NEW YORK AND NEW JERSEY HARBOR DEEPENING PROJECT

AQUATIC BIOLOGICAL SURVEY REPORT
2005

Prepared for:

U.S. Army Corps of Engineers – New York District
Environmental Review Section
Jacob K. Javits Federal Building
26 Federal Plaza
New York, New York 10278

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1.0 INTRODUCTION

1.1 BACKGROUND

This report presents the results of the 2005 Aquatic Biological Survey (ABS) conducted in the New York and New Jersey Harbor (Harbor) from January through July 2005. The focus of the program was to collect spatial and temporal distribution data on adult and early life stages of finfish in the Harbor, with an emphasis on winter flounder *(Pseudopleuronectes americanus).*

The 2005 Aquatic Biological Survey supplements data provided in the following reports: 1998–1999 New York and New Jersey Harbor Navigation (NYNJHN) Study, 2000–2001 Supplemental Sampling Program, 2001–2002 Aquatic Biological Sampling Program, the 2002-2003 Aquatic Biological Sampling Program and the 2004 Aquatic Biological Survey Report. Collectively, these five studies comprise the biological database for the New York and New Jersey Harbor Deepening Project (NYNJHDP), a United States Army Corps of Engineers (USACE) and Port Authority of New York and New Jersey (PANYNJ) sponsored project to deepen navigation channels to 50-ft to accommodate larger commercial vessels. The primary goal of the Aquatic Biological Survey is to collect data on Harbor finfish, shellfish, macro-invertebrates, and water quality, with a focus on biological community structure, distribution patterns, and seasonal patterns of habitat use. The information collected is used in determining the potential biological impacts of deepening existing Harbor navigation channels, anchorages, and berthing areas.

The NYNJHDP is the culmination of several prior projects. In December 1999, the U.S. Army Corps of Engineers released their Final Feasibility Report and Environmental Impact Statement, a comprehensive report detailing existing conditions of the Harbor, evaluating alternative actions and recommending a plan for channel improvements in the

Harbor. In December 2000, the U.S. Congress issued the Water Resources Development Act allowing the Harbor Navigation Study to commence. In 2002, Congress released the Conference Report on the Energy and Water Appropriations Act of 2002, which ordered the USACE to consolidate each of its dredging projects into the Harbor Deepening Project. In June 2002, a Record of Decision was issued for the Final Environmental Impact Statement for the Harbor Navigation Study.

The 1998–1999 NYNJHN Study found that the Harbor finfish community consists of a variety of resident and migratory fish species typical of large coastal estuaries and inshore waterways along the Middle Atlantic Bight. The Harbor estuary serves as a spawning ground, migratory pathway and nursery/foraging area for many fish and macroinvertebrate species. To obtain more information on the use of Harbor habitats by early life stages of fish, particularly winter flounder, the NYNJHN Supplemental Sampling Program was conducted during 2000–2001.

Although both the 1998–1999 NYNJHN Study and the 2000–2001 Supplemental Sampling Program provided extensive information about adult and early life stages of winter flounder in the Harbor, it was determined that additional data were needed to better understand spatial and temporal occurrence patterns within the Harbor, their use of Harbor navigation channels and shallow/shoal areas, and the role Lower New York Bay plays in winter flounder over-wintering and spawning. Furthermore, it was determined that data for multiple years are needed to establish whether the use of navigation channels and shallow/shoal areas by winter flounder is consistent from year to year. As a result, the 2001-2002 Aquatic Biological Sampling Program was created to meet this need for additional data.

The 2001-2002 Aquatic Biological Sampling Program provided additional support to the findings of the Supplemental Sampling Program (2000-2001) that winter flounder disperse throughout the Hudson-Raritan Estuary after hatching from the primary spawning areas in the Lower New York Bay. These movement patterns may be

important to winter flounder population dynamics as larvae that move directly to the ocean without using the nursery habitat may be lost to the population (Chant et al. 2000).

Although there is some indication from the 2000-2001 and 2001-2002 sampling programs that winter flounder in the Hudson-Raritan Estuary exhibit movement patterns, more data were required to determine if this pattern is consistent among years. Additional sampling was conducted during 2002-2005 to expand the temporal coverage of the Biological Monitoring Program Database, especially with respect to the Lower Bay for winter flounder and other Essential Fish Habitat (EFH) species. To allow for direct comparisons among years, the study objectives and sampling gear have remained consistent among sampling years, except where noted[1].

1.2 STUDY OBJECTIVES

During the 2005 Aquatic Biological Survey data were collected on adult and early life stages of finfish in the Harbor with an emphasis on winter flounder – sampling was conducted during the period when winter flounder spawning and early lifestages occur in the Harbor. The specific objectives were to:

- Determine the utilization and significance of Harbor areas for adult winter flounder and other EFH species for the months of January through June.

- Determine the utilization and significance of Harbor areas for early life stages (eggs and larvae) of winter flounder and other EFH species from January through July.

To meet program objectives, two sampling methodologies were employed. Bottom trawling was conducted to address the objectives related to adult finfish, and an epibenthic sled-mounted plankton net was used to target early life stages.

[1] Bottom trawls were conducted during the night in previous sampling years. In 2005, sampling times were changed to daylight hours due to Health and Safety considerations.

1.3 REPORT ORGANIZATION

The remainder of this report, which describes the 2005 ABS methodology and presents results, is organized as follows: Section 2 describes sampling stations and summarizes the sampling methods used; Section 3 presents the results of bottom-trawl and epibenthic-sled sampling; and Section 4 discusses how the data collected relate to 2005 program objectives and compare to previous years of the NYNJHDP sampling.

2.0 METHODS

2.1 SAMPLING LOCATIONS

The same 26 locations sampled during the 2001–2004 Aquatic Biological Sampling Programs were sampled during 2005 (Table 2-1). However, the Elizabeth Flats South (AK-1) and the South Brooklyn (SB-2) stations were not sampled for bottom trawls due to a change in bathymetry. Of these 26 stations, 14 were located in shallow/shoal or interpier areas, and 12 were located in navigation channels.

For data analysis purposes in this report as well as the previous Aquatic Biological Sampling Programs, the Harbor was divided into three study areas based on geography: Arthur Kill/Newark Bay, Upper New York Bay, and Lower New York Bay (Figure 2-1). The 26 stations were distributed as follows among the three areas:

- Arthur Kill and Newark Bay

  Nine stations were located in this area. Of these, two were in Arthur Kill shallow/shoal areas (AK-1 and AK-4) and two were in channels at the Arthur Kill/Kill Van Kull confluence area (AK-2 and AK-3). Two other stations were located in the navigation channel in Newark Bay (NB-5, and NB-6), while the shallow/shoal areas were represented by three Arthur Kill/Newark Bay stations: NB-3, NB-4, and NB-7. AK-1 was not included in the 2005 trawl survey.

- Upper New York Bay ("Upper Bay")
  In the Upper Bay, which includes South Brooklyn (SB) and Port Jersey (PJ), 11 stations were sampled. Two were in the South Brooklyn interpier areas (shallow/shoal area stations SB-1 and SB-2) and one was on the Bay Ridge Flats (SB-3). Three stations were located in navigation channels—one in Bay Ridge Channel (SB-4) and two in the Anchorage Channel (SB-5 and SB-6). Three shallow/shoal area stations were located in Port Jersey (PJ-l, PJ-2, PJ-3) and two were located in Port Jersey Channel (PJ-4 and PJ-5). SB-2 was not included in the 2005 trawl survey.

- Lower New York Bay ("Lower Bay")
  Six stations were located in this area—three in channels (LB-2, LB-4 and LB-6) and three in shallow/shoal areas (LB-1, LB-3, and LB-5). The Lower Bay sites were added in the 2001–2002 Aquatic Biological Sampling Program to provide better spatial coverage for the evaluation of winter flounder and other EFH species in the Harbor.

2.2 BOTTOM TRAWL SAMPLING

Adult and sub-adult (juvenile) finfish were sampled via bottom trawl surveys conducted from 10 January through 16 June 2005. Trawls were conducted on a stratified schedule bracketing the period when adult winter flounder historically are present in the Harbor to spawn. Bottom trawls were conducted twice a month in January, February and March and once a month during April May and June at twenty-four (24) sampling stations Due to ice conditions during the second sampling week in January, bottom trawls were conducted at only 16 stations.

Bottom trawl surveys were conducted using a 30-foot (9.1 m) otter trawl (Table 2-2), the same trawl used during previous years of the NYNJHDP. A minimum ratio of tow cable

length to maximum station water depth of 5:1 was maintained to ensure that the trawl was in contact with the bottom throughout each tow.

Bottom trawls were conducted during the daylight[2] hours (from one hour after sunrise and one hour before sunset) against the prevailing current at a bottom speed of approximately 5.0 ft/sec (150 cm/sec). Target tow duration was ten minutes, although tow times were adjusted as needed to account for obstructions, limited interpier distances, commercial traffic, and several other factors.

A total of 209 bottom trawls where conducted in 2005 —104 at navigation channel stations and 105 at shallow/shoal.

All fish were identified and enumerated on the research vessel immediately following collection. Total length of each winter flounder caught was recorded to the nearest millimeter (mm). When available, up to a total of 10 winter flounder per trawl that measured greater than 250 mm were preserved on ice and returned to the laboratory for gender determination. A 250-mm total length was established to limit the number of immature fish kept for analysis. Winter flounder typically exhibit adult gonad development at 250 mm total length and reach sexual maturity between 280 mm and 300 mm (Witherell 1993).

For all other species collected, total length was measured for a maximum of 25 individuals of each species in each trawl sample. When the number collected of a non-target species exceeded 25 in a trawl sample, a random, unbiased selection of the 25 to be measured was made. Except for winter flounder preserved for laboratory analysis, all fish collected were released after on-board examination.

2.3 ICHTHYOPLANKTON SAMPLING (EPIBENTHIC SLED)

Ichthyoplankton sampling was conducted from 10 January to 7 July 2005. Twenty-six stations were sampled twice a month from February through June and once a month during January and July.

Samples were collected with an epibenthic sled-mounted, 0.5-m mouth diameter plankton net with 0.5-mm mesh (Table 2-3). Typically, a 3:1 ratio of cable length to station depth was used and an inclinometer was used to determine the warp angle from the boat to confirm that the sled was on the bottom. The net was fitted with a General Oceanics flowmeter (Model 2030R) to calculate sample volume.

All samples were collected during daylight hours (from one hour after sunrise to one hour before sunset). Whenever possible, each tow was conducted against the prevailing current or tide for ten minutes. Tow direction and duration were adjusted as needed to account for obstructions, limited transect distances and commercial traffic.

A total of 327 epibenthic sled tows were conducted—152 at navigation channel stations and 175 at shallow/shoal stations. Each sample was washed from the plankton net into containers and preserved with 5% buffered formalin containing rose Bengal stain. Samples were returned to the laboratory for sorting and identification.

All specimens were identified to the lowest taxonomic level practicable, assigned a life stage based on morphometric characteristics (egg, yolk-sac larvae, post yolk-sac larvae, or juvenile) and enumerated. Eggs and larvae that could not be identified to species were recorded as unidentified species. For some larvae, it was not possible to discern between yolk-sac and post yolk-sac life stages because specimens were damaged. Indiscernible larval life stages were combined with the yolk-sac larvae life stage during analysis.

[2] Bottom trawls were conducted during the night in previous sampling years. Sampling times were changed due to Health and Safety considerations.

Quality control procedures consisted of a continuous sampling plan to assure an average outgoing quality limit (AOQL) of ≥ 90% during sample sorting, enumeration, life-stage designation, and identification.

2.4 WATER QUALITY MEASUREMENTS

Dissolved oxygen (DO), temperature, conductivity, and salinity were measured after each trawl and epibenthic sled tow (Table 2-4). Water quality parameters were recorded one foot (0.3 m) above the substrate using calibrated meters (YSI Model 85 Handheld Oxygen, Conductivity, Salinity and Temperature System).

2.5 DATA ANALYSIS

The names of all species identified to the lowest possible taxonomic level in both trawl and ichthyoplankton sampling are listed in Table 2-5.

2.5.1 Bottom Trawl

Catch per unit effort (CPUE), defined as the number of fish per 10 minute trawl tow, was determined for each trawl tow based on the time each net sampled on the bottom. Catches were standardized to a 10-minute tow when tow times were less than 10 minutes. Standardization was performed by dividing 10 by the actual number of tow minutes.

$$CPUE = \left(\frac{N}{T} \right) \times 10$$

Where:

N equals the number of fish collected during the tow.

T equals the actual tow time expressed in minutes.

2.5.2 Ichthyoplankton

Ichthyoplankton densities expressed as total number per 1,000 cubic meters (m^3) were computed for each epibenthic sled tow based on the volume of water sampled and using the following formula:

$$Density = \left(\frac{N}{[A \times D]} \right) \times 1{,}000$$

Where:

N equals the total number of organisms collected

A equals the area of the net mouth (m^2) and

D equals the distance traveled (m) calculated as the total flowmeter revolutions multiplied by the flowmeter constant (0.026873).

3.0 RESULTS

Adult finfish and ichthyoplankton data were analyzed for the two general habitat types (navigation channels and shallow/shoal areas) and the three Harbor areas (Arthur Kill/Newark Bay, Upper Bay, and Lower Bay). Following is a summary of results for all species combined and for winter flounder. Detailed station data for adult finfish, ichthyoplankton, and water quality are provided in Appendices A through C, respectively.

Note that the following data-unit definitions apply in the figures accompanying the main report text and in the Appendices:

- Trawl: Catch per unit effort (CPUE), defined as number caught per 10 minute trawl tow.
- Epibenthic sled tow: Ichthyoplankton density (number per 1000 cubic meters).

3.1 FINFISH

3.1.1 Bottom Trawl Sampling

A total of 38 fish species were collected during the 2005 bottom trawl survey (Table 2-5). Thirty-four (34) species were collected from the navigation channel stations and 31 species were collected from the shallow/shoal stations. Tables 3-1a and 3-1b report average trawl CPUE by species for all navigation channel stations and for all shallow/shoal stations, respectively, for each month sampled (January-June) during 2005.

Bay anchovy (2,289 individuals), Atlantic herring (624 individuals), winter flounder (449 individuals) and alewife (250 individuals) were the most abundant species collected in the Harbor during the 2005 bottom trawl sampling program (Appendix A). Overall, the total annual catch in the Harbor was three times higher in the shallow/shoal habitats compared to channel habitats. Species composition also differed among station type.

Among the navigation channel stations, winter flounder (407 individuals), white perch (205 individuals) and alewife (104 individuals) were the most abundant species (Table 3-1a). At shallow/shoal stations bay anchovy (2,253 individuals) was the most abundant species collected, with the majority of individuals collected in June. Atlantic herring (585 individuals), alewife (146 individuals) and blueback herring (121 individuals) were also abundant in the shallow/shoal stations (Table 3-1b).

Greater numbers of fish were collected during the spring than during the winter for all of the sampling stations combined. The greatest collections occurred in June, and the smallest number of fish was collected during February. However, among only the navigation channel stations, more fish were collected during the winter months (January through March) than during the spring (Figure 3-1). The total monthly average CPUE for all species combined in the navigation channel stations ranged from 3 to 40 fish per 10-minute tow during the winter months (January through March), and from 1 to 14 fish per tow between April and June (Table 3-1a). The greatest number of fish were collected from the shallow/shoal stations during the spring (April through June), when the total

monthly average CPUE for all species combined ranged between 34 and 185 fish per tow (Table 3-1b). Very few fish were collected from the shallow/shoal stations during the winter months. The total monthly average CPUE for the shallow stations ranged from 1 to 5 fish per 10-minute tow for the months of January through March (Table 3-1b).

Species distributions varied among season and among station type. Overall bay anchovy, Atlantic herring and alewife were the dominant species in April, May and June. During the winter months (January through March) winter flounder, white perch and alewife dominated the collections in navigation channel stations (Table 3-1a) while Atlantic herring, silverside and bay anchovy dominated the catch in the shoal/shallow stations (Table 3-1b). During the spring, Atlantic herring, silverside and bay anchovy continued to dominate the shallow/shoal stations (Table 3-1b). However, in the navigation channel stations, winter flounder, spotted hake and striped bass were the most abundant species collected during the spring (Table 3-1a).

3.1.1.1 Arthur Kill/Newark Bay

A total of 23 species were collected from the Arthur Kill/Newark Bay sampling area, with 18 species collected from the navigation channel stations and 19 collected from the shallow/shoal stations. Catches were most diverse in January when 9 species were collected from the channel stations and 11 species were collected from the shallow/shoal stations (Table 3-2a).

The total annual catch in the Arthur Kill/Newark Bay sampling area was similar among the shallow/shoal stations and the navigation channel stations; however species composition differed among station type (Table 3-2a). White perch was the most abundant species in the navigation channel stations, accounting for 49% of the total annual catch in these stations. Atlantic herring and bay anchovy were the most abundant species in the shallow/shoal stations, making up 45% and 35% of the annual catch, respectively (Appendix A).

Of the three sampling areas, fish abundance in the Arthur Kill/Newark Bay was the second highest and it peaked during March to May (Figure 3-1). In general, finfish abundance in the Arthur Kill/Newark Bay sampling area was highest in January and March in the navigation channel stations and from April to May in the shallow/shoal stations (Tables 3-2a and 3-2b). The total monthly average CPUE of all species combined in the navigation channels ranged from 2 to 52 fish per 10-minute tow from January to March, with the peak abundance occurring in January (Table 3-2a). In the shallow/shoal stations, abundance was greatest from April to June when the total monthly average CPUE ranged from 7 to 59 fish per tow, with peak collections in May (Table 3-2b).

Figure 3-2 presents the monthly species composition for the Arthur Kill/Newark Bay sampling area. During the winter, white perch (48% of the total collection in January and and 70% in March) and Atlantic silverside (43% of the total in February) were the most abundant species collected from the Arthur Kill/Newark Bay sampling area. Striped bass was the most abundant species collected in April, accounting for 50% of the total catch, while Atlantic herring accounted for 75% of May collections and bay anchovy dominated June collections, making up 97% of the total catch in that month (Figure 3-2).

3.1.1.2 Upper Bay

A total of 31 species were collected from the Upper Bay sampling area, with 26 species collected from the navigation channel stations and 25 collected from the shallow/shoal stations (Table 3-3a).

Winter flounder and Atlantic herring were the most abundant species collected during the winter in the Upper Bay and were consistently caught during the first four months of the sampling season (Figure 3-3). Atlantic herring and winter flounder were collected from both navigation and shallow/shoal stations (Tables 3-2a and 3-2b). Together with winter flounder, Atlantic herring dominated the catch in March and was the most abundant species in April, accounting for 47% of the total catch (Figure 3-3). Bay anchovy

dominated the collections in May and June, accounting for 73% and 91% of the total collections in those months, respectively (Figure 3-3).

3.1.1.3 Lower Bay

Collections from the Lower Bay sampling area were the lowest in diversity and abundance when compared to the other sampling areas. A total of 21 species were collected from the Lower Bay, with 18 species collected from the navigation channel stations and 11 collected from the shallow/shoal stations (Table 3-2c). Peak collections occurred in January (Figure 3-4), and most of the fish were collected from the channel stations (Table 3-2c).

Winter flounder and alewife were the most abundant species in the Lower Bay. Most species were caught in January with winter flounder (39%) and silver hake (13%) being the most common in the collections (Figure 3-4). Winter flounder was also most abundant in March, accounting for 33% of the total, while alewife (47%) dominated in April. Only a few fish, winter flounder and butterfish, were collected in the Lower Bay during May and June (Figure 3-4).

3.1.3 Ichthyoplankton Sampling (Epibenthic Sled)

Among the eggs, larvae, and juveniles collected during the 2005 Aquatic Biological Survey, 32 species were identified (Table 2-5). Post yolk sac (PYS) larvae were the most abundant ichthyoplankton life stage collected during the sampling program, followed by eggs. The highest egg densities (all species combined) were collected in the Arthur Kill/Newark Bay at shallow/shoal stations (Tables 3-3a-f, Figure 3-5), and the highest post-yolk-sac larvae densities were collected in the Lower Bay at shallow water stations (Tables 3-3a-f, Figure 3-13). Regardless of station depth, the greatest ichthyoplankton densities in all three study areas were recorded during the end of the sampling season from late May to the beginning of July (Figure 3-5, Figure 3-9 and Figure 3-13).

3.1.3.1 Eggs

The highest egg densities (all species included) were collected throughout the Harbor during June and July (Figure 3-5). Bay anchovy and weakfish were the two most common species collected in the Harbor (Figures 3-6 to 3-8). The highest average weekly egg density (52,720/1000 m^3) was collected at the Arthur Kill/Newark Bay shallow/shoal stations during June (Figure 3-5). Egg densities in the Arthur Kill/Newark Bay varied seasonally from zero eggs in January and February to an increase in abundance beginning in March and peaking in June (Figure 3-5 and 3-6). In the Upper and Lower Bays, egg densities were typically similar at the navigation channel stations and the shallow/shoal stations (Tables 3-3c-f, Figure 3-5).

Egg densities and species varied seasonally among study areas. In March, winter flounder eggs were present in all three Harbor areas (Figures 3-6 to 3-8). During March and April, unidentified Gadid eggs were also present in high densities, representing 76% of the total collection in the Arthur Kill/Newark Bay in both months (Figure 3-6) and 63% and 61% of the Upper Bay collections in March and April, respectively (Figure 3-7). Species diversity increased in April through July with bay anchovy dominating the egg collections in the Arthur Kill/Newark Bay into the summer and Atlantic menhaden and bay anchovy dominating the eggs collections in the Upper and Lower Bays (Figures 3-6 to 3-8).

3.1.3.2 Yolk-sac Larvae

Yolk-sac larvae (all species included) were collected in the Harbor throughout the sampling program (Figure 3-9) with maximum average weekly densities occurring at shallow/shoal stations during May in the Lower Bay (85/1000 m^3) and during June in the Arthur Kill/Newark Bay (98/1000 m^3). Except for those two peaks, collection densities of yolk-sac larvae were typically similar at the navigation channel stations and the shallow/shoal stations during the rest of the year (Tables 3-3a-f, Figure 3-9).

Average weekly densities of yolk-sac larvae were typically less than 20/1000 m^3 during January and February with grubby and American sandlance being the most dominant species during this period (Figure 3-10 to 3-12). During March and April, catches consisted of grubby and winter flounder while in May and June the most common species was Atlantic menhaden in all three regions and to a lesser extent tautog in the Upper Bay and bay anchovy in the Arthur Kill/Newark Bay. Only one winter flounder yolk-sac larvae was caught in May in the Arthur Kill/Newark Bay and none were collected in June or July in any region. No yolk-sac larvae of any species were caught in July (Figure 3-10 to 3-12).

3.1.3.3 Post Yolk-sac Larvae

Post yolk-sac larvae (all species included) were collected from all stations during the 2005 sampling program. It was the dominant early life stage in the survey. Average weekly post yolk-sac larval densities of all species combined were relatively low (<40/1000 m^3) from January through February (Figure 3-13). However, densities increased during the spring throughout the Harbor and peaked in June and July with the maximum density reaching 11,907/1000 m^3 in the shallow/shoal stations of the Lower Bay (Figure 3-13).

Post yolk-sac larvae were the most species-rich early life stage. Twenty-nine (29) species were collected during the 2005 ichthyoplankton sampling program, but, species diversity and abundance varied between months and sampling areas (Table 3-3a to 3-3f). For all Harbor areas there was an increase in species diversity from January to July. For example, only a few species were collected throughout the Harbor during January sampling with the most abundant species being Atlantic croaker, American sandlance and grubby (Figure 3-14 to 3-16). However, in May to July species diversity increased and there was a shift in dominant species to primarily bay anchovy and unidentified gobiid with Atlantic tomcod also dominate in the Arthur Kill/Newark Bay in May, Atlantic menhaden dominate in the Upper Bay in May, and windowpane dominate in the Lower Bay in both May and June (Figures 3-14 through 3-16).

3.1.3.4 Juveniles

Juveniles represented the lowest densities of all the life stages collected in the ichthyoplankton sled tows (Figure 3-17). The maximum average weekly density of juveniles were recorded in the navigation channel stations of the Arthur Kill/Newark Bay during January (11/1000 m^3) and July (15/1000 m^3). The January samples in the Arthur Kill/Newark Bay were composed of Atlantic croaker (57%) and bay anchovy (43%) while the July collections were dominated by northern pipefish (77%) and a few winter flounder (16%) (Figure 3-18). Overall, juveniles were more common at navigation channel stations than shallow/shoal stations, particularly in the Arthur Kill/Newark Bay and the Upper Bay (Figure 3-17). Only one juvenile was collected in the Lower Bay during the entire 2005 sampling season, a windowpane flounder collected in June (Figure 3-20). Of note, bay anchovy and Atlantic croaker were collected in both the Upper Bay and the Arthur Kill/Newark Bay while winter flounder, tomcod and pipefish were exclusively collected in the Arthur Kill/Newark Bay and summer flounder, Atlantic cod and butterfish were only caught in the Upper Bay (Figures 3-18 and 3-19).

3.2 WINTER FLOUNDER

3.2.1 Bottom Trawl Sampling

3.2.1.1 Catch Per Unit Effort (CPUE)

Adult and sub-adult (juvenile) winter flounder were collected in trawls during all sampling months (January to June) in each of the three Harbor areas (Tables 3-2a to 3-2c). The highest monthly average winter flounder CPUE was recorded in January at navigation channel stations in the Lower Bay (35.83) and then in April at navigation channel stations in the Upper Bay (11.60). Overall, winter flounder CPUE was higher at navigation channel stations as compared to shallow/shoal stations, especially in the Upper and Lower Bays. Monthly average CPUE was similar among the shallow/shoal stations

in all three Harbor areas with the most consistent monthly catches occurring in the Upper Bay and Arthur Kill/Newark Bay and the highest CPUE occurring in April in the Lower Bay (2.33). When CPUE data were analyzed temporally (by sampling week), there was some indication that winter flounder transition from deep-water (channel) habitats in the Lower Bay during winter to more inland areas (including shallow water habitats) in the Upper Bay and Arthur Kill/Newark Bay during the early spring (Figure 3-21).

3.2.1.2 Size Distribution

The total lengths of 289 winter flounder collected and measured during the 2005 sampling program ranged from 39 to 402 mm, with the majority of fish between 60 and 260 mm (Figure 3-22). A length frequency plot of winter flounder lengths from all Harbor areas combined exhibited a slight bimodal distribution pattern with the greatest frequencies of winter flounder measured between 90 and 150 mm, representing a combination of young of the year and juvenile fish, and a smaller peak of mostly juveniles measuring between 180 and 250 mm (Figure 3-22).

Temporal occurrence of winter flounder length frequencies in the three Harbor areas is shown in Figures 3-23 through 3-25. In the Arthur Kill/Newark Bay, a majority of the fish measured between 80 and180 mm, and were likely juveniles, although a few larger individuals were collected in March and April (Figure 3-23). In the Upper Bay, winter flounder lengths varied from 30 to 400mm between January and June with a peak in larger individuals in March and April (Figure 3-24). In the Lower Bay, winter flounder were most commonly measured in January and March and predominantly ranged between 60 and 240 mm (Figure 3-25).

3.2.1.3 Sex Ratio

Figure 3-26 presents the ratio of male and female adult winter flounder as sampled in each of the three regions between 2002 and 2005. Historically, females have been more common in all three Harbor areas, typically accounting for 70% or more of the

collections in all areas and in most years. In 2005, only females were collected (total number sampled was 16). Most of them, 94%, were collected in the Upper Bay and none of them were collected in the Arthur Kill/Newark Bay (Figure 3-26).

3.2.2 Ichthyoplankton Sampling (Epibenthic Sled)

Winter flounder eggs, yolk-sac and post yolk-sac larvae were collected throughout the Harbor during the 2005 sampling program (Figure 3-27). A majority of the ichthyoplankton (all life stages combined) were collected from the Lower Bay (53%), followed by the Upper Bay (32%) and then the Arthur Kill/Newark Bay (15%). Most of the winter flounder eggs were collected in the Upper Bay (72%), followed by the Lower Bay (18%) and then the Arthur Kill/Newark Bay (6%). Yolk-sac larvae were mostly collected in the Upper Bay (36%) and the Lower Bay (35%), and then followed by the Arthur Kill/Newark Bay (29%). By contrast, post yolk-sac larvae were collected predominantly in the Lower Bay (54%), followed by Upper Bay (31%) and Arthur Kill/Newark Bay (15%). Post yolk-sac larvae were the most common winter flounder life stage collected, accounting for 93.55% of the total catch, followed by yolk-sac larvae (3.4%), eggs (2.73%) and then juveniles (0.32%) (Figure 3-27).

Winter flounder eggs were collected in the Harbor from late January through mid April (Figure 3-28). Peak egg densities (31/1000 m^3) were collected in early April at the Upper Bay shallow/shoal sites while higher egg densities (above 5/1000 m^3) were also collected in the navigational channels of the Lower Bay in late March and early April as well as at both the navigation channel (early April) and shallow/shoal stations (early March) in the Upper Bay. Winter flounder eggs were only collected in the shallow/shoal stations in Arthur Kill/Newark Bay and only from early March to early April (Figure 3-28).

Winter flounder yolk-sac larvae were mostly collected from early March through mid April in all areas of the Harbor, although lower densities were also observed in the shallow/shoal stations of the Arthur Kill/Newark Bay in early May (Figure 3-29). In general, the highest densities of yolk-sac larvae were collected in the Upper Bay, where

the peak density (14.6/1000 m³) was recorded at the navigation channel stations during mid April.

Post yolk-sac larvae were the most abundant winter flounder life stage in ichthyoplankton collections and were collected in all areas of the Harbor predominantly from early April to mid May (Figure 3-30). Densities were generally highest in the Lower Bay, where the peak density (824/1000 m³) occurred at shallow/shoal stations during mid April. In fact, peak densities for all three Harbor areas occurred in mid April and at shallow/shoal stations, including the Upper Bay (279/1000 m³) and in Arthur Kill/Newark Bay (127/1000 m³).

3.3.3 Comparison with Previous Years

In this section, comparisons are made between the winter flounder CPUE and early lifestage density data presented above and data from the 2001-2004 Aquatic Biological Sampling Programs (USACE 2002, USACE 2003, USACE 2004 and USACE 2005) to identify trends across years. General comparisons across sampling years can be made since the programs were conducted during the same time of year and at the same sampling stations using the same gear.

Except for the exceptional high catch recorded in January in the Lower Bay, the CPUE of adult and sub-adult (juvenile) winter flounder was generally lower in 2005 than in previous sampling years, especially when compared to 2001-2002 (Figure 3-31). When compared by region, the highest abundance of winter flounder in the Arthur Kill/Newark Bay occurred during June of the 2001-2002 sampling program (Figure 3-31). This catch was dominated by young-of-year winter flounder measuring <90 mm (Figures 3-32 and 3-33). In the Upper Bay, the highest abundance of winter flounder was collected in January of 2004 (Figure 3-31) and was comprised primarily of young-of-year measuring <90 mm and likely juveniles measuring between 90 mm and 120 mm in total length (Figures 3-32 and 3-34). In the Lower Bay, the highest average monthly CPUE for any region during 2001-2005 sampling was recorded in January of 2005 (Figure 3-31) and

was dominated by young-of-year winter flounder measuring <90 mm (Figures 3-32 and 3-35).

During the program, the winter flounder that were expected to be sexually mature (≥ 250 mm) were collected throughout the Harbor from December through June with a majority collected from January through May (Figure 3-32). The majority of these sexually mature fish were collected in the Upper Bay and Lower Bay (Figure 3-32).

Egg densities were greater throughout the Harbor in 2002-2003 than in the 2001-2002, 2004 and 2005 sampling programs especially in the Upper Bay and Lower Bay (Figure 3-36). During these program years, few eggs were collected in the Arthur Kill/Newark Bay, while the greatest egg densities were observed in the Lower and Upper Bay.

Larval densities (yolk sac and post yolk sac combined) were generally higher in 2004 than in 2001-2002, 2002-2003 and 2005 sampling programs during April in all three Harbor areas, while densities were higher during 2002-2003 in May (Figure 3-37). In 2001-2002, larvae were first collected in February, whereas larvae were not collected until March in 2002-2004 and 2005. The greatest larval densities collected during the 2001 to 2005 program years were in the Lower Bay. Average abundance of winter flounder larvae increased steadily and peaked in 2004. In 2005, larvae abundance decreased dramatically from 2004 and was similar to 2001-2002 levels (Figure 3-37).

3.3 WATER QUALITY

During 2005 water quality sampling, bottom water temperatures in the Harbor ranged from a low of 0.6°C recorded in January in the Lower Bay to high of 25.1°C recorded in July in the Arthur Kill (Appendix C). At the onset of the winter flounder spawning period in February average monthly water temperatures were similar throughout the Harbor (Figure 3-38). During the peak spawning period in March, identical average monthly bottom temperatures of 3.6°C were measured in all the bays.

Salinity values at near bottom depth over the course of the 2005 sampling season ranged from a low of 1.9 ppt recorded in Newark Bay in early April (perhaps the result of heavy spring runoff) to a high of 30.3 ppt recorded in the Lower Bay in January (Appendix C). As expected, average monthly bottom salinities were consistently between 5 to 10 ppt lower in the Arthur Kill/Newark Bay as compared to the Lower Bay during the course of the 2005 sampling season (Figure 3-38).

Dissolved oxygen concentration in water is largely dependent on water temperature, and to a lesser degree, salinity. As temperature increases, the solubility of oxygen in water solution decreases. Similarly, as salinity increases, the oxygen solubility in water decreases. Trends in dissolved oxygen levels were similar across the three Harbor areas with average monthly bottom values remaining between 9 and 12 mg/L from January through March and then decreasing in the summer to between 5 and 8 mg/L in June and July (Figure 3-38). From May through July, dissolved oxygen levels were inversely proportional to water temperatures throughout the Harbor with the highest water temperatures, and consequently the lowest dissolved oxygen levels, recorded in the Arthur Kill/Newark Bay and inversely, the lowest water temperatures and highest dissolved oxygen recorded in Lower Bay (Figure 3-38). All of the water quality sampling data are presented in Appendix C.

4.0 DISCUSSION

The water quality and habitat characteristics of the areas sampled during the biological surveys of the NYNJHDP may affect the spatial and temporal occurrence of finfish in the Harbor, particularly winter flounder. As demonstrated in previous reports, the Lower Bay is more characteristic of a marine environment than the Arthur Kill/Newark Bay and the Upper Bay which are more characteristic of a nearshore, estuarine environment (USACE 1999, USACE 2002, USACE 2003, USACE 2004 and USACE 2005). Based on the water quality data from these studies, the Upper Bay, however, is more marine than the Arthur Kill/Newark Bay by virtue of its relatively broad connection to the Lower

Bay through the Narrows. The predominance of fine bottom sediments in the Arthur Kill/Newark Bay area also suggests that there is limited tidal exchange resulting in a depositional area with a greater potential for high biological, chemical, and sediment oxygen demand.

4.1 ALL SPECIES

The finfish composition of the 2005 sampling program is typical of Atlantic seaboard estuaries and consistent with the species composition observed in previous years of the project. Relative abundance of dominant species shifted slightly between the 2004 and the 2005 programs. In 2005, the dominant species collected in trawls were bay anchovy, Atlantic menhaden, winter flounder and alewife. Bay anchovy was also the dominant species in previous years, but in 2005 neither striped bass nor white perch were among the more common species collected. There was also a slight increase in the number of taxa collected in the trawls from 35 species in 2004 to 38 in 2005, although the number of taxa collected in the epibenthic sled tows decreased from 34 species in 2004 to 32 in 2005. These relatively small changes in species number and diversity are well within what can be expected from the natural variations in fish population and sample collection.

In general, the species collected in 2005 are common in estuaries and known to rely on the Harbor for spawning, nursery and foraging habitat (Able and Fahay 1998). Many species spawn in the harbor seasonally, while others spawn offshore on the continental shelf or in the Harbor tributaries. This seasonality and preference for different spawning habitat influenced the occurrence and relative density of species collected during the sampling program. Species that spawn in the Harbor, such as bay anchovy, windowpane flounder, and winter flounder, were present in higher densities during their seasonal spawning periods. However, the total abundance of all species of flatfish, except winter flounder, declined during the survey years 2001-2005. The reason for the decline in summer flounder, smallmouth flounder, and windowpane abundance is unknown. The decline is probably due to the overall population decline and not due to local factors in Harbor. The short time series of only four years also makes it difficult to judge the extent

of the decline. It may very well be part of the natural variation in the flatfish populations. In fact, post yolk-sac larvae abundance for windowpane in 2005 was the largest recorded and this may produce a higher abundance of windowpane in 2006.

4.2 WINTER FLOUNDER

The abundance of adult and sub-adult winter flounder collected in the bottom trawl program has remained relatively stable through the 2001-2005 sampling years, although the numbers collected in the Arthur Kill/Newark Bay in 2005 were somewhat lower than in previous years, especially when compared to 2001-2002 (Figure 3-31). Except for the peak occurrence observed in the Upper and Lower Bays during the 2002-2003 sampling season, the abundance of winter flounder eggs collected in ichthyoplankton samples has remained relatively consistent through 2001-2005 (Figure 3-36). In 2005, however, the abundance of winter flounder larvae (yolk-sac and post yolk-sac combined) was lower than in the previous two sampling programs (2002-2003 and 2004) (Figure 3-37). This may reflect random variation in sampling collection or the natural variation in the population from year to year. If larvae supply was the limiting factor then a corresponding decline in the abundance of age-1 winter flounder may be expected in the bottom trawl collections of the 2006 program.

As in previous years of the study (2001-2004), the occurrence of adult winter flounder during the peak spawning period and the subsequent occurrence of eggs and larvae were used to identify where and when winter flounder were spawning in the Harbor. In the NJ, NY, CT, RI waters, winter flounder spawn from late January to early April at temperatures of 1 to 10 °C and salinities of 10 to 35 ppt (Scarlett and Allen 1992, Pearcy 1962, Crawford and Carey 1985). In the NY/NJ Harbor area, peak spawning occurs from February to March with optimum temperatures generally ranging from 3 to 8 °C and salinities from15 to 25 ppt (Able and Fahay 1998, Stoner et. al 1999). The incubation period to hatching varies with temperature and typically occurs in two to three weeks (NMFS 1999). Adults are believed to reach maturity in 3 to 5 years at 250 to 300 mm (Witherell and Burnett 1993) and spawn in shallow and conservative hydrodynamic areas

of estuaries to retain larvae in spawning and nursery habitat (Pearcy 1962, Crawford and Carey 1985).

In 2005, the majority of sexually mature adult winter flounder (those ≥ 250 mm) were collected in the Upper Bay, primarily in March and April (Figure 3-23 to 3-25). This represents a slight shift from previous sampling years in which more spawning size adults were collected in the Lower Bay than in other areas of the Harbor (USACE 2002, USACE 2003 and USACE 2004). Although winter flounder adults were collected in both the shallow/shoal and navigation channel habitats, adults were more abundant at navigation channel stations, especially in the Lower and Upper Bays from January through March (Figure 3-21). However, no consistent pattern in depth preference of winter flounder adults has been identified in the NYNJHDP surveys and there is little indication that winter flounder spawn in the channels but are instead likely using the channels as a primary migration route to and from shallow-water spawning areas. The presence of winter flounder in early life stages (eggs and larvae) suggests some spawning may have occurred in the channels, however this may not always be the case as bottom disturbance caused by ship traffic in some areas, which in combination with strong currents, may result in the displacement and transport of eggs and particularly larvae into the channels from adjacent shallow/shoal areas where spawning occurs.

As demonstrated in previous program years, the spatial and temporal trends observed in winter flounder adults, eggs and larvae show that winter flounder likely use different areas of the Harbor during different stages of its life history. Winter flounder larvae and juveniles seek nursery habitat in estuaries of the Middle Atlantic Bight to feed and grow (Able and Fahay 1998). During the 2005 ichthyoplankton sampling program, eggs and yolk-sac larvae (the earliest life stages) were most abundant in the Upper Bay while post yolk-sac larvae were more prevalent in the Lower Bay and juveniles were exclusively collected in the Arthur Kill/Newark Bay. Previous sampling programs in the Harbor have shown that young winter flounder move from the primary spawning area in the

Lower Bay and the lower reaches of the Upper Bay to areas further into the Harbor estuary (USACE 1999, USACE 2002, USACE 2003, USACE 2004 and USACE 2005).

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Table 2-1 Description of stations sampled during the 1999–2005 Aquatic Biological Sampling Programs.

Area	Station Name	Type	Station Location	Average Depth (ft)	GPS Coordinates (deg., min., sec.)			
					Start		End	
					North	West	North	West
South Brooklyn/ Upper Bay	SB–1*	Shallow/shoal	Gowanus Bay Interpier South	27	40:39.45	74:00.86	40:39.56	74:01.05
	SB–2 **#	Shallow/shoal	Gowanus Bay Interpier	30	40:39.60	74:00.48	40:39.75	74:00.75
	SB–3*	Shallow/shoal	Bay Ridge Flats	22	40:39.36	74:02.26	40:38.91	74:02.36
	SB–4 **	Navigation Channel	Bay Ridge Channel	42	40:39.28	74:01.52	40:38.98	74:01.79
	SB–5*	Navigation Channel	Anchorage Channel Middle	57	40:39.53	74:03.30	40:39.69	74:03.19
	SB–6 **	Navigation Channel	Anchorage Channel South	49	40:38.76	74:03.11	40:38.48	74:02.98
Port Jersey	PJ–1 **	Shallow/shoal	Jersey Flats	12	40:39.91	74:03.57	40:40.17	74:03.45
	PJ–2*	Shallow/shoal	Caven Point	10	40:40.62	74:03.44	40:41.02	74:03.35
	PJ–3 **	Shallow/shoal	Constable Hook	13	40:39.75	74:04.75	40:39.53	74:04.19
	PJ–4 **	Navigation Channel	Port Jersey Channel	39	40:39.91	74:04.11	40:40.07	74:04.51
	PJ–5*	Navigation Channel	Port Jersey Channel East	42	40:39.48	74:03.64	40:39.78	74:03.96
Newark Bay	NB–3*	Shallow/shoal	Newark Bay Flats Middle	10	40:41.06	74:07.61	40:41.40	74:07.44
	NB–4*	Shallow/shoal	Newark Bay Flats South	16	40:40.72	74:07.76	40:40.38	74:07.92
	NB–5 **	Navigation Channel	Newark Bay Middle Reach	42	40:40.59	74:07.96	40:40.19	74:08.26
	NB–6 **	Navigation Channel	Newark Bay South Reach	46	40:39.44	74:08.52	40:39.15	74:08.75
	NB–7*	Shallow/shoal	Elizabeth Flats North	13	40:39.62	74:09.29	40:39.51	74:08.99
Lower Bay	LB–1	Shallow/shoal	East Bank	13	40:33.45	74:00.24	40:33.94	74:00.52
	LB–2	Navigation Channel	North End Ambrose Channel	50	40:33.23	74:01.54	40:33.40	74:01.55
	LB–3	Shallow/shoal	Swash Channel Range	17	40:33.34	74:04.46	40 33.00	74 04.44
	LB–4	Navigation Channel	Chapel Hill South Channel	30	40:31.06	74:02.41	40:30.64	74:02.39
	LB–5	Shallow/shoal	Old Orchard Shoals	13	40:30.59	74:04.72	40:30.75	74:05.22
	LB–6	Navigation Channel	Raritan Bay East Reach	41	40 29.41	74 06.39	40 29.53	74 06.90
Arthur Kill	AK-1#	Shallow/shoal	Elizabeth Flats South	19	40:38.84	74:10.58	40:38.85	74:10.13
	AK-2	Navigation Channel	North of Shooter Island Reach	39	40:38.80	74:10.75	40:38.77	74:10.26
	AK-3	Navigation Channel	Elizabeth Reach	42	40:38.32	74:11.59	40:38.53	74:11.30
	AK-4	Shallow/shoal	Prall's Island	20	40:36.83	74:11.91	40:36.24	74:11.82

* Also sampled during the 2000 - 2001 Supplemental Sampling Program
** Also sampled during the NYNJHN 1998 – 1999 Baseline Program and 2000-2001 Supplemental Sampling Program
# Not sampled with bottom trawls in 2005

Table 2-2 Specifications of bottom trawl used to collect adult finfish during the 2005 Aquatic Biological Survey.

Part	Specification
Headrope	25.9 ft. (7.9 m)
Footrope	27.9 ft (8.5 m)
Wing height	3.6 ft. (1.1 m)
Total length	35.1 ft (10.7 m)
Wing mesh (square)	2.0-in. (5.1 cm)
Body mesh (square)	2.0-in. (5.1 cm)
Cod end mesh (square)	0.75-in. (1.9 cm)
Cod end liner mesh (square)	0.25-in. (0.6 cm)
Trawl doors	32.0 x 17.0 x 0.75-in (79.2 x 39.6 x 3.1 cm)
Tow line length	5 times maximum station water depth

Table 2-3 Specifications of epibenthic sled and plankton net used to collect early life stages of finfish during the 2005 Aquatic Biological Survey.

Part	Specification
Mouth diameter	0.5 m
Overall length	3.0 m
Mesh size	0.5 mm
Cod-end diameter	10.1 cm
Cod-end mesh	0.5 mm (PVC cod-end bucket)
Epibenthic sled	Constructed of PVC pipe

Table 2-4 Water quality parameters measured during the 2005 Aquatic Biological Survey.

Water Quality Parameter	Units and Accuracy	Sample Depths
Temperature	+/- 0.2	Bottom
Dissolved oxygen	+/- 0.5 mg/L	Bottom
Conductivity	+/- 100 microseimens	Bottom

Table 2-5. Species identified in trawl and epibenthic sled (ichthyoplankton) samples collected during the 2005 Aquatic Biological Survey.

Common Name	Scientific Name	Sled	Trawl
Alewife	*Alosa pseudoharengus*		x
American eel	*Anguilla rostrata*		x
American shad	*Alosa sapidissima*	x	x
American sandlance	*Ammodytes americanus*	x	
Atlantic cod	*Gadus morhua*	x	
Atlantic Croaker	*Micropogonias undulatus*	x	x
Atlantic Herring	*Alosa sapidissima*	x	x
Atlantic menhaden	*Brevoortia tyrannus*	x	x
Atlantic silverside	*Menidia menidia*	x	x
Atlantic tomcod	*Microgadus tomcod*	x	x
Atlantic sturgeon	*Acipenser oxyrinchus*		x
Bay anchovy	*Anchoa mitchilli*	x	x
Blueback herring	*Alosa aestivalis*		x
Butterfish	*Peprilus triacanthus*	x	x
Clupeidae	*Clupeidae spp.*		x
Conger eel	*Conger oceanicus*	x	x
Cunner	*Tautogolabrus adspersus*	x	x
Feather blenny	*Hypsoblennius hentzi*	x	
Fourbeard Rockling	*Enchelyopus cimbrius*	x	
Fourspot flounder	*Hippoglossina oblonga*	x	x
Gadidae	*Gadidae spp.*	x	
Gizzard shad	*Dorosoma cepedianum*		x

Table 2-5. Species identified in trawl and epibenthic sled (ichthyoplankton) samples collected during the 2005 Aquatic Biological Survey.

Gobidae	*Gobidae*	x	
Goosefish	*Lophius americanus*	x	
Grubby	*Myoxocephalus aenaeus*	x	x
Hogchoker	*Trinectes maculatus*	x	
Labridae	*Labridae spp.*	x	
Little skate	*Raja erinacea*		x
Longhorn sculpin	*Myoxocephalus octodecen*	x	
Mummichog	*Fundulus heteroclitus*		x
Northern pipefish	*Syngnathus fuscus*	x	x
Northern puffer	*Sphoeroides maculatus*	x	
Prionotus sp.	*Prionotus sp.*	x	
Red hake	*Urophycis chuss*		x
Rock gunnel	*Pholis gunnellus*	x	x
Scup	*Stenotomus chrysops*		x
Seaboard Goby	*Gobiosoma ginsburgi*		x
Shortnose sturgeon	*Acipenser brevirostrum*		x
Silver hake	*Merluccius bilinearis*		x
Silver perch	*Diapterus rhombeus*		x
Smallmouth flounder	*Etropus microstomus*	x	x
Spotted hake	*Urophycis regia*		x
Striped bass	*Morone saxatilis*		x
Summer flounder	*Paralichthys dentatus*	x	x

Table 2-5. Species identified in trawl and epibenthic sled (ichthyoplankton) samples collected during the 2005 Aquatic Biological Survey.

Tautog	*Tautoga onitis*	x	x
Threespine stickleback	*Gasterosteus aculeatus*		x
Weakfish	*Cynoscion Regalis*	x	x
White perch	*Morone americana*		x
Windowpane flounder	*Scopthalmus aquosus*	x	x
Winter flounder	*Pleuronectes americanus*	x	x
Winter skate	*Raja ocellata*		x

Table 3-1a Monthly average trawl CPUE by species for all navigation channel stations combined during the 2005 Aquatic Biological Survey.

Species	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05
Alewife	3.05	0.21	0.96	1.40		
American Shad	1.15	0.14	0.17	0.33	0.08	
Atlantic Croaker	2.06					
Atlantic Herring	0.40	0.42	0.99	0.08		
Atlantic Menhaden	0.55					
Atlantic Silverside	0.70	0.17	0.08			
Atlantic Tomcod				0.08	0.75	0.56
Bay Anchovy	1.41	0.08			0.10	0.46
Blueback Herring	0.15	0.67	1.03			
Butterfish					0.08	0.33
Clupeid unidentified			0.13			
Conger Eel			0.04			
Cunner	0.05		0.08	0.08		
Fourspot Flounder	0.20					
Gizzard Shad	0.15					
Grubby			0.04			
Little Skate	1.00	0.21	0.29	0.42		
Northern Pipefish	0.45		0.04	0.08		
Red Hake	0.90	0.25	0.71	1.17		
Rock Gunnel				0.08		
Scup					0.08	0.10
Seaboard Goby		0.04	0.10			
Silver Hake	3.45					
Silver Perch	0.05					
Smallmouth Flounder	2.30	0.08	0.13			
Spotted Hake	2.20	0.04	0.25	2.08	2.17	
Striped Bass	1.35	0.09	0.04	1.56		
Summer Flounder					0.08	0.14
Tautog	0.05		0.58			
Unidentified				0.10		
White Perch	5.85	0.33	3.29	0.08		
Windowpane	0.40	0.21	0.79	1.25		
Winter Flounder	11.05	0.59	4.27	5.09	0.92	
Winter Skate	0.20		0.04			

Table 3-1b Monthly average trawl CPUE by species for all shallow/shoal stations combined during the 2005 Aquatic Biological Survey.

Species	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05
Alewife				12.75	1.25	
American Eel				0.21		
American Shad	0.19			0.10	0.43	
Atlantic Croaker	0.14					
Atlantic Herring	0.33	0.28	2.72	31.69	19.54	
Atlantic Menhaden					0.92	
Atlantic Silverside	1.29	0.98	0.08			
Atlantic Sturgeon						0.10
Atlantic Tomcod						11.50
Bay Anchovy	1.99	0.05		0.94	12.34	219.59
Blueback Herring	0.52		0.04	10.85	0.42	
Butterfish						0.50
Gizzard Shad	0.34					
Little Skate				0.33		
Mummichog		0.05				
Northern Pipefish				0.17	0.37	
Rock Gunnel				0.08		0.08
Scup						5.67
Seaboard Goby			0.14			0.08
Shortnose Sturgeon						0.21
Smallmouth Flounder				0.10		
Spotted Hake				0.50		0.10
Striped Bass	0.27	0.15	0.11	2.44	0.73	
Summer Flounder		0.04			0.29	0.63
Tautog				0.42	0.08	0.33
Threespine Stickleback	0.05					
Weakfish						0.28
White Perch	0.25		0.04	0.10		
Windowpane	0.18		0.05	0.25		
Winter Flounder	0.11	0.29	0.40	1.48	0.19	0.77
Winter Skate				0.17		

Table 3-2 a Monthly average CPUE by species for all navigation channel and shallow/shoal stations combined in the Arthur Kill/Newark Bay during the 2005 Aquatic Biological Survey.

Navigation Channel Stations

Species	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05
Alewife			0.13	2.50		
American Shad			0.13	1.00	0.25	
Atlantic Croaker	9.75					
Atlantic Herring		0.39	0.55	0.25		
Atlantic Silverside	0.25	0.25				
Atlantic Tomcod					2.25	
Bay Anchovy	3.25	0.25				1.39
Blueback Herring		0.25	0.13			
Butterfish					0.25	0.50
Gizzard Shad	0.75					
Red Hake			0.13			
Seaboard Goby			0.30			
Spotted Hake	0.50			0.25	6.50	
Striped Bass	6.75	0.26		3.50		
Summer Flounder					0.25	
White Perch	29.25	1.00	9.88	0.25		
Windowpane	0.25					
Winter Flounder	0.50	0.51	1.44	0.78	2.50	

Shallow/Shoal Stations

Species	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05
Alewife				0.31		
American Eel				0.63		
American Shad	0.94				0.25	
Atlantic Herring	1.15		0.13	1.88	53.63	
Atlantic Silverside	2.33	2.26	0.25			
Bay Anchovy	8.58	0.14			0.75	47.50
Blueback Herring	1.25		0.13		1.25	
Butterfish						0.25
Gizzard Shad	0.25					
Mummichog		0.14				
Northern Pipefish				0.25	1.11	
Rock Gunnel						0.25
Seaboard Goby						0.25
Striped Bass	0.50	0.31	0.13	6.25	1.92	
Summer Flounder					0.63	
Threespine Stickleback	0.25					
White Perch	1.25		0.13	0.31		
Windowpane	0.25					
Winter Flounder	0.25		0.92	1.44	0.28	0.75

Table 3-2 b Monthly average CPUE by species for all navigation channel and shallow/shoal stations combined in the Upper Bay during the 2005 Aquatic Biological Survey.

Navigation Channel Stations

Species	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05
Alewife	0.90	0.50	0.80	1.15		
American Shad		0.24	0.10			
Atlantic Croaker	0.23					
Atlantic Herring	0.80	0.10	1.83			
Atlantic Menhaden	0.10					
Atlantic Silverside	0.10					
Atlantic Tomcod				0.20		1.33
Bay Anchovy	0.23				0.25	
Blueback Herring	0.10	0.70	0.87			
Butterfish						0.40
Clupeid unidentified			0.30			
Conger Eel			0.10			
Cunner	0.10		0.20	0.20		
Grubby			0.10			
Little Skate			0.40	1.00		
Northern Pipefish			0.10	0.20		
Red Hake	0.20	0.20	0.70	2.80		
Rock Gunnel				0.20		
Scup					0.20	0.25
Seaboard Goby		0.10				
Smallmouth Flounder			0.30			
Spotted Hake			0.30	4.80		
Striped Bass			0.10	0.95		
Summer Flounder						0.33
Tautog	0.10		1.40			
Unidentified				0.25		
Windowpane	0.10		1.80	3.00		
Winter Flounder	0.40	0.40	6.50	11.60		

Shallow/Shoal Stations

Species	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05
Alewife				26.55	3.00	
American Shad				0.25	0.82	
Atlantic Croaker	0.29					
Atlantic Herring		0.48	5.92	74.55	4.00	
Atlantic Menhaden					2.20	
Atlantic Silverside	1.05	0.14				
Atlantic Sturgeon						0.25
Atlantic Tomcod						27.60
Bay Anchovy	0.54			2.25	29.02	489.02
Blueback Herring	0.54			26.05		
Butterfish						0.60
Gizzard Shad	0.57					
Northern Pipefish				0.20		
Rock Gunnel				0.20		
Scup						13.60
Seaboard Goby			0.33			
Shortnose Sturgeon						0.50
Smallmouth Flounder				0.25		
Spotted Hake						0.25
Striped Bass	0.33	0.10	0.17	0.65	0.22	
Summer Flounder					0.20	1.52
Tautog				1.00	0.20	0.80
Weakfish						0.67
Windowpane	0.25		0.13			
Winter Flounder	0.11	0.70	0.23	1.00	0.22	1.05

Table 3-2 c Monthly average CPUE by species for all navigation channel and shallow/shoal stations combined in the Lower Bay during the 2005 Aquatic Biological Survey.

Navigation Channel Stations

Species	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05
Alewife	8.67		2.33	0.33		
American Shad	3.83	0.17	0.33			
Atlantic Herring		1.00	0.17			
Atlantic Menhaden	1.67					
Atlantic Silverside	2.00	0.33	0.33			
Bay Anchovy	2.17					
Blueback Herring	0.33	1.17	2.50			
Fourspot Flounder	0.67					
Little Skate	3.33	0.83	0.50			
Northern Pipefish	1.50					
Red Hake	2.67	0.67	1.50			
Silver Hake	11.50					
Silver Perch	0.17					
Smallmouth Flounder	7.67	0.33				
Spotted Hake	7.00	0.17	0.50			
Windowpane	1.00	0.83	0.17			
Winter Flounder	35.83	1.00	4.33		0.33	
Winter Skate	0.67		0.17			

Shallow/Shoal Stations

Species	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05
Alewife				6.33		
Atlantic Herring	0.33	0.33	0.83			
Atlantic Silverside	1.00	0.67				
Butterfish						0.67
Little Skate				1.33		
Spotted Hake				2.00		
Striped Bass				0.33		
Summer Flounder		0.17				
Windowpane				1.00		
Winter Flounder				2.33		0.33
Winter Skate				0.67		

Table 3-3 a Monthly average ichthyoplankton density (Number/1000 m³) by species for all navigation channel stations in Arthur Kill/Newark Bay, 2005 Aquatic Biological Survey.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden				3.28	2.13	807.59	
Bay anchovy						5893.78	10697.08
Fourbeard rockling				8.48	6.75		
Gadid unidentified			7.47	44.78			
Labridae					10.20	1537.37	939.92
Prionotus sp.						81.30	37.01
Weakfish						111.36	8827.94
Windowpane					16.99	161.42	

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
American shad						4.20	
Atlantic menhaden						22.04	
Grubby		6.62	8.73	5.68			
Longhorn sculpin		0.81					
Rock gunnel		0.88					
Tautog						1.44	
Windowpane						1.56	
Winter flounder				6.54	0.73		

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sandlance				1.57	0.73		
American shad						28.55	
Atlantic croaker	21.27						
Atlantic herring			2.30				
Atlantic menhaden						69.54	
Atlantic tomcod		7.28		8.57	10.62		
Bay anchovy						69.14	430.37
Cunner						0.84	1.46
Gadid unidentified				1.88			
Gobiid unidentified						0.72	1268.17
Goosefish						0.72	
Grubby		13.32	56.37	157.64	5.91		
Hogchocker						0.84	
Northern pipefish						12.49	22.93
Prionotus sp.							1.46
Rock gunnel		1.28	0.80				
Tautog						7.63	1.46
Weakfish						17.58	135.16
Windowpane						16.47	
Winter flounder			0.93	50.52	49.58	8.38	

Juvenile

Species	January	February	March	April	May	June	July
Atlantic croaker	6.06						
Atlantic tomcod					3.06		
Bay anchovy	4.60						
Northern pipefish							11.79
Weakfish							1.47
Winter flounder					3.16		1.46

Table 3-3 b Monthly average ichthyoplankton density (Number/1000 m³) by species for all shallow/shoal stations in Arthur Kill/Newark Bay, during the 2005 Aquatic Biological Survey.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden				0.61	0.63	1034.58	
Bay anchovy						25963.73	6418.46
Gadid unidentified			1.29		0.72		
Labridae					6.95	783.20	309.42
Prionotus sp.							4.73
Weakfish							805.75
Winter flounder			2.29	0.76			

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
Atlantic menhaden						28.29	
Atlantic tomcod			0.76				
Bay anchovy						18.65	
Gobiid unidentified						2.94	
Goosefish						0.69	
Grubby		8.70	10.42	4.44			
Tautog						4.56	
Windowpane						1.52	
Winter flounder			1.21	4.47			

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
Atlantic croaker	5.19						
Atlantic menhaden						190.06	
Atlantic silverside							1.51
Atlantic tomcod		3.04	0.71	1.07			
Bay anchovy						455.55	246.43
Cunner						1.98	
Gobiid unidentified						8.81	643.67
Grubby		16.35	101.36	46.05	0.72		
Northern pipefish						31.34	24.12
Northern puffer							1.51
Rock gunnel			2.15				
Tautog						17.62	
Weakfish						35.18	1.11
Windowpane					0.63	25.80	
Winter flounder			1.91	67.24	6.17		

Lifestage: Juvenile

Species	January	February	March	April	May	June	July
Northern pipefish							2.83
Winter flounder							1.41

Table 3-3 c Monthly average ichthyoplankton density (Number/1000 m³) by species for all navigation channel stations in Upper Bay, during the 2005 Aquatic Biological Survey.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden				23.56	958.26	2106.54	
Bay anchovy					212.77	9556.86	3142.30
Fourbeard rockling				0.44	10.02		
Gadid unidentified		0.67	6.40	67.23	0.93		629.55
Goosefish							22.06
Labridae					314.62	4963.99	2184.63
Prionotus sp.					8.05	1216.77	1708.10
Weakfish						69.95	223.45
Windowpane				2.72	60.65	913.26	
Winter flounder	0.58		2.49	4.44			

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
American sandlance	1.55						
Atlantic menhaden					9.96	12.91	
Grubby			8.14	2.45			
Tautog						11.52	
Weakfish						1.67	
Winter flounder			1.30	7.34			

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sandlance	0.35		0.64	0.45			
Atlantic cod				0.68	0.28		
Atlantic croaker	3.84						
Atlantic herring				0.73	0.98		
Atlantic menhaden		0.42			134.95	379.05	22.09
Atlantic tomcod			0.64	12.05	0.35		
Bay anchovy						638.56	351.28
Cunner						18.95	30.35
Fourspot flounder							1.54
Gobiid unidentified							311.88
Grubby	0.58	8.12	119.34	117.70	7.66		
Northern pipefish						63.06	8.66
Rock gunnel		1.72	2.27	7.50	1.22		
Summer flounder	0.49						
Tautog						18.69	1.54
Weakfish						35.36	16.64
Windowpane					37.53	233.70	
Winter flounder			1.93	117.85	43.17	10.35	

Juvenile

Species	January	February	March	April	May	June	July
Atlantic cod				1.11			
Atlantic croaker	2.37						
Atlantic herring					0.35		
Atlantic tomcod					1.39		

Table 3-3 d Monthly average ichthyoplankton density (Number/1000 m³) by species for all shallow/shoal stations in Upper Bay, during the 2005 Aquatic Biological Survey.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden				4.98	107.20	6766.24	
Bay anchovy					76.06	6783.06	13983.84
Fourbeard rockling				2.81	7.37		
Gadid unidentified			3.89	20.89	1.45		227.09
Labridae					64.25	2264.60	1462.18
Prionotus sp.						14.79	7.03
Weakfish							183.59
Windowpane				1.17	21.54	75.32	
Winter flounder			3.32	15.67			

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
American sandlance	2.35						
Atlantic menhaden						4.18	
Grubby		0.68	14.04	4.43			
Winter flounder	0.53			8.31			

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sandlance	5.96		0.43	2.57			
Atlantic cod		0.50	0.54				
Atlantic croaker	2.47						
Atlantic herring				3.96			
Atlantic menhaden					23.29	62.99	3.07
Atlantic tomcod		1.00		26.66			
Bay anchovy						206.42	379.53
Cunner						4.13	3.19
Feather blenny				0.42			
Gobiid unidentified							424.16
Grubby	1.82	17.06	112.33	48.14	3.20		
Northern pipefish						13.75	19.00
Prionotus sp.						0.58	1.06
Rock gunnel		2.93	1.91	0.91	1.01		
Smallmouth flounder		0.61					
Tautog						14.40	4.20
Weakfish						15.12	
Windowpane					6.07	50.64	
Winter flounder			14.27	157.24	38.97		

Juvenile

Species	January	February	March	April	May	June	July
Bay anchovy	0.53						
Butterfish							1.06
Summer flounder		0.57					

Table 3-3 e Monthly average ichthyoplankton density (Number/1000 m³) by species for all navigation channel stations in Lower Bay, during the 2005 Aquatic Biological Survey.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden				92.18	449.90	323.82	
Bay anchovy					161.14	5509.27	66.06
Gadid unidentified				5.73			208.69
Labridae					470.30	2426.74	329.01
Prionotus sp.					133.59	1326.83	1002.16
Weakfish							120.32
Windowpane					100.31	1202.67	
Winter flounder			2.33	3.92			

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
Atlantic menhaden					9.69		
Grubby		0.96	1.20		0.74		
Winter flounder				6.64			

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sandlance	1.45			1.11			
Atlantic croaker	1.45						
Atlantic menhaden					56.08	24.85	19.37
Bay anchovy						1.21	41.49
Cunner						2.69	1.94
Feather blenny						1.21	
Gobiid unidentified							39.44
Grubby		13.63	62.71	243.56	9.87		
Northern pipefish						1.74	34.54
Northern puffer							1.94
Prionotus sp.							1.94
Rock gunnel			3.49	1.96			
Summer flounder		0.98					
Tautog						1.21	1.94
Weakfish							36.86
Windowpane					90.18	52.73	5.64
Winter flounder				70.35	67.30	2.42	

Juvenile

Species	January	February	March	April	May	June	July

Table 3-3 f Monthly average ichthyoplankton density (Number/1000 m³) by species for all shallow/shoal stations in Lower Bay, during the 2005 Aquatic Biological Survey.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden				205.67	1237.78	276.61	
Bay anchovy					582.80	9285.23	410.44
Fourbeard rockling				8.23	0.60		
Gadid unidentified				6.29			108.73
Labridae					343.53	2235.43	324.17
Prionotus sp.					15.90	3816.04	247.15
Weakfish						128.98	
Windowpane					283.46	2462.55	
Winter flounder			0.86				

Yolk-sac Larvae

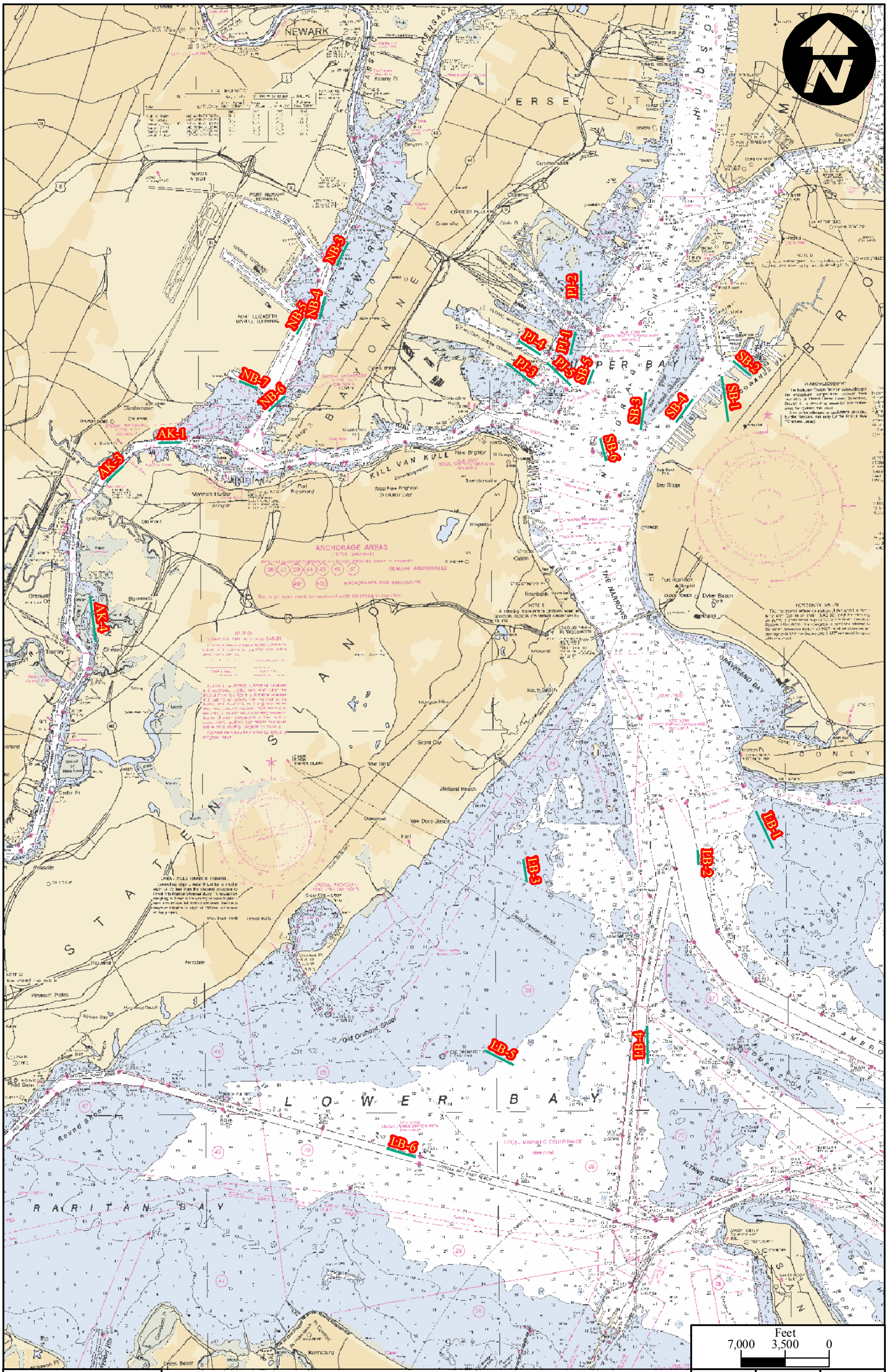
Species	January	February	March	April	May	June	July
American sandlance	6.37						
Atlantic menhaden					27.56	12.73	
Grubby		4.82	8.00	1.12			
Windowpane					0.65		
Winter flounder			5.05	5.01			

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sandlance	2.50		2.17	1.71			
Atlantic cod			1.17				
Atlantic menhaden					96.95	50.99	8.42
Atlantic silverside						6.05	
Atlantic tomcod				2.56			
Bay anchovy						114.11	866.07
Butterfish							2.81
Cunner						2.14	2.81
Feather blenny				0.85			
Gobiid unidentified							10916.00
Grubby		20.20	316.78	71.64	4.98		
Longhorn sculpin			0.86				
Northern pipefish						23.95	81.76
Rock gunnel		3.53	8.40	6.68			
Tautog					0.65	22.64	28.67
Weakfish						9.36	
Windowpane					126.00	151.39	
Winter flounder			4.92	436.08	72.97		

Juvenile

Species	January	February	March	April	May	June	July
Windowpane						2.02	



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AQUATIC BIOLOGICAL SAMPLING (1999-2005)

Job No.	Date	Figure No.
1040-004	12/13/05	2-1

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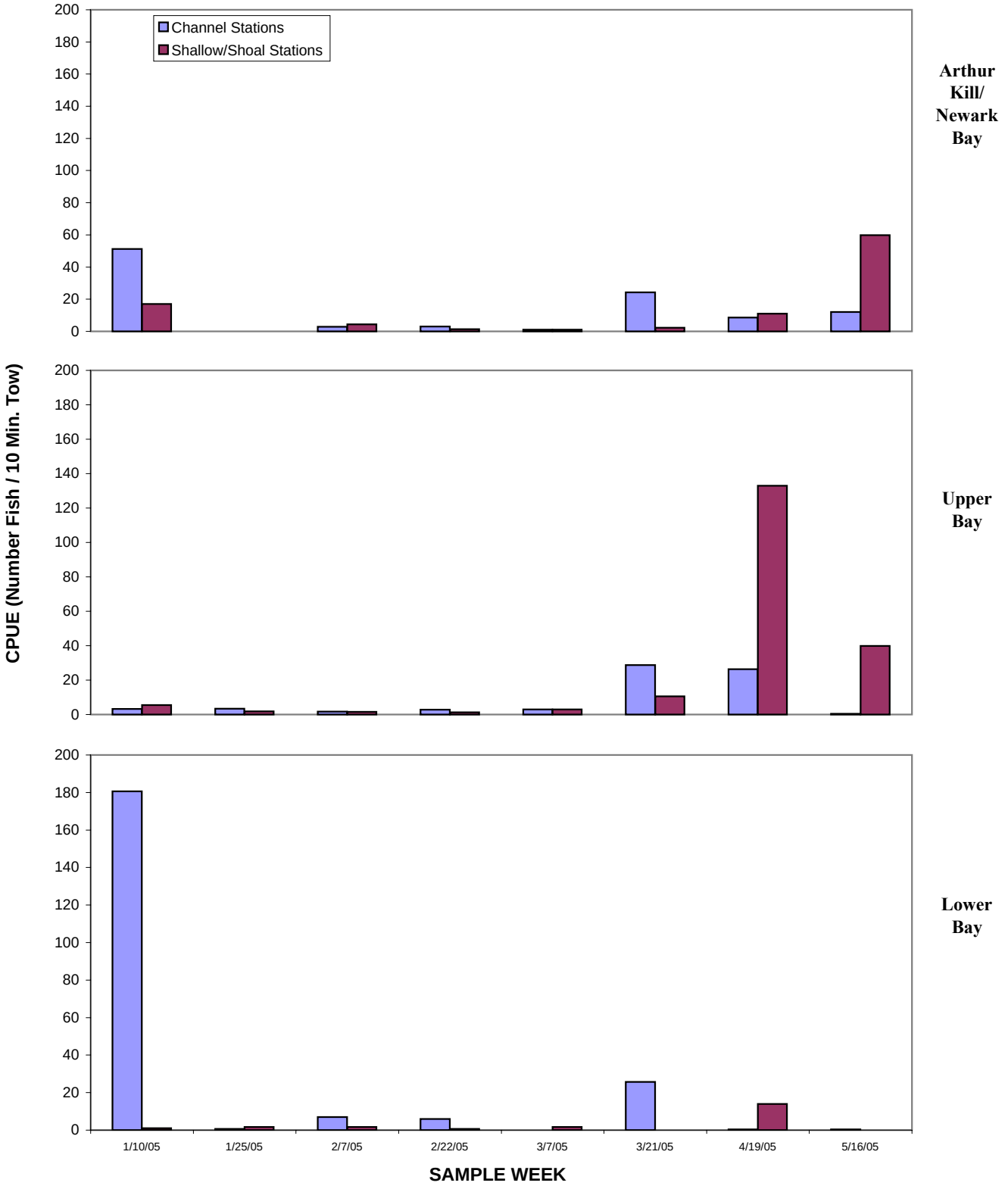


Figure 3-1 **Average weekly trawl CPUE for all species combined at navigation channel and shallow/shoal stations in the three study areas, 2005 Aquatic Biological Survey.**

Note(s) Dates listed indicate the first day of each sample week.

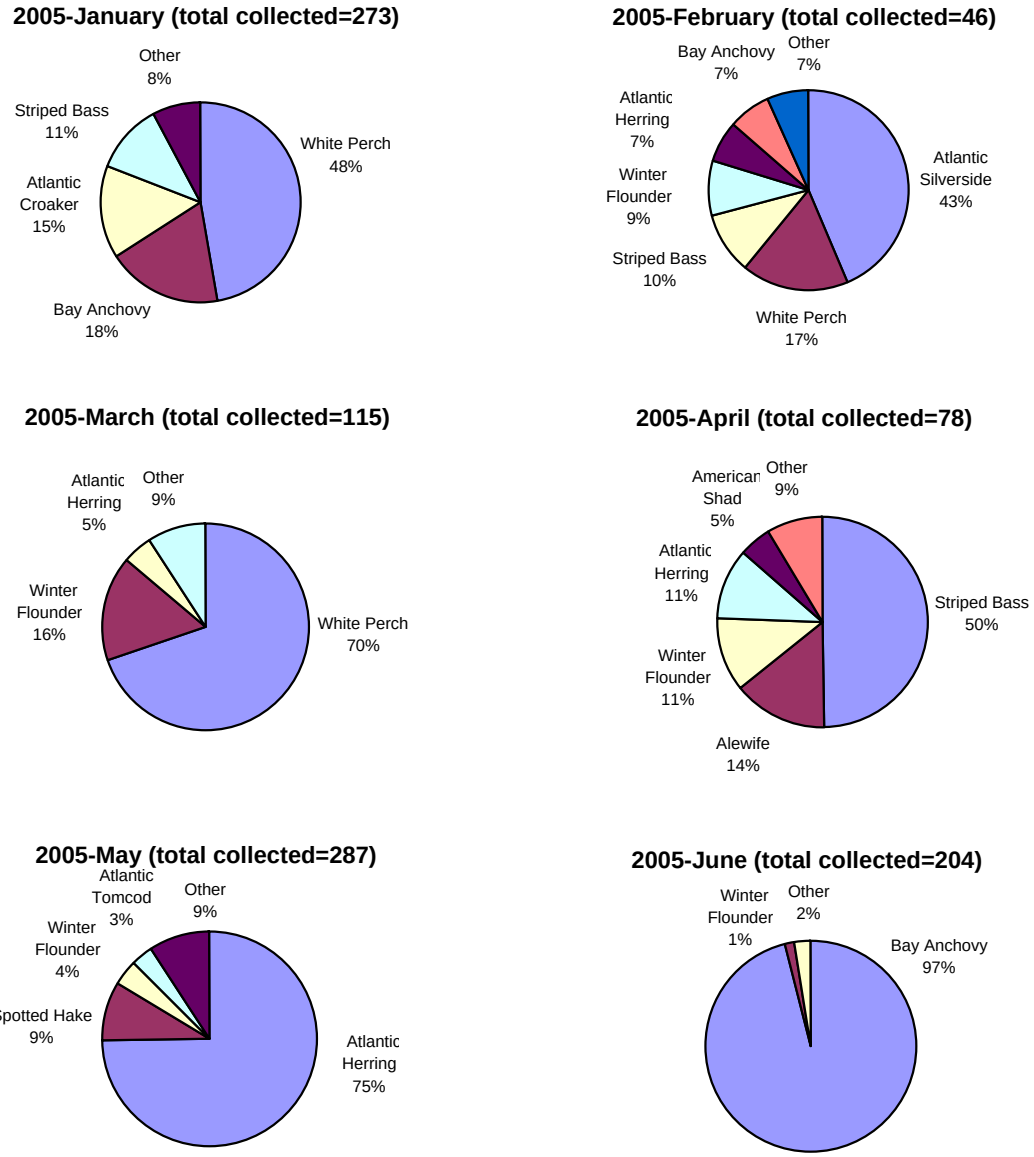


Figure 3-2 **Species composition of trawl catches from Arthur Kill/ Newark Bay stations during the 2005 Aquatic Biological Survey.**

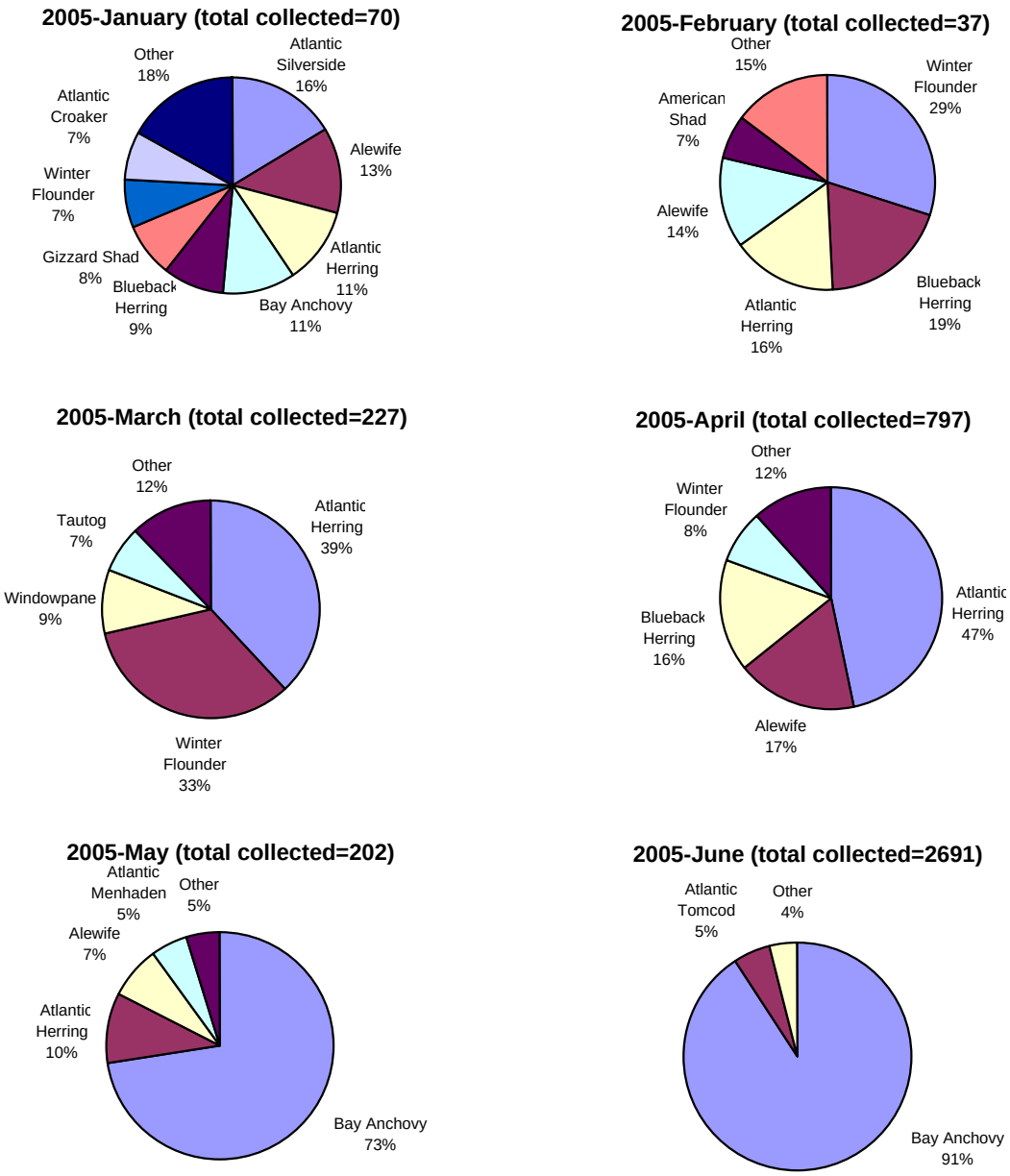


Figure 3-3 **Species composition of trawl catches from Upper Bay stations during the 2005 Aquatic Biological Survey.**

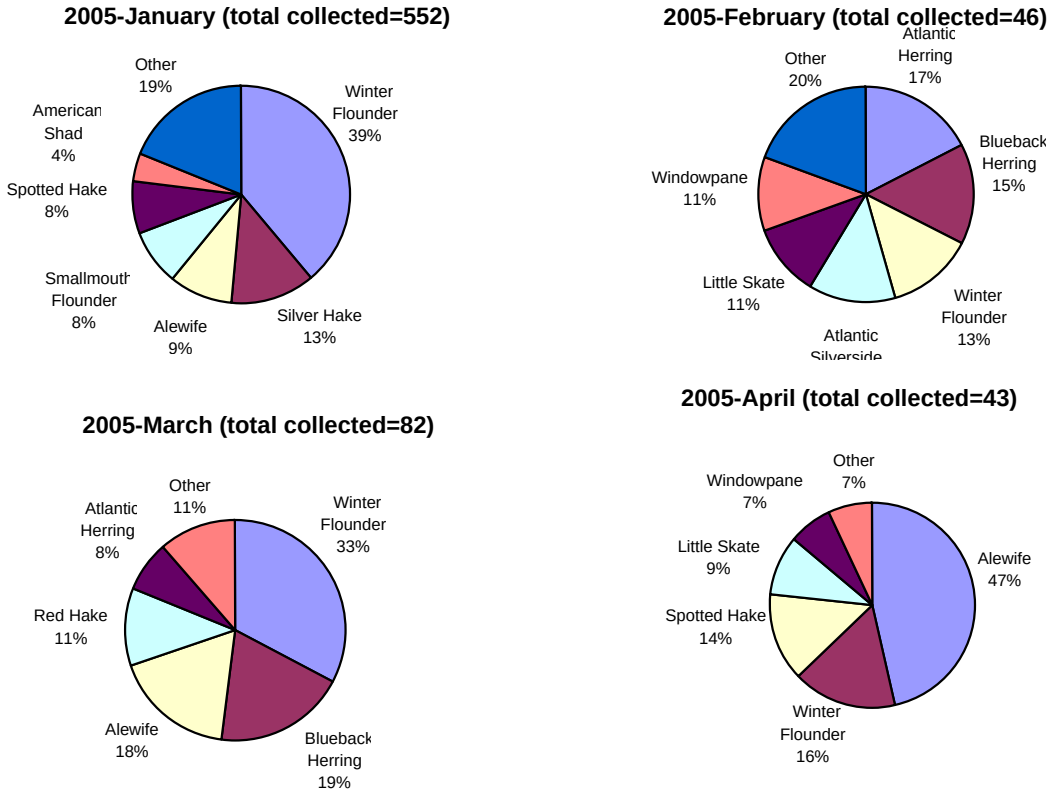


Figure 3-4 **Species composition of trawl catches from Lower Bay stations during the 2005 Aquatic Biological Survey.**

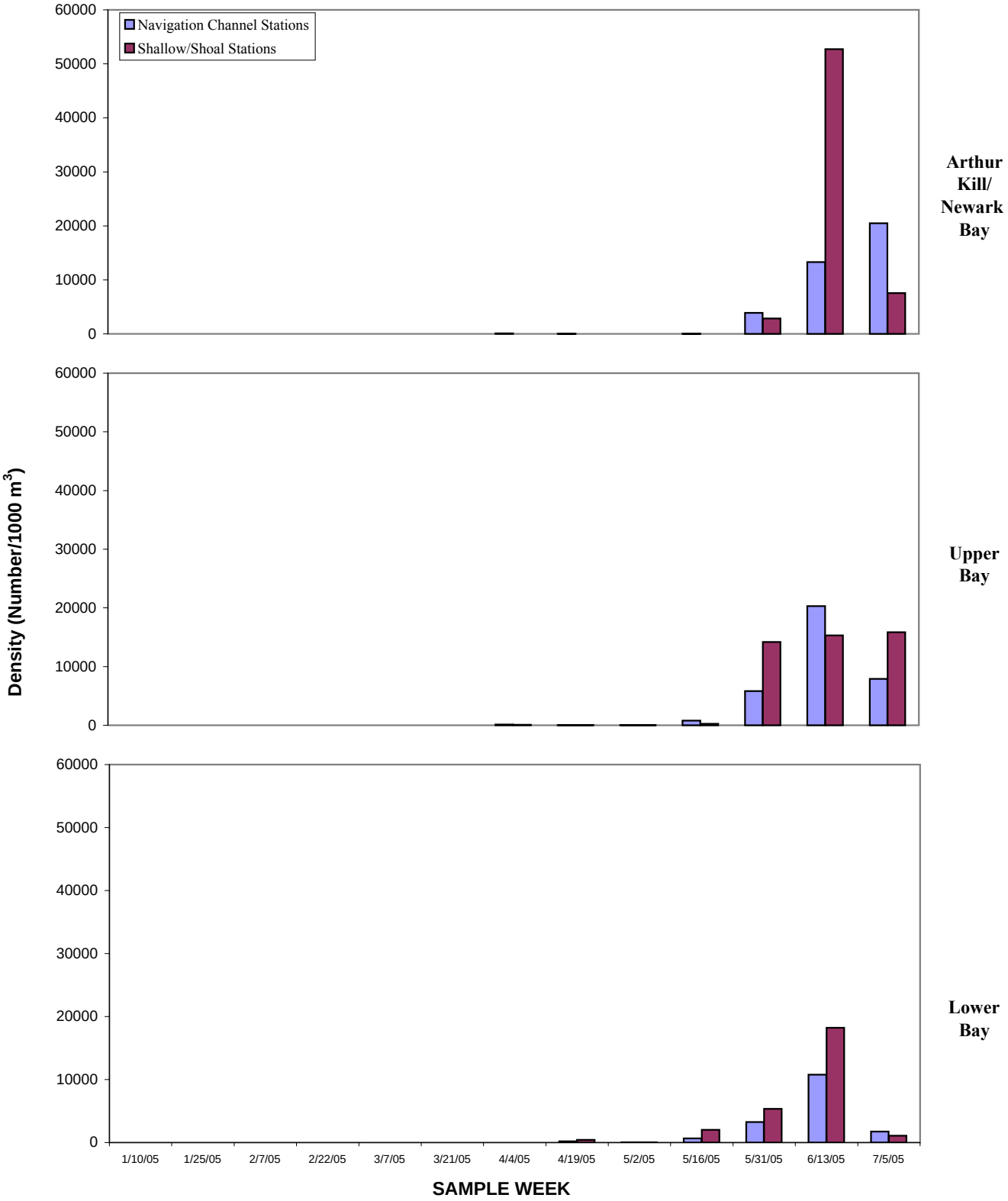


Figure 3-5 **Average weekly egg density of all species combined at navigation channel and shallow/shoal stations in the three study areas, 2005 Aquatic Biological Survey.**

Note(s): Dates listed indicate the first day of each sample week.

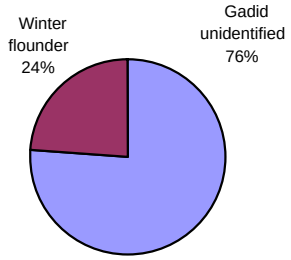
2005-January (total collected=0)

No Eggs Collected

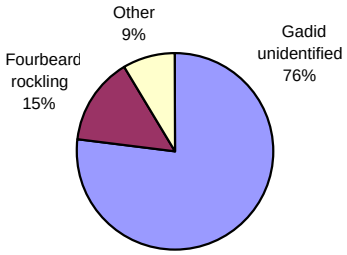
2005-February (total collected=0)

No Eggs Collected

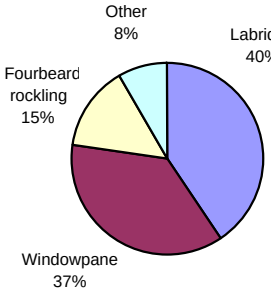
2005-March (total collected=14)



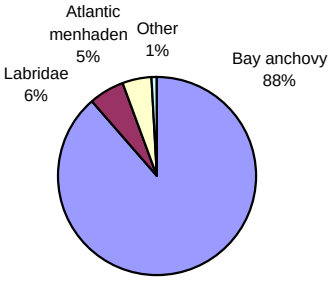
2005-April (total collected=52)



2005-May (total collected=63)



2005-June (total collected=51105)



2005-July (total collected=19944)

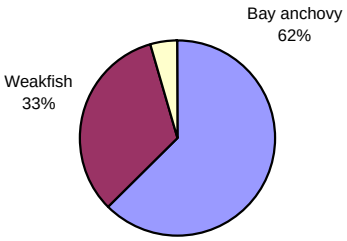


Figure 3-6 **Species composition of eggs collected at Arthur Kill/Newark Bay stations during the 2005 Aquatic Biological Survey.**

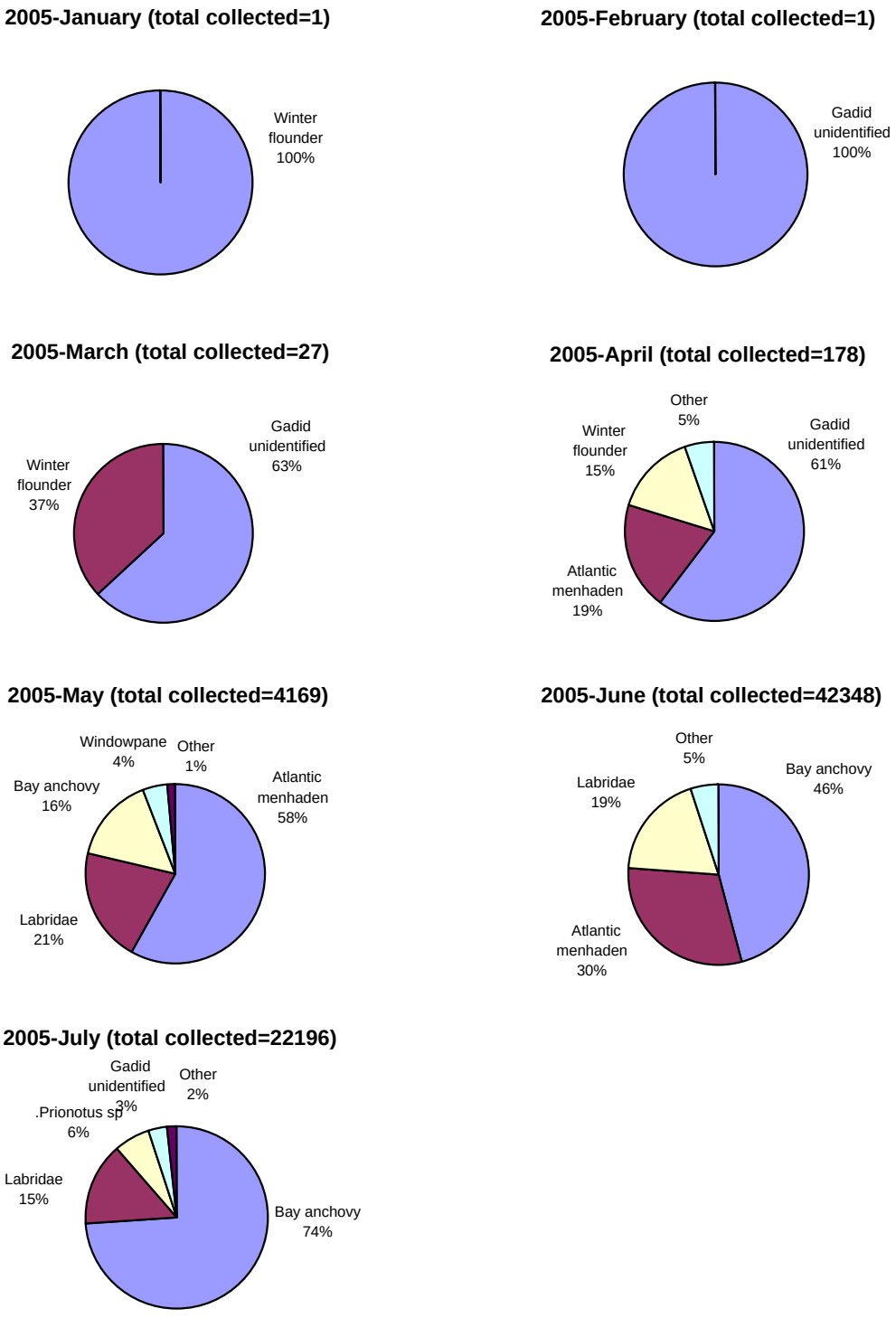


Figure 3-7 **Species composition of eggs collected at Upper Bay stations during the 2005 Aquatic Biological Survey.**

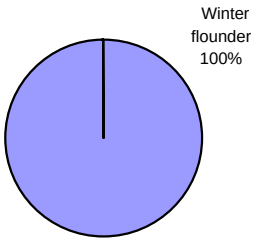
2005-January (total collected=0)

No Eggs Collected

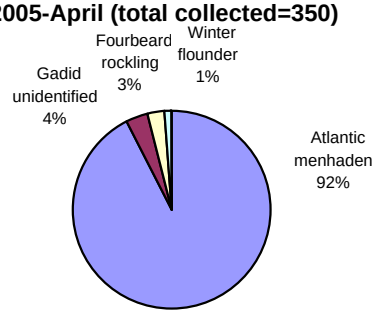
2005-February (total collected=0)

No Eggs Collected

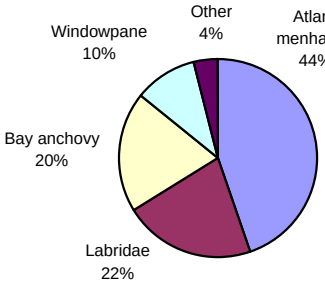
2005-March (total collected=2)



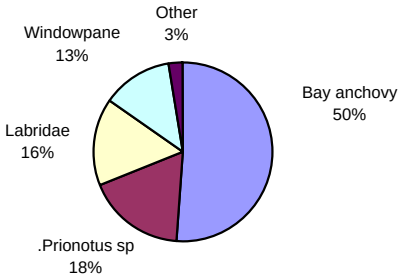
2005-April (total collected=350)



2005-May (total collected=5516)



2005-June (total collected=13808)



2005-July (total collected=1214)

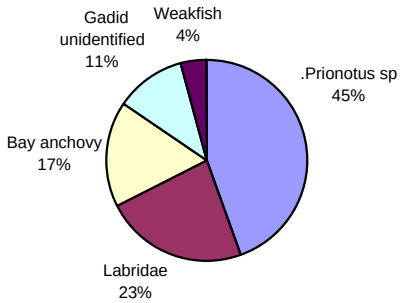


Figure 3-8 **Species composition of eggs collected at Lower Bay stations during the 2005 Aquatic Biological Survey.**

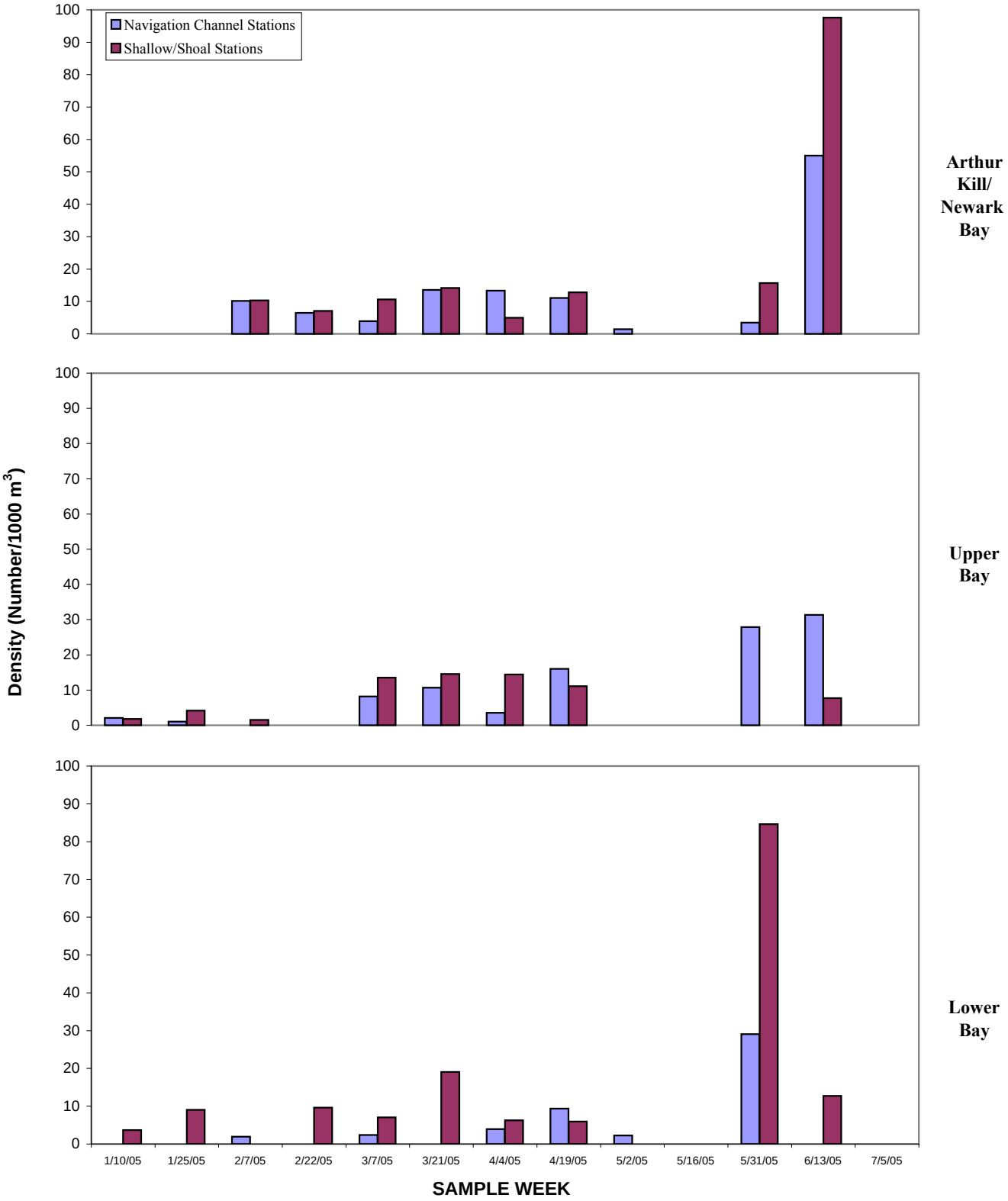


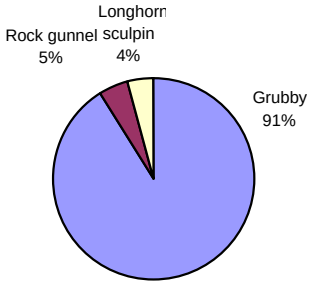
Figure 3-9 **Average weekly yolk-sac larvae density of all species combined at navigation channel and shallow/shoal stations in the three study areas, 2005 Aquatic Biological Survey.**

Note(s): Dates listed indicate the first day of each sample week.

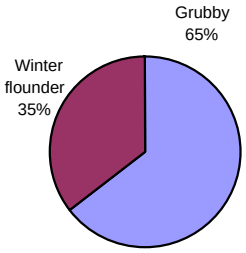
2005-January (total collected=0)

No YS Collected

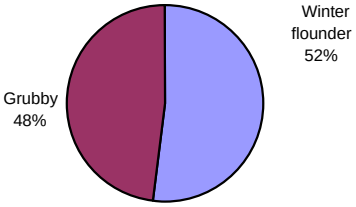
2005-February (total collected=20)



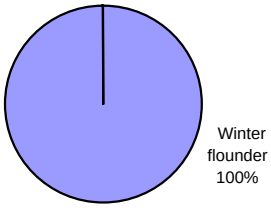
2005-March (total collected=12)



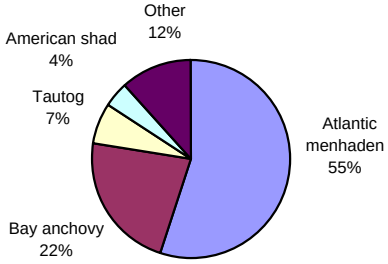
2005-April (total collected=28)



2005-May (total collected=1)



2005-June (total collected=119)



2005-July (total collected=0)

No YS Collected

Figure 3-10 **Species composition of yolk-sac larvae collected at Arthur Kill/ Newark Bay stations during the 2005 Aquatic Biological Survey.**

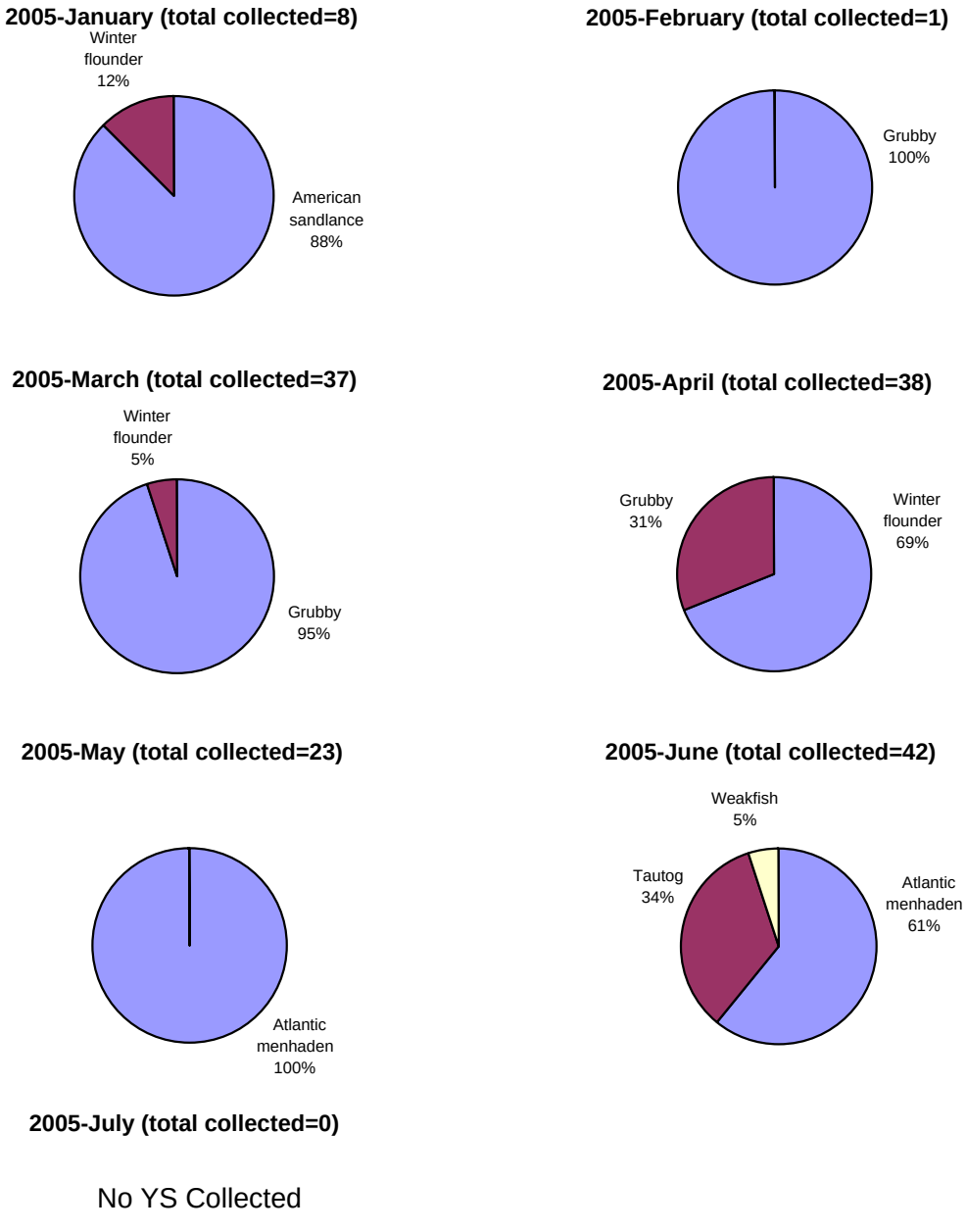


Figure 3-11 **Species composition of yolk-sac larvae collected at Upper Bay stations during the 2005 Aquatic Biological Survey.**

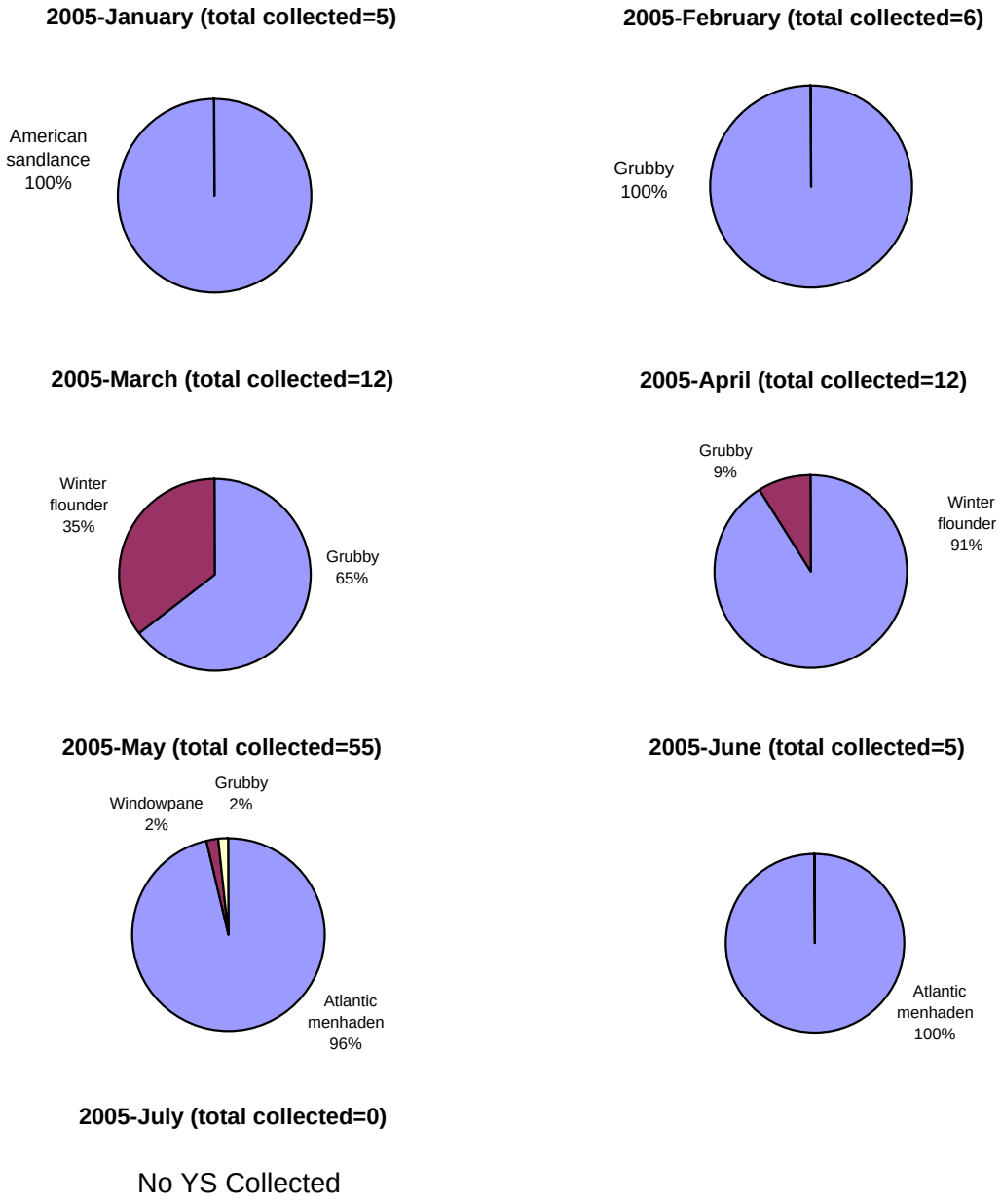


Figure 3-12 **Species composition of yolk-sac larvae collected at Lower Bay stations during the 2005 Aquatic Biological Survey.**

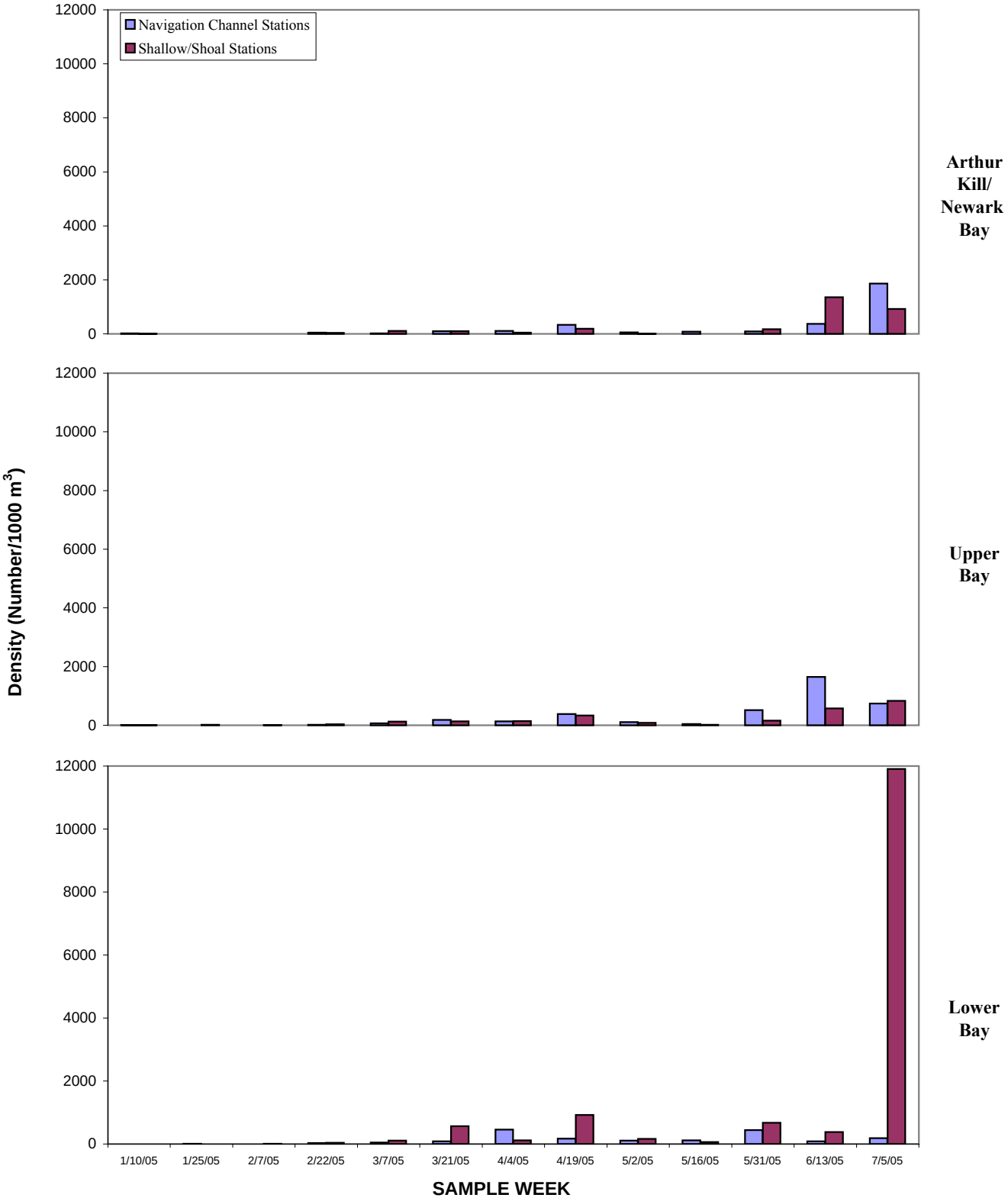


Figure 3-13 **Average weekly post yolk-sac larvae density of all species combined at navigation channel and shallow/shoal stations in the three study areas, 2005 Aquatic Biological Survey.**

Note(s): Dates listed indicate the first day of each sample week.

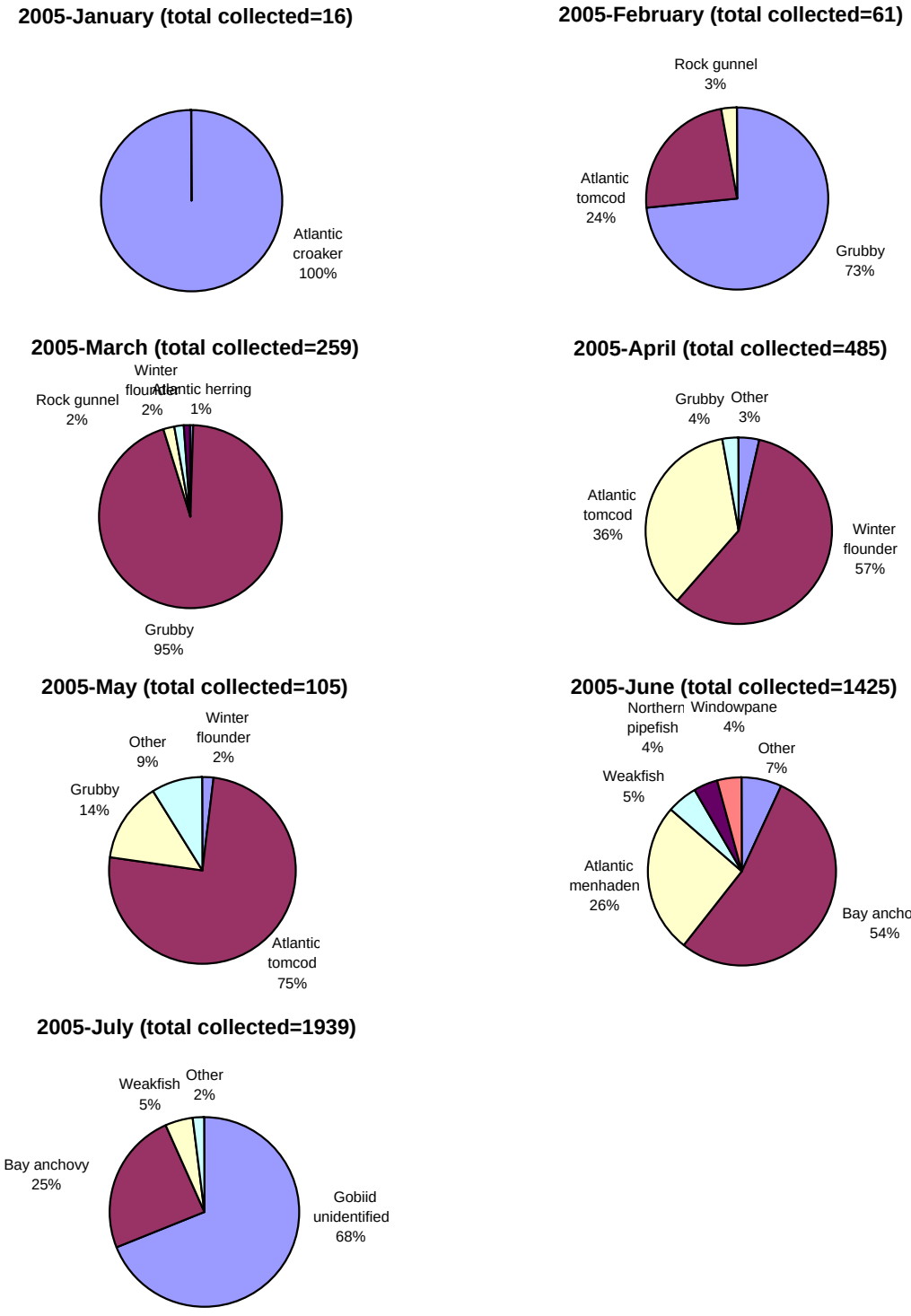


Figure 3-14 **Species composition of post yolk-sac larvae collected at Arthur Kill/Newark Bay stations during the 2005 Aquatic Biological Survey.**

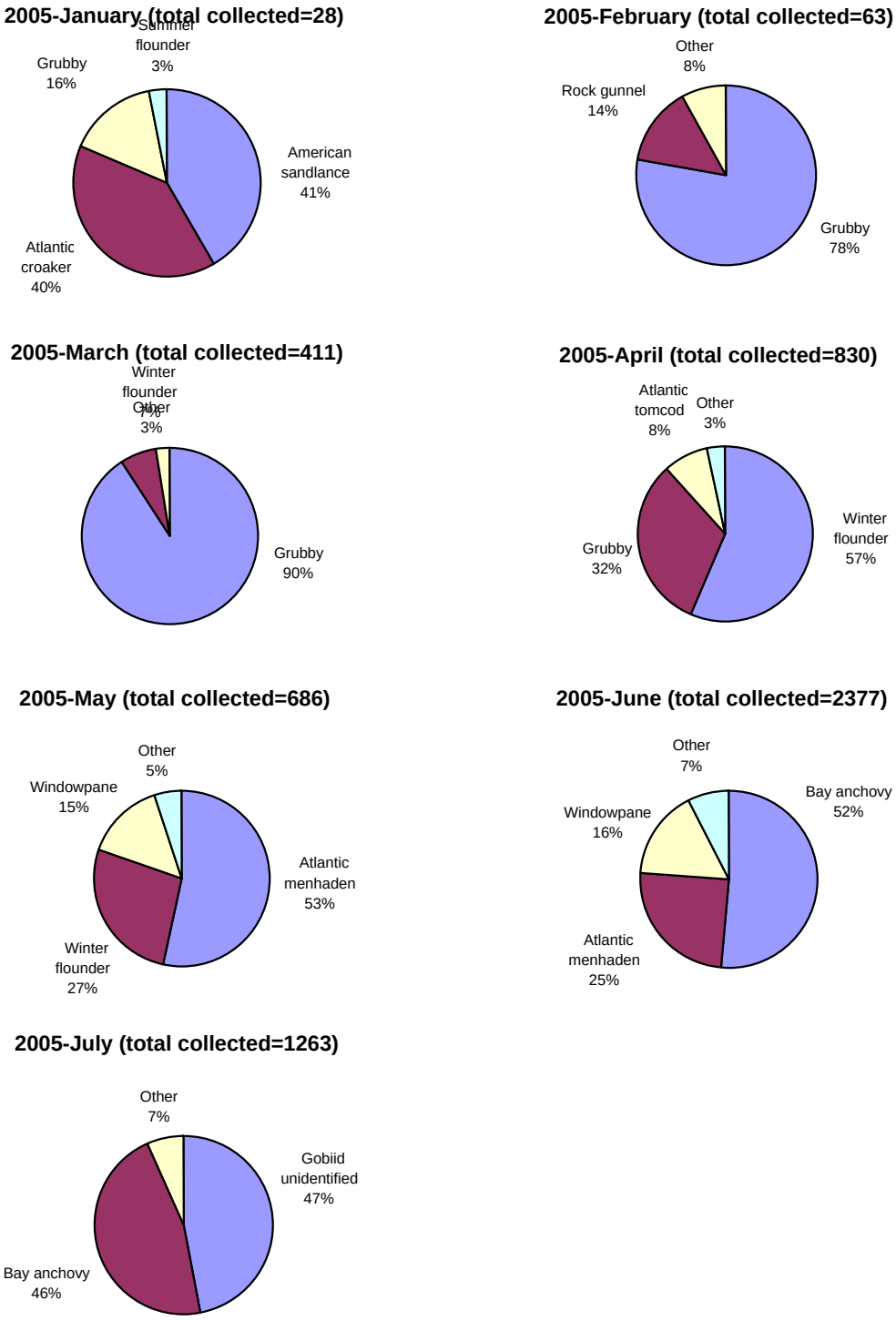


Figure 3-15 **Species composition of post yolk-sac larvae collected at Upper Bay stations during the 2005 Aquatic Biological Survey.**

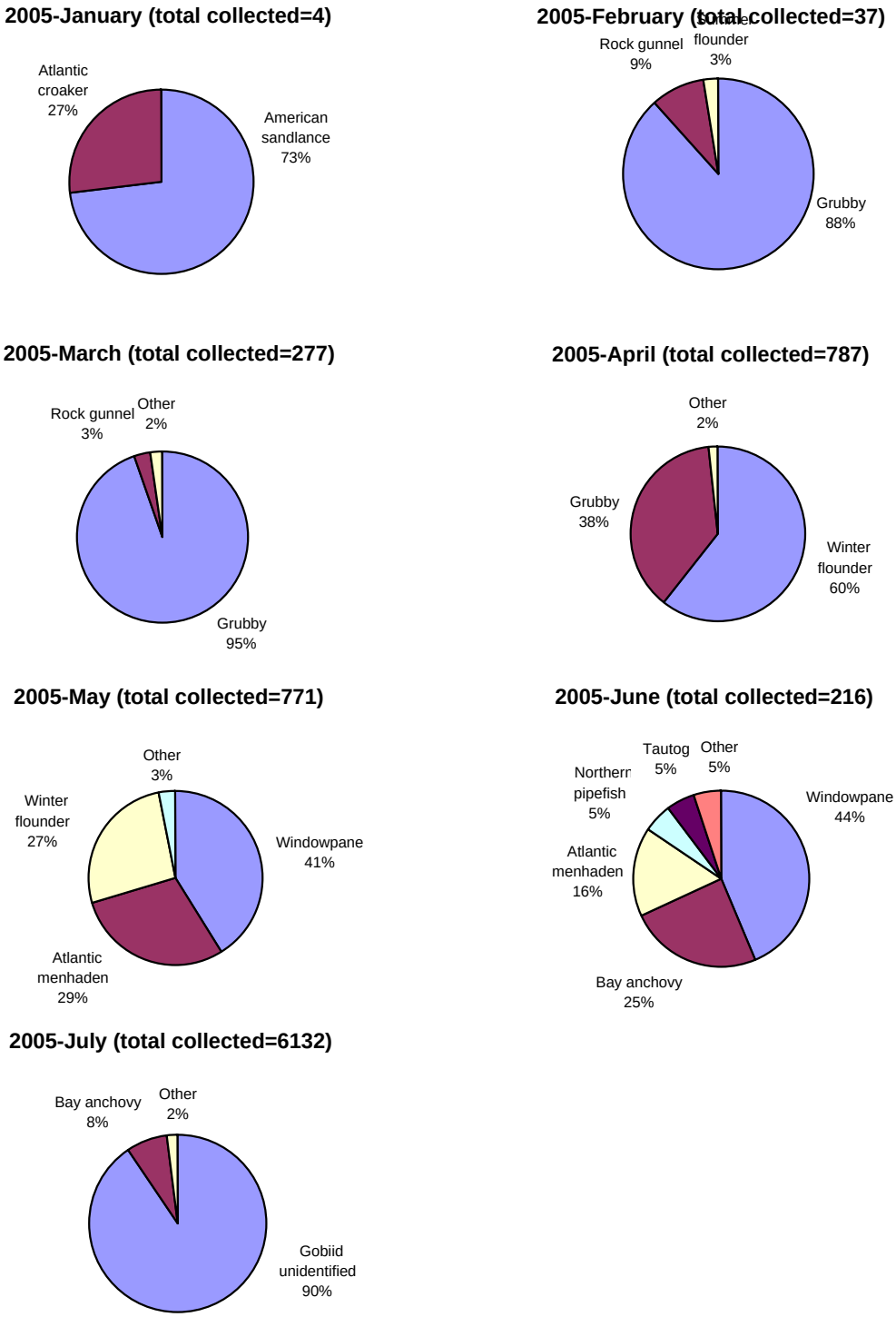


Figure 3-16 **Species composition of post yolk-sac larvae collected at Lower Bay stations during the 2005 Aquatic Biological Survey.**

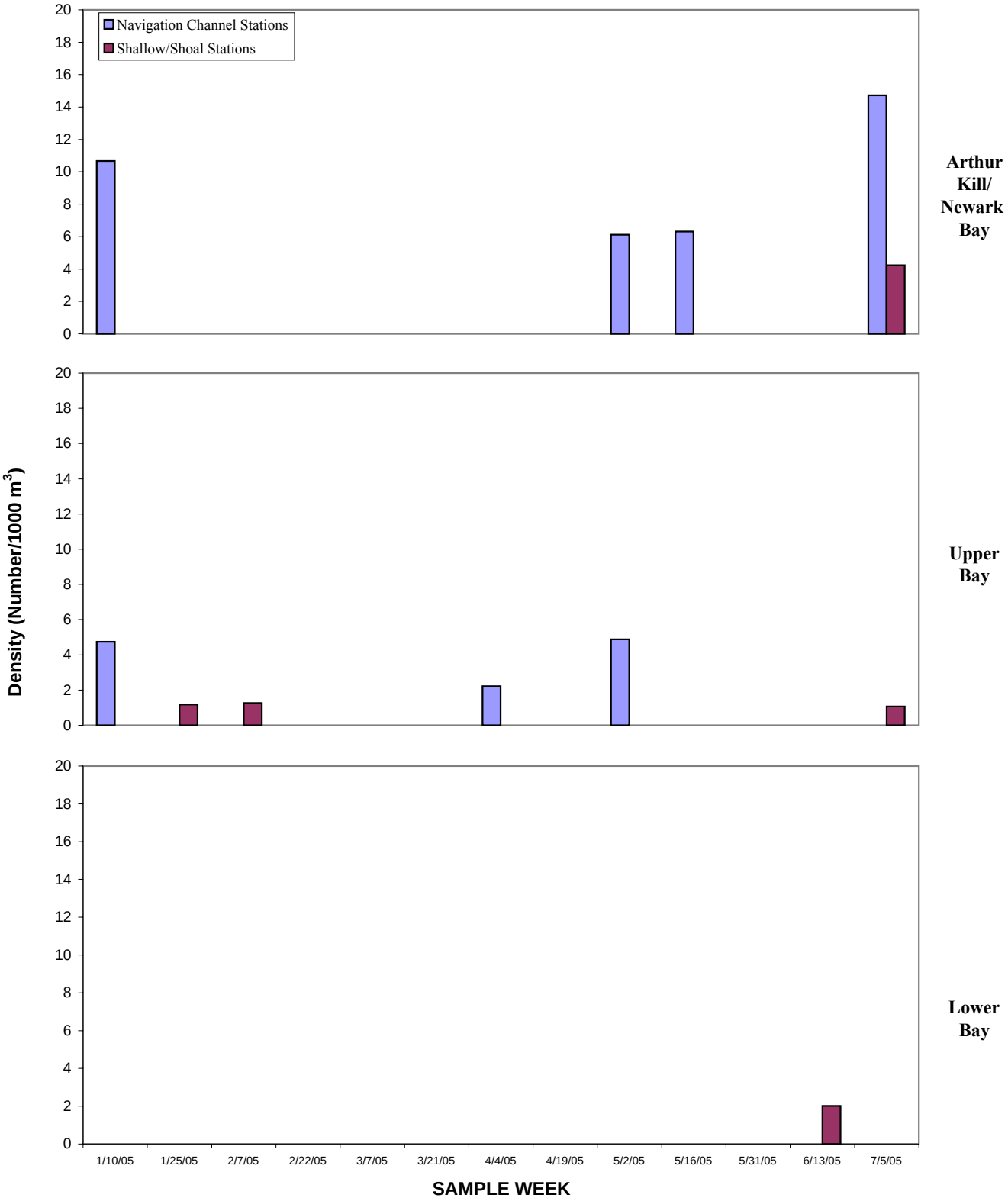
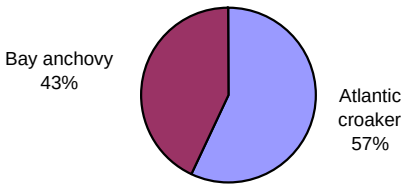


Figure 3-17 **Average weekly juvenile density of all species combined at navigation channel and shallow/shoal stations in the three study areas, 2005 Aquatic Biological Survey.**

Note(s): Dates listed indicate the first day of each sample week.

2005-January (total collected=7)



2005-February (total collected=0)

No Juveniles Collected

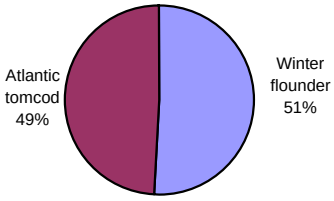
2005-March (total collected=0)

No Juveniles Collected

2005-April (total collected=0)

No Juveniles Collected

2005-May (total collected=8)



2005-June (total collected=0)

No Juveniles Collected

2005-July (total collected=13)

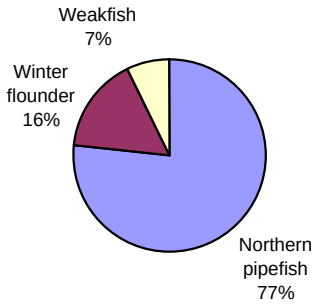
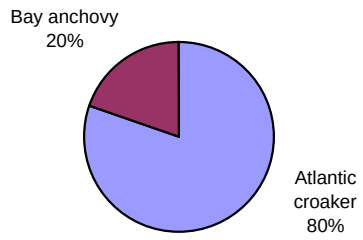
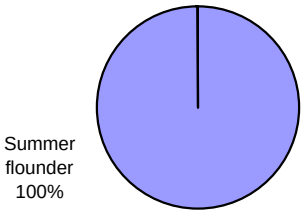


Figure 3-18 **Species composition of juveniles collected at Arthur Kill/Newark Bay stations during the 2005 Aquatic Biological Survey.**

2005-January (total collected=5)



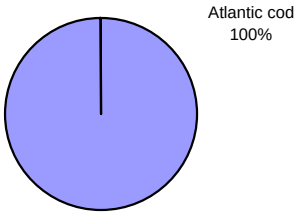
2005-February (total collected=1)



2005-March (total collected=0)

No Juveniles Collected

2005-April (total collected=1)



2005-May (total collected=4)

No Juveniles Collected

2005-June (total collected=0)

No Juveniles Collected

2005-July (total collected=1)

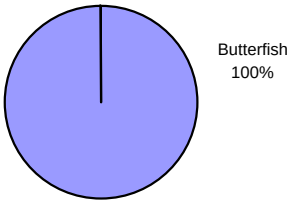


Figure 3-19 **Species composition of juveniles collected at Upper Bay stations stations during the 2005 Aquatic Biological Survey.**

2005-January (total collected=0)

No Juveniles Collected

2005-February (total collected=0)

No Juveniles Collected

2005-March (total collected=0)

No Juveniles Collected

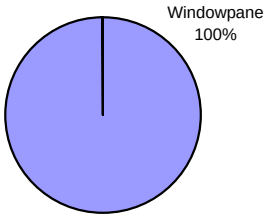
2005-April (total collected=0)

No Juveniles Collected

2005-May (total collected=0)

No Juveniles Collected

2005-June (total collected=1)



2005-July (total collected=0)

No Juveniles Collected

Figure 3-20 **Species composition of juveniles collected at Lower Bay stations stations during the 2005 Aquatic Biological Survey.**

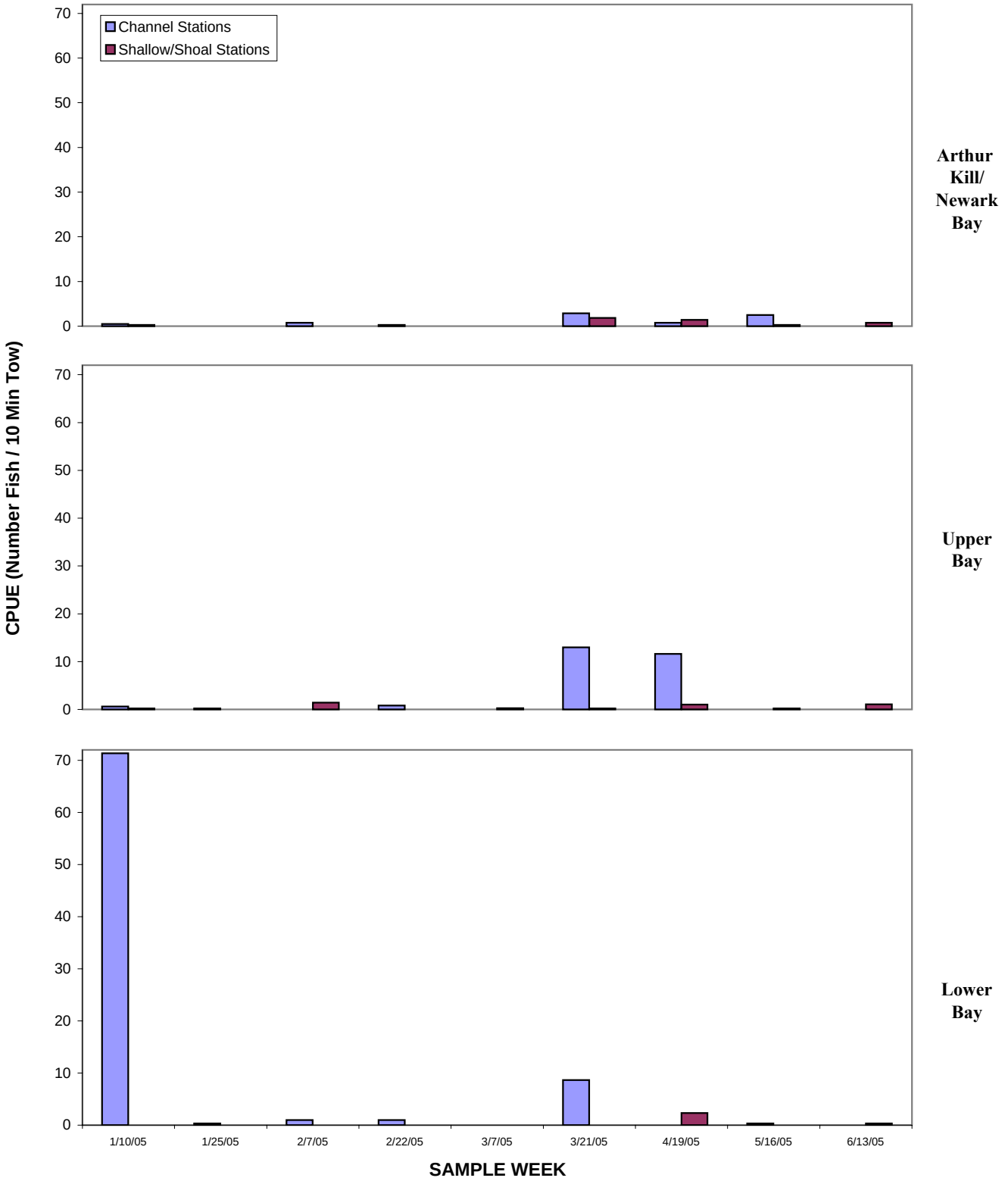


Figure 3-21 **Average weekly winter flounder trawl CPUE at navigation channel and shallow/shoal stations in the three study areas during 2005 Aquatic Biological Survey.**

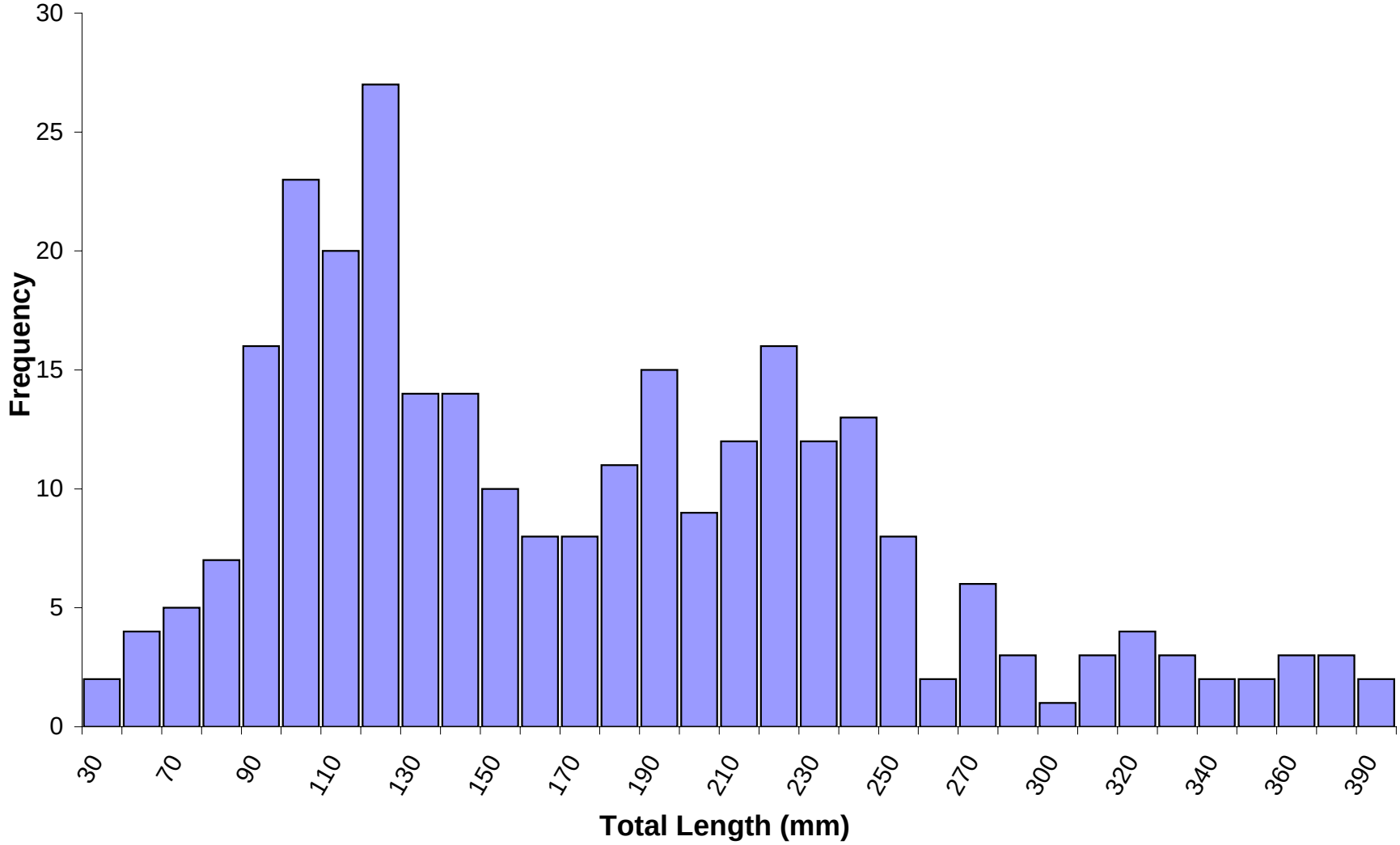


Figure 3-22 **Length frequency distribution (10 mm intervals) of all winter flounder collected during trawl sampling during 2005 Aquatic Biological Survey. Winter flounder >250 mm are considered adult while winter flounder <250 are juvenile.**

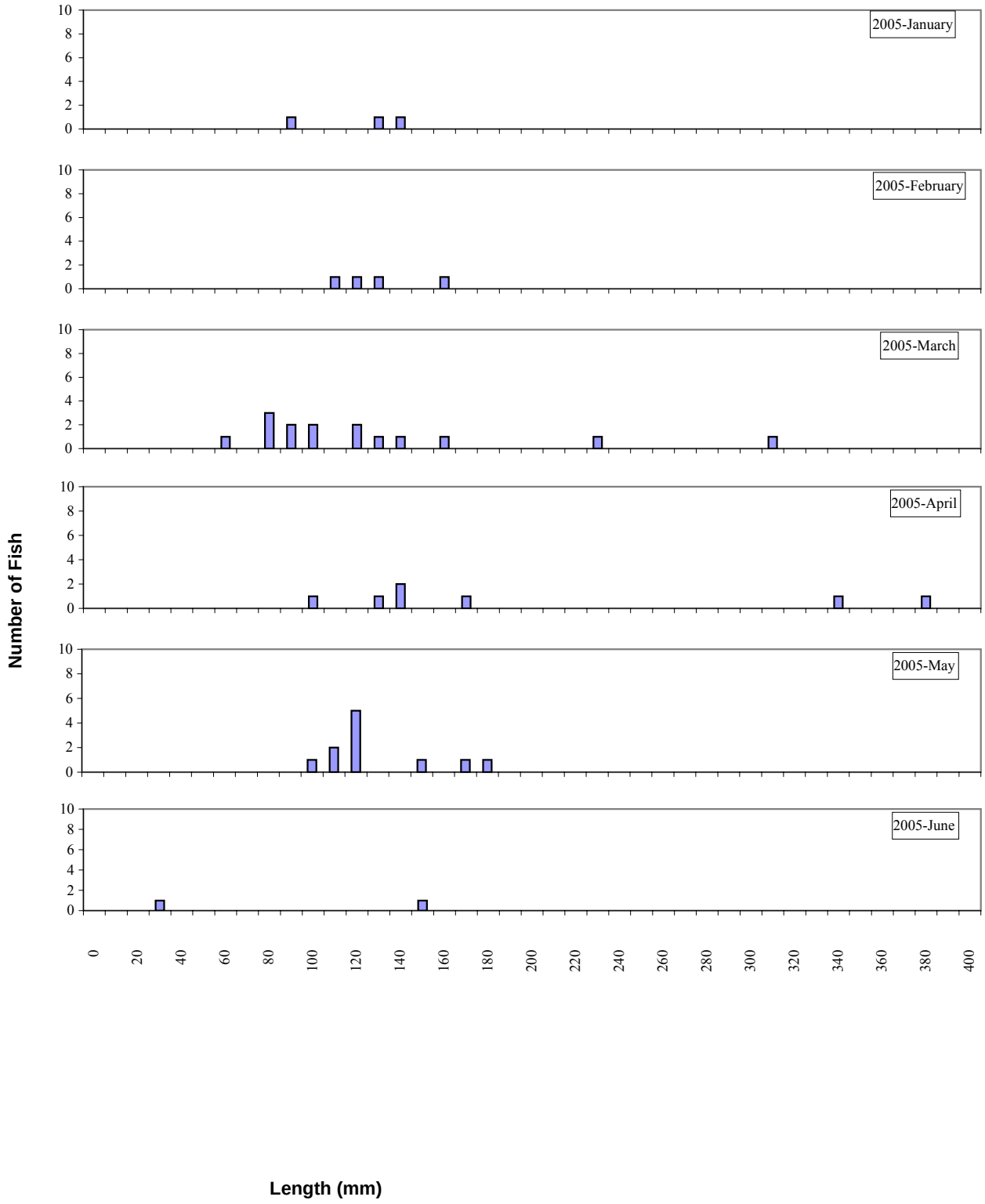


Figure 3-23 **Length frequency distribution of winter flounder collected during trawl sampling at Arthur Kill/Newark Bay stations, 2005 Aquatic Biological Survey.**

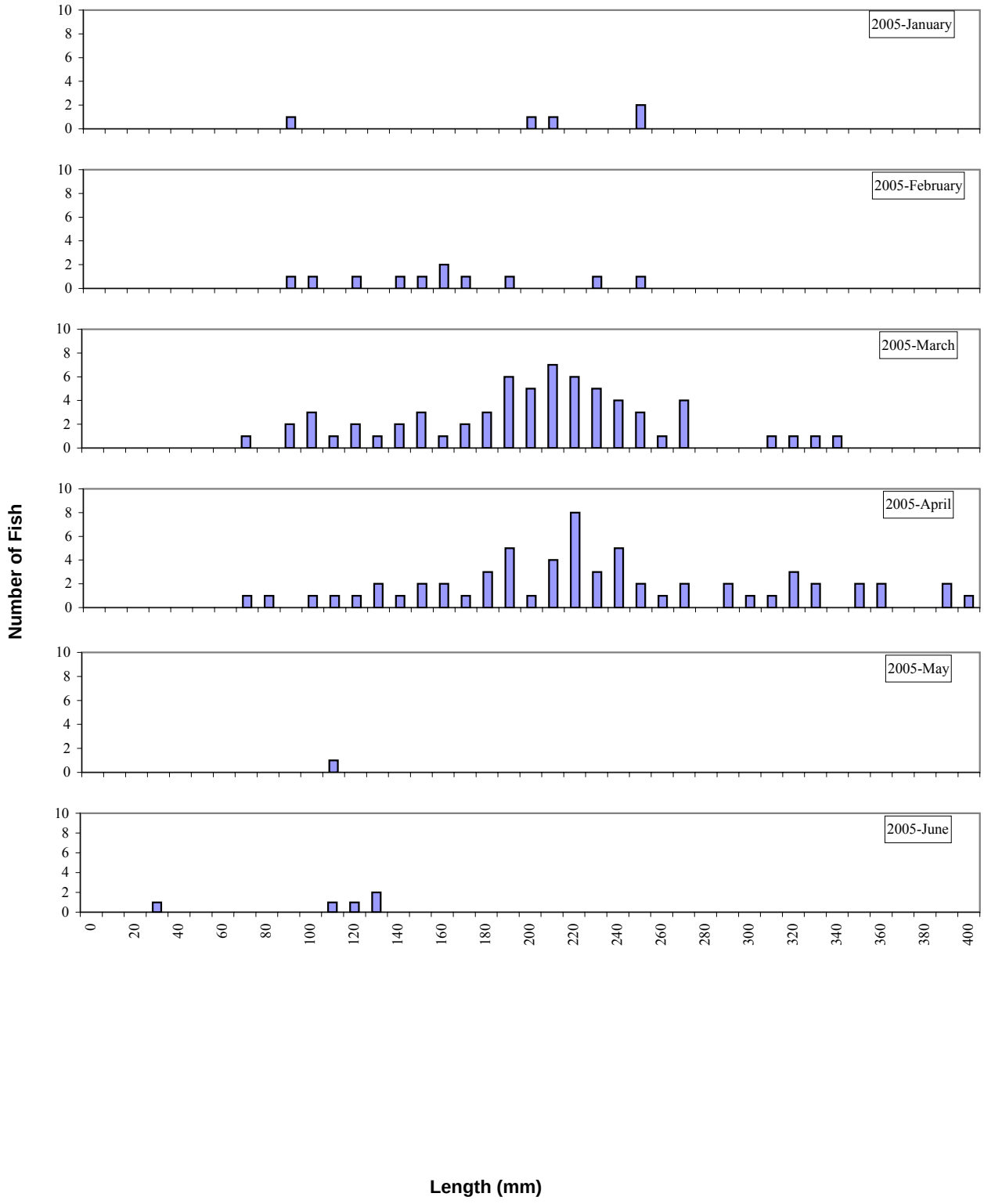


Figure 3-24 **Length frequency distribution of winter flounder collected during trawl sampling at Upper Bay stations, 2005 Aquatic Biological Survey.**

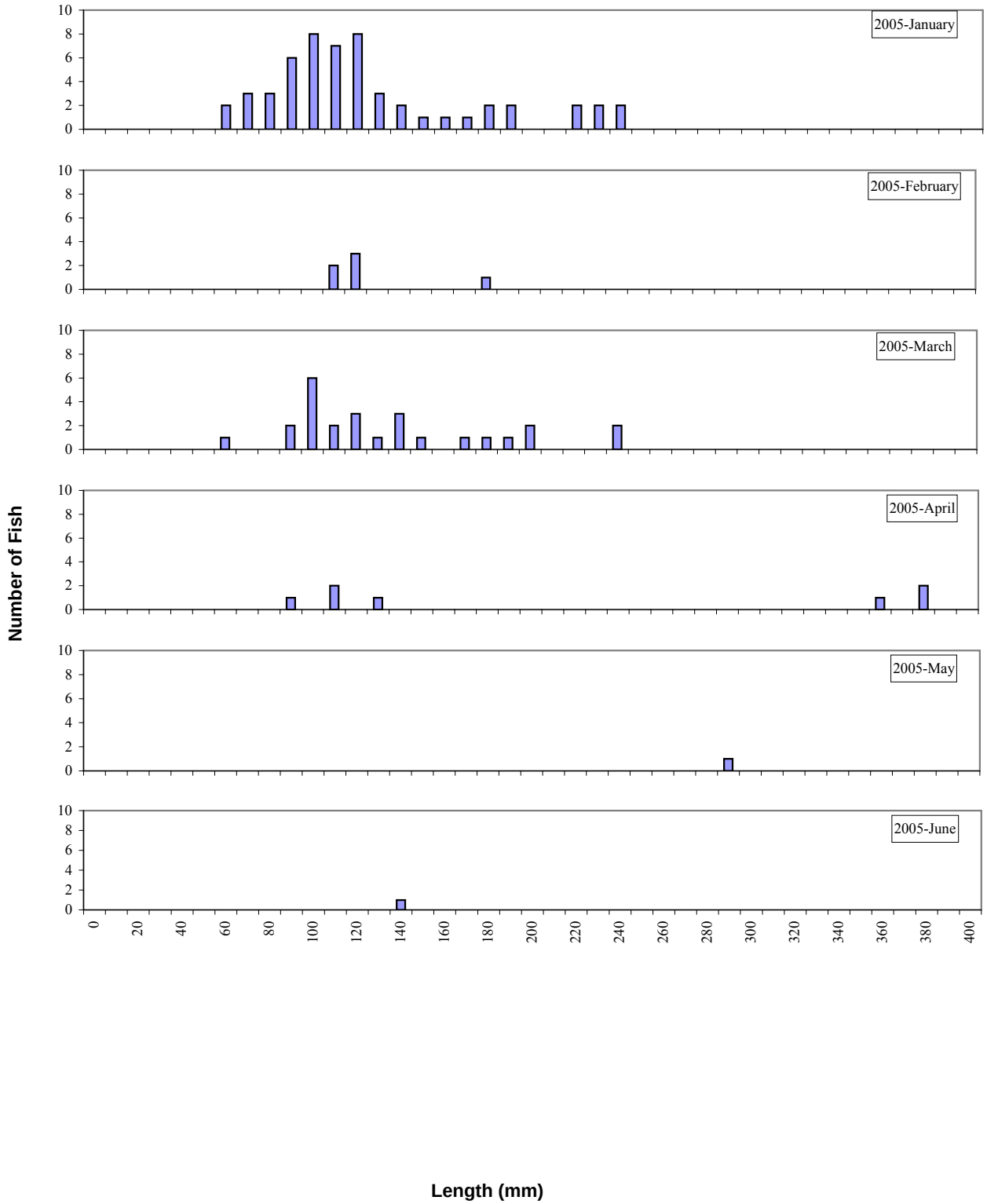


Figure 3-25 **Length frequency distribution of winter flounder collected during trawl sampling at Lower Bay stations, 2005 Aquatic Biological Survey.**

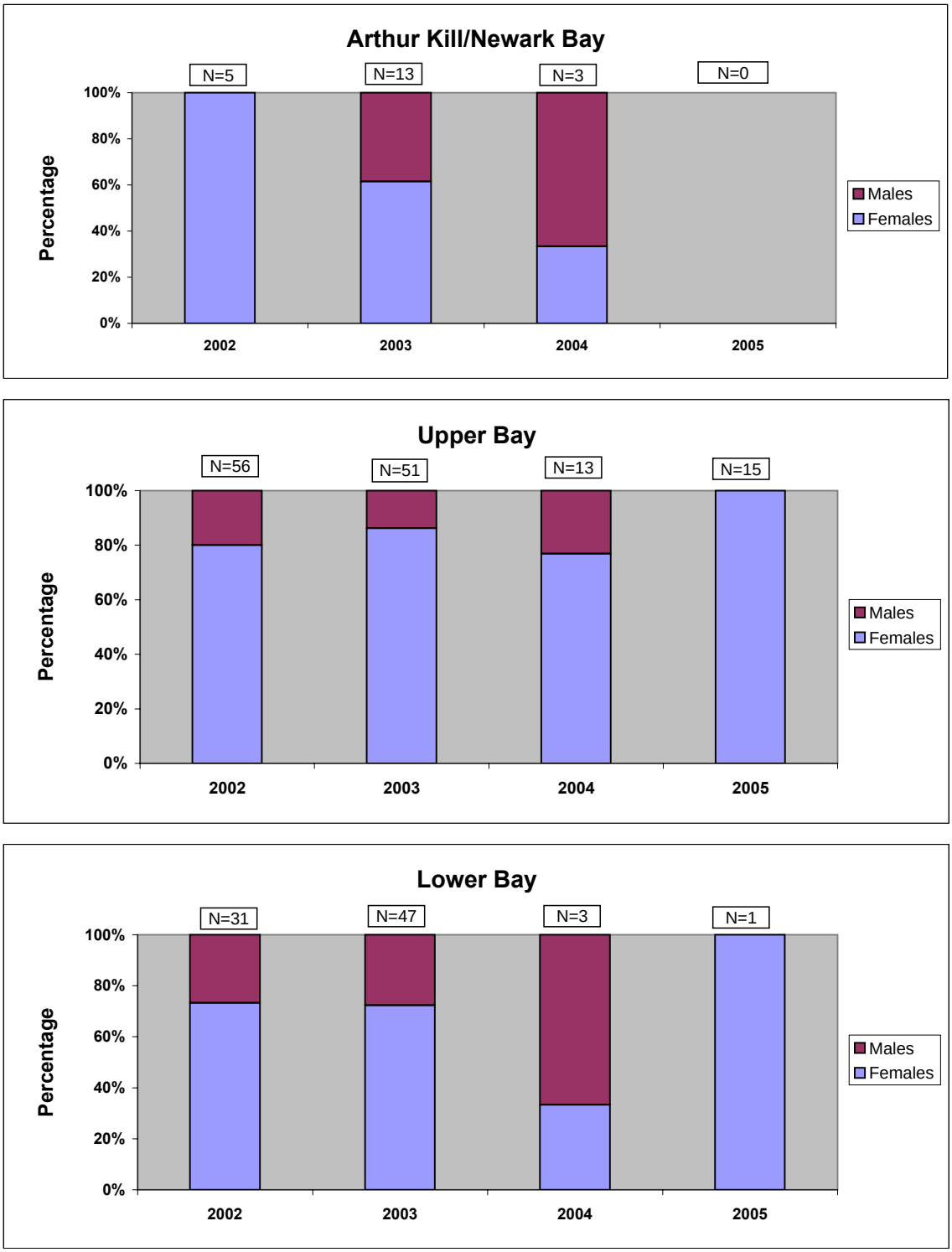


Figure 3-26 Sex ratio of adult winter flounder (Total length ≥ 250 mm) collected in trawls during the 2002-2005 Aquatic Biological Sampling Programs.

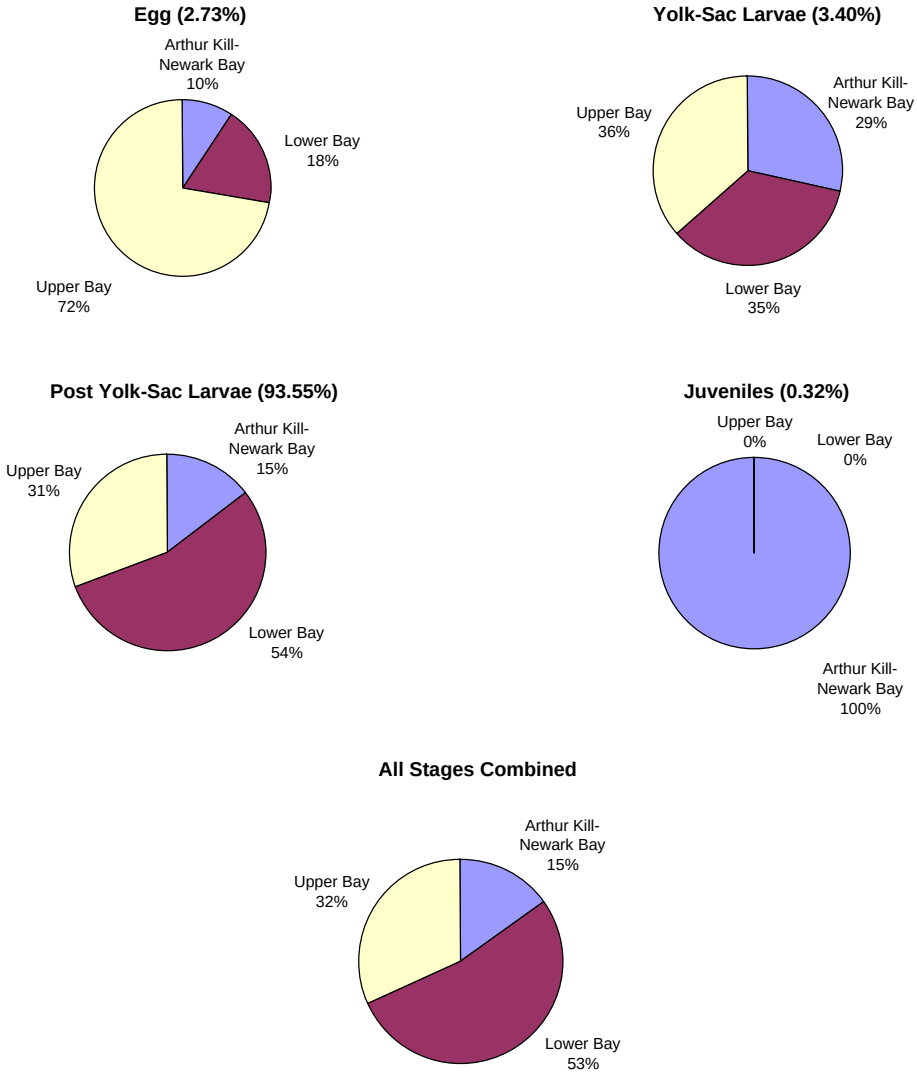


Figure 3-27 Distribution of winter flounder lifestages collected in the three study areas, 2005 Aquatic Biological Survey.

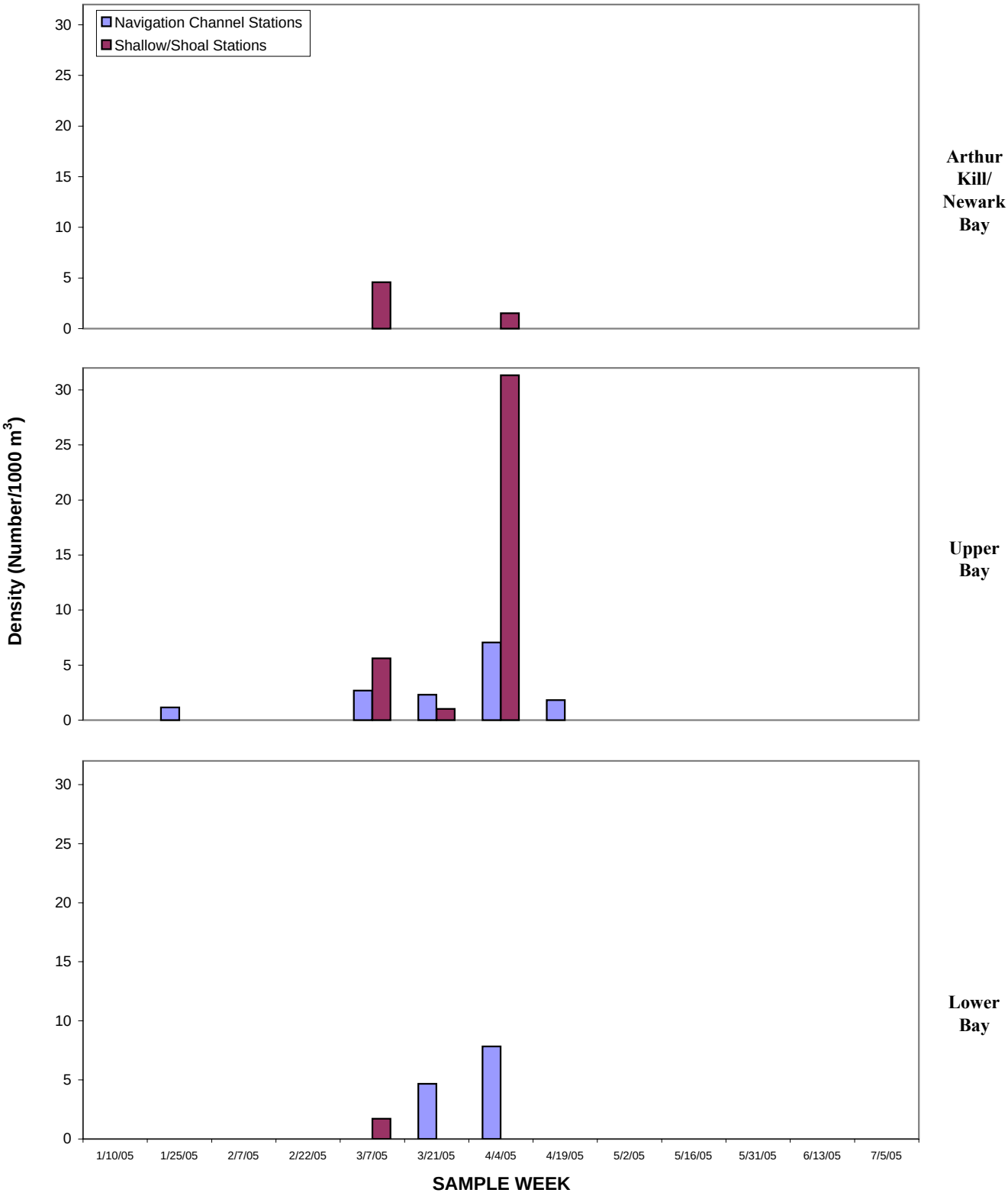


Figure 3-28 **Average weekly winter flounder egg density at navigation channel and shallow/shoal stations in the three study areas, 2005 Aquatic Biological Survey.**

Note(s): Dates listed indicate the first day of each sample week.

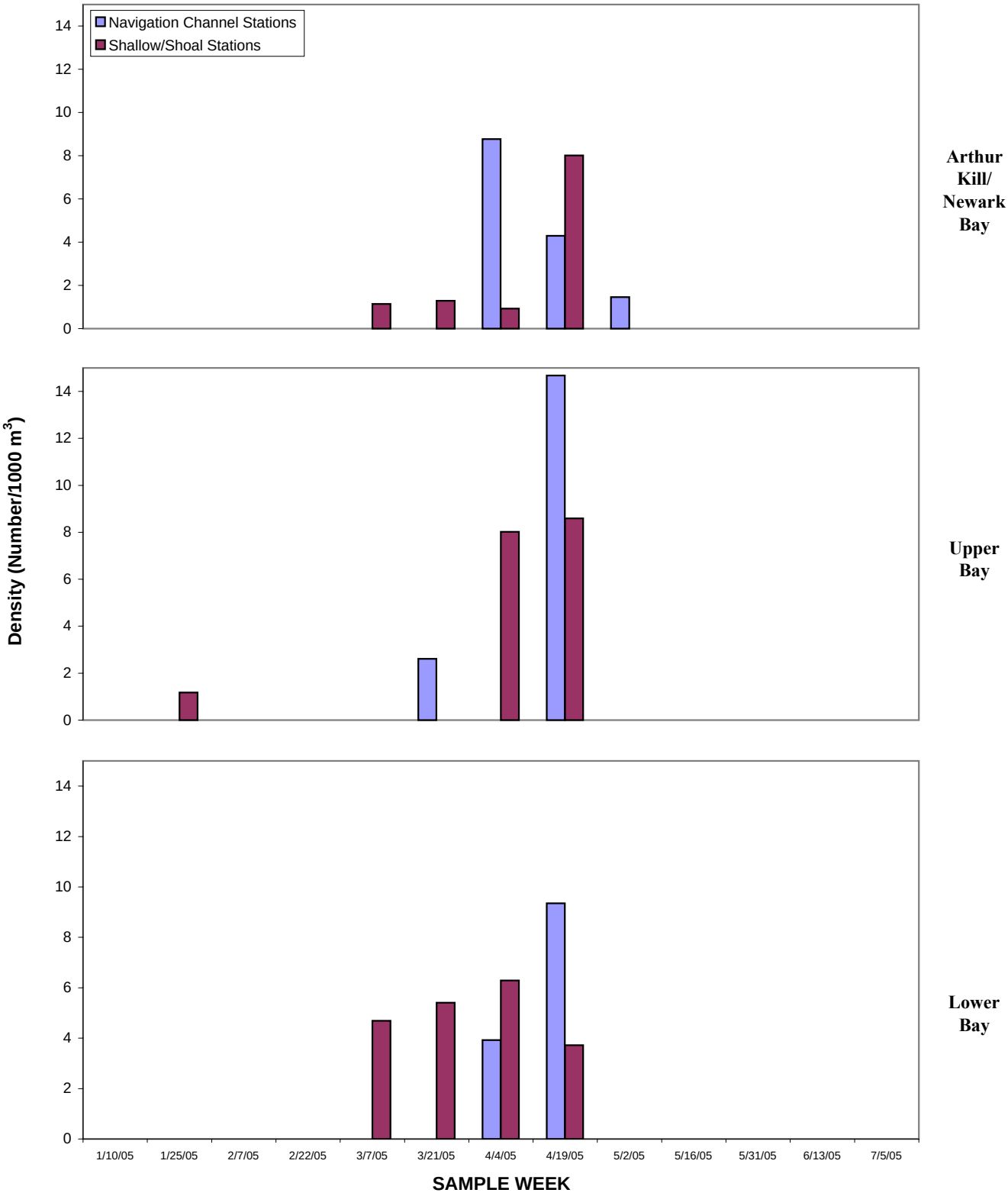


Figure 3-29 **Average weekly winter flounder yolk-sac larvae density at navigation channel and shallow/shoal stations in the three study areas, 2005 Aquatic Biological Survey.**

Note(s): Dates listed indicate the first day of each sample week.

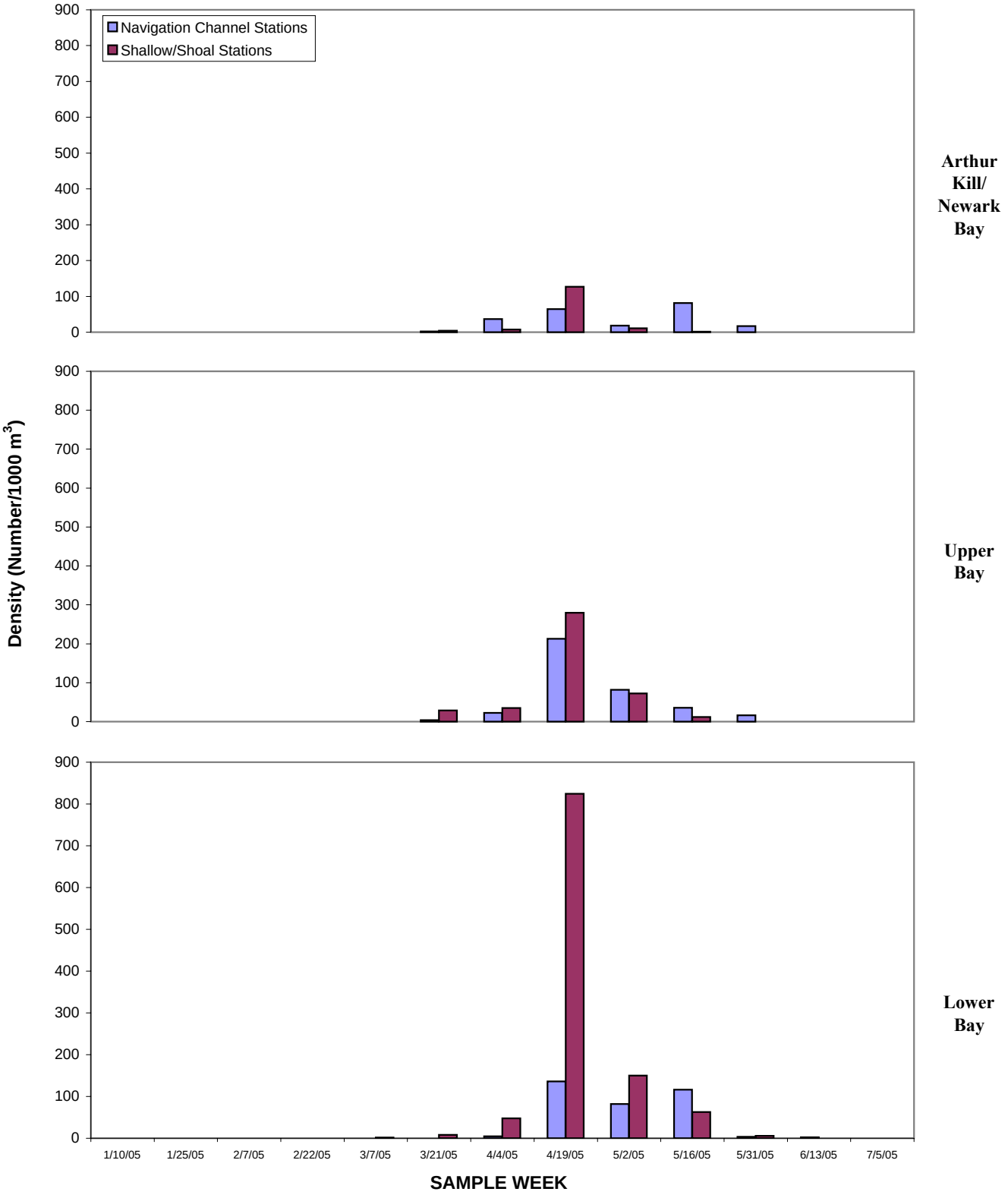


Figure 3-30 **Average weekly winter flounder post yolk-sac larvae density at navigation channel and shallow/shoal stations in the three study areas, 2005 Aquatic Biological Survey.**

Note(s): Dates listed indicate the first day of each sample week.

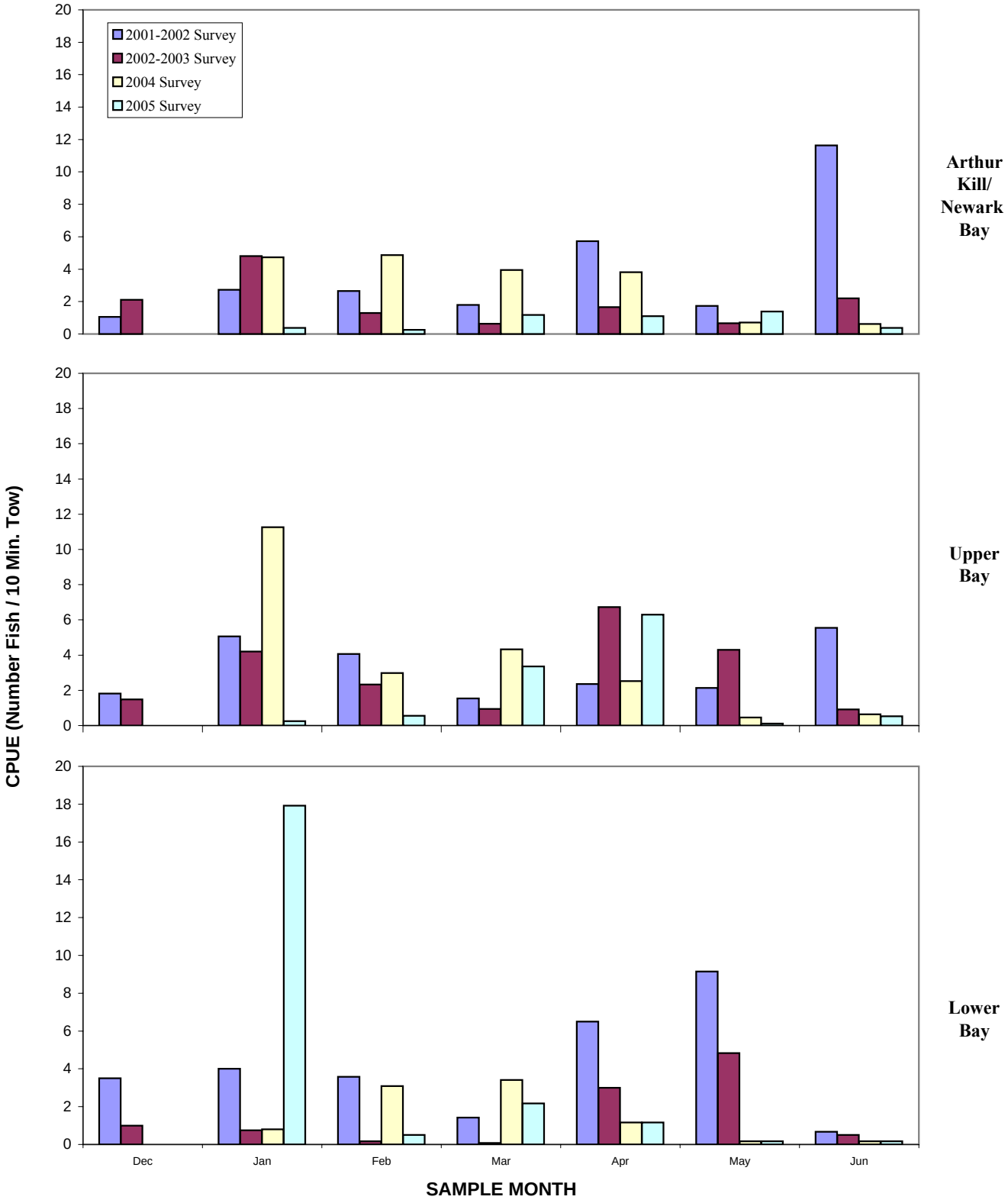


Figure 3-31 **Average monthly trawl CPUE of winter flounder during the 2001-2002, 2002-2003, 2004 and 2005 surveys in the three study areas.**

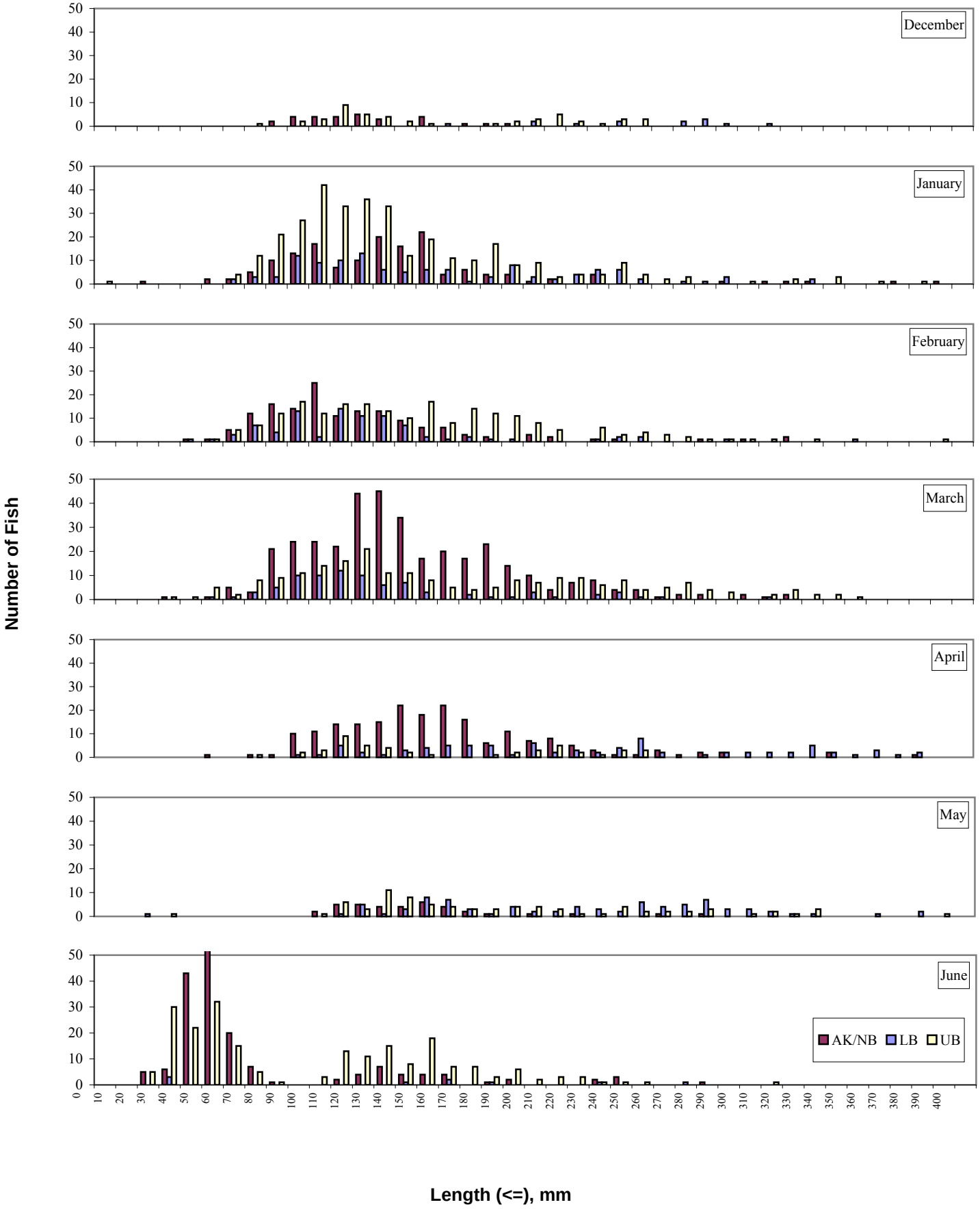


Figure 3-32 Monthly length frequency distribution of winter flounder collected during trawl sampling at Arthur Kill/Newark Bay, Upper Bay and Lower Bay stations, 2001-2005 Aquatic Biological Sampling Programs.

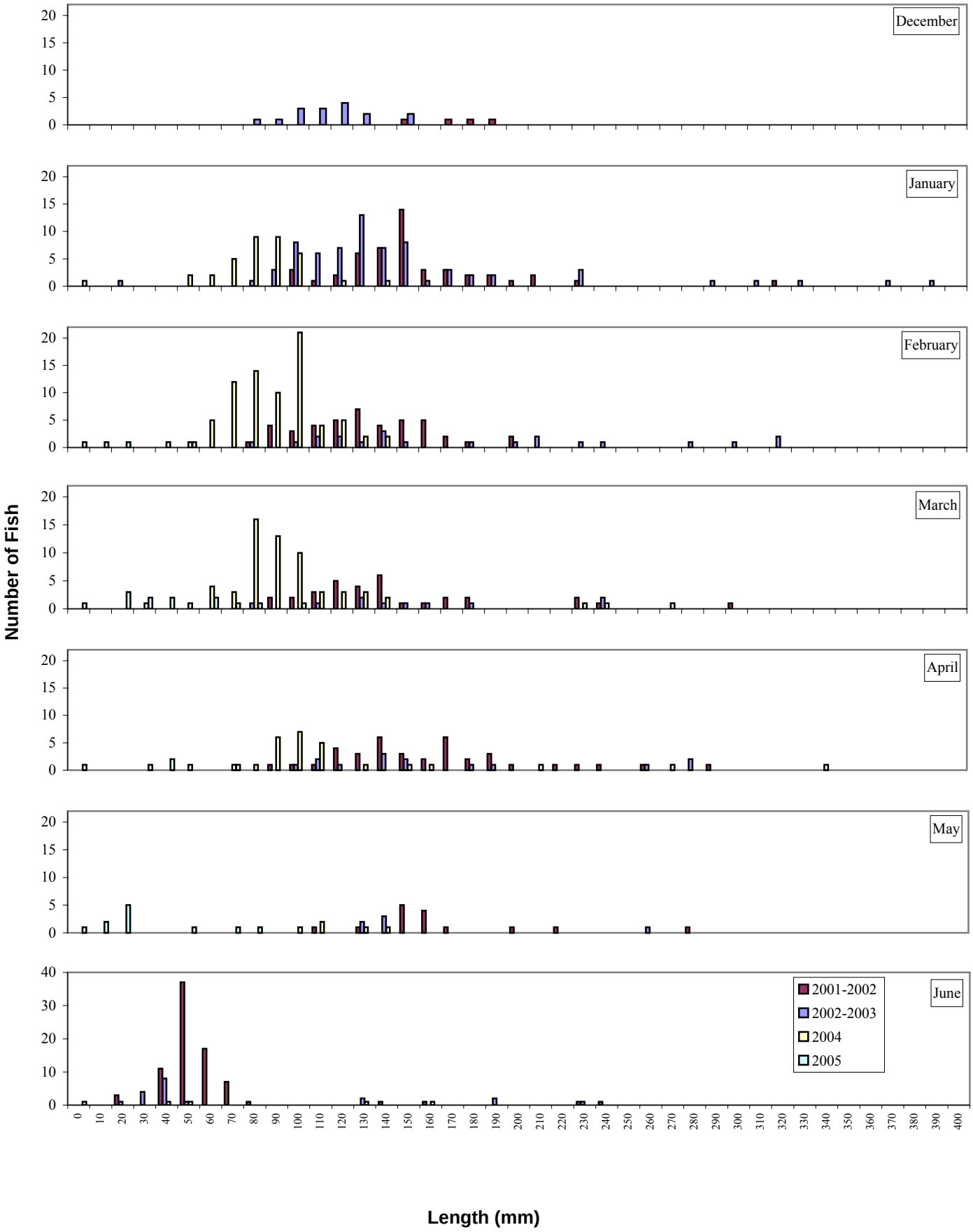


Figure 3-33 Monthly length frequency distribution of winter flounder collected during trawl sampling at Arthur Kill/Newark Bay stations, 2001-2005 Aquatic Biological Sampling Programs.

Note(s): Scale change in June.
No sampling in December 2003 and 2004.

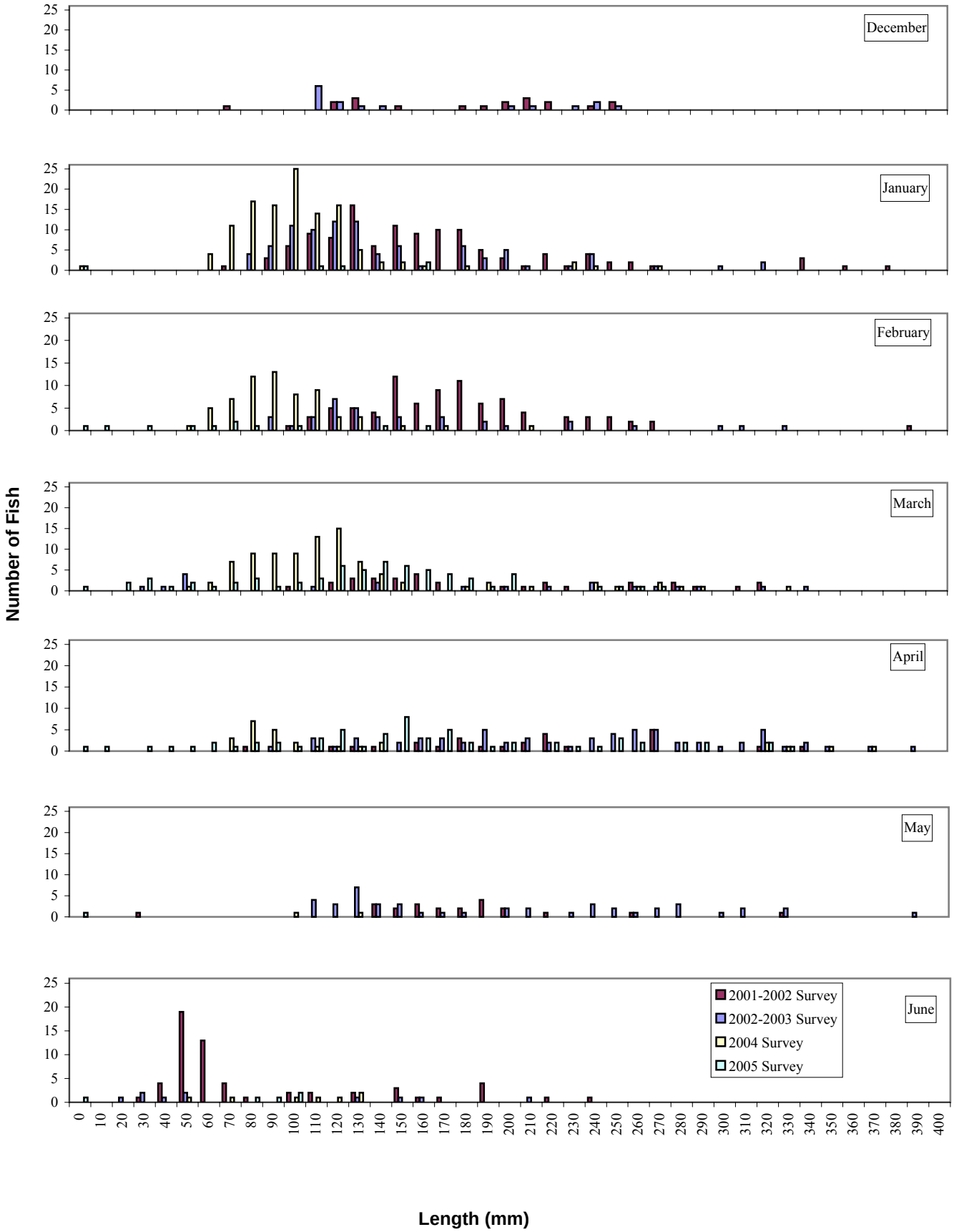


Figure 3-34 Monthly length frequency distribution of winter flounder collected during trawl sampling at Upper Bay stations, 2001-2005 Aquatic Biological Sampling Programs.

Note(s) No sampling in December 2003 and 2004.

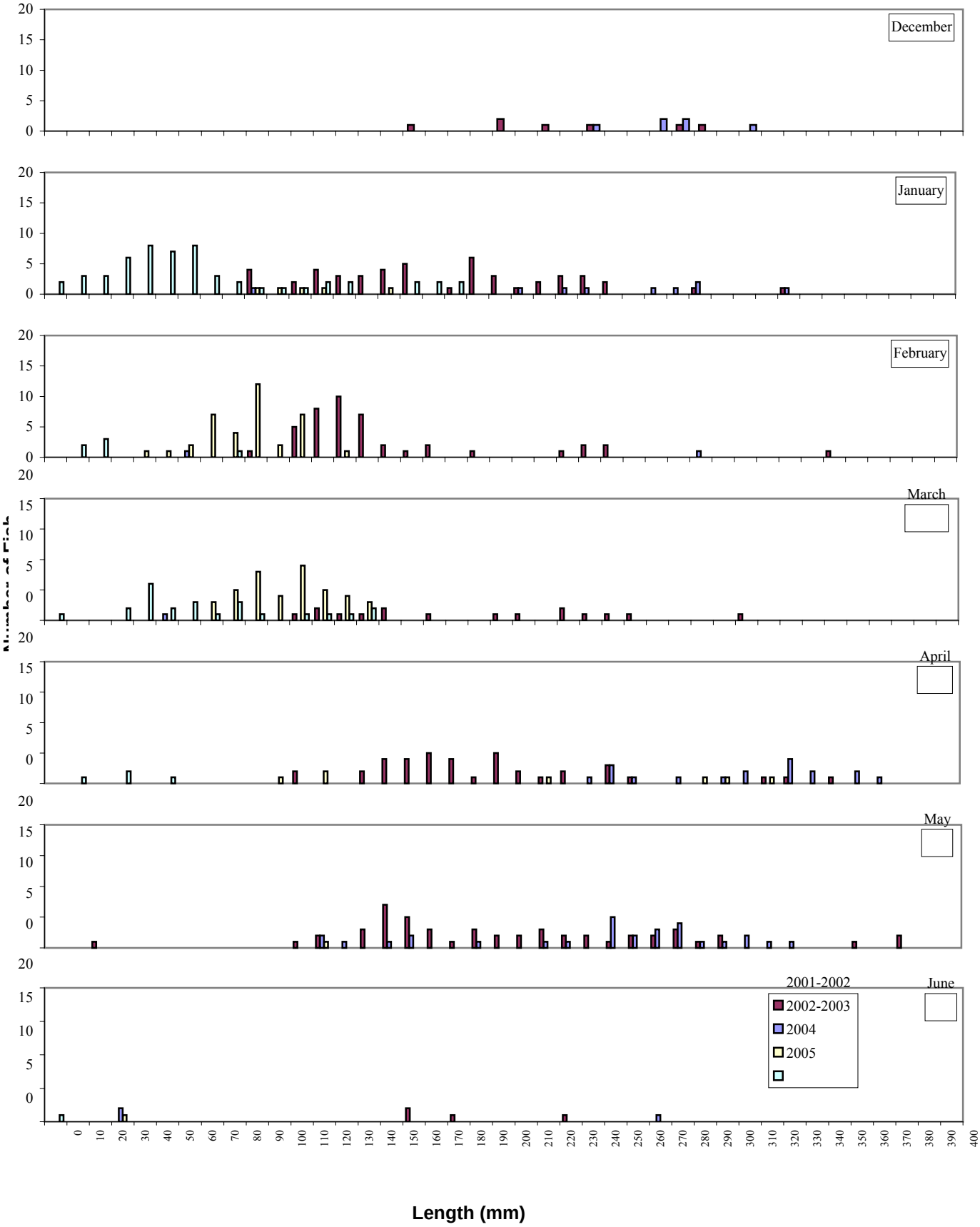


Figure 3-35 Monthly length frequency distribution of winter flounder collected during trawl sampling at Lower Bay stations, 2001-2005 Aquatic Biological Sampling Programs.

Note(s): No sampling in December 2003 and 2004.

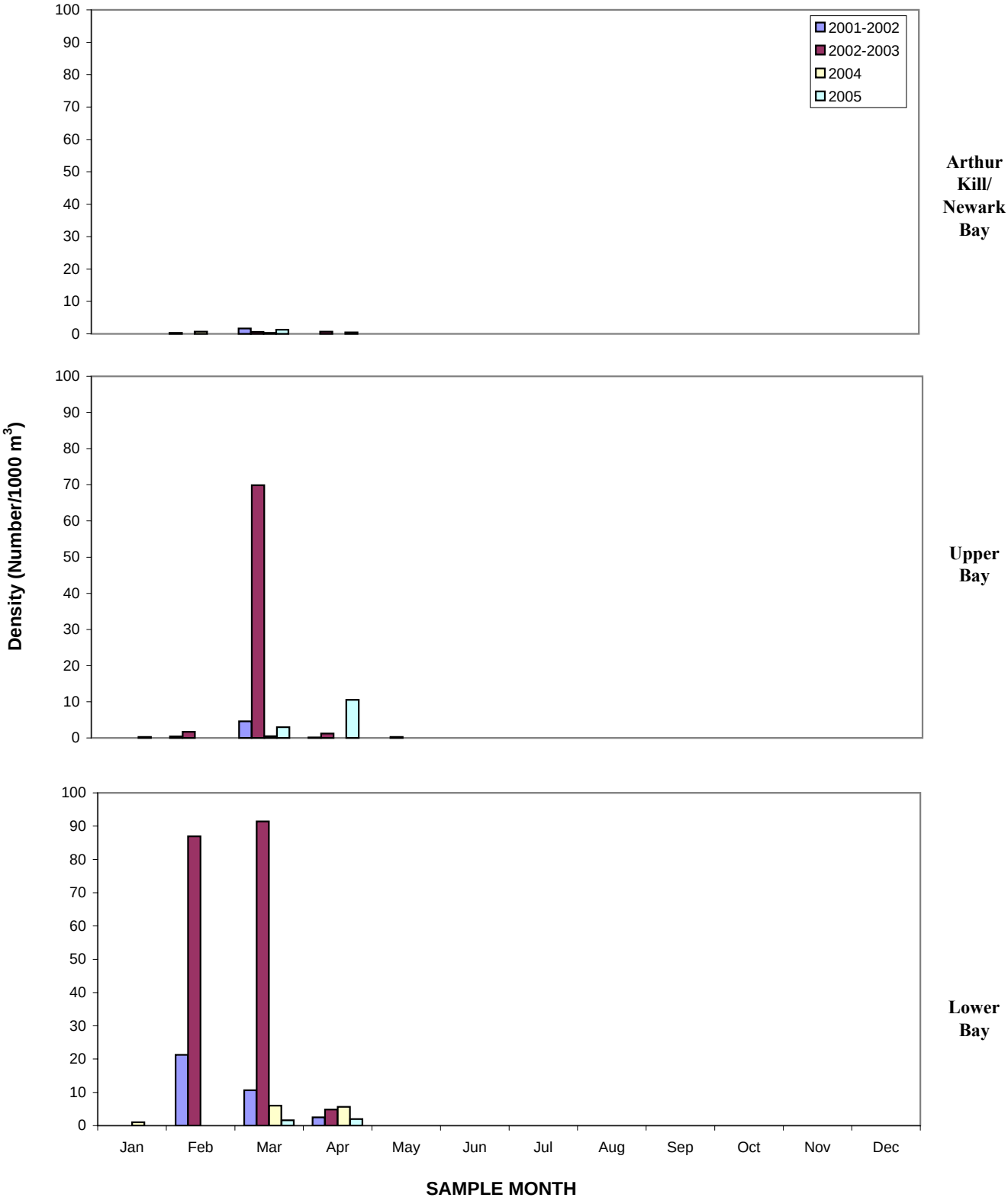


Figure 3-36 **Average monthly winter flounder egg density during the 2001-2002, 2002-2003, 2004, and 2005 surveys in the three study areas.**

Note(s): No sampling in December 2003 and 2004.

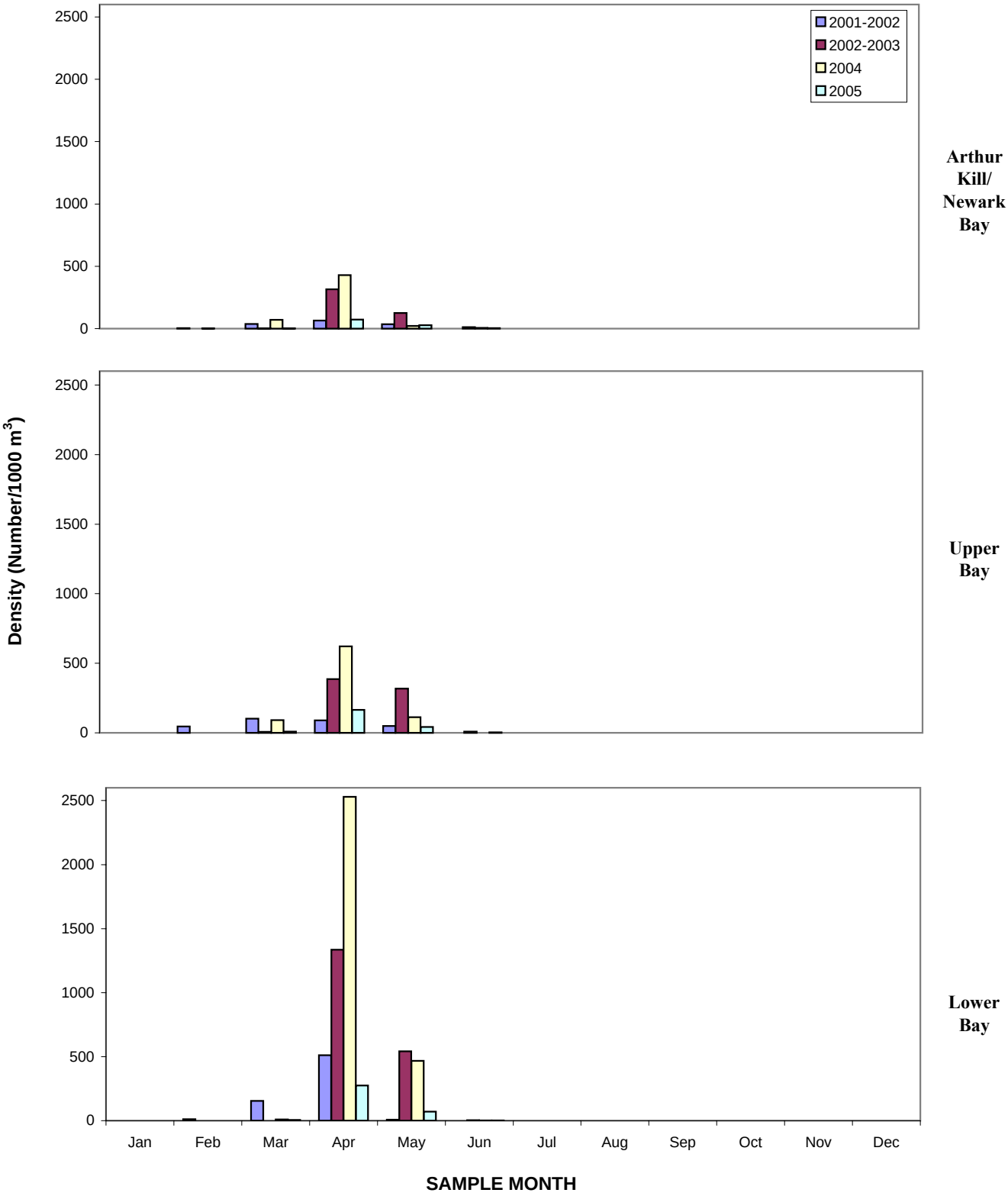


Figure 3-37 **Average monthly winter flounder larvae density during the 2001-2002, 2002-2003, 2004, and 2005 surveys in the three study areas.**

Note(s): No sampling in December 2003 and 2004.

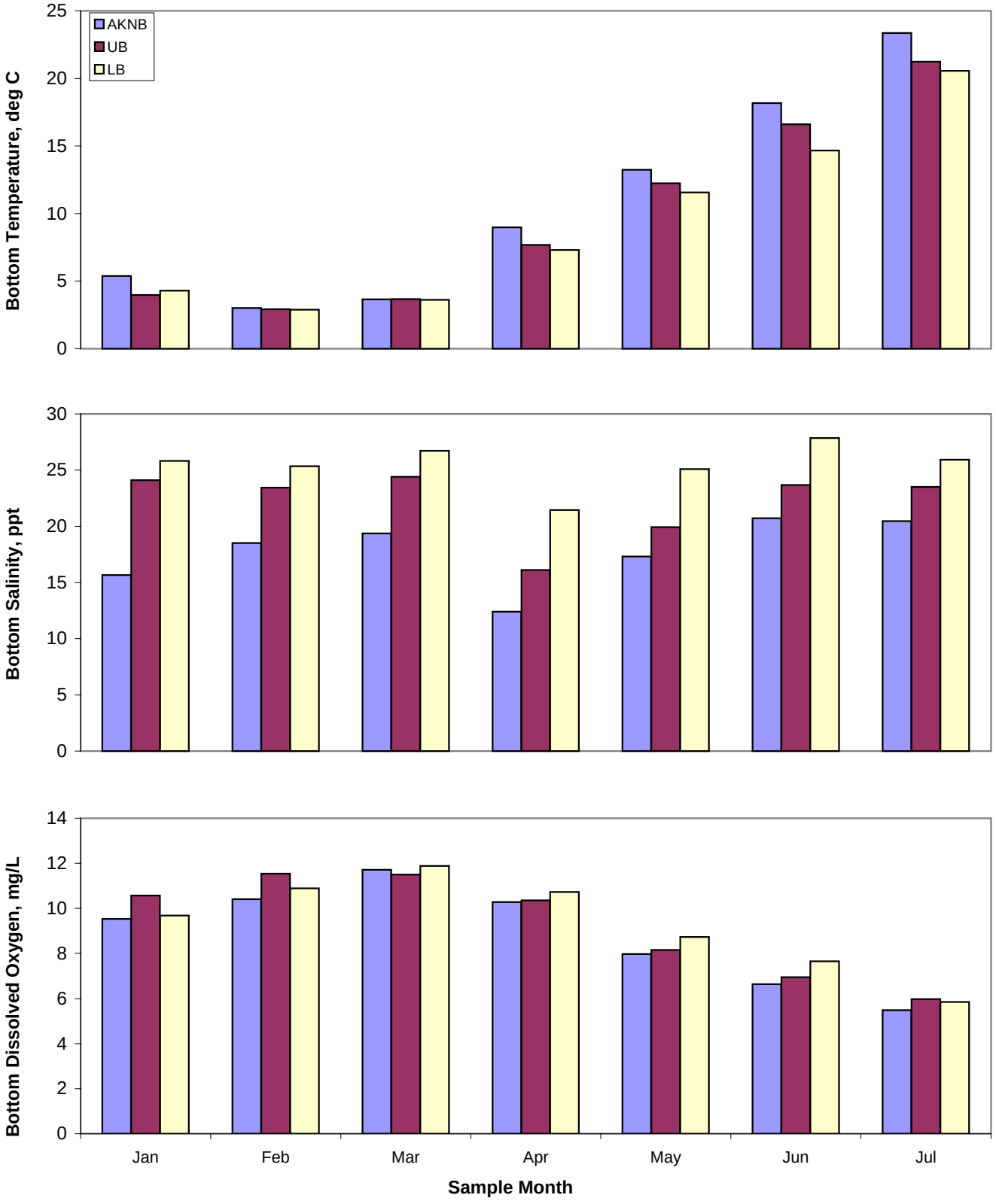


Figure 3-38 **Average monthly water quality measurements by area in the three sampling areas during the 2005 Aquatic Biological Survey.**

Appendix A

Finfish CPUE (Bottom Trawl) by date and station sampled during the 2005 Aquatic Biological Survey.

Appendix A. Finfish CPUE (Bottom Trawl) by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Number Caught
10-Jan-05	LB-1	Atlantic Herring	2
10-Jan-05	LB-1	Atlantic Silverside	1
10-Jan-05	LB-2	Fourspot Flounder	4
10-Jan-05	LB-2	Northern Pipefish	2
10-Jan-05	LB-2	Red Hake	14
10-Jan-05	LB-2	Silver Hake	64
10-Jan-05	LB-2	Silver Perch	1
10-Jan-05	LB-2	Smallmouth Flounder	44
10-Jan-05	LB-2	Spotted Hake	23
10-Jan-05	LB-2	Windowpane	1
10-Jan-05	LB-2	Winter Flounder	53
10-Jan-05	LB-2	Winter Skate	2
10-Jan-05	LB-4	Bay Anchovy	3
10-Jan-05	LB-4	Little Skate	1
10-Jan-05	LB-4	Smallmouth Flounder	1
10-Jan-05	LB-6	Alewife	52
10-Jan-05	LB-6	American Shad	23
10-Jan-05	LB-6	Atlantic Menhaden	10
10-Jan-05	LB-6	Atlantic Silverside	11
10-Jan-05	LB-6	Bay Anchovy	10
10-Jan-05	LB-6	Blueback Herring	2
10-Jan-05	LB-6	Little Skate	19
10-Jan-05	LB-6	Northern Pipefish	7
10-Jan-05	LB-6	Red Hake	2
10-Jan-05	LB-6	Silver Hake	5
10-Jan-05	LB-6	Smallmouth Flounder	1
10-Jan-05	LB-6	Spotted Hake	19
10-Jan-05	LB-6	Windowpane	5
10-Jan-05	LB-6	Winter Flounder	161
10-Jan-05	LB-6	Winter Skate	2
11-Jan-05	AK-2	Atlantic Silverside	1
11-Jan-05	AK-2	Bay Anchovy	4
11-Jan-05	AK-2	Striped Bass	1
11-Jan-05	AK-2	White Perch	1
11-Jan-05	AK-4	American Shad	3
11-Jan-05	AK-4	Atlantic Herring	1
11-Jan-05	AK-4	Bay Anchovy	8
11-Jan-05	AK-4	Blueback Herring	4
11-Jan-05	NB-3	Bay Anchovy	15
11-Jan-05	NB-3	Striped Bass	2
11-Jan-05	NB-3	White Perch	4
11-Jan-05	NB-3	Windowpane	1
11-Jan-05	NB-3	Winter Flounder	1
11-Jan-05	NB-4	Atlantic Silverside	6
11-Jan-05	NB-4	Bay Anchovy	6

Appendix A. Finfish CPUE (Bottom Trawl) by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Number Caught
11-Jan-05	NB-4	Gizzard Shad	1
11-Jan-05	NB-4	Threespine Stickleback	1
11-Jan-05	NB-4	White Perch	1
11-Jan-05	NB-5	Atlantic Croaker	24
11-Jan-05	NB-5	Bay Anchovy	2
11-Jan-05	NB-5	Spotted Hake	2
11-Jan-05	NB-5	Striped Bass	14
11-Jan-05	NB-5	White Perch	83
11-Jan-05	NB-5	Winter Flounder	2
11-Jan-05	NB-6	Atlantic Croaker	15
11-Jan-05	NB-6	Bay Anchovy	7
11-Jan-05	NB-6	Gizzard Shad	3
11-Jan-05	NB-6	Striped Bass	12
11-Jan-05	NB-6	White Perch	33
11-Jan-05	NB-6	Windowpane	1
11-Jan-05	NB-7	Atlantic Herring	1
11-Jan-05	NB-7	Atlantic Silverside	1
11-Jan-05	NB-7	Bay Anchovy	1
12-Jan-05	PJ-3	Atlantic Silverside	2
12-Jan-05	PJ-3	Bay Anchovy	1
12-Jan-05	PJ-3	Blueback Herring	1
12-Jan-05	PJ-3	Gizzard Shad	4
12-Jan-05	PJ-3	Windowpane	1
12-Jan-05	PJ-5	Atlantic Croaker	1
12-Jan-05	SB-1	Striped Bass	1
12-Jan-05	SB-3	Atlantic Silverside	1
12-Jan-05	SB-3	Blueback Herring	4
12-Jan-05	SB-4	Alewife	4
12-Jan-05	SB-4	Blueback Herring	1
12-Jan-05	SB-4	Red Hake	1
12-Jan-05	SB-5	Winter Flounder	3
13-Jan-05	PJ-1	Atlantic Silverside	2
13-Jan-05	PJ-2	Bay Anchovy	1
13-Jan-05	PJ-2	Windowpane	1
13-Jan-05	PJ-2	Winter Flounder	1
13-Jan-05	PJ-4	Alewife	4
13-Jan-05	PJ-4	Bay Anchovy	1
25-Jan-05	LB-1	Atlantic Silverside	5
25-Jan-05	LB-2	Winter Flounder	1
25-Jan-05	LB-6	Atlantic Silverside	1
25-Jan-05	SB-6	Atlantic Croaker	1
25-Jan-05	SB-6	Atlantic Herring	2
25-Jan-05	SB-6	Atlantic Silverside	1
25-Jan-05	SB-6	Bay Anchovy	1
25-Jan-05	SB-6	Cunner	1

Appendix A. Finfish CPUE (Bottom Trawl) by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Number Caught
26-Jan-05	PJ-2	Bay Anchovy	2
26-Jan-05	PJ-3	Atlantic Silverside	3
26-Jan-05	PJ-5	Atlantic Herring	2
26-Jan-05	PJ-5	Red Hake	1
26-Jan-05	SB-4	Atlantic Herring	3
26-Jan-05	SB-4	Winter Flounder	1
26-Jan-05	SB-5	Atlantic Herring	1
26-Jan-05	SB-5	Atlantic Menhaden	1
07-Feb-05	AK-2	Atlantic Herring	1
07-Feb-05	AK-2	Striped Bass	1
07-Feb-05	AK-2	Winter Flounder	1
07-Feb-05	AK-3	Bay Anchovy	2
07-Feb-05	AK-3	Winter Flounder	2
07-Feb-05	AK-4	Atlantic Silverside	12
07-Feb-05	NB-5	Atlantic Silverside	1
07-Feb-05	NB-5	Striped Bass	1
07-Feb-05	NB-5	White Perch	2
07-Feb-05	NB-7	Striped Bass	1
08-Feb-05	LB-1	Atlantic Silverside	2
08-Feb-05	LB-2	Atlantic Herring	1
08-Feb-05	LB-2	Little Skate	2
08-Feb-05	LB-2	Red Hake	4
08-Feb-05	LB-2	Smallmouth Flounder	2
08-Feb-05	LB-2	Windowpane	2
08-Feb-05	LB-2	Winter Flounder	1
08-Feb-05	LB-3	Atlantic Herring	2
08-Feb-05	LB-3	Atlantic Silverside	1
08-Feb-05	LB-4	Blueback Herring	5
08-Feb-05	LB-4	Little Skate	2
08-Feb-05	LB-4	Winter Flounder	2
09-Feb-05	PJ-5	American Shad	1
09-Feb-05	SB-3	Striped Bass	1
09-Feb-05	SB-3	Winter Flounder	7
09-Feb-05	SB-4	Seaboard Goby	1
09-Feb-05	SB-5	Blueback Herring	2
09-Feb-05	SB-6	Blueback Herring	4
22-Feb-05	LB-2	American Shad	1
22-Feb-05	LB-2	Blueback Herring	1
22-Feb-05	LB-2	Little Skate	1
22-Feb-05	LB-2	Spotted Hake	1
22-Feb-05	LB-2	Windowpane	2
22-Feb-05	LB-2	Winter Flounder	3
22-Feb-05	LB-3	Atlantic Silverside	1
22-Feb-05	LB-4	Atlantic Herring	4
22-Feb-05	LB-4	Atlantic Silverside	1

Appendix A. Finfish CPUE (Bottom Trawl) by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Number Caught
22-Feb-05	LB-6	Atlantic Herring	1
22-Feb-05	LB-6	Atlantic Silverside	1
23-Feb-05	AK-2	Atlantic Herring	2
23-Feb-05	AK-2	Blueback Herring	2
23-Feb-05	AK-3	Atlantic Silverside	1
23-Feb-05	AK-4	Atlantic Silverside	1
23-Feb-05	AK-4	Bay Anchovy	1
23-Feb-05	AK-4	Mummichog	1
23-Feb-05	NB-5	White Perch	5
23-Feb-05	NB-5	Winter Flounder	1
23-Feb-05	NB-6	White Perch	1
23-Feb-05	NB-7	Atlantic Silverside	1
24-Feb-05	PJ-2	Atlantic Herring	1
24-Feb-05	PJ-3	Atlantic Silverside	1
24-Feb-05	SB-1	Atlantic Herring	1
24-Feb-05	SB-4	American Shad	1
24-Feb-05	SB-4	Atlantic Herring	1
24-Feb-05	SB-4	Winter Flounder	1
24-Feb-05	SB-5	Alewife	5
24-Feb-05	SB-5	Blueback Herring	1
24-Feb-05	SB-5	Red Hake	2
24-Feb-05	SB-5	Winter Flounder	3
07-Mar-05	LB-3	Atlantic Herring	5
07-Mar-05	SB-5	Clupeid unidentified	3
07-Mar-05	SB-6	Atlantic Herring	1
08-Mar-05	SB-1	Atlantic Herring	1
10-Mar-05	AK-2	Atlantic Herring	3
10-Mar-05	AK-3	Atlantic Herring	1
10-Mar-05	NB-3	Striped Bass	1
10-Mar-05	NB-4	Atlantic Herring	1
10-Mar-05	NB-4	Blueback Herring	1
10-Mar-05	NB-4	White Perch	1
11-Mar-05	PJ-2	Atlantic Herring	6
11-Mar-05	PJ-2	Windowpane	1
11-Mar-05	PJ-2	Winter Flounder	1
11-Mar-05	PJ-4	Atlantic Herring	3
11-Mar-05	PJ-5	Atlantic Herring	3
11-Mar-05	PJ-5	Blueback Herring	1
21-Mar-05	LB-2	Atlantic Silverside	1
21-Mar-05	LB-2	Little Skate	2
21-Mar-05	LB-2	Red Hake	7
21-Mar-05	LB-2	Spotted Hake	2
21-Mar-05	LB-2	Winter Flounder	21
21-Mar-05	LB-2	Winter Skate	1
21-Mar-05	LB-4	Alewife	10

Appendix A. Finfish CPUE (Bottom Trawl) by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Number Caught
21-Mar-05	LB-4	American Shad	1
21-Mar-05	LB-4	Atlantic Silverside	1
21-Mar-05	LB-4	Blueback Herring	5
21-Mar-05	LB-4	Little Skate	1
21-Mar-05	LB-4	Red Hake	2
21-Mar-05	LB-4	Spotted Hake	1
21-Mar-05	LB-4	Windowpane	1
21-Mar-05	LB-4	Winter Flounder	3
21-Mar-05	LB-6	Alewife	4
21-Mar-05	LB-6	American Shad	1
21-Mar-05	LB-6	Atlantic Herring	1
21-Mar-05	LB-6	Blueback Herring	10
21-Mar-05	LB-6	Winter Flounder	2
21-Mar-05	SB-6	Alewife	2
21-Mar-05	SB-6	Atlantic Herring	8
21-Mar-05	SB-6	Blueback Herring	3
21-Mar-05	SB-6	Conger Eel	1
21-Mar-05	SB-6	Cunner	1
21-Mar-05	SB-6	Grubby	1
21-Mar-05	SB-6	Little Skate	3
21-Mar-05	SB-6	Red Hake	4
21-Mar-05	SB-6	Smallmouth Flounder	2
21-Mar-05	SB-6	Spotted Hake	3
21-Mar-05	SB-6	Tautog	13
21-Mar-05	SB-6	Windowpane	17
21-Mar-05	SB-6	Winter Flounder	48
22-Mar-05	AK-2	Winter Flounder	1
22-Mar-05	AK-3	Seaboard Goby	1
22-Mar-05	AK-3	Winter Flounder	2
22-Mar-05	AK-4	Winter Flounder	1
22-Mar-05	NB-3	Atlantic Silverside	2
22-Mar-05	NB-3	Winter Flounder	3
22-Mar-05	NB-5	Blueback Herring	1
22-Mar-05	NB-5	Red Hake	1
22-Mar-05	NB-5	White Perch	74
22-Mar-05	NB-5	Winter Flounder	6
22-Mar-05	NB-6	Alewife	1
22-Mar-05	NB-6	American Shad	1
22-Mar-05	NB-6	Seaboard Goby	1
22-Mar-05	NB-6	White Perch	5
22-Mar-05	NB-6	Winter Flounder	1
22-Mar-05	NB-7	Winter Flounder	1
23-Mar-05	PJ-1	Atlantic Herring	23
23-Mar-05	PJ-3	Atlantic Herring	5
23-Mar-05	PJ-3	Striped Bass	1

Appendix A. Finfish CPUE (Bottom Trawl) by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Number Caught
23-Mar-05	PJ-5	Blueback Herring	1
23-Mar-05	PJ-5	Winter Flounder	1
23-Mar-05	SB-1	Seaboard Goby	1
23-Mar-05	SB-3	Winter Flounder	1
23-Mar-05	SB-5	Alewife	6
23-Mar-05	SB-5	American Shad	1
23-Mar-05	SB-5	Blueback Herring	2
23-Mar-05	SB-5	Cunner	1
23-Mar-05	SB-5	Little Skate	1
23-Mar-05	SB-5	Northern Pipefish	1
23-Mar-05	SB-5	Red Hake	3
23-Mar-05	SB-5	Smallmouth Flounder	1
23-Mar-05	SB-5	Striped Bass	1
23-Mar-05	SB-5	Tautog	1
23-Mar-05	SB-5	Windowpane	1
23-Mar-05	SB-5	Winter Flounder	15
19-Apr-05	LB-1	Little Skate	3
19-Apr-05	LB-1	Windowpane	2
19-Apr-05	LB-1	Winter Flounder	3
19-Apr-05	LB-1	Winter Skate	2
19-Apr-05	LB-3	Alewife	19
19-Apr-05	LB-3	Spotted Hake	6
19-Apr-05	LB-3	Striped Bass	1
19-Apr-05	LB-3	Windowpane	1
19-Apr-05	LB-3	Winter Flounder	4
19-Apr-05	LB-5	Little Skate	1
19-Apr-05	LB-6	Alewife	1
19-Apr-05	SB-6	Alewife	1
19-Apr-05	SB-6	Windowpane	1
20-Apr-05	AK-2	Winter Flounder	1
20-Apr-05	AK-4	Alewife	1
20-Apr-05	AK-4	American Eel	2
20-Apr-05	AK-4	Striped Bass	6
20-Apr-05	AK-4	White Perch	1
20-Apr-05	AK-4	Winter Flounder	1
20-Apr-05	NB-3	Northern Pipefish	1
20-Apr-05	NB-3	Striped Bass	2
20-Apr-05	NB-4	Striped Bass	3
20-Apr-05	NB-4	Winter Flounder	2
20-Apr-05	NB-5	Alewife	4
20-Apr-05	NB-5	American Shad	2
20-Apr-05	NB-5	Atlantic Herring	1
20-Apr-05	NB-5	Striped Bass	13
20-Apr-05	NB-5	White Perch	1
20-Apr-05	NB-6	Alewife	6

Appendix A. Finfish CPUE (Bottom Trawl) by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Number Caught
20-Apr-05	NB-6	American Shad	2
20-Apr-05	NB-6	Spotted Hake	1
20-Apr-05	NB-6	Striped Bass	1
20-Apr-05	NB-6	Winter Flounder	2
20-Apr-05	NB-7	Atlantic Herring	3
20-Apr-05	NB-7	Striped Bass	5
20-Apr-05	NB-7	Winter Flounder	1
21-Apr-05	PJ-1	Alewife	24
21-Apr-05	PJ-1	Atlantic Herring	54
21-Apr-05	PJ-1	Bay Anchovy	10
21-Apr-05	PJ-1	Blueback Herring	8
21-Apr-05	PJ-1	Rock Gunnel	1
21-Apr-05	PJ-1	Striped Bass	2
21-Apr-05	PJ-1	Winter Flounder	3
21-Apr-05	PJ-2	Alewife	86
21-Apr-05	PJ-2	American Shad	1
21-Apr-05	PJ-2	Atlantic Herring	99
21-Apr-05	PJ-2	Bay Anchovy	1
21-Apr-05	PJ-2	Blueback Herring	97
21-Apr-05	PJ-2	Striped Bass	1
21-Apr-05	PJ-3	Alewife	1
21-Apr-05	PJ-3	Atlantic Herring	156
21-Apr-05	PJ-3	Smallmouth Flounder	1
21-Apr-05	PJ-4	Alewife	2
21-Apr-05	PJ-5	Alewife	1
21-Apr-05	PJ-5	Striped Bass	3
21-Apr-05	PJ-5	Unidentified	1
21-Apr-05	SB-3	Blueback Herring	1
21-Apr-05	SB-3	Northern Pipefish	1
21-Apr-05	SB-3	Tautog	5
21-Apr-05	SB-3	Winter Flounder	2
21-Apr-05	SB-4	Alewife	1
21-Apr-05	SB-4	Striped Bass	1
21-Apr-05	SB-4	Windowpane	1
21-Apr-05	SB-4	Winter Flounder	3
21-Apr-05	SB-5	Atlantic Tomcod	1
21-Apr-05	SB-5	Cunner	1
21-Apr-05	SB-5	Little Skate	5
21-Apr-05	SB-5	Northern Pipefish	1
21-Apr-05	SB-5	Red Hake	14
21-Apr-05	SB-5	Rock Gunnel	1
21-Apr-05	SB-5	Spotted Hake	24
21-Apr-05	SB-5	Windowpane	13
21-Apr-05	SB-5	Winter Flounder	55
16-May-05	LB-6	Winter Flounder	1

Appendix A. Finfish CPUE (Bottom Trawl) by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Number Caught
17-May-05	AK-3	American Shad	1
17-May-05	AK-4	Northern Pipefish	4
17-May-05	AK-4	Striped Bass	6
17-May-05	AK-4	Winter Flounder	1
17-May-05	NB-3	American Shad	1
17-May-05	NB-3	Blueback Herring	4
17-May-05	NB-3	Striped Bass	1
17-May-05	NB-4	Atlantic Herring	212
17-May-05	NB-4	Bay Anchovy	3
17-May-05	NB-4	Blueback Herring	1
17-May-05	NB-5	Atlantic Tomcod	9
17-May-05	NB-5	Spotted Hake	23
17-May-05	NB-5	Summer Flounder	1
17-May-05	NB-5	Winter Flounder	10
17-May-05	NB-6	Butterfish	1
17-May-05	NB-6	Spotted Hake	3
17-May-05	NB-7	Atlantic Herring	1
17-May-05	NB-7	Summer Flounder	1
18-May-05	PJ-1	Atlantic Herring	3
18-May-05	PJ-1	Bay Anchovy	24
18-May-05	PJ-2	Alewife	15
18-May-05	PJ-2	American Shad	3
18-May-05	PJ-2	Atlantic Menhaden	11
18-May-05	PJ-2	Bay Anchovy	4
18-May-05	PJ-3	American Shad	1
18-May-05	PJ-3	Atlantic Herring	6
18-May-05	PJ-3	Bay Anchovy	103
18-May-05	PJ-3	Striped Bass	1
18-May-05	PJ-3	Winter Flounder	1
18-May-05	PJ-5	Bay Anchovy	1
18-May-05	SB-1	Atlantic Herring	2
18-May-05	SB-3	Summer Flounder	1
18-May-05	SB-3	Tautog	1
18-May-05	SB-5	Scup	1
13-Jun-05	PJ-3	Bay Anchovy	3
13-Jun-05	PJ-3	Butterfish	2
13-Jun-05	PJ-3	Summer Flounder	2
13-Jun-05	PJ-3	Winter Flounder	2
13-Jun-05	PJ-4	Scup	1
13-Jun-05	SB-1	Atlantic Tomcod	39
13-Jun-05	SB-1	Bay Anchovy	13
13-Jun-05	SB-1	Summer Flounder	1
13-Jun-05	SB-1	Weakfish	1
13-Jun-05	SB-3	Butterfish	1
13-Jun-05	SB-5	Butterfish	2

Appendix A. Finfish CPUE (Bottom Trawl) by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Number Caught
14-Jun-05	LB-3	Winter Flounder	1
14-Jun-05	LB-5	Butterfish	2
15-Jun-05	AK-2	Bay Anchovy	5
15-Jun-05	AK-4	Bay Anchovy	1
15-Jun-05	NB-3	Bay Anchovy	13
15-Jun-05	NB-3	Butterfish	1
15-Jun-05	NB-3	Rock Gunnel	1
15-Jun-05	NB-3	Seaboard Goby	1
15-Jun-05	NB-3	Winter Flounder	1
15-Jun-05	NB-4	Bay Anchovy	72
15-Jun-05	NB-5	Butterfish	1
15-Jun-05	NB-6	Butterfish	1
15-Jun-05	NB-7	Bay Anchovy	52
15-Jun-05	NB-7	Winter Flounder	1
16-Jun-05	PJ-1	Atlantic Tomcod	3
16-Jun-05	PJ-1	Scup	68
16-Jun-05	PJ-1	Summer Flounder	1
16-Jun-05	PJ-1	Tautog	4
16-Jun-05	PJ-1	Winter Flounder	2
16-Jun-05	PJ-2	Atlantic Sturgeon	1
16-Jun-05	PJ-2	Atlantic Tomcod	4
16-Jun-05	PJ-2	Bay Anchovy	1919
16-Jun-05	PJ-2	Shortnose Sturgeon	2
16-Jun-05	PJ-2	Spotted Hake	1
16-Jun-05	PJ-2	Summer Flounder	1
16-Jun-05	PJ-2	Winter Flounder	1
16-Jun-05	PJ-5	Atlantic Tomcod	4
16-Jun-05	PJ-5	Summer Flounder	1

Appendix B

Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
10-Jan-05	LB-3	American sandlance	PYS	1	5.8
10-Jan-05	LB-3	American sandlance	YS	1	5.8
10-Jan-05	LB-5	American sandlance	YS	1	5.2
11-Jan-05	AK-1	Atlantic croaker	PYS	1	7.3
11-Jan-05	AK-2	Atlantic croaker	PYS	2	12.9
11-Jan-05	AK-3	Atlantic croaker	JUV	3	17.6
11-Jan-05	AK-3	Bay anchovy	JUV	2	11.7
11-Jan-05	NB-3	Atlantic croaker	PYS	1	6.5
11-Jan-05	NB-4	Atlantic croaker	PYS	2	12.1
11-Jan-05	NB-5	Atlantic croaker	JUV	1	6.7
11-Jan-05	NB-5	Atlantic croaker	PYS	8	53.5
11-Jan-05	NB-5	Bay anchovy	JUV	1	6.7
11-Jan-05	NB-6	Atlantic croaker	PYS	2	18.7
12-Jan-05	PJ-5	Atlantic croaker	JUV	4	23.7
12-Jan-05	SB-1	American sandlance	YS	1	10.8
12-Jan-05	SB-1	Atlantic croaker	PYS	2	21.5
12-Jan-05	SB-3	American sandlance	PYS	1	4.4
12-Jan-05	SB-4	American sandlance	YS	1	3.9
12-Jan-05	SB-4	Atlantic croaker	PYS	1	3.9
12-Jan-05	SB-5	American sandlance	YS	1	6.3
13-Jan-05	PJ-4	Atlantic croaker	PYS	6	28.7
25-Jan-05	LB-1	American sandlance	YS	1	8.9
25-Jan-05	LB-4	American sandlance	PYS	1	8.7
25-Jan-05	LB-4	Atlantic croaker	PYS	1	8.7
25-Jan-05	LB-5	American sandlance	PYS	1	9.2
25-Jan-05	LB-5	American sandlance	YS	2	18.3
26-Jan-05	PJ-1	American sandlance	PYS	2	14.4
26-Jan-05	PJ-1	Grubby	PYS	2	14.4
26-Jan-05	PJ-2	Bay anchovy	JUV	1	5.9
26-Jan-05	PJ-2	Winter flounder	YS	1	5.9
26-Jan-05	PJ-3	American sandlance	PYS	1	5.6
26-Jan-05	PJ-3	Atlantic croaker	PYS	1	5.6
26-Jan-05	PJ-3	Grubby	PYS	1	5.6
26-Jan-05	PJ-4	Atlantic croaker	PYS	1	5.8
26-Jan-05	PJ-4	Grubby	PYS	1	5.8
26-Jan-05	PJ-4	Winter flounder	Egg	1	5.8
26-Jan-05	PJ-5	American sandlance	YS	1	5.2
26-Jan-05	SB-1	American sandlance	PYS	1	11.0
26-Jan-05	SB-3	American sandlance	PYS	6	30.1
26-Jan-05	SB-3	American sandlance	YS	3	15.1
26-Jan-05	SB-4	Summer flounder	PYS	1	4.9
26-Jan-05	SB-5	American sandlance	PYS	1	3.5
07-Feb-05	AK-1	Grubby	YS	4	51.7
07-Feb-05	AK-2	Grubby	YS	2	13.0
07-Feb-05	AK-2	Longhorn sculpin	YS	1	6.5
07-Feb-05	AK-3	Grubby	YS	1	7.1
07-Feb-05	AK-4	Grubby	PYS	2	10.5
07-Feb-05	NB-5	Grubby	YS	1	7.1
07-Feb-05	NB-5	Rock gunnel	YS	1	7.1
08-Feb-05	LB-2	Summer flounder	PYS	1	5.9
08-Feb-05	LB-3	Grubby	PYS	3	17.6
08-Feb-05	LB-4	Grubby	YS	1	5.8

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
08-Feb-05	LB-5	Rock gunnel	PYS	1	8.3
09-Feb-05	PJ-1	Rock gunnel	PYS	1	5.7
09-Feb-05	PJ-2	Summer flounder	JUV	1	6.3
09-Feb-05	PJ-3	Grubby	PYS	2	11.7
09-Feb-05	PJ-3	Rock gunnel	PYS	1	5.8
09-Feb-05	PJ-5	Grubby	PYS	1	5.7
09-Feb-05	SB-1	Grubby	PYS	1	12.2
09-Feb-05	SB-3	Grubby	YS	1	7.5
09-Feb-05	SB-4	Grubby	PYS	1	4.7
09-Feb-05	SB-6	Atlantic menhaden	PYS	1	4.2
22-Feb-05	LB-1	Grubby	PYS	4	24.4
22-Feb-05	LB-1	Grubby	YS	2	12.2
22-Feb-05	LB-2	Grubby	PYS	2	13.0
22-Feb-05	LB-3	Grubby	PYS	9	50.3
22-Feb-05	LB-3	Grubby	YS	3	16.8
22-Feb-05	LB-3	Rock gunnel	PYS	1	5.6
22-Feb-05	LB-4	Grubby	PYS	1	7.2
22-Feb-05	LB-5	Grubby	PYS	4	29.0
22-Feb-05	LB-5	Rock gunnel	PYS	1	7.2
22-Feb-05	LB-6	Grubby	PYS	10	61.6
23-Feb-05	AK-1	Grubby	PYS	6	57.9
23-Feb-05	AK-1	Grubby	YS	1	9.7
23-Feb-05	AK-2	Grubby	PYS	5	36.4
23-Feb-05	AK-3	Atlantic tomcod	PYS	2	8.5
23-Feb-05	AK-3	Grubby	PYS	9	38.3
23-Feb-05	AK-3	Rock gunnel	PYS	1	4.3
23-Feb-05	AK-4	Grubby	PYS	9	44.2
23-Feb-05	AK-4	Grubby	YS	4	19.6
23-Feb-05	NB-3	Atlantic tomcod	PYS	4	24.4
23-Feb-05	NB-3	Grubby	PYS	4	24.4
23-Feb-05	NB-3	Grubby	YS	1	6.1
23-Feb-05	NB-4	Atlantic tomcod	PYS	1	6.0
23-Feb-05	NB-4	Grubby	PYS	3	18.0
23-Feb-05	NB-5	Atlantic tomcod	PYS	6	35.9
23-Feb-05	NB-5	Grubby	PYS	3	17.9
23-Feb-05	NB-5	Grubby	YS	2	12.0
23-Feb-05	NB-5	Rock gunnel	PYS	1	6.0
23-Feb-05	NB-6	Atlantic tomcod	PYS	2	13.8
23-Feb-05	NB-6	Grubby	PYS	2	13.8
23-Feb-05	NB-6	Grubby	YS	2	13.8
23-Feb-05	NB-7	Grubby	PYS	1	8.6
24-Feb-05	PJ-1	Atlantic tomcod	PYS	1	5.4
24-Feb-05	PJ-1	Grubby	PYS	4	21.7
24-Feb-05	PJ-1	Rock gunnel	PYS	1	5.4
24-Feb-05	PJ-2	Rock gunnel	PYS	3	15.3
24-Feb-05	PJ-3	Atlantic cod	PYS	1	5.5
24-Feb-05	PJ-3	Atlantic tomcod	PYS	1	5.5
24-Feb-05	PJ-3	Grubby	PYS	9	49.9
24-Feb-05	PJ-4	Grubby	PYS	9	4.5
24-Feb-05	PJ-4	Rock gunnel	PYS	1	0.5
24-Feb-05	PJ-5	Grubby	PYS	2	9.5
24-Feb-05	PJ-5	Rock gunnel	PYS	1	4.7

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
24-Feb-05	SB-1	Grubby	PYS	3	33.8
24-Feb-05	SB-2	Grubby	PYS	4	38.3
24-Feb-05	SB-3	Grubby	PYS	3	20.0
24-Feb-05	SB-3	Smallmouth flounder	PYS	1	6.7
24-Feb-05	SB-4	Grubby	PYS	1	7.5
24-Feb-05	SB-5	Gadid unidentified	Egg	1	6.7
24-Feb-05	SB-5	Grubby	PYS	2	13.5
24-Feb-05	SB-6	Grubby	PYS	6	36.0
24-Feb-05	SB-6	Rock gunnel	PYS	2	12.0
07-Mar-05	LB-1	Grubby	PYS	8	41.3
07-Mar-05	LB-1	Longhorn sculpin	PYS	1	5.2
07-Mar-05	LB-1	Rock gunnel	PYS	2	10.3
07-Mar-05	LB-1	Winter flounder	Egg	1	5.2
07-Mar-05	LB-1	Winter flounder	PYS	1	5.2
07-Mar-05	LB-2	Grubby	PYS	4	28.8
07-Mar-05	LB-2	Grubby	YS	1	7.2
07-Mar-05	LB-3	American sandlance	PYS	1	4.9
07-Mar-05	LB-3	Grubby	PYS	15	73.6
07-Mar-05	LB-3	Rock gunnel	PYS	1	4.9
07-Mar-05	LB-4	Grubby	PYS	10	69.1
07-Mar-05	LB-4	Rock gunnel	PYS	1	6.9
07-Mar-05	LB-5	Atlantic cod	PYS	1	7.0
07-Mar-05	LB-5	Grubby	PYS	18	126.6
07-Mar-05	LB-5	Grubby	YS	1	7.0
07-Mar-05	LB-5	Rock gunnel	PYS	5	35.2
07-Mar-05	LB-5	Winter flounder	UID	1	7.0
07-Mar-05	LB-5	Winter flounder	YS	2	14.1
07-Mar-05	LB-6	Grubby	PYS	3	26.8
07-Mar-05	SB-5	Grubby	PYS	27	103.5
07-Mar-05	SB-5	Grubby	YS	4	15.3
07-Mar-05	SB-5	Rock gunnel	PYS	1	3.8
07-Mar-05	SB-6	Grubby	PYS	21	89.7
07-Mar-05	SB-6	Grubby	YS	2	8.5
08-Mar-05	SB-1	Grubby	PYS	30	369.2
08-Mar-05	SB-1	Grubby	YS	3	36.9
08-Mar-05	SB-2	Grubby	PYS	22	244.1
08-Mar-05	SB-2	Grubby	YS	3	33.3
08-Mar-05	SB-2	Winter flounder	Egg	1	11.1
08-Mar-05	SB-3	Grubby	PYS	3	21.4
08-Mar-05	SB-3	Rock gunnel	PYS	1	7.1
08-Mar-05	SB-4	Grubby	PYS	1	7.2
08-Mar-05	SB-4	Winter flounder	Egg	1	7.2
10-Mar-05	AK-1	Gadid unidentified	Egg	1	5.8
10-Mar-05	AK-1	Grubby	PYS	20	116.1
10-Mar-05	AK-2	Atlantic herring	PYS	1	6.4
10-Mar-05	AK-2	Grubby	PYS	5	31.8
10-Mar-05	AK-2	Rock gunnel	PYS	1	6.4
10-Mar-05	AK-3	Atlantic herring	PYS	2	12.1
10-Mar-05	AK-3	Grubby	PYS	8	48.2
10-Mar-05	AK-3	Grubby	YS	2	12.1
10-Mar-05	AK-4	Grubby	PYS	11	72.2
10-Mar-05	AK-4	Grubby	YS	2	13.1

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
10-Mar-05	NB-3	Grubby	PYS	25	142.1
10-Mar-05	NB-3	Grubby	UID	2	11.4
10-Mar-05	NB-3	Grubby	YS	2	11.4
10-Mar-05	NB-3	Winter flounder	YS	1	5.7
10-Mar-05	NB-4	Grubby	PYS	10	49.4
10-Mar-05	NB-4	Rock gunnel	PYS	1	4.9
10-Mar-05	NB-5	Grubby	PYS	15	-33.9
10-Mar-05	NB-5	Grubby	YS	1	-2.3
10-Mar-05	NB-6	Gadid unidentified	Egg	1	5.9
10-Mar-05	NB-6	Grubby	PYS	3	17.7
10-Mar-05	NB-6	Grubby	YS	1	5.9
10-Mar-05	NB-7	Atlantic tomcod	YS	1	7.6
10-Mar-05	NB-7	Grubby	PYS	22	168.1
10-Mar-05	NB-7	Grubby	YS	2	15.3
10-Mar-05	NB-7	Rock gunnel	PYS	1	7.6
10-Mar-05	NB-7	Winter flounder	Egg	3	22.9
11-Mar-05	PJ-1	Grubby	PYS	6	34.0
11-Mar-05	PJ-1	Grubby	YS	1	5.7
11-Mar-05	PJ-1	Rock gunnel	PYS	1	5.7
11-Mar-05	PJ-1	Winter flounder	Egg	4	22.7
11-Mar-05	PJ-2	Atlantic cod	PYS	1	6.5
11-Mar-05	PJ-2	Grubby	PYS	1	6.5
11-Mar-05	PJ-3	American sandlance	PYS	1	5.1
11-Mar-05	PJ-3	Grubby	PYS	13	66.9
11-Mar-05	PJ-3	Grubby	YS	1	5.1
11-Mar-05	PJ-3	Rock gunnel	PYS	1	5.1
11-Mar-05	PJ-4	Grubby	PYS	20	91.6
11-Mar-05	PJ-4	Grubby	YS	1	4.6
11-Mar-05	PJ-5	Grubby	PYS	3	18.8
11-Mar-05	PJ-5	Grubby	YS	2	12.5
11-Mar-05	PJ-5	Rock gunnel	PYS	2	12.5
11-Mar-05	PJ-5	Winter flounder	Egg	1	6.3
21-Mar-05	LB-1	Grubby	PYS	42	252.6
21-Mar-05	LB-1	Grubby	YS	5	30.1
21-Mar-05	LB-2	Grubby	PYS	5	39.7
21-Mar-05	LB-3	American sandlance	PYS	1	8.1
21-Mar-05	LB-3	Grubby	PYS	15	121.8
21-Mar-05	LB-3	Grubby	UID	2	16.2
21-Mar-05	LB-3	Winter flounder	PYS	3	24.4
21-Mar-05	LB-3	Winter flounder	UID	1	8.1
21-Mar-05	LB-3	Winter flounder	YS	2	16.2
21-Mar-05	LB-4	Grubby	PYS	6	84.1
21-Mar-05	LB-4	Rock gunnel	PYS	1	14.0
21-Mar-05	LB-4	Winter flounder	Egg	1	14.0
21-Mar-05	LB-5	Grubby	PYS	118	1284.9
21-Mar-05	LB-5	Grubby	YS	1	10.9
21-Mar-05	LB-6	Grubby	PYS	15	127.8
21-Mar-05	SB-6	American sandlance	PYS	1	6.4
21-Mar-05	SB-6	Atlantic tomcod	PYS	1	6.4
21-Mar-05	SB-6	Grubby	PYS	73	465.1
21-Mar-05	SB-6	Grubby	UID	2	12.7
21-Mar-05	SB-6	Grubby	YS	4	25.5

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
21-Mar-05	SB-6	Rock gunnel	PYS	1	6.4
21-Mar-05	SB-6	Winter flounder	PYS	2	12.7
22-Mar-05	AK-1	Grubby	PYS	5	29.3
22-Mar-05	AK-1	Grubby	YS	2	11.7
22-Mar-05	AK-2	Grubby	PYS	20	117.5
22-Mar-05	AK-2	Grubby	YS	3	17.6
22-Mar-05	AK-3	Gadid unidentified	Egg	5	33.3
22-Mar-05	AK-3	Grubby	PYS	4	26.7
22-Mar-05	AK-4	Atlantic tomcod	PYS	1	7.1
22-Mar-05	AK-4	Gadid unidentified	Egg	1	7.1
22-Mar-05	AK-4	Grubby	PYS	23	163.9
22-Mar-05	AK-4	Grubby	YS	4	28.5
22-Mar-05	AK-4	Winter flounder	PYS	1	7.1
22-Mar-05	NB-3	Grubby	PYS	7	45.2
22-Mar-05	NB-3	Grubby	YS	1	6.5
22-Mar-05	NB-3	Winter flounder	PYS	1	6.5
22-Mar-05	NB-3	Winter flounder	YS	1	6.5
22-Mar-05	NB-4	Grubby	PYS	25	138.6
22-Mar-05	NB-4	Winter flounder	PYS	1	5.5
22-Mar-05	NB-5	Gadid unidentified	Egg	3	20.6
22-Mar-05	NB-5	Grubby	PYS	16	109.6
22-Mar-05	NB-5	Grubby	YS	1	6.9
22-Mar-05	NB-6	Grubby	PYS	18	133.4
22-Mar-05	NB-6	Grubby	YS	4	29.6
22-Mar-05	NB-6	Winter flounder	PYS	1	7.4
22-Mar-05	NB-7	Grubby	PYS	10	88.7
22-Mar-05	NB-7	Grubby	YS	2	17.7
22-Mar-05	NB-7	Rock gunnel	PYS	1	8.9
23-Mar-05	PJ-1	Grubby	PYS	13	74.4
23-Mar-05	PJ-1	Grubby	YS	1	5.7
23-Mar-05	PJ-1	Winter flounder	PYS	1	5.7
23-Mar-05	PJ-2	Grubby	PYS	12	60.2
23-Mar-05	PJ-2	Rock gunnel	PYS	1	5.0
23-Mar-05	PJ-2	Winter flounder	PYS	3	15.1
23-Mar-05	PJ-3	Gadid unidentified	Egg	2	10.2
23-Mar-05	PJ-3	Grubby	PYS	21	106.6
23-Mar-05	PJ-3	Grubby	YS	3	15.2
23-Mar-05	PJ-3	Winter flounder	PYS	2	10.2
23-Mar-05	PJ-4	Gadid unidentified	Egg	2	9.9
23-Mar-05	PJ-4	Grubby	PYS	28	139.1
23-Mar-05	PJ-4	Grubby	YS	2	9.9
23-Mar-05	PJ-4	Winter flounder	Egg	1	5.0
23-Mar-05	PJ-5	Grubby	PYS	32	160.3
23-Mar-05	PJ-5	Grubby	YS	1	5.0
23-Mar-05	SB-1	Grubby	PYS	16	215.6
23-Mar-05	SB-1	Grubby	YS	2	26.9
23-Mar-05	SB-1	Winter flounder	PYS	5	67.4
23-Mar-05	SB-2	Gadid unidentified	Egg	2	18.2
23-Mar-05	SB-2	Grubby	PYS	11	100.3
23-Mar-05	SB-2	Grubby	YS	3	27.3
23-Mar-05	SB-2	Winter flounder	PYS	8	72.9
23-Mar-05	SB-3	Gadid unidentified	Egg	3	18.3

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
23-Mar-05	SB-3	Grubby	PYS	8	48.7
23-Mar-05	SB-3	Grubby	YS	2	12.2
23-Mar-05	SB-3	Winter flounder	Egg	1	6.1
23-Mar-05	SB-4	Gadid unidentified	Egg	7	45.6
23-Mar-05	SB-4	Grubby	PYS	9	58.7
23-Mar-05	SB-4	Winter flounder	Egg	1	6.5
23-Mar-05	SB-4	Winter flounder	PYS	1	6.5
23-Mar-05	SB-4	Winter flounder	YS	2	13.0
23-Mar-05	SB-5	Gadid unidentified	Egg	1	8.5
23-Mar-05	SB-5	Grubby	PYS	7	59.4
04-Apr-05	AK-1	Grubby	PYS	5	25.1
04-Apr-05	AK-1	Grubby	YS	1	5.0
04-Apr-05	AK-2	American sandlance	PYS	1	5.0
04-Apr-05	AK-2	Gadid unidentified	Egg	1	5.0
04-Apr-05	AK-2	Grubby	PYS	14	70.2
04-Apr-05	AK-2	Winter flounder	PYS	29	145.4
04-Apr-05	AK-2	Winter flounder	UID	4	20.1
04-Apr-05	AK-2	Winter flounder	YS	7	35.1
04-Apr-05	AK-3	Atlantic tomcod	PYS	8	42.3
04-Apr-05	AK-3	Grubby	PYS	22	116.4
04-Apr-05	AK-3	Grubby	UID	1	5.3
04-Apr-05	AK-4	Atlantic tomcod	PYS	2	10.7
04-Apr-05	AK-4	Grubby	PYS	21	112.1
04-Apr-05	AK-4	Winter flounder	PYS	6	32.0
04-Apr-05	AK-4	Winter flounder	UID	3	16.0
04-Apr-05	NB-3	Winter flounder	PYS	1	4.6
04-Apr-05	NB-3	Winter flounder	UID	1	4.6
04-Apr-05	NB-3	Winter flounder	YS	1	4.6
04-Apr-05	NB-5	American sandlance	PYS	1	7.5
04-Apr-05	NB-5	Gadid unidentified	Egg	1	7.5
04-Apr-05	NB-5	Gadid unidentified	PYS	2	15.1
04-Apr-05	NB-5	Grubby	PYS	3	22.6
04-Apr-05	NB-5	Grubby	YS	1	7.5
04-Apr-05	NB-6	Gadid unidentified	Egg	29	312.7
04-Apr-05	NB-6	Grubby	PYS	1	10.8
04-Apr-05	NB-6	Grubby	UID	1	10.8
04-Apr-05	NB-6	Grubby	YS	1	10.8
04-Apr-05	NB-6	Unidentified	UID	1	10.8
04-Apr-05	NB-7	Grubby	PYS	4	30.6
04-Apr-05	NB-7	Grubby	YS	2	15.3
04-Apr-05	NB-7	Winter flounder	Egg	1	7.6
04-Apr-05	NB-7	Winter flounder	UID	1	7.6
04-Apr-05	PJ-3	Grubby	PYS	8	44.7
04-Apr-05	PJ-3	Grubby	YS	2	11.2
04-Apr-05	PJ-3	Winter flounder	PYS	3	16.7
04-Apr-05	PJ-3	Winter flounder	UID	3	16.7
04-Apr-05	PJ-4	American sandlance	PYS	1	4.5
04-Apr-05	PJ-4	Atlantic tomcod	PYS	6	27.2
04-Apr-05	PJ-4	Gadid unidentified	Egg	3	13.6
04-Apr-05	PJ-4	Grubby	PYS	22	99.9
04-Apr-05	PJ-4	Rock gunnel	PYS	1	4.5
04-Apr-05	PJ-4	Winter flounder	PYS	4	18.2

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
05-Apr-05	LB-1	Atlantic tomcod	PYS	3	15.4
05-Apr-05	LB-1	Feather blenny	PYS	1	5.1
05-Apr-05	LB-1	Grubby	PYS	17	87.0
05-Apr-05	LB-1	Rock gunnel	PYS	2	10.2
05-Apr-05	LB-1	Winter flounder	PYS	28	143.3
05-Apr-05	LB-2	American sandlance	PYS	1	6.7
05-Apr-05	LB-2	Gadid unidentified	Egg	1	6.7
05-Apr-05	LB-2	Grubby	PYS	31	206.9
05-Apr-05	LB-2	Winter flounder	PYS	2	13.4
05-Apr-05	LB-3	Grubby	PYS	2	13.1
05-Apr-05	LB-3	Rock gunnel	PYS	2	13.1
05-Apr-05	LB-3	Winter flounder	UID	1	6.5
05-Apr-05	LB-4	Gadid unidentified	Egg	2	23.5
05-Apr-05	LB-4	Grubby	PYS	10	117.6
05-Apr-05	LB-4	Rock gunnel	PYS	1	11.8
05-Apr-05	LB-4	Winter flounder	Egg	2	23.5
05-Apr-05	LB-4	Winter flounder	YS	1	11.8
05-Apr-05	LB-5	Gadid unidentified	Egg	4	37.7
05-Apr-05	LB-5	Grubby	PYS	6	56.6
05-Apr-05	LB-5	Winter flounder	YS	2	18.9
05-Apr-05	LB-6	Grubby	PYS	104	1022.9
05-Apr-05	PJ-1	American sandlance	PYS	1	9.0
05-Apr-05	PJ-1	Atlantic herring	PYS	2	18.1
05-Apr-05	PJ-1	Atlantic tomcod	PYS	4	36.2
05-Apr-05	PJ-1	Grubby	PYS	6	54.3
05-Apr-05	PJ-1	Grubby	YS	3	27.1
05-Apr-05	PJ-1	Winter flounder	Egg	1	9.0
05-Apr-05	PJ-1	Winter flounder	PYS	11	99.5
05-Apr-05	PJ-1	Winter flounder	YS	4	36.2
05-Apr-05	PJ-2	Atlantic herring	PYS	1	11.9
05-Apr-05	PJ-2	Atlantic tomcod	PYS	20	238.7
05-Apr-05	PJ-2	Gadid unidentified	Egg	19	226.7
05-Apr-05	PJ-2	Grubby	PYS	3	35.8
05-Apr-05	PJ-2	Winter flounder	Egg	15	179.0
05-Apr-05	PJ-2	Winter flounder	PYS	1	11.9
05-Apr-05	PJ-2	Winter flounder	YS	1	11.9
05-Apr-05	PJ-5	Atlantic herring	PYS	1	7.3
05-Apr-05	PJ-5	Atlantic tomcod	PYS	5	36.5
05-Apr-05	PJ-5	Gadid unidentified	Egg	8	58.4
05-Apr-05	PJ-5	Grubby	PYS	3	21.9
05-Apr-05	PJ-5	Rock gunnel	PYS	1	7.3
05-Apr-05	PJ-5	Winter flounder	PYS	1	7.3
05-Apr-05	PJ-5	Winter flounder	UID	1	7.3
05-Apr-05	SB-1	American sandlance	PYS	1	12.5
05-Apr-05	SB-1	Atlantic herring	PYS	1	12.5
05-Apr-05	SB-1	Atlantic tomcod	PYS	2	25.0
05-Apr-05	SB-1	Grubby	PYS	3	37.5
05-Apr-05	SB-1	Winter flounder	PYS	1	12.5
05-Apr-05	SB-1	Winter flounder	UID	1	12.5
05-Apr-05	SB-2	Grubby	PYS	2	21.9
05-Apr-05	SB-2	Rock gunnel	PYS	1	10.9
05-Apr-05	SB-2	Winter flounder	PYS	2	21.9

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
05-Apr-05	SB-3	Atlantic herring	PYS	1	5.0
05-Apr-05	SB-3	Atlantic tomcod	PYS	3	15.1
05-Apr-05	SB-3	Grubby	PYS	15	75.4
05-Apr-05	SB-3	Winter flounder	PYS	9	45.3
05-Apr-05	SB-4	Atlantic tomcod	PYS	3	25.7
05-Apr-05	SB-4	Gadid unidentified	Egg	62	531.2
05-Apr-05	SB-4	Grubby	PYS	3	25.7
05-Apr-05	SB-4	Winter flounder	PYS	1	8.6
05-Apr-05	SB-5	Atlantic cod	JUV	1	11.1
05-Apr-05	SB-5	Atlantic tomcod	PYS	2	22.3
05-Apr-05	SB-5	Gadid unidentified	Egg	1	11.1
05-Apr-05	SB-6	Atlantic tomcod	PYS	1	8.8
05-Apr-05	SB-6	Gadid unidentified	Egg	3	26.5
05-Apr-05	SB-6	Grubby	PYS	29	255.8
05-Apr-05	SB-6	Grubby	YS	2	17.6
05-Apr-05	SB-6	Winter flounder	Egg	4	35.3
05-Apr-05	SB-6	Winter flounder	PYS	9	79.4
19-Apr-05	LB-1	Atlantic menhaden	Egg	17	114.5
19-Apr-05	LB-1	Grubby	PYS	14	94.3
19-Apr-05	LB-1	Grubby	YS	1	6.7
19-Apr-05	LB-1	Winter flounder	PYS	221	1488.9
19-Apr-05	LB-2	Atlantic menhaden	Egg	38	158.2
19-Apr-05	LB-2	Gadid unidentified	Egg	1	4.2
19-Apr-05	LB-2	Grubby	PYS	10	41.6
19-Apr-05	LB-2	Winter flounder	PYS	45	187.3
19-Apr-05	LB-2	Winter flounder	YS	2	8.3
19-Apr-05	LB-3	American sandlance	PYS	1	4.7
19-Apr-05	LB-3	Atlantic menhaden	Egg	10	46.8
19-Apr-05	LB-3	Fourbeard rockling	Egg	1	4.7
19-Apr-05	LB-3	Winter flounder	PYS	67	313.9
19-Apr-05	LB-3	Winter flounder	UID	28	131.2
19-Apr-05	LB-4	Atlantic menhaden	Egg	17	71.3
19-Apr-05	LB-4	Grubby	PYS	1	4.2
19-Apr-05	LB-4	Winter flounder	PYS	42	176.0
19-Apr-05	LB-4	Winter flounder	UID	2	8.4
19-Apr-05	LB-4	Winter flounder	YS	2	8.4
19-Apr-05	LB-5	American sandlance	PYS	1	5.6
19-Apr-05	LB-5	Atlantic menhaden	Egg	192	1072.6
19-Apr-05	LB-5	Fourbeard rockling	Egg	8	44.7
19-Apr-05	LB-5	Grubby	PYS	32	178.8
19-Apr-05	LB-5	Rock gunnel	PYS	3	16.8
19-Apr-05	LB-5	Winter flounder	PYS	120	670.4
19-Apr-05	LB-5	Winter flounder	UID	7	39.1
19-Apr-05	LB-5	Winter flounder	YS	2	11.2
19-Apr-05	LB-6	Atlantic menhaden	Egg	57	323.7
19-Apr-05	LB-6	Grubby	PYS	12	68.1
19-Apr-05	LB-6	Winter flounder	PYS	8	45.4
19-Apr-05	LB-6	Winter flounder	YS	2	11.4
19-Apr-05	SB-6	Atlantic cod	PYS	1	6.8
19-Apr-05	SB-6	Atlantic menhaden	Egg	33	224.7
19-Apr-05	SB-6	Grubby	PYS	66	449.4
19-Apr-05	SB-6	Grubby	YS	1	6.8

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
19-Apr-05	SB-6	Rock gunnel	PYS	7	47.7
19-Apr-05	SB-6	Winter flounder	PYS	30	204.3
20-Apr-05	AK-1	Grubby	PYS	16	78.0
20-Apr-05	AK-1	Winter flounder	PYS	1	4.9
20-Apr-05	AK-2	Grubby	PYS	7	31.4
20-Apr-05	AK-2	Winter flounder	PYS	7	31.4
20-Apr-05	AK-2	Winter flounder	UID	3	13.5
20-Apr-05	AK-3	Grubby	PYS	29	130.2
20-Apr-05	AK-3	Winter flounder	PYS	11	49.4
20-Apr-05	AK-3	Winter flounder	YS	1	4.5
20-Apr-05	AK-4	Atlantic menhaden	Egg	1	6.1
20-Apr-05	AK-4	Grubby	PYS	19	116.6
20-Apr-05	AK-4	Grubby	YS	1	6.1
20-Apr-05	AK-4	Winter flounder	PYS	1	6.1
20-Apr-05	NB-3	Winter flounder	PYS	60	394.9
20-Apr-05	NB-3	Winter flounder	UID	5	32.9
20-Apr-05	NB-3	Winter flounder	YS	2	13.2
20-Apr-05	NB-4	Grubby	PYS	4	26.4
20-Apr-05	NB-4	Winter flounder	PYS	24	158.1
20-Apr-05	NB-4	Winter flounder	UID	2	13.2
20-Apr-05	NB-5	Atlantic menhaden	Egg	1	5.9
20-Apr-05	NB-5	Atlantic tomcod	PYS	1	5.9
20-Apr-05	NB-5	Gadid unidentified	Egg	1	5.9
20-Apr-05	NB-5	Grubby	PYS	73	431.7
20-Apr-05	NB-5	Winter flounder	PYS	6	35.5
20-Apr-05	NB-5	Winter flounder	YS	1	5.9
20-Apr-05	NB-6	Atlantic menhaden	Egg	3	20.4
20-Apr-05	NB-6	Atlantic tomcod	PYS	3	20.4
20-Apr-05	NB-6	Fourbeard rockling	Egg	10	67.8
20-Apr-05	NB-6	Gadid unidentified	Egg	4	27.1
20-Apr-05	NB-6	Grubby	PYS	66	447.8
20-Apr-05	NB-6	Grubby	YS	4	27.1
20-Apr-05	NB-6	Winter flounder	PYS	21	142.5
20-Apr-05	NB-6	Winter flounder	YS	1	6.8
20-Apr-05	NB-7	Grubby	PYS	8	71.8
20-Apr-05	NB-7	Grubby	YS	2	17.9
20-Apr-05	NB-7	Winter flounder	PYS	8	71.8
20-Apr-05	NB-7	Winter flounder	UID	2	17.9
20-Apr-05	NB-7	Winter flounder	YS	3	26.9
21-Apr-05	PJ-1	Grubby	PYS	12	59.2
21-Apr-05	PJ-1	Grubby	YS	2	9.9
21-Apr-05	PJ-1	Winter flounder	PYS	21	103.6
21-Apr-05	PJ-1	Winter flounder	YS	1	4.9
21-Apr-05	PJ-2	Gadid unidentified	Egg	1	6.8
21-Apr-05	PJ-2	Grubby	PYS	2	13.6
21-Apr-05	PJ-2	Winter flounder	PYS	22	149.9
21-Apr-05	PJ-2	Winter flounder	UID	22	149.9
21-Apr-05	PJ-3	Atlantic tomcod	PYS	1	5.0
21-Apr-05	PJ-3	Feather blenny	PYS	1	5.0
21-Apr-05	PJ-3	Gadid unidentified	Egg	2	10.1
21-Apr-05	PJ-3	Grubby	PYS	17	85.7
21-Apr-05	PJ-3	Grubby	YS	1	5.0

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
21-Apr-05	PJ-3	Winter flounder	PYS	118	594.9
21-Apr-05	PJ-3	Winter flounder	UID	19	95.8
21-Apr-05	PJ-3	Winter flounder	YS	6	30.2
21-Apr-05	PJ-4	Fourbeard rockling	Egg	1	4.4
21-Apr-05	PJ-4	Gadid unidentified	Egg	3	13.1
21-Apr-05	PJ-4	Grubby	PYS	23	100.8
21-Apr-05	PJ-4	Windowpane	Egg	1	4.4
21-Apr-05	PJ-4	Winter flounder	PYS	21	92.0
21-Apr-05	PJ-4	Winter flounder	UID	8	35.0
21-Apr-05	PJ-4	Winter flounder	YS	1	4.4
21-Apr-05	PJ-5	Gadid unidentified	Egg	2	9.3
21-Apr-05	PJ-5	Grubby	PYS	11	51.0
21-Apr-05	PJ-5	Rock gunnel	PYS	1	4.6
21-Apr-05	PJ-5	Windowpane	Egg	1	4.6
21-Apr-05	PJ-5	Winter flounder	PYS	33	153.1
21-Apr-05	PJ-5	Winter flounder	UID	2	9.3
21-Apr-05	SB-1	Atlantic menhaden	Egg	2	22.5
21-Apr-05	SB-1	Fourbeard rockling	Egg	3	33.7
21-Apr-05	SB-1	Grubby	PYS	5	56.2
21-Apr-05	SB-1	Winter flounder	PYS	22	247.4
21-Apr-05	SB-2	American sandlance	PYS	1	9.3
21-Apr-05	SB-2	Atlantic menhaden	Egg	4	37.3
21-Apr-05	SB-2	Grubby	PYS	7	65.3
21-Apr-05	SB-2	Winter flounder	PYS	15	139.8
21-Apr-05	SB-2	Winter flounder	UID	4	37.3
21-Apr-05	SB-2	Winter flounder	YS	1	9.3
21-Apr-05	SB-3	Gadid unidentified	Egg	1	7.0
21-Apr-05	SB-3	Grubby	PYS	4	28.2
21-Apr-05	SB-3	Windowpane	Egg	2	14.1
21-Apr-05	SB-3	Winter flounder	PYS	63	443.4
21-Apr-05	SB-3	Winter flounder	YS	1	7.0
21-Apr-05	SB-4	Atlantic menhaden	Egg	2	10.9
21-Apr-05	SB-4	Grubby	PYS	25	136.1
21-Apr-05	SB-4	Rock gunnel	PYS	2	10.9
21-Apr-05	SB-4	Winter flounder	PYS	83	452.0
21-Apr-05	SB-4	Winter flounder	UID	3	16.3
21-Apr-05	SB-4	Winter flounder	YS	11	59.9
21-Apr-05	SB-5	Gadid unidentified	Egg	1	9.1
21-Apr-05	SB-5	Grubby	PYS	4	36.4
21-Apr-05	SB-5	Windowpane	Egg	2	18.2
21-Apr-05	SB-5	Winter flounder	Egg	1	9.1
21-Apr-05	SB-5	Winter flounder	PYS	18	163.8
21-Apr-05	SB-5	Winter flounder	YS	1	9.1
02-May-05	AK-1	Gadid unidentified	Egg	1	7.2
02-May-05	AK-1	Grubby	PYS	1	7.2
02-May-05	AK-1	Winter flounder	PYS	3	21.5
02-May-05	AK-2	American sandlance	PYS	1	5.8
02-May-05	AK-2	Grubby	PYS	1	5.8
02-May-05	AK-2	Winter flounder	PYS	3	17.5
02-May-05	AK-2	Winter flounder	UID	1	5.8
02-May-05	AK-2	Winter flounder	YS	1	5.8
02-May-05	AK-3	Atlantic tomcod	PYS	1	5.4

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
02-May-05	AK-3	Grubby	PYS	1	5.4
02-May-05	AK-3	Winter flounder	PYS	1	5.4
02-May-05	AK-4	Winter flounder	PYS	2	13.6
02-May-05	NB-3	Winter flounder	PYS	1	6.0
02-May-05	NB-3	Winter flounder	UID	1	6.0
02-May-05	NB-4	Winter flounder	PYS	1	6.1
02-May-05	NB-4	Winter flounder	UID	1	6.1
02-May-05	NB-5	Atlantic tomcod	JUV	4	24.5
02-May-05	NB-5	Atlantic tomcod	PYS	12	73.4
02-May-05	NB-5	Fourbeard rockling	Egg	4	24.5
02-May-05	NB-5	Grubby	PYS	2	12.2
02-May-05	NB-5	Winter flounder	PYS	4	24.5
02-May-05	NB-6	Atlantic tomcod	PYS	1	6.2
02-May-05	NB-6	Fourbeard rockling	Egg	3	18.5
02-May-05	NB-6	Grubby	PYS	3	18.5
02-May-05	NB-6	Winter flounder	PYS	4	24.7
02-May-05	NB-7	Winter flounder	PYS	1	8.5
02-May-05	PJ-1	Fourbeard rockling	Egg	1	6.1
02-May-05	PJ-1	Gadid unidentified	Egg	2	12.1
02-May-05	PJ-1	Grubby	PYS	1	6.1
02-May-05	PJ-1	Winter flounder	PYS	7	42.5
02-May-05	PJ-2	Gadid unidentified	Egg	1	6.7
02-May-05	PJ-2	Windowpane	Egg	1	6.7
02-May-05	PJ-2	Winter flounder	PYS	8	53.6
02-May-05	PJ-3	Winter flounder	PYS	4	21.6
02-May-05	PJ-4	Atlantic herring	JUV	1	4.9
02-May-05	PJ-4	Atlantic herring	PYS	2	9.9
02-May-05	PJ-4	Atlantic tomcod	PYS	1	4.9
02-May-05	PJ-4	Fourbeard rockling	Egg	2	9.9
02-May-05	PJ-4	Grubby	PYS	2	9.9
02-May-05	PJ-4	Winter flounder	PYS	21	103.5
03-May-05	LB-1	Fourbeard rockling	Egg	1	5.4
03-May-05	LB-1	Grubby	PYS	2	10.7
03-May-05	LB-1	Windowpane	Egg	5	26.8
03-May-05	LB-1	Winter flounder	PYS	29	155.5
03-May-05	LB-2	Grubby	PYS	5	40.1
03-May-05	LB-2	Windowpane	Egg	1	8.0
03-May-05	LB-2	Winter flounder	PYS	5	40.1
03-May-05	LB-3	Windowpane	Egg	4	27.7
03-May-05	LB-3	Winter flounder	PYS	18	124.4
03-May-05	LB-4	Grubby	PYS	6	40.2
03-May-05	LB-4	Grubby	YS	1	6.7
03-May-05	LB-4	Winter flounder	PYS	24	160.8
03-May-05	LB-4	Winter flounder	UID	1	6.7
03-May-05	LB-5	Grubby	PYS	4	28.4
03-May-05	LB-5	Windowpane	Egg	2	14.2
03-May-05	LB-5	Winter flounder	PYS	24	170.7
03-May-05	LB-6	Grubby	PYS	1	3.8
03-May-05	LB-6	Windowpane	Egg	20	76.0
03-May-05	LB-6	Winter flounder	PYS	12	45.6
03-May-05	PJ-5	Fourbeard rockling	Egg	2	15.9
03-May-05	PJ-5	Grubby	PYS	3	23.8

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
03-May-05	PJ-5	Windowpane	Egg	2	15.9
03-May-05	PJ-5	Winter flounder	PYS	14	111.2
03-May-05	SB-1	Fourbeard rockling	Egg	3	37.0
03-May-05	SB-1	Grubby	PYS	1	12.3
03-May-05	SB-1	Winter flounder	PYS	12	148.0
03-May-05	SB-1	Winter flounder	UID	2	24.7
03-May-05	SB-2	Fourbeard rockling	Egg	4	52.8
03-May-05	SB-2	Grubby	PYS	1	13.2
03-May-05	SB-2	Rock gunnel	PYS	1	13.2
03-May-05	SB-2	Winter flounder	PYS	5	66.0
03-May-05	SB-3	Grubby	PYS	2	10.0
03-May-05	SB-3	Windowpane	Egg	1	5.0
03-May-05	SB-3	Winter flounder	PYS	21	104.6
03-May-05	SB-4	Atlantic tomcod	JUV	3	19.5
03-May-05	SB-4	Fourbeard rockling	Egg	15	97.4
03-May-05	SB-4	Gadid unidentified	Egg	2	13.0
03-May-05	SB-4	Grubby	PYS	3	19.5
03-May-05	SB-4	Windowpane	Egg	5	32.5
03-May-05	SB-4	Winter flounder	PYS	7	45.5
03-May-05	SB-5	Fourbeard rockling	Egg	1	13.2
03-May-05	SB-5	Labridae	Egg	1	13.2
03-May-05	SB-5	Rock gunnel	PYS	1	13.2
03-May-05	SB-5	Windowpane	Egg	3	39.7
03-May-05	SB-5	Winter flounder	PYS	3	39.7
03-May-05	SB-6	Atlantic cod	PYS	1	3.9
03-May-05	SB-6	Atlantic herring	PYS	1	3.9
03-May-05	SB-6	Fourbeard rockling	Egg	1	3.9
03-May-05	SB-6	Grubby	PYS	12	46.6
03-May-05	SB-6	Rock gunnel	PYS	1	3.9
03-May-05	SB-6	Windowpane	Egg	4	15.5
03-May-05	SB-6	Winter flounder	PYS	28	108.6
16-May-05	LB-1	Atlantic menhaden	Egg	28	227.7
16-May-05	LB-1	Labridae	Egg	24	195.1
16-May-05	LB-1	Windowpane	Egg	72	585.4
16-May-05	LB-1	Winter flounder	PYS	15	122.0
16-May-05	LB-2	Grubby	PYS	1	4.8
16-May-05	LB-2	Labridae	Egg	5	23.8
16-May-05	LB-2	Windowpane	Egg	24	114.2
16-May-05	LB-2	Windowpane	PYS	1	4.8
16-May-05	LB-2	Winter flounder	PYS	12	57.1
16-May-05	LB-3	Atlantic menhaden	Egg	60	338.6
16-May-05	LB-3	Grubby	PYS	1	5.6
16-May-05	LB-3	Labridae	Egg	20	112.9
16-May-05	LB-3	Windowpane	Egg	52	293.5
16-May-05	LB-3	Winter flounder	PYS	4	22.6
16-May-05	LB-4	Atlantic menhaden	Egg	6	27.9
16-May-05	LB-4	Labridae	Egg	6	27.9
16-May-05	LB-4	Windowpane	Egg	18	83.8
16-May-05	LB-4	Winter flounder	PYS	37	172.2
16-May-05	LB-5	Atlantic menhaden	Egg	536	3921.8
16-May-05	LB-5	Labridae	Egg	24	175.6
16-May-05	LB-5	Windowpane	Egg	32	234.1

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
16-May-05	LB-5	Winter flounder	PYS	6	43.9
16-May-05	LB-6	Atlantic menhaden	Egg	228	1594.6
16-May-05	LB-6	Windowpane	Egg	20	139.9
16-May-05	LB-6	Winter flounder	PYS	17	118.9
17-May-05	AK-1	Winter flounder	PYS	1	6.0
17-May-05	AK-2	Grubby	PYS	1	5.3
17-May-05	AK-2	Labridae	Egg	2	10.5
17-May-05	AK-2	Windowpane	Egg	10	52.7
17-May-05	AK-2	Winter flounder	PYS	13	68.5
17-May-05	AK-3	Labridae	Egg	2	12.6
17-May-05	AK-3	Windowpane	Egg	1	6.3
17-May-05	AK-3	Winter flounder	JUV	4	25.3
17-May-05	AK-3	Winter flounder	PYS	1	6.3
17-May-05	AK-4	Atlantic menhaden	Egg	1	6.3
17-May-05	AK-4	Labridae	Egg	10	63.4
17-May-05	AK-4	Windowpane	PYS	1	6.3
17-May-05	NB-4	Labridae	Egg	1	6.1
17-May-05	NB-5	Atlantic menhaden	Egg	1	6.0
17-May-05	NB-5	Labridae	Egg	7	41.9
17-May-05	NB-5	Windowpane	Egg	11	65.9
17-May-05	NB-5	Winter flounder	PYS	4	24.0
17-May-05	NB-6	Atlantic menhaden	Egg	2	11.0
17-May-05	NB-6	Fourbeard rockling	Egg	2	11.0
17-May-05	NB-6	Labridae	Egg	3	16.5
17-May-05	NB-6	Windowpane	Egg	2	11.0
17-May-05	NB-6	Winter flounder	PYS	41	225.8
18-May-05	PJ-1	Atlantic menhaden	Egg	1	4.7
18-May-05	PJ-1	Windowpane	Egg	2	9.4
18-May-05	PJ-1	Windowpane	PYS	1	4.7
18-May-05	PJ-1	Winter flounder	PYS	4	18.8
18-May-05	PJ-2	Atlantic menhaden	Egg	14	86.2
18-May-05	PJ-2	Labridae	Egg	24	147.8
18-May-05	PJ-2	Windowpane	PYS	3	18.5
18-May-05	PJ-3	Atlantic menhaden	Egg	1	5.0
18-May-05	PJ-4	Atlantic menhaden	Egg	20	121.1
18-May-05	PJ-4	Labridae	Egg	36	218.0
18-May-05	PJ-4	Windowpane	Egg	28	169.5
18-May-05	PJ-4	Winter flounder	PYS	3	18.2
18-May-05	PJ-5	Atlantic menhaden	Egg	16	93.1
18-May-05	PJ-5	Labridae	Egg	68	395.6
18-May-05	PJ-5	Windowpane	Egg	20	116.4
18-May-05	PJ-5	Winter flounder	PYS	9	52.4
18-May-05	SB-1	Atlantic menhaden	Egg	5	62.3
18-May-05	SB-1	Labridae	Egg	11	137.2
18-May-05	SB-1	Windowpane	Egg	11	137.2
18-May-05	SB-1	Windowpane	PYS	1	12.5
18-May-05	SB-2	Atlantic menhaden	Egg	17	188.5
18-May-05	SB-2	Labridae	Egg	14	155.2
18-May-05	SB-2	Windowpane	Egg	3	33.3
18-May-05	SB-2	Winter flounder	PYS	2	22.2
18-May-05	SB-3	Atlantic menhaden	Egg	26	255.8
18-May-05	SB-3	Labridae	Egg	10	98.4

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
18-May-05	SB-3	Windowpane	Egg	9	88.6
18-May-05	SB-3	Winter flounder	PYS	3	29.5
18-May-05	SB-4	Atlantic menhaden	Egg	300	1576.3
18-May-05	SB-4	Labridae	Egg	36	189.2
18-May-05	SB-4	Windowpane	Egg	20	105.1
18-May-05	SB-4	Windowpane	PYS	1	5.3
18-May-05	SB-4	Winter flounder	PYS	12	63.1
18-May-05	SB-5	Atlantic menhaden	Egg	38	277.7
18-May-05	SB-5	Labridae	Egg	24	175.4
18-May-05	SB-5	Prionotus sp.	Egg	2	14.6
18-May-05	SB-5	Windowpane	Egg	28	204.6
18-May-05	SB-5	Winter flounder	PYS	5	36.5
18-May-05	SB-6	Atlantic menhaden	Egg	14	105.0
18-May-05	SB-6	Grubby	PYS	1	7.5
18-May-05	SB-6	Labridae	Egg	12	90.0
18-May-05	SB-6	Windowpane	Egg	20	150.0
18-May-05	SB-6	Windowpane	PYS	1	7.5
18-May-05	SB-6	Winter flounder	PYS	1	7.5
31-May-05	LB-1	Atlantic menhaden	Egg	128	751.7
31-May-05	LB-1	Atlantic menhaden	PYS	59	346.5
31-May-05	LB-1	Atlantic menhaden	UID	84	493.3
31-May-05	LB-1	Atlantic menhaden	YS	32	187.9
31-May-05	LB-1	Bay anchovy	Egg	40	234.9
31-May-05	LB-1	Labridae	Egg	128	751.7
31-May-05	LB-1	Prionotus sp.	Egg	16	94.0
31-May-05	LB-1	Tautog	PYS	1	5.9
31-May-05	LB-1	Windowpane	Egg	8	47.0
31-May-05	LB-1	Windowpane	PYS	101	593.1
31-May-05	LB-1	Windowpane	YS	1	5.9
31-May-05	LB-1	Winter flounder	PYS	3	17.6
31-May-05	LB-2	Atlantic menhaden	Egg	72	685.3
31-May-05	LB-2	Atlantic menhaden	PYS	40	380.7
31-May-05	LB-2	Atlantic menhaden	UID	23	218.9
31-May-05	LB-2	Atlantic menhaden	YS	8	76.1
31-May-05	LB-2	Bay anchovy	Egg	32	304.6
31-May-05	LB-2	Labridae	Egg	232	2208.2
31-May-05	LB-2	Prionotus sp.	Egg	80	761.5
31-May-05	LB-2	Windowpane	Egg	32	304.6
31-May-05	LB-2	Windowpane	PYS	25	238.0
31-May-05	LB-3	Atlantic menhaden	Egg	192	1178.5
31-May-05	LB-3	Atlantic menhaden	PYS	59	362.1
31-May-05	LB-3	Bay anchovy	Egg	104	638.3
31-May-05	LB-3	Labridae	Egg	160	982.1
31-May-05	LB-3	Prionotus sp.	Egg	8	49.1
31-May-05	LB-3	Windowpane	Egg	16	98.2
31-May-05	LB-3	Windowpane	PYS	16	98.2
31-May-05	LB-4	Atlantic menhaden	Egg	304	1675.2
31-May-05	LB-4	Atlantic menhaden	PYS	21	115.7
31-May-05	LB-4	Atlantic menhaden	UID	6	33.1
31-May-05	LB-4	Atlantic menhaden	YS	2	11.0
31-May-05	LB-4	Bay anchovy	Egg	112	617.2
31-May-05	LB-4	Labridae	Egg	352	1939.7

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
31-May-05	LB-4	Prionotus sp.	Egg	80	440.8
31-May-05	LB-4	Windowpane	Egg	32	176.3
31-May-05	LB-4	Windowpane	PYS	92	507.0
31-May-05	LB-4	Winter flounder	PYS	2	11.0
31-May-05	LB-5	Atlantic menhaden	Egg	864	4721.7
31-May-05	LB-5	Atlantic menhaden	PYS	30	163.9
31-May-05	LB-5	Atlantic menhaden	UID	21	114.8
31-May-05	LB-5	Atlantic menhaden	YS	11	60.1
31-May-05	LB-5	Bay anchovy	Egg	800	4372.0
31-May-05	LB-5	Labridae	Egg	160	874.4
31-May-05	LB-5	Windowpane	Egg	224	1224.2
31-May-05	LB-5	Windowpane	PYS	81	442.7
31-May-05	LB-6	Atlantic menhaden	Egg	16	66.1
31-May-05	LB-6	Atlantic menhaden	PYS	2	8.3
31-May-05	LB-6	Bay anchovy	Egg	128	528.5
31-May-05	LB-6	Labridae	Egg	8	33.0
31-May-05	LB-6	Windowpane	PYS	15	61.9
31-May-05	PJ-1	Atlantic menhaden	Egg	128	791.0
31-May-05	PJ-1	Atlantic menhaden	PYS	49	302.8
31-May-05	PJ-1	Atlantic menhaden	UID	28	173.0
31-May-05	PJ-1	Bay anchovy	Egg	160	988.8
31-May-05	PJ-1	Labridae	Egg	48	296.6
31-May-05	PJ-1	Windowpane	PYS	7	43.3
31-May-05	PJ-4	Atlantic menhaden	Egg	832	5379.7
31-May-05	PJ-4	Atlantic menhaden	PYS	129	834.1
31-May-05	PJ-4	Atlantic menhaden	UID	91	588.4
31-May-05	PJ-4	Atlantic menhaden	YS	7	45.3
31-May-05	PJ-4	Bay anchovy	Egg	48	310.4
31-May-05	PJ-4	Conger eel	LEPTO	2	12.9
31-May-05	PJ-4	Labridae	Egg	208	1344.9
31-May-05	PJ-4	Windowpane	PYS	10	64.7
31-May-05	PJ-5	Atlantic menhaden	Egg	880	5392.0
31-May-05	PJ-5	Atlantic menhaden	PYS	125	765.9
31-May-05	PJ-5	Atlantic menhaden	UID	134	821.1
31-May-05	PJ-5	Atlantic menhaden	YS	14	85.8
31-May-05	PJ-5	Bay anchovy	Egg	320	1960.7
31-May-05	PJ-5	Labridae	Egg	224	1372.5
31-May-05	PJ-5	Prionotus sp.	Egg	16	98.0
31-May-05	PJ-5	Windowpane	PYS	49	300.2
31-May-05	PJ-5	Winter flounder	PYS	3	18.4
31-May-05	SB-5	Atlantic menhaden	Egg	72	301.3
31-May-05	SB-5	Atlantic menhaden	PYS	59	246.9
31-May-05	SB-5	Atlantic menhaden	UID	60	251.1
31-May-05	SB-5	Atlantic menhaden	YS	1	4.2
31-May-05	SB-5	Bay anchovy	Egg	80	334.8
31-May-05	SB-5	Labridae	Egg	80	334.8
31-May-05	SB-5	Windowpane	PYS	11	46.0
31-May-05	SB-6	Atlantic menhaden	Egg	40	169.5
31-May-05	SB-6	Atlantic menhaden	PYS	10	42.4
31-May-05	SB-6	Atlantic menhaden	UID	12	50.8
31-May-05	SB-6	Atlantic menhaden	YS	1	4.2
31-May-05	SB-6	Bay anchovy	Egg	88	372.8

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
31-May-05	SB-6	Labridae	Egg	64	271.2
31-May-05	SB-6	Windowpane	PYS	24	101.7
01-Jun-05	AK-1	Atlantic menhaden	Egg	16	110.1
01-Jun-05	AK-1	Atlantic menhaden	PYS	25	172.0
01-Jun-05	AK-1	Atlantic menhaden	UID	9	61.9
01-Jun-05	AK-1	Bay anchovy	Egg	800	5503.7
01-Jun-05	AK-1	Labridae	Egg	56	385.3
01-Jun-05	AK-1	Windowpane	PYS	4	27.5
01-Jun-05	AK-2	Atlantic menhaden	Egg	16	97.7
01-Jun-05	AK-2	Atlantic menhaden	PYS	8	48.8
01-Jun-05	AK-2	Atlantic menhaden	UID	13	79.4
01-Jun-05	AK-2	Bay anchovy	Egg	416	2539.9
01-Jun-05	AK-2	Labridae	Egg	96	586.1
01-Jun-05	AK-2	Windowpane	PYS	5	30.5
01-Jun-05	AK-2	Winter flounder	PYS	1	6.1
01-Jun-05	AK-3	Atlantic menhaden	Egg	32	194.3
01-Jun-05	AK-3	Atlantic menhaden	PYS	4	24.3
01-Jun-05	AK-3	Atlantic menhaden	UID	8	48.6
01-Jun-05	AK-3	Bay anchovy	Egg	752	4567.0
01-Jun-05	AK-3	Labridae	Egg	32	194.3
01-Jun-05	AK-3	Tautog	PYS	1	6.1
01-Jun-05	AK-3	Windowpane	PYS	2	12.1
01-Jun-05	AK-4	Atlantic menhaden	Egg	8	52.1
01-Jun-05	AK-4	Atlantic menhaden	PYS	51	332.3
01-Jun-05	AK-4	Atlantic menhaden	UID	15	97.7
01-Jun-05	AK-4	Atlantic menhaden	YS	7	45.6
01-Jun-05	AK-4	Bay anchovy	Egg	352	2293.8
01-Jun-05	AK-4	Gobiid unidentified	PYS	2	13.0
01-Jun-05	AK-4	Labridae	Egg	84	547.4
01-Jun-05	AK-4	Northern pipefish	PYS	1	6.5
01-Jun-05	NB-3	Atlantic menhaden	PYS	13	85.4
01-Jun-05	NB-3	Atlantic menhaden	UID	8	52.5
01-Jun-05	NB-3	Atlantic menhaden	YS	5	32.8
01-Jun-05	NB-3	Bay anchovy	Egg	88	578.0
01-Jun-05	NB-3	Labridae	Egg	1	6.6
01-Jun-05	NB-3	Northern pipefish	PYS	2	13.1
01-Jun-05	NB-3	Weakfish	PYS	1	6.6
01-Jun-05	NB-3	Windowpane	PYS	1	6.6
01-Jun-05	NB-4	Atlantic menhaden	PYS	7	40.5
01-Jun-05	NB-4	Atlantic menhaden	UID	2	11.6
01-Jun-05	NB-4	Bay anchovy	Egg	292	1687.9
01-Jun-05	NB-4	Labridae	Egg	8	46.2
01-Jun-05	NB-5	Atlantic menhaden	Egg	128	805.9
01-Jun-05	NB-5	Atlantic menhaden	PYS	12	75.5
01-Jun-05	NB-5	Atlantic menhaden	UID	37	232.9
01-Jun-05	NB-5	Bay anchovy	Egg	544	3424.9
01-Jun-05	NB-5	Labridae	Egg	96	604.4
01-Jun-05	NB-5	Winter flounder	PYS	3	18.9
01-Jun-05	NB-6	Atlantic menhaden	Egg	16	112.0
01-Jun-05	NB-6	Atlantic menhaden	PYS	12	84.0
01-Jun-05	NB-6	Atlantic menhaden	UID	12	84.0
01-Jun-05	NB-6	Atlantic menhaden	YS	2	14.0

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
01-Jun-05	NB-6	Bay anchovy	Egg	312	2184.4
01-Jun-05	NB-6	Labridae	Egg	40	280.1
01-Jun-05	NB-6	Tautog	PYS	1	7.0
01-Jun-05	NB-6	Weakfish	PYS	1	7.0
01-Jun-05	NB-6	Windowpane	PYS	2	14.0
01-Jun-05	NB-6	Winter flounder	PYS	6	42.0
01-Jun-05	NB-7	Atlantic menhaden	Egg	8	66.8
01-Jun-05	NB-7	Atlantic menhaden	PYS	14	116.8
01-Jun-05	NB-7	Bay anchovy	Egg	352	2937.5
01-Jun-05	NB-7	Weakfish	PYS	1	8.3
01-Jun-05	NB-7	Windowpane	PYS	5	41.7
01-Jun-05	PJ-3	Atlantic menhaden	Egg	8	59.2
01-Jun-05	PJ-3	Atlantic menhaden	PYS	37	273.8
01-Jun-05	PJ-3	Atlantic menhaden	UID	34	251.6
01-Jun-05	PJ-3	Bay anchovy	Egg	76	562.4
01-Jun-05	PJ-3	Labridae	Egg	48	355.2
01-Jun-05	PJ-3	Windowpane	PYS	8	59.2
02-Jun-05	PJ-2	Atlantic menhaden	Egg	592	3243.2
02-Jun-05	PJ-2	Atlantic menhaden	PYS	26	142.4
02-Jun-05	PJ-2	Atlantic menhaden	UID	14	76.7
02-Jun-05	PJ-2	Bay anchovy	Egg	528	2892.6
02-Jun-05	PJ-2	Labridae	Egg	256	1402.5
02-Jun-05	PJ-2	Windowpane	Egg	16	87.7
02-Jun-05	PJ-2	Windowpane	PYS	5	27.4
02-Jun-05	SB-1	Atlantic menhaden	Egg	2800	32644.2
02-Jun-05	SB-1	Bay anchovy	Egg	64	746.2
02-Jun-05	SB-1	Labridae	Egg	384	4476.9
02-Jun-05	SB-1	Windowpane	Egg	32	373.1
02-Jun-05	SB-1	Windowpane	PYS	1	11.7
02-Jun-05	SB-2	Atlantic menhaden	Egg	1008	9475.2
02-Jun-05	SB-2	Atlantic menhaden	PYS	2	18.8
02-Jun-05	SB-2	Atlantic menhaden	UID	2	18.8
02-Jun-05	SB-2	Bay anchovy	Egg	88	827.2
02-Jun-05	SB-2	Labridae	Egg	128	1203.2
02-Jun-05	SB-2	Windowpane	Egg	16	150.4
02-Jun-05	SB-3	Atlantic menhaden	Egg	3104	21089.0
02-Jun-05	SB-3	Atlantic menhaden	PYS	10	67.9
02-Jun-05	SB-3	Atlantic menhaden	UID	4	27.2
02-Jun-05	SB-3	Bay anchovy	Egg	288	1956.7
02-Jun-05	SB-3	Labridae	Egg	208	1413.2
02-Jun-05	SB-3	Windowpane	Egg	32	217.4
02-Jun-05	SB-3	Windowpane	PYS	3	20.4
02-Jun-05	SB-4	Atlantic menhaden	Egg	864	5958.8
02-Jun-05	SB-4	Atlantic menhaden	PYS	3	20.7
02-Jun-05	SB-4	Bay anchovy	Egg	80	551.7
02-Jun-05	SB-4	Conger eel	LEPTO	1	6.9
02-Jun-05	SB-4	Labridae	Egg	592	4082.9
02-Jun-05	SB-4	Windowpane	Egg	128	882.8
02-Jun-05	SB-4	Windowpane	PYS	12	82.8
02-Jun-05	SB-4	Winter flounder	PYS	9	62.1
13-Jun-05	PJ-3	Atlantic menhaden	Egg	256	1411.2
13-Jun-05	PJ-3	Atlantic menhaden	PYS	3	16.5

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
13-Jun-05	PJ-3	Atlantic menhaden	YS	1	5.5
13-Jun-05	PJ-3	Bay anchovy	Egg	1984	10937.0
13-Jun-05	PJ-3	Bay anchovy	PYS	5	27.6
13-Jun-05	PJ-3	Cunner	PYS	2	11.0
13-Jun-05	PJ-3	Labridae	Egg	704	3880.9
13-Jun-05	PJ-3	Tautog	PYS	7	38.6
13-Jun-05	PJ-3	Weakfish	PYS	2	11.0
13-Jun-05	PJ-3	Windowpane	PYS	6	33.1
13-Jun-05	PJ-4	Atlantic menhaden	Egg	512	2682.6
13-Jun-05	PJ-4	Atlantic menhaden	PYS	16	83.8
13-Jun-05	PJ-4	Atlantic menhaden	YS	5	26.2
13-Jun-05	PJ-4	Bay anchovy	Egg	2752	14419.2
13-Jun-05	PJ-4	Bay anchovy	PYS	11	57.6
13-Jun-05	PJ-4	Labridae	Egg	2560	13413.2
13-Jun-05	PJ-4	Northern pipefish	PYS	3	15.7
13-Jun-05	PJ-4	Prionotus sp.	Egg	640	3353.3
13-Jun-05	PJ-4	Tautog	PYS	1	5.2
13-Jun-05	PJ-4	Windowpane	Egg	640	3353.3
13-Jun-05	PJ-4	Windowpane	PYS	1	5.2
13-Jun-05	SB-1	Atlantic menhaden	Egg	96	1097.4
13-Jun-05	SB-1	Atlantic menhaden	PYS	4	45.7
13-Jun-05	SB-1	Bay anchovy	Egg	944	10790.8
13-Jun-05	SB-1	Bay anchovy	PYS	30	342.9
13-Jun-05	SB-1	Cunner	PYS	1	11.4
13-Jun-05	SB-1	Labridae	Egg	192	2194.7
13-Jun-05	SB-1	Northern pipefish	PYS	2	22.9
13-Jun-05	SB-1	Weakfish	PYS	1	11.4
13-Jun-05	SB-1	Windowpane	PYS	11	125.7
13-Jun-05	SB-2	Atlantic menhaden	Egg	80	813.7
13-Jun-05	SB-2	Atlantic menhaden	UID	2	20.3
13-Jun-05	SB-2	Bay anchovy	Egg	1136	11554.6
13-Jun-05	SB-2	Bay anchovy	PYS	4	40.7
13-Jun-05	SB-2	Labridae	Egg	384	3905.8
13-Jun-05	SB-2	Prionotus sp.	Egg	16	162.7
13-Jun-05	SB-2	Windowpane	PYS	2	20.3
13-Jun-05	SB-3	Atlantic menhaden	Egg	240	1028.1
13-Jun-05	SB-3	Atlantic menhaden	PYS	11	47.1
13-Jun-05	SB-3	Atlantic menhaden	YS	5	21.4
13-Jun-05	SB-3	Bay anchovy	Egg	656	2810.1
13-Jun-05	SB-3	Bay anchovy	PYS	12	51.4
13-Jun-05	SB-3	Cunner	PYS	1	4.3
13-Jun-05	SB-3	Labridae	Egg	112	479.8
13-Jun-05	SB-3	Northern pipefish	PYS	2	8.6
13-Jun-05	SB-3	Windowpane	PYS	4	17.1
13-Jun-05	SB-4	Atlantic menhaden	Egg	480	2403.0
13-Jun-05	SB-4	Atlantic menhaden	PYS	34	170.2
13-Jun-05	SB-4	Atlantic menhaden	YS	7	35.0
13-Jun-05	SB-4	Bay anchovy	Egg	1792	8971.0
13-Jun-05	SB-4	Bay anchovy	PYS	42	210.3
13-Jun-05	SB-4	Cunner	PYS	2	10.0
13-Jun-05	SB-4	Labridae	Egg	480	2403.0
13-Jun-05	SB-4	Northern pipefish	PYS	1	5.0

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
13-Jun-05	SB-4	Prionotus sp.	Egg	32	160.2
13-Jun-05	SB-4	Tautog	PYS	3	15.0
13-Jun-05	SB-4	Weakfish	YS	2	10.0
13-Jun-05	SB-4	Windowpane	Egg	96	480.6
13-Jun-05	SB-4	Windowpane	PYS	23	115.1
13-Jun-05	SB-5	Atlantic menhaden	Egg	64	345.5
13-Jun-05	SB-5	Atlantic menhaden	PYS	3	16.2
13-Jun-05	SB-5	Atlantic menhaden	YS	3	16.2
13-Jun-05	SB-5	Bay anchovy	Egg	1152	6219.8
13-Jun-05	SB-5	Bay anchovy	PYS	5	27.0
13-Jun-05	SB-5	Labridae	Egg	128	691.1
13-Jun-05	SB-5	Northern pipefish	PYS	1	5.4
13-Jun-05	SB-5	Prionotus sp.	Egg	32	172.8
13-Jun-05	SB-5	Tautog	PYS	3	16.2
13-Jun-05	SB-5	Windowpane	PYS	16	86.4
14-Jun-05	LB-1	Atlantic menhaden	Egg	16	96.7
14-Jun-05	LB-1	Atlantic menhaden	PYS	5	30.2
14-Jun-05	LB-1	Atlantic silverside	PYS	3	18.1
14-Jun-05	LB-1	Bay anchovy	Egg	1008	6094.2
14-Jun-05	LB-1	Bay anchovy	PYS	1	6.0
14-Jun-05	LB-1	Labridae	Egg	272	1644.5
14-Jun-05	LB-1	Northern pipefish	PYS	3	18.1
14-Jun-05	LB-1	Prionotus sp.	Egg	240	1451.0
14-Jun-05	LB-1	Tautog	PYS	3	18.1
14-Jun-05	LB-1	Weakfish	Egg	64	386.9
14-Jun-05	LB-1	Windowpane	JUV	1	6.0
14-Jun-05	LB-1	Windowpane	PYS	5	30.2
14-Jun-05	LB-2	Atlantic menhaden	Egg	48	174.4
14-Jun-05	LB-2	Bay anchovy	Egg	464	1686.2
14-Jun-05	LB-2	Bay anchovy	PYS	1	3.6
14-Jun-05	LB-2	Feather blenny	PYS	1	3.6
14-Jun-05	LB-2	Labridae	Egg	400	1453.6
14-Jun-05	LB-2	Prionotus sp.	Egg	224	814.0
14-Jun-05	LB-2	Tautog	PYS	1	3.6
14-Jun-05	LB-2	Windowpane	Egg	80	290.7
14-Jun-05	LB-2	Windowpane	PYS	17	61.8
14-Jun-05	LB-2	Winter flounder	PYS	2	7.3
14-Jun-05	LB-3	Atlantic menhaden	Egg	96	733.1
14-Jun-05	LB-3	Atlantic menhaden	PYS	6	45.8
14-Jun-05	LB-3	Atlantic menhaden	YS	5	38.2
14-Jun-05	LB-3	Bay anchovy	Egg	1856	14173.2
14-Jun-05	LB-3	Bay anchovy	PYS	39	297.8
14-Jun-05	LB-3	Labridae	Egg	448	3421.1
14-Jun-05	LB-3	Northern pipefish	PYS	2	15.3
14-Jun-05	LB-3	Prionotus sp.	Egg	960	7331.0
14-Jun-05	LB-3	Tautog	PYS	4	30.5
14-Jun-05	LB-3	Weakfish	PYS	2	15.3
14-Jun-05	LB-3	Windowpane	Egg	672	5131.7
14-Jun-05	LB-3	Windowpane	PYS	6	45.8
14-Jun-05	LB-4	Atlantic menhaden	Egg	16	129.2
14-Jun-05	LB-4	Atlantic menhaden	PYS	6	48.5
14-Jun-05	LB-4	Bay anchovy	Egg	432	3489.4

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
14-Jun-05	LB-4	Cunner	PYS	1	8.1
14-Jun-05	LB-4	Labridae	Egg	432	3489.4
14-Jun-05	LB-4	Prionotus sp.	Egg	144	1163.1
14-Jun-05	LB-4	Windowpane	Egg	80	646.2
14-Jun-05	LB-4	Windowpane	PYS	10	80.8
14-Jun-05	LB-5	Atlantic menhaden	PYS	12	76.9
14-Jun-05	LB-5	Bay anchovy	Egg	1184	7588.3
14-Jun-05	LB-5	Bay anchovy	PYS	6	38.5
14-Jun-05	LB-5	Cunner	PYS	1	6.4
14-Jun-05	LB-5	Labridae	Egg	256	1640.7
14-Jun-05	LB-5	Northern pipefish	PYS	6	38.5
14-Jun-05	LB-5	Prionotus sp.	Egg	416	2666.2
14-Jun-05	LB-5	Tautog	PYS	3	19.2
14-Jun-05	LB-5	Weakfish	PYS	2	12.8
14-Jun-05	LB-5	Windowpane	Egg	352	2256.0
14-Jun-05	LB-5	Windowpane	PYS	59	378.1
14-Jun-05	LB-6	Atlantic menhaden	Egg	128	667.8
14-Jun-05	LB-6	Atlantic menhaden	PYS	5	26.1
14-Jun-05	LB-6	Bay anchovy	Egg	2176	11352.2
14-Jun-05	LB-6	Labridae	Egg	448	2337.2
14-Jun-05	LB-6	Northern pipefish	PYS	1	5.2
14-Jun-05	LB-6	Prionotus sp.	Egg	384	2003.3
14-Jun-05	LB-6	Windowpane	Egg	512	2671.1
14-Jun-05	LB-6	Windowpane	PYS	3	15.7
14-Jun-05	SB-6	Atlantic menhaden	Egg	192	829.6
14-Jun-05	SB-6	Atlantic menhaden	PYS	456	1970.2
14-Jun-05	SB-6	Bay anchovy	Egg	3328	14379.2
14-Jun-05	SB-6	Bay anchovy	PYS	776	3352.9
14-Jun-05	SB-6	Cunner	PYS	24	103.7
14-Jun-05	SB-6	Labridae	Egg	768	3318.3
14-Jun-05	SB-6	Northern pipefish	PYS	80	345.7
14-Jun-05	SB-6	Prionotus sp.	Egg	448	1935.7
14-Jun-05	SB-6	Tautog	PYS	16	69.1
14-Jun-05	SB-6	Tautog	YS	16	69.1
14-Jun-05	SB-6	Weakfish	PYS	40	172.8
14-Jun-05	SB-6	Windowpane	Egg	128	553.0
14-Jun-05	SB-6	Windowpane	PYS	256	1106.1
15-Jun-05	AK-1	Atlantic menhaden	Egg	224	1547.0
15-Jun-05	AK-1	Atlantic menhaden	PYS	8	55.3
15-Jun-05	AK-1	Atlantic menhaden	YS	5	34.5
15-Jun-05	AK-1	Bay anchovy	Egg	1376	9503.2
15-Jun-05	AK-1	Bay anchovy	PYS	26	179.6
15-Jun-05	AK-1	Goosefish	YS	1	6.9
15-Jun-05	AK-1	Labridae	Egg	320	2210.0
15-Jun-05	AK-1	Northern pipefish	PYS	4	27.6
15-Jun-05	AK-1	Tautog	PYS	3	20.7
15-Jun-05	AK-1	Weakfish	PYS	7	48.3
15-Jun-05	AK-1	Windowpane	PYS	4	27.6
15-Jun-05	AK-2	Atlantic menhaden	Egg	288	1634.3
15-Jun-05	AK-2	Atlantic menhaden	PYS	13	73.8
15-Jun-05	AK-2	Atlantic menhaden	YS	4	22.7
15-Jun-05	AK-2	Bay anchovy	Egg	896	5084.5

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
15-Jun-05	AK-2	Bay anchovy	PYS	41	232.7
15-Jun-05	AK-2	Labridae	Egg	192	1089.5
15-Jun-05	AK-2	Northern pipefish	PYS	7	39.7
15-Jun-05	AK-2	Tautog	PYS	4	22.7
15-Jun-05	AK-2	Weakfish	PYS	6	34.0
15-Jun-05	AK-2	Windowpane	PYS	5	28.4
15-Jun-05	AK-3	Atlantic menhaden	Egg	384	2213.8
15-Jun-05	AK-3	Atlantic menhaden	PYS	30	173.0
15-Jun-05	AK-3	Atlantic menhaden	UID	10	57.7
15-Jun-05	AK-3	Atlantic menhaden	YS	18	103.8
15-Jun-05	AK-3	Bay anchovy	Egg	1664	9593.2
15-Jun-05	AK-3	Bay anchovy	PYS	29	167.2
15-Jun-05	AK-3	Gobiid unidentified	PYS	1	5.8
15-Jun-05	AK-3	Goosefish	PYS	1	5.8
15-Jun-05	AK-3	Labridae	Egg	1088	6272.5
15-Jun-05	AK-3	Northern pipefish	PYS	4	23.1
15-Jun-05	AK-3	Tautog	YS	2	11.5
15-Jun-05	AK-3	Weakfish	PYS	7	40.4
15-Jun-05	AK-3	Windowpane	Egg	224	1291.4
15-Jun-05	AK-3	Windowpane	PYS	4	23.1
15-Jun-05	AK-3	Windowpane	YS	1	5.8
15-Jun-05	AK-4	Atlantic menhaden	Egg	256	1945.9
15-Jun-05	AK-4	Atlantic menhaden	PYS	88	668.9
15-Jun-05	AK-4	Atlantic menhaden	YS	6	45.6
15-Jun-05	AK-4	Bay anchovy	Egg	13888	105563.0
15-Jun-05	AK-4	Bay anchovy	PYS	302	2295.5
15-Jun-05	AK-4	Gobiid unidentified	PYS	8	60.8
15-Jun-05	AK-4	Gobiid unidentified	YS	2	15.2
15-Jun-05	AK-4	Labridae	Egg	320	2432.3
15-Jun-05	AK-4	Northern pipefish	PYS	6	45.6
15-Jun-05	AK-4	Tautog	PYS	4	30.4
15-Jun-05	AK-4	Tautog	YS	6	45.6
15-Jun-05	AK-4	Weakfish	PYS	8	60.8
15-Jun-05	AK-4	Windowpane	PYS	2	15.2
15-Jun-05	AK-4	Windowpane	YS	2	15.2
15-Jun-05	NB-3	Atlantic menhaden	Egg	512	3853.7
15-Jun-05	NB-3	Atlantic menhaden	PYS	21	158.1
15-Jun-05	NB-3	Atlantic menhaden	YS	13	97.8
15-Jun-05	NB-3	Bay anchovy	Egg	5472	41185.9
15-Jun-05	NB-3	Bay anchovy	PYS	131	986.0
15-Jun-05	NB-3	Bay anchovy	YS	18	135.5
15-Jun-05	NB-3	Cunner	PYS	1	7.5
15-Jun-05	NB-3	Northern pipefish	PYS	5	37.6
15-Jun-05	NB-3	Tautog	PYS	2	15.1
15-Jun-05	NB-3	Weakfish	PYS	14	105.4
15-Jun-05	NB-3	Windowpane	PYS	5	37.6
15-Jun-05	NB-4	Atlantic menhaden	Egg	96	494.1
15-Jun-05	NB-4	Atlantic menhaden	PYS	32	164.7
15-Jun-05	NB-4	Atlantic menhaden	YS	1	5.1
15-Jun-05	NB-4	Bay anchovy	Egg	5664	29154.8
15-Jun-05	NB-4	Bay anchovy	PYS	138	710.3
15-Jun-05	NB-4	Bay anchovy	YS	3	15.4

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
15-Jun-05	NB-4	Cunner	PYS	1	5.1
15-Jun-05	NB-4	Labridae	Egg	384	1976.6
15-Jun-05	NB-4	Northern pipefish	PYS	30	154.4
15-Jun-05	NB-4	Tautog	PYS	20	102.9
15-Jun-05	NB-4	Weakfish	PYS	21	108.1
15-Jun-05	NB-4	Windowpane	PYS	17	87.5
15-Jun-05	NB-5	American shad	PYS	34	228.4
15-Jun-05	NB-5	American shad	YS	5	33.6
15-Jun-05	NB-5	Atlantic menhaden	Egg	160	1074.7
15-Jun-05	NB-5	Bay anchovy	Egg	1696	11392.2
15-Jun-05	NB-5	Bay anchovy	PYS	19	127.6
15-Jun-05	NB-5	Cunner	PYS	1	6.7
15-Jun-05	NB-5	Hogchocker	PYS	1	6.7
15-Jun-05	NB-5	Labridae	Egg	304	2042.0
15-Jun-05	NB-5	Northern pipefish	PYS	4	26.9
15-Jun-05	NB-5	Prionotus sp.	Egg	48	322.4
15-Jun-05	NB-5	Tautog	PYS	3	20.2
15-Jun-05	NB-5	Weakfish	Egg	96	644.8
15-Jun-05	NB-5	Weakfish	PYS	5	33.6
15-Jun-05	NB-5	Windowpane	PYS	2	13.4
15-Jun-05	NB-5	Windowpane	YS	1	6.7
15-Jun-05	NB-6	Atlantic menhaden	Egg	64	328.0
15-Jun-05	NB-6	Atlantic menhaden	PYS	15	76.9
15-Jun-05	NB-6	Atlantic menhaden	YS	7	35.9
15-Jun-05	NB-6	Bay anchovy	Egg	1632	8364.2
15-Jun-05	NB-6	Bay anchovy	PYS	5	25.6
15-Jun-05	NB-6	Labridae	Egg	240	1230.0
15-Jun-05	NB-6	Northern pipefish	PYS	2	10.3
15-Jun-05	NB-6	Prionotus sp.	Egg	64	328.0
15-Jun-05	NB-6	Tautog	PYS	1	5.1
15-Jun-05	NB-6	Weakfish	Egg	48	246.0
15-Jun-05	NB-6	Weakfish	PYS	5	25.6
15-Jun-05	NB-6	Windowpane	PYS	2	10.3
15-Jun-05	NB-7	Atlantic menhaden	Egg	320	2276.2
15-Jun-05	NB-7	Atlantic menhaden	PYS	15	106.7
15-Jun-05	NB-7	Atlantic menhaden	YS	3	21.3
15-Jun-05	NB-7	Bay anchovy	Egg	8608	61229.4
15-Jun-05	NB-7	Bay anchovy	PYS	54	384.1
15-Jun-05	NB-7	Bay anchovy	YS	5	35.6
15-Jun-05	NB-7	Cunner	PYS	1	7.1
15-Jun-05	NB-7	Gobiid unidentified	PYS	2	14.2
15-Jun-05	NB-7	Gobiid unidentified	YS	2	14.2
15-Jun-05	NB-7	Labridae	Egg	32	227.6
15-Jun-05	NB-7	Northern pipefish	PYS	4	28.5
15-Jun-05	NB-7	Tautog	PYS	1	7.1
15-Jun-05	NB-7	Weakfish	PYS	2	14.2
15-Jun-05	NB-7	Windowpane	PYS	2	14.2
16-Jun-05	PJ-1	Atlantic menhaden	Egg	272	3363.7
16-Jun-05	PJ-1	Atlantic menhaden	PYS	6	74.2
16-Jun-05	PJ-1	Bay anchovy	Egg	1216	15037.9
16-Jun-05	PJ-1	Bay anchovy	PYS	69	853.3
16-Jun-05	PJ-1	Cunner	PYS	1	12.4

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
16-Jun-05	PJ-1	Labridae	Egg	288	3561.6
16-Jun-05	PJ-1	Northern pipefish	PYS	3	37.1
16-Jun-05	PJ-1	Tautog	PYS	3	37.1
16-Jun-05	PJ-1	Weakfish	PYS	7	86.6
16-Jun-05	PJ-1	Windowpane	PYS	17	210.2
16-Jun-05	PJ-2	Atlantic menhaden	Egg	32	203.7
16-Jun-05	PJ-2	Atlantic menhaden	PYS	1	6.4
16-Jun-05	PJ-2	Atlantic menhaden	YS	3	19.1
16-Jun-05	PJ-2	Bay anchovy	Egg	2592	16498.2
16-Jun-05	PJ-2	Bay anchovy	PYS	150	954.8
16-Jun-05	PJ-2	Cunner	PYS	1	6.4
16-Jun-05	PJ-2	Labridae	Egg	320	2036.8
16-Jun-05	PJ-2	Northern pipefish	PYS	13	82.7
16-Jun-05	PJ-2	Prionotus sp.	PYS	1	6.4
16-Jun-05	PJ-2	Tautog	PYS	13	82.7
16-Jun-05	PJ-2	Weakfish	PYS	9	57.3
16-Jun-05	PJ-2	Windowpane	PYS	5	31.8
16-Jun-05	PJ-5	Atlantic menhaden	Egg	64	419.7
16-Jun-05	PJ-5	Atlantic menhaden	PYS	2	13.1
16-Jun-05	PJ-5	Bay anchovy	Egg	1952	12800.1
16-Jun-05	PJ-5	Bay anchovy	PYS	28	183.6
16-Jun-05	PJ-5	Labridae	Egg	896	5875.5
16-Jun-05	PJ-5	Northern pipefish	PYS	1	6.6
16-Jun-05	PJ-5	Prionotus sp.	Egg	256	1678.7
16-Jun-05	PJ-5	Tautog	PYS	1	6.6
16-Jun-05	PJ-5	Weakfish	Egg	64	419.7
16-Jun-05	PJ-5	Weakfish	PYS	6	39.3
16-Jun-05	PJ-5	Windowpane	Egg	32	209.8
16-Jun-05	PJ-5	Windowpane	PYS	1	6.6
05-Jul-05	AK-1	Bay anchovy	Egg	2288	14744.3
05-Jul-05	AK-1	Bay anchovy	PYS	84	541.3
05-Jul-05	AK-1	Gobiid unidentified	PYS	314	2023.5
05-Jul-05	AK-1	Labridae	Egg	192	1237.3
05-Jul-05	AK-1	Northern pipefish	PYS	4	25.8
05-Jul-05	AK-1	Weakfish	Egg	496	3196.3
05-Jul-05	AK-2	Bay anchovy	Egg	24	162.0
05-Jul-05	AK-2	Bay anchovy	PYS	31	209.3
05-Jul-05	AK-2	Gobiid unidentified	PYS	125	843.9
05-Jul-05	AK-2	Labridae	Egg	56	378.0
05-Jul-05	AK-2	Northern pipefish	PYS	4	27.0
05-Jul-05	AK-2	Prionotus sp.	Egg	8	54.0
05-Jul-05	AK-2	Weakfish	Egg	32	216.0
05-Jul-05	AK-2	Weakfish	PYS	1	6.8
05-Jul-05	AK-3	Bay anchovy	Egg	4192	24709.6
05-Jul-05	AK-3	Bay anchovy	PYS	180	1061.0
05-Jul-05	AK-3	Gobiid unidentified	PYS	576	3395.2
05-Jul-05	AK-3	Labridae	Egg	96	565.9
05-Jul-05	AK-3	Northern pipefish	JUV	8	47.2
05-Jul-05	AK-3	Northern pipefish	PYS	8	47.2
05-Jul-05	AK-3	Weakfish	Egg	368	2169.2
05-Jul-05	AK-3	Weakfish	PYS	28	165.0
05-Jul-05	AK-4	Bay anchovy	Egg	456	3221.0

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
05-Jul-05	AK-4	Bay anchovy	PYS	33	233.1
05-Jul-05	AK-4	Gobiid unidentified	PYS	159	1123.1
05-Jul-05	AK-4	Northern pipefish	JUV	2	14.1
05-Jul-05	AK-4	Northern pipefish	PYS	2	14.1
05-Jul-05	AK-4	Winter flounder	JUV	1	7.1
05-Jul-05	NB-3	Bay anchovy	Egg	556	3286.0
05-Jul-05	NB-3	Bay anchovy	PYS	25	147.8
05-Jul-05	NB-3	Gobiid unidentified	PYS	3	17.7
05-Jul-05	NB-3	Labridae	Egg	4	23.6
05-Jul-05	NB-3	Prionotus sp.	Egg	4	23.6
05-Jul-05	NB-3	Weakfish	Egg	44	260.0
05-Jul-05	NB-4	Bay anchovy	Egg	1536	8545.0
05-Jul-05	NB-4	Bay anchovy	PYS	34	189.1
05-Jul-05	NB-4	Gobiid unidentified	PYS	7	38.9
05-Jul-05	NB-4	Labridae	Egg	8	44.5
05-Jul-05	NB-4	Northern pipefish	PYS	5	27.8
05-Jul-05	NB-4	Weakfish	Egg	16	89.0
05-Jul-05	NB-4	Weakfish	PYS	1	5.6
05-Jul-05	NB-5	Bay anchovy	Egg	1872	10958.3
05-Jul-05	NB-5	Bay anchovy	PYS	58	339.5
05-Jul-05	NB-5	Cunner	PYS	1	5.9
05-Jul-05	NB-5	Gobiid unidentified	PYS	40	234.2
05-Jul-05	NB-5	Labridae	Egg	224	1311.2
05-Jul-05	NB-5	Northern pipefish	PYS	3	17.6
05-Jul-05	NB-5	Prionotus sp.	PYS	1	5.9
05-Jul-05	NB-5	Tautog	PYS	1	5.9
05-Jul-05	NB-5	Weakfish	Egg	3392	19856.0
05-Jul-05	NB-5	Weakfish	PYS	61	357.1
05-Jul-05	NB-5	Winter flounder	JUV	1	5.9
05-Jul-05	NB-6	Bay anchovy	Egg	1184	6958.4
05-Jul-05	NB-6	Bay anchovy	PYS	19	111.7
05-Jul-05	NB-6	Gobiid unidentified	PYS	102	599.5
05-Jul-05	NB-6	Labridae	Egg	256	1504.5
05-Jul-05	NB-6	Prionotus sp.	Egg	16	94.0
05-Jul-05	NB-6	Weakfish	Egg	2224	13070.6
05-Jul-05	NB-6	Weakfish	JUV	1	5.9
05-Jul-05	NB-6	Weakfish	PYS	2	11.8
05-Jul-05	NB-7	Atlantic silverside	PYS	1	7.6
05-Jul-05	NB-7	Bay anchovy	Egg	304	2296.0
05-Jul-05	NB-7	Bay anchovy	PYS	16	120.8
05-Jul-05	NB-7	Gobiid unidentified	PYS	2	15.1
05-Jul-05	NB-7	Labridae	Egg	32	241.7
05-Jul-05	NB-7	Northern pipefish	PYS	7	52.9
05-Jul-05	NB-7	Northern puffer	PYS	1	7.6
05-Jul-05	NB-7	Weakfish	Egg	64	483.4
05-Jul-05	PJ-3	Bay anchovy	Egg	6464	34235.0
05-Jul-05	PJ-3	Bay anchovy	PYS	125	662.0
05-Jul-05	PJ-3	Gobiid unidentified	PYS	50	264.8
05-Jul-05	PJ-3	Labridae	Egg	64	339.0
05-Jul-05	PJ-3	Northern pipefish	PYS	2	10.6
05-Jul-05	PJ-3	Weakfish	Egg	32	169.5
06-Jul-05	SB-1	Bay anchovy	Egg	12	152.2

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
06-Jul-05	SB-1	Bay anchovy	PYS	35	444.1
06-Jul-05	SB-1	Gobiid unidentified	PYS	36	456.7
06-Jul-05	SB-1	Labridae	Egg	116	1471.7
06-Jul-05	SB-1	Northern pipefish	PYS	1	12.7
06-Jul-05	SB-1	Weakfish	Egg	36	456.7
06-Jul-05	SB-2	Bay anchovy	Egg	16	168.7
06-Jul-05	SB-2	Bay anchovy	PYS	12	126.5
06-Jul-05	SB-2	Gobiid unidentified	PYS	34	358.6
06-Jul-05	SB-2	Labridae	Egg	308	3248.1
06-Jul-05	SB-2	Prionotus sp.	Egg	4	42.2
06-Jul-05	SB-2	Weakfish	Egg	16	168.7
06-Jul-05	SB-3	Atlantic menhaden	PYS	1	6.4
06-Jul-05	SB-3	Bay anchovy	Egg	208	1328.6
06-Jul-05	SB-3	Bay anchovy	PYS	54	344.9
06-Jul-05	SB-3	Butterfish	JUV	1	6.4
06-Jul-05	SB-3	Cunner	PYS	3	19.2
06-Jul-05	SB-3	Gobiid unidentified	PYS	74	472.7
06-Jul-05	SB-3	Labridae	Egg	176	1124.2
06-Jul-05	SB-3	Northern pipefish	PYS	3	19.2
06-Jul-05	SB-3	Prionotus sp.	PYS	1	6.4
06-Jul-05	SB-3	Tautog	PYS	3	19.2
06-Jul-05	SB-3	Weakfish	Egg	48	306.6
06-Jul-05	SB-4	Atlantic menhaden	PYS	2	11.8
06-Jul-05	SB-4	Bay anchovy	PYS	20	118.5
06-Jul-05	SB-4	Gobiid unidentified	PYS	25	148.1
06-Jul-05	SB-4	Labridae	Egg	288	1706.4
06-Jul-05	SB-4	Northern pipefish	PYS	2	11.8
06-Jul-05	SB-4	Prionotus sp.	Egg	88	521.4
06-Jul-05	SB-4	Weakfish	Egg	16	94.8
06-Jul-05	SB-4	Weakfish	PYS	1	5.9
06-Jul-05	SB-5	Atlantic menhaden	PYS	2	13.8
06-Jul-05	SB-5	Bay anchovy	Egg	96	661.7
06-Jul-05	SB-5	Bay anchovy	PYS	93	641.0
06-Jul-05	SB-5	Cunner	PYS	3	20.7
06-Jul-05	SB-5	Gobiid unidentified	PYS	34	234.4
06-Jul-05	SB-5	Goosefish	Egg	16	110.3
06-Jul-05	SB-5	Labridae	Egg	272	1874.9
06-Jul-05	SB-5	Northern pipefish	PYS	1	6.9
06-Jul-05	SB-5	Prionotus sp.	Egg	200	1378.6
06-Jul-05	SB-5	Weakfish	Egg	32	220.6
06-Jul-05	SB-6	Atlantic menhaden	PYS	11	84.8
06-Jul-05	SB-6	Bay anchovy	Egg	328	2528.9
06-Jul-05	SB-6	Bay anchovy	PYS	38	293.0
06-Jul-05	SB-6	Cunner	PYS	17	131.1
06-Jul-05	SB-6	Fourspot flounder	PYS	1	7.7
06-Jul-05	SB-6	Gobiid unidentified	PYS	136	1048.6
06-Jul-05	SB-6	Labridae	Egg	440	3392.5
06-Jul-05	SB-6	Northern pipefish	PYS	1	7.7
06-Jul-05	SB-6	Prionotus sp.	Egg	240	1850.4
06-Jul-05	SB-6	Tautog	PYS	1	7.7
06-Jul-05	SB-6	Unidentified	UID	4	30.8
06-Jul-05	SB-6	Weakfish	Egg	104	801.9

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Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
06-Jul-05	SB-6	Weakfish	PYS	2	15.4
07-Jul-05	LB-1	Bay anchovy	Egg	96	978.6
07-Jul-05	LB-1	Bay anchovy	PYS	3	30.6
07-Jul-05	LB-1	Gadid unidentified	Egg	32	326.2
07-Jul-05	LB-1	Gobiid unidentified	PYS	27	275.2
07-Jul-05	LB-1	Labridae	Egg	68	693.2
07-Jul-05	LB-1	Northern pipefish	PYS	1	10.2
07-Jul-05	LB-1	Prionotus sp.	Egg	24	244.6
07-Jul-05	LB-1	Tautog	PYS	1	10.2
07-Jul-05	LB-2	Bay anchovy	Egg	10	107.9
07-Jul-05	LB-2	Gadid unidentified	Egg	58	626.1
07-Jul-05	LB-2	Gobiid unidentified	PYS	3	32.4
07-Jul-05	LB-2	Labridae	Egg	58	626.1
07-Jul-05	LB-2	Prionotus sp.	Egg	18	194.3
07-Jul-05	LB-3	Bay anchovy	PYS	416	2508.7
07-Jul-05	LB-3	Gobiid unidentified	PYS	5104	30779.4
07-Jul-05	LB-3	Labridae	Egg	10	60.3
07-Jul-05	LB-3	Northern pipefish	PYS	32	193.0
07-Jul-05	LB-3	Prionotus sp.	Egg	74	446.3
07-Jul-05	LB-4	Atlantic menhaden	PYS	1	5.6
07-Jul-05	LB-4	Bay anchovy	Egg	16	90.2
07-Jul-05	LB-4	Bay anchovy	PYS	20	112.8
07-Jul-05	LB-4	Gobiid unidentified	PYS	8	45.1
07-Jul-05	LB-4	Labridae	Egg	64	361.0
07-Jul-05	LB-4	Northern pipefish	PYS	7	39.5
07-Jul-05	LB-4	Prionotus sp.	Egg	480	2707.2
07-Jul-05	LB-4	Weakfish	Egg	64	361.0
07-Jul-05	LB-4	Weakfish	PYS	1	5.6
07-Jul-05	LB-4	Windowpane	PYS	3	16.9
07-Jul-05	LB-5	Atlantic menhaden	PYS	6	25.3
07-Jul-05	LB-5	Bay anchovy	Egg	60	252.7
07-Jul-05	LB-5	Bay anchovy	PYS	14	59.0
07-Jul-05	LB-5	Butterfish	PYS	2	8.4
07-Jul-05	LB-5	Cunner	PYS	2	8.4
07-Jul-05	LB-5	Gobiid unidentified	PYS	402	1693.3
07-Jul-05	LB-5	Labridae	Egg	52	219.0
07-Jul-05	LB-5	Northern pipefish	PYS	10	42.1
07-Jul-05	LB-5	Prionotus sp.	Egg	12	50.5
07-Jul-05	LB-5	Tautog	PYS	18	75.8
07-Jul-05	LB-6	Atlantic menhaden	PYS	9	52.5
07-Jul-05	LB-6	Bay anchovy	PYS	2	11.7
07-Jul-05	LB-6	Cunner	PYS	1	5.8
07-Jul-05	LB-6	Gobiid unidentified	PYS	7	40.8
07-Jul-05	LB-6	Northern pipefish	PYS	11	64.1
07-Jul-05	LB-6	Northern puffer	PYS	1	5.8
07-Jul-05	LB-6	Prionotus sp.	Egg	18	105.0
07-Jul-05	LB-6	Prionotus sp.	PYS	1	5.8
07-Jul-05	LB-6	Tautog	PYS	1	5.8
07-Jul-05	LB-6	Weakfish	PYS	18	105.0
07-Jul-05	PJ-1	Bay anchovy	Egg	3152	20648.2
07-Jul-05	PJ-1	Bay anchovy	PYS	36	235.8
07-Jul-05	PJ-1	Gadid unidentified	Egg	208	1362.6

Appendix B. Ichthyoplankton (Epibenthic Sled) life stage densities by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000 m^3)
07-Jul-05	PJ-1	Gobiid unidentified	PYS	111	727.1
07-Jul-05	PJ-1	Labridae	Egg	160	1048.1
07-Jul-05	PJ-1	Northern pipefish	PYS	10	65.5
07-Jul-05	PJ-2	Atlantic menhaden	PYS	2	12.0
07-Jul-05	PJ-2	Bay anchovy	Egg	4544	27370.3
07-Jul-05	PJ-2	Bay anchovy	PYS	77	463.8
07-Jul-05	PJ-2	Gobiid unidentified	PYS	44	265.0
07-Jul-05	PJ-2	Labridae	Egg	256	1542.0
07-Jul-05	PJ-2	Northern pipefish	PYS	1	6.0
07-Jul-05	PJ-2	Tautog	PYS	1	6.0
07-Jul-05	PJ-4	Bay anchovy	Egg	608	3417.6
07-Jul-05	PJ-4	Bay anchovy	PYS	24	134.9
07-Jul-05	PJ-4	Gadid unidentified	Egg	560	3147.7
07-Jul-05	PJ-4	Gobiid unidentified	PYS	3	16.9
07-Jul-05	PJ-4	Labridae	Egg	352	1978.6
07-Jul-05	PJ-4	Northern pipefish	PYS	3	16.9
07-Jul-05	PJ-4	Prionotus sp.	Egg	752	4227.0
07-Jul-05	PJ-4	Weakfish	PYS	11	61.8
07-Jul-05	PJ-5	Bay anchovy	Egg	1552	9103.3
07-Jul-05	PJ-5	Bay anchovy	PYS	97	569.0
07-Jul-05	PJ-5	Gobiid unidentified	PYS	19	111.4
07-Jul-05	PJ-5	Labridae	Egg	336	1970.8
07-Jul-05	PJ-5	Prionotus sp.	Egg	96	563.1

Appendix C

Water Quality data by date and station sampled during the 2005 Aquatic Biological Survey.

Appendix C. Water Quality data by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Temperature (ºC)	DO (mg/l)	Conductivity (SPC@25)	Salinity (ppt)
10-Jan-05	LB-3	6	10.1	39700	25
10-Jan-05	LB-5	5.8	10	37690	23.5
10-Jan-05	LB-6	5.9	10	36860	22.9
10-Jan-05	LB-4	6.4	9.7	43490	27.5
10-Jan-05	LB-2	6	9.8	39510	25
10-Jan-05	LB-1	5.9	10	37650	23.5
11-Jan-05	AK-3	5.6	9.8	27290	16.5
11-Jan-05	AK-4	5.8	9.5	26310	15.9
11-Jan-05	AK-2	5.5	9.8	27460	16.6
11-Jan-05	AK-1	5.3	9.9	27000	16.4
11-Jan-05	NB-7	5.2	9.9	28750	17.5
11-Jan-05	NB-6	5.4	9.5	29750	18.2
11-Jan-05	NB-5	5.4	9	28750	17.5
11-Jan-05	NB-4	5.1	9.1	21460	12.7
11-Jan-05	NB-3	5.1	9.3	16600	9.7
12-Jan-05	SB-2				
12-Jan-05	SB-1	5.7	9.8	38100	23.7
12-Jan-05	SB-4	5.8	9.7	39780	25
12-Jan-05	SB-3	5.7	9.7	39760	25.9
12-Jan-05	SB-6	5.9	9.5	42700	27
12-Jan-05	SB-5	5.9	9.5	41990	26.5
12-Jan-05	PJ-5	5.9	9.6	41600	26.2
12-Jan-05	PJ-3	5	9.8	31350	19.1
13-Jan-05	PJ-1	5.5	10	34780	21.5
13-Jan-05	PJ-4	5.8	9.8	38710	24.3
13-Jan-05	PJ-2	5.4	10.1	30770	18.8
25-Jan-05	LB-3	2.4	9.8	43000	26.8
25-Jan-05	LB-5	0.6	10.8	37800	23.1
25-Jan-05	LB-6	2.6	9.4	45000	28.1
25-Jan-05	LB-4	3.6	8.7	46070	29
25-Jan-05	LB-2	4.4	8.5	47680	30.3
25-Jan-05	LB-1	2	9.4	40600	25.2
25-Jan-05	SB-6	2.1	9.3	40010	24.8
26-Jan-05	SB-1	2.5	11.7	41560	25.9
26-Jan-05	SB-4	2.9	11.4	43260	27.1
26-Jan-05	SB-3	2	12.1	38140	23.4
26-Jan-05	SB-5	3	11.3	44600	28.1
26-Jan-05	PJ-1	1.9	11.9	34800	22.1
26-Jan-05	PJ-5	2.3	11.4	38640	23.8
26-Jan-05	PJ-3	1.7	11.8	35100	21.4
26-Jan-05	PJ-4	2.7	11	42160	26.2
26-Jan-05	PJ-2	1.9	12	35075	21.5
07-Feb-05	AK-1	3	10.7	31100	18.9
07-Feb-05	AK-2	2.4	10.9	34600	21.1
07-Feb-05	AK-4	3.3	10.2	30230	18.3

Appendix C. Water Quality data by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Temperature (ºC)	DO (mg/l)	Conductivity (SPC@25)	Salinity (ppt)
07-Feb-05	AK-3	2.5	10.4	32860	20
07-Feb-05	NB-6	2.4	10.4	32980	20.1
07-Feb-05	NB-5	2.4	10.2	33350	20.3
07-Feb-05	NB-4	2.7	9.9	27900	16.8
07-Feb-05	NB-3	2.4	10.2	29900	17.9
07-Feb-05	NB-7	2.3	10	31990	19.4
08-Feb-05	LB-3	2.7	11.5	41910	26.1
08-Feb-05	LB-5	2.6	11.3	40060	24.8
08-Feb-05	LB-6	2.6	10.8	40510	25.2
08-Feb-05	LB-4	2.9	10.7	44540	28
08-Feb-05	LB-1	2.8	10.6	41600	25.9
08-Feb-05	LB-2	2.7	10.4	45170	28.3
09-Feb-05	PJ-2	2.8	12.6	39040	24.2
09-Feb-05	PJ-1	2.8	12.5	40740	25.4
09-Feb-05	PJ-4	2.8	12.4	40950	25.5
09-Feb-05	PJ-3	2.8	12.6	36600	22.6
09-Feb-05	PJ-5	3	12.4	39950	24.8
09-Feb-05	SB-5	3	12.3	39470	24.5
09-Feb-05	SB-6	2.8	12.5	40140	24.9
09-Feb-05	SB-3	2.8	12.2	38650	23.9
09-Feb-05	SB-4	2.8	12.4	37900	23.5
09-Feb-05	SB-1	2.9	12.4	37160	22.9
22-Feb-05	LB-3	2.9	11.5	36580	22.5
22-Feb-05	LB-5	2.8	11.4	36250	22.3
22-Feb-05	LB-6	3.1	10.1	40330	25.2
22-Feb-05	LB-4	3.1	10.8	41060	25.6
22-Feb-05	LB-2	3.3	10.7	43800	27.5
22-Feb-05	LB-1	3.2	10.9	36710	22.7
23-Feb-05	AK-1	3.4	10.5	31000	18.8
23-Feb-05	AK-2	3	10.6	34120	20.8
23-Feb-05	AK-3	3.2	10.4	33460	20.5
23-Feb-05	AK-4	3.9	10.5	28750	17.4
23-Feb-05	NB-7	3.4	10.7	30030	18.2
23-Feb-05	NB-6	3.1	10.1	32850	20
23-Feb-05	NB-5	3.2	10.1	32660	19.9
23-Feb-05	NB-4	3.7	10.7	20950	12.3
23-Feb-05	NB-3	3.8	10.8	21180	12.5
24-Feb-05	PJ-2	2.9	10.8	33480	20.4
24-Feb-05	PJ-1	2.9	10.8	36630	22
24-Feb-05	PJ-5	3.2	10.5	40450	25.2
24-Feb-05	PJ-4	2.9	10.7	37300	23
24-Feb-05	PJ-3	2.4	11.3	29600	17.9
24-Feb-05	SB-5	3.3	10.5	42100	26.2
24-Feb-05	SB-6	3.2	10.6	39700	24.7
24-Feb-05	SB-3	3	10.7	36450	22.5

Appendix C. Water Quality data by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Temperature (ºC)	DO (mg/l)	Conductivity (SPC@25)	Salinity (ppt)
24-Feb-05	SB-4	3	10.7	36380	22.4
24-Feb-05	SB-1	3	10.8	35780	22
24-Feb-05	SB-2	3	10.6	38350	23.7
07-Mar-05	LB-3	3	12.8	42840	26.8
07-Mar-05	LB-5	3	12.8	41080	25.5
07-Mar-05	LB-6	2.8	13	42920	26.9
07-Mar-05	LB-4	3.4	12.3	43500	27.1
07-Mar-05	LB-2	3.4	11.8	46740	29.4
07-Mar-05	LB-1	3.6	12.5	42950	27
07-Mar-05	SB-6	3.1	12	41140	25.6
07-Mar-05	SB-5	3.2	12	42160	26.1
08-Mar-05	SB-2	3.6	12	40560	25.3
08-Mar-05	SB-1	3.4	11.9	39900	24.9
08-Mar-05	SB-4	3.4	12.1	42080	26.4
08-Mar-05	SB-3	3.4	12	40900	25.1
10-Mar-05	NB-7	2.2	11.2	31750	19.2
10-Mar-05	NB-6	2.2	11	32910	20.1
10-Mar-05	NB-5	2.3	10.9	32610	19.8
10-Mar-05	NB-4	2.3	11.4	29890	18.1
10-Mar-05	NB-3	2.7	10.9	27490	16.5
10-Mar-05	AK-4	3.1	11.6	31940	19.4
10-Mar-05	AK-3	2.5	11.2	31710	19.2
10-Mar-05	AK-1	2.5	11.2	31540	19.1
10-Mar-05	AK-2	2.4	11.1	31610	19.2
11-Mar-05	PJ-1	2.4	11.7	40150	24.9
11-Mar-05	PJ-5	2.5	11.4	41870	26.1
11-Mar-05	PJ-3	2.4	11.6	37550	23.1
11-Mar-05	PJ-4	2.5	11.5	42070	26.2
11-Mar-05	PJ-2	2.6	11.7	39330	24.3
21-Mar-05	LB-3	4.2	12.1	38950	24.3
21-Mar-05	LB-5	3.8	12.3	39340	24.5
21-Mar-05	LB-6	3.8	10.5	42730	26.8
21-Mar-05	LB-4	4	10.9	43600	27.4
21-Mar-05	LB-2	4	10.3	45110	28.5
21-Mar-05	LB-1	4.4	11.3	41960	26.4
21-Mar-05	SB-6	4.1	10.1	44730	28.2
22-Mar-05	NB-7	4.5	13.5	31810	19.5
22-Mar-05	NB-6	4.3	11.5	37930	23.2
22-Mar-05	NB-5	4.3	11.4	37380	23.2
22-Mar-05	NB-4	5.5	12.7	26980	16.3
22-Mar-05	NB-3	5.2	12.4	26930	16.3
22-Mar-05	AK-2	4.4	11	34310	21.1
22-Mar-05	AK-4	5.6	13.5	30780	18.9
22-Mar-05	AK-3	5	12.4	32030	19.7
22-Mar-05	AK-1	4.8	11.9	32150	19.7

Appendix C. Water Quality data by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Temperature (ºC)	DO (mg/l)	Conductivity (SPC@25)	Salinity (ppt)
23-Mar-05	PJ-2	4.5	12	27010	16.4
23-Mar-05	PJ-1	4.4	11.7	36430	22.6
23-Mar-05	PJ-5	4.4	11.3	37240	23.1
23-Mar-05	PJ-3	4.7	11.6	31610	19.4
23-Mar-05	PJ-4	4.3	10.7	40660	25.5
23-Mar-05	SB-5	4.4	10.8	43500	27.4
23-Mar-05	SB-3	4.5	11	37220	23.1
23-Mar-05	SB-4	4.4	11.1	37490	23.3
23-Mar-05	SB-1	4.4	11.5	37510	25.3
23-Mar-05	SB-2	4.3	11.2	39640	24.8
04-Apr-05	AK-2	6.5	10.6	17660	9.8
04-Apr-05	AK-1	6.7	10.7	13320	7.6
04-Apr-05	AK-3	6.3	10.2	19370	11.5
04-Apr-05	AK-4	6.9	10	14740	8.5
04-Apr-05	NB-7	7.4	9.9	8760	4.9
04-Apr-05	NB-6	6.7	9.4	15940	11.3
04-Apr-05	NB-5	6.7	9.4	15990	11.3
04-Apr-05	NB-4	8.1	10	3500	1.9
04-Apr-05	NB-3	8.1	10	3500	1.9
04-Apr-05	PJ-3	6.2	11.1	10100	5.6
04-Apr-05	PJ-4	6.2	10.1	11000	6.4
05-Apr-05	PJ-2	5.8	12.2	7000	3.8
05-Apr-05	PJ-1	5.9	12.4	6420	3.3
05-Apr-05	PJ-5	5.5	11.2	32660	19.6
05-Apr-05	SB-5	5.5	11.7	22000	14.2
05-Apr-05	LB-3	6.8	11	27670	16.8
05-Apr-05	LB-5	6	10.9	31400	20
05-Apr-05	LB-6	6.3	10.5	33310	20.6
05-Apr-05	LB-4	6.7	12.2	21660	12.4
05-Apr-05	LB-2	5.9	14.4	24950	14.6
05-Apr-05	LB-1	6.3	11.3	33840	21.1
05-Apr-05	SB-6	5.8	11.6	25100	10.1
05-Apr-05	SB-3	6.2	11.8	15990	9.2
05-Apr-05	SB-4	5.3	10.9	33160	23.6
05-Apr-05	SB-1	6	10.8	16070	9.1
05-Apr-05	SB-2	5.9	10.7	20570	12
19-Apr-05	LB-3	8.9	9.8	35010	21.9
19-Apr-05	LB-5	8.8	9.6	35710	22.4
19-Apr-05	LB-6	7.8	9.4	42490	27
19-Apr-05	LB-4	8.2	9.5	40900	26
19-Apr-05	LB-2	6.5	9.8	46140	29.5
19-Apr-05	LB-1	9.5	10.3	39540	25.1
19-Apr-05	SB-6	7.6	9.8	43560	27.8
20-Apr-05	NB-7	11.1	10.7	25510	15.6
20-Apr-05	NB-4	12.7	11.3	20120	12

Appendix C. Water Quality data by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Temperature (ºC)	DO (mg/l)	Conductivity (SPC@25)	Salinity (ppt)
20-Apr-05	NB-3	12.6	11.2	20070	12
20-Apr-05	NB-5	9	9.3	39530	21.6
20-Apr-05	NB-6	9	9.1	35300	22.1
20-Apr-05	AK-4	12.6	11.6	25490	15.6
20-Apr-05	AK-3	10	10.2	31610	19.6
20-Apr-05	AK-2	10.4	10.5	28990	17.9
20-Apr-05	AK-1	10.8	10.9	29310	18.1
21-Apr-05	SB-2	9.1	9.7	36840	23.2
21-Apr-05	SB-1	9.3	9.4	36050	22.6
21-Apr-05	SB-4	8.4	9.6	40640	25.8
21-Apr-05	SB-3	9.8	9.7	33570	21
21-Apr-05	SB-5	9.4	9.5	33340	20.8
21-Apr-05	PJ-5	9.2	9.1	35560	22.3
21-Apr-05	PJ-3	11.1	9.3	29910	18.5
21-Apr-05	PJ-4	8.2	8.6	40430	25.6
21-Apr-05	PJ-1	10.9	9.3	24440	14.9
21-Apr-05	PJ-2	11.8	9.3	24620	15
02-May-05	NB-7	12.2	8.3	25480	15.6
02-May-05	NB-4	12.7	7.8	22180	13.4
02-May-05	NB-3	13.1	7.4	19940	11.9
02-May-05	NB-6	11.3	7.7	28360	17.5
02-May-05	NB-5	11.2	7.7	28830	17.8
02-May-05	AK-1	12.2	8	25380	15.5
02-May-05	AK-2	11.1	8	28970	17.9
02-May-05	AK-3	11.3	7.9	28900	17.8
02-May-05	AK-4	12.4	8.4	26000	15.9
02-May-05	PJ-3	11.5	9.2	23850	14.5
02-May-05	PJ-4	9.3	9	36440	22.9
02-May-05	PJ-1	10.2	8.8	31100	19.3
02-May-05	PJ-2	11.2	9	24340	14.8
03-May-05	PJ-5	10.4	9.1	29920	17.9
03-May-05	SB-5	9.4	9.2	34210	21.3
03-May-05	LB-3	10.2	10.2	34510	21.8
03-May-05	LB-5	9.5	9.3	37350	23.4
03-May-05	LB-6	8.1	9.5	40040	25.2
03-May-05	LB-4	9.4	9.5	35320	22.5
03-May-05	LB-2	7	9.5	44260	28.3
03-May-05	LB-1	9.2	9.6	40100	24.8
03-May-05	SB-6	10.7	8.9	29460	18.2
03-May-05	SB-3	11.1	8.8	26610	16.1
03-May-05	SB-4	8.9	8.5	37200	23.4
03-May-05	SB-1	10	9.5	32380	8.2
03-May-05	SB-2	9.8	8.1	33280	20.8
16-May-05	LB-3	12.4	8.9	35990	22.7
16-May-05	LB-5	12.7	10.3	36370	23

Appendix C. Water Quality data by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Temperature (ºC)	DO (mg/l)	Conductivity (SPC@25)	Salinity (ppt)
16-May-05	LB-6	10.6	8.8	42000	26.4
16-May-05	LB-4	11.5	9	39380	25.1
16-May-05	LB-2	8.6	8.5	45960	29.5
16-May-05	LB-1	12.4	9.9	41950	26.9
17-May-05	AK-1	13.8	7.9	30750	19.2
17-May-05	AK-2	12.6	8	34170	21.7
17-May-05	AK-3	13.4	7.7	31860	19.8
17-May-05	AK-4	15.3	7.7	28850	17.9
17-May-05	NB-3	16.2	8	26810	16.3
17-May-05	NB-4	16	7.7	26690	16.5
17-May-05	NB-5	14.2	8.1	30410	18.9
17-May-05	NB-7	16.4	9.2	26530	16.3
17-May-05	NB-6	13	8.1	34170	21.6
18-May-05	SB-2	12.1	8	37000	23.2
18-May-05	SB-1	12.7	8.6	35880	22.7
18-May-05	SB-4	11.9	8.1	39192	24.9
18-May-05	SB-3	12.6	7.8	35360	22.3
18-May-05	SB-6	12.4	7.8	36550	22.8
18-May-05	SB-5	13.1	8	32520	19.3
18-May-05	PJ-3	15.6	8.4	26160	15.3
18-May-05	PJ-5	12.4	7.5	35950	23.4
18-May-05	PJ-4	11.4	7.4	38740	24.6
18-May-05	PJ-1	14.2	8.2	27350	16.6
18-May-05	PJ-2	14.4	7.8	25240	16
31-May-05	LB-3	14.5	7.2	38440	24.4
31-May-05	LB-5	15.4	7.4	37450	23.8
31-May-05	LB-6	14.6	7.6	40250	25.7
31-May-05	LB-4	14.5	7.2	40190	25.6
31-May-05	LB-2	13	7.5	41750	26.7
31-May-05	LB-1	14.7	7.2	40220	25.7
31-May-05	SB-6	14.7	7	35020	22
31-May-05	SB-5	14.9	6.8	34990	22.4
31-May-05	PJ-4	14.5	6.8	37070	23.5
31-May-05	PJ-5	14.9	6.8	36400	23.1
31-May-05	PJ-1	16.3	7	30040	18.6
01-Jun-05	NB-7	16	6.4	30900	19.2
01-Jun-05	NB-4	16.3	6	29600	18.4
01-Jun-05	NB-3	16.9	5.7	26570	16.3
01-Jun-05	NB-6	15.8	6.4	31740	19.8
01-Jun-05	NB-5	15.8	6.4	31750	19.8
01-Jun-05	AK-1	16	6.4	31270	19.5
01-Jun-05	AK-2	15.9	6.5	31470	19.7
01-Jun-05	AK-3	16.1	6.4	31400	19.6
01-Jun-05	AK-4	17.1	6	30900	19.2
01-Jun-05	PJ-3	15.9	6.9	31080	20.1

Appendix C. Water Quality data by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Temperature (ºC)	DO (mg/l)	Conductivity (SPC@25)	Salinity (ppt)
02-Jun-05	SB-2	14.9	5.5	36350	23.1
02-Jun-05	SB-1	14.9	5.9	35960	22.9
02-Jun-05	SB-4	14.7	6.3	37040	23.5
02-Jun-05	SB-3	14.8	6.5	36750	23.3
02-Jun-05	PJ-2	15.4	6.5	32820	20.6
13-Jun-05	SB-2	17	6.8	39830	25.5
13-Jun-05	SB-1	17.7	7	38900	24.8
13-Jun-05	SB-4	16.3	7.4	41030	26.4
13-Jun-05	SB-3	18.4	7.3	37500	23.8
13-Jun-05	SB-5	16.3	7.4	40710	26.1
13-Jun-05	PJ-3	19.7	7.1	34110	21.5
13-Jun-05	PJ-4	16.3	7	40350	25.8
14-Jun-05	LB-3	17.1	7.1	40240	25.7
14-Jun-05	LB-5	16.4	7.1	41380	26.6
14-Jun-05	LB-6	13.8	7.9	43980	28.4
14-Jun-05	LB-4	14.2	7.5	43780	28.1
14-Jun-05	LB-2	11.3	8.3	45400	29.6
14-Jun-05	LB-1	15.2	8	44430	28.8
14-Jun-05	SB-6	15	7.7	42700	27.4
15-Jun-05	AK-1	20.7	7	34420	21.6
15-Jun-05	AK-2	19.2	7	36530	23.2
15-Jun-05	AK-3	19.8	6.8	35700	22.6
15-Jun-05	AK-4	21.8	6.7	33700	21.2
15-Jun-05	NB-7	22.5	7.8	32750	20.5
15-Jun-05	NB-3	21.1	6.5	33750	21.2
15-Jun-05	NB-4	21.5	7.3	33720	21.2
15-Jun-05	NB-5	17.9	7	38250	24.4
15-Jun-05	NB-6	16.6	7.1	30990	25.6
16-Jun-05	PJ-1	19	7.1	34420	21.7
16-Jun-05	PJ-5	15.5	7.4	41700	26.8
16-Jun-05	PJ-2	20.5	8.3	31190	19.4
05-Jul-05	AK-2	21.9	6	34230	21.6
05-Jul-05	AK-1	23.8	5.5	32190	21.1
05-Jul-05	AK-3	22.7	5.8	33240	20.8
05-Jul-05	AK-4	25.1	4.7	31960	19.9
05-Jul-05	NB-7	23.7	5.8	32220	20.1
05-Jul-05	NB-4	24.1	5.3	31490	19.5
05-Jul-05	NB-3	24.2	5.4	30600	19
05-Jul-05	NB-5	22.5	5.6	33190	20.8
05-Jul-05	NB-6	22.2	5.2	33840	21.3
05-Jul-05	PJ-3	23	8.7	32470	20.3
06-Jul-05	SB-2	20.3	4.9	38930	24.8
06-Jul-05	SB-1	20.9	5.3	36160	23.3
06-Jul-05	SB-4	20.8	6.3	39280	25.1
06-Jul-05	SB-3	21.1	5.6	36210	22.9

Appendix C. Water Quality data by date and station sampled during the 2005 Aquatic Biological Survey.

Date	Station	Temperature (ºC)	DO (mg/l)	Conductivity (SPC@25)	Salinity (ppt)
06-Jul-05	SB-6	20.7	6.3	40730	26.1
06-Jul-05	SB-5	20.7	6.4	40140	25.7
07-Jul-05	LB-3	20.9	5.1	38290	24.4
07-Jul-05	LB-5	21.2	6.1	35180	24.1
07-Jul-05	LB-6	20.8	5.1	36130	25.1
07-Jul-05	LB-4	20.4	6.1	41720	26.8
07-Jul-05	LB-2	19.4	6.7	44400	28.7
07-Jul-05	LB-1	20.7	6	41080	26.5
07-Jul-05	PJ-4	20.8	5.6	40030	25.6
07-Jul-05	PJ-1	21.7	5.4	34680	21.8
07-Jul-05	PJ-2	22.4	5.6	31160	19.3
07-Jul-05	PJ-5	21.3	5.6	37220	23.6