knobbed whelk	23	0.2	8.8	0.8
red hake	668	0.2	50.3	0.2	flat claw hermit crab	nc		8.7	0.8
summer flounder	462	0.2	386.4	1.4	boring sponge	nc		7.4	0.7
blueback herring	448	0.2	12.2	0.0	rock crab	nc		6.8	0.6
little skate	377	0.1	193.1	0.7	channeled whelk	29	0.2	6.0	0.5
hogchoker	354	0.1	41.8	0.1	hydroid spp.	nc		5.9	0.5
Atlantic herring	340	0.1	37.1	0.1	blue crab	20	0.1	5.0	0.4
tautog	306	0.1	288.5	1.0	hard clams	22	0.2	3.2	0.3
moonfish	265	0.1	5.2	0.0	mud crabs	nc		2.5	0.2
striped bass	167	0.1	261.9	0.9	mixed sponge species	nc		1.9	0.2
smallmouth flounder	148	0.1	4.2	0.0	sand shrimp	nc		1.8	0.2
clearnose skate	134	0.0	228.7	0.8	lady crab	nc		1.7	0.2
goosefish	70	0.0	23.3	0.1	Tubularia, spp.	nc		1.5	0.1
northern kingfish	31	0.0	4.8	0.0	northern moon snail	nc		1.3	0.1
hickory shad	18	0.0	4.2	0.0	arks	3	0.0	1.3	0.1
winter skate	17	0.0	31.6	0.1	starfish spp.	1	0.0	0.9	0.1
blue runner	15	0.0	1.5	0.0	blue mussel	1	0.0	0.8	0.1
Atlantic sturgeon	12	0.0	318.3	1.1	common oyster	5	0.0	0.6	0.1
spot	12	0.0	1.7	0.0	surf clam	1	0.0	0.5	0.0
spiny dogfish	9	0.0	43.6	0.2	comb jelly spp	nc		0.2	0.0
striped anchovy	8	0.0	0.5	0.0	star coral	nc		0.2	0.0
northern puffer	5	0.0	0.9	0.0	ghost shrimp	1	0.0	0.2	0.0
cunner	4	0.0	0.5	0.0	anemones	nc		0.1	0.0
inshore lizardfish	4	0.0	0.3	0.0	bobtail squid	1	0.0	0.1	0.0
oyster toadfish	4	0.0	1.7	0.0	red bearded sponge	nc	0.0	0.1	0.0
Atlantic silverside	3	0.0	0.3	0.0	common razor clam	1	0.0	0.1	0.0
fourbeard rockling	3	0.0	0.3	0.0	Japanese shore crab	1	0.0	0.1	0.0
striped cusk-eel	3	0.0	0.1	0.0	polychaetes	1	0.0	0.1	0.0
northern sennet	2	0.0	0.2	0.0	tunicates, misc	nc	3.0	0.1	0.0
bluntnose stingray	1	0.0	0.6	0.0	purple sea urchin	nc		0.1	0.0
Atlantic cod	1	0.0	4.9	0.0	water jelly	1	0.0	0.1	0.0
crevalle jack	1	0.0	0.1	0.0	Total	13,200	0.0	1,125.8	0.0
haddock	1	0.0	0.1	0.0	Note: nc= not counted	20,200		-,	
pinfish	1	0.0	0.1	0.0	10te. ne not counted				
pollock	1	0.0	0.1	0.0					
roughtail stingray	1	0.0	45.4	0.0					
rough cond	1	0.0	0.1	0.2					

0.0

0.0

277,166

rough scad sea raven

Total

sand tiger shark

0.1

0.2

21.8

28,495

0.0

0.0

Appendix 5.4. cont. . Total number and weight (kg) of finfish and invertebrates caught in 2017.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year gadids, 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)=144.

species	count	%	weight	%	species	count	%	weight	%
scup	75,763	56.4	9,616.8	51.4					
butterfish	35,814	26.7	1,426.0	7.6	Finfish not ranked				
weakfish	5,904	4.4	311.2	1.7	anchovy spp, (yoy)				
striped searobin	3,942	2.9	1,400.0	7.5	Atlantic herring, (yoy)				
bluefish	2,408	1.8	263.6	1.4	American sand lance (yoy)				
smooth dogfish	1,624	1.2	3,391.3	18.1	gadid spp, (yoy)				
northern searobin	1,430	1.1	196.2	1.0					
spotted hake	1,253	0.9	111.2	0.6	<u>Invertebrates</u>				
bay anchovy	1,069	0.8	7.7	0.0	longfin inshore squid	14,186	96.5	584.5	54.5
black sea bass	980	0.7	714.8	3.8	horseshoe crab	112	0.8	224.4	20.9
windowpane flounder	974	0.7	127.1	0.7	spider crab	nc		129.4	12.1
hogchoker	391	0.3	50.1	0.3	boring sponge	nc		46.9	4.4
fourspot flounder	366	0.3	67.9	0.4	common slipper shell	nc		20.8	1.9
summer flounder	354	0.3	244.0	1.3	bushy bryozoan	nc		12.1	1.1
silver hake	309	0.2	12.3	0.1	flat claw hermit crab	nc		8.3	0.8
moonfish	273	0.2	4.2	0.0	knobbed whelk	36	0.2	7.3	0.7
Atlantic menhaden	239	0.2	72.2	0.4	mantis shrimp	173	1.2	7.3	0.7
American shad	230	0.2	21.0	0.1	blue crab	18	0.1	4.1	0.4
red hake	152	0.1	11.9	0.1	American lobster	12	0.1	4.0	0.4
spot	114	0.1	10.5	0.1	lion's mane jellyfish	102	0.7	3.7	0.3
little skate	113	0.1	63.0	0.3	lady crab	nc		3.5	0.3
winter flounder	112	0.1	27.7	0.1	blue mussel	nc		2.7	0.3
blueback herring	89	0.1	3.5	0.0	channeled whelk	18	0.1	2.4	0.2
tautog	77	0.1	99.0	0.5	sand shrimp	nc		1.6	0.1
clearnose skate	73	0.1	147.1	0.8	hard clams	5	0.0	1.2	0.1
striped bass	73	0.1	186.8	1.0	comb jelly spp	24	0.2	1.2	0.1
smallmouth flounder	44	0.0	2.0	0.0	hydroid spp.	nc		1.1	0.1
alewife	38	0.0	2.0	0.0	arks	6	0.0	1.1	0.1
winter skate	19	0.0	34.1	0.2	mud crabs	nc		1.1	0.1
northern kingfish	11	0.0	2.3	0.0	northern moon snail	nc		1.0	0.1
Atlantic herring	10	0.0	1.1	0.0	rock crab	nc		0.8	0.1
American sand lance	7	0.0	0.1	0.0	surf clam	10	0.1	0.8	0.1
rough scad	7	0.0	0.6	0.0	red bearded sponge	nc		0.5	0.0
Atlantic cod	4	0.0	0.1	0.0	purple sea urchin	3	0.0	0.4	0.0
cunner	4	0.0	0.5	0.0	star coral	nc		0.2	0.0
hickory shad	4	0.0	1.3	0.0	anemones	nc		0.1	0.0
northern puffer	4	0.0	0.7	0.0	ghost shrimp	1	0.0	0.1	0.0
Atlantic mackerel	3	0.0	1.3	0.0	jingle shell clams	1	0.0	0.1	0.0
spiny dogfish	3	0.0	15.6	0.1	common oyster	nc		0.1	0.0
black drum	2	0.0	0.2	0.0	mixed sponge species	nc		0.1	0.0
Atlantic sturgeon	1	0.0	60.9	0.3	Total	14,707		1,072.9	
blue runner	1	0.0	0.1	0.0	Note: nc= not counted	,		,	
bigeye	1	0.0	0.1	0.0					
crevalle jack	1	0.0	0.1	0.0					
glasseye snapper	1	0.0	0.1	0.0					
inshore lizardfish	1	0.0	0.1	0.0					
	_								

naked goby

Total

Spanish mackerel

oyster toadfish

1

1

134,295

0.0

0.0

0.0

0.1

0.1

0.3

18,710.9

0.0

0.0

Appendix 5.4. cont. . Total number and weight (kg) of finfish and invertebrates caught in 2018.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year gadids, 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	%
scup	81,228	53.4	12,947.2	56.1					
butterfish	42,025	27.6	1,412.7	6.1	Finfish not ranked				
weakfish	7,544	5.0	270.2	1.2	anchovy spp, (yoy)				
striped searobin	4,223	2.8	1,582.6	6.9	Atlantic herring, (yoy)				
northern searobin	2,949	1.9	460.8	2.0	American sand lance (yoy)				
smooth dogfish	1,598	1.0	3,024.9	13.1	gadid spp, (yoy)				
black sea bass	1,434	0.9	690.7	3.0					
windowpane flounder	1,266	0.8	189.6	0.8					
alewife	1,052	0.7	87.5	0.4	<u>Invertebrates</u>				
spotted hake	1,015	0.7	151.7	0.7	horseshoe crab	264	1.9	512.3	44.3
hogchoker	811	0.5	98.9	0.4	longfin inshore squid	13,146	92.2	408.8	35.3
summer flounder	753	0.5	397.0	1.7	spider crab	nc		77.1	6.7
fourspot flounder	711	0.5	147.6	0.6	bushy bryozoan	nc		39.4	3.4
bluefish	702	0.5	161.4	0.7	common slipper shell	nc		29.4	2.5
bay anchovy	641	0.4	3.3	0.0	lion's mane jellyfish	458	3.2	13.8	1.2
blueback herring	579	0.4	36.5	0.2	mantis shrimp	297	2.1	11.6	1.0
winter flounder	500	0.3	132.2	0.6	mixed sponge species	nc		10.8	0.9
silver hake	450	0.3	18.3	0.1	hydroid spp.	nc		10.2	0.9
red hake	361	0.2	25.8	0.1	flat claw hermit crab	nc		8.7	0.7
Atlantic herring	352	0.2	45.0	0.2	knobbed whelk	15	0.1	6.5	0.6
striped bass	269	0.2	457.4	2.0	American lobster	15	0.1	3.8	0.3
American shad	230	0.2	17.6	0.1	channeled whelk	23	0.2	3.4	0.3
tautog	230	0.2	209.0	0.9	Tubularia, spp.	nc		3.2	0.3
Atlantic menhaden	227	0.1	80.5	0.3	rock crab	nc		2.7	0.2
striped anchovy	222	0.1	4.1	0.0	blue crab	18	0.1	2.7	0.2
blue runner	195	0.1	19.9	0.1	sand shrimp	nc	0.1	1.7	0.1
little skate	151	0.1	82.4	0.4	northern moon snail	nc		1.3	0.1
moonfish	143	0.1	2.6	0.0	arks	nc		1.2	0.1
smallmouth flounder	86	0.1	2.9	0.0	hard clams	3	0.0	1.2	0.1
clearnose skate	81	0.1	149.8	0.6	lady crab	nc	0.0	1.1	0.1
northern kingfish	75	0.0	9.9	0.0	star coral	nc		0.9	0.1
spot	36	0.0	3.8	0.0	fan worm tubes	nc		0.8	0.1
Atlantic cod	11	0.0	3.2	0.0	mud crabs	nc		0.7	0.1
Atlantic mackerel	10	0.0	0.7	0.0	sea grape	nc		0.6	0.1
Atlantic sturgeon	7	0.0	98.6	0.4	surf clam	4	0.0	0.6	0.0
inshore lizardfish	7	0.0	0.5	0.0	blue mussel	nc	0.0	0.4	0.0
crevalle jack	6	0.0	0.5	0.0	Jonah crab	nc		0.4	0.0
hickory shad	6	0.0	2.2	0.0	comb jelly spp	nc		0.4	0.0
northern puffer	5	0.0	0.3	0.0	red bearded sponge	nc		0.4	0.0
spiny dogfish	5	0.0	16.7	0.0	water jelly	3	0.0	0.3	0.0
cunner	4	0.0	0.5	0.0	purple sea urchin	2	0.0	0.2	0.0
	3	0.0	0.3	0.0		nc	0.0	0.2	0.0
northern pipefish	3	0.0	4.1		Japanese shore crab			0.2	0.0
winter skate	2	0.0		0.0	boring sponge	nc 1	0.0		0.0
harvestfish	2 2	0.0	0.2 18.9	0.0 0.1	coastal mud shrimp	1 1	0.0	0.1 0.1	0.0
roughtail stingray	2 2				green sea urchin	1			
oyster toadfish		0.0	0.8	0.0	jingle shell clams		0.0	0.1	0.0
Atlantic croaker	1	0.0	0.1	0.0	green crab	1	0.0	0.1	0.0
planehead filefish	1	0.0	0.1	0.0	polychaetes	nc		0.1	0.0
goosefish	1	0.0	0.9	0.0	Total	14,252		1,156.5	
haddock	1	0.0	1.6	0.0	Note: nc= not counted				
fourbeard rockling	1	0.0	0.1	0.0					
striped cusk-eel	1	0.0	0.1	0.0					
		0.0	0.1	0.0					

Spanish mackerel

northern stargazer

Total

0.0

0.0

152,220

0.1

0.2

23,074.2

0.0

Appendix 5.4. cont. . Total number and weight (kg) of finfish and invertebrates caught in 2019.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year gadids, 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	53,617	40.2	11,169.4	50.3					
butterfish	43,434	32.5	1,114.1	5.0	Finfish not ranked				
silver hake	4,348	3.3	126.1	0.6	anchovy spp, (yoy)				
weakfish	3,766	2.8	245.5	1.1	Atlantic herring, (yoy)				
striped searobin	3,181	2.4	1,264.4	5.7	American sand lance (yoy)				
northern searobin	3,112	2.3	450.5	2.0	gadid spp, (yoy)				
moonfish	2,270	1.7	22.6	0.1					
bluefish	2,048	1.5	224.5	1.0					
spotted hake	2,027	1.5	178.3	0.8	<u>Invertebrates</u>				
black sea bass	1,584	1.2	816.7	3.7	horseshoe crab	218	1.8	391.9	33.3
windowpane flounder	1,427	1.1	242.5	1.1	longfin inshore squid	10,934	92.1	368.4	31.3
alewife	1,401	1.0	86.1	0.4	spider crab	nc		115.9	9.9
bay anchovy	1,346	1.0	6.6	0.0	common slipper shell	nc		71.8	6.1
summer flounder	1,309	1.0	464.3	2.1	lion's mane jellyfish	386	3.3	67.6	5.8
Atlantic herring	1,294	1.0	302.7	1.4	bushy bryozoan	nc		60.2	5.1
smooth dogfish	1,243	0.9	2,957.2	13.3	mixed sponge species	nc		43.2	3.7
red hake	1,215	0.9	77.5	0.3	American lobster	25	0.2	7.6	0.6
Atlantic menhaden	815	0.6	280.7	1.3	mantis shrimp	223	1.9	7.2	0.6
fourspot flounder	570	0.4	147.8	0.7	flat claw hermit crab	nc		6.5	0.6
striped bass	535	0.4	773.6	3.5	hydroid spp.	nc		5.7	0.5
American shad	512	0.4	32.4	0.1	knobbed whelk	17	0.1	4.8	0.4
winter flounder	422	0.3	103.1	0.5	blue crab	21	0.2	3.9	0.3
little skate	418	0.3	220.9	1.0	common oyster	nc		3.8	0.3
hogchoker	383	0.3	50.8	0.2	channeled whelk	22	0.2	3.3	0.3
tautog	373	0.3	351.9	1.6	sand shrimp	nc		2.5	0.2
smallmouth flounder	186	0.1	4.1	0.0	rock crab	nc		1.7	0.1
blueback herring	124	0.1	6.0	0.0	hard clams	10	0.1	1.4	0.1
clearnose skate	113	0.1	213.8	1.0	lady crab	nc		1.4	0.1
spot	66	0.0	8.2	0.0	mud crabs	nc		1.3	0.1
Spanish mackerel	65	0.0	3.7	0.0	northern moon snail	nc		1.1	0.1
blue runner	59	0.0	3.8	0.0	Tubularia, spp.	nc		1.0	0.1
winter skate	41	0.0	72.7	0.3	arks	nc		0.8	0.1
striped anchovy	21	0.0	0.4	0.0	deadman's fingers sponge	nc		0.6	0.0
fourbeard rockling	20	0.0	1.3	0.0	blue mussel	nc		0.4	0.0
Atlantic cod	15	0.0	5.1	0.0	fan worm tubes	nc		0.4	0.0
northern kingfish	14	0.0	1.9	0.0	star coral	nc		0.3	0.0
hickory shad	11	0.0	3.1	0.0	comb jelly spp	nc		0.3	0.0
Atlantic sturgeon	9	0.0	104.7	0.5	sea cucumber	2	0.0	0.2	0.0
northern puffer	9	0.0	1.4	0.0	sea grape	nc	0.0	0.2	0.0
northern pipefish	5	0.0	0.2	0.0	green sea urchin	2	0.0	0.1	0.0
crevalle jack	4	0.0	0.2	0.0	red bearded sponge	nc	0.0	0.1	0.0
spiny dogfish	4	0.0	23.8	0.1	northern red shrimp	1	0.0	0.1	0.0
oyster toadfish	4	0.0	1.1	0.0	polychaetes	nc	0.0	0.1	0.0
bigeye	3	0.0	0.2	0.0	coastal mud shrimp	1	0.0	0.1	0.0
conger eel	2	0.0	0.2	0.0	ghost shrimp	1	0.0	0.1	0.0
fawn cusk-eel	2	0.0	0.3	0.0	Japanese shore crab	nc	0.0	0.1	0.0
	2	0.0	0.1	0.0				0.1	0.0
goosefish					moon jelly	nc			
inshore lizardfish	2	0.0	0.1	0.0	starfish spp.	nc		0.1	0.0
white perch	2	0.0	0.2	0.0	surf clam	1	0.0	0.1	0.0
American eel	1	0.0	0.6	0.0	purple sea urchin	1	0.0	0.1	0.0
planehead filefish	1	0.0	0.1	0.0	Total	11,865		1,176.2	
harvestfish	1	0.0	0.1	0.0	Note: nc= not counted				
northern sennet	1	0.0	0.1	0.0					
4		0.0	1.0	0.1					

0.0

0.0

1

133,439

roughtail stingray

longhorn sculpin

Total

16.8

0.1

22,184.7

0.1

Appendix 5.4. cont. . Total number and weight (kg) of finfish and invertebrates caught in 2021.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year gadids, 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)=139.

species	count	%	weight	%	species	count	%	weight	%
scup	54,698	43.9	8,184.6	46.2					
butterfish	38,461	30.9	1,034.9	5.8	Finfish not ranked				
weakfish	8,661	6.9	612.4	3.5	anchovy spp, (yoy)				
northern searobin	4,135	3.3	727.1	4.1	Atlantic herring, (yoy)				
striped searobin	3,460	2.8	1,281.7	7.2	American sand lance (yoy)				
moonfish	2,255	1.8	28.6	0.2	gadid spp, (yoy)				
smooth dogfish	1,728	1.4	2,909.3	16.4					
bay anchovy	1,618	1.3	6.0	0.0					
bluefish	1,203	1.0	171.0	1.0	<u>Invertebrates</u>				
black sea bass	1,089	0.9	521.6	2.9	horseshoe crab	339	3.0	583.3	38.4
spotted hake	886	0.7	73.4	0.4	longfin inshore squid	9,652	85.9	360.3	23.7
windowpane flounder	812	0.7	142.8	0.8	boring sponge	nc		153.3	10.1
summer flounder	796	0.6	511.2	2.9	bushy bryozoan	nc		148.6	9.8
hogchoker	704	0.6	87.5	0.5	common slipper shell	nc		81.4	5.4
silver hake	565	0.5	21.2	0.1	spider crab	nc		61.4	4.0
red hake	533	0.4	35.9	0.2	mantis shrimp	813	7.2	27.3	1.8
American shad	403	0.3	26.6	0.2	knobbed whelk	95	0.8	25.3	1.7
striped anchovy	326	0.3	3.7	0.0	flat claw hermit crab	nc		16.0	1.1
Atlantic menhaden	303	0.2	95.3	0.5	lion's mane jellyfish	151	1.3	12.8	0.8
winter flounder	266	0.2	55.9	0.3	channeled whelk	64	0.6	9.9	0.7
tautog	225	0.2	193.9	1.1	blue crab	60	0.5	8.9	0.6
fourspot flounder	224	0.2	51.2	0.3	arks	nc		7.1	0.5
smallmouth flounder	191	0.2	4.3	0.0	hydroid spp.	nc		5.2	0.3
clearnose skate	165	0.1	278.7	1.6	American lobster	6	0.1	2.4	0.2
alewife	125	0.1	7.4	0.0	mud crabs	nc		2.3	0.2
inshore lizardfish	116	0.1	9.3	0.1	hard clams	25	0.2	2.1	0.1
Atlantic herring	114	0.1	0.5	0.0	rock crab	nc		2.0	0.1
striped bass	109	0.1	164.6	0.9	common oyster	nc		1.8	0.1
spot	90	0.1	11.4	0.1	sand shrimp	nc		1.1	0.1
northern kingfish	76	0.1	6.5	0.0	lady crab	nc		0.8	0.1
northern puffer	56	0.0	2.1	0.0	sea grape	nc		0.8	0.1
little skate	51	0.0	25.0	0.1	deadman's fingers sponge	nc		0.6	0.0
hickory shad	24	0.0	9.1	0.1	blue mussel	nc		0.6	0.0
winter skate	23	0.0	21.2	0.1	star coral	nc		0.5	0.0
mackerel scad	21	0.0	0.4	0.0	northern moon snail	nc		0.5	0.0
Atlantic sturgeon	19	0.0	378.6	2.1	purple sea urchin	10	0.1	0.4	0.0
Atlantic cod	14	0.0	2.0	0.0	brown shrimp	16	0.1	0.4	0.0
blue runner	13	0.0	1.0	0.0	mixed sponge species	nc		0.3	0.0
blueback herring	12	0.0	0.4	0.0	fan worm tubes	nc		0.3	0.0
rough scad	11	0.0	0.5	0.0	Tubularia, spp.	nc		0.3	0.0
fourbeard rockling	10	0.0	1.2	0.0	comb jelly spp	nc		0.2	0.0
oyster toadfish	10	0.0	3.8	0.0	rubbery bryzoan	nc		0.2	0.0
cunner	5	0.0	0.9	0.0	tunicates, misc	nc		0.1	0.0
Atlantic mackerel	5	0.0	0.3	0.0	starfish spp.	nc		0.1	0.0
crevalle jack	4	0.0	0.2	0.0	surf clam	2	0.0	0.1	0.0
planehead filefish	4	0.0	0.2	0.0	bay scallop	1	0.0	0.1	0.0
bigeye scad	3	0.0	0.2	0.0	red bearded sponge	nc		0.1	0.0
Spanish mackerel	2	0.0	0.3	0.0	nemerteans	nc		0.1	0.0
conger eel	1	0.0	0.2	0.0	wavy astarte	1	0.0	0.1	0.0
American sand lance	1	0.0	0.2	0.0	Total	11,235	0.0	1,518.8	0.0
		0.0	0.1			11,435		1,510.8	
short bigeye	1			0.0	Note: nc= not counted				
striped burrfish	1	0.0	0.3	0.0					
landham amhin	1	0.0	0.2	0.0					

0.0

0.0

1

124,630

longhorn sculpin

sand tiger shark

Total

0.3

8.4

17,715.0

0.0

Appendix 5.4. cont. . Total number and weight (kg) of finfish and invertebrates caught in 2022.

Finfish species are in order of descending count. Invertebrate species are in order of descending weight (nc = not counted). Young-of-year gadids, 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)=167.

species	count	%	weight	%	species	count	%	weight	%
scup	85,562	52.2	10,840.3	56.0				-	
butterfish	48,429	29.5	1,272.9	6.6	Finfish not ranked				
weakfish	15,050	9.2	725.4	3.8	anchovy spp, (yoy)				
northern searobin	2,021	1.2	366.1	1.9	Atlantic herring, (yoy)				
striped searobin	1,653	1.0	616.6	3.2	American sand lance (yoy)				
black sea bass	1,351	0.8	578.8	3.0	gadid spp, (yoy)				
smooth dogfish	1,331	0.8	2,054.1	10.6					
red hake	1,287	0.8	78.2	0.4					
bluefish	881	0.5	178.1	0.9	<u>Invertebrates</u>				
Atlantic menhaden	881	0.5	223.3	1.2	horseshoe crab	402	2.3	714.8	39.9
silver hake	745	0.5	23.3	0.1	longfin inshore squid	15,385	86.7	701.1	39.1
windowpane flounder	561	0.3	95.7	0.5	bushy bryozoan	nc		139.4	7.8
summer flounder	501	0.3	305.2	1.6	boring sponge	nc		70.3	3.9
bay anchovy	443	0.3	2.1	0.0	lion's mane jellyfish	1,134	6.4	37.9	2.1
hogchoker	410	0.3	52.3	0.3	common slipper shell	nc		33.8	1.9
alewife	388	0.2	22.1	0.1	spider crab	nc		31.8	1.8
winter flounder	313	0.2	71.5	0.4	mantis shrimp	714	4.0	24.3	1.4
tautog	302	0.2	302.0	1.6	channeled whelk	44	0.2	8.2	0.5
moonfish	235	0.1	3.7	0.0	knobbed whelk	22	0.1	5.5	0.3
striped bass	211	0.1	583.1	3.0	lady crab	nc		3.5	0.2
American shad	206	0.1	19.3	0.1	flat claw hermit crab	nc		3.5	0.2
northern kingfish	190	0.1	13.4	0.1	arks	nc		2.5	0.1
smallmouth flounder	150	0.1	2.9	0.0	blue crab	14	0.1	2.1	0.1
clearnose skate	122	0.1	191.2	1.0	hard clams	18	0.1	1.4	0.1
spotted hake	110	0.1	4.5	0.0	American lobster	4	0.0	1.4	0.1
spot	105	0.1	16.6	0.1	sand shrimp	nc		1.3	0.1
northern puffer	85	0.1	2.0	0.0	deadman's fingers sponge	nc		1.2	0.1
striped anchovy	62	0.0	1.1	0.0	star coral	nc		1.0	0.1
fourspot flounder	59	0.0	14.2	0.1	fan worm tubes	nc		1.0	0.1
little skate	56	0.0	29.4	0.2	rock crab	nc		1.0	0.1
Atlantic herring	47	0.0	3.1	0.0	mud crabs	nc		0.9	0.1
Atlantic sturgeon	47	0.0	608.7	3.1	Tubularia, spp.	nc		0.8	0.0
blueback herring	39	0.0	1.0	0.0	common oyster	nc		0.4	0.0
bigeye scad	28	0.0	1.3	0.0	northern moon snail	nc		0.3	0.0
Atlantic mackerel	20	0.0	1.7	0.0	hydroid spp.	nc		0.3	0.0
Atlantic cod	15	0.0	18.7	0.1	purple sea urchin	7	0.0	0.3	0.0
blue runner	12	0.0	0.9	0.0	surf clam	5	0.0	0.2	0.0
hickory shad	7	0.0	2.5	0.0	red bearded sponge	nc		0.2	0.0
winter skate	7	0.0	5.8	0.0	polychaetes	nc		0.2	0.0
rough scad	5	0.0	0.3	0.0	blue mussel	nc		0.1	0.0
fourbeard rockling	4	0.0	0.3	0.0	cleaner/peppermint shrimp	2	0.0	0.1	0.0
goosefish	3	0.0	1.7	0.0	sea grape	nc	0.0	0.1	0.0
northern pipefish	2	0.0	0.1	0.0	starfish spp.	nc		0.1	0.0
longhorn sculpin	2	0.0	0.6	0.0	anemones	nc		0.1	0.0
Spanish mackerel	2	0.0	0.1	0.0	coastal mud shrimp	1	0.0	0.1	0.0
seasnail	2	0.0	0.1	0.0	green crab	1	0.0	0.1	0.0
bigeye	1	0.0	0.1	0.0	northern red shrimp	1	0.0	0.1	0.0
cownose ray	1	0.0	2.6	0.0	mixed sponge species	nc	0.0	0.1	0.0
-	1	0.0	0.3	0.0	Total	17,754		1,791.0	0.0
conger eel	_		0.3	0.0	างเสา	17,754		1,/91.0	
cunner	1	0.0							
American eel	1	0.0	0.9	0.0	Note: nc= not counted				
planehead filefish	1	0.0	0.1	0.0					

American sand lance

sea raven

Total

oyster toadfish

0.0

0.0

0.0

1

163,951

0.1

0.3

0.4

19,340.5

0.0

0.0

**Appendix 5.5 Endangered Species Interactions, 2022:** Forty-seven (47) Atlantic sturgeon were captured on six (6) of the 167 tows completed in 2022; an encounter rate (3.6%) comparable to the average for the LISTS time series of tows (2.5%). The captures occurred in deep transition and mud sites off the North shore of Long Island and near Falkner's Island. One (1) loggerhead turtle was captured at site 01-28; an encounter rate of 0.5%. All encounters were reported to NMFS within 24 hours and all animals were released alive and uninjured. Details are provided below:

Sample	Date	Site	Tow Start	Duration (min)	Species	Total Length (mm)	Standard Length (mm)	Weight (kg)	Left Pec T-bar	Dorsal T-bar	PIT	Tissue Sample	Photo	Release Time	Release Latitude	Release Longitude
SP2022081	6/13/2022	03-26	10:48	30	ATS	1,430	1,400	28.12	-	-	ADDED	Υ	Υ	11:46	41.0624	-72.7041
SP2022081	6/13/2022	03-26	10:48	30	ATS	1,760	1,600	45.36	-	-	RECAP	N	Υ	11:44	41.0621	-72.7047
SP2022086	6/14/2022	01-25	12:02	30	ATS	1,125	969	8.25	-	-	ADDED	Υ	Υ	12:47	41.0174	-72.7072
FA2022003	9/8/2022	01-28	12:43	30	LST	900	810	>65	-	-	N/A	N/A	Υ	13:40	41.0550	-72.5847
FA2022018	9/16/2022	01-24	10:00	30	ATS	760	670	2.53	-	-	-	N	N	11:51	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	840	720	3.15	-	-	-	N	N	11:55	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	910	790	4.20	-	-	-	N	N	11:41	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	940	811	4.55	-	-	-	N	N	12:05	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	970	850	5.26	-	-	-	N	N	11:39	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	973	854	5.33	-	-	-	N	N	12:03	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,016	880	5.85	-	-	-	N	N	11:57	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,020	890	6.06	-	-	-	N	N	11:47	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,030	910	6.48	-	-	-	N	N	11:53	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,070	960	7.64	-	-	-	N	N	12:01	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,138	990	8.40	-	-	-	N	N	11:49	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,140	1,000	8.67	-	-	-	N	N	11:59	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,145	1,000	8.67	-	-	-	N	N	11:45	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,154	1,047	9.98	-	-	-	N	N	11:19	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,194	1,060	10.37	-	-	-	N	N	10:55	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,200	1,005	8.80	-	-	-	N	N	11:43	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,208	1,050	10.07	-	-	-	N	N	11:01	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,235	1,091	11.33	-	-	-	N	N	11:11	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,255	1,140	12.97	-	-	-	N	N	10:57	41.0166	-72.8015

<sup>\*</sup>Due to the large number of fish captured in a single tow (FA2022018), steps were taken to prioritize the survival of the fish. These steps included not taking individual weights, weights here reflects estimated weight based on a length-weight relationship of previously caught fish on LISTS. Release time is an estimate and latitude/longitude for this tow was where the last fish was released. A PIT tag reader malfunction prohibited the fish being scanned for tags or the addition of new tags. With no way to identify the samples, there were no tissue samples taken.

**Appendix 5.5. Cont. Endangered Species Interactions, 2022:** Forty-seven (47) Atlantic sturgeon were captured on six (6) of the 167 tows completed in 2022; an encounter rate (3.6%) comparable to the average for the LISTS time series of tows (2.5%). The captures occurred in deep transition and mud sites off the North shore of Long Island and near Falkner's Island. One (1) loggerhead turtle was captured at site 01-28; an encounter rate of 0.5%. All encounters were reported to NMFS within 24 hours and all anima ls were released alive and uninjured. Details are provided below:

Sample	Date	Site	Tow Start	Duration (min)	Species	Total Length (mm)	Standard Length (mm)	Weight (kg)	Left Pec T-bar	Dorsal T- bar	PIT	Tissue Sample	Photo	Release Time	Release Latitude	Release Longitude
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,262	1,128	12.55	-	-	-	N	N	11:25	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,266	1,135	12.80	-	-	-	N	N	11:13	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,283	1,134	12.76	-	-	-	N	N	11:15	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,298	1,159	13.65	-	-	-	N	Ν	11:03	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,303	1,195	14.99	-	-	-	N	Ν	10:51	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,306	1,160	13.68	-	-	-	N	Ν	11:35	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,316	1,136	12.83	-	-	-	N	Ν	11:37	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,349	1,162	13.76	-	-	-	N	Ν	11:31	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,370	1,196	15.03	-	-	-	N	Ν	11:17	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,375	1,200	15.19	-	-	-	N	N	11:29	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,388	1,214	15.74	-	-	-	N	Ν	11:23	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,404	1,235	16.59	-	-	-	N	Ν	11:05	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,405	1,284	18.70	-	-	RECAP	N	N	10:45	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,405	1,240	16.80	-	-	-	N	Ν	10:53	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,405	1,234	16.55	-	-	-	N	Ν	11:21	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,454	1,287	18.84	-	-	-	N	N	10:49	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,496	1,289	18.93	-	-	-	N	Ν	11:33	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,500	1,288	18.88	-	-	-	N	Ν	11:27	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,575	1,435	26.33	-	-	-	N	N	11:09	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,635	1,450	27.18	-	-	-	N	Ν	11:07	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,750	1,535	32.39	-	-	-	N	N	10:59	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,870	1,640	39.70	-	-	-	N	Ν	10:47	41.0166	-72.8015
FA2022018	9/16/2022	01-24	10:00	30	ATS	1,305	1,173	14.16	-	-	-	N	N	12:07	41.0166	-72.8015
FA2022050	10/18/2022	05-27	11:29	30	ATS	1,459	1,281	18.50	-	-	ADDED	Y	N	12:16	41.1073	-72.6043
FA2022056	10/19/2022	10-27	14:08	30	ATS	1,355	1,222	14.25	-	-	ADDED	Υ	N	14:59	41.2225	-72.7933

<sup>\*</sup>Due to the large number of fish captured in a single tow (FA2022018), steps were taken to prioritize the survival of the fish. These steps included not taking individual weights, weights here reflects estimated weight based on a length-weight relationship of previously caught fish on LISTS. Release time is an estimate and latitude/longitude for this tow was where the last fish was released. A PIT tag reader malfunction prohibited the fish being scanned for tags or the addition of new tags. With no way to identify the samples, there were no tissue samples taken.

**Appendix 5.6:** 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  $\sim 3-15^{\circ}$ C, 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  $< 7-10^{\circ}$ C; prefers  $\sim 11-22^{\circ}$ C, and spawns at higher end of temperature tolerance.

Cold Temperate Group					
Common Name	Scientific Name				
alewife	Alosa pseudoharengus				
American plaice	Hippoglossoides platessoides				
Atlantic herring	Clupea harengus				
Atlantic cod	Gadus morhua				
Atlantic mackerel	Scomber scombrus				
Atlantic salmon	Salmo salar				
Atlantic seasnail	Liparis atlanticus				
Atlantic sturgeon	Acipenser oxyrinchus				
Atlantic tomcod	Microgadus tomcod				
barndoor skate	Dipturus laevis				
cunner	Tautogolabrus adspersus				
fawn cusk-eel	Lepophidium profundorum				
fourspot flounder	Hippoglossina oblonga				
grubby	Myoxocephalus aeneus				
haddock	Melanogrammus aeglefinus				
little skate	Leucoraja erinacea				
longhorn sculpin	Myoxocephalus octodecemspinosus				
lumpfish	Cyclopterus lumpus				
monkfish (goosefish)	Lophius americanus				
northern pipefish	Syngnathus fuscus				
ocean pout	Zoarces americanus				
pollock	Pollachius virens				
rainbow smelt	Osmerus mordax				
red hake	Urophycis chuss				
rock gunnel	Pholis gunnellus				
rockling	Enchelyopus cimbrius				
searaven	Hemitripterus americanus				
spiny dogfish	Squalus acanthias				
whiting (silver hake)	Merluccius bilinearis				
windowpane	Scophthalmus aquosus				
winter flounder	Pseudopleuronectes americanus				
winter skate	Leucoraja ocellata				
vellowtail flounder	Limanda ferruginea				

Warm Temperate Group							
Common Name	Scientific Name						
American eel	Anguilla rostrata						
American shad	Alosa sapidissima						
Atlantic bonito	Sarda sarda						
Atlantic croaker	Micropogonias undulates						
Atlantic silversides	Menidia menidia						
black seabass	Centropristis striata						
blueback herring	Alosa aestivalis						
bluefish	Pomatomus saltatrix						
butterfish	Peprilus triacanthus						
clearnose skate	Raja eglanteria						
conger eel	Conger oceanicus						
gizzard shad	Dorosoma cepedianum						
hickory shad	Alosa mediocris						
hogchoker	Trinectes maculates						
lined seahorse	Hippocampus erectus						
menhaden	Brevoortia tyrannus						
naked goby	Gobiosoma bosc						
northern kingfish	Menticirrhus saxatilis						
northern puffer	Sphoeroides maculates						
northern searobin	Prionotus carolinus						
oyster toadfish	Opsanus tau						
scup (porgy)	Stenotomus chrysops						
sea lamprey	Petromyzon marinus						
smallmouth flounder	Etropus microstomus						
smooth dogfish	Mustelus canis						
spot	Leiostomus xanthurus						
spotted hake	Urophycis regia						
striped bass	Morone saxatilis						
striped cusk-eel	Ophidion marginatum						
striped searobin	Prionotus evolans						
summer flounder	Paralichthys dentatus						
tautog (blackfish)	Tautoga onitis						
white pearch	Morone Americana						
weakfish	Cynoscion regalis						