NEW YORK AND NEW JERSEY HARBOR DEEPENING PROJECT

AQUATIC BIOLOGICAL SURVEY REPORT
2007

Final Report

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1.0 INTRODUCTION

1.1 BACKGROUND

The 2007 Aquatic Biological Survey ("2007 Survey") was conducted as part of the New York and New Jersey Harbor Deepening Project (HDP). This project is 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 feet to accommodate larger commercial vessels. A primary goal of the Aquatic Biological Survey is to collect data on finfish, shellfish, macroinvertebrates, and water quality, with a focus on biological community structure, distribution and seasonal patterns of habitat use in New York/New Jersey Harbor (the Harbor). The information collected is used in determining the potential project related biological impacts of deepening existing Harbor navigation channels, anchorages, and berthing areas.

The 2007 Survey supplements data provided in previous reports: 1998–1999 New York and New Jersey Harbor Navigation Study, 2000–2001 Supplemental Sampling Program, 2001-2002 Aquatic Biological Sampling Program ("2002 Survey"), the 2002-2003 Biological Sampling Program ("2003 Survey"), the 2004 Aquatic Biological Survey Report, the 2005 Aquatic Biological Survey Report, and the 2006 Aquatic Biological Survey Report. Collectively, these studies comprise the biological database for the Harbor Deepening Project.

The biological database indicates that the Harbor finfish population structure (species assemblage and relative abundance) are a dynamic community consisting 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 species of finfish in non-channel (i.e. shoal and inactive interpier areas) and channel habitats. Multi-year sampling programs are needed to establish the use of navigation channel and non-channel habitats

by finfish (primarily winter flounder); variably including consistency in usage and relative abundance from year to year.

Program sampling conducted from 2002-2006 was used to determine annual variability in seasonal movement patterns and to expand the temporal coverage of the program database, especially with respect to the Lower Bay for winter flounder. This sampling has provided a valuable long-term data set whereby fish responses to changing conditions and anthropogenic alterations in the Harbor can be assessed. The study objectives, survey areas, and sampling gear have been relatively consistent among sampling years to allow for direct comparisons.

The focus of the 2007 Survey conducted from January through July 2007 was to collect spatial and temporal distribution data in the New York/New Jersey Harbor. Sampling included collections for adults, juveniles, and early life stages of winter flounder and other Managed Finfish (Essential Fish Habitat Species). These data were used to determine trends in winter flounder distribution, habitat use (spawning and nursery habitat utilization), and relative abundance. The results of the 2007 Survey are provided and discussed in this report.

1.2 STUDY OBJECTIVES

During the 2007 Aquatic Biological Survey data were collected on adult and early life stages of finfish in the Harbor with emphasis on winter flounder. Sampling was conducted from January to July when winter flounder spawning and early life stages occur in the Harbor.

The specific study objectives were to determine the utilization and significance of selected Harbor areas for both adult and early life stage (eggs and larvae) winter flounder and other Essential Fish Habitat (EFH) species for the months of January through July.

To meet program objectives, two sampling methodologies were employed. A bottom trawl was used to sample adult and juvenile finfish, and a plankton net mounted on an epibenthic sled was used to sample demersal (occurring near the bottom) eggs and larvae.

1.3 REPORT ORGANIZATION

Finfish species are classified into one of three groups: EFH-managed species, Important Non-Managed species (INM), and Other Non-Managed species (ONM). INM species have been identified by the resource agencies as forage, commercial and/or game/recreationally species that are of special concern. This organization was used in the 2006 report to broaden the study's focus from primarily winter flounder to other important species in the Harbor's finfish community. The specific attention to INM species in this report is warranted because they have become a focus of interest for local resource agencies related to their roles as a forage species and/or as predators in the Harbor finfish community.

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 the data and findings on a Harbor-wide scale and compares winter flounder data and findings to previous program years of the HDP.

2.0 METHODS

2.1 SAMPLING LOCATIONS

Over the years of the Aquatic Biological Survey, a standard set of sampling locations have been used, but some adjustments have been made between years. Most of the sampling locations have been sampled in each year with a few additions or deletions in some years. There are now 27 potential sampling locations, 25 of which were sampled during the 2007 Survey. Twenty-three (23) of these locations were sampled during the 2001–2005 Surveys. The Elizabeth Flats South (AK-1) station was not sampled during 2005 through 2007 due to a change in bathymetry. The Island of Meadows station (AK-7) was added in Arthur Kill during 2006 to replace the AK-1 station as a non-channel station, but was not sampled in 2007. Elizabeth Flats North (NB-7) station, which was not sampled during 2006, was again sampled in 2007.

Of the 25 stations sampled during 2007, 13 were located in non-channel or interpier areas, and 12 were located in navigation channels (Table 2-1). For all years combined, 27 stations have been sampled; 15 non-channel stations and 12 channel stations (Figure 2-1).

For data analysis purposes in this and the three previous Survey years (2004 through 2006), the Harbor was divided into three regions based on geography: Arthur Kill/Newark Bay, Upper New York Bay, and Lower New York Bay. Sampling stations were distributed as follows among the three regions:

- Arthur Kill and Newark Bay

  Ten stations were located in this region, but eight were sampled during 2007. Of the 10 stations, three were in Arthur Kill non-channel areas (AK-1, AK-4, and AK-7) and two were in channels at the Arthur Kill/Kill Van Kull confluence area (AK-2 and AK-3). Newark Bay stations were represented by three non-channel stations (NB-3, NB-4, and NB-7) and two stations located in the navigation channel (NB-5 and NB-6). AK-1 was not included in the 2005, 2006, or 2007 trawl surveys. AK-7 was added to the sampling program during 2006, but was not included in the 2007 sampling program.

- 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 (non-channel 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 non-channel stations were located in Port Jersey (PJ-l, PJ-2, and 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 non-channel areas (LB-1, LB-3, and LB-5). The Lower Bay sites were added in the 2001-2002 Biological Sampling Program to provide better spatial coverage for the evaluation of winter flounder and other EFH species in the Harbor.

2.2 ADULT AND JUVENILE FINFISH SAMPLING (BOTTOM TRAWLS)

Adult finfish were sampled with a bottom trawl from 22 January through 21 June 2007. 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 generally twice a month in January, February, and March and once a month during April, May, and June at 25 sampling stations.

Bottom trawls were conducted using a 30-ft (9.1-m) otter trawl (Table 2-2), the same trawl used during previous program years. A minimum ratio of 5:1 tow cable length to maximum station water depth was maintained to ensure that the trawl was in contact with the bottom throughout each tow.

Bottom trawls were conducted during daylight[1] hours (i.e., 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

[1] Bottom trawls were conducted during the night for the 1998 through 2004 sampling programs. In 2005, sampling times were changed to daylight hours due to safety considerations.

tow times were adjusted as needed to account for obstructions, limited interpier distances, commercial traffic, and several other factors. A total of 217 bottom trawls were conducted in 2007: 108 at navigation channel stations and 109 at non-channel stations.

All fish were identified and enumerated on the research vessel immediately following collection. The total length (TL) of each winter flounder caught was recorded to the nearest millimeter (mm). When available, a total of up to five (5) winter flounder (≥ 250 mm) per trawl were measured and sexed. If gender could not be determined in the field, specimens were preserved on ice and returned to the laboratory for gender determination. Since winter flounder typically exhibit adult gonad development at 250 mm TL and reach sexual maturity between 280 mm and 300 mm (Witherell 1993), a 250-mm TL requirement was established to limit the number of immature fish kept for analysis.

For all other species collected, up to 25 specimens of each species were measured for total length from each trawl sample. A random subsample of 25 specimens was taken for measurements when the number of fish collected exceeded 25. Except for winter flounder preserved for laboratory analysis, all fish collected were released after on-board examination.

2.3 ICHTHYOPLANKTON SAMPLING (EPIBENTHIC SLED TOWS)

Ichthyoplankton sampling was conducted from 29 January to 11 July 2006. Twenty-five stations were sampled generally twice a month from February through June and once a month during January and July.

Ichthyoplankton samples were collected with a 0.5-meter square mouth plankton net (with 0.5-mm mesh) mounted in an epibenthic sled (Table 2-3). Typically, a 3:1 ratio of tow cable/line length to station depth was maintained 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 measure sample volume.

All samples were collected during daylight hours (i.e., 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 289 epibenthic sled tows were conducted in 2007: 143 at navigation channel stations and 146 at non-channel stations. Each sample was washed from the plankton net into containers and preserved with 10% 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 (i.e., egg, yolk-sac larvae, post yolk-sac larvae, or juvenile) and enumerated. For some larvae, it was not possible to discern between yolk-sac and post yolk-sac life stages because specimens were damaged. These were classified as an unidentified (UID) life stage.

Up to 25 winter flounder of each larval stage (i.e., stages 1-4 and juvenile) were measured in each sample. Larvae were measured for total length to the nearest 0.1 mm. Juveniles were measured to the nearest 1.0 mm. Damaged fish were not measured.

In addition, all winter flounder yolk-sac and post yolk-sac larvae were further classified into the following developmental stages:

Stage 1: Yolk-sac present or eyes not pigmented.

Stage 2: Eyes pigmented, no loop or coil formed in the gut, no flexion of the notochord, and no yolk-sac present or minimal traces of yolk may remain.

Stage 3: Loop or coil formed in gut and/or flexion of the notochord has begun, but left eye has not migrated past the midline.

Stage 4: Left eye has migrated past the midline, but juvenile characteristics not present.

Quality control procedures consisted of a continuous sampling plan to assure an average outgoing quality limit (AOQL) of ≤ 0.10 (≥ 90% accuracy) 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

All finfish were identified to the lowest practical taxonomic level in both trawl and ichthyoplankton sampling. Species were grouped into one of three categories: federally managed EFH species, non-managed but commercially or recreationally important species (INM species), and other non-managed species (ONM species).

2.5.1 Trawl

Catch per unit effort (CPUE), defined as number of fish per 10 minute trawl tow, was determined for each trawl tow based on the time each net sampled on the bottom. Standardization was performed by dividing the number of fish collected during the tow by the actual tow duration multiplied by 10.

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

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 results are described for two general habitat types (navigation channel and non-channel stations) in three NY/NJ Harbor regions (Arthur Kill/Newark Bay, Upper Bay, and Lower Bay). Species composition, relative abundance, density per unit volume, and catch per unit effort (CPUE) are described in the following summary of 2007 results. Detailed station data for adult and juvenile finfish, ichthyoplankton, and water quality are provided in Appendices A through C, respectively.

3.1 FINFISH

3.1.1 Adults and Juveniles (Trawl Sampling)

A total of 7,032 finfish from 47 species were collected during the 2007 bottom trawl survey (Tables 3-1 and 3-2). White perch (2,361 individuals collected, 33.6% of the total finfish catch) were the most abundant species collected in the Harbor during the 2007 sampling program, contributing approximately a third of the total finfish catch. They were followed in abundance by bay anchovy (1,363 individuals, 19.4%), spotted hake (527 individuals, 7.5%), striped bass (522 individuals, 7.4%), winter flounder (428 individuals, 6.1%), alewife (371 individuals, 5.3%), Atlantic tomcod (218 individuals, 3.1%), Atlantic silverside (200 individuals, 2.8%), red hake (186 individuals, 2.6%), blueback herring (130 individuals, 1.8%), and scup (121 individuals, 1.7%). The remaining 36 species were each represented by less than 70 individuals and of these, 21 were represented by less than 10 individuals.

Approximately 72.6% of the total catch consisted of fish species grouped as "ONM species"; EFH and INM species represented approximately 13.9 and 13.5 percent of the total finfish catch, respectively. Three EFH species (red hake [186 individuals], scup [121 individuals], winter flounder [428 individuals]), and two INM species (alewife [371 individuals] and striped bass [522 individuals]) each contributed over one percent of the

total catch in the Harbor (Table 3-2). The remaining EFH and INM species listed in Table 3-1 each represented less than one percent of the total catch.

Forty-four (44) species of finfish consisting of 5,449 individuals were collected from navigation channel stations, and 28 species of finfish consisting of 1,583 individuals were collected from non-channel stations (Tables 3-1 and 3-2). White perch (2,354 individuals, 43.2 percent), spotted hake (523 individuals, 9.6 percent), and striped bass (479 individuals, 8.8 percent) were the three most common species collected in channel stations. Bay anchovy (1,010 individuals, 63.8 percent), Atlantic silverside (145 individuals, 9.2 percent), and scup (118 individuals, 7.5 percent) were the three most common species collected in non-channel stations. Overall, collections in channel habitats resulted in a higher species richness (44 species) and relative abundance (5,449 individuals) compared to collections in non-channel habitats (28 species and 1,583 individuals).

Species distributions varied temporally and spatially, with channel stations having generally higher CPUE rates from January to April, while the CPUE rates at Arthur Kill/Newark Bay and Upper Bay non-channel stations were generally higher during May and June (Figure 3-1). In the Lower Bay, channel CPUE rates continued to be generally higher than non-channel CPUEs throughout the sampling period. The highest monthly mean CPUEs for EFH species generally occurred during January and June and the lowest occurred during May (Table 3-3). Red hake and winter flounder were common in channels during January and February, winter flounder were also common in channels during April and June, and scup were common in non-channels during June. Monthly mean CPUE rates were generally higher in channel stations compared to non-channel stations for EFH species. Black sea bass, winter skate, clearnose skate and bluefish had low CPUE rates and winter flounder, scup, red hake and butterfish had higher CPUE rates.

The highest monthly mean CPUEs for INM species occurred during January followed by April (Table 3-3). Monthly mean CPUE rates were generally higher in channel stations

for INM species during January, February, March, and April; the two highest monthly mean CPUEs for this group occurred at channel stations, in January for alewife (10.95 CPUE) and in April for striped bass (10.59 CPUE). Of the INM species, striped bass were common in channels during January, February, and April, and alewife were common in January and March. Striped bass were also common in collections at non-channel habitats during April. In May, monthly mean CPUE rates for INM species were slightly higher at non-channel stations. In June, monthly mean CPUE rates for INM species were similar at both navigation channel and non-channel stations.

The three most common species (white perch, bay anchovy, and spotted hake) collected were grouped as ONM species. ONM species generally used the three Harbor areas throughout the sampling period. ONM species also used channels during the winter (predominately during January and February) and early spring and non-channels during May and June (Table 3-3). The range of monthly mean CPUEs at non-channel stations for all the ONM species was 1.76 to 7.33 (January to April) and 41.90 to 64.88 (during May and June, respectively). The range of monthly mean CPUEs at channel stations for all the ONM species was 4.67 to 17.86 (March to May) and 40.35 to 74.02 (January, February, and June).

3.1.1.1 Arthur Kill/Newark Bay

Arthur Kill/Newark Bay had the second lowest number of fish species and highest number of fish collected of the three Harbor sampling regions (Table 3-2). A total of 3,961 fish consisting of 29 species were collected. White perch (59.1%) was the dominant species collected and the next five most common species were bay anchovy (22.3%), striped bass (6.4%), spotted hake (4.4%), red hake (1.8%), and winter flounder (1.6%).

Of the EFH and INM species caught during 2007, only striped bass, winter flounder, and red hake represented more than one percent of the total catch. Further investigation of temporal patterns among EFH and INM species indicate monthly changes in species composition (Tables 3-4a and 3-4b, Figure 3-2). Red hake were dominant followed by

striped bass during January; in February striped bass were dominant; winter flounder and striped bass were common in March; windowpane, alewife, winter flounder and striped bass were present in April; in May, striped bass were common followed by winter flounder; and during June winter flounder were common followed by summer flounder.

Twenty-nine (29) species were collected from the navigation channel stations and eleven species were collected from the non-channel stations (Tables 3-3, 3-4a, and 3-4b). The greatest number of species (n = 20) were caught at channel stations during January and the least (n = 4) were collected during May. At non-channel stations, the greatest number of species (n = 6) were collected during May and none were collected during April. White perch, the most abundant species (n = 2,339) was collected predominately at channel stations (n = 2,337). Other abundant species were bay anchovy (n = 882), striped bass (n = 255), and spotted hake (n = 174). Most bay anchovy were collected from non-channel areas (n = 717), while most striped bass (n = 247) and all the spotted hake were collected from channel areas.

Trends in CPUE within the Arthur Kill/Newark Bay region generally followed those of the Harbor with higher catches during early winter followed by generally lower catches during late winter and early spring. During May and June, catches generally increased (Tables 3-4a and 3-4b, Figures 3-1 and 3-2). In January and early February, the channel catch rates were much higher than observed in the other two Harbor regions and during late May and June the non-channel catch rates were generally higher than both the Lower and Upper Bays. During January and February the mean monthly CPUEs were considerably higher than other regions primarily due to large collections of white perch and in June, mean monthly CPUEs were also higher due to large collections of bay anchovy. Catches of EFH (primarily red hake & winter flounder) and INM (primarily striped bass) species occurred mostly in channel stations during winter. Red hake had the highest mean monthly CPUE of EFH species caught, peaking during January with 10.71 fish/10-minute trawl in channel stations; they were followed by winter flounder. Striped bass had the highest mean monthly CPUE of INM species caught, peaking during February with 22.16 fish/10-minute trawl in channel stations. Non-channel catches of

EFH and INM species were low. Striped bass had the highest mean monthly CPUE of 2.9 during May followed by summer flounder in June, when it had the same peak catch rate (0.48) as striped bass.

3.1.1.2 Upper Bay

The Upper Bay had the highest number of fish species and second highest number of fish collected of the three Harbor sampling regions (Table 3-2). A total of 2,095 fish consisting of 42 species were collected. Bay anchovy (15.8%) and winter flounder (15.1%) were the dominant species collected. In addition, the five common species were spotted hake (13.0%), striped bass (11.9%), Atlantic tomcod (10.0%), scup (5.8%), red hake (5.3%), and Atlantic silverside (4.1%).

Of the EFH and INM species caught during 2007, winter flounder, striped bass, scup, red hake, alewife, windowpane, and Atlantic herring represented more than one percent of the total catch each. Red hake, striped bass and winter flounder were the top three species during January; whereas striped bass and winter flounder were dominant in April.

Thirty-seven (37) species were sampled from navigation channel stations and 27 species were collected from non-channel stations (Tables 3-2, 3-4a, and 3-4b). The greatest number of species (n = 20) were caught at channel stations during January and the least (n = 8) were collected during May. At non-channel stations, the greatest number of species (n = 15) were collected during January and the least (n = 7) were collected during February. The most common species collected in the Upper Bay were bay anchovy (n = 332) and winter flounder (n = 316) followed by spotted hake (n = 272), striped bass (n = 249), Atlantic tomcod (n = 209), scup (n = 121), and red hake (n = 111). Most bay anchovy (n = 290) and scup (n = 118) were collected from non-channel areas; while most winter flounder (n = 252), striped bass (n = 215), Atlantic tomcod (n = 154), spotted hake (n = 271), and all red hake were collected from channel areas.

Mean monthly CPUE varied temporally in the Upper Bay. During January, late March, and April fish were caught at generally higher rates at channel stations and during May and June higher catch rates were generally observed at non-channel stations (Tables 3-4a

and 3-4b, Figures 3-1 and 3-2). Winter flounder was the most common EFH species collected at channel stations; mean monthly CPUEs ranged from 0.2 to 10.4, peaking during June followed by April, January, February, March, and May. At non-channel stations, the peak mean monthly CPUE (3.33) for winter flounder occurred during April. Winter flounder were collected at channel and non-channel stations during all months, though channel catch rates were generally higher. Red hake was the second most common EFH species at channel stations; the peak mean monthly catch rate occurred in January. Striped bass was the most common INM species collected from both channel and non-channel stations; peak mean monthly catch rates (25.22 for channels and 4.33 for non-channels) occurred during April and the second highest mean monthly CPUE (9.14) occurred at channel stations during January.

3.1.1.3 Lower Bay

The Lower Bay had the lowest number of fish and species collected of the three Harbor sampling regions (Table 3-2). A total of 976 fish consisting of 23 species were collected. Alewife (29.4%) was the dominant species collected and the seven most common species were bay anchovy (15.3%), spotted hake (8.3%), blueback herring (7.4%), Atlantic silverside (6.9%), silver hake (5.8%), winter flounder (4.8%), and butterfish (4.2%).

Of the EFH and INM species caught during 2007, alewife, winter flounder, butterfish, Atlantic menhaden, little skate, striped bass, Atlantic herring, and windowpane each represented more than one percent of total catch. As anticipated there were changes in species diversity, composition and CPUE from month to month (Tables 3-4a and 3-4b; Figures 3-1 and 3-2). For example, Alewife, Atlantic menhaden and winter flounder were common in January; whereas butterfish were dominant in June.

Twenty-two (22) species were sampled from navigation channel stations and 14 species were collected from non-channel stations (Tables 3-2, 3-4a, and 3-4b). The greatest number of species (n = 17) were caught at channel stations during January and the least (n = 1) was collected during April. At non-channel stations, the greatest number of species (n = 9) were collected during January and none were collected during February. The most common species, alewife (n = 287), bay anchovy (n = 149), spotted hake (n =

81), and blueback herring (n = 72) were collected primarily at channel stations, as were the two most common EFH managed species, winter flounder (n = 47) and butterfish (n = 41). Of the more common species remaining, Atlantic silverside (n = 67) were collected from both channel and non-channel stations, while silver hake (n = 51) and Atlantic menhaden (n = 40) were collected primarily from channel areas.

During the Program, more fish were usually collected from the channel stations than from non-channel stations (Tables 3-4a and 3-4b, Figures 3-1 and 3-2). During January, March, and June fish were caught at much higher rates at channel stations; only during April were catch rates slightly higher at non-channel stations. Lower catch rates were observed in February, April, and May. Butterfish was the most common EFH species collected at channel stations; mean monthly CPUEs during the two months they were collected ranged from 3 to 10 during May and June, respectively. Winter flounder was the second most common EFH species collected; peak catch rates were 5.5, 1.17, and 0.67 during January, February, and March, respectively. Alewife was the most common INM species collected. They were only collected from channel stations and only during the winter months of January (CPUE = 32.83), February (CPUE = 1.83) and March (CPUE = 13.17). Atlantic menhaden were common with a peak mean monthly CPUE of 5.67 for channel stations during January. The peak mean monthly CPUE of 2.67 for striped bass at channel stations was also in January.

3.1.2 Ichthyoplankton (Epibenthic Sled Sampling)

Finfish eggs, larvae, and juveniles were collected from channel and non-channel stations in all sampling regions during the 2007 Aquatic Biological Survey (Tables 3-5 and 3-6a-d). There were differences between channel and non-channel stations within and between regions for eggs and larvae; these differences were due primarily to species habitat preferences (primarily water depth and salinity). Overall, egg densities were slightly higher at non-channel stations in the Lower Bay followed by the Arthur Kill/Newark Bay and egg densities were lowest in the Upper Bay. For EFH and INM species, egg densities were similar at non-channel and channel stations with higher egg densities of Atlantic mackerel and windowpane in the Lower Bay; winter flounder in the

Upper Bay; and Atlantic menhaden in the Arthur Kill/Newark Bay region. Overall, larvae densities were slightly higher at non-channel stations; larval densities were higher in the Arthur Kill/Newark Bay region followed closely by the Lower and Upper Bays. For EFH and INM species, Atlantic menhaden larval densities were similar at non-channel and channel stations; winter flounder larvae densities were much higher at non-channel stations compared to channel stations; and larval densities of butterfish, summer flounder, and striped bass were higher at channel stations. Juvenile fish were generally caught at channel stations in the Arthur Kill/Newark Bay and Upper Bay regions.

A total of 33 species were collected in ichthyoplankton sampling over the seven-month study (Table 3-5). The Upper Bay had the highest number of species (species richness = 32), compared to 23 species in Lower Bay and 21 species in Arthur Kill/Newark Bay region. The Upper Bay also had the highest number of EFH and INM species (species richness = 7); compared to Lower Bay and the Arthur Kill/Newark Bay regions with 5 and 3 species, respectively.

Five EFH managed species (Atlantic mackerel, butterfish, summer flounder, windowpane, and winter flounder) and two INM species (Atlantic menhaden and striped bass) were collected (Tables 3-6a – 6d). Three life stages (eggs, yolk-sac larvae, and post yolk-sac larvae) of windowpane, winter flounder, and Atlantic menhaden were represented in collections. Only the egg stage of Atlantic mackerel and post-yolk-sac stage of butterfish, summer flounder, and striped bass post yolk-sac larvae were collected. Of the five EFH managed species (Atlantic mackerel, butterfish, summer flounder, windowpane, and winter flounder) and two INM species (Atlantic menhaden and striped bass) collected, three (windowpane, winter flounder, and Atlantic menhaden) were collected from all three regions. Egg, yolk-sac larval, and post yolk-sac larval life stages of winter flounder and Atlantic menhaden were collected from all three regions. Windowpane egg and post yolk-sac larval life stages were collected from all three regions while yolk-sac larvae were only collected from the Upper Bay. Butterfish eggs were collected from the Upper Bay and Lower Bay and post yolk-sac larvae were only collected from the Upper Bay. Summer flounder post yolk-sac larvae were collected

from the Upper Bay and Lower Bay. Striped bass post yolk-sac larvae were only collected from the Upper Bay.

Ichthyoplankton densities by survey month, sampling location, and species and life stage collected are provided in Tables 3-6a-d and Appendix B.

3.1.2.1 Eggs

The egg life stages of 13 species/taxon were collected in the Harbor during 2007 (Table 3-5). Six taxa represented almost 99% of the 101,543 eggs collected; these included bay anchovy (51.8%), Labridae (20.8%), *Prionotus* sp. (13.7%), windowpane (7.2%), Atlantic menhaden (4.5%), and winter flounder (0.8%). The catches of EFH and INM species in the Harbor were dominated by winter flounder during February/March and windowpane from April to July (Table 3-6a, Figures 3-3 and 3-4). Egg densities were higher in the Lower Bay for windowpane and lowest in the Arthur Kill/Newark Bay areas; winter flounder egg densities were higher in the Upper and Lower Bays and lowest in the Arthur Kill/Newark Bay region. A few Atlantic mackerel eggs were collected primarily in the Lower Bay during June.

Egg densities of INM species (Atlantic menhaden) were higher in the Arthur Kill/Newark Bay region than in the Lower Bay and Upper Bay which both had similar egg densities; Atlantic menhaden egg densities were high in May and they peaked in June. Atlantic menhaden was the dominant (EFH and INM) species collected in the Arthur Kill/Newark Bay region during June. Overall, for EFH and INM species slightly higher egg densities were collected at channel stations compared to non-channel stations.

Atlantic mackerel had the lowest peak mean monthly density (4.47 eggs/1,000m^3) of any EFH species at Lower Bay channel stations during May (Table 3-6a). Windowpane had the highest peak mean monthly density (1,723.95 eggs/1,000m^3) at Lower Bay channel stations during June of any EFH species (Table 3-3a). Winter flounder peak mean monthly densities of 187.1 and 190.6 occurred at non-channel stations in the Lower Bay during February and the Upper Bay during March, respectively. Atlantic menhaden (INM

species) peak mean monthly density of 1,529.49 occurred at a non-channel station in the Arthur Kill/Newark Bay during June.

Higher total densities of eggs of ONM species occurred in both the Lower Bay and Arthur Kill/Newark Bay regions and were considerably lower in the Upper Bay (Table 3-6a). Egg densities were similar for channel and non-channel stations in the Upper Bay and slightly higher at non-channel stations in the Arthur Kill/Newark Bay region and at channel stations in the Lower Bay.

3.1.2.2 Yolk-sac Larvae

The yolk-sac larval life stages of a total of 7 fish species/taxon were collected in the Harbor during 2007 (Table 3.5). Of these, winter flounder represented 96.8 % of the total catch; the second most common species was the grubby (2.6%) followed by Atlantic menhaden (0.3%) and rock gunnel (0.2%). Catches of yolk-sac larvae in the Harbor occurred primarily during late March and early April 2007 (Table 3-6b, Figures 3-5 and 3-6). During late March, non-channel densities were much higher than channel densities for all three regions; this was also true for the Lower Bay in early April. In April, the Arthur Kill/Newark Bay and Upper Bay densities were similar for channel and non-channel stations.

The catches of EFH and INM species were dominated by winter flounder during February through April and Atlantic menhaden were more common during May and June. Winter flounder were the dominant EFH species collected as yolk-sac larvae and they represented nearly 97% of the total catch. Overall, densities at non-channel stations were usually higher than at channel stations for both winter flounder and Atlantic menhaden. Winter founder yolk-sac larvae were predominately present during March and April (Table 3-6b, Figures 3-5 and 3-6).

The peak mean monthly densities were 2,365.54 and 2,211.69/1,000 m^3 for winter flounder at Lower Bay non-channel stations during March and April, respectively. Other EFH (windowpane) and INM (Atlantic menhaden) were also caught in the Harbor during May and June; their distribution throughout the Harbor was limited. Atlantic menhaden were collected primarily at non-channel stations in Upper Bay during May and June, with

densities of 5.31 and 1.99/1,000 m^3, respectively; a few were also collected from the Lower Bay and Arthur Kill/Newark Bay during the same period. One windowpane was collected in May at a channel station in Upper Bay. Low total densities of yolk-sac larvae of ONM species occurred in both the Lower Bay and Arthur Kill/Newark Bay regions, but were slightly higher in the Upper Bay. Total densities of ONM yolk-sac larvae were slightly higher at channel stations compared to non-channel stations.

3.1.2.3 Post Yolk-sac Larvae

The post-yolk-sac life stages of a total of 26 fish species/taxon were collected in the Harbor during 2007 (Table 3-5). Seven taxon represented about 98% of the 37,026 post-yolk-sac larvae collected; bay anchovy (33.0%), winter flounder (32.9%), Gobiidae (19.1%), windowpane (6.8%), grubby (3.6%), Atlantic menhaden (1.9%), and weakfish (0.8%). The catches of EFH and INM species in the Harbor were dominated by winter flounder from March through May; and windowpane were dominant May through July(Table 3-6c, Figures 3-7 and 3-8). Densities were similar at non-channel and channel stations during March, May, and June for winter flounder. During April, winter flounder densities were higher at non-channel stations than at channel stations, especially for the Lower Bay. Windowpane and Atlantic menhaden densities were generally higher at channel stations compared to non-channel stations, especially during June.

Post yolk-sac larvae were collected during all survey months, but densities varied among the three regions (Table 3-6c, Figure 3-7). The Lower Bay had the highest peak non-channel density (12,321/1,000 m^3) on 9 April and the highest channel density on 18 June 2007; between these peaks, densities were similar or lower than found in the Upper Bay and Arthur Kill/Newark Bay regions. The second highest non-channel density (7,797/1,000 m^3) was in the Arthur Kill/Newark Bay region on 18 June 2007 followed by the Upper Bay (2,708/1,000 m^3) on 9 July 2007. The second highest channel density (2,526) was in the Arthur Kill/Newark Bay region on 9 July 2007 followed by the Upper Bay (2,098/1,000 m^3) on 9 July 2007.

Winter flounder were the dominant EFH species collected as post-yolk-sac larvae, and they represented about 33% of the total catch. Winter flounder post-yolk-sac larvae were predominately present during April (Table 3-6c, Figure 3-8). The peak mean monthly

densities were 6,459.92 and 526.42/1,000 m^3 for winter flounder at Lower Bay non-channel and channel stations during April, respectively. Winter flounder were followed in densities by windowpane; peak mean monthly densities were 859.84 and 302.66/1,000 m^3 for Lower Bay channel and non-channel stations during June, respectively. Atlantic menhaden were collected at channel and non-channel stations in all three regions primarily during May, June, and July; densities peaked at channel stations during June at the Arthur Kill/Newark Bay and the Lower Bay (97.64 and 90.47/1,000 m^3), respectively. Other EFH (butterfish and summer flounder) and INM (striped bass) species were also caught in the Harbor; their distribution throughout the Harbor was limited. The total densities of post-yolk-sac larvae of ONM species were high at channel and non-channel stations during June and July; this was primarily due to large collections of bay anchovy and Gobiidae larvae.

3.1.2.4 Juveniles

The juvenile life stages of a total of 7 fish species/taxa were collected in the Harbor during 2007 (Table 3-5). Three taxon represented about 85% of the 38 juveniles collected; Atlantic croaker (47.4%), bay anchovy (18.4%), and weakfish (18.4%). The catches of EFH and INM species in the Harbor included one juvenile summer flounder (Table 3-6d, Figures 3-9 and 3-10). Densities of ONM species were higher at channel stations compared to non-channel stations during January to April and July.

3.2 WINTER FLOUNDER

3.2.1 Adults and Juveniles (Trawl Sampling)

Four hundred and twenty eight (428) winter flounder were collected from both channel and non-channel habitats in all three Harbor regions (Table 3-2). They were collected each month from January to June, although more were collected at channel stations. The highest catch rates of winter flounder at channel stations occurred in January, followed by June, April, February, March, and May (Table 3-3). Seventy four percent (74%) of the winter flounder collected were from Upper Bay stations, 15% were from the Arthur Kill/Newark Bay, and 11% were from the Lower Bay.

3.2.1.1 Catch per Unit Effort (CPUE)

Mean monthly CPUEs for winter flounder, were considerably higher in the Upper Bay compared to the Lower Bay and Arthur Kill/Newark Bay areas of the Harbor. CPUEs at channel stations were consistently higher compared to non-channel stations. Winter flounder mean monthly CPUEs at channel stations were highest in January (5.54 CPUE) followed by June, April, February, and March and they were lowest in May (0.26 CPUE) (Tables 3-4a-b). The peak mean monthly CPUE at channel stations occurred in the Upper Bay (10.40 CPUE) during June and the peak at non-channel stations (3.33 CPUE) occurred in April. Except during May, the Upper Bay had the highest mean monthly catch rates, regardless of station type.

High mean monthly CPUEs were also observed in April (9.87 CPUE) and January (6.64 CPUE) at Upper Bay channel stations and in January (3.92 CPUE) at Lower Bay channel stations (Figure 3-11). Upper Bay non-channel stations had consistently higher CPUEs than the other two regions, ranging from 3.33 CPUE in April to 0.17 CPUE in May. Few winter flounder were caught at non-channel stations in the Arthur Kill/Newark Bay and Lower Bay regions.

3.2.1.2 Size Distribution

Lengths of 428 winter flounder collected in the Harbor during 2007, ranged from approximately 40 to 440 mm TL (Figure 3-12, Appendix A). The majority of winter flounder collected in trawls during 2007 were juveniles (TL < 250 mm). The mean length distribution at channel and non-channels stations was 174.4 mm TL (± 70.1 SD; N = 359) and 159.2 mm TL (± 88.5 SD; N = 69), respectively. Approximately 13% of fish collected at channel stations measured 250 mm TL or more compared to 16% collected from non-channel stations.

Temporal patterns in size distribution suggested more adult winter flounder were present in the Upper Bay during winter and early spring January to April; fewer adults were collected from the Lower Bay and Arthur Kill/Newark Bay during the same period

(Figures 3-13, 3-14, and 3-15). No winter flounder were collected from the Lower Bay from April to June. During May and June, few adult size winter flounder were collected and juveniles were predominately collected during June in the Upper Bay. The length frequency distribution of winter flounder ranged from approximately 100 to 350 mm total length. In the Upper Bay during June, a bi-modal length frequency distribution was evident with young of the year attaining a length range of approximately 40 to 80 mm resulting in their recruitment into the trawl collections and yearlings approximately 125 to 200 mm; a few older juveniles and adults were also collected.

3.2.1.3 Gender Ratio

The gender ratio of the 43 adult-size winter flounder (total length ≥ 250mm) collected in the Harbor favored females (Figure 3-16). The Arthur Kill/Newark Bay (n = 5) samples consisted of slightly more males than females; while the Lower Bay sample (n = 8) and Upper Bay (n = 30) consisted of slightly more females than males.

3.2.2 Ichthyoplankton (Epibenthic Sled Sampling)

Winter flounder eggs, yolk-sac and post-yolk sac larvae were collected throughout the Harbor at both channel and non-channel stations (Tables 3-6a – 6d, Figures 3-17 – 3-20). Eggs were collected primarily during late February through March in the Upper and Lower bay non-channel stations, and yolk-sac larvae were collected primarily during late March and early April in the Lower Bay non-channel stations. Overall, post-yolk sac winter flounder were the dominant life stage collected in each region during April and May. The peak mean monthly density (6,459.92/1,000 m^3) of post-yolk-sac larvae occurred in April at Lower Bay non-channel stations. No post-yolk sac larvae were collected in July, and no juveniles were collected in ichthyoplankton samples during any month.

Winter flounder eggs were collected in the Harbor from February through April 2007 (Table 3-6a, Figure 3-18). Winter flounder peak mean monthly densities of 187.1 and 190.6 occurred at non-channel stations in the Lower Bay during February and the Upper Bay during March, respectively. The highest average weekly egg densities were

collected at non-channel stations in the Lower Bay on 27 February 2007 (374 eggs/1,000 m^3) followed by the Upper Bay (211 eggs/1,000 m^3). The following surveys at non-channel stations during March also resulted in high weekly average densities of 199 and 98 eggs/1,000 m^3 in the Upper Bay on 12 and 26 March 2007, respectively and in the Lower Bay (113 eggs/1,000 m^3) on 26 March 2007. Winter flounder eggs were predominately collected at non-channel stations; fewer eggs were collected at channel stations. During February, the mean monthly egg densities at Lower Bay channel and non-channel stations were 1.63 and 187.10 eggs/1,000 m^3, respectively. During March, the mean monthly egg densities at Upper Bay channel and non-channel stations were 1.87 and 190.60 eggs/1,000 m^3, respectively.

Yolk-sac winter flounder larvae were collected at channel and non-channel stations in the Harbor from late January through early May 2007 (Table 3-6b, Figure 3-19). Average weekly yolk-sac larvae densities (by region and habitat) were low (0 to 17/1,000 m^3) from January to early March. Peak average weekly yolk-sac larvae densities of 4714 and 4408 /1,000 m^3 occurred at non-channel stations in the Lower Bay on 26 March and 9 April 2007, respectively. Within the Upper Bay and Arthur Kill/Newark Bay, high yolk-sac larvae densities of 129 and 346/1,000 m^3, respectively, occurred during the same period. Few yolk-sac larvae were collected from 23 April to 7 May 2007 (range 0 to 11/1,000 m^3). Winter flounder yolk-sac larvae were predominately collected at non-channel stations in the Lower Bay; during March, the mean monthly densities at Lower Bay channel and non-channel stations were 265.23 and 2,365.54 /1,000 m^3, respectively. During April, the mean monthly densities at Lower Bay channel and non-channel stations were 111.82 and 2211.69 /1,000 m^3, respectively. This disparity was not as evident in the Upper Bay and Arthur Kill/Newark Bay; during March non-channel densities were higher, however during April densities were similar between channel and non-channel stations.

From February to mid-June, post-yolk sac larvae were collected at channel and non-channel stations in the Harbor (Table 3-6c, Figure 3-20). Average weekly post yolk-sac larvae densities (by region and habitat) were low (0 to 27/1,000 m^3) from February to

early March. Peak average weekly post yolk-sac larvae densities of 7299 /1,000 m^3 occurred at non-channel stations in the Lower Bay on 9 April 2007. Average weekly post yolk-sac larvae densities also peaked at non-channel stations in Upper Bay and Arthur Kill/Newark Bay (526 and 330/1,000 m^3, respectively) during the same period. Within the Lower Bay, Upper Bay, and Arthur Kill/Newark Bay, high post yolk-sac larvae densities of 426, 356, and 153/1,000 m^3, respectively, also occurred at channel stations during the 9 April 2007 same period. Post yolk-sac larvae continued to be collected from 23 April to mid June 2007. However, few post yolk-sac larvae were collected during June 2007.

Winter flounder post yolk-sac larvae were predominately collected at non-channel stations in the Lower Bay during April; the mean monthly densities at Lower Bay channel and non-channel stations were 526.42 and 6459.92 /1,000 m^3, respectively. The mean monthly densities were slightly higher in non-channel stations compared to channel stations in the Upper Bay and Arthur Kill/Newark Bay during April and in the Lower Bay during May. This disparity reversed in the Upper Bay and Arthur Kill/Newark Bay during May; channel stations had slightly higher densities than non-channel stations.

3.2.3 Comparisons among Years

The 2001-2007 survey years of adult and juvenile winter flounder trawl (CPUE) and early life stage ichthyoplankton survey (density) data were compared by month and year. Although the sampling gear and methods were consistent, the bottom trawl sampling period changed from night-sampling during 2002 through 2004 to day-sampling during 2005 through 2007; therefore, only selected comparisons will be made across the years.

Comparisons of mean monthly CPUEs among the 2002-2004 programs and among the 2005-2007 programs showed few consistent patterns between years or sampling regions (Figure 3-21a-b). No sampling year was consistently higher or lower than other years and no region had consistently higher or lower CPUEs from 2002 -2004. However, the Lower Bay has shown the most yearly variation in mean monthly catches over the duration of the Aquatic Biological Survey. For example, mean January CPUEs in the Lower Bay were similar to the other sampling regions during 2002 and 2007; however, in 2005

catches of winter flounder in the Lower Bay were considerably higher compared to the Upper Bay and Arthur Kill/Newark Bay regions (except for January and February).

CPUEs were generally higher and more evenly distributed temporally and spatially during 2002, 2003, and 2004, when trawls were conducted at night. During 2005, 2006, and 2007, when trawls were conducted during the day, winter flounder CPUEs were lower and less evenly distributed temporally and spatially than in 2002 to 2004. During the last three years of the Aquatic Biological Survey, the Upper Bay generally had higher mean monthly catch rates and the Arthur Kill/Newark Bay catch rates were generally the lowest.

The 2002 to 2007 trawl data showed that adult and juvenile winter flounder were generally present throughout the Harbor using habitat in each of the three regions during every year and most months of the survey (Figure 3-21a). The 2005 surveys showed that winter flounder were generally concentrated in the Lower Bay during January followed by their dispersal into other sampling regions (Figure 3-21b). However, the 2005 to 2007 data also suggest an increased utilization of the Upper Bay and a decreased utilization of the Arthur Kill/Newark Bay and Lower Bay primarily during February to June. In 2006 and 2007, mean monthly CPUEs in the Upper Bay were generally higher than in the other two Harbor regions (Figure 3-21b).

Peak abundances varied by year, month, and region. During 2002-2004, the highest abundances of winter flounder occurred during June 2002 at Arthur Kill/Newark Bay (11.6 CPUE) and during January 2004 at Upper Bay (11.3 CPUE; Figure 3-21a). The June 2002 peak was caused by high recruitment of age-0 winter flounder in the trawl tows (Figure 3-23a), whereas the January 2004 catch was dominated by juvenile winter flounder (Figure 3-25a). During 2005, the highest abundances occurred during January at Lower Bay (17.9 CPUE) followed by the Upper Bay in April. In 2006 and 2007, the highest mean monthly CPUEs occurred in the Upper Bay in April followed by June and January 2007 and May 2006. The 2007 collections followed a pattern similar to previous years. The 2007 collections showed a secondary peak in June due to recruitment of age-0

into the trawl collections; this was similar to June 2002. The ABS surveys were conducted during the winter and spring from 2002 to 2007; during this period, winter flounder were collected in all three Harbor regions and in every month except for June 2006 in the Arthur Kill/Newark Bay and April, May, and June of 2007 in the Lower Bay.

Regardless of whether the sampling was conducted during the night (2002-2004) or during the day (2005-2007), the fish assemblage in each region was dominated by sexually immature individuals (TL < 250 mm). Nighttime catches during January through March were dominated by individuals between 50-150 mm TL, whereas a wide range of length classes were caught during April and May 2002-2004 (Figures 3-22a, 3-23a, 3-24a, 3-25a). The greatest number of sexually mature winter flounder was sampled during April and May 2002-2004 (Figures 3-22a) and March and April 2005 and 2006. In 2007, most mature winter flounder were collected in January, March, and April (Figure 3-22b). During June 2002 and 2007, small winter flounder, likely young-of-the-year, were collected in Arthur Kill/Newark Bay and Upper Bay and are represented by the large fraction of fish close to 50 mm TL (Figures 3-22a, 3-23a, 3-24a, 3-25a).

Over the six years of the ABS program, winter flounder eggs were generally collected from February through April (Figure 3-26); the highest densities of winter flounder eggs were collected in February and March. Egg densities were typically higher in Lower Bay and Upper Bay than in Arthur Kill/Newark Bay. Densities of eggs collected during 2003 were the highest of any sampling season prior to 2007, with monthly means of 70 eggs/1,000 m^3 in Upper Bay and of 87 and 91 eggs/1,000 m^3 in Lower Bay (Figure 3-26a). Monthly egg densities during 2007 were slightly higher than previous years in the Lower Bay (90 eggs/1,000 m^3) and Upper Bay (110 eggs/1,000 m^3) during February and March, respectively (Figure 3-26a). Densities of eggs in the Arthur Kill/Newark Bay during 2007 were similar to previous years (Figure 3-26a).

The occurrence of winter flounder larvae (yolk-sac and post-yolk sac combined) took place over a protracted time frame, starting in February and lasting into June (Figure 3-26b). Generally the highest winter flounder larval densities were collected in the Lower

Bay, while Arthur Kill/Newark Bay had the lowest. Prior to 2007, mean monthly densities in each region reached their five-year peak during April 2004: Arthur Kill/Newark Bay 429; Upper Bay 622; Lower Bay 2,529 larvae/1,000 m^3. The 2003 season also had high densities in each sampling region. Monthly larvae densities during April 2007 were higher than usual in the Lower Bay and Upper Bay and second highest in the Arthur Kill/Newark Bay. Monthly mean densities of approximately 4800 larvae/1,000 m^3 in Lower Bay, 750 larvae/1,000 m^3 in Upper Bay, and 400 larvae/1,000 m^3 in the Arthur Kill/Newark Bay (Figure 3-26a). In contrast, some of the lowest densities in the Harbor were collected during 2002, 2005, and 2006.

The length ranges of winter flounder larvae from the three sampling regions were similar (Figure 3-27); the Arthur Kill/Newark Bay range was slightly narrower on both ends than either the Upper or Lower Bays. The smaller larvae (≤4 mm) were distributed through the sampling regions. The length frequency data suggests that some of the larger larvae (primarily post yolk-sac larvae in the 5 -6 mm range) may be moving into the Upper Bay primarily from the Lower Bay.

3.3 WATER QUALITY DATA

Arthur Kill/Newark Bay mean bottom temperature range was greater than the other regions of the Harbor (Figure 3-28). Mean temperatures were cooler in January, similar among regions during February and March, and higher from April through June in Arthur Kill/Newark Bay compared to the other regions. At the onset of the winter flounder spawning season, mean temperatures throughout the Harbor were approximately 5°C. During spring and summer 2007, Arthur Kill/Newark Bay had the highest temperatures and Lower Bay generally had the lowest temperatures. Mean monthly temperatures for the sampling season ranged from a low of approximately 2.5°C in Arthur Kill/Newark Bay and Lower Bay during February to a high of approximately 22°C in Arthur Kill/Newark Bay during July.

Salinity recorded from near-bottom depth during ichthyoplankton and bottom trawl surveys ranged between 16.7 ppt and 28.7 ppt over the course of the sampling season

(Figure 3-28). Salinities were consistently lower in the Arthur Kill/Newark Bay and higher in the Lower Bay throughout the 2007 sampling season.

Trends in dissolved oxygen levels were similar across the three Harbor regions, remaining between 9.0 mg/L and 11.6 mg/L from January through April and decreasing in the summer months to between 5.1 mg/L and 7.9 mg/L. Generally, dissolved oxygen levels throughout the Harbor were inversely related to temperatures within regions. All water quality sampling data are presented in Appendix C.

3.3.1 Comparisons among Years

Interannual variation in temperature was more pronounced in the Harbor than for salinity and dissolved oxygen concentrations. Winter water temperatures during 2002, 2005, 2006, and 2007 were warmer in all regions during January and in February 2002 and 2006 as compared to temperatures during other years (Figure 3-29a). There was a general increase in temperatures during May, June, and July with the warmest June water temperatures occurring in 2007 in all three sampling regions and the warmest May temperatures in the Upper Bay and Lower Bay occurring in 2007. In May 2006, water temperatures peaked in Arthur Kill/Newark Bay more than eight degrees higher than during other years (Figure 3-29a), 2007 was the second highest mean temperature for May. Mean temperatures during July 2007 were similar to other years, with the exception of unusually low temperatures observed during 2006 (Figure 3-29a).

Salinity concentrations in Upper and Lower Bays were relatively consistent among years and among months. In Arthur Kill/Newark Bay, salinities generally fluctuated more between years and months; the highest during 2002, the lowest during 2005, and the most consistent across months during 2006 and 2007 (Figure 3-29b). For all regions, salinity was most variable among years during April, with the low concentrations observed during months in 2003 and 2005. Salinities during 2007 were similar to other years, except during summer months in Arthur Kill/Newark Bay when they were higher than typical (Figure 3-29b).

Mean dissolved oxygen concentrations were less variable than mean temperatures among months and displayed less interannual variation than salinity concentrations. Dissolved oxygen concentrations were consistently higher during February and March, and steadily declined from April through July (Figure 3-29c).

4.0 DISCUSSION

The water quality and habitat characteristics found throughout the Harbor affect the spatial and temporal occurrence of finfish, including winter flounder. The three Harbor regions within this study exhibit different water quality and sediment types. The warmest temperatures occur in the Arthur Kill/Newark Bay region. This region also experiences the lowest dissolved oxygen concentrations and salinities. The bottom substrate of Arthur Kill/Newark Bay is dominated by fine grain sediments (i.e. silt and mud). The Lower Bay is characterized by the most stable water temperatures of the Harbor, as well as the highest salinity (closest to sea water, 35 ppt) and dissolved oxygen concentrations. Bottom sediments in the Lower Bay are comprised primarily of coarse grains (i.e., sand). Water temperature and salinity gradients in the Upper Bay are largely influenced by Hudson River flows. The Upper Bay sediments are comprised of a mixture of fine and coarse grains.

4.1 ALL SPECIES

The fish community of the NY/NJ Harbor is dominated by migratory and seasonally transient species. Many species spawn in the Harbor seasonally, while others spawn offshore on the continental shelf or upstream in the Harbor tributaries. This seasonality and preference for different spawning habitat influences the occurrence and relative density of species collected during the sampling program. Species that spawn in the Harbor such as bay anchovy were present in high densities during their seasonal spawning period (March through July). Other species such as American shad were less abundant because they do not spawn in the Harbor proper. The finfish composition of anadromous, semi-anadromous and shallow water residents collected during the 2007 Aquatic Biological Survey is typical of Atlantic seaboard estuaries within the Middle Atlantic Bight (Able and Fahay 1998).

Species abundance and diversity have varied annually throughout the sampling program. For example, the highest total abundance of all species combined in trawl catches over the sampling program occurred in 2006 with 23,874 fish collected; whereas, a total of

7,032 fish were collected during 2007. The changes in number of species, species abundance, and total abundance during the sampling program are likely within the natural variation of populations within a dynamic system. Temporal and spatial trends are generally evident across the Harbor regions. Specifically, there was a transition from generally higher CPUEs at channel stations during winter and early spring months to generally higher CPUEs at non-channel stations during late spring and early summer months. In addition, species richness and total abundance varied by region and year. In 2006, the Arthur Kill/Newark Bay collections had the lowest species richness and abundance, while the Lower Bay had the highest abundance and Upper Bay had the highest species richness. In comparison to 2006, the Lower Bay had the lowest species richness and abundance, the Arthur Kill/Newark Bay had the highest abundance, and the Upper Bay had the highest species richness in 2007.

Egg and larval densities also varied spatially and temporally. Generally, there were no clear differences between channel and non-channel station densities for ichthyoplankton except within Arthur Kill/Newark Bay, which had relatively higher egg and post-yolk sac larval densities at non-channel stations during 2006. In 2007, the highest species richness was in the Upper Bay (32 species), where it was similar to adult fish, while the highest total abundance of eggs and larvae was in the Lower Bay. There were no clear differences between channel and non-channel station egg densities in 2007. However, larval densities were higher in non-channel habitats during March 2007 throughout the Harbor and in April 2007 at Lower Bay stations. In June, larval densities were higher at channel stations in the Lower Bay and higher at non-channel stations in the Arthur Kill/Newark Bay region.

4.1.1 Essential Fish Habitat Species

The trawl catches of several EFH species (red hake, windowpane, winter flounder, and little skate) have generally occurred in deeper water (channel) habitats and to a lesser extent, in shallow water (non-channel) habitats. Atlantic herring, bluefish, butterfish, scup, and summer flounder are generally collected in non-channel habitats. Spatial and temporal preferences were evident for some EFH species. For instance, red hake were

collected in the Arthur Kill/Newark Bay and Upper Bay at channel stations before water temperatures warmed (January). Scup catch rates were highest at Upper Bay non-channel stations with warmer water temperatures (June). Adult and juvenile winter flounder and windowpane catch rates were high at Upper Bay channel stations with cooler winter and early spring water temperatures (January to April), and young of the year winter flounder catch rates were high at channel stations in the Upper Bay during June.

Temporal and spatial preferences were not evident for some EFH species. For instance in 2006, Atlantic herring were collected in the Arthur Kill/Newark Bay and Upper Bay at non-channel stations with warmer water temperatures (May). However in 2007, Atlantic herring catches were high before water temperatures warmed (February and March) at channel stations in the Upper Bay during February and Lower Bay during March.

From 2003 to 2006, winter flounder egg and larval densities were generally similar between channel and non-channel habitats. During 2007, egg and larval densities were considerably higher than in previous years, and they were also higher at non-channel habitats than in channel habitats. Winter flounder eggs were collected primarily from non-channel habitats in the Lower and Upper Bays during February and March. Winter flounder yolk-sac larval densities were high from March to April in non-channel habitats of the Lower Bay while most post yolk-sac larvae were collected from March to May with the peak concentrations in April at Lower Bay non-channel stations.

Windowpane egg and larval densities were slightly higher at channel stations than at non-channel stations. During 2007, windowpane egg and larval densities were considerably higher than in previous years. Windowpane were common in the Harbor with eggs and larvae collected primarily in the Lower Bay during May and June. Peak densities of both windowpane eggs and larvae occurred during June in the Lower Bay.

Atlantic mackerel eggs and larvae, butterfish larvae, and summer flounder larvae have been collected in low densities primarily from the Lower Bay and Upper Bay during past

years. In 2007, a few Atlantic mackerel eggs were collected from Lower Bay channel habitats during May, summer flounder larvae were present in Lower Bay non-channel habitats during April, and a few butterfish larvae were collected at channel stations in the Upper Bay in July.

4.1.2 Important Non-Managed Species

For this program, alewife, Atlantic menhaden, and striped bass are grouped as INM species and these three species have consistently comprised an important part of the trawl and/or ichthyoplankton catch. Collections of Atlantic menhaden eggs and larvae from both channel and non-channel stations throughout the Harbor (primarily larvae in the Lower Bay, followed by the Upper Bay) have remained a common component of the 2003 to 2007 ichthyoplankton samples. Similar to past years, few Atlantic menhaden eggs were collected in 2007, but larvae were common in collections throughout the Harbor. Atlantic menhaden were also collected by trawl, primarily from channel habitats of the Lower Bay during January 2007. Although alewife and striped bass eggs and larvae are seldom collected in the Harbor, juvenile alewife and striped bass are collected primarily from channel habitats in the Lower Bay during winter (primarily January in 2007) and striped bass are collected primarily from channel habitats in the Arthur Kill/Newark Bay and Upper Bay during winter and early spring (primarily February and April in 2007). Striped bass was a dominant or very common species in collections during the first three program years when trawl surveys were conducted at night. Since changing to daytime trawling, striped bass catches have generally been lower (during 2005, 2006, and 2007).

4.2 WINTER FLOUNDER

As demonstrated in previous program years (USACE 2003a, USACE 2003b, USACE 2005, USACE 2006, USACE 2007) and during this year's survey, spatial and temporal trends in winter flounder abundance demonstrate that different areas of the Harbor are important to winter flounder at different stages of their life history. The spatial and temporal patterns observed in winter flounder abundance and density show that this species generally utilizes different areas of the Harbor for spawning and nursery

habitat. However, depending on water quality (primarily temperature and salinity) and sediment conditions, the Harbor regions used may shift seasonally and annually for each life stage.

The occurrence of adult winter flounder during the peak spawning period (February - March) and the subsequent occurrence of eggs and larvae can be used as indicators of potential spawning areas in the Harbor. Because winter flounder produce demersal eggs which adhere to the substrate, the locations with high densities of winter flounder eggs in collections were also likely to be at or near the primary spawning areas. The predominance of winter flounder eggs in the Lower Bay and lower section of the Upper Bay during the peak spawning period (i.e., February to March) coupled with the relatively high densities of yolk-sac larvae generally suggests these areas provide important winter flounder spawning habitat. Some winter flounder spawning occurs in the upper section of the Upper Bay and Arthur Kill/Newark Bay regions, but the intensity is notably less than in the Lower Bay – likely resulting from the distribution of a combination of suitable spawning substrate and the seasonal location of suitable water quality (temperature and salinity) in these regions.

During previous sampling programs (1999 – 2003), the primary spawning areas were determined to be in the Lower Bay and the lower reaches of the Upper Bay. Distributional data from these studies suggested that juvenile (young of the year) winter flounder generally move from the primary spawning areas in the Lower Bay to nursery areas further into the Harbor estuary (USACE 1999, USACE 2002, USACE 2003a, USACE 2003b). This conclusion was based on increasing densities of juveniles in the Arthur Kill/Newark Bay and Upper Bay regions during 2002 and 2003. In 2004, the movement of juveniles into the Arthur Kill/Newark Bay and Upper Bay regions was not evident (USACE 2005).

The 2005-2007 sampling programs also showed that the primary winter flounder spawning locations included both the Lower Bay and the lower portions of the Upper Bay, and the overall yearly dispersal movements of older larvae appeared to be into the

Lower Bay, this same movement pattern also seemed apparent in 2002 and 2004. Since winter flounder larvae move primarily by using currents to drift, it is possible that increases of larvae in the Lower Bay ichthyoplankton catches during 2002, 2004, and the last three years may have been due, in part, to a redistribution of winter flounder spawned and hatched from shallower areas of the Lower Bay. In 2007, winter flounder egg and larval densities were the highest observed during the six years of the sampling program, which could account for the relatively large numbers of larvae in Lower Bay channels. In 2007, the movement of juveniles into the Upper Bay regions was again evident; however few juveniles were collected in Arthur Kill/Newark Bay trawl collections.

Winter flounder adults (>250 mm) were most common in trawl catches in the Upper Bay during January through March of 2005, 2006, and 2007. March has typically been the peak spawning period for winter flounder in the Upper Bay region (Able and Fahay 1998, USACE 2005). Peak spawning in the Lower Bay appears to be slightly earlier (February to March). In estuaries such as New York/New Jersey Harbor, winter flounder typically spawn in shallow water less than six (6) meters depth (NMFS 1997, NMFS 1999 and Brown et al. 2000). However, no consistent pattern in spawning depth preference for winter flounder adults has been identified during the program years, although adult winter flounder are likely using the channels as a primary migration route to and from shallow-water spawning areas. The presence of winter flounder 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 or storms, 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.

Over the six years of the ABS studies, sexually mature winter flounder were collected in larger numbers in the Upper Bay and the Lower Bay than in the Arthur Kill/Newark Bay. Gender ratios varied slightly among the main sampling areas. The gender ratio usually favored females but the difference was most pronounced in the Upper Bay and Lower Bay. Since only large 250 mm winter flounder are sexed, there may be some bias towards

females. In the Navesink River estuary, Stoner *et al.* (1999) found that females outnumbered males in the middle and upper reaches of the estuary, with males more abundant in the lower estuary. Females outnumber males in studies on the Niantic River in Connecticut which resulted in a geometric mean sex ratio of 1.6 females to male over 30 years (1977 – 2007) when sex was determined on all sized WFL (NUSCO 2008).

Declines in commercial harvests and recreational catch have been observed in the Southern New England/Mid-Atlantic stock complex of winter flounder (Vonderweidt et al. 2006). Total landings (commercial and recreational) of winter flounder have steadily declined since 1984, and the winter flounder stock is currently classified as overfished. All mid-Atlantic coastal states are managing this stock through seasonal fishing closures, gear restrictions, and size and creel limits.

Programs such as the USACE-NYD Aquatic Biological Survey are essential in monitoring the status of the local populations. As an ongoing, systematic sampling program, yearly indices of abundance for larvae, juveniles, and adults are available. The densities of winter flounder eggs and larvae were considerably higher in 2007 than any previous year. Although many factors influence annual variations in egg and larval densities, some of these factors are quantified through this program such as habitat use of adults, sex ratio, and water temperatures. Continued data collection could provide insight into patterns of abundance and habitat use by early life stages of winter flounder.

The Lower Bay contains a large amount of potential winter flounder spawning and nursery habitat compared to the Upper Bay and Arthur Kill/Newark Bay. The combination of a large amount of shallow water habitat and extensive areas of suitable substrate would suggest they might provide important habitat for winter flounder. There are two possible reasons why egg densities in the Lower Bay are similar to Upper Bay densities while larval densities are often considerably higher in the Lower Bay compared to the Upper Bay densities.

First, because the existing habitat in the Lower Bay may be more suitable for winter flounder spawning, considerably more eggs are likely spawned in the Lower Bay's extensive shallows. In the Upper Bay, by contrast, the shallow water habitats are much less extensive and their habitat suitability for winter flounder spawning and early life stages has been degraded. The degraded habitat quality is primarily due to fragmented shallow/shoal habitat resulting from navigation channels, some of which cross prevailing currents and cause turbulence that can resuspend eggs in the water column. The fragmented shallow/shoal habitat would result in a higher percentage of eggs spawned close to navigation channels as compared to the Lower Bay. Moreover, the propeller wash from tugs, ships, and other commercial traffic in the channels of the Upper Bay increases the turbulence and a higher percentage of winter flounder eggs are susceptible to resuspension in the water column and collection in the ichthyoplankton net. In the Lower Bay, by comparison, a high percentage of the winter flounder eggs spawned are likely to remain on the bottom with fewer breaking loose and drifting with the current.

Second, the selected locations of Lower Bay shallow water stations may not include the primary spawning habitat used by winter flounder. The three shallow water stations (LB-1, LB-3, and LB-5) are closer to channels and do not sample the near shore habitats of the extensive shallow water habitats on the east side of Staten Island or south of Coney Island. If the majority of winter flounder spawn in the shallower waters of these areas (near shore), then the adults, eggs, and yolk-sac larvae may be under-represented in the bottom trawl and ichthyoplankton collections (primarily in February and March). After hatching, the larvae would be more likely to drift with currents and spread over the shallows and potentially into the sampling areas increasing the chance of collection.

Because winter flounder can spawn in very shallow waters, the addition of several nearshore ichthyoplankton sampling stations (Gravesend Bay, west Hoffman Island, Old Orchard Shoal, and Squash Channel Range west) with suitable substrates would be useful in refining the distribution and importance of spawning areas in the Harbor.

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Table 2-1. Description of stations sampled during the 1999–2007 Aquatic Biological Survey.

Region	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	Non-channel	Gowanus Bay Interpier South	27	40:39.45	74:00.86	40:39.56	74:01.05
	SB–2[a]	Non-channel	Gowanus Bay Interpier	30	40:39.60	74:00.48	40:39.75	74:00.75
	SB–3	Non-channel	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	Non-channel	Jersey Flats	12	40:39.91	74:03.57	40:40.17	74:03.45
	PJ–2	Non-channel	Caven Point	10	40:40.62	74:03.44	40:41.02	74:03.35
	PJ–3	Non-channel	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	Non-channel	Newark Bay Flats Middle	10	40:41.06	74:07.61	40:41.40	74:07.44
	NB–4	Non-channel	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[b]	Non-channel	Elizabeth Flats North	13	40:39.62	74:09.29	40:39.51	74:08.99
Lower Bay	LB–1	Non-channel	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	Non-channel	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	Non-channel	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[a,b,d]	Non-channel	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[b]	Non-channel	Prall's Island	20	40:36.83	74:11.91	40:36.24	74:11.82
	AK-7[c]	Non-channel	Island of Meadows	15	40:34.59	74:12.49	40:34.70	74:12.47

[a] Not sampled with bottom trawls in 2005
[b] Not sampled in 2006
[c] Only sampled during 2006 (AK-7 replaced AK-1 in 2006 due to rapid depth changes at AK-1)
[d] Not sampled in 2007

Table 2-2. Specifications of the bottom trawl used during the 1999-2007 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 1.0-in (81.3 x 43.2 x 2.5 cm)
Tow line length	5 times maximum station water depth

Table 2-3. Specifications of the epibenthic sled and plankton net used during the 1999-2007 Aquatic Biological Survey.

Part	Specification
Mouth height x width	0.5 x 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)
Distance from sled base	Bottom of net is 17.8 cm above the bottom of the sled runners
Epibenthic sled	Constructed of aluminum pipe

Table 2-4. Water quality parameters measurements made during the 2007 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
Salinity	+/- 0.1 ppt	Bottom

Table 3-1. Taxa identified in trawl and epibenthic sled (ichthyoplankton) samples collected during the 2007 Aquatic Biological Survey.

Group	Common Name	Scientific Name	Trawl	Sled
Essential Fish Habitat Species	Atlantic herring	*Clupea harengus*	x	
	Atlantic mackerel	*Scomber scombrus*		x
	Black sea bass	*Centropristis striata*	x	
	Bluefish	*Pomatomus saltatrix*	x	
	Butterfish	*Peprilus triacanthus*	x	x
	Clearnose skate	*Raja eglanteria*	x	
	Little skate	*Raja erinacea*	x	
	Red hake	*Urophycis chuss*	x	
	Scup	*Stenotomus chrysops*	x	
	Summer flounder	*Paralichthys dentatus*	x	x
	Windowpane	*Scopthalmus aquosus*	x	x
	Winter flounder	*Pleuronectes americanus*	x	x
	Winter skate	*Raja ocellata*	x	
Important Non-Managed Species	Alewife	*Alosa pseudoharengus*	x	
	Atlantic menhaden	*Brevoortia tyrannus*	x	x
	Striped bass	*Morone saxatilis*	x	x
Other Non-Managed Taxa	American eel	*Anguilla rostrata*	x	
	American sandlance	*Ammodytes americanus*		x
	American shad	*Alosa sapidissima*	x	
	Atlantic croaker	*Micropogonias undulates*	x	x
	Atlantic moonfish	*Selene setapinnis*	x	
	Atlantic silverside	*Menidia menidia*	x	
	Atlantic tomcod	*Microgadus tomcod*	x	x
	Bay anchovy	*Anchoa mitchilli*	x	x
	Blueback herring	*Alosa aestivalis*	x	
	Clupeiformes	Clupeidae		x
	Conger eel	*Conger oceanicus*	x	
	Cunner	*Tautogolabrus adspersus*	x	x
	Feather blenny	*Hypsoblennius hentzi*		x
	Fourbeard rockling	*Enchelyopus cimbrius*		x
	Fourspot flounder	*Hippoglossina oblonga*	x	x
	Gadidae	Gadidae		x
	Gizzard shad	*Dorosoma cepedianum*	x	
	Gobidae	Gobidae		x
	Goosefish	*Lophius americanus*		x
	Grubby	*Myoxocephalus aenaeus*	x	x
	Hogchocker	*Trinectes maculatus*	x	
	Labridae	Labridae		x
	Lined seahorse	*Hippocampus erectus*	x	
	Naked goby	*Gobiosoma bosci*		x
	Northern kingfish	*Menticirrhus saxatilis*		x
	Northern puffer	*Sphoeroides maculatus*		x
	Northern pipefish	*Syngnathus fuscus*	x	x
	Northern searobin	*Prionotus carolinus*	x	
	Oyster toadfish	*Opsanus tau*	x	
	Pollock	*Pollachius virens*	x	

Group	Common Name	Scientific Name	Trawl	Sled
	Prionotus sp.	*Prionotus* sp.		**x**
	Rock gunnel	*Pholis gunnellus*	**x**	**x**
	Silver hake	*Merluccius bilinearis*	**x**	**x**
	Smallmouth flounder	*Etropus microstomus*	**x**	**x**
	Smooth dogfish	*Mustelus canis*	**x**	
	Spiny dogfish	*Squalus acanthias*	**x**	
	Spot	*Leiostomus xanthurus*	**x**	
	Spotted hake	*Urophycis regia*	**x**	**x**
	Striped cusk-eel	*Ophidion marginatum*	**x**	
	Striped mullet	*Mugil cephalus*	**x**	
	Striped searobin	*Prionotus evolans*	**x**	
	Tautog	*Tautoga onitis*	**x**	**x**
	Weakfish	*Cynoscion regalis*	**x**	**x**
	White perch	*Morone americana*	**x**	**x**
Macrocrustaceans	American lobster	*Homarus americanus*	**x**	
	Blue crab	*Callinectes sapidus*	**x**	

Table 3-2. Total number collected by species at channel and non-channel stations during trawl surveys for the 2007 Aquatic Biological Survey.

Species	Station Type	Region			Total
		AKNB	UB	LB	
Essential Fish Habitat Species					
Atlantic herring	Channel	1	33	11	45
	Non-Channel		5	3	8
	Combined	*1*	*38*	*14*	53
Black sea bass	Channel				0
	Non-Channel		3		3
	Combined	*0*	*3*	*0*	3
Bluefish	Channel				0
	Non-Channel		5		5
	Combined	*0*	*5*	*0*	5
Butterfish	Channel	2	2	39	43
	Non-Channel		2	2	4
	Combined	*2*	*4*	*41*	47
Clearnose skate	Channel		1	3	4
	Non-Channel				0
	Combined	*0*	*1*	*3*	4
Little skate	Channel		9	22	31
	Non-Channel		2	3	5
	Combined	*0*	*11*	*25*	36
Red hake	Channel	73	111	2	186
	Non-Channel				0
	Combined	*73*	*111*	*2*	186
Scup	Channel		3		3
	Non-Channel		118		118
	Combined	*0*	*121*	*0*	121
Summer flounder	Channel	2	9	7	18
	Non-Channel	1	5		6
	Combined	*3*	*14*	*7*	24
Windowpane	Channel	6	43	7	56
	Non-Channel		7	3	10
	Combined	*6*	*50*	*10*	66
Winter flounder	Channel	63	252	44	359
	Non-Channel	2	64	3	69
	Combined	*65*	*316*	*47*	428
Winter skate	Channel		4		4
	Non-Channel		2		2
	Combined	*0*	*6*	*0*	6
Sub-Total Essential Fish Habitat Species		*150*	*680*	*149*	*979*
Important Non-Managed Species					
Alewife	Channel	13	61	287	361
	Non-Channel	1	9		10
	Combined	*14*	*70*	*287*	371
Atlantic menhaden	Channel		10	37	47
	Non-Channel		8	3	11
	Combined	*0*	*18*	*40*	58
Striped bass	Channel	247	215	17	479
	Non-Channel	8	34	1	43
	Combined	*255*	*249*	*18*	522
Sub-Total Important Non-Managed Species		*269*	*337*	*345*	*951*

		Region			
Other Non-Managed Species					
American eel	Channel	2			2
	Non-Channel				0
	Combined	*2*	*0*	*0*	2
American shad	Channel	3	8	28	39
	Non-Channel		8	1	9
	Combined	*3*	*16*	*29*	48
Atlantic croaker	Channel	16	4		20
	Non-Channel				0
	Combined	*16*	*4*	*0*	20
Atlantic moonfish	Channel		1		1
	Non-Channel				0
	Combined	*0*	*1*	*0*	1
Atlantic silverside	Channel	2	9	44	55
	Non-Channel	46	76	23	145
	Combined	*48*	*85*	*67*	200
Atlantic tomcod	Channel	8	154		162
	Non-Channel	1	55		56
	Combined	*9*	*209*	*0*	218
Bay anchovy	Channel	165	42	146	353
	Non-Channel	717	290	3	1010
	Combined	*882*	*332*	*149*	1363
Blueback herring	Channel	2	32	68	102
	Non-Channel	13	11	4	28
	Combined	*15*	*43*	*72*	130
Conger eel	Channel		1		1
	Non-Channel				0
	Combined	*0*	*1*	*0*	1
Cunner	Channel	2	7		9
	Non-Channel		3		3
	Combined	*2*	*10*	*0*	12
Fourspot flounder	Channel		1	2	3
	Non-Channel				0
	Combined	*0*	*1*	*2*	3
Gizzard shad	Channel	29			29
	Non-Channel		1		1
	Combined	*29*	*1*	*0*	30
Grubby	Channel	3	5		8
	Non-Channel		6		6
	Combined	*3*	*11*	*0*	14
Hogchocker	Channel	2			2
	Non-Channel				0
	Combined	*2*	*0*	*0*	2
Lined seahorse	Channel				0
	Non-Channel		2	1	3
	Combined	*0*	*2*	*1*	3
Northern pipefish	Channel	5	9	3	17
	Non-Channel	1	2		3
	Combined	*6*	*11*	*3*	20
Northern searobin	Channel		5	4	9
	Non-Channel				0
	Combined	*0*	*5*	*4*	9
Oyster toadfish	Channel		1		1

		Region			
	Non-Channel				0
	Combined	*0*	*1*	*0*	1
	Channel		2		2
Pollock	Non-Channel				0
	Combined	*0*	*2*	*0*	2
	Channel	2			2
Rock gunnel	Non-Channel				0
	Combined	*2*	*0*	*0*	2
	Channel	3	10	51	64
Silver hake	Non-Channel	1			1
	Combined	*4*	*10*	*51*	65
	Channel	2	14	9	25
Smallmouth flounder	Non-Channel		5	4	9
	Combined	*2*	*19*	*13*	34
	Channel		1		1
Smooth dogfish	Non-Channel				0
	Combined	*0*	*1*	*0*	1
	Channel			10	10
Spiny dogfish	Non-Channel				0
	Combined	*0*	*0*	*10*	10
	Channel	1	8		9
Spot	Non-Channel				0
	Combined	*1*	*8*	*0*	9
	Channel	174	271	78	523
Spotted hake	Non-Channel		1	3	4
	Combined	*174*	*272*	*81*	527
	Channel		1		1
Striped cuskeel	Non-Channel				0
	Combined	*0*	*1*	*0*	1
	Channel		2		2
Striped mullet	Non-Channel				0
	Combined	*0*	*2*	*0*	2
	Channel	1			1
Striped searobin	Non-Channel				0
	Combined	*1*	*0*	*0*	1
	Channel	1			1
Tautog	Non-Channel		4		4
	Combined	*1*	*4*	*0*	5
	Channel	1	4		5
Weakfish	Non-Channel				0
	Combined	*1*	*4*	*0*	5
	Channel	2337	17		2354
White perch	Non-Channel	2	5		7
	Combined	*2339*	*22*	*0*	2361
Sub-Total Other Non-Managed Species		*3542*	*1078*	*482*	*5102*
Macrocrustaceans					
	Channel		1		1
American lobster	Non-Channel				0
	Combined	*0*	*1*	*0*	1
	Channel	27	60	8	95
Blue crab	Non-Channel	75	134	1	210
	Combined	*102*	*194*	*9*	305

	Region			
Sub-Total Macrocrustaceans	*102*	*195*	*9*	*306*

Table 3-3. Monthly average trawl CPUE by species for all navigation channel and non-channel stations combined during the 2007 Aquatic Biological Survey.

Species	Station Type	Jan	Feb	Mar	Apr	May	Jun	Total
Essential Fish Habitat Species								
Atlantic herring	Channel	0.05	1.09	0.69				1.83
	Non-Channel	0.29	0.06	0.03		0.17		0.55
Black sea bass	Channel							0
	Non-Channel				0.25			0.25
Bluefish	Channel							0
	Non-Channel					0.08	0.33	0.41
Butterfish	Channel	0.05				0.93	2.58	3.56
	Non-Channel					0.08	0.25	0.33
Clearnose skate	Channel				0.08	0.17	0.08	0.33
	Non-Channel							0
Little skate	Channel	1.05	0.14	0.17		0.08		1.44
	Non-Channel			0.03	0.08	0.25		0.36
Red hake	Channel	6.81	1.26	0.25	0.95	0.08		9.35
	Non-Channel							0
Scup	Channel					0.17	0.08	0.25
	Non-Channel					0.5	9.33	9.83
Summer flounder	Channel	0.33	0.05	0.03	0.18		0.59	1.18
	Non-Channel			0.03	0.17		0.29	0.49
Windowpane	Channel	1.05	0.36	0.52	0.69	0.09	0.17	2.88
	Non-Channel	0.05	0.06	0.07	0.33		0.25	0.76
Winter flounder	Channel	5.54	3.28	2.35	4.19	0.26	4.67	20.29
	Non-Channel	0.74	0.28	0.98	1.67	0.08	0.33	4.08
Winter skate	Channel			0.14				0.14
	Non-Channel			0.07				0.07
Important Non-Managed Species								
Alewife	Channel	10.95	1.48	3.24	0.18	0.19	0.09	16.13
	Non-Channel	0.05			0.67	0.08		0.8
Atlantic menhaden	Channel	1.81	0.27	0.1				2.18
	Non-Channel	0.54	0.06			0.08		0.68
Striped bass	Channel	6.93	8.33	0.88	10.59		0.08	26.81
	Non-Channel	0.71			2.25	0.72	0.12	3.8
Other Non-Managed Species								
(31 species)	Channel	74.02 (20)	51.11 (13)	15.51 (11)	17.86 (15)	4.67 (4)	40.35 (11)	203.52 (31)
(15 species)	Non-Channel	5.74 (11)	7.33 (4)	1.76 (6)	2.00 (8)	41.90 (7)	64.88 (6)	123.61 (15)

Table 3-4a. Monthly average CPUE by management group for all navigation channel stations in the Arthur Kill/Newark Bay (AK/NB), Upper Bay (UB), and Lower Bay (LB) during the 2007 Aquatic Biological Survey.

Species	Region	Jan	Feb	Mar	Apr	May	Jun	Total
Essential Fish Habitat Species								
Atlantic herring	AK/NB	0.17						0.17
	UB		3	0.69				3.69
	LB			1.83				1.83
Butterfish	AK/NB	0.17					0.25	0.42
	UB					0.42		0.42
	LB					3	10	13
Clearnose skate	AK/NB							0
	UB				0.2			0.2
	LB					0.67	0.33	1
Little skate	AK/NB							0
	UB	0.57	0.13	0.23				0.93
	LB	2.83	0.33	0.33		0.33		3.82
Red hake	AK/NB	10.71	1.33	0.12				12.16
	UB	8.63	2.13	0.46	2.29			13.51
	LB	0.17				0.33		0.5
Scup	AK/NB							0
	UB					0.4	0.2	0.6
	LB							0
Summer flounder	AK/NB						0.52	0.52
	UB	0.22	0.13		0.42		0.8	1.57
	LB	0.83		0.17			0.33	1.33
Windowpane	AK/NB	0.33	0.13		0.5	0.26		1.22
	UB	1.67	0.88	1.15	1.24			4.94
	LB	0.83					0.67	1.5
Winter flounder	AK/NB	3.92	2.13	2.12	0.25	0.52	1.02	9.96
	UB	6.64	6	3.31	9.87	0.2	10.4	36.42
	LB	5.5	1.17	0.67				7.34
Winter skate	AK/NB							0
	UB			0.31				0.31
	LB							0
Important Non-Managed Species								
Alewife	AK/NB	0.17	0.57	0.6	0.25		0.27	1.86
	UB	3.56	2.13	0.69	0.22	0.45		7.05
	LB	32.83	1.83	13.17				47.83
Atlantic menhaden	AK/NB							0
	UB	0.44	0.75					1.19
	LB	5.67		0.5				6.17
Striped bass	AK/NB	7.88	22.16	2.44	0.25			32.73
	UB	9.14	0.75		25.22		0.2	35.31
	LB	2.67		0.17				2.84
Other Non-Managed Species								
(21 species)	AK/NB	202.17	132.30	31.17	10.00	0.77	47.79	424.20

Species	Region	Jan	Feb	Mar	Apr	May	Jun	Total
		(13)	(7)	(4)	(7)	(2)	(7)	(21)
(24 species)	UB	14.38 (12)	4.5 (9)	6.46 (10)	34.67 (11)	10.40 (4)	29.61 (7)	100.02 (24)
(11 species)	LB	35.33 (9)	5.00 (4)	9.00 (5)	0.33 (1)	0.33 (1)	48.33 (3)	98.32 (11)

Table 3-4b. Monthly average CPUE by management group for all non-channel stations combined in the Arthur Kill/Newark Bay (AK/NB), Lower Bay (LB), and Upper Bay (UB) during the 2007 Aquatic Biological Survey.

Species	Region	Jan	Feb	Mar	Apr	May	Jun	Total
Essential Fish Habitat Species								
Atlantic Herring	AK/NB							0
	UB	0.47	0.14			0.33		0.94
	LB	0.33		0.17				0.5
Black Sea Bass	AK/NB							0
	UB				0.5			0.5
	LB							0
Bluefish	AK/NB							0
	UB					0.17	0.67	0.84
	LB							0
Butterfish	AK/NB							0
	UB					0.17	0.17	0.34
	LB						0.67	0.67
Little Skate	AK/NB							0
	UB					0.33		0.33
	LB			0.17	0.33	0.33		0.83
Scup	AK/NB							0
	UB					1	18.67	19.67
	LB							0
Summer Flounder	AK/NB						0.48	0.48
	UB			0.06	0.33		0.33	0.72
	LB							0
Windowpane	AK/NB							0
	UB	0.13	0.16	0.06	0.33		0.5	1.18
	LB			0.17	0.67			0.84
Winter Flounder	AK/NB			0.18			0.33	0.51
	UB	1.59	0.71	1.59	3.33	0.17	0.5	7.89
	LB	0.33		0.17				0.5
Winter Skate	AK/NB							0
	UB			0.12				0.12
	LB							0
Important Non-Managed Species								
Alewife	AK/NB					0.33		0.33
	UB	0.13			1.33			1.46
	LB							0
Atlantic menhaden	AK/NB							0
	UB	0.97	0.14			0.17		1.28
	LB	0.5						0.5
Striped bass	AK/NB	0.17				2.9	0.48	3.55
	UB	1.64			4.33			5.97
	LB				0.33			0.33
Other Non-Managed Species								

Species	Region	Jan	Feb	Mar	Apr	May	Jun	Total
(7 species)	AK/NB	9.77 (4)	0.89 (2)	0.50 (2)		63.64 (4)	201.08 (1)	275.88 (7)
(14 species)	UB	2.64 (9)	18.21 (3)	2.72 (5)	3.83 (7)	51.98 (5)	29.22 (6)	108.6 (14)
(7 species)	LB	5.83 (6)		0.50 (3)	0.33 (1)			6.66 (7)

Table 3-5. Total number of collected by species at channel and non-channel stations during ichthyoplankton surveys for the 2007 Aquatic Biological Survey.

Common Name	LifeStage	Region			Total
		AKNB	UB	LB	
Essential Fish Habitat Species					
Atlantic mackerel	Egg	0	1	4	5
	Yolk sac	0	0	0	0
	Post-yolk sac	0	0	0	0
	Juvenile	0	0	0	0
	Total	0	1	4	5
Butterfish	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	0	2	0	2
	Juvenile	0	0	0	0
	Total	0	2	0	2
Summer flounder	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	0	1	16	17
	Juvenile	0	1	0	1
	Total	0	2	16	18
Windowpane	Egg	85	1,728	5,531	7,344
	Yolk sac	0	1	0	1
	Post-yolk sac	72	641	1,806	2,519
	Juvenile	0	0	0	0
	Total	157	2,370	7,337	9,864
Winter flounder	Egg	5	600	209	814
	Yolk sac	264	667	3,788	4,719
	Post-yolk sac	1,127	3,097	7,962	12,186
	Juvenile	0	0	0	0
	Total	1,509	4,564	12,050	17,719
Sub-Total Essential Fish Habitat Species		1,666	6,939	19,407	27,608
Important Non-Managed Species		0	0	0	
Atlantic menhaden	Egg	2,768	927	916	4,611
	Yolk sac	2	11	3	16
	Post-yolk sac	227	286	192	705
	Juvenile	0	0	0	0
	Total	3,012	1,262	1,147	5,332
Striped bass	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	0	2	0	2
	Juvenile	0	0	0	0
	Total	0	2	0	2
Sub-Total Important Non-Managed Species		3,012	1,264	1,147	5,334
Other Non-Managed Species					
American sandlance	Egg	0	0	0	0
	Yolk sac	0	0	3	3
	Post-yolk sac	2	21	13	36

		Region			
	Juvenile	0	0	0	0
	Total	2	21	16	39
Atlantic croaker	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	4	3	0	7
	Juvenile	15	3	0	18
	Total	19	6	0	25
Atlantic tomcod	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	7	2	0	9
	Juvenile	0	0	0	0
	Total	7	2	0	9
Bay anchovy	Egg	27,955	7,449	17,178	52,582
	Yolk sac	0	0	0	0
	Post-yolk sac	6,533	2,479	3,210	12,222
	Juvenile	3	4	0	7
	Total	34,491	9,931	20,388	64,811
Clupeiformes	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	0	0	29	29
	Juvenile	0	0	0	0
	Total	127	70	29	29
Cunner	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	0	2	2	4
	Juvenile	0	0	0	0
	Total	0	2	2	4
Feather blenny	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	2	3	0	5
	Juvenile	0	0	0	0
	Total	2	3	0	5
Fourbeard rockling	Egg	40	72	26	138
	Yolk sac	0	0	0	0
	Post-yolk sac	0	2	1	3
	Juvenile	0	0	0	0
	Total	40	74	27	141
Fourspot flounder	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	0	1	0	1
	Juvenile	0	0	0	0
	Total	0	1	0	1
Gadid unidentified	Egg	0	2	4	6
	Yolk sac	0	0	0	0
	Post-yolk sac	0	0	0	0
	Juvenile	0	0	0	0
	Total	0	2	4	6
Gobiid unidentified	Egg	0	1	0	1

		Region			
	Yolk sac	0	0	0	0
	Post-yolk sac	2,627	4,358	79	7,064
	Juvenile	0	0	0	0
	Total	2,627	4,359	79	7,065
Goosefish	Egg	0	0	128	128
	Yolk sac	0	0	0	0
	Post-yolk sac	0	1	0	1
	Juvenile	0	0	0	0
	Total	0	1	128	129
Grubby	Egg	0	0	0	0
	Yolk sac	45	66	14	125
	Post-yolk sac	417	582	325	1,324
	Juvenile	0	0	0	0
	Total	462	649	339	1,449
Labridae	Egg	3,259	9,369	8,457	21,085
	Yolk sac	0	0	0	0
	Post-yolk sac	0	0	0	0
	Juvenile	0	0	0	0
	Total	3,259	9,369	8,457	21,085
Naked goby	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	0	0	0	0
	Juvenile	1	0	0	1
	Total	1	0	0	1
Northern kingfish	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	2	6	5	13
	Juvenile	0	0	0	0
	Total	2	6	5	13
Northern pipefish	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	122	110	41	273
	Juvenile	0	0	0	0
	Total	122	110	41	273
Northern puffer	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	0	4	1	5
	Juvenile	0	0	0	0
	Total	0	4	1	5
Prionotus sp.	Egg	95	3,916	9,887	13,898
	Yolk sac	0	0	0	0
	Post-yolk sac	1	6	5	12
	Juvenile	0	1	0	1
	Total	96	3,923	9,892	13,911
Rock gunnel	Egg	0	0	0	0
	Yolk sac	0	8	1	9
	Post-yolk sac	142	43	39	224
	Juvenile	0	0	0	0

		Region			
	Total	142	51	41	233
Silver hake	Egg	0	6	0	6
	Yolk sac	0	0	0	0
	Post-yolk sac	0	0	0	0
	Juvenile	0	0	0	0
	Total	0	6	0	6
Smallmouth flounder	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	0	0	0	0
	Juvenile	0	2	1	3
	Total	0	2	1	3
Spotted hake	Egg	0	1	0	1
	Yolk sac	0	0	0	0
	Post-yolk sac	0	0	0	0
	Juvenile	0	0	0	0
	Total	*0*	*1*	*0*	*1*
Tautog	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	10	22	19	51
	Juvenile	0	0	0	0
	Total	10	22	19	51
Unidentified	Egg	0	85	839	924
	Yolk sac	0	0	0	0
	Post-yolk sac	1	0	2	3
	Juvenile	0	0	0	0
	Total	2	115	841	927
Weakfish	Egg	0	0	0	0
	Yolk sac	0	0	0	0
	Post-yolk sac	142	130	39	311
	Juvenile	7	0	0	7
	Total	149	130	39	318
White perch	Egg	0	0	0	0
	Yolk sac	1	1	0	2
	Post-yolk sac	1	0	0	1
	Juvenile	0	0	0	0
	Total	2	1	0	3
Sub-Total Other Non-Managed Species		41,561	28,860	40,349	110,543

Table 3-6a. Monthly average egg density (number/1000m^3) by group for channel stations and non-channel stations in Arthur Kill/Newark Bay (AK/NB), Upper Bay (UB), and Lower Bay (LB) during the 2007 Aquatic Biological Survey.

Channel Stations

Species	Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Jan-Jul
Essential Fish Habitat Species									
	AK/NB								
Atlantic mackerel	UB					0.37			0.37
	LB					4.47			4.47
	AK/NB					2.74	58.25		60.99
Windowpane	UB				7.62	241.19	387.94		636.75
	LB				10.27	770.20	1723.95		2504.42
	AK/NB			0.62					0.62
Winter flounder	UB		11.74	1.87					13.62
	LB		1.63	2.24					3.87
Important Non-Managed Species									
	AK/NB						883.56		883.56
Atlantic menhaden	UB					82.25	64.01		146.26
	LB					78.58	177.06		255.64
Other Non-Managed Species									
(4 species)	AK/NB		0.55		27.96	64.42	7721.96	3708.86	11523.74
			(1)		(1)	(3)	(3)	(2)	
(7 species)	UB	1.12			14.26	433.17	4624.41	505.35	5578.31
		(1)			(1)	(6)	(3)	(3)	
(7 species)	LB				6.56	747.16	17191.60	403.83	18349.14
					(1)	(5)	(4)	(3)	

Non-Channel Stations

Species	Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Jan-Jul
Essential Fish Habitat Species									
	AK/NB								
Atlantic mackerel	UB								
	LB					0.72			0.72
	AK/NB								
Windowpane	UB				2.47	54.74	213.84	6.60	277.66
	LB				5.12	732.67	1619.35		2357.15
	AK/NB			4.80					4.80
Winter flounder	UB		4.87	190.60	2.46				197.92
	LB		187.10	57.18					244.28
Important Non-Managed Species									
	AK/NB						1529.49		1529.49
Atlantic menhaden	UB					199.58	194.23		393.80
	LB					373.34	96.74		470.08

Non-Channel Stations									
Species	**Site**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Jan-Jul**
Other Non-Managed Species									
(3 species)	AK/NB					139.88	15391.04	581.13	16112.04
						(2)	(3)	(1)	
(8 species)	UB				25.01	170.35	4338.58	1006.02	5539.97
					(1)	(7)	(3)	(4)	
(5 species)	LB		1.04	2.30	13.46	1625.47	14567.78	64.34	16274.40
			(1)	(1)	(1)	(4)	(3)	(1)	

Table 3-6b. Monthly average yolk-sac larval density (number/1000m^3) by group for channel stations and non-channel stations in Arthur Kill/Newark Bay (AK/NB), Upper Bay (UB), and Lower Bay (LB) during the 2007 Aquatic Biological Survey.

Channel Stations

Species	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Jan-Jul
Essential Fish Habitat Species									
Windowpane	AK/NB								
	UB					0.37			0.37
	LB								
Winter flounder	AK/NB		1.10	12.27	64.52	0.65			78.55
	UB		1.47	20.29	69.52	0.73			92.01
	LB		0.84	265.23	111.82				377.88
Important Non-Managed Species									
Atlantic menhaden	AK/NB					0.47	0.73		1.20
	UB								
	LB					1.55			1.55
Other Non-Managed Species									
(2 species)	AK/NB		19.27 (1)	4.55 (1)	0.74 (1)	0.51 (1)			25.07
(3 species)	UB	19.62 (2)	14.44 (2)	1.33 (1)	1.29 (1)	0.37 (1)			37.04
(3 species)	LB	1.92 (1)	2.54 (2)		2.31 (1)				6.76

Non-Channel Stations

Species	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Jan-Jul
Essential Fish Habitat Species									
Winter flounder	AK/NB	1.98	0.69	65.50	64.91				133.07
	UB		11.83	131.03	69.98				212.84
	LB		3.41	2365.54	2211.69				4580.63
Important Non-Managed Species									
Atlantic menhaden	AK/NB								
	UB					5.31	1.99		7.30
	LB						1.20		1.20
Other Non-Managed Species									
(1 species)	AK/NB	1.97 (1)	4.63 (1)		1.10 (1)				7.70
(2 species)	UB	12.51 (2)	11.08 (2)	3.41 (1)	1.70 (1)				28.71
(2 species)	LB		11.02 (2)	0.87 (1)					11.89

Table 3-6c. Monthly average post-yolk sac larval density (number/1000m^3) by group for channel stations and non-channel stations in Arthur Kill/Newark Bay (AK/NB), Upper Bay (UB), and Lower Bay (LB) during the 2007 Aquatic Biological Survey.

Channel Stations

Species	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Jan-Jul
Essential Fish Habitat Species									
Butterfish	AK/NB								
	UB							2.15	2.15
	LB								
Summer flounder	AK/NB								
	UB				0.31				0.31
	LB								
Windowpane	AK/NB					0.51	39.17		39.68
	UB					105.28	94.22	1.26	200.76
	LB					241.58	859.84	63.50	1164.92
Winter flounder	AK/NB			16.70	157.08	63.57	3.13		240.49
	UB			48.84	446.09	96.23	4.67		595.84
	LB		1.94	83.88	526.42	278.77	8.43		899.44
Important Non-Managed Species									
Atlantic menhaden	AK/NB						97.64	1.46	99.10
	UB			2.58		6.67	43.32	6.74	59.31
	LB			1.44		9.30	90.47	5.13	106.34
Striped bass	AK/NB								
	UB						0.73		0.73
	LB								
Other Non-Managed Species									
(14 species)	AK/NB	9.79 (1)	8.07 (3)	108.50 (2)	184.34 (3)	9.21 (4)	926.96 (6)	2524.99 (6)	3771.85
(13 species)	UB	25.46 (2)	9.37 (2)	36.11 (3)	65.55 (3)	12.27 (1)	534.83 (8)	2088.12 (6)	2771.71
(12 species)	LB	8.63 (1)	11.67 (3)	61.75 (3)	47.16 (2)	16.57 (1)	3484.76 (8)	218.08 (4)	3848.62

Non-Channel Stations

Species	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Jan-Jul
Essential Fish Habitat Species									
Summer flounder	AK/NB								
	UB								
	LB				17.75				17.75
Windowpane	AK/NB					2.63	12.62		15.24
	UB					22.91	102.85	3.30	129.06
	LB					148.69	302.66	13.49	464.83
Winter flounder	AK/NB			128.22	449.96	7.67	1.09		586.95
	UB			61.79	685.40	51.52	0.39		799.09
	LB		2.87	84.92	6459.92	432.35	2.76		6982.82

Non-Channel Stations									
Species	**Region**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Jan-Jul**
Important Non-Managed Species									
Atlantic menhaden	AK/NB					1.65	60.13	3.34	65.13
	UB			0.37		22.95	59.20	24.28	106.79
	LB			3.26		29.95	15.78	1.91	50.89
Other Non-Managed Species									
(10 species)	AK/NB	13.82	17.63	25.77	25.95	3.54	4061.74	2915.25	7063.70
		(2)	(3)	(1)	(2)	(1)	(5)	(4)	
(16 species)	UB	8.38	14.91	105.17	78.79	10.29	637.86	2680.18	3535.58
		(1)	(2)	(3)	(2)	(3)	(10)	(7)	
(13 species)	LB	3.97	26.81	113.34	101.26	15.60	67.74	77.12	405.85
		(1)	(3)	(3)	(2)	(2)	(6)	(6)	

Table 3-6d. Monthly average juvenile larval density (number/1000m^3) by group for channel stations and non-channel stations in Arthur Kill/Newark Bay (AK/NB), Upper Bay (UB), and Lower Bay (LB) during the 2007 Aquatic Biological Survey.

Channel Stations

Species	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Jan-Jul
Other Non-Managed Species									
(4 species)	AK/NB	38.48 (2)	2.06 (1)	0.95 (1)				10.98 (1)	52.47
(4 species)	UB	3.90 (1)	1.47 (2)	0.58 (1)	0.90 (1)			0.78 (1)	7.64
(1 species)	LB			2.24 (1)					2.24

Non-Channel Stations

Species	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Jan-Jul
Essential Fish Habitat Species									
Summer flounder	AK/NB UB LB			0.30					0.30
Important Non-Managed Species									
Other Non-Managed Species									
(2 species)	AK/NB	3.94 (1)	0.69 (1)						4.64
(2 species)	UB		1.57 (2)						1.57
(0 species)	LB								

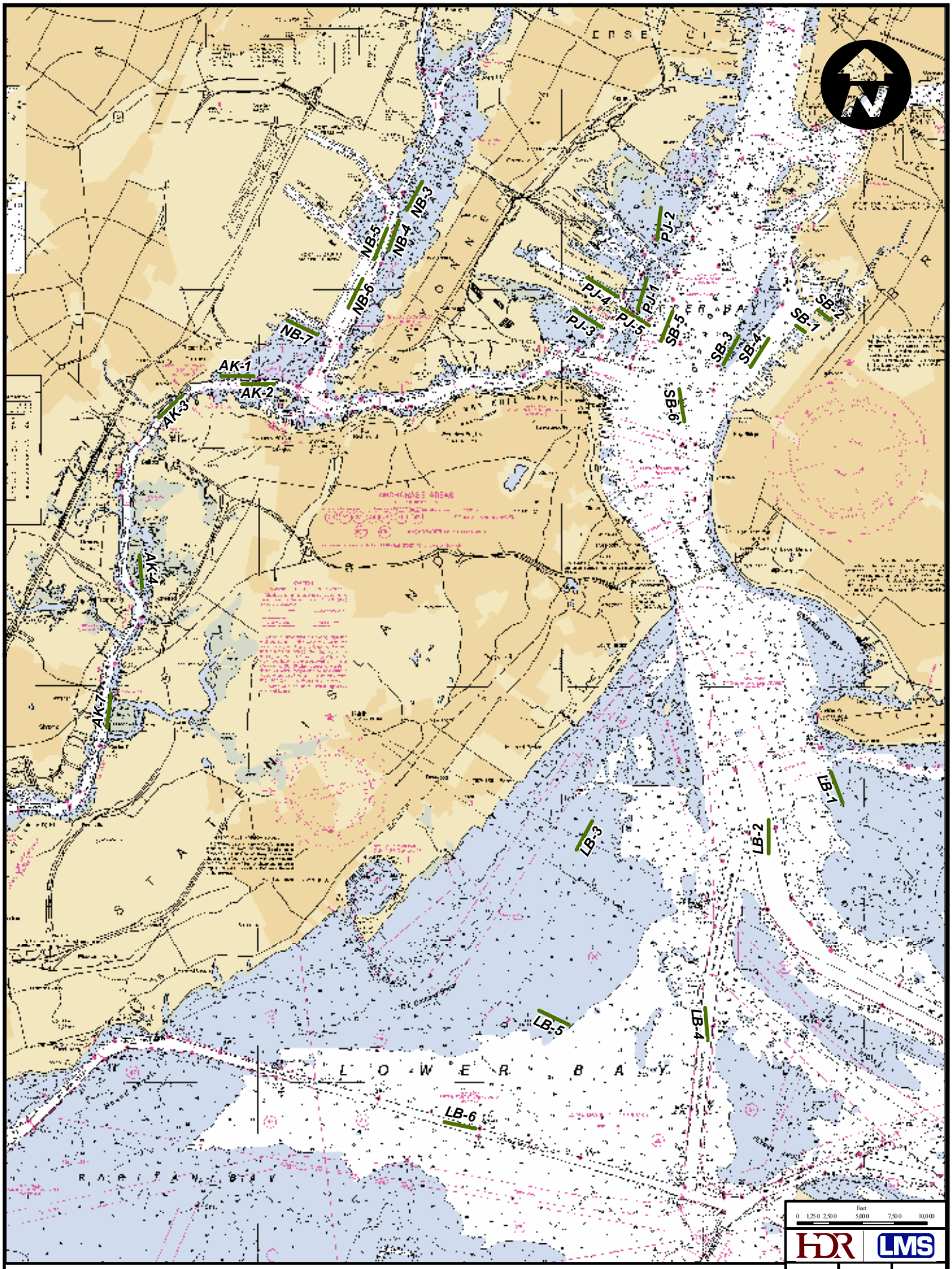

Figure 2-1. Map of stations sampled during the 2007 Aquatic Biological Survey.

Job No.	Date	Figure No.
147/54551	11/05/07	2-1

HLE: \\PRL-SRV2\Projects\426906_NY-NJ ENVIRONMENTAL RESTORATION CONSULT 0054553_ERC-SZ 10330 16AQUATIC SURVEY\GIS\map_docs\mxd\SamplingStations_Revised_8x11_FIGURE2-1.mxd

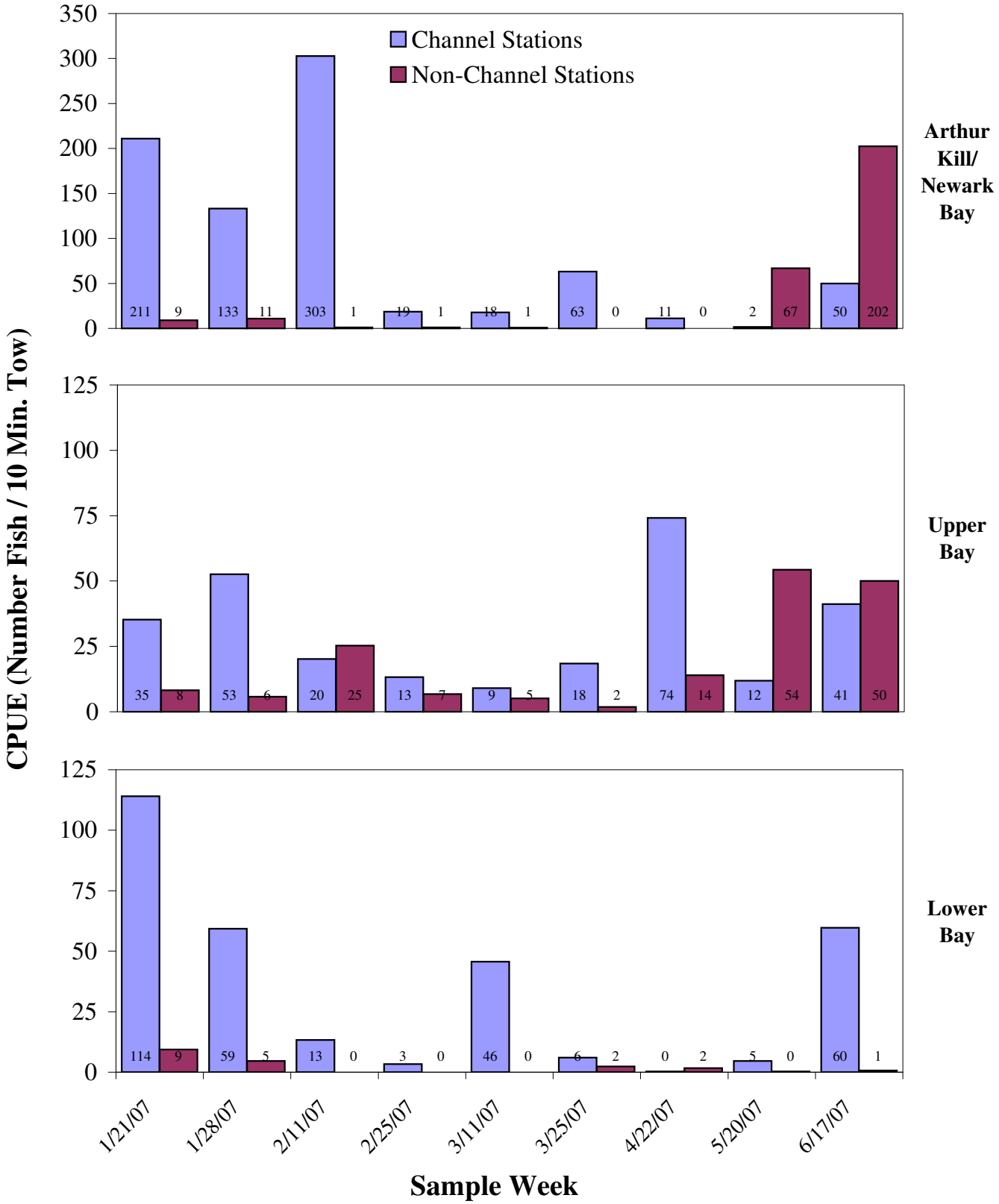

Figure 3-1 **Average weekly trawl CPUE for all species combined at navigation channel and non-channel stations in the three regions, 2007 Aquatic Biological Survey.**

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

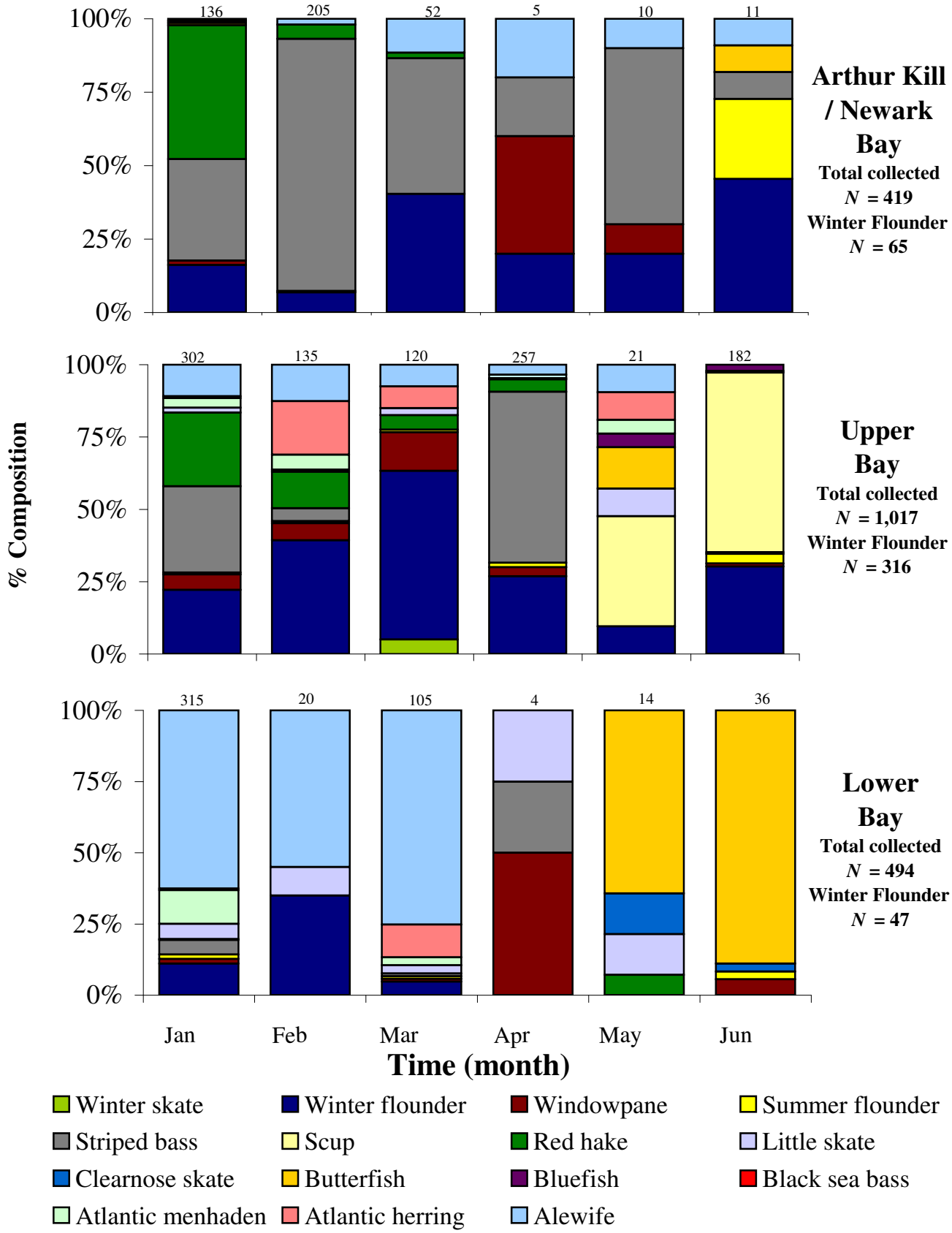

Figure 3-2 **EFH and Important Non-Managed Species composition of trawl catches from Arthur Kill/Newark Bay, Upper Bay,and Lower Bay stations during the 2007 Aquatic Biological Survey.**

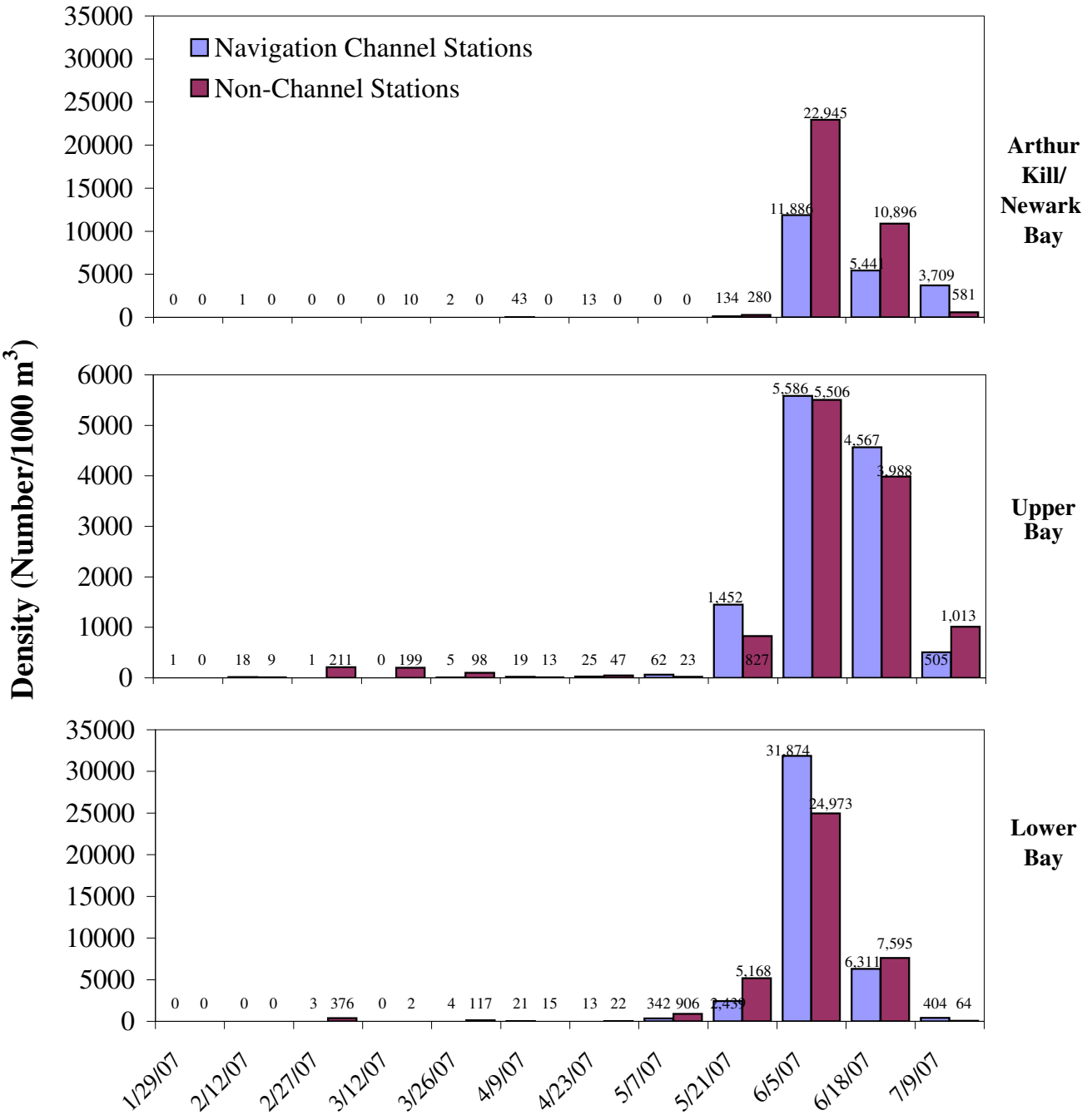

Figure 3-3 **Average weekly egg density of all species combined at navigation channel and non-channel stations in the three regions, 2007 Aquatic Biological Survey.**

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

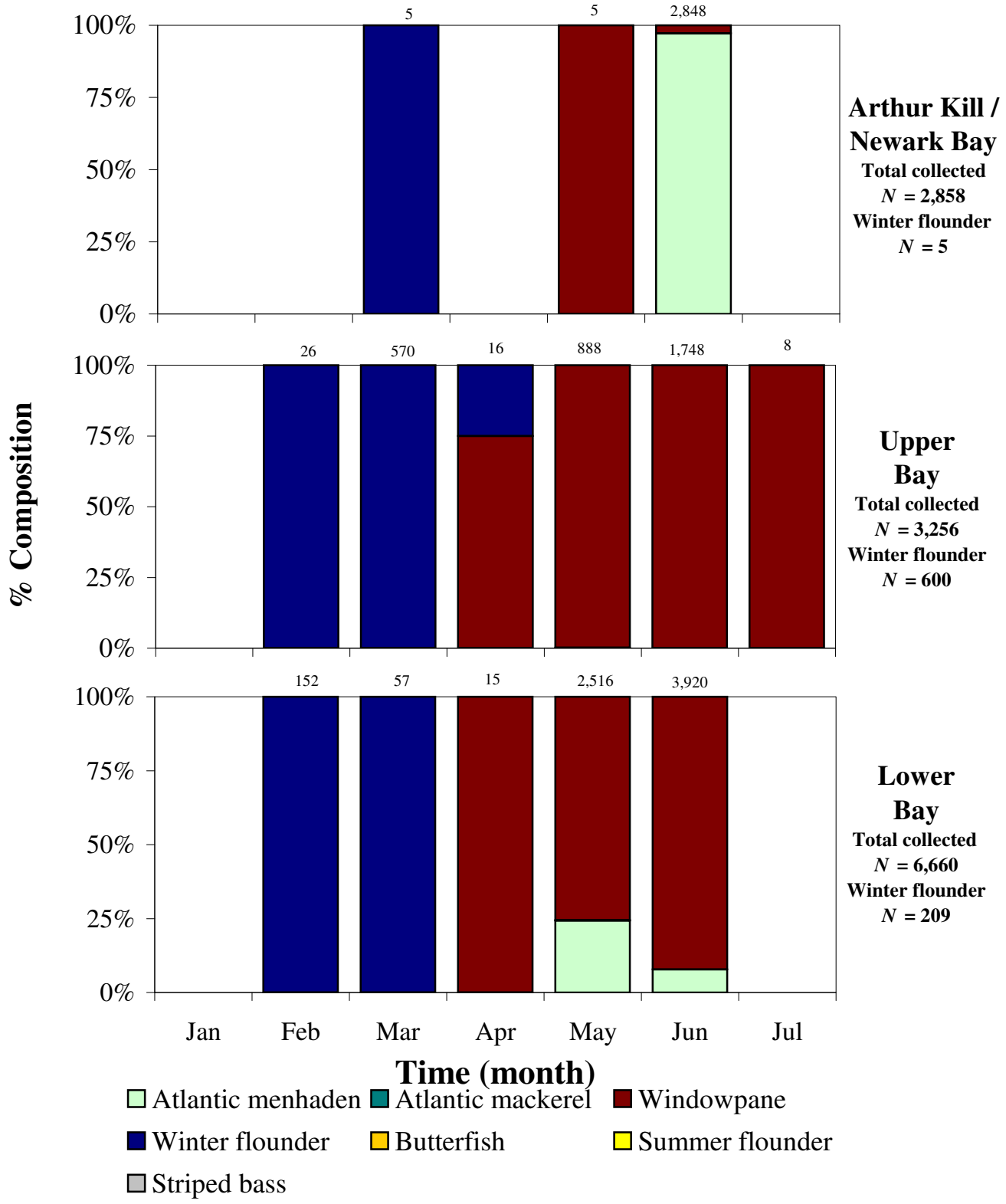

Figure 3-4 **EFH and important Non-Managed species compostion of eggs collected at all stations during the 2007 Aquatic Biological Survey.**

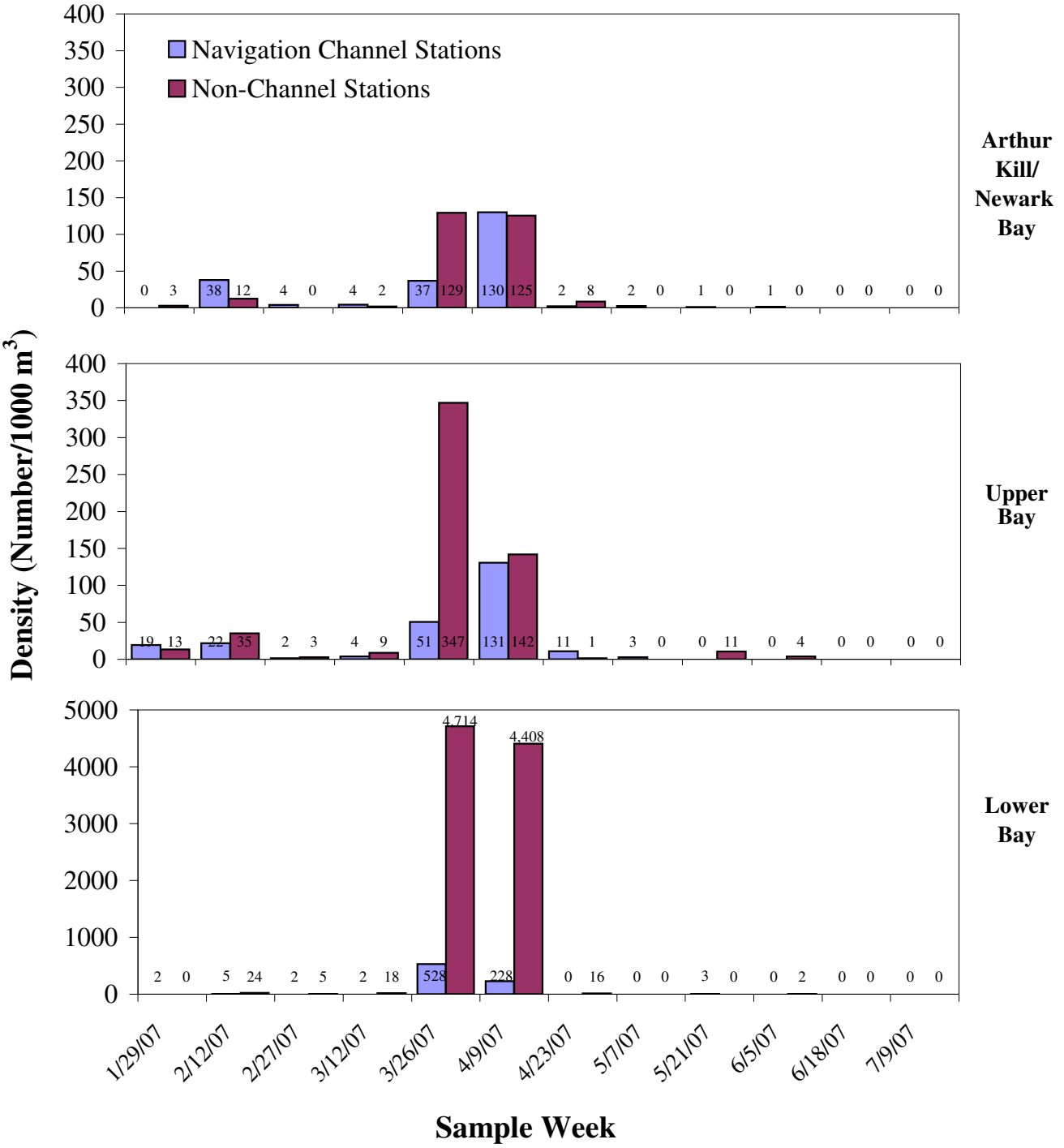

Figure 3-5 **Average weekly yolk-sac larvae density of all species combined at navigation channel and non-channel stations in the three regions, 2007 Aquatic Biological Survey.**

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

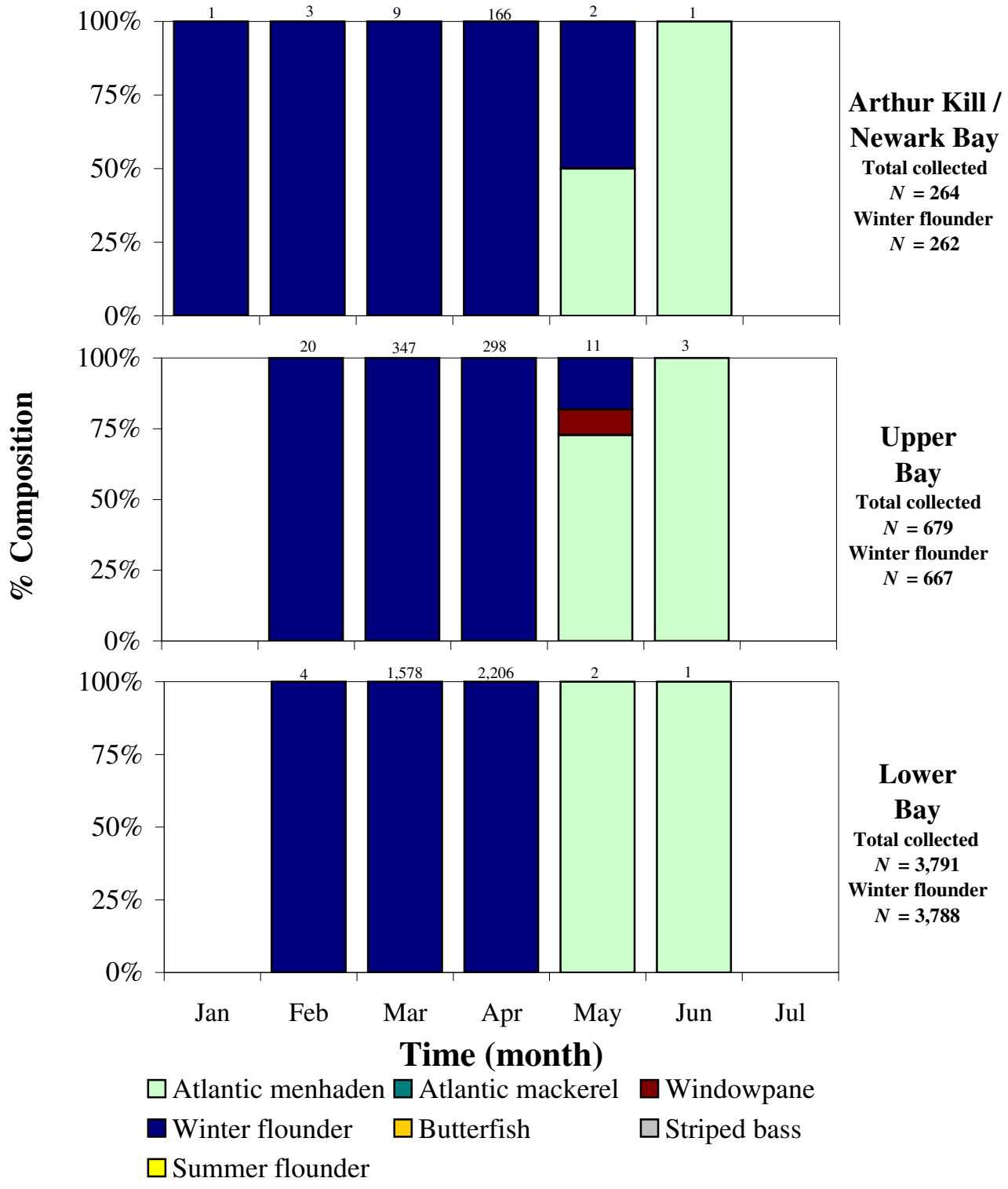

Figure 3-6 **EFH and important Non-Managed species compostion of yolk-sac larvae collected at all stations during the 2007 Aquatic Biological Survey.**

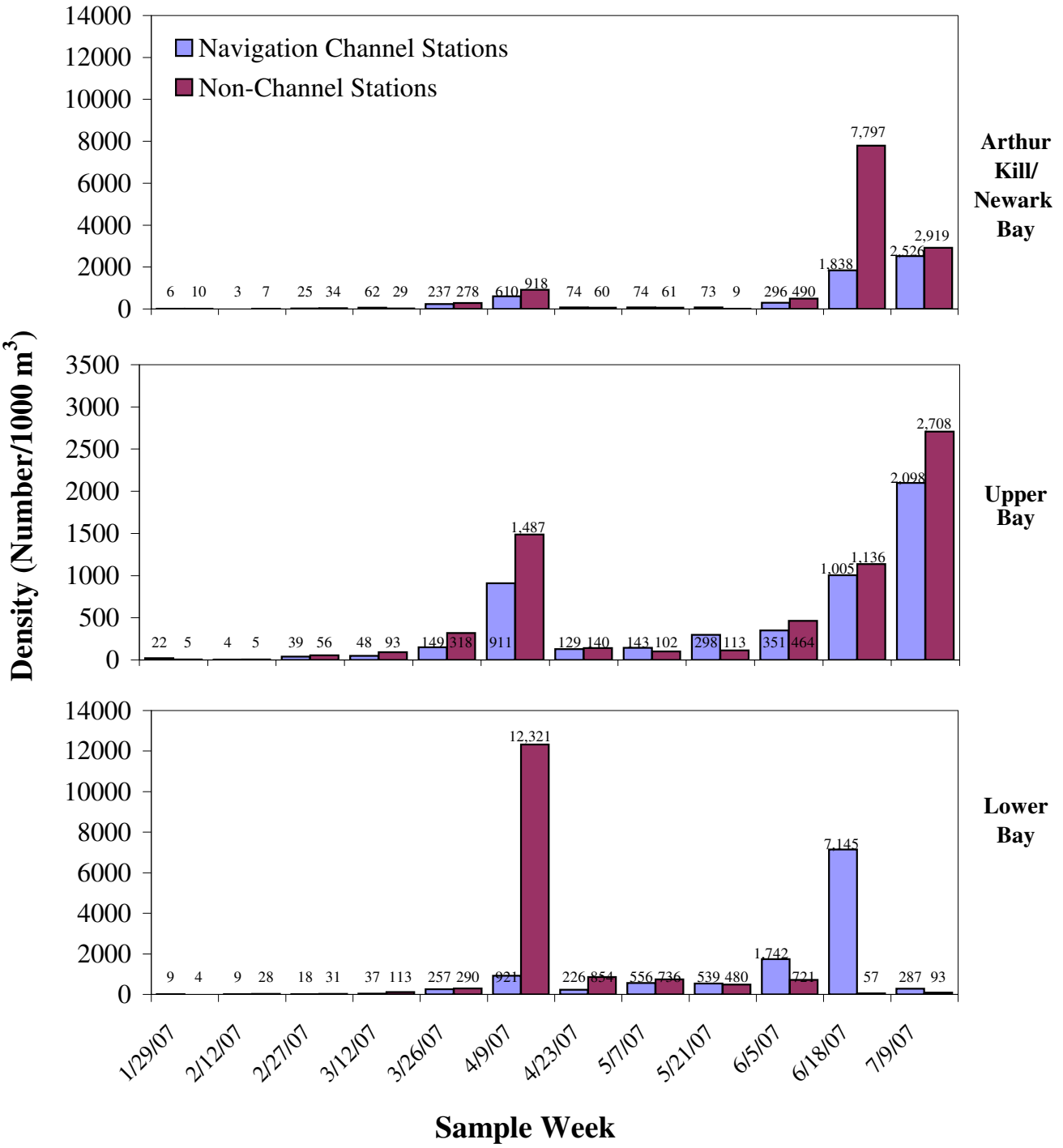

Figure 3-7 **Average weekly post-yolk sac larvae density of all species combined at navigation channel and non-channel stations in the three regions, 2007 Aquatic Biological Survey.**

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

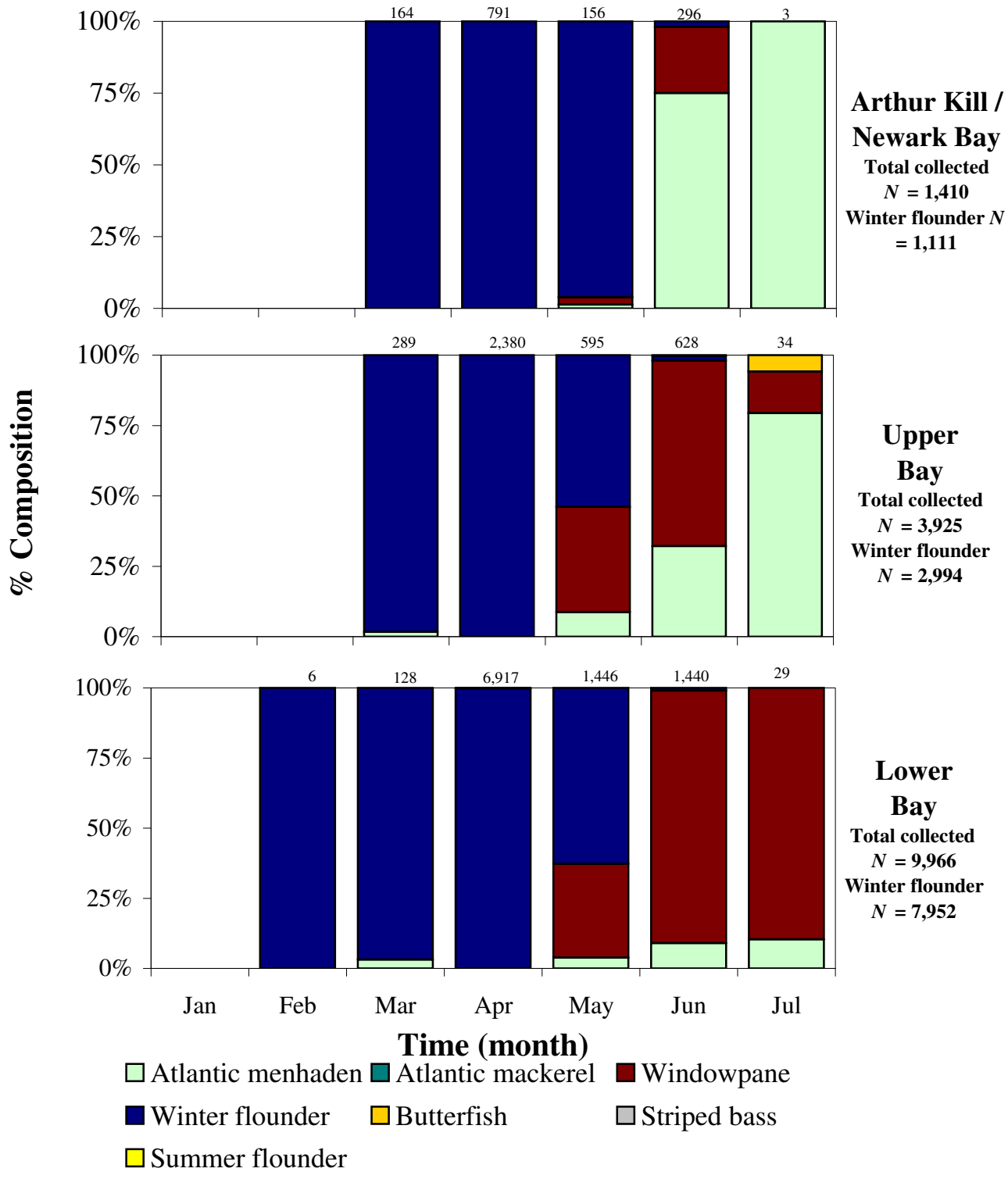

Figure 3-8 **EFH and important Non-Managed species compostion of post yolk-sac larvae collected at all stations during the 2007 Aquatic Biological Survey.**

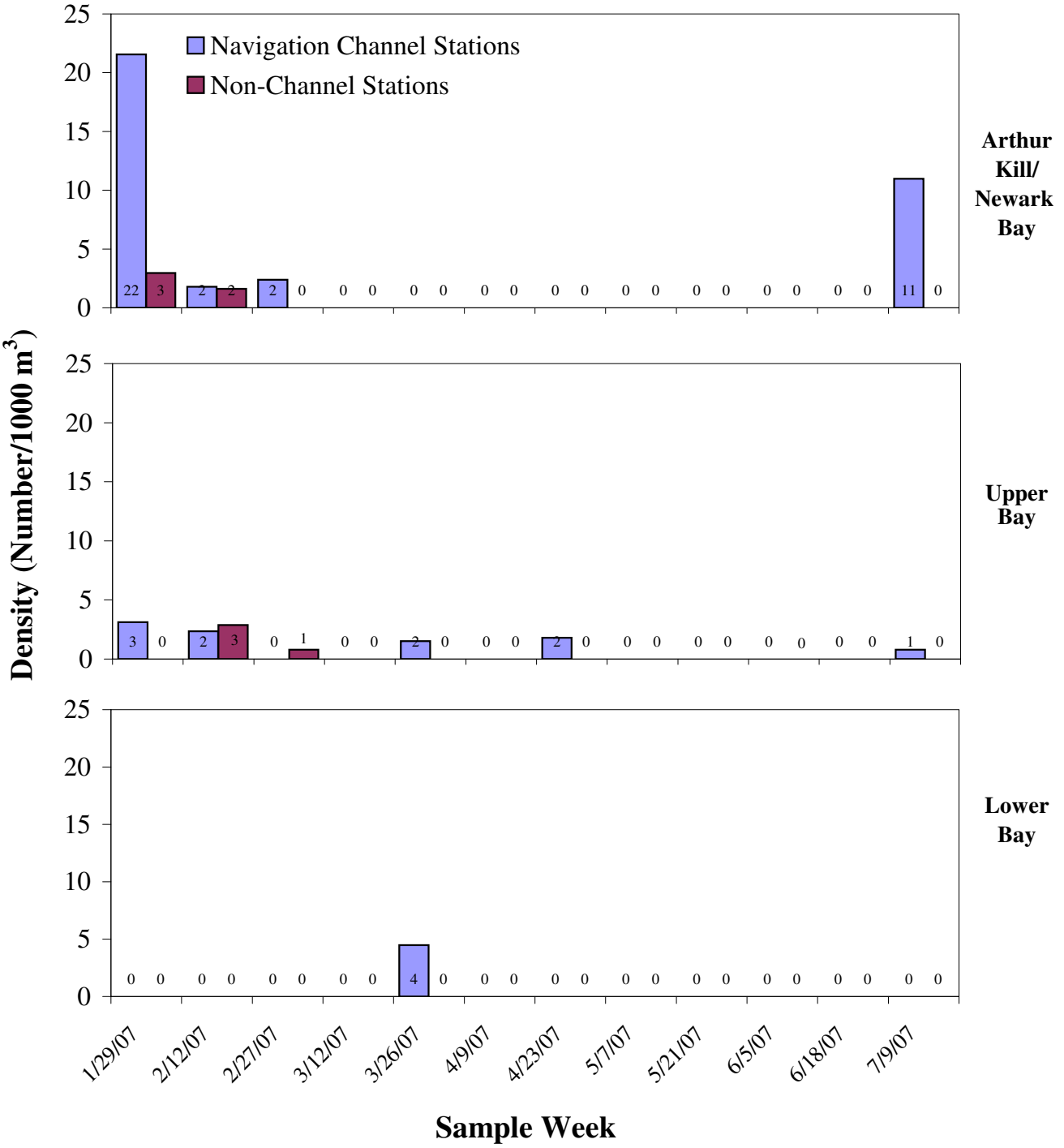

Figure 3-9 **Average weekly juvenile density of all species combined at navigation channel and non-channel stations in the three regions, 2007 Aquatic Biological Survey.**

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

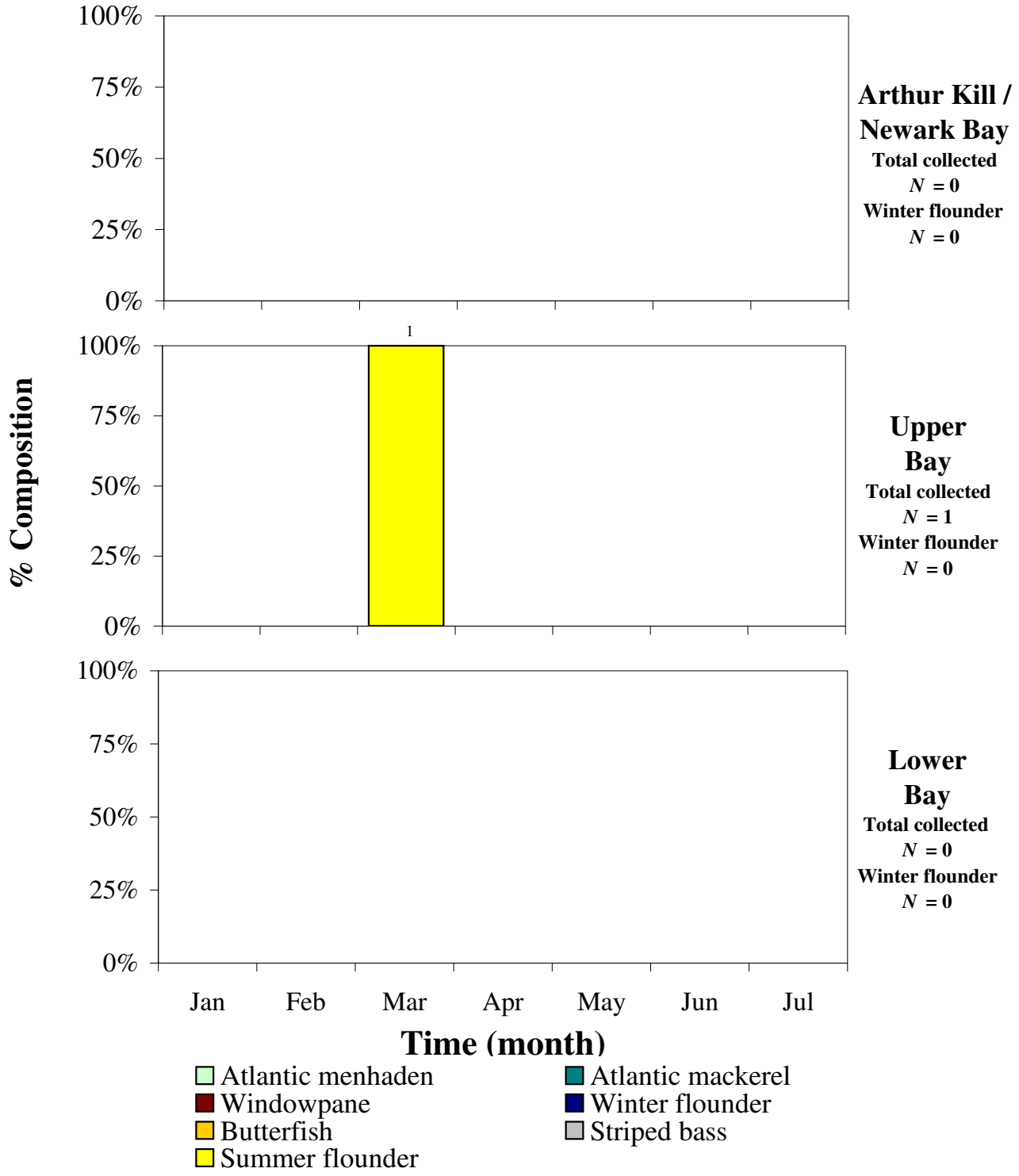

Figure 3-10 **EFH and important Non-Managed species compostion of juveniles collected at all stations during the 2007 Aquatic Biological Survey.**

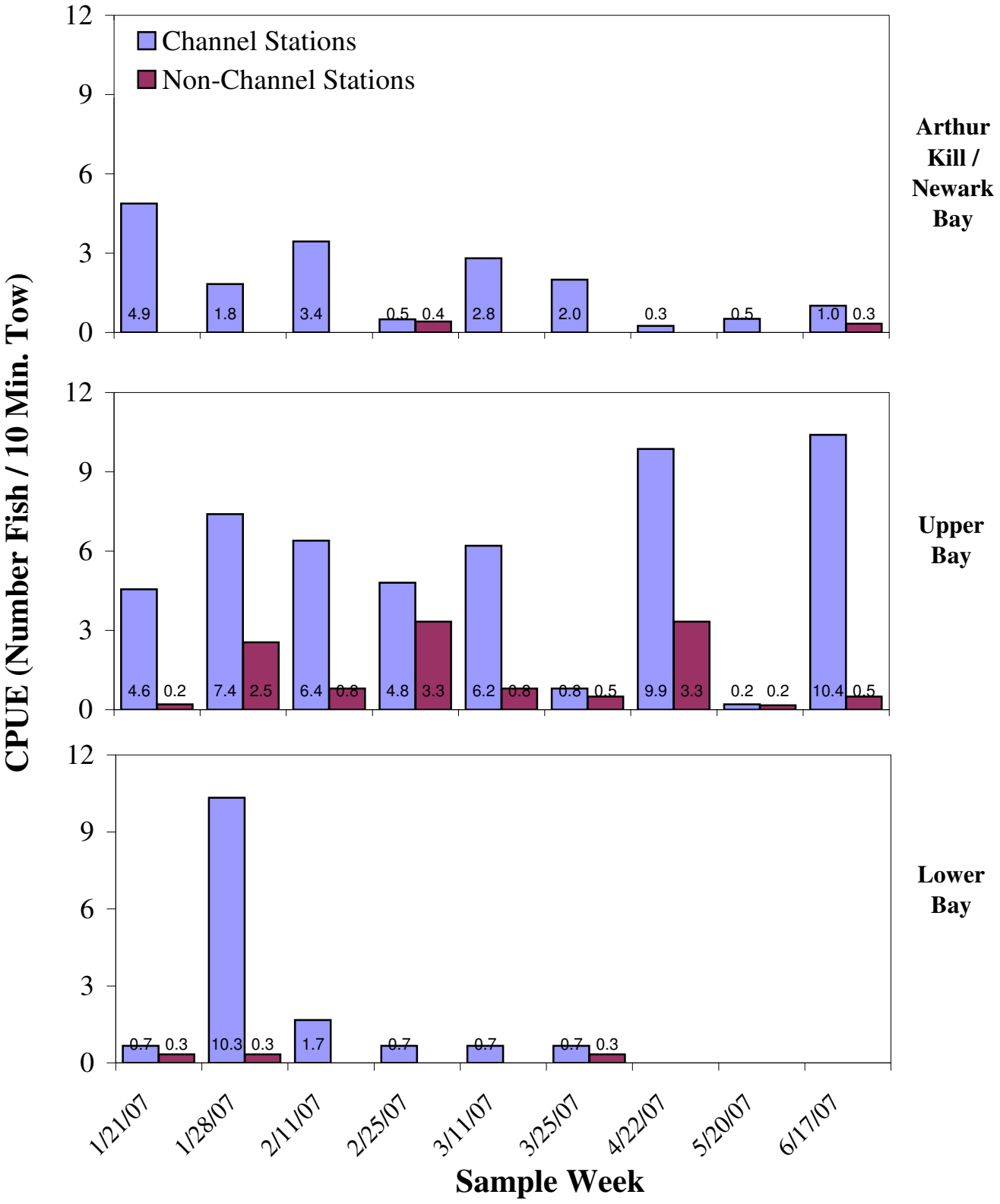

Figure 3-11 **Average weekly winter flounder trawl CPUE at navigation channel and non-channel stations in the three regions during 2007 Aquatic Biological Survey.**

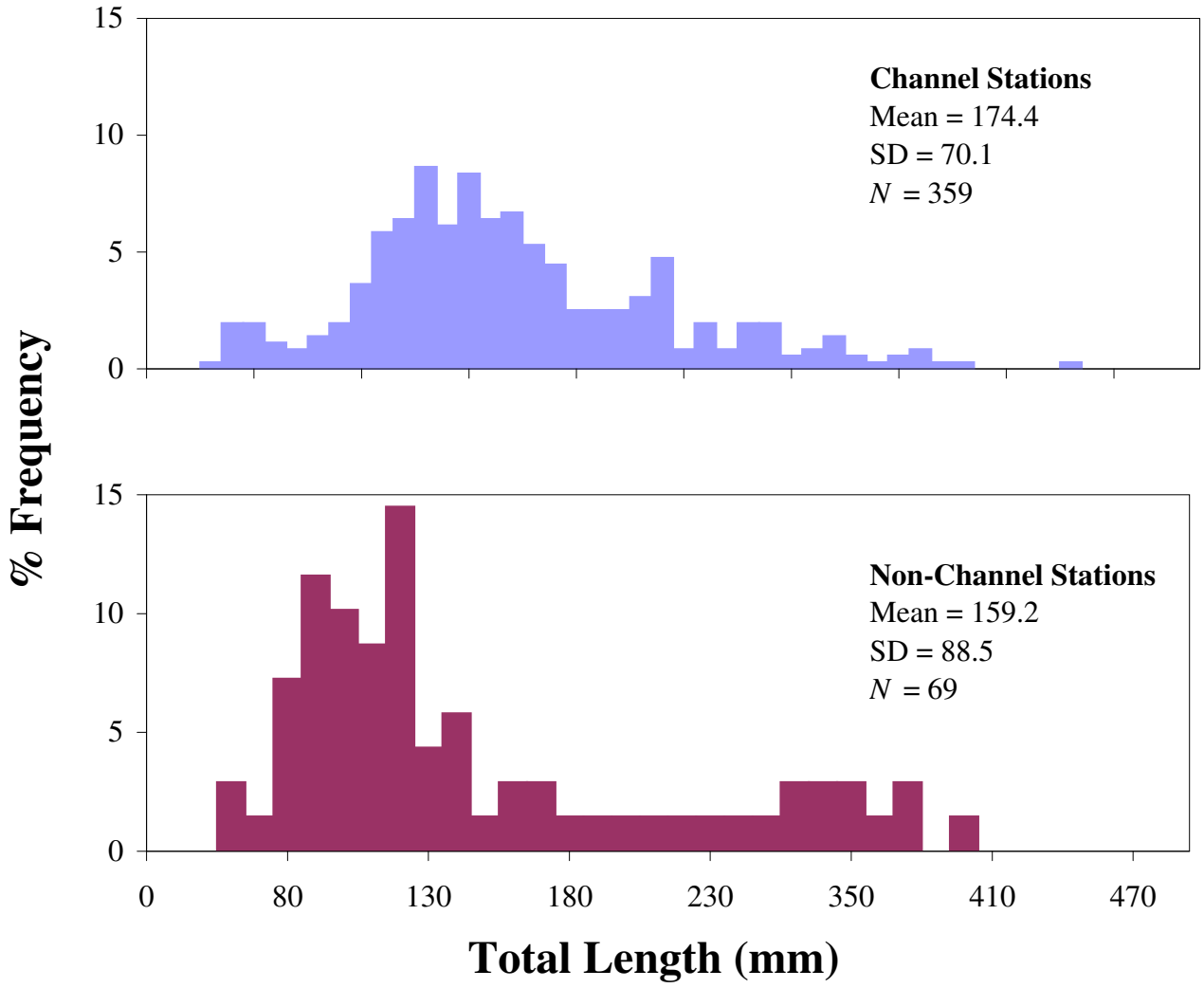

Figure 3-12 **Length frequency distribution (10 mm intervals) of all winter flounder collected during trawl sampling for the 2007 Aquatic Biological Survey. Winter flounder > 250 mm are considered adults, while individuals < 250 mm are juveniles.**

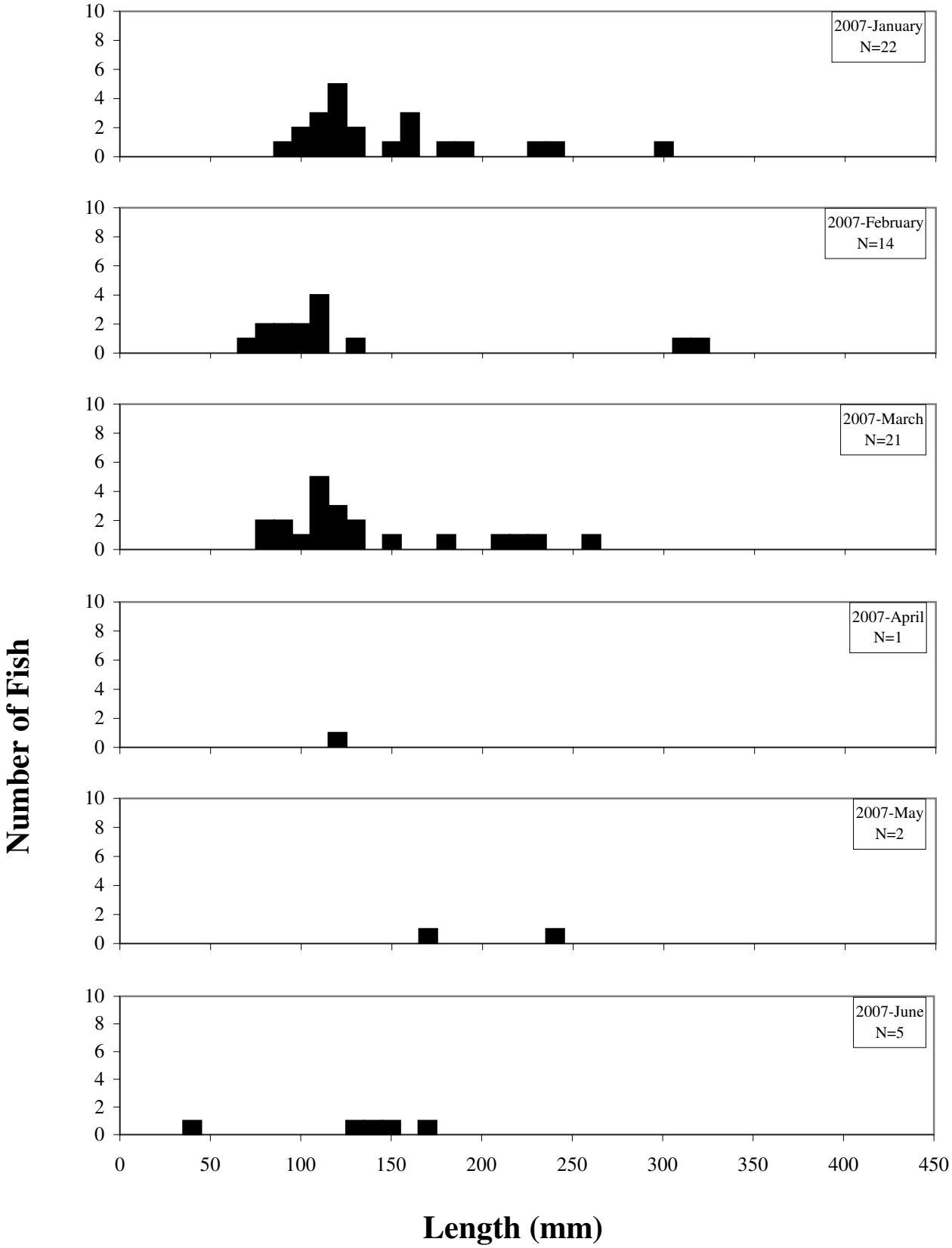

Figure 3-13 **Length frequency distribution of winter flounder collected during trawl sampling at Arthur Kill/Newark Bay stations, 2007 Aquatic Biological Survey.**

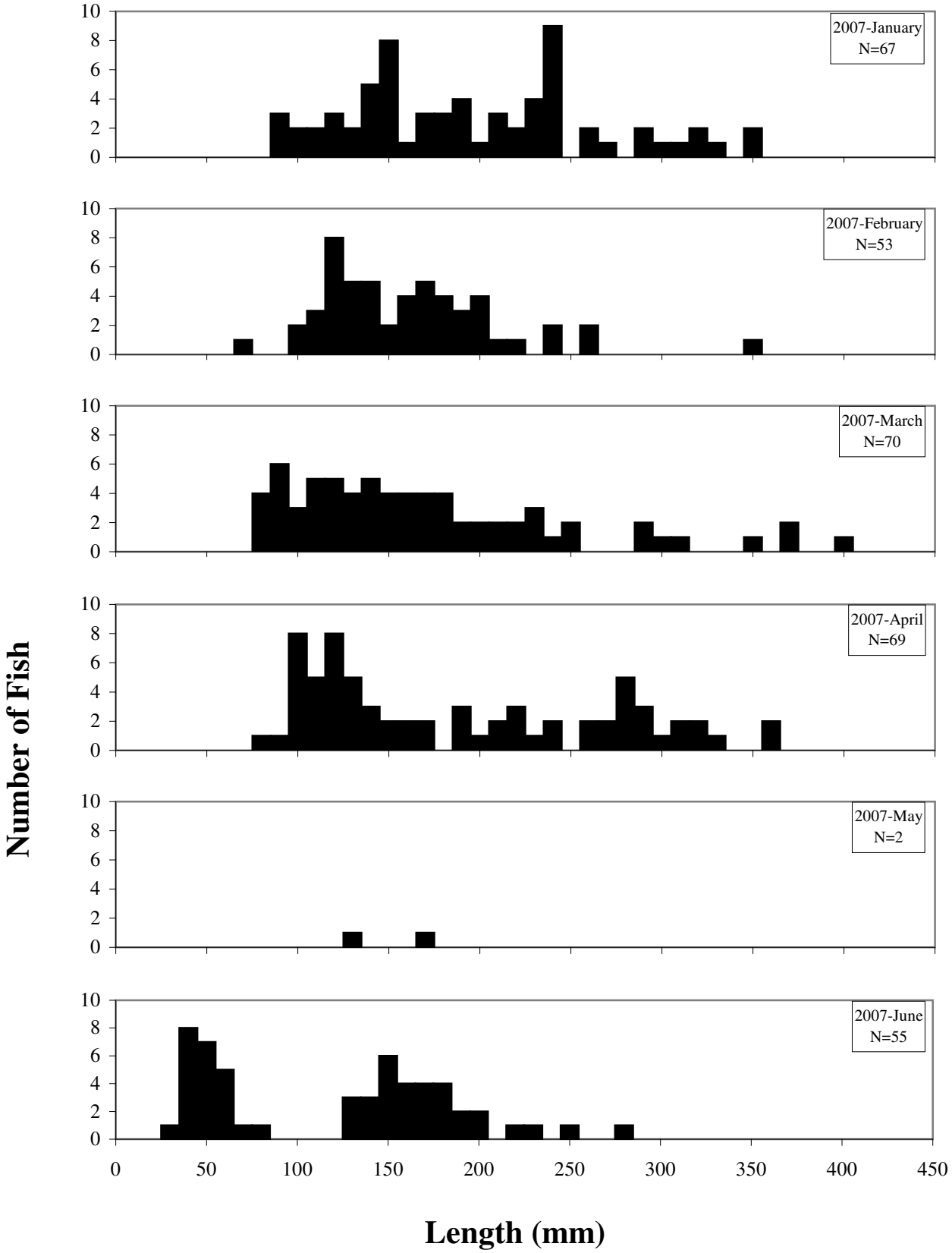

Figure 3-14 **Length frequency distribution of winter flounder collected during trawl sampling at Upper Bay stations, 2007 Aquatic Biological Survey.**

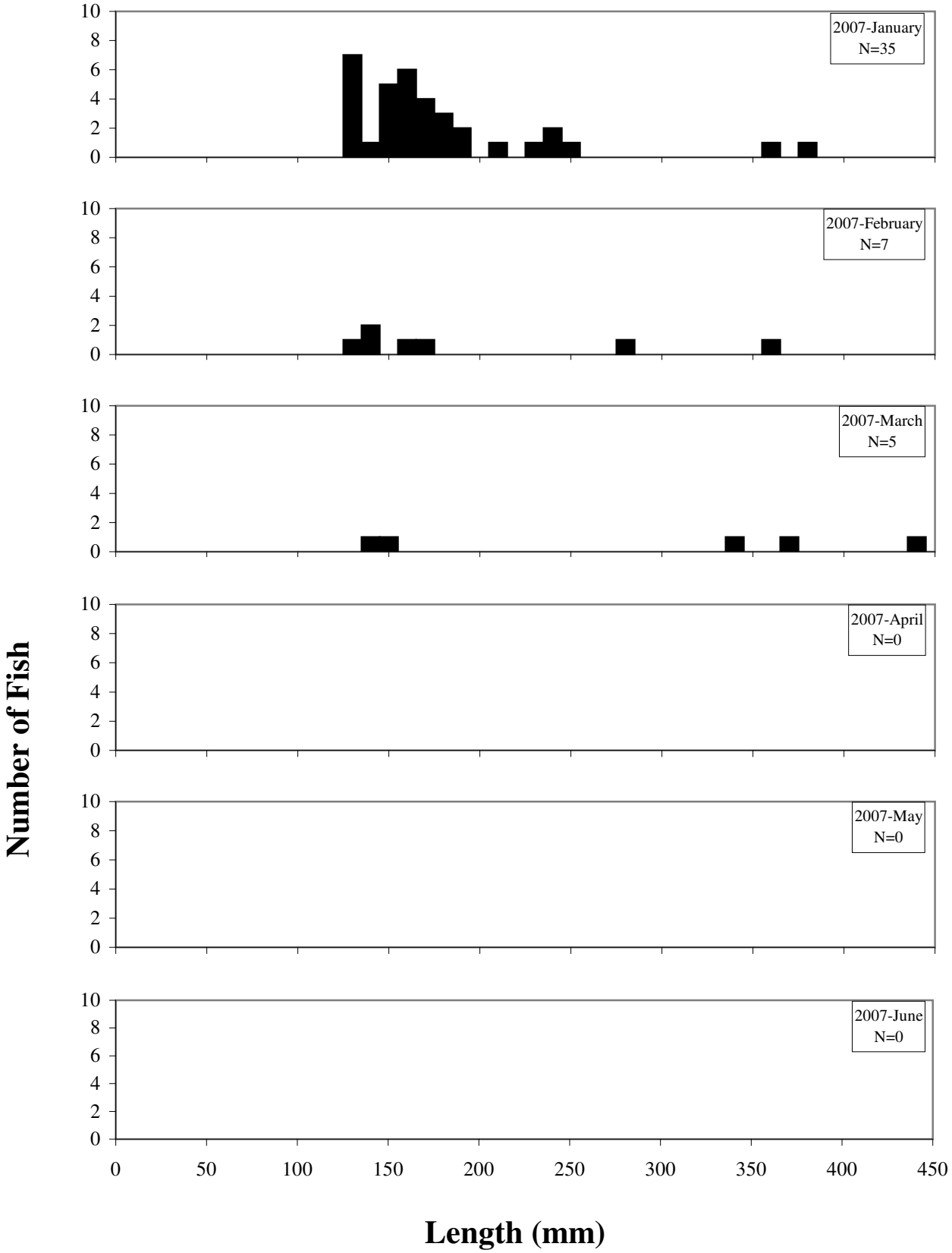

Figure 3-15 **Length frequency distribution of winter flounder collected during trawl sampling at Lower Bay stations, 2007 Aquatic Biological Survey.**

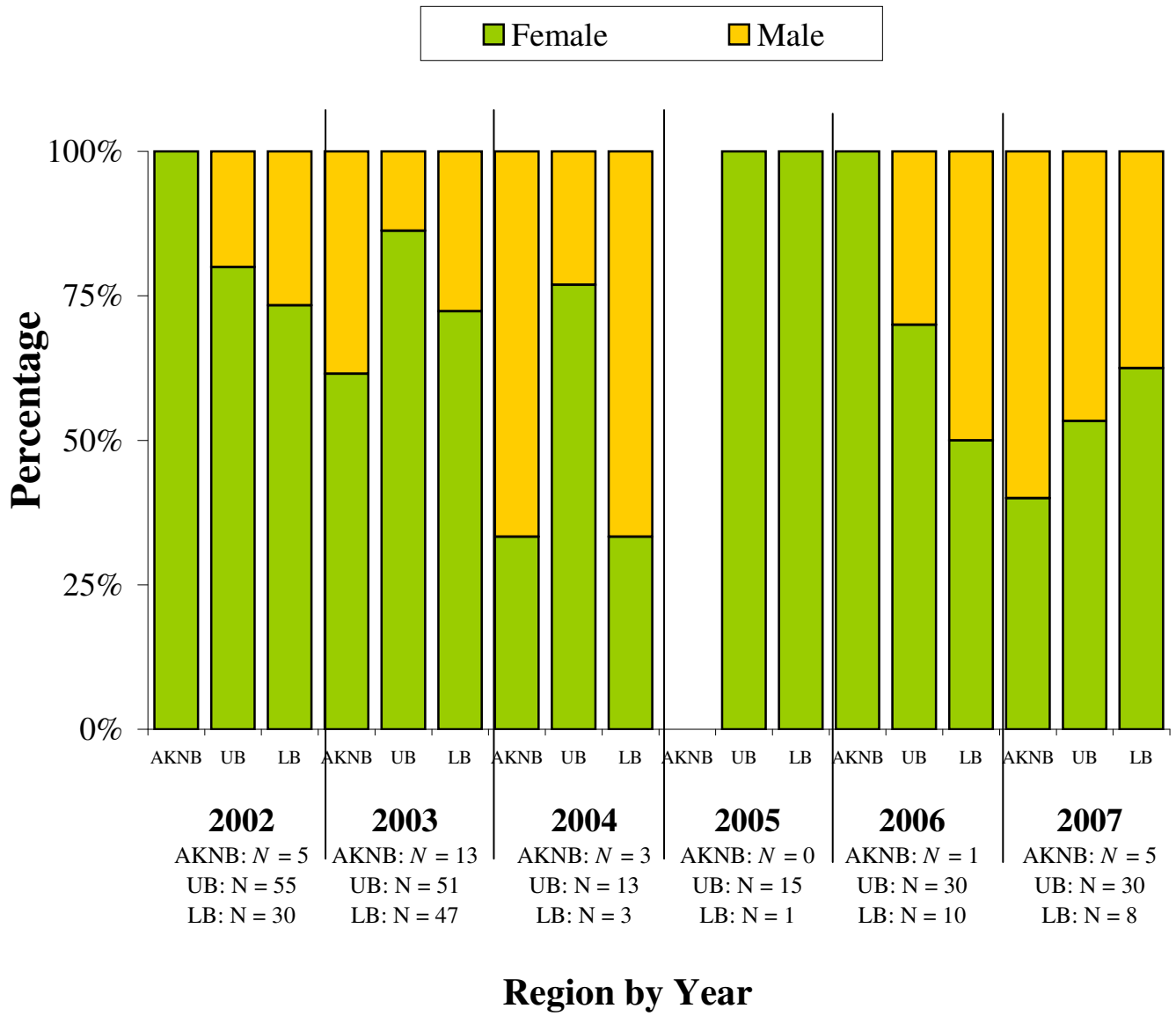

Figure 3-16 **Gender ratio of winter flounder adults (total length ≥ 250 mm) collected at all regions during the 2002 through 2007 Aquatic Biological Surveys.**

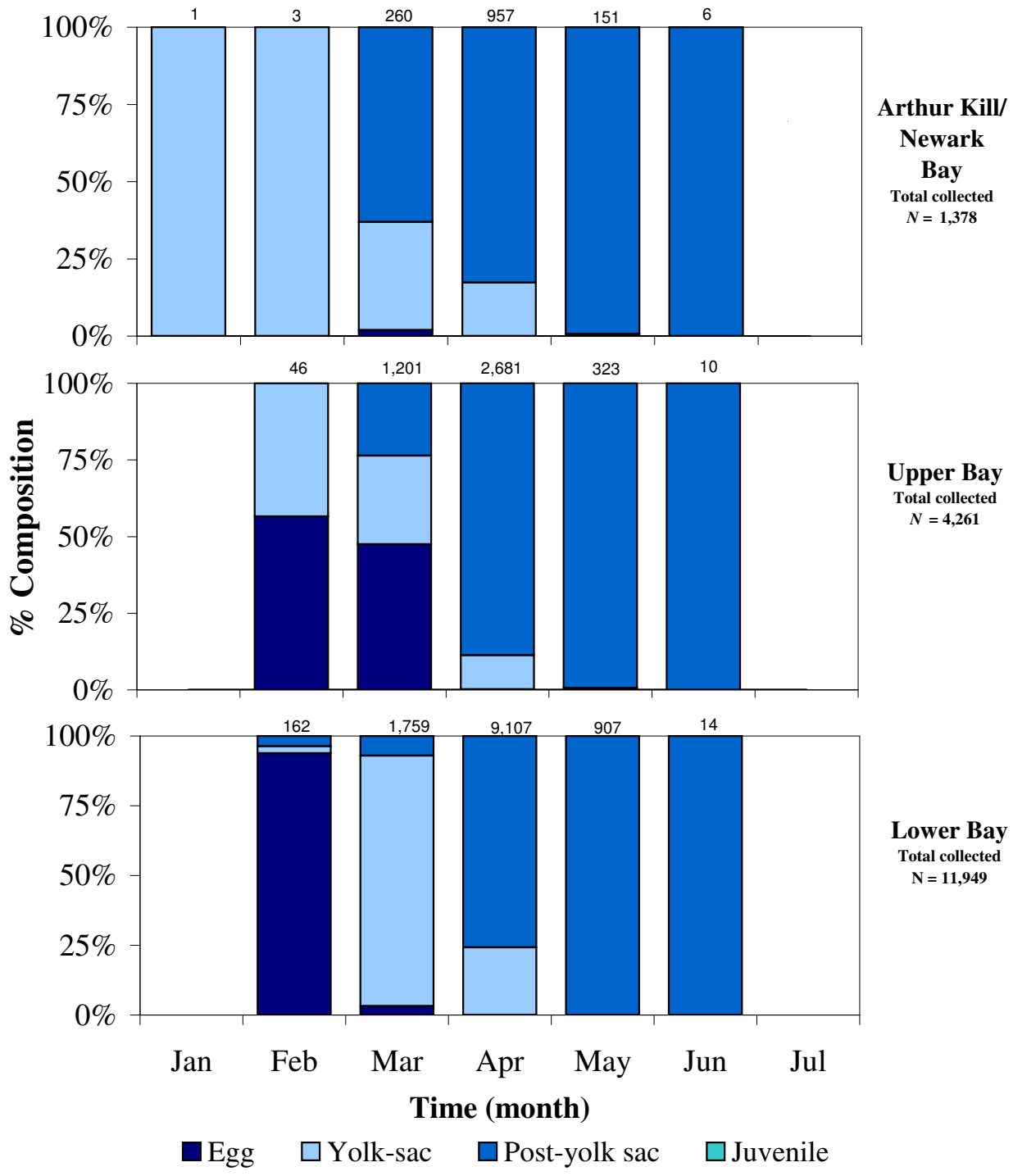

Figure 3-17 **Percent composition of winter flounder lifestages in the three regions, 2007 Aquatic Biological Survey.**

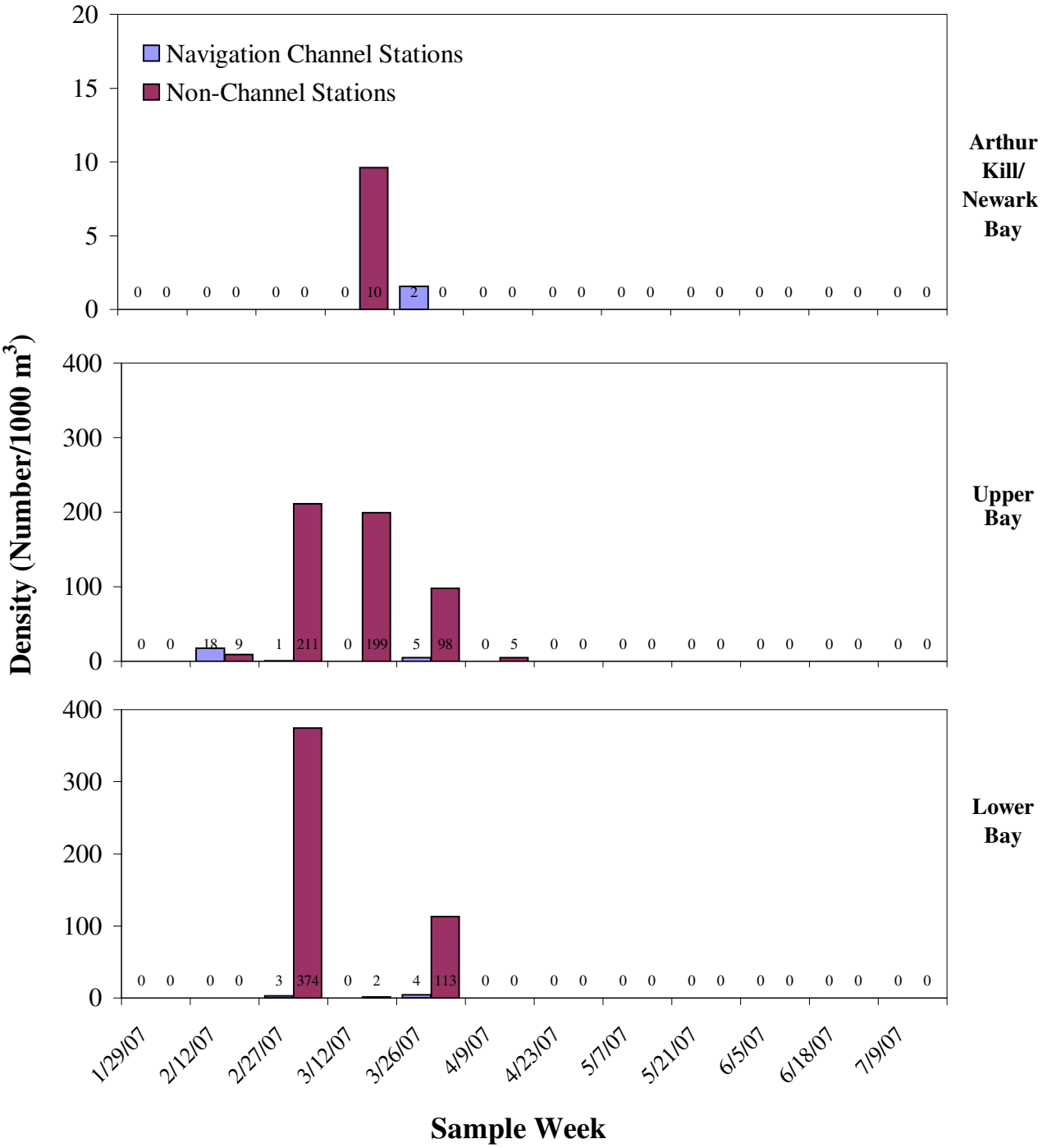

Figure 3-18 **Average weekly winter flounder egg density at navigation channel and non-channel stations in the three regions, 2007 Aquatic Biological Survey.**

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

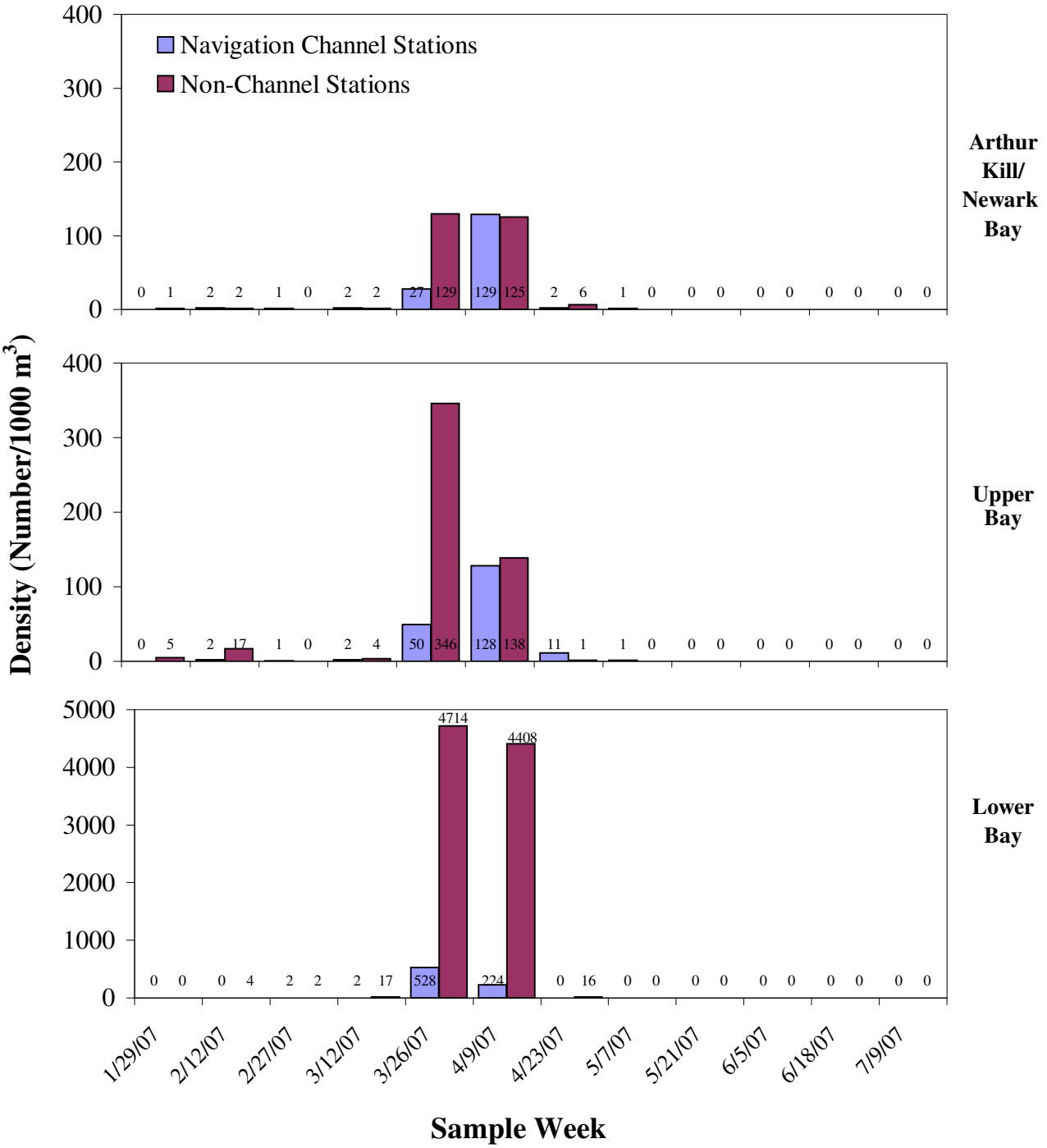

Figure 3-19 **Average weekly winter flounder yolk-sac larval density at navigation channel and non-channel stations in the three regions, 2007 Aquatic Biological Survey.**

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

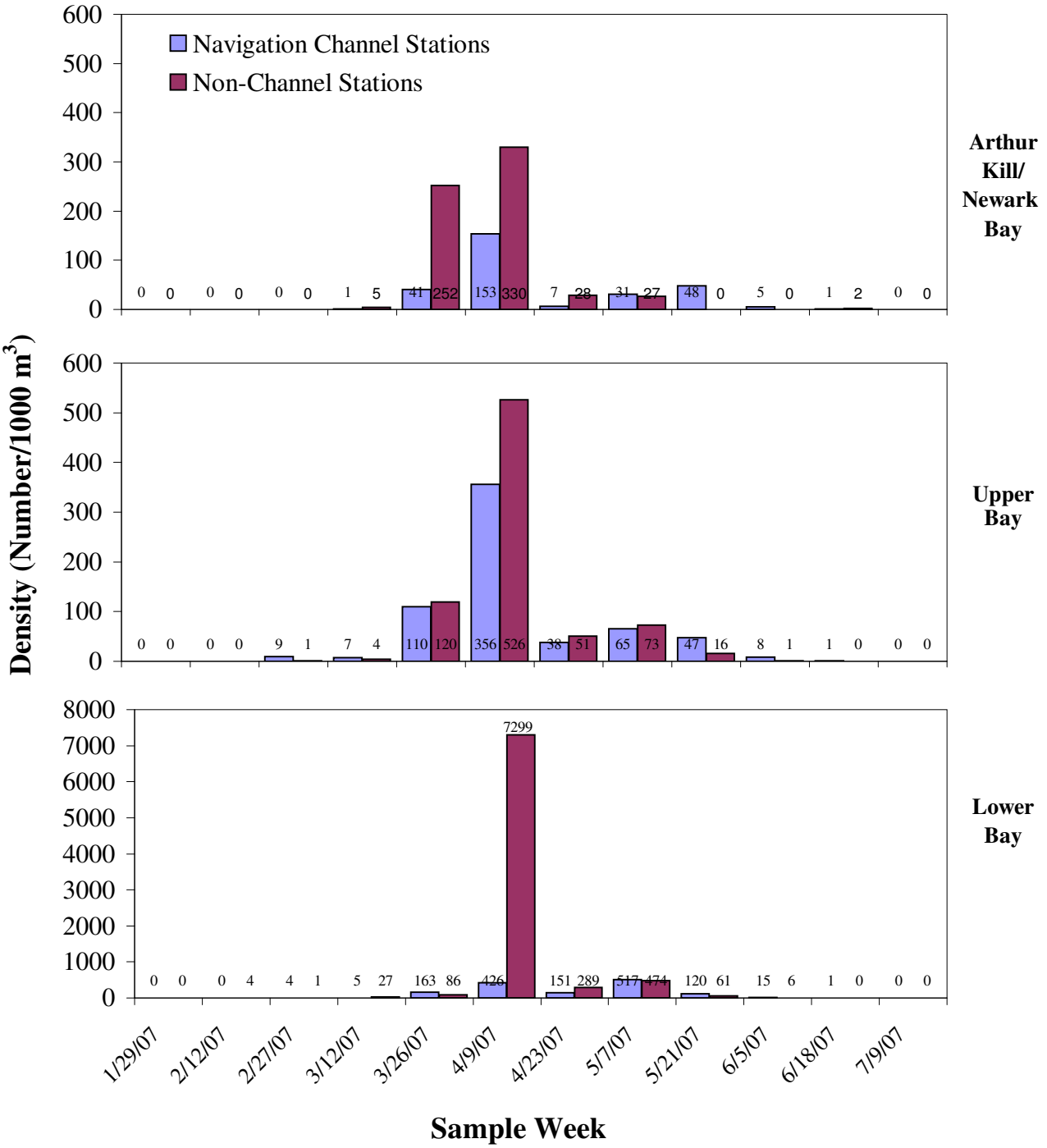

Figure 3-20 **Average weekly winter flounder post-yolk sac larval density at navigation channel and non-channel stations in the three regions, 2007 Aquatic Biological Survey.**

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

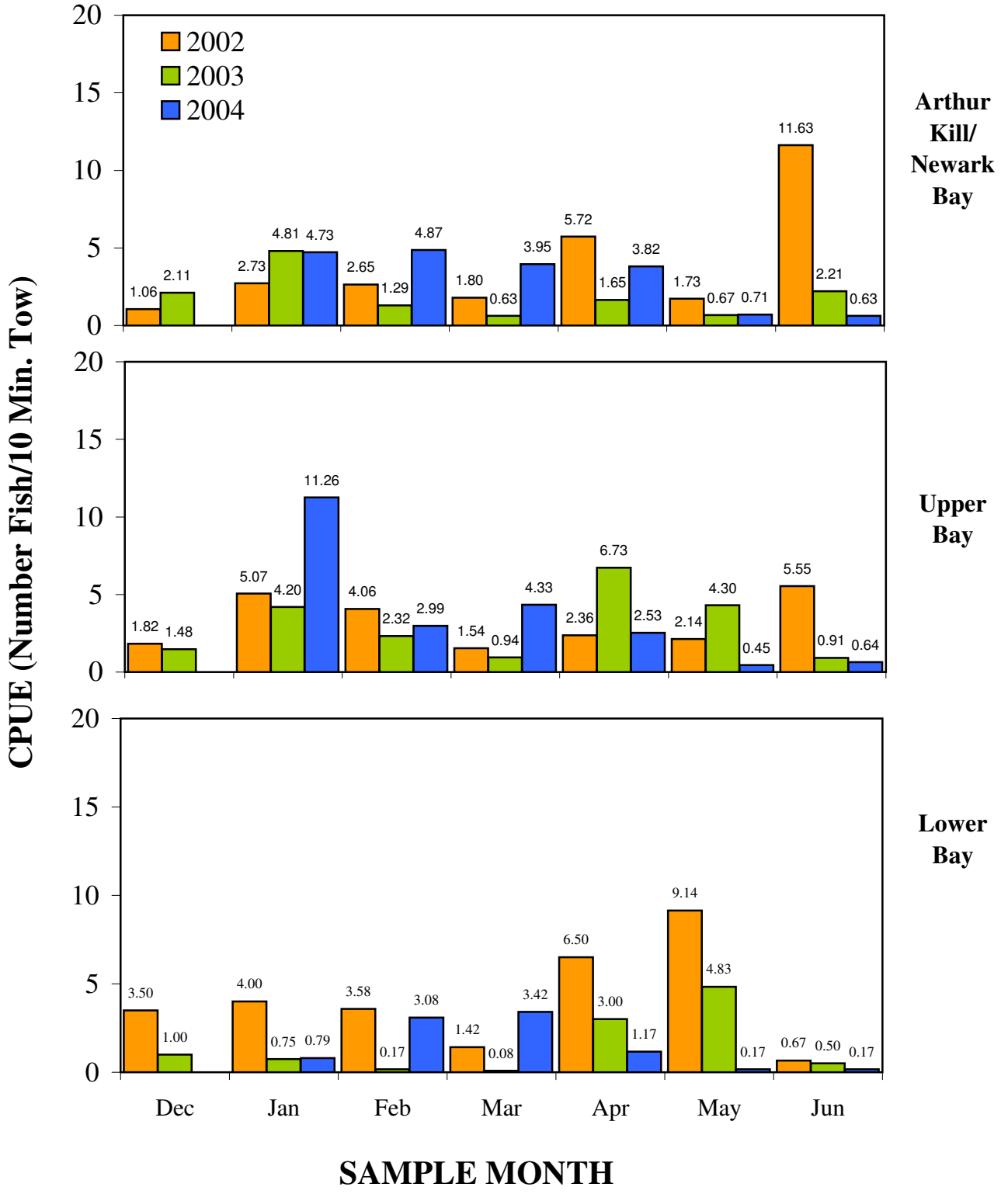

Figure 3-21 a **Average monthly trawl CPUE of winter flounder during the 2002, 2003, and 2004 surveys in the three regions.**

Note: December was not sampled during 2004.

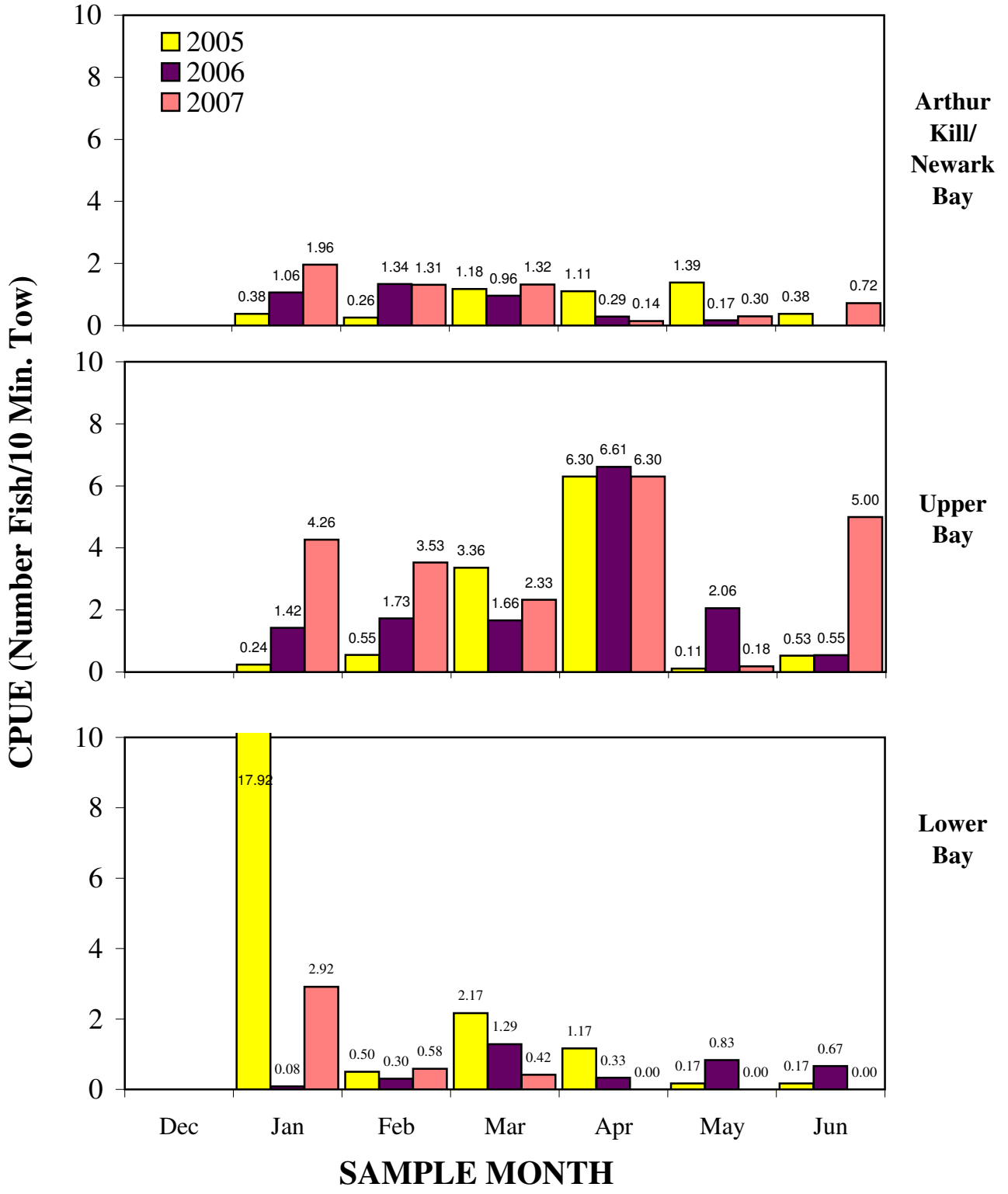

Figure 3-21 b **Average monthly trawl CPUE of winter flounder during the 2005, 2006, and 2007 surveys in the three regions.**

Note: December was not sampled during these years.

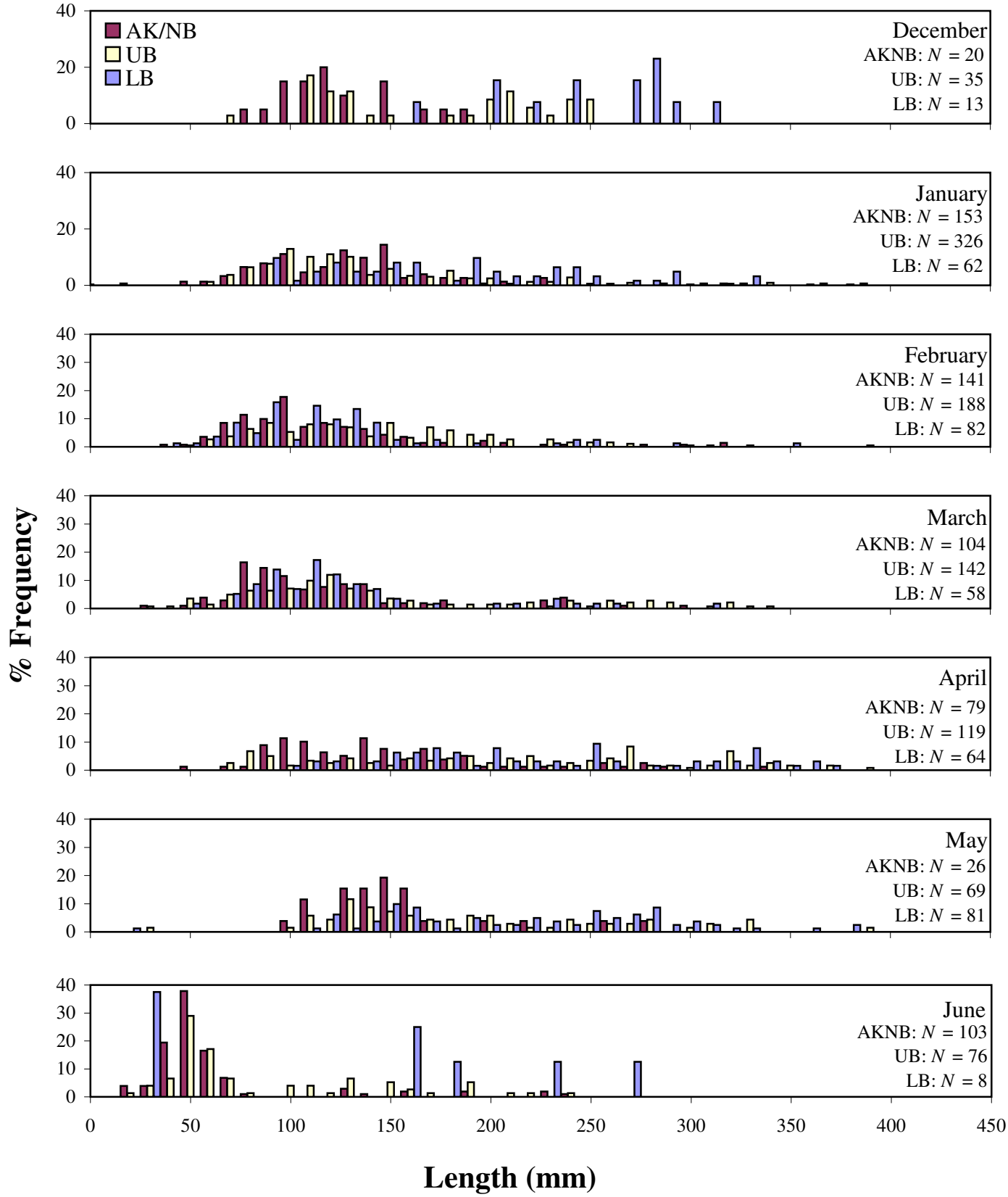

Figure 3-22 a **Length frequency distribution of winter flounder collected during trawl sampling at Arthur Kill/Newark Bay, Upper Bay, and Lower Bay stations, 2002, 2003, and 2004 Aquatic Biological Surveys.**

Note(s): No sampling in December 2003.

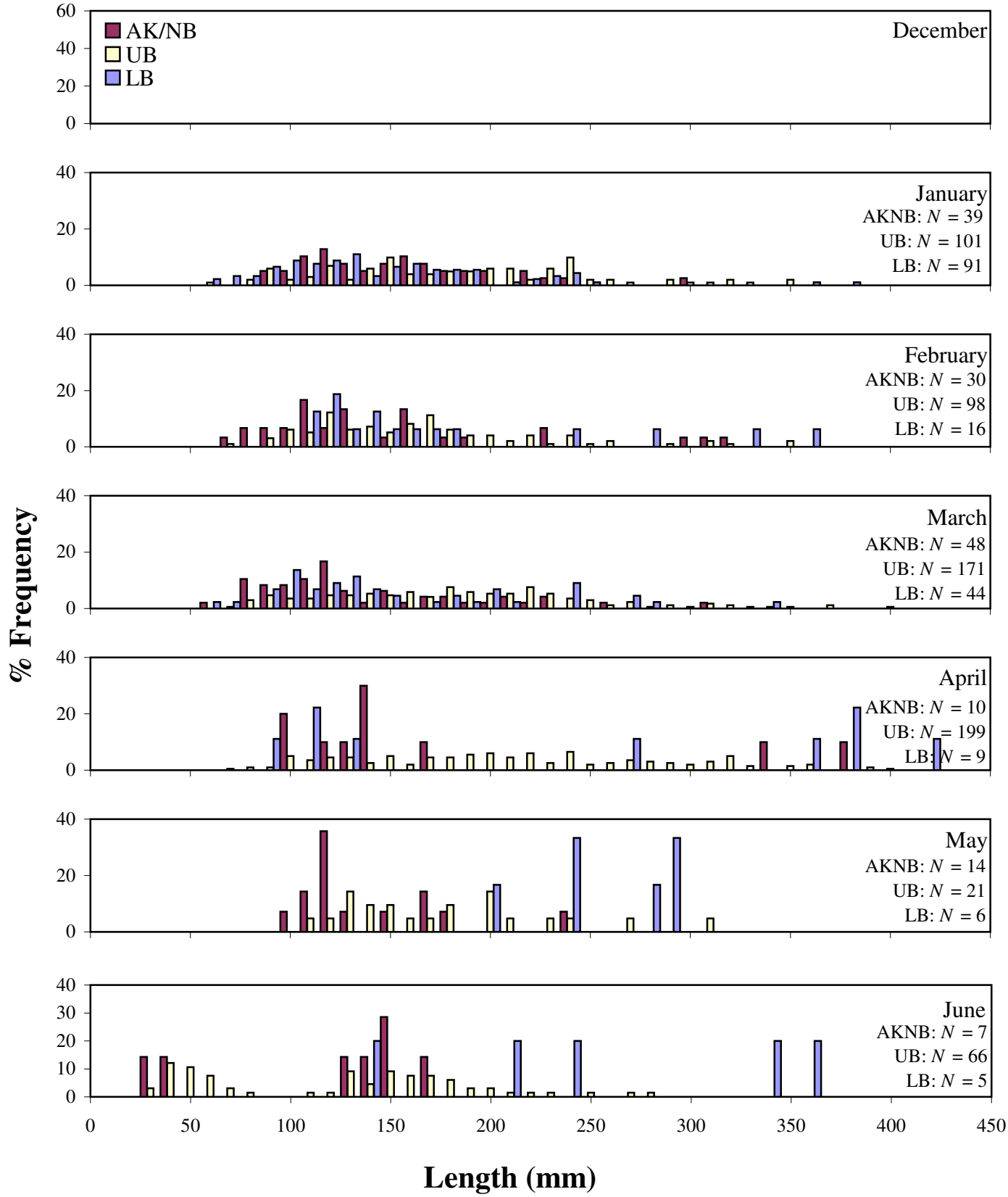

Figure 3-22 b **Length frequency distribution of winter flounder collected during trawl sampling at Arthur Kill/Newark Bay, Upper Bay, and Lower Bay stations, 2005, 2006, and 2007 Aquatic Biological Surveys.**

Note(s): No sampling in December.

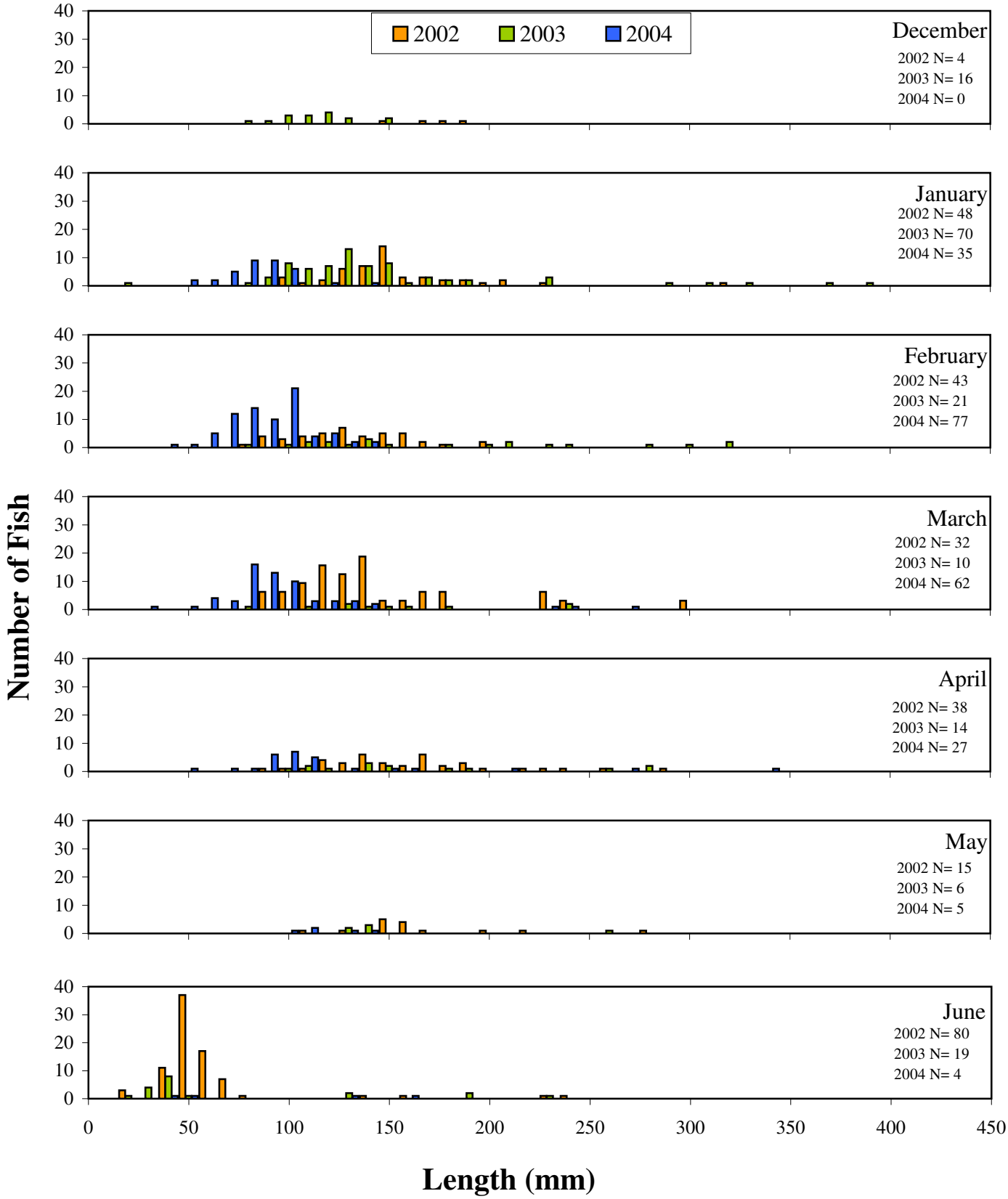

Figure 3-23 a **Length frequency distribution of winter flounder collected during trawl sampling at Arthur Kill/Newark Bay, 2002, 2003, and 2004 Aquatic Biological Surveys.**

Note(s): No sampling in December 2004.

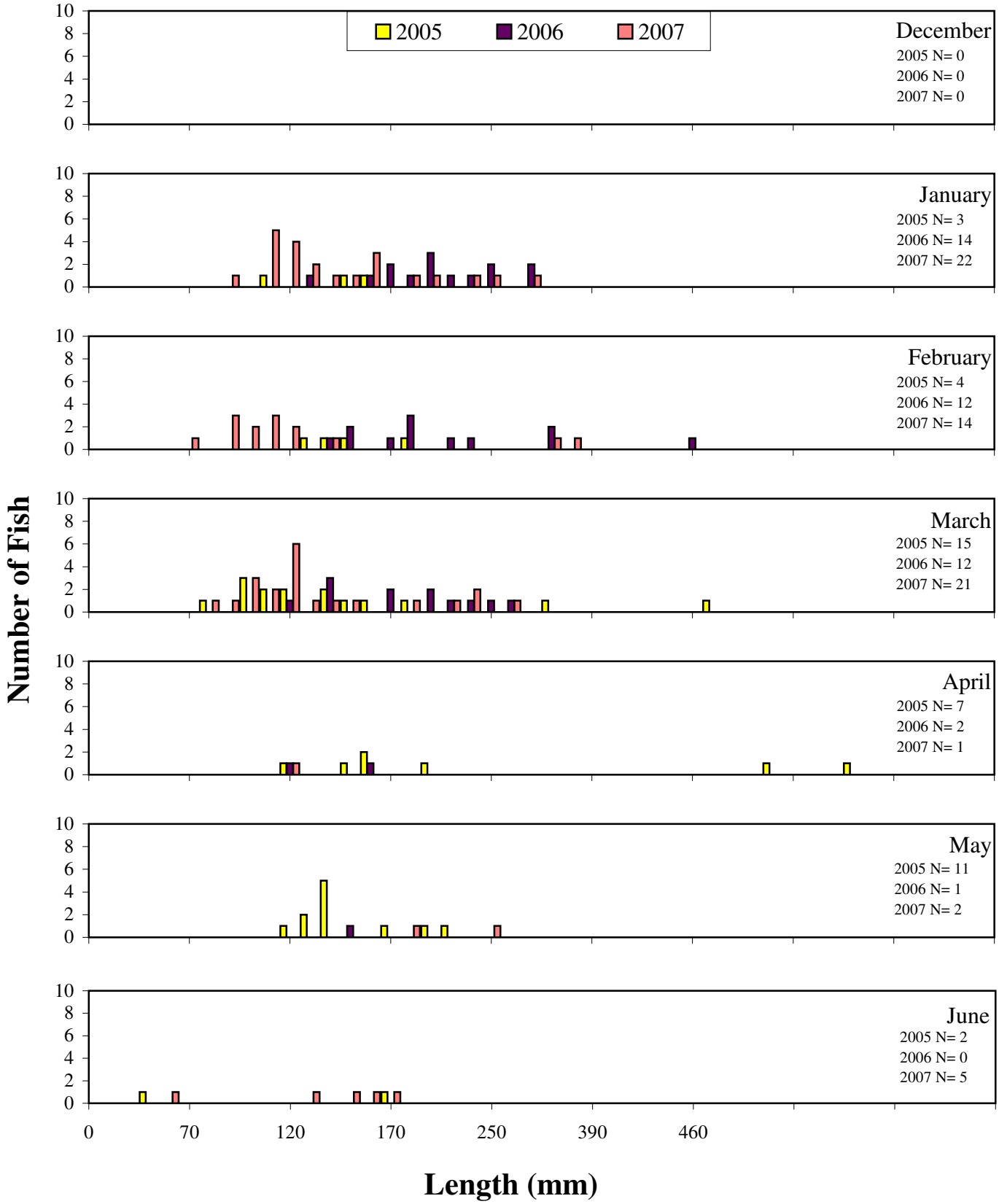

Figure 3-23 b **Length frequency distribution of winter flounder collected during trawl sampling at Arthur Kill/Newark Bay, 2005, 2006, and 2007 Aquatic Biological Surveys.**

Note(s): No sampling in December.

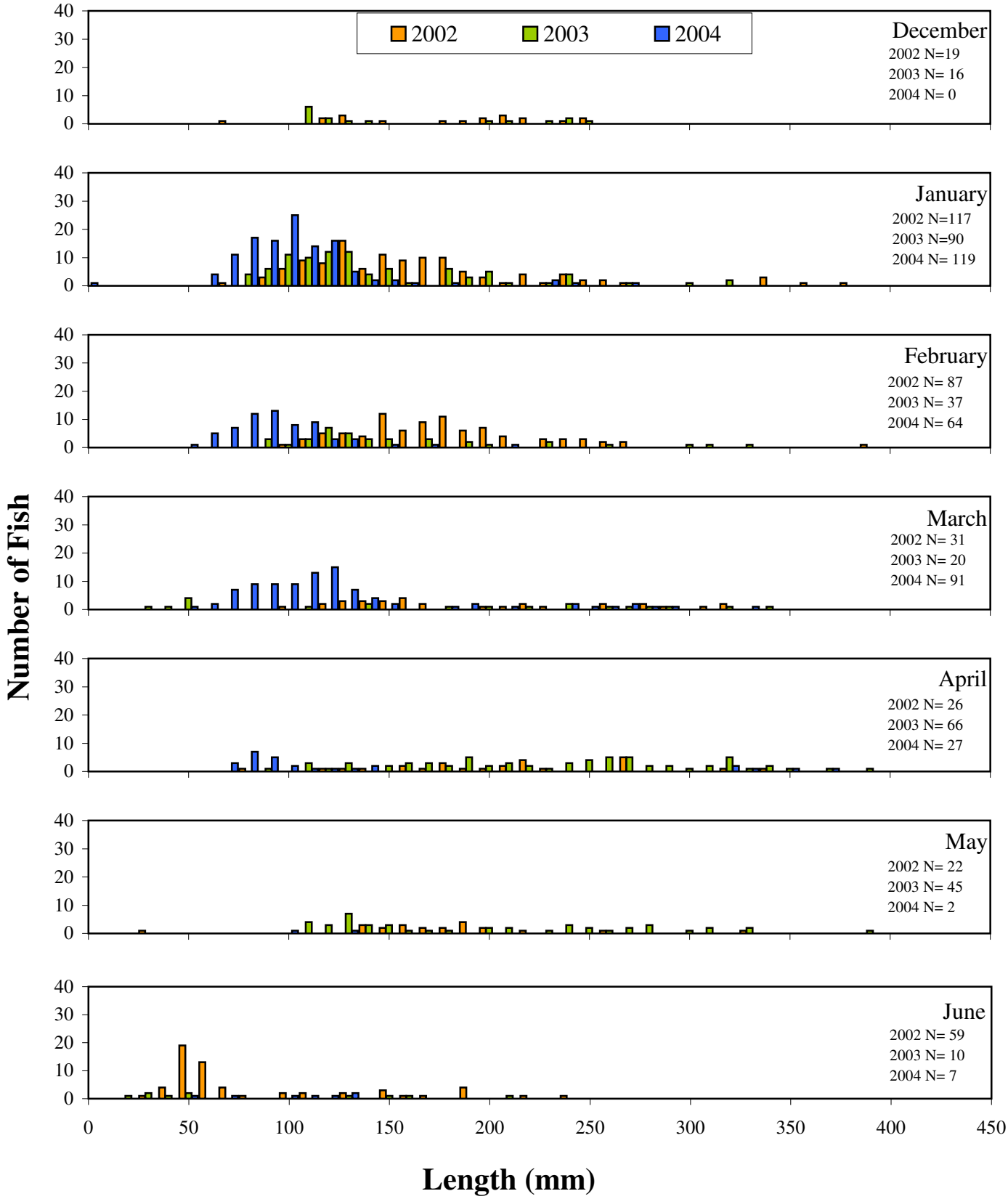

Figure 3-24 a **Length frequency distribution of winter flounder collected during trawl sampling at Upper Bay, 2002, 2003, and 2004 Aquatic Biological Surveys.**

Note(s): No sampling in December 2004.

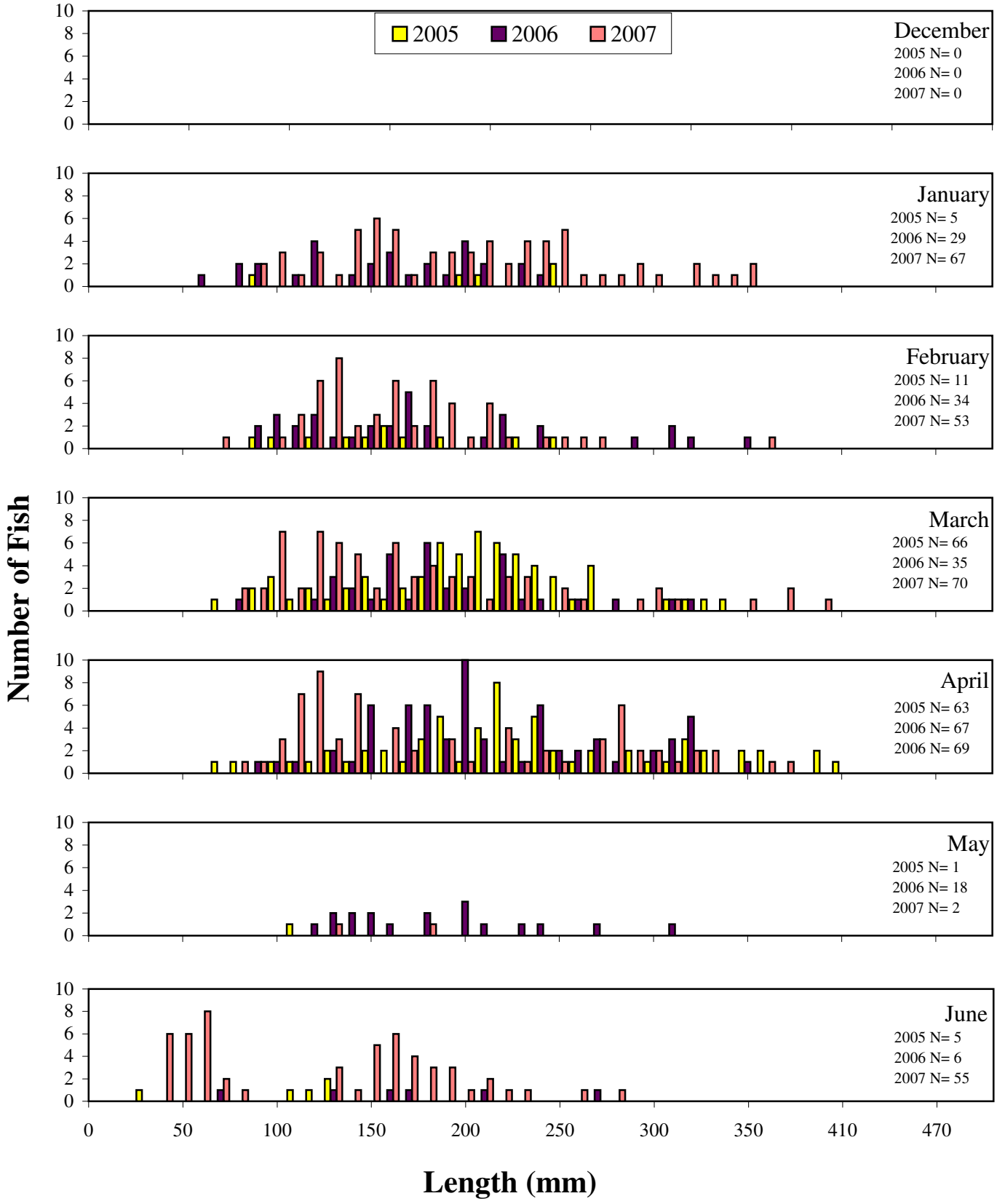

Figure 3-24 b **Length frequency distribution of winter flounder collected during trawl sampling at Upper Bay, 2005, 2006, and 2007 Aquatic Biological Surveys.**

Note(s): No sampling in December.

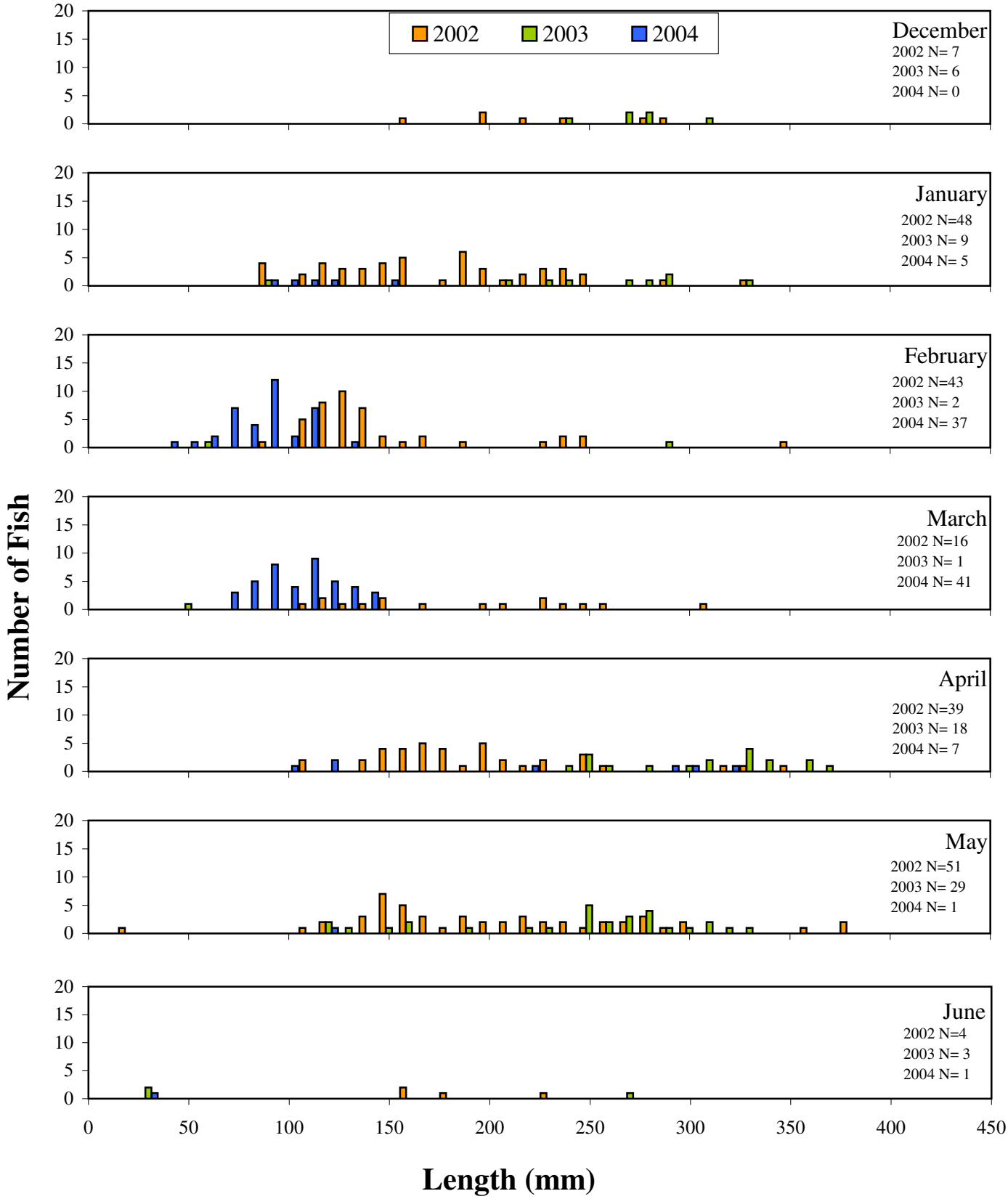

Figure 3-25 a **Length frequency distribution of winter flounder collected during trawl sampling at Lower Bay, 2002, 2003, and 2004 Aquatic Biological Surveys.**

Note(s): No sampling in December 2004.

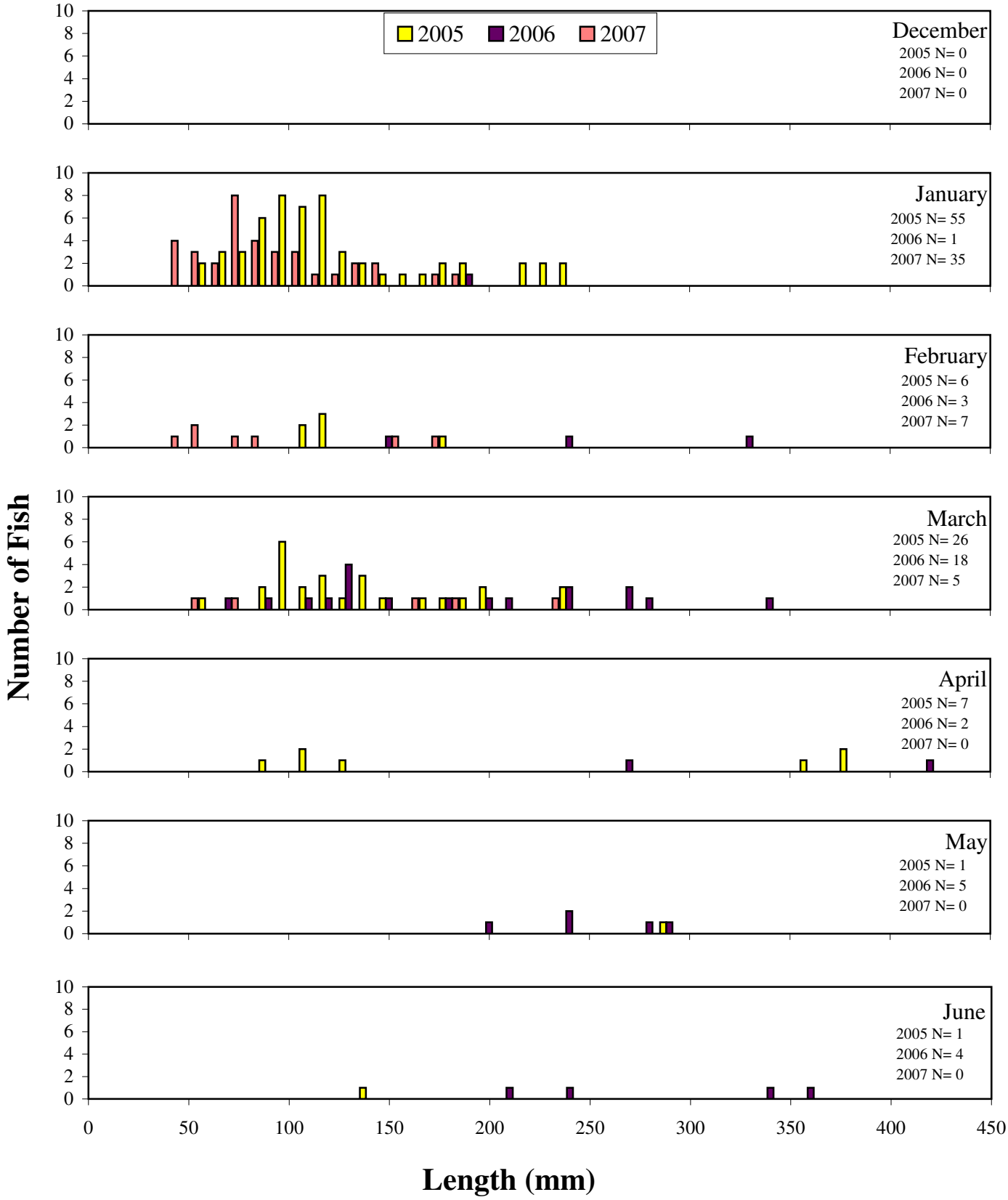

Figure 3-25 b **Length frequency distribution of winter flounder collected during trawl sampling at Lower Bay, 2005, 2006, 2007 Aquatic Biological Surveys.**

Note(s): No sampling in December.

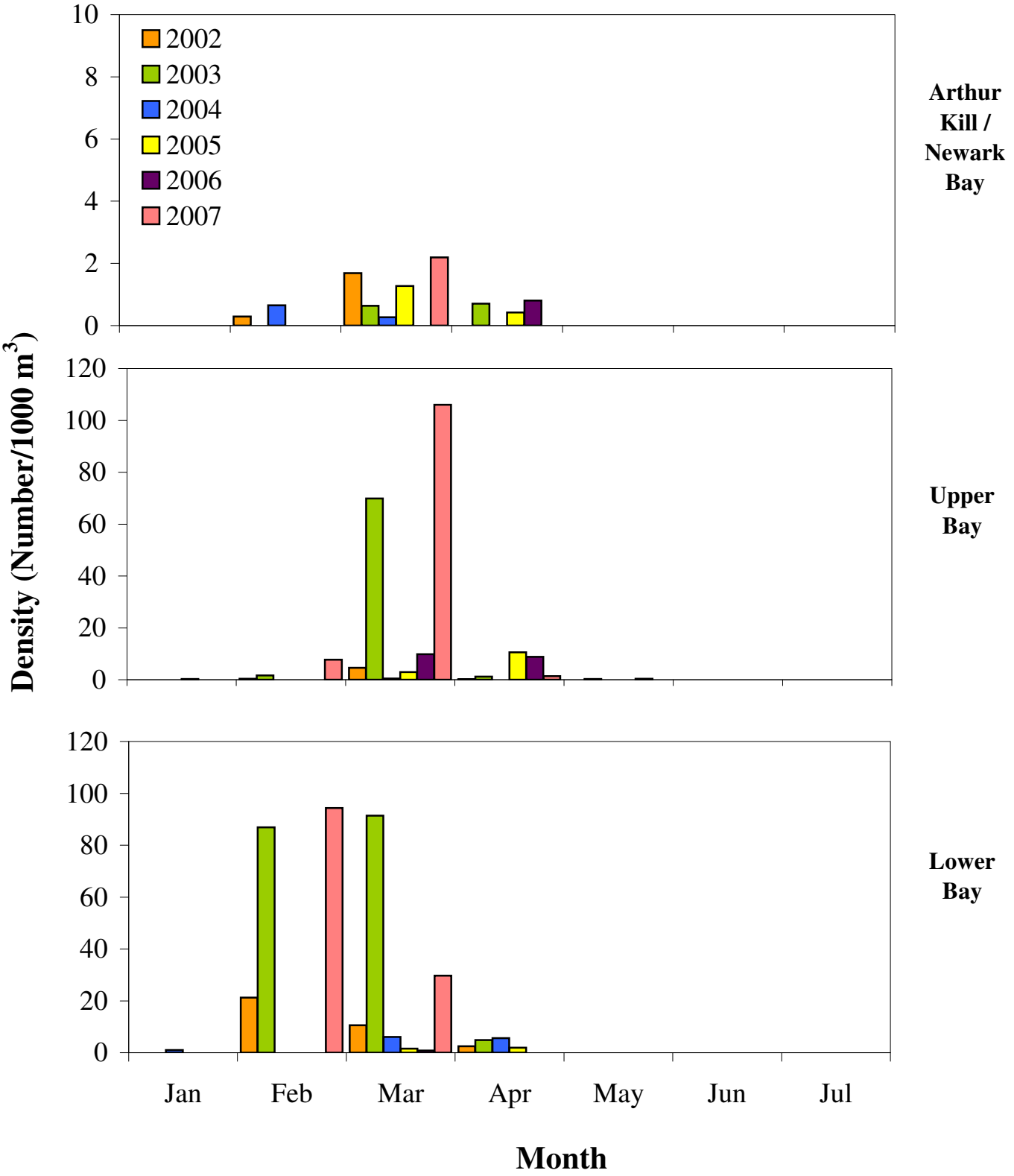

Figure 3-26a **Average monthly winter flounder egg density during the 2002, 2003, 2004, 2005, 2006, and 2007 surveys in the three regions.**

Note(s): Scale change for Arthur Kill/Newark Bay.

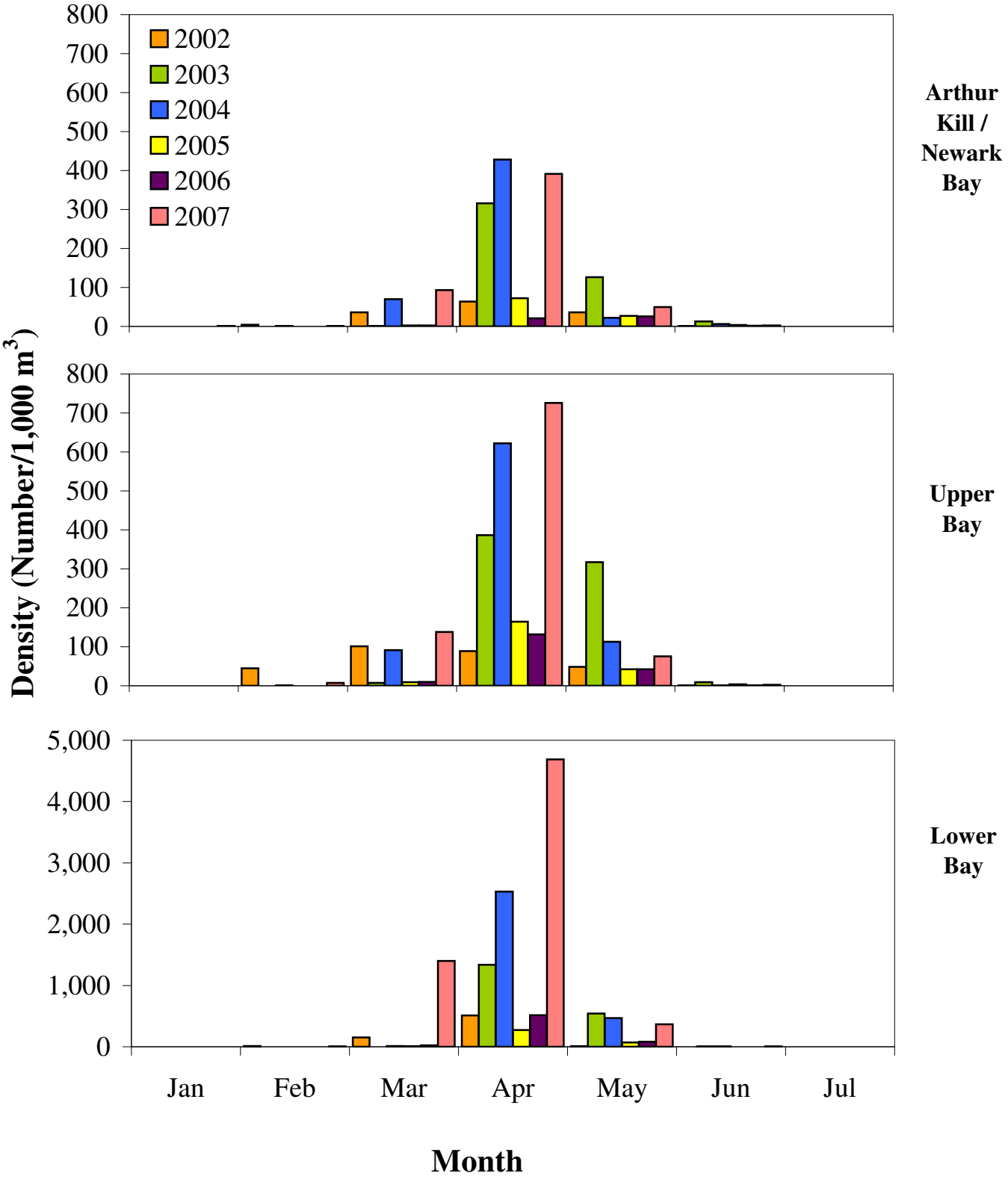

Figure 3-26b **Average monthly winter flounder larval density during the 2002, 2003, 2004, 2005, 2006, and 2007 surveys in the three study regions.**

Note(s): Scale change for Lower Bay.

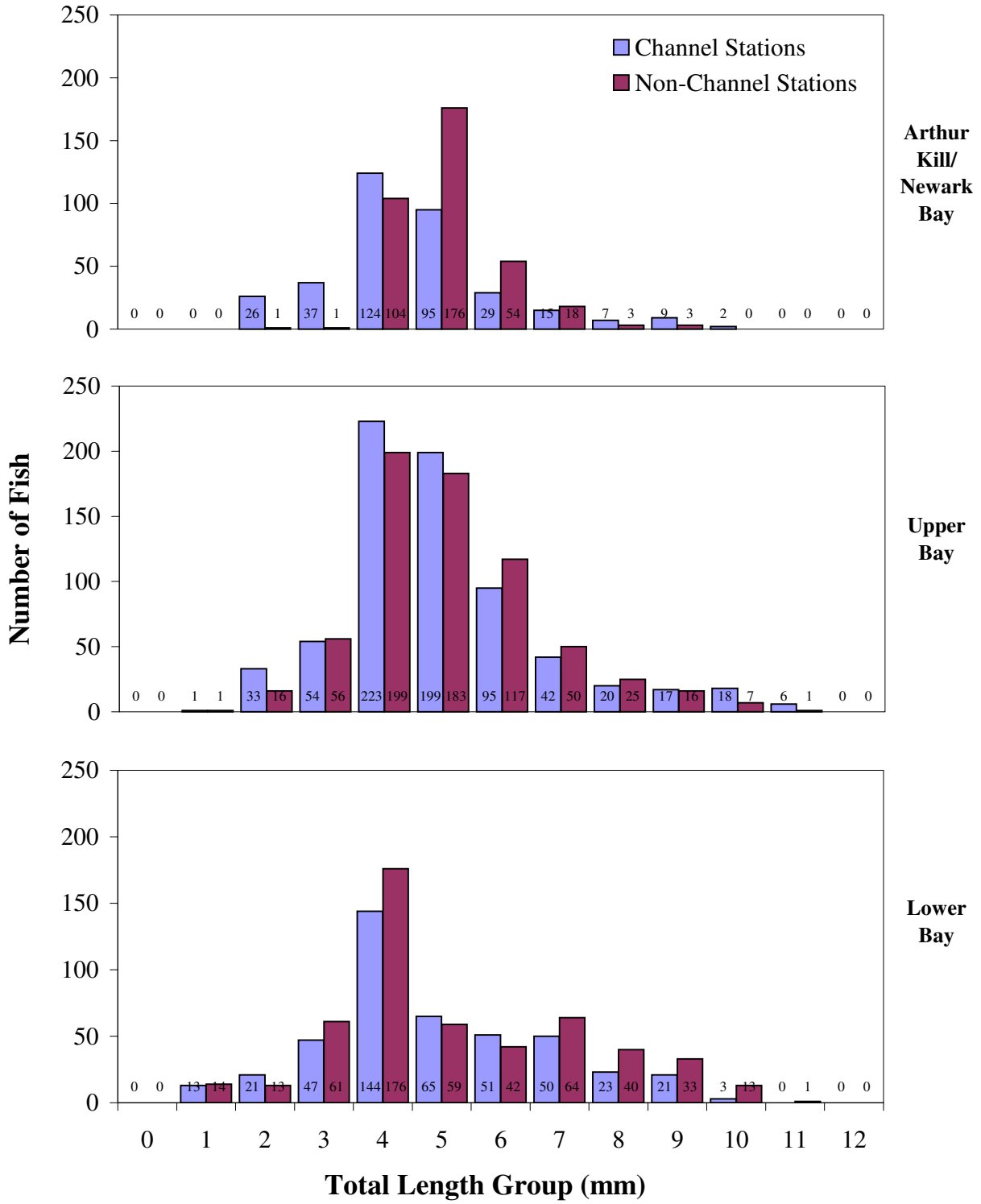

Figure 3-27 **Length frequency distribution of winter flounder larvae collected during ichthyoplankton sampling at Arthur Kill/Newark Bay, Upper Bay, and Lower Bay stations, 2007 Aquatic Biological Survey.**

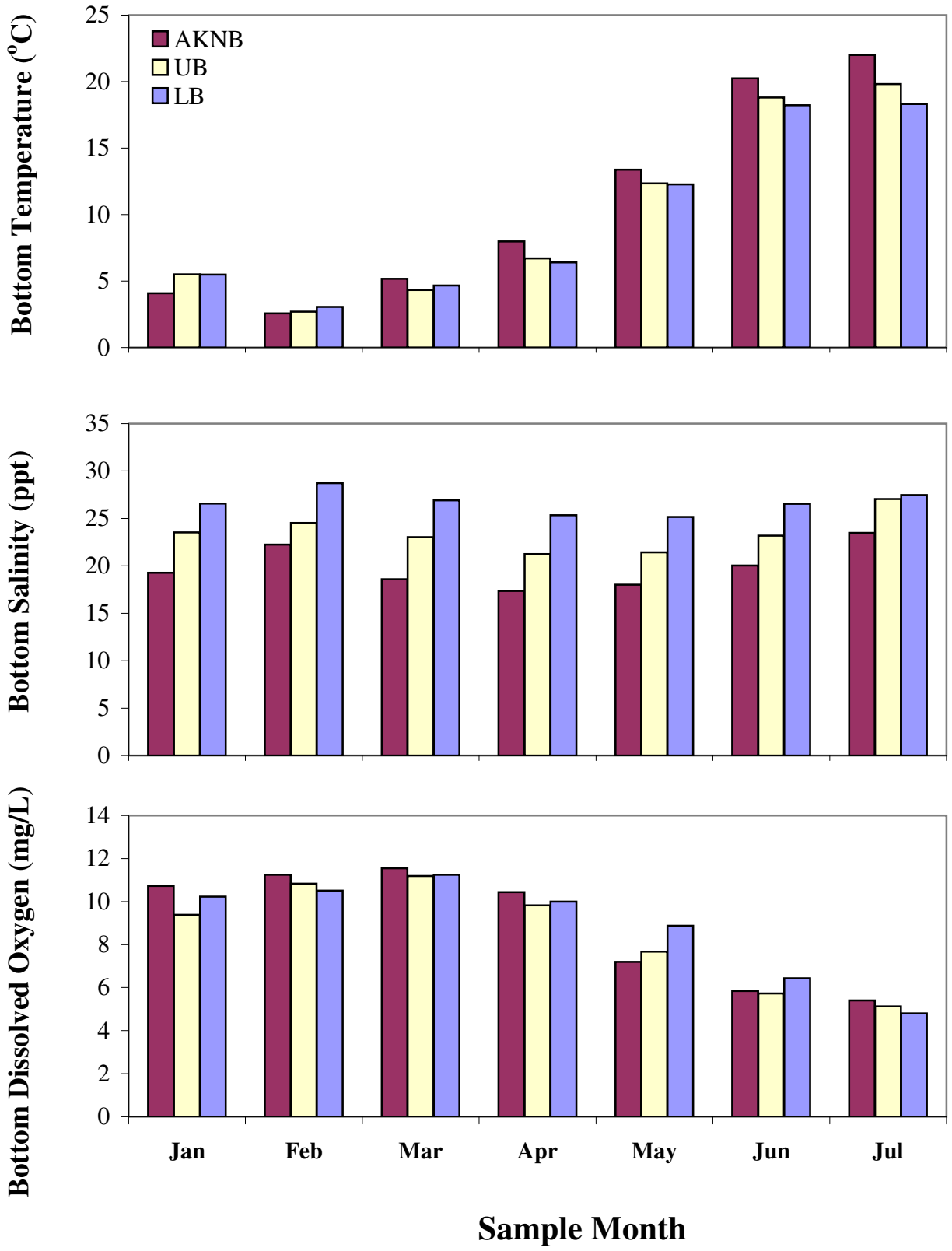

Figure 3-28 **Average monthly water quality measurements by region during the 2007 Aquatic Biological Survey.**

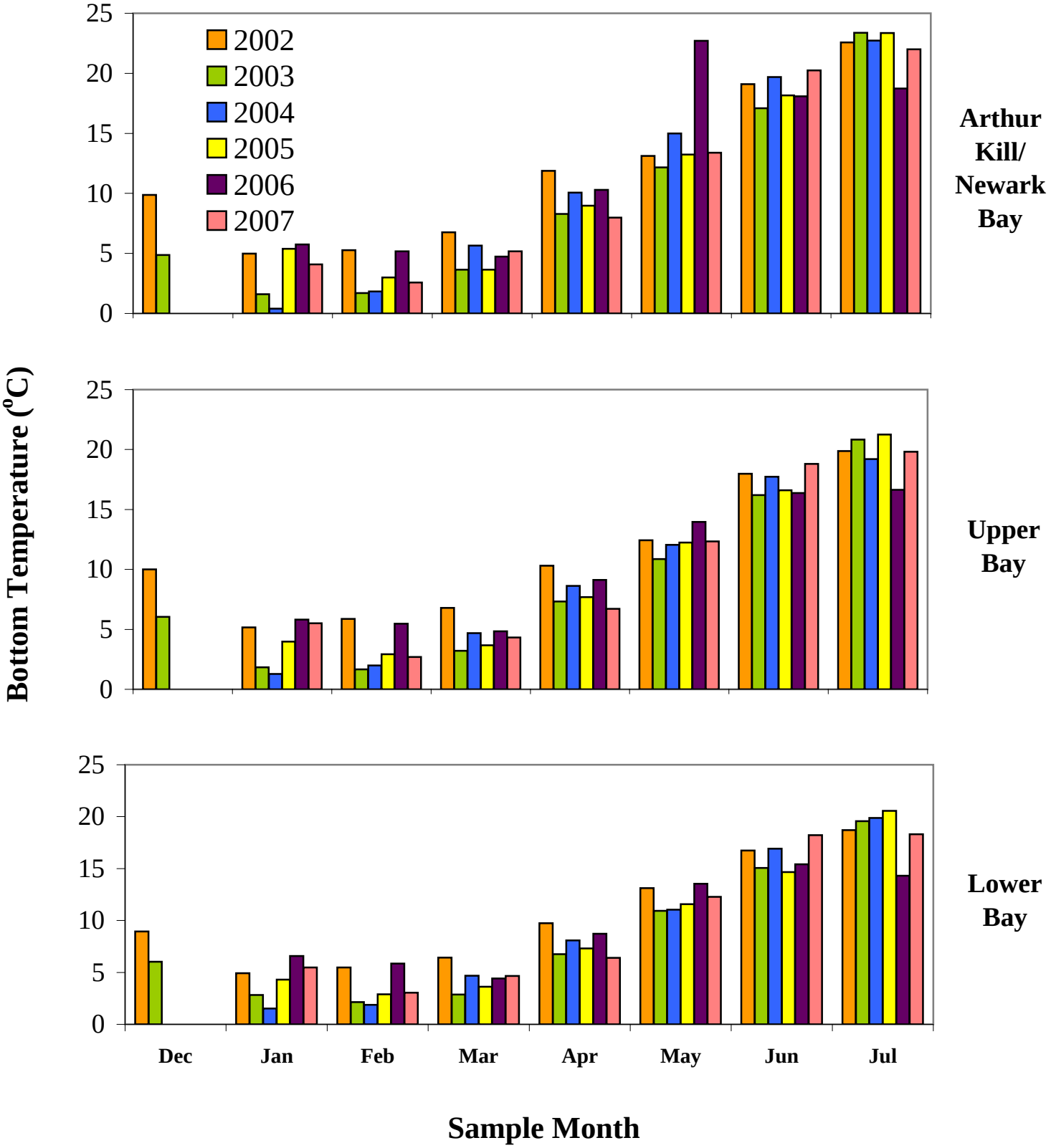

Figure 3-29 a **Average monthly bottom temperature measurements by region during the 2002-2007 Aquatic Biological Surveys.**

Note: December sampling did not occur during the 2004-2007 surveys.

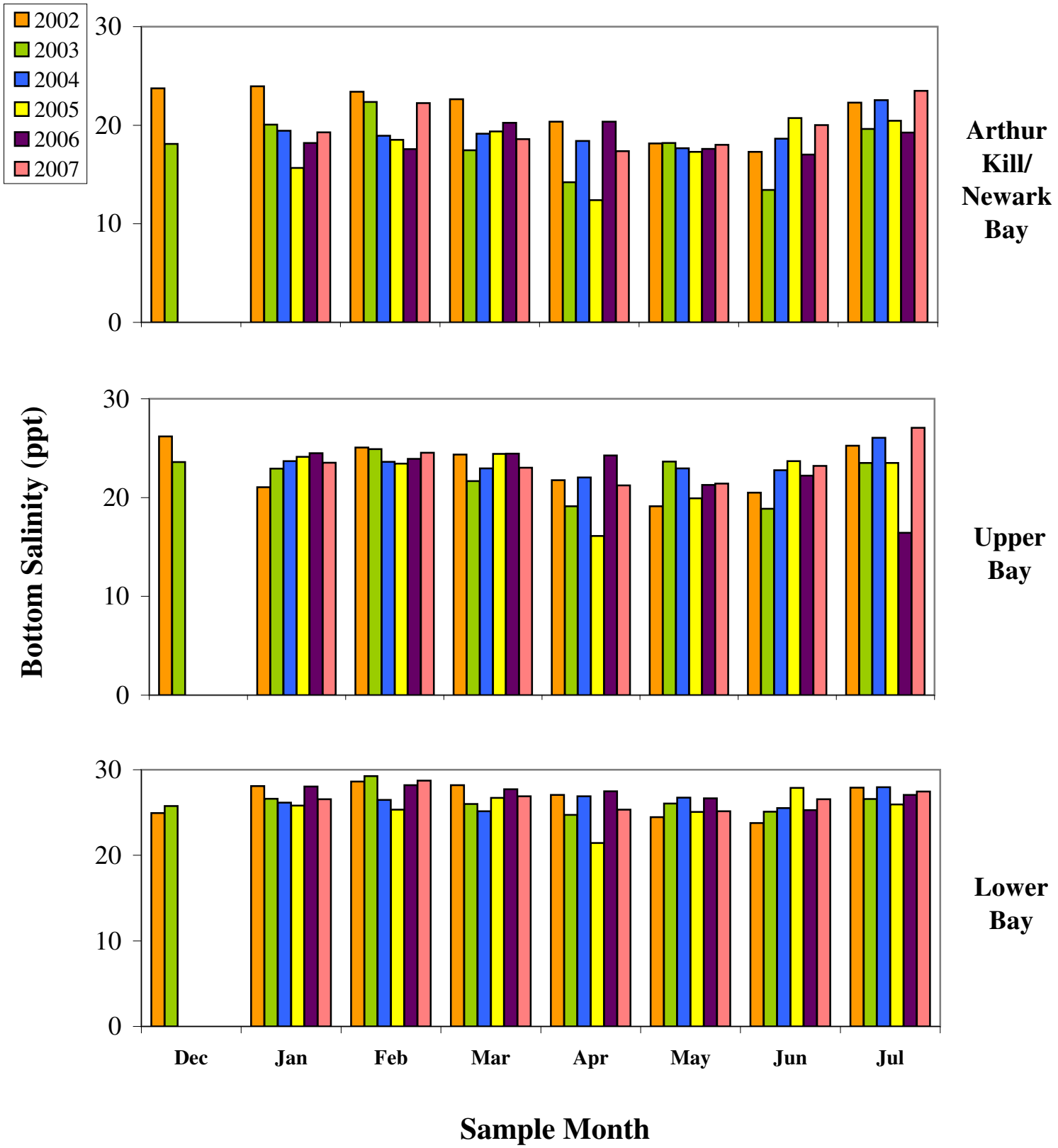

Figure 3-29 b **Average monthly bottom salinity measurements by region during the 2002-2007 Aquatic Biological Surveys.**

Note: December sampling did not occur during the 2004-2006 surveys.

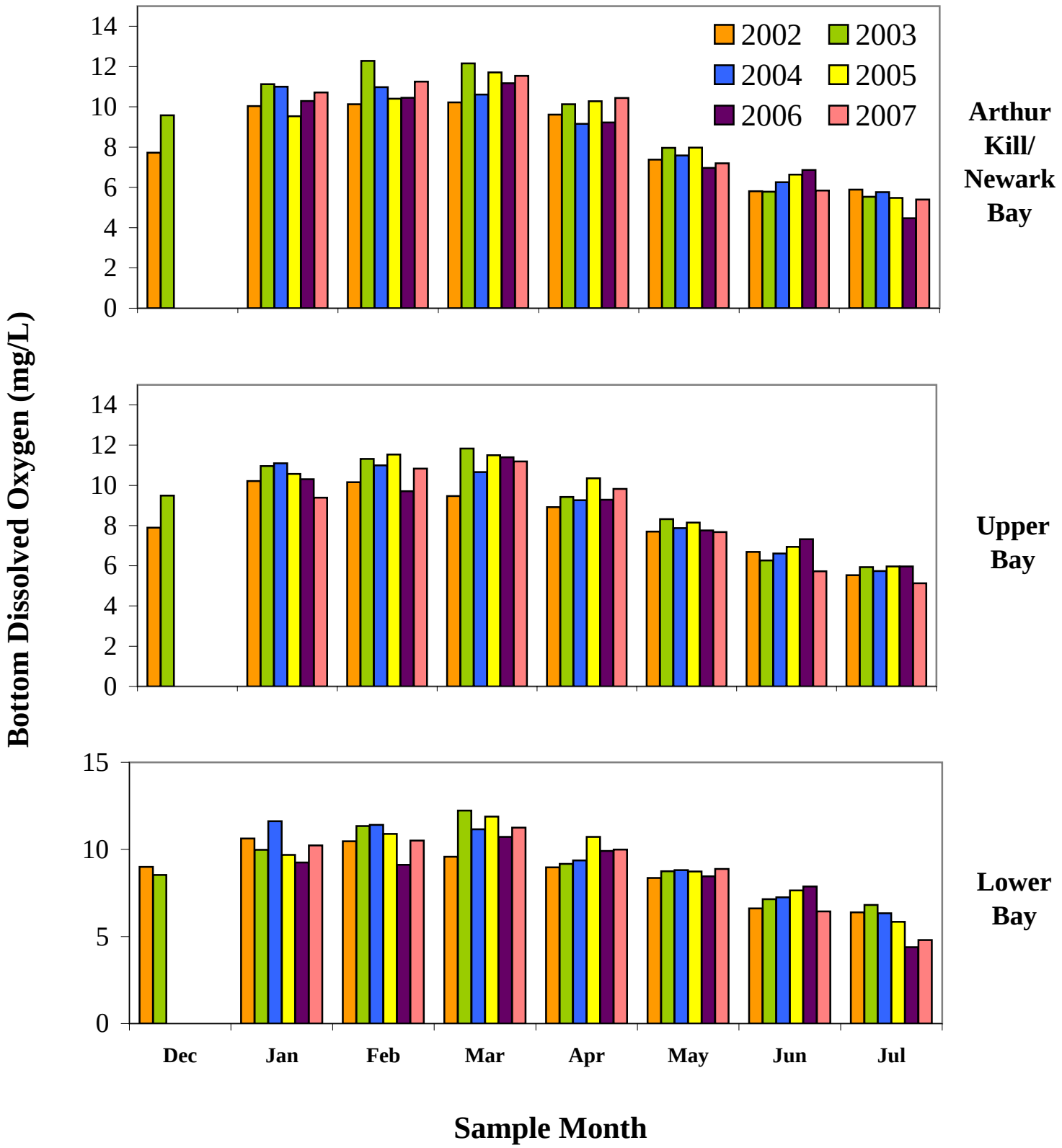

Figure 3-29 c **Average monthly bottom dissolved oxygen measurements by region during the 2002-2007 Aquatic Biological Surveys.**

Note: December sampling did not occur during the 2004-2006 surveys.

Appendix A

Finfish and Shellfish CPUE (number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
22-Jan-07	LB-1	Smallmouth flounder	1.0
22-Jan-07	LB-2	Bay anchovy	1.0
22-Jan-07	LB-2	Blue crab	1.0
22-Jan-07	LB-2	Fourspot flounder	2.0
22-Jan-07	LB-2	Little skate	8.0
22-Jan-07	LB-2	Red hake	1.0
22-Jan-07	LB-2	Silver hake	18.0
22-Jan-07	LB-2	Smallmouth flounder	1.0
22-Jan-07	LB-2	Spiny dogfish	4.0
22-Jan-07	LB-2	Spotted hake	26.0
22-Jan-07	LB-2	Summer flounder	1.0
22-Jan-07	LB-2	Windowpane	2.0
22-Jan-07	LB-3	American shad	1.0
22-Jan-07	LB-3	Atlantic menhaden	2.0
22-Jan-07	LB-3	Atlantic silverside	12.0
22-Jan-07	LB-3	Blueback herring	2.0
22-Jan-07	LB-3	Spotted hake	2.0
22-Jan-07	LB-4	Alewife	93.0
22-Jan-07	LB-4	American shad	6.0
22-Jan-07	LB-4	Atlantic menhaden	8.0
22-Jan-07	LB-4	Bay anchovy	1.0
22-Jan-07	LB-4	Blueback herring	6.0
22-Jan-07	LB-4	Spiny dogfish	2.0
22-Jan-07	LB-4	Spotted hake	1.0
22-Jan-07	LB-5	Atlantic herring	2.0
22-Jan-07	LB-5	Atlantic menhaden	1.0
22-Jan-07	LB-5	Atlantic silverside	1.0
22-Jan-07	LB-5	Blueback herring	1.0
22-Jan-07	LB-5	Smallmouth flounder	1.0
22-Jan-07	LB-5	Spotted hake	1.0
22-Jan-07	LB-5	Winter flounder	1.0
22-Jan-07	LB-6	Alewife	84.0
22-Jan-07	LB-6	Atlantic menhaden	22.0
22-Jan-07	LB-6	Bay anchovy	2.0
22-Jan-07	LB-6	Blueback herring	24.0
22-Jan-07	LB-6	Little skate	1.0
22-Jan-07	LB-6	Silver hake	1.0
22-Jan-07	LB-6	Smallmouth flounder	2.0
22-Jan-07	LB-6	Spotted hake	6.0
22-Jan-07	LB-6	Striped bass	16.0
22-Jan-07	LB-6	Windowpane	1.0
22-Jan-07	LB-6	Winter flounder	2.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
22-Jan-07	SB-3	Striped bass	2.0
22-Jan-07	SB-4	Alewife	2.0
22-Jan-07	SB-4	Atlantic menhaden	1.0
22-Jan-07	SB-4	Cunner	2.0
22-Jan-07	SB-4	Red hake	5.0
22-Jan-07	SB-4	Silver hake	1.0
22-Jan-07	SB-4	Striped bass	19.0
22-Jan-07	SB-4	White perch	1.0
22-Jan-07	SB-4	Winter flounder	7.0
22-Jan-07	SB-6	Alewife	1.0
22-Jan-07	SB-6	Blueback herring	3.0
22-Jan-07	SB-6	Red hake	1.0
22-Jan-07	SB-6	Silver hake	7.0
22-Jan-07	SB-6	Smallmouth flounder	1.0
22-Jan-07	SB-6	Spotted hake	6.0
22-Jan-07	SB-6	Striped bass	2.0
22-Jan-07	SB-6	Windowpane	10.0
23-Jan-07	AK-2	American eel	1.3
23-Jan-07	AK-2	Atlantic croaker	18.8
23-Jan-07	AK-2	Cunner	1.3
23-Jan-07	AK-2	Grubby	1.3
23-Jan-07	AK-2	Red hake	11.3
23-Jan-07	AK-2	Silver hake	2.5
23-Jan-07	AK-2	Spotted hake	18.8
23-Jan-07	AK-2	Striped bass	6.3
23-Jan-07	AK-2	Striped searobin	1.3
23-Jan-07	AK-2	White perch	155.0
23-Jan-07	AK-2	Winter flounder	7.5
23-Jan-07	AK-3	Atlantic croaker	1.0
23-Jan-07	AK-3	Atlantic herring	1.0
23-Jan-07	AK-3	Gizzard shad	4.0
23-Jan-07	AK-3	Red hake	28.0
23-Jan-07	AK-3	Smallmouth flounder	1.0
23-Jan-07	AK-3	Spotted hake	18.0
23-Jan-07	AK-3	Striped bass	7.0
23-Jan-07	AK-3	White perch	126.0
23-Jan-07	AK-3	Winter flounder	2.0
23-Jan-07	NB-3	Atlantic silverside	5.0
23-Jan-07	NB-3	Bay anchovy	2.0
23-Jan-07	NB-3	Silver hake	1.0
23-Jan-07	NB-3	Striped bass	1.0
23-Jan-07	NB-4	Atlantic silverside	1.0
23-Jan-07	NB-4	Bay anchovy	1.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
23-Jan-07	NB-5	Alewife	1.0
23-Jan-07	NB-5	American eel	1.0
23-Jan-07	NB-5	Blue crab	1.0
23-Jan-07	NB-5	Red hake	11.0
23-Jan-07	NB-5	Spotted hake	45.0
23-Jan-07	NB-5	White perch	182.0
23-Jan-07	NB-5	Winter flounder	1.0
23-Jan-07	NB-6	Bay anchovy	1.0
23-Jan-07	NB-6	Gizzard shad	15.0
23-Jan-07	NB-6	Red hake	8.0
23-Jan-07	NB-6	Smallmouth flounder	1.0
23-Jan-07	NB-6	Spotted hake	6.0
23-Jan-07	NB-6	Striped bass	9.0
23-Jan-07	NB-6	Weakfish	1.0
23-Jan-07	NB-6	White perch	140.0
23-Jan-07	NB-6	Winter flounder	9.0
23-Jan-07	NB-7	Atlantic silverside	6.8
23-Jan-07	NB-7	Blueback herring	9.5
23-Jan-07	PJ-1	Atlantic menhaden	3.0
23-Jan-07	PJ-1	Cunner	2.0
23-Jan-07	PJ-1	Northern pipefish	1.0
23-Jan-07	PJ-1	Smallmouth flounder	1.0
23-Jan-07	PJ-1	Striped bass	2.0
23-Jan-07	PJ-1	Tautog	1.0
23-Jan-07	PJ-1	Winter flounder	1.0
24-Jan-07	PJ-2	Alewife	1.0
24-Jan-07	PJ-2	Atlantic menhaden	2.0
24-Jan-07	PJ-2	Striped bass	1.0
24-Jan-07	PJ-3	Bay anchovy	4.8
24-Jan-07	PJ-4	Bay anchovy	12.0
24-Jan-07	PJ-4	Blueback herring	11.0
24-Jan-07	PJ-4	Spotted hake	11.0
24-Jan-07	PJ-5	Atlantic croaker	1.1
24-Jan-07	PJ-5	Bay anchovy	5.6
24-Jan-07	PJ-5	Blueback herring	1.1
24-Jan-07	PJ-5	Little skate	1.1
24-Jan-07	PJ-5	Red hake	6.7
24-Jan-07	PJ-5	Silver hake	1.1
24-Jan-07	PJ-5	Spotted hake	4.4
24-Jan-07	PJ-5	Striped bass	2.2
24-Jan-07	PJ-5	White perch	1.1
24-Jan-07	PJ-5	Winter flounder	7.8
24-Jan-07	SB-1	American shad	2.8

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
24-Jan-07	SB-1	Atlantic herring	2.8
24-Jan-07	SB-1	Atlantic menhaden	2.8
24-Jan-07	SB-1	Blueback herring	2.8
24-Jan-07	SB-1	Gizzard shad	2.8
24-Jan-07	SB-1	Striped bass	5.6
24-Jan-07	SB-5	Blue crab	5.0
24-Jan-07	SB-5	Little skate	3.0
24-Jan-07	SB-5	Red hake	14.0
24-Jan-07	SB-5	Spotted hake	12.0
24-Jan-07	SB-5	Summer flounder	1.0
24-Jan-07	SB-5	Weakfish	1.0
24-Jan-07	SB-5	Windowpane	2.0
24-Jan-07	SB-5	Winter flounder	8.0
29-Jan-07	PJ-1	Atlantic herring	1.0
29-Jan-07	PJ-4	Alewife	4.0
29-Jan-07	PJ-4	Atlantic croaker	3.0
29-Jan-07	PJ-4	Red hake	10.0
29-Jan-07	PJ-4	Spot	8.0
29-Jan-07	PJ-4	Spotted hake	18.0
29-Jan-07	PJ-4	Striped bass	6.0
29-Jan-07	PJ-4	Striped mullet	1.0
29-Jan-07	PJ-4	Weakfish	1.0
29-Jan-07	PJ-4	White perch	5.0
29-Jan-07	PJ-4	Winter flounder	12.0
29-Jan-07	PJ-5	Alewife	5.0
29-Jan-07	PJ-5	Atlantic menhaden	1.0
29-Jan-07	PJ-5	Red hake	1.0
29-Jan-07	PJ-5	Striped bass	16.0
29-Jan-07	PJ-5	Summer flounder	1.0
29-Jan-07	PJ-5	White perch	1.0
29-Jan-07	PJ-5	Winter flounder	1.0
29-Jan-07	SB-1	Striped bass	2.6
29-Jan-07	SB-1	Winter flounder	7.7
29-Jan-07	SB-3	Atlantic silverside	1.0
29-Jan-07	SB-3	Smallmouth flounder	2.0
29-Jan-07	SB-3	Windowpane	1.0
29-Jan-07	SB-3	Winter flounder	4.0
29-Jan-07	SB-4	Alewife	20.0
29-Jan-07	SB-4	Atlantic menhaden	2.0
29-Jan-07	SB-4	Red hake	8.0
29-Jan-07	SB-4	Spotted hake	1.0
29-Jan-07	SB-4	Striped bass	36.0
29-Jan-07	SB-4	Winter flounder	7.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
29-Jan-07	SB-5	Blue crab	7.0
29-Jan-07	SB-5	Conger eel	1.0
29-Jan-07	SB-5	Cunner	1.0
29-Jan-07	SB-5	Little skate	1.0
29-Jan-07	SB-5	Red hake	32.0
29-Jan-07	SB-5	Spotted hake	5.0
29-Jan-07	SB-5	Striped bass	1.0
29-Jan-07	SB-5	Weakfish	2.0
29-Jan-07	SB-5	Windowpane	3.0
29-Jan-07	SB-5	Winter flounder	17.0
30-Jan-07	LB-1	Atlantic silverside	6.0
30-Jan-07	LB-2	Atlantic menhaden	1.0
30-Jan-07	LB-2	Silver hake	30.0
30-Jan-07	LB-2	Smallmouth flounder	1.0
30-Jan-07	LB-2	Spiny dogfish	4.0
30-Jan-07	LB-2	Spotted hake	25.0
30-Jan-07	LB-2	Summer flounder	4.0
30-Jan-07	LB-2	Winter flounder	6.0
30-Jan-07	LB-3	Atlantic silverside	1.0
30-Jan-07	LB-3	Bay anchovy	2.0
30-Jan-07	LB-3	Blue crab	1.0
30-Jan-07	LB-3	Smallmouth flounder	1.0
30-Jan-07	LB-3	Winter flounder	1.0
30-Jan-07	LB-4	Atlantic silverside	13.0
30-Jan-07	LB-4	Blue crab	1.0
30-Jan-07	LB-4	Little skate	2.0
30-Jan-07	LB-4	Silver hake	1.0
30-Jan-07	LB-4	Spotted hake	3.0
30-Jan-07	LB-4	Winter flounder	4.0
30-Jan-07	LB-5	Atlantic silverside	2.0
30-Jan-07	LB-5	Smallmouth flounder	1.0
30-Jan-07	LB-6	Alewife	20.0
30-Jan-07	LB-6	American shad	9.0
30-Jan-07	LB-6	Atlantic menhaden	3.0
30-Jan-07	LB-6	Atlantic silverside	5.0
30-Jan-07	LB-6	Bay anchovy	2.0
30-Jan-07	LB-6	Little skate	6.0
30-Jan-07	LB-6	Smallmouth flounder	5.0
30-Jan-07	LB-6	Spotted hake	11.0
30-Jan-07	LB-6	Windowpane	2.0
30-Jan-07	LB-6	Winter flounder	21.0
31-Jan-07	NB-3	Atlantic silverside	26.0
31-Jan-07	NB-4	Atlantic silverside	2.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
31-Jan-07	NB-5	Bay anchovy	1.0
31-Jan-07	NB-5	Blue crab	1.0
31-Jan-07	NB-5	Butterfish	1.0
31-Jan-07	NB-5	Gizzard shad	1.0
31-Jan-07	NB-5	Red hake	4.0
31-Jan-07	NB-5	Spot	1.0
31-Jan-07	NB-5	Spotted hake	21.0
31-Jan-07	NB-5	Striped bass	4.0
31-Jan-07	NB-5	White perch	218.0
31-Jan-07	NB-5	Windowpane	2.0
31-Jan-07	NB-6	Gizzard shad	2.0
31-Jan-07	NB-6	Red hake	2.0
31-Jan-07	NB-6	Spotted hake	24.0
31-Jan-07	NB-6	Striped bass	21.0
31-Jan-07	NB-6	White perch	203.0
31-Jan-07	NB-6	Winter flounder	4.0
31-Jan-07	NB-7	Atlantic silverside	4.3
01-Feb-07	AK-2	Gizzard shad	1.1
01-Feb-07	AK-2	Striped bass	2.2
01-Feb-07	AK-2	White perch	3.3
01-Feb-07	AK-2	Winter flounder	1.1
01-Feb-07	AK-3	Alewife	3.3
01-Feb-07	AK-3	Red hake	1.1
01-Feb-07	AK-3	Spotted hake	1.1
01-Feb-07	AK-3	Striped bass	1.1
01-Feb-07	AK-3	White perch	7.8
01-Feb-07	AK-3	Winter flounder	2.2
01-Feb-07	PJ-2	Atlantic herring	1.0
01-Feb-07	PJ-2	Atlantic menhaden	1.0
01-Feb-07	PJ-2	Blue crab	3.0
01-Feb-07	PJ-2	Winter flounder	1.0
01-Feb-07	PJ-3	Atlantic silverside	6.3
01-Feb-07	PJ-3	Blue crab	1.3
01-Feb-07	SB-6	Alewife	14.0
01-Feb-07	SB-6	Atlantic menhaden	6.0
01-Feb-07	SB-6	Blueback herring	12.0
12-Feb-07	LB-2	Blue crab	1.0
12-Feb-07	LB-4	Atlantic silverside	1.0
12-Feb-07	LB-4	Blue crab	1.0
12-Feb-07	LB-4	Little skate	1.0
12-Feb-07	LB-4	Spotted hake	1.0
12-Feb-07	LB-6	Alewife	6.0
12-Feb-07	LB-6	American shad	1.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
12-Feb-07	LB-6	Atlantic silverside	23.0
12-Feb-07	LB-6	Blue crab	2.0
12-Feb-07	LB-6	Little skate	1.0
12-Feb-07	LB-6	Northern pipefish	1.0
12-Feb-07	LB-6	Winter flounder	5.0
13-Feb-07	NB-3	Atlantic silverside	1.0
13-Feb-07	NB-4	White perch	1.0
13-Feb-07	NB-5	White perch	27.9
13-Feb-07	NB-6	American shad	1.0
13-Feb-07	NB-6	Blue crab	1.0
13-Feb-07	NB-6	Gizzard shad	4.0
13-Feb-07	NB-6	Red hake	5.0
13-Feb-07	NB-6	Silver hake	1.0
13-Feb-07	NB-6	Striped bass	168.0
13-Feb-07	NB-6	White perch	924.0
13-Feb-07	NB-6	Windowpane	1.0
13-Feb-07	NB-7	Atlantic silverside	1.4
13-Feb-07	NB-7	Blue crab	1.4
13-Feb-07	PJ-2	Atlantic silverside	1.0
13-Feb-07	PJ-2	Blue crab	1.0
13-Feb-07	PJ-2	Cunner	1.0
13-Feb-07	PJ-2	Grubby	1.0
13-Feb-07	PJ-2	Winter flounder	1.0
15-Feb-07	AK-2	Cunner	1.3
15-Feb-07	AK-2	Gizzard shad	1.3
15-Feb-07	AK-2	Red hake	1.3
15-Feb-07	AK-2	Spotted hake	2.5
15-Feb-07	AK-2	Striped bass	5.0
15-Feb-07	AK-2	White perch	42.5
15-Feb-07	AK-2	Winter flounder	2.5
15-Feb-07	AK-3	Alewife	1.3
15-Feb-07	AK-3	Atlantic silverside	2.5
15-Feb-07	AK-3	Red hake	1.3
15-Feb-07	AK-3	White perch	6.3
15-Feb-07	AK-3	Winter flounder	11.3
15-Feb-07	PJ-1	Grubby	1.1
15-Feb-07	PJ-1	Windowpane	1.1
15-Feb-07	PJ-3	Atlantic silverside	3.8
15-Feb-07	PJ-4	Spotted hake	1.0
15-Feb-07	PJ-4	Windowpane	1.0
15-Feb-07	PJ-5	Alewife	3.0
15-Feb-07	PJ-5	Atlantic herring	4.0
15-Feb-07	PJ-5	Blue crab	1.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
15-Feb-07	PJ-5	Grubby	2.0
15-Feb-07	PJ-5	Red hake	1.0
15-Feb-07	PJ-5	Smallmouth flounder	2.0
15-Feb-07	PJ-5	Spotted hake	1.0
15-Feb-07	PJ-5	Winter flounder	9.0
16-Feb-07	SB-1	Atlantic silverside	113.3
16-Feb-07	SB-3	Winter flounder	3.0
16-Feb-07	SB-4	Atlantic herring	10.0
16-Feb-07	SB-4	Atlantic silverside	5.0
16-Feb-07	SB-4	Smallmouth flounder	1.0
16-Feb-07	SB-4	Striped bass	2.0
16-Feb-07	SB-4	Striped mullet	1.0
16-Feb-07	SB-4	Winter flounder	11.0
16-Feb-07	SB-5	Atlantic herring	10.0
16-Feb-07	SB-5	Atlantic tomcod	1.0
16-Feb-07	SB-5	Blue crab	2.0
16-Feb-07	SB-5	Little skate	1.0
16-Feb-07	SB-5	Red hake	15.0
16-Feb-07	SB-5	Spotted hake	1.0
16-Feb-07	SB-5	Striped bass	3.0
16-Feb-07	SB-5	Windowpane	3.0
16-Feb-07	SB-5	Winter flounder	12.0
16-Feb-07	SB-6	Atlantic silverside	1.0
27-Feb-07	LB-4	Northern pipefish	1.0
27-Feb-07	LB-6	Alewife	5.0
27-Feb-07	LB-6	Atlantic silverside	2.0
27-Feb-07	LB-6	Blue crab	1.0
27-Feb-07	LB-6	Winter flounder	2.0
28-Feb-07	NB-3	Blue crab	1.0
28-Feb-07	NB-3	White perch	1.0
28-Feb-07	NB-4	Blue crab	2.0
28-Feb-07	NB-5	Red hake	1.0
28-Feb-07	NB-5	Striped bass	1.0
28-Feb-07	NB-5	White perch	18.0
28-Feb-07	NB-6	Red hake	1.0
28-Feb-07	NB-6	White perch	13.0
28-Feb-07	PJ-4	Northern pipefish	1.0
28-Feb-07	PJ-5	Atlantic silverside	2.0
28-Feb-07	PJ-5	Blue crab	2.0
28-Feb-07	PJ-5	Blueback herring	4.0
28-Feb-07	PJ-5	Red hake	1.0
28-Feb-07	PJ-5	Striped bass	1.0
28-Feb-07	PJ-5	Summer flounder	1.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
28-Feb-07	PJ-5	White perch	1.0
28-Feb-07	PJ-5	Windowpane	3.0
28-Feb-07	PJ-5	Winter flounder	16.0
01-Mar-07	PJ-1	Atlantic silverside	1.0
01-Mar-07	PJ-1	Winter flounder	2.0
01-Mar-07	PJ-3	Blue crab	2.5
01-Mar-07	SB-3	Blue crab	6.0
01-Mar-07	SB-3	Smallmouth flounder	1.0
01-Mar-07	SB-3	Winter flounder	18.0
01-Mar-07	SB-3	Winter skate	2.0
01-Mar-07	SB-4	Smallmouth flounder	1.0
01-Mar-07	SB-4	Winter flounder	1.0
01-Mar-07	SB-5	Alewife	1.0
01-Mar-07	SB-5	Blue crab	6.0
01-Mar-07	SB-5	Cunner	2.0
01-Mar-07	SB-5	Grubby	3.0
01-Mar-07	SB-5	Little skate	2.0
01-Mar-07	SB-5	Northern pipefish	1.0
01-Mar-07	SB-5	Red hake	4.0
01-Mar-07	SB-5	Smallmouth flounder	3.0
01-Mar-07	SB-5	Windowpane	6.0
01-Mar-07	SB-5	Winter flounder	7.0
01-Mar-07	SB-5	Winter skate	4.0
01-Mar-07	SB-6	Windowpane	1.0
02-Mar-07	AK-2	Northern pipefish	1.0
02-Mar-07	AK-2	Striped bass	2.0
02-Mar-07	AK-2	White perch	26.0
02-Mar-07	AK-2	Winter flounder	2.0
02-Mar-07	AK-3	Northern pipefish	1.2
02-Mar-07	AK-3	Red hake	1.2
02-Mar-07	AK-3	Striped bass	2.4
02-Mar-07	AK-3	White perch	4.8
02-Mar-07	NB-7	Atlantic silverside	1.3
02-Mar-07	NB-7	Winter flounder	1.3
02-Mar-07	SB-1	Atlantic silverside	16.7
12-Mar-07	LB-4	American shad	1.0
12-Mar-07	LB-4	Atlantic herring	3.0
12-Mar-07	LB-4	Northern pipefish	1.0
12-Mar-07	LB-4	Winter flounder	2.0
12-Mar-07	LB-6	Alewife	75.0
12-Mar-07	LB-6	American shad	7.0
12-Mar-07	LB-6	Atlantic herring	8.0
12-Mar-07	LB-6	Atlantic menhaden	3.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
12-Mar-07	LB-6	Blue crab	1.0
12-Mar-07	LB-6	Blueback herring	37.0
13-Mar-07	NB-3	Blue crab	1.0
13-Mar-07	NB-4	Atlantic silverside	1.0
13-Mar-07	NB-5	White perch	29.0
13-Mar-07	NB-5	Winter flounder	2.0
13-Mar-07	NB-6	Blue crab	1.0
13-Mar-07	NB-6	Striped bass	1.0
13-Mar-07	NB-6	White perch	25.0
13-Mar-07	PJ-1	Atlantic silverside	1.2
13-Mar-07	PJ-1	Blue crab	1.2
13-Mar-07	PJ-2	Winter flounder	1.0
13-Mar-07	PJ-3	Blue crab	3.3
14-Mar-07	PJ-4	Winter flounder	1.0
14-Mar-07	PJ-5	Atlantic silverside	1.0
14-Mar-07	PJ-5	Northern pipefish	1.0
14-Mar-07	PJ-5	Windowpane	1.0
14-Mar-07	PJ-5	Winter flounder	15.0
14-Mar-07	SB-1	Atlantic silverside	19.4
14-Mar-07	SB-3	Blue crab	4.0
14-Mar-07	SB-3	Blueback herring	1.0
14-Mar-07	SB-3	Winter flounder	3.0
15-Mar-07	AK-2	Winter flounder	1.0
15-Mar-07	AK-3	White perch	4.7
15-Mar-07	AK-3	Winter flounder	8.2
15-Mar-07	NB-7	Blueback herring	1.3
15-Mar-07	SB-5	American shad	1.0
15-Mar-07	SB-5	Atlantic herring	6.0
15-Mar-07	SB-5	Blue crab	4.0
15-Mar-07	SB-5	Cunner	1.0
15-Mar-07	SB-5	Northern pipefish	2.0
15-Mar-07	SB-5	Windowpane	1.0
15-Mar-07	SB-5	Winter flounder	15.0
26-Mar-07	LB-1	Atlantic herring	1.0
26-Mar-07	LB-1	Atlantic silverside	1.0
26-Mar-07	LB-1	Winter flounder	1.0
26-Mar-07	LB-3	Blueback herring	1.0
26-Mar-07	LB-4	Alewife	4.0
26-Mar-07	LB-4	American shad	4.0
26-Mar-07	LB-4	Little skate	2.0
26-Mar-07	LB-4	Silver hake	1.0
26-Mar-07	LB-4	Spotted hake	2.0
26-Mar-07	LB-4	Summer flounder	1.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
26-Mar-07	LB-4	Winter flounder	1.0
26-Mar-07	LB-5	Bay anchovy	1.0
26-Mar-07	LB-5	Little skate	1.0
26-Mar-07	LB-5	Windowpane	1.0
26-Mar-07	LB-6	Blueback herring	1.0
26-Mar-07	LB-6	Striped bass	1.0
26-Mar-07	LB-6	Winter flounder	1.0
27-Mar-07	PJ-1	Blue crab	2.0
27-Mar-07	PJ-1	Windowpane	1.0
27-Mar-07	PJ-2	American shad	2.0
27-Mar-07	PJ-2	Summer flounder	1.0
27-Mar-07	PJ-2	Winter flounder	1.0
27-Mar-07	PJ-5	Alewife	2.0
27-Mar-07	PJ-5	Blueback herring	1.0
27-Mar-07	PJ-5	Northern searobin	1.0
27-Mar-07	PJ-5	Spotted hake	4.0
27-Mar-07	PJ-5	Winter flounder	1.0
27-Mar-07	SB-3	Blue crab	2.0
27-Mar-07	SB-3	Grubby	1.0
27-Mar-07	SB-3	Smallmouth flounder	1.0
27-Mar-07	SB-3	Winter flounder	2.0
27-Mar-07	SB-4	Alewife	2.0
27-Mar-07	SB-4	American shad	3.0
27-Mar-07	SB-4	Atlantic herring	3.0
27-Mar-07	SB-4	Winter flounder	1.0
27-Mar-07	SB-5	Blue crab	1.0
27-Mar-07	SB-5	Spotted hake	1.0
28-Mar-07	NB-3	Blue crab	1.0
28-Mar-07	NB-4	Blue crab	4.0
28-Mar-07	NB-5	Blueback herring	1.0
28-Mar-07	NB-5	White perch	41.0
28-Mar-07	NB-5	Winter flounder	2.0
28-Mar-07	NB-6	Alewife	6.0
28-Mar-07	NB-6	American shad	1.0
28-Mar-07	NB-6	Blue crab	1.0
28-Mar-07	NB-6	Striped bass	17.0
28-Mar-07	NB-6	White perch	174.0
28-Mar-07	PJ-4	Alewife	2.0
28-Mar-07	PJ-4	American shad	1.0
28-Mar-07	PJ-4	Red hake	1.0
28-Mar-07	PJ-4	Spotted hake	1.0
28-Mar-07	PJ-4	White perch	1.0
28-Mar-07	PJ-4	Winter flounder	1.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
28-Mar-07	SB-6	Alewife	2.0
28-Mar-07	SB-6	American lobster	1.0
28-Mar-07	SB-6	American shad	3.0
28-Mar-07	SB-6	Little skate	1.0
28-Mar-07	SB-6	Northern searobin	2.0
28-Mar-07	SB-6	Red hake	1.0
28-Mar-07	SB-6	Smallmouth flounder	3.0
28-Mar-07	SB-6	Spotted hake	47.0
28-Mar-07	SB-6	Windowpane	6.0
28-Mar-07	SB-6	Winter flounder	1.0
29-Mar-07	AK-3	Striped bass	2.0
29-Mar-07	AK-3	White perch	3.0
29-Mar-07	AK-3	Winter flounder	6.0
29-Mar-07	NB-7	Blue crab	1.0
29-Mar-07	PJ-3	Atlantic silverside	1.0
29-Mar-07	PJ-3	Grubby	1.0
23-Apr-07	LB-3	Lined seahorse	1.0
23-Apr-07	LB-3	Windowpane	1.0
23-Apr-07	LB-5	Little skate	1.0
23-Apr-07	LB-5	Striped bass	1.0
23-Apr-07	LB-5	Windowpane	1.0
23-Apr-07	LB-6	Spotted hake	1.0
24-Apr-07	NB-4	Blue crab	4.0
24-Apr-07	NB-5	Blue crab	2.0
24-Apr-07	NB-5	Blueback herring	1.0
24-Apr-07	NB-5	Spotted hake	4.0
24-Apr-07	NB-5	White perch	1.0
24-Apr-07	NB-6	Alewife	1.0
24-Apr-07	NB-6	Blue crab	2.0
24-Apr-07	NB-6	Spotted hake	4.0
24-Apr-07	NB-6	Striped bass	1.0
24-Apr-07	SB-3	Black sea bass	1.0
24-Apr-07	SB-3	Grubby	1.0
24-Apr-07	SB-3	Striped bass	3.0
24-Apr-07	SB-3	Windowpane	1.0
24-Apr-07	SB-3	Winter flounder	6.0
24-Apr-07	SB-4	Atlantic tomcod	8.0
24-Apr-07	SB-4	Northern pipefish	3.0
24-Apr-07	SB-4	Red hake	2.0
24-Apr-07	SB-4	Spotted hake	13.0
24-Apr-07	SB-4	Striped bass	125.0
24-Apr-07	SB-4	White perch	1.0
24-Apr-07	SB-4	Winter flounder	45.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
25-Apr-07	PJ-1	Alewife	4.0
25-Apr-07	PJ-1	Atlantic tomcod	1.0
25-Apr-07	PJ-1	Bay anchovy	2.0
25-Apr-07	PJ-1	Black sea bass	2.0
25-Apr-07	PJ-1	Blue crab	3.0
25-Apr-07	PJ-1	Blueback herring	5.0
25-Apr-07	PJ-1	Grubby	1.0
25-Apr-07	PJ-1	Northern pipefish	1.0
25-Apr-07	PJ-1	Striped bass	5.0
25-Apr-07	PJ-1	Summer flounder	1.0
25-Apr-07	PJ-1	Windowpane	1.0
25-Apr-07	PJ-1	Winter flounder	9.0
25-Apr-07	PJ-2	Alewife	3.0
25-Apr-07	PJ-2	American shad	3.0
25-Apr-07	PJ-2	Blue crab	1.0
25-Apr-07	PJ-2	Striped bass	14.0
25-Apr-07	PJ-2	White perch	5.0
25-Apr-07	PJ-2	Winter flounder	3.0
25-Apr-07	PJ-3	Alewife	1.0
25-Apr-07	PJ-3	Blue crab	4.0
25-Apr-07	PJ-3	Blueback herring	4.0
25-Apr-07	PJ-3	Striped bass	4.0
25-Apr-07	PJ-3	Summer flounder	1.0
25-Apr-07	PJ-3	Winter flounder	2.0
25-Apr-07	PJ-4	Blue crab	1.0
25-Apr-07	PJ-4	Northern searobin	1.0
25-Apr-07	PJ-4	Red hake	1.0
25-Apr-07	PJ-4	Spotted hake	9.0
25-Apr-07	PJ-4	White perch	2.0
25-Apr-07	PJ-5	Clearnose skate	1.0
25-Apr-07	PJ-5	Red hake	3.0
25-Apr-07	PJ-5	Spotted hake	21.0
25-Apr-07	PJ-5	Winter flounder	1.0
25-Apr-07	SB-5	Alewife	1.1
25-Apr-07	SB-5	Atlantic tomcod	3.3
25-Apr-07	SB-5	Blue crab	2.2
25-Apr-07	SB-5	Pollock	1.1
25-Apr-07	SB-5	Red hake	4.4
25-Apr-07	SB-5	Smallmouth flounder	1.1
25-Apr-07	SB-5	Spotted hake	53.3
25-Apr-07	SB-5	Striped bass	1.1
25-Apr-07	SB-5	Striped cuskeel	1.1
25-Apr-07	SB-5	Summer flounder	1.1

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
25-Apr-07	SB-5	White perch	3.3
25-Apr-07	SB-5	Windowpane	2.2
25-Apr-07	SB-5	Winter flounder	3.3
25-Apr-07	SB-6	Cunner	1.0
25-Apr-07	SB-6	Fourspot flounder	1.0
25-Apr-07	SB-6	Northern searobin	1.0
25-Apr-07	SB-6	Pollock	1.0
25-Apr-07	SB-6	Red hake	1.0
25-Apr-07	SB-6	Silver hake	1.0
25-Apr-07	SB-6	Smallmouth flounder	2.0
25-Apr-07	SB-6	Spotted hake	45.0
25-Apr-07	SB-6	Summer flounder	1.0
25-Apr-07	SB-6	Windowpane	4.0
26-Apr-07	AK-2	American shad	1.0
26-Apr-07	AK-2	Northern pipefish	1.0
26-Apr-07	AK-2	Rock gunnel	1.0
26-Apr-07	AK-2	Spotted hake	8.0
26-Apr-07	AK-3	Blue crab	1.0
26-Apr-07	AK-3	Grubby	2.0
26-Apr-07	AK-3	Northern pipefish	1.0
26-Apr-07	AK-3	Rock gunnel	1.0
26-Apr-07	AK-3	Spotted hake	9.0
26-Apr-07	AK-3	White perch	6.0
26-Apr-07	AK-3	Windowpane	2.0
26-Apr-07	AK-3	Winter flounder	1.0
26-Apr-07	NB-7	Blue crab	1.0
21-May-07	PJ-1	Atlantic menhaden	1.0
21-May-07	PJ-1	Atlantic tomcod	2.0
21-May-07	PJ-1	Bay anchovy	28.0
21-May-07	PJ-1	Blue crab	2.0
21-May-07	PJ-1	Bluefish	1.0
21-May-07	PJ-1	Butterfish	1.0
21-May-07	PJ-2	Atlantic herring	2.0
21-May-07	PJ-2	Atlantic tomcod	9.0
21-May-07	PJ-2	Bay anchovy	21.0
21-May-07	PJ-2	Blue crab	6.0
21-May-07	PJ-2	Lined seahorse	1.0
21-May-07	PJ-3	American shad	2.4
21-May-07	PJ-3	Bay anchovy	78.8
21-May-07	PJ-3	Blue crab	12.1
21-May-07	SB-3	Bay anchovy	43.0
21-May-07	SB-3	Blue crab	2.0
21-May-07	SB-3	Little skate	2.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
21-May-07	SB-3	Scup	6.0
21-May-07	SB-3	Tautog	1.0
21-May-07	SB-3	Winter flounder	1.0
21-May-07	SB-4	Atlantic tomcod	2.0
21-May-07	SB-4	Bay anchovy	12.0
21-May-07	SB-4	Scup	2.0
21-May-07	SB-4	Spotted hake	3.0
21-May-07	SB-4	Winter flounder	1.0
21-May-07	SB-5	Alewife	1.1
21-May-07	SB-5	Butterfish	2.1
22-May-07	LB-4	Butterfish	9.0
22-May-07	LB-4	Little skate	1.0
22-May-07	LB-4	Spotted hake	1.0
22-May-07	LB-5	Little skate	1.0
22-May-07	LB-6	Clearnose skate	2.0
22-May-07	LB-6	Red hake	1.0
23-May-07	NB-3	Alewife	1.0
23-May-07	NB-3	Bay anchovy	8.0
23-May-07	NB-3	Blue crab	5.0
23-May-07	NB-3	Blueback herring	1.0
23-May-07	NB-3	Striped bass	1.0
23-May-07	NB-4	Atlantic tomcod	1.0
23-May-07	NB-4	Blue crab	1.0
23-May-07	NB-4	Blueback herring	4.0
23-May-07	NB-5	Bay anchovy	1.0
23-May-07	PJ-4	Alewife	1.2
23-May-07	PJ-4	Atlantic tomcod	29.0
23-May-07	PJ-4	Bay anchovy	1.2
23-May-07	PJ-4	Blue crab	16.9
23-May-07	PJ-4	Spotted hake	3.6
23-May-07	PJ-4	White perch	1.2
24-May-07	AK-3	Spotted hake	2.1
24-May-07	AK-3	Windowpane	1.0
24-May-07	AK-3	Winter flounder	2.1
24-May-07	NB-7	Bay anchovy	175.4
24-May-07	NB-7	Blue crab	26.2
24-May-07	NB-7	Northern pipefish	1.5
24-May-07	NB-7	Striped bass	7.7
24-May-07	SB-1	Atlantic tomcod	67.0
24-May-07	SB-1	Bay anchovy	25.5
24-May-07	SB-1	Blue crab	28.7
24-May-07	SB-2	Atlantic tomcod	10.3
24-May-07	SB-2	Bay anchovy	22.8

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
24-May-07	SB-2	Blue crab	16.6
18-Jun-07	LB-2	Clearnose skate	1.0
18-Jun-07	LB-3	Butterfish	1.0
18-Jun-07	LB-4	Butterfish	30.0
18-Jun-07	LB-4	Windowpane	1.0
18-Jun-07	LB-5	Butterfish	1.0
18-Jun-07	LB-6	Bay anchovy	140.0
18-Jun-07	LB-6	Northern searobin	4.0
18-Jun-07	LB-6	Spotted hake	1.0
18-Jun-07	LB-6	Summer flounder	1.0
18-Jun-07	LB-6	Windowpane	1.0
19-Jun-07	NB-3	Bay anchovy	404.0
19-Jun-07	NB-3	Blue crab	20.0
19-Jun-07	NB-3	Winter flounder	1.0
19-Jun-07	NB-4	Bay anchovy	162.0
19-Jun-07	NB-4	Blue crab	8.0
19-Jun-07	NB-5	Atlantic tomcod	2.0
19-Jun-07	NB-5	Bay anchovy	3.0
19-Jun-07	NB-5	Blue crab	3.0
19-Jun-07	NB-5	Hogchocker	2.0
19-Jun-07	NB-5	Spotted hake	8.0
19-Jun-07	NB-5	Summer flounder	1.0
19-Jun-07	NB-6	Bay anchovy	4.0
19-Jun-07	NB-6	Blue crab	3.0
19-Jun-07	NB-6	Butterfish	1.0
19-Jun-07	NB-6	Gizzard shad	1.0
19-Jun-07	NB-6	Spotted hake	1.0
19-Jun-07	NB-6	Winter flounder	2.0
19-Jun-07	PJ-2	Bay anchovy	2.0
19-Jun-07	PJ-2	Blue crab	16.0
19-Jun-07	PJ-2	Winter flounder	1.0
20-Jun-07	AK-2	Atlantic tomcod	3.0
20-Jun-07	AK-2	Bay anchovy	145.0
20-Jun-07	AK-2	Blue crab	5.0
20-Jun-07	AK-2	Northern pipefish	1.0
20-Jun-07	AK-2	Spotted hake	2.0
20-Jun-07	AK-2	Winter flounder	1.0
20-Jun-07	AK-3	Alewife	1.1
20-Jun-07	AK-3	Atlantic tomcod	3.2
20-Jun-07	AK-3	Bay anchovy	10.6
20-Jun-07	AK-3	Blue crab	6.4
20-Jun-07	AK-3	Spotted hake	4.3
20-Jun-07	AK-3	Summer flounder	1.1

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
20-Jun-07	AK-3	Tautog	1.1
20-Jun-07	AK-3	Winter flounder	1.1
20-Jun-07	NB-7	Bay anchovy	37.2
20-Jun-07	NB-7	Blue crab	11.5
20-Jun-07	NB-7	Striped bass	1.4
20-Jun-07	NB-7	Summer flounder	1.4
20-Jun-07	PJ-1	Atlantic tomcod	14.0
20-Jun-07	PJ-1	Bay anchovy	95.0
20-Jun-07	PJ-1	Blue crab	45.0
20-Jun-07	PJ-1	Bluefish	4.0
20-Jun-07	PJ-1	Butterfish	1.0
20-Jun-07	PJ-1	Scup	4.0
20-Jun-07	PJ-1	Windowpane	1.0
20-Jun-07	PJ-1	Winter flounder	1.0
20-Jun-07	PJ-3	Bay anchovy	3.3
20-Jun-07	PJ-4	Atlantic tomcod	3.0
20-Jun-07	PJ-4	Bay anchovy	2.0
20-Jun-07	PJ-4	Blue crab	5.0
20-Jun-07	PJ-4	Spotted hake	1.0
20-Jun-07	PJ-4	Winter flounder	1.0
20-Jun-07	PJ-5	Atlantic tomcod	89.0
20-Jun-07	PJ-5	Bay anchovy	10.0
20-Jun-07	PJ-5	Blue crab	8.0
20-Jun-07	PJ-5	Scup	1.0
20-Jun-07	PJ-5	Smooth dogfish	1.0
20-Jun-07	PJ-5	Spotted hake	14.0
20-Jun-07	PJ-5	Striped bass	1.0
20-Jun-07	PJ-5	Summer flounder	4.0
20-Jun-07	PJ-5	Winter flounder	45.0
21-Jun-07	SB-2	Atlantic silverside	36.0
21-Jun-07	SB-2	Atlantic tomcod	4.0
21-Jun-07	SB-2	Bay anchovy	16.0
21-Jun-07	SB-2	Blue crab	2.0
21-Jun-07	SB-2	Windowpane	2.0
21-Jun-07	SB-3	Atlantic tomcod	1.0
21-Jun-07	SB-3	Blue crab	2.0
21-Jun-07	SB-3	Lined seahorse	1.0
21-Jun-07	SB-3	Scup	108.0
21-Jun-07	SB-3	Spotted hake	1.0
21-Jun-07	SB-3	Summer flounder	2.0
21-Jun-07	SB-3	Tautog	2.0
21-Jun-07	SB-3	Winter flounder	1.0
21-Jun-07	SB-4	Atlantic tomcod	9.0

Appendix A. Finfish and Shellfish CPUE (Number per 10 minute trawl) by date and station sampled during the 2007 Aquatic Biological Survey.

Date	Station	Common Name	CPUE
21-Jun-07	SB-4	Blue crab	2.0
21-Jun-07	SB-4	Spotted hake	1.0
21-Jun-07	SB-4	Winter flounder	5.0
21-Jun-07	SB-5	Atlantic tomcod	15.0
21-Jun-07	SB-5	Northern pipefish	1.0
21-Jun-07	SB-5	Oyster toadfish	1.0
21-Jun-07	SB-5	Winter flounder	1.0
21-Jun-07	SB-6	Atlantic moonfish	1.0

Appendix B

Ichthyoplankton (epibenthic sled) life stage densities by date and station collected during the 2007 Aquatic Biological Survey.

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
29-Jan-07	PJ-1	Rock gunnel	PYS	25.15
29-Jan-07	PJ-4	Atlantic croaker	PYS	18.07
29-Jan-07	PJ-4	Rock gunnel	PYS	12.05
29-Jan-07	PJ-5	Bay anchovy	JUV	15.59
29-Jan-07	PJ-5	Rock gunnel	PYS	23.39
29-Jan-07	SB-1	Rock gunnel	YS	29.41
29-Jan-07	SB-3	Grubby	YS	8.12
29-Jan-07	SB-4	Grubby	YS	31.33
29-Jan-07	SB-4	Rock gunnel	PYS	4.48
29-Jan-07	SB-4	Rock gunnel	YS	17.91
29-Jan-07	SB-4	Spotted hake	Egg	4.48
29-Jan-07	SB-5	Grubby	YS	29.23
29-Jan-07	SB-5	Rock gunnel	PYS	43.85
30-Jan-07	LB-1	Rock gunnel	PYS	6.28
30-Jan-07	LB-3	Rock gunnel	PYS	5.64
30-Jan-07	LB-4	Rock gunnel	PYS	5.75
30-Jan-07	LB-4	Rock gunnel	YS	5.75
30-Jan-07	LB-5	Rock gunnel	UID	6.53
30-Jan-07	LB-6	Rock gunnel	PYS	20.14
31-Jan-07	NB-3	Atlantic croaker	PYS	5.90
31-Jan-07	NB-3	Bay anchovy	JUV	5.90
31-Jan-07	NB-3	Grubby	YS	5.90
31-Jan-07	NB-5	Atlantic croaker	JUV	26.71
31-Jan-07	NB-5	Bay anchovy	JUV	6.68
31-Jan-07	NB-5	Rock gunnel	PYS	13.35
31-Jan-07	NB-6	Atlantic croaker	JUV	43.58
31-Jan-07	NB-6	Rock gunnel	PYS	6.23
31-Jan-07	NB-7	Bay anchovy	JUV	5.93
31-Jan-07	NB-7	Rock gunnel	PYS	35.55
31-Jan-07	NB-7	Winter flounder	ST 1	5.93
01-Feb-07	AK-2	Atlantic croaker	PYS	5.91
01-Feb-07	AK-3	Atlantic croaker	JUV	9.28
01-Feb-07	PJ-2	Winter flounder	ST 1	6.40
01-Feb-07	PJ-3	Grubby	YS	11.90
01-Feb-07	PJ-3	Rock gunnel	PYS	5.95
01-Feb-07	PJ-3	Winter flounder	ST 1	23.80
01-Feb-07	SB-6	Grubby	YS	14.00
01-Feb-07	SB-6	Rock gunnel	PYS	9.33
01-Feb-07	SB-6	Rock gunnel	YS	4.67
12-Feb-07	LB-1	Rock gunnel	PYS	12.50
12-Feb-07	LB-2	American sandlance	YS	6.33

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
12-Feb-07	LB-2	Grubby	YS	3.16
12-Feb-07	LB-2	Rock gunnel	PYS	9.49
12-Feb-07	LB-3	American sandlance	YS	6.50
12-Feb-07	LB-3	Grubby	YS	38.99
12-Feb-07	LB-3	Rock gunnel	PYS	32.49
12-Feb-07	LB-3	Winter flounder	ST 1	13.00
12-Feb-07	LB-3	Winter flounder	ST 2	6.50
12-Feb-07	LB-4	Grubby	YS	5.74
12-Feb-07	LB-4	Rock gunnel	PYS	17.21
12-Feb-07	LB-5	Grubby	YS	13.18
12-Feb-07	LB-5	Rock gunnel	PYS	26.37
12-Feb-07	LB-5	Winter flounder	ST 2	6.59
13-Feb-07	NB-3	Atlantic croaker	JUV	4.85
13-Feb-07	NB-3	Winter flounder	ST 1	4.85
13-Feb-07	NB-4	Atlantic croaker	PYS	4.77
13-Feb-07	NB-4	Grubby	YS	9.55
13-Feb-07	NB-4	Rock gunnel	PYS	4.77
13-Feb-07	NB-4	Unidentified	UID	4.77
13-Feb-07	NB-5	Atlantic croaker	PYS	4.42
13-Feb-07	NB-5	Fourbeard rockling	Egg	4.42
13-Feb-07	NB-5	Grubby	YS	26.50
13-Feb-07	NB-5	Rock gunnel	PYS	4.42
13-Feb-07	NB-5	Winter flounder	ST 1	8.83
13-Feb-07	NB-6	Atlantic croaker	JUV	7.16
13-Feb-07	NB-6	Grubby	YS	50.15
13-Feb-07	NB-7	Grubby	YS	22.88
13-Feb-07	NB-7	Rock gunnel	PYS	11.44
13-Feb-07	PJ-2	Grubby	YS	4.23
13-Feb-07	PJ-2	Rock gunnel	PYS	12.68
13-Feb-07	PJ-2	Winter flounder	ST 1	16.90
15-Feb-07	AK-2	Grubby	YS	20.49
15-Feb-07	AK-3	Grubby	YS	45.81
15-Feb-07	AK-3	Rock gunnel	PYS	5.09
15-Feb-07	PJ-1	Atlantic croaker	JUV	11.51
15-Feb-07	PJ-1	Bay anchovy	JUV	5.75
15-Feb-07	PJ-1	Grubby	YS	28.77
15-Feb-07	PJ-1	Rock gunnel	PYS	11.51
15-Feb-07	PJ-3	Grubby	YS	8.25
15-Feb-07	PJ-3	Rock gunnel	YS	4.13
15-Feb-07	PJ-3	Winter flounder	Egg	37.13
15-Feb-07	PJ-3	Winter flounder	ST 1	8.25

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
15-Feb-07	PJ-4	Grubby	YS	28.53
15-Feb-07	PJ-4	Rock gunnel	PYS	5.71
15-Feb-07	PJ-5	Atlantic croaker	JUV	4.91
15-Feb-07	PJ-5	Grubby	YS	44.23
15-Feb-07	PJ-5	Winter flounder	ST 1	4.91
16-Feb-07	SB-1	Grubby	YS	42.71
16-Feb-07	SB-1	Winter flounder	ST 1	74.75
16-Feb-07	SB-3	Grubby	YS	21.90
16-Feb-07	SB-3	Rock gunnel	PYS	5.47
16-Feb-07	SB-3	Winter flounder	Egg	16.42
16-Feb-07	SB-4	Grubby	YS	15.92
16-Feb-07	SB-5	Grubby	PYS	8.21
16-Feb-07	SB-5	Grubby	YS	8.21
16-Feb-07	SB-5	Rock gunnel	PYS	8.21
16-Feb-07	SB-6	Smallmouth flounder	JUV	6.87
16-Feb-07	SB-6	Winter flounder	Egg	89.30
16-Feb-07	SB-6	Winter flounder	ST 1	6.87
27-Feb-07	LB-1	American sandlance	PYS	4.14
27-Feb-07	LB-1	Grubby	PYS	20.69
27-Feb-07	LB-1	Winter flounder	ST 2	4.14
27-Feb-07	LB-2	American sandlance	PYS	6.60
27-Feb-07	LB-2	Grubby	PYS	3.30
27-Feb-07	LB-2	Rock gunnel	PYS	3.30
27-Feb-07	LB-2	Winter flounder	ST 2	6.60
27-Feb-07	LB-3	Fourbeard rockling	Egg	6.22
27-Feb-07	LB-3	Grubby	PYS	43.55
27-Feb-07	LB-3	Rock gunnel	PYS	6.22
27-Feb-07	LB-3	Winter flounder	Egg	18.67
27-Feb-07	LB-4	Grubby	PYS	25.08
27-Feb-07	LB-4	Rock gunnel	PYS	5.02
27-Feb-07	LB-4	Winter flounder	ST 1	5.02
27-Feb-07	LB-4	Winter flounder	ST 2	5.02
27-Feb-07	LB-5	Grubby	PYS	7.46
27-Feb-07	LB-5	Grubby	YS	7.46
27-Feb-07	LB-5	Rock gunnel	PYS	7.46
27-Feb-07	LB-5	Winter flounder	Egg	1,103.93
27-Feb-07	LB-5	Winter flounder	ST 1	7.46
27-Feb-07	LB-6	Winter flounder	Egg	9.78
27-Feb-07	SB-1	Grubby	PYS	62.15
27-Feb-07	SB-2	Grubby	PYS	66.24
28-Feb-07	NB-3	Grubby	PYS	10.15

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
28-Feb-07	NB-4	Grubby	PYS	20.09
28-Feb-07	NB-5	Grubby	PYS	27.94
28-Feb-07	NB-5	Grubby	YS	5.59
28-Feb-07	NB-6	Grubby	PYS	16.80
28-Feb-07	NB-6	Grubby	YS	5.60
28-Feb-07	NB-7	Grubby	PYS	72.21
28-Feb-07	PJ-4	Grubby	PYS	16.36
28-Feb-07	PJ-4	Rock gunnel	PYS	4.09
28-Feb-07	PJ-5	Grubby	PYS	23.09
28-Feb-07	PJ-5	Winter flounder	Egg	4.62
01-Mar-07	PJ-1	Grubby	PYS	48.15
01-Mar-07	PJ-1	Rock gunnel	PYS	5.35
01-Mar-07	PJ-1	Winter flounder	Egg	871.98
01-Mar-07	PJ-2	Grubby	PYS	20.32
01-Mar-07	PJ-3	Grubby	PYS	28.85
01-Mar-07	PJ-3	Grubby	YS	4.81
01-Mar-07	PJ-3	Summer flounder	JUV	4.81
01-Mar-07	PJ-3	Winter flounder	Egg	394.25
01-Mar-07	SB-3	Grubby	PYS	100.62
01-Mar-07	SB-3	Grubby	YS	11.18
01-Mar-07	SB-3	Winter flounder	ST 2	5.59
01-Mar-07	SB-4	Grubby	PYS	11.72
01-Mar-07	SB-4	Grubby	YS	3.91
01-Mar-07	SB-4	Rock gunnel	PYS	7.82
01-Mar-07	SB-4	Winter flounder	ST 1	3.91
01-Mar-07	SB-4	Winter flounder	ST 2	3.91
01-Mar-07	SB-5	Atlantic menhaden	PYS	9.96
01-Mar-07	SB-5	Grubby	PYS	39.85
01-Mar-07	SB-6	American sandlance	PYS	13.37
01-Mar-07	SB-6	Grubby	PYS	16.71
01-Mar-07	SB-6	Rock gunnel	PYS	6.69
01-Mar-07	SB-6	Winter flounder	ST 2	43.46
02-Mar-07	AK-2	Grubby	PYS	36.20
02-Mar-07	AK-2	Winter flounder	ST 1	4.53
02-Mar-07	AK-3	Grubby	PYS	19.09
02-Mar-07	AK-3	Naked goby	JUV	9.55
12-Mar-07	LB-1	American sandlance	PYS	10.44
12-Mar-07	LB-1	Grubby	PYS	104.39
12-Mar-07	LB-1	Grubby	YS	5.22
12-Mar-07	LB-1	Rock gunnel	PYS	10.44
12-Mar-07	LB-1	Winter flounder	Egg	5.22

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
12-Mar-07	LB-1	Winter flounder	ST 1	20.88
12-Mar-07	LB-1	Winter flounder	ST 2	20.88
12-Mar-07	LB-2	American sandlance	PYS	3.06
12-Mar-07	LB-2	Atlantic menhaden	PYS	3.06
12-Mar-07	LB-2	Winter flounder	ST 2	3.06
12-Mar-07	LB-3	American sandlance	PYS	12.22
12-Mar-07	LB-3	Grubby	PYS	61.08
12-Mar-07	LB-3	Winter flounder	ST 2	12.22
12-Mar-07	LB-4	Grubby	PYS	56.99
12-Mar-07	LB-4	Rock gunnel	PYS	6.33
12-Mar-07	LB-4	Winter flounder	ST 1	6.33
12-Mar-07	LB-4	Winter flounder	ST 2	6.33
12-Mar-07	LB-5	American sandlance	PYS	9.77
12-Mar-07	LB-5	Atlantic menhaden	PYS	19.55
12-Mar-07	LB-5	Grubby	PYS	29.32
12-Mar-07	LB-5	Winter flounder	ST 1	29.32
12-Mar-07	LB-5	Winter flounder	ST 2	48.87
12-Mar-07	LB-6	Atlantic menhaden	PYS	5.58
12-Mar-07	LB-6	Grubby	PYS	16.74
12-Mar-07	LB-6	Rock gunnel	PYS	5.58
12-Mar-07	LB-6	Winter flounder	ST 2	5.58
12-Mar-07	SB-1	American sandlance	PYS	11.17
12-Mar-07	SB-1	Grubby	PYS	178.65
12-Mar-07	SB-1	Grubby	YS	22.33
12-Mar-07	SB-1	Rock gunnel	PYS	22.33
12-Mar-07	SB-2	American sandlance	PYS	9.15
12-Mar-07	SB-2	Grubby	PYS	182.95
12-Mar-07	SB-2	Grubby	YS	9.15
12-Mar-07	SB-2	Rock gunnel	PYS	9.15
13-Mar-07	NB-3	Grubby	PYS	27.63
13-Mar-07	NB-3	Winter flounder	ST 2	9.21
13-Mar-07	NB-4	Grubby	PYS	25.01
13-Mar-07	NB-4	Winter flounder	ST 1	5.00
13-Mar-07	NB-4	Winter flounder	ST 2	5.00
13-Mar-07	NB-5	Grubby	PYS	89.46
13-Mar-07	NB-5	Grubby	YS	8.95
13-Mar-07	NB-6	Grubby	PYS	46.28
13-Mar-07	NB-6	Winter flounder	ST 1	8.41
13-Mar-07	NB-6	Winter flounder	ST 2	4.21
13-Mar-07	NB-6	Winter flounder	UID	4.21
13-Mar-07	NB-7	Grubby	PYS	21.62

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
13-Mar-07	NB-7	Winter flounder	Egg	28.82
13-Mar-07	PJ-1	American sandlance	PYS	14.54
13-Mar-07	PJ-1	Grubby	PYS	19.39
13-Mar-07	PJ-1	Winter flounder	ST 1	4.85
13-Mar-07	PJ-1	Winter flounder	ST 2	19.39
13-Mar-07	PJ-2	American sandlance	PYS	5.54
13-Mar-07	PJ-2	Winter flounder	Egg	11.07
13-Mar-07	PJ-3	Atlantic menhaden	PYS	5.88
13-Mar-07	PJ-3	Grubby	PYS	11.76
13-Mar-07	PJ-3	Winter flounder	Egg	728.84
13-Mar-07	PJ-3	Winter flounder	ST 1	5.88
13-Mar-07	PJ-3	Winter flounder	ST 2	5.88
14-Mar-07	PJ-4	American sandlance	PYS	4.58
14-Mar-07	PJ-4	Grubby	PYS	13.74
14-Mar-07	PJ-4	Grubby	YS	4.58
14-Mar-07	PJ-4	Rock gunnel	PYS	4.58
14-Mar-07	PJ-4	Winter flounder	ST 2	13.74
14-Mar-07	PJ-5	American sandlance	PYS	8.75
14-Mar-07	PJ-5	Grubby	PYS	26.25
14-Mar-07	SB-3	Grubby	PYS	61.95
14-Mar-07	SB-3	Winter flounder	Egg	456.16
14-Mar-07	SB-3	Winter flounder	ST 1	11.26
14-Mar-07	SB-4	Grubby	PYS	44.55
14-Mar-07	SB-4	Grubby	UID	4.05
14-Mar-07	SB-4	Winter flounder	ST 1	4.05
14-Mar-07	SB-4	Winter flounder	ST 2	8.10
14-Mar-07	SB-6	American sandlance	PYS	15.21
14-Mar-07	SB-6	Grubby	PYS	34.23
14-Mar-07	SB-6	Grubby	YS	3.80
14-Mar-07	SB-6	Rock gunnel	PYS	3.80
14-Mar-07	SB-6	Winter flounder	ST 1	7.61
14-Mar-07	SB-6	Winter flounder	ST 2	15.21
15-Mar-07	AK-2	American sandlance	PYS	4.44
15-Mar-07	AK-2	Grubby	PYS	84.31
15-Mar-07	AK-3	American sandlance	PYS	3.79
15-Mar-07	AK-3	Grubby	PYS	15.17
15-Mar-07	SB-5	American sandlance	PYS	7.62
15-Mar-07	SB-5	Atlantic menhaden	PYS	15.25
15-Mar-07	SB-5	Grubby	PYS	22.87
26-Mar-07	LB-1	American sandlance	PYS	22.80
26-Mar-07	LB-1	Grubby	PYS	57.01

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
26-Mar-07	LB-1	Winter flounder	Egg	296.43
26-Mar-07	LB-1	Winter flounder	PYS	11.40
26-Mar-07	LB-1	Winter flounder	ST 1	17.10
26-Mar-07	LB-1	Winter flounder	ST 2	96.91
26-Mar-07	LB-1	Winter flounder	ST 3	5.70
26-Mar-07	LB-2	Grubby	PYS	73.40
26-Mar-07	LB-2	Rock gunnel	PYS	4.08
26-Mar-07	LB-2	Winter flounder	ST 1	8.16
26-Mar-07	LB-2	Winter flounder	ST 2	65.25
26-Mar-07	LB-2	Winter flounder	YS	16.31
26-Mar-07	LB-3	Grubby	PYS	169.17
26-Mar-07	LB-3	Winter flounder	ST 1	7,274.48
26-Mar-07	LB-3	Winter flounder	ST 2	203.01
26-Mar-07	LB-4	Grubby	PYS	134.46
26-Mar-07	LB-4	Smallmouth flounder	JUV	13.45
26-Mar-07	LB-4	Winter flounder	Egg	13.45
26-Mar-07	LB-4	Winter flounder	ST 1	268.93
26-Mar-07	LB-4	Winter flounder	ST 2	255.48
26-Mar-07	LB-5	Fourbeard rockling	Egg	13.81
26-Mar-07	LB-5	Grubby	PYS	193.39
26-Mar-07	LB-5	Winter flounder	Egg	41.44
26-Mar-07	LB-5	Winter flounder	ST 1	6,851.44
26-Mar-07	LB-5	Winter flounder	ST 2	110.51
26-Mar-07	LB-6	American sandlance	PYS	6.98
26-Mar-07	LB-6	Grubby	PYS	62.84
26-Mar-07	LB-6	Winter flounder	ST 1	1,291.67
26-Mar-07	LB-6	Winter flounder	ST 2	167.57
27-Mar-07	PJ-1	Grubby	PYS	28.54
27-Mar-07	PJ-1	Grubby	YS	7.14
27-Mar-07	PJ-1	Winter flounder	Egg	14.27
27-Mar-07	PJ-1	Winter flounder	ST 1	735.03
27-Mar-07	PJ-1	Winter flounder	ST 2	406.76
27-Mar-07	PJ-2	Grubby	PYS	55.93
27-Mar-07	PJ-2	Winter flounder	Egg	554.20
27-Mar-07	PJ-2	Winter flounder	ST 1	457.60
27-Mar-07	PJ-2	Winter flounder	ST 2	30.51
27-Mar-07	PJ-5	American sandlance	PYS	4.97
27-Mar-07	PJ-5	Grubby	PYS	29.79
27-Mar-07	PJ-5	Grubby	YS	4.97
27-Mar-07	PJ-5	Winter flounder	ST 1	54.62
27-Mar-07	PJ-5	Winter flounder	ST 2	148.96

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
27-Mar-07	SB-1	American sandlance	PYS	21.55
27-Mar-07	SB-1	Grubby	PYS	635.67
27-Mar-07	SB-1	Winter flounder	ST 1	689.54
27-Mar-07	SB-1	Winter flounder	ST 2	150.84
27-Mar-07	SB-1	Winter flounder	ST 3	10.77
27-Mar-07	SB-2	Grubby	PYS	168.02
27-Mar-07	SB-2	Winter flounder	ST 1	56.01
27-Mar-07	SB-2	Winter flounder	ST 2	96.01
27-Mar-07	SB-2	Winter flounder	ST 3	8.00
27-Mar-07	SB-3	Grubby	PYS	29.15
27-Mar-07	SB-3	Winter flounder	ST 1	9.72
27-Mar-07	SB-3	Winter flounder	ST 2	48.58
27-Mar-07	SB-4	Grubby	PYS	72.47
27-Mar-07	SB-4	Winter flounder	ST 1	52.34
27-Mar-07	SB-4	Winter flounder	ST 2	88.57
27-Mar-07	SB-4	Winter flounder	UID	12.08
27-Mar-07	SB-5	Bay anchovy	JUV	7.58
27-Mar-07	SB-5	Grubby	PYS	37.90
27-Mar-07	SB-5	Winter flounder	Egg	7.58
27-Mar-07	SB-5	Winter flounder	ST 1	30.32
27-Mar-07	SB-5	Winter flounder	ST 2	37.90
28-Mar-07	NB-3	Grubby	PYS	35.42
28-Mar-07	NB-3	Winter flounder	ST 1	64.94
28-Mar-07	NB-3	Winter flounder	ST 2	330.63
28-Mar-07	NB-4	Grubby	PYS	21.74
28-Mar-07	NB-4	Winter flounder	ST 1	21.74
28-Mar-07	NB-4	Winter flounder	ST 2	152.19
28-Mar-07	NB-5	Grubby	PYS	114.66
28-Mar-07	NB-5	Grubby	YS	15.29
28-Mar-07	NB-5	Winter flounder	ST 1	15.29
28-Mar-07	NB-5	Winter flounder	ST 2	53.51
28-Mar-07	NB-6	Grubby	PYS	124.38
28-Mar-07	NB-6	Winter flounder	Egg	6.22
28-Mar-07	NB-6	Winter flounder	ST 1	6.22
28-Mar-07	NB-6	Winter flounder	ST 2	43.53
28-Mar-07	NB-7	Grubby	PYS	23.18
28-Mar-07	NB-7	Winter flounder	ST 1	301.29
28-Mar-07	NB-7	Winter flounder	ST 2	272.32
28-Mar-07	NB-7	Winter flounder	UID	23.18
28-Mar-07	PJ-4	Winter flounder	ST 1	35.33
28-Mar-07	PJ-4	Winter flounder	ST 2	149.17

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
28-Mar-07	SB-6	Atlantic menhaden	PYS	8.40
28-Mar-07	SB-6	Grubby	PYS	41.98
28-Mar-07	SB-6	Winter flounder	Egg	16.79
28-Mar-07	SB-6	Winter flounder	ST 1	67.17
28-Mar-07	SB-6	Winter flounder	ST 2	125.95
28-Mar-07	SB-6	Winter flounder	YS	8.40
29-Mar-07	AK-2	Grubby	PYS	17.54
29-Mar-07	AK-2	Grubby	YS	4.39
29-Mar-07	AK-2	Winter flounder	ST 1	26.32
29-Mar-07	AK-2	Winter flounder	ST 2	65.79
29-Mar-07	AK-2	Winter flounder	UID	4.39
29-Mar-07	AK-3	Grubby	PYS	529.63
29-Mar-07	AK-3	Grubby	YS	16.90
29-Mar-07	AK-3	Winter flounder	ST 1	61.98
29-Mar-07	AK-3	Winter flounder	UID	5.63
29-Mar-07	PJ-3	Grubby	PYS	14.06
29-Mar-07	PJ-3	Winter flounder	Egg	18.75
29-Mar-07	PJ-3	Winter flounder	ST 1	126.58
29-Mar-07	PJ-3	Winter flounder	ST 2	206.28
09-Apr-07	LB-1	Grubby	PYS	32.90
09-Apr-07	LB-1	Windowpane	Egg	4.11
09-Apr-07	LB-1	Winter flounder	PYS	16.45
09-Apr-07	LB-1	Winter flounder	ST 1	263.18
09-Apr-07	LB-1	Winter flounder	ST 2	773.08
09-Apr-07	LB-1	Winter flounder	ST 3	954.01
09-Apr-07	LB-1	Winter flounder	UID	32.90
09-Apr-07	LB-2	Grubby	PYS	6.29
09-Apr-07	LB-2	Windowpane	Egg	6.29
09-Apr-07	LB-2	Winter flounder	ST 1	31.46
09-Apr-07	LB-2	Winter flounder	ST 2	292.59
09-Apr-07	LB-2	Winter flounder	ST 3	264.27
09-Apr-07	LB-2	Winter flounder	UID	207.64
09-Apr-07	LB-3	Fourbeard rockling	Egg	13.31
09-Apr-07	LB-3	Grubby	PYS	213.04
09-Apr-07	LB-3	Summer flounder	PYS	106.52
09-Apr-07	LB-3	Windowpane	Egg	26.63
09-Apr-07	LB-3	Winter flounder	ST 1	12,143.22
09-Apr-07	LB-3	Winter flounder	ST 2	32,914.51
09-Apr-07	LB-4	Grubby	PYS	186.83
09-Apr-07	LB-4	Grubby	YS	13.84
09-Apr-07	LB-4	Windowpane	Egg	55.36

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
09-Apr-07	LB-4	Winter flounder	ST 1	103.79
09-Apr-07	LB-4	Winter flounder	ST 2	339.06
09-Apr-07	LB-4	Winter flounder	ST 3	124.55
09-Apr-07	LB-4	Winter flounder	UID	6.92
09-Apr-07	LB-5	Grubby	PYS	116.67
09-Apr-07	LB-5	Winter flounder	ST 1	816.70
09-Apr-07	LB-5	Winter flounder	ST 2	1,834.91
09-Apr-07	LB-5	Winter flounder	UID	21.21
09-Apr-07	LB-6	Grubby	PYS	16.48
09-Apr-07	LB-6	Winter flounder	ST 1	535.64
09-Apr-07	LB-6	Winter flounder	ST 2	642.77
09-Apr-07	LB-6	Winter flounder	ST 3	889.98
09-Apr-07	LB-6	Winter flounder	UID	8.24
09-Apr-07	PJ-1	Grubby	PYS	9.37
09-Apr-07	PJ-1	Winter flounder	PYS	149.91
09-Apr-07	PJ-1	Winter flounder	ST 1	159.28
09-Apr-07	PJ-1	Winter flounder	ST 2	1,780.18
09-Apr-07	PJ-1	Winter flounder	ST 3	281.08
09-Apr-07	PJ-1	Winter flounder	UID	159.28
09-Apr-07	PJ-2	Grubby	PYS	17.71
09-Apr-07	PJ-2	Unidentified	UID	177.06
09-Apr-07	PJ-2	Winter flounder	ST 1	301.00
09-Apr-07	PJ-2	Winter flounder	ST 2	1,056.44
09-Apr-07	PJ-2	Winter flounder	ST 3	542.98
09-Apr-07	PJ-3	Grubby	PYS	7.38
09-Apr-07	PJ-3	Grubby	YS	7.38
09-Apr-07	PJ-3	Winter flounder	Egg	29.51
09-Apr-07	PJ-3	Winter flounder	PYS	147.53
09-Apr-07	PJ-3	Winter flounder	ST 1	147.53
09-Apr-07	PJ-3	Winter flounder	ST 2	1,467.90
09-Apr-07	PJ-3	Winter flounder	ST 3	73.76
09-Apr-07	PJ-3	Winter flounder	UID	169.66
10-Apr-07	AK-2	Grubby	PYS	34.16
10-Apr-07	AK-2	Winter flounder	ST 1	55.52
10-Apr-07	AK-2	Winter flounder	ST 2	521.00
10-Apr-07	AK-2	Winter flounder	ST 3	196.44
10-Apr-07	AK-2	Winter flounder	UID	21.35
10-Apr-07	AK-3	Fourbeard rockling	Egg	29.55
10-Apr-07	AK-3	Grubby	PYS	200.94
10-Apr-07	AK-3	Grubby	YS	5.91
10-Apr-07	AK-3	Rock gunnel	PYS	5.91

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
10-Apr-07	AK-3	Winter flounder	ST 1	289.58
10-Apr-07	AK-3	Winter flounder	ST 2	153.66
10-Apr-07	AK-3	Winter flounder	ST 3	29.55
10-Apr-07	AK-3	Winter flounder	UID	70.92
10-Apr-07	NB-3	Grubby	PYS	39.77
10-Apr-07	NB-3	Winter flounder	PYS	44.74
10-Apr-07	NB-3	Winter flounder	ST 1	283.34
10-Apr-07	NB-3	Winter flounder	ST 2	695.91
10-Apr-07	NB-3	Winter flounder	ST 3	606.44
10-Apr-07	NB-3	Winter flounder	UID	119.30
10-Apr-07	NB-3	Winter flounder	YS	4.97
10-Apr-07	NB-4	Atlantic tomcod	PYS	4.85
10-Apr-07	NB-4	Grubby	PYS	9.71
10-Apr-07	NB-4	Winter flounder	ST 1	53.40
10-Apr-07	NB-4	Winter flounder	ST 2	412.62
10-Apr-07	NB-4	Winter flounder	ST 3	495.15
10-Apr-07	NB-4	Winter flounder	UID	169.90
10-Apr-07	NB-5	Atlantic tomcod	PYS	6.73
10-Apr-07	NB-5	Fourbeard rockling	Egg	87.53
10-Apr-07	NB-5	Grubby	PYS	188.54
10-Apr-07	NB-5	Winter flounder	ST 1	107.74
10-Apr-07	NB-5	Winter flounder	ST 2	161.60
10-Apr-07	NB-5	Winter flounder	ST 3	60.60
10-Apr-07	NB-5	Winter flounder	UID	20.20
10-Apr-07	NB-5	Winter flounder	YS	6.73
10-Apr-07	NB-6	Atlantic tomcod	PYS	6.12
10-Apr-07	NB-6	Fourbeard rockling	Egg	55.09
10-Apr-07	NB-6	Rock gunnel	PYS	771.31
10-Apr-07	NB-6	Winter flounder	ST 1	55.09
10-Apr-07	NB-6	Winter flounder	ST 2	73.46
10-Apr-07	NB-6	Winter flounder	ST 3	30.61
10-Apr-07	NB-6	Winter flounder	UID	12.24
10-Apr-07	NB-7	Grubby	PYS	62.63
10-Apr-07	NB-7	Winter flounder	PYS	34.16
10-Apr-07	NB-7	Winter flounder	ST 1	34.16
10-Apr-07	NB-7	Winter flounder	ST 2	244.84
10-Apr-07	NB-7	Winter flounder	ST 3	102.49
10-Apr-07	NB-7	Winter flounder	UID	39.86
10-Apr-07	SB-3	Fourbeard rockling	Egg	18.81
10-Apr-07	SB-3	Grubby	PYS	18.81
10-Apr-07	SB-3	Grubby	YS	4.70

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
10-Apr-07	SB-3	Winter flounder	PYS	23.51
10-Apr-07	SB-3	Winter flounder	ST 2	37.62
10-Apr-07	SB-3	Winter flounder	ST 3	131.68
10-Apr-07	SB-3	Winter flounder	UID	47.03
10-Apr-07	SB-5	Fourbeard rockling	Egg	15.26
10-Apr-07	SB-5	Grubby	PYS	30.53
10-Apr-07	SB-5	Winter flounder	ST 1	300.19
10-Apr-07	SB-5	Winter flounder	ST 2	488.44
10-Apr-07	SB-5	Winter flounder	ST 3	544.41
10-Apr-07	SB-5	Winter flounder	UID	127.20
11-Apr-07	PJ-4	Fourbeard rockling	Egg	16.45
11-Apr-07	PJ-4	Grubby	PYS	16.45
11-Apr-07	PJ-4	Winter flounder	PYS	4.11
11-Apr-07	PJ-4	Winter flounder	ST 1	131.63
11-Apr-07	PJ-4	Winter flounder	ST 2	740.43
11-Apr-07	PJ-4	Winter flounder	ST 3	1,110.64
11-Apr-07	PJ-4	Winter flounder	UID	41.13
11-Apr-07	PJ-5	Fourbeard rockling	Egg	13.99
11-Apr-07	PJ-5	Grubby	PYS	83.94
11-Apr-07	PJ-5	Winter flounder	ST 1	79.28
11-Apr-07	PJ-5	Winter flounder	ST 2	293.81
11-Apr-07	PJ-5	Winter flounder	ST 3	214.53
11-Apr-07	PJ-5	Winter flounder	UID	13.99
11-Apr-07	SB-1	Fourbeard rockling	Egg	11.30
11-Apr-07	SB-1	Grubby	PYS	327.56
11-Apr-07	SB-1	Rock gunnel	PYS	11.30
11-Apr-07	SB-1	Winter flounder	PYS	271.08
11-Apr-07	SB-1	Winter flounder	ST 1	22.59
11-Apr-07	SB-1	Winter flounder	ST 2	33.89
11-Apr-07	SB-1	Winter flounder	ST 3	451.80
11-Apr-07	SB-1	Winter flounder	UID	135.54
11-Apr-07	SB-2	Fourbeard rockling	Egg	16.71
11-Apr-07	SB-2	Grubby	PYS	116.94
11-Apr-07	SB-2	Grubby	YS	8.35
11-Apr-07	SB-2	Winter flounder	ST 1	200.46
11-Apr-07	SB-2	Winter flounder	ST 2	676.57
11-Apr-07	SB-2	Winter flounder	ST 3	1,286.31
11-Apr-07	SB-2	Winter flounder	UID	250.58
11-Apr-07	SB-4	Fourbeard rockling	Egg	48.84
11-Apr-07	SB-4	Grubby	PYS	30.05
11-Apr-07	SB-4	Winter flounder	PYS	75.13

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
11-Apr-07	SB-4	Winter flounder	ST 1	26.30
11-Apr-07	SB-4	Winter flounder	ST 2	146.51
11-Apr-07	SB-4	Winter flounder	ST 3	383.17
11-Apr-07	SB-4	Winter flounder	UID	67.62
11-Apr-07	SB-6	Grubby	PYS	115.67
11-Apr-07	SB-6	Grubby	YS	12.85
11-Apr-07	SB-6	Winter flounder	ST 1	102.82
11-Apr-07	SB-6	Winter flounder	ST 2	192.78
11-Apr-07	SB-6	Winter flounder	ST 3	83.54
11-Apr-07	SB-6	Winter flounder	UID	12.85
23-Apr-07	LB-1	Fourbeard rockling	Egg	46.54
23-Apr-07	LB-1	Grubby	PYS	65.15
23-Apr-07	LB-1	Winter flounder	ST 2	4.65
23-Apr-07	LB-1	Winter flounder	ST 3	451.40
23-Apr-07	LB-1	Winter flounder	UID	9.31
23-Apr-07	LB-2	Fourbeard rockling	Egg	7.00
23-Apr-07	LB-2	Grubby	PYS	21.00
23-Apr-07	LB-2	Winter flounder	ST 3	91.00
23-Apr-07	LB-2	Winter flounder	UID	7.00
23-Apr-07	LB-3	Grubby	PYS	28.26
23-Apr-07	LB-3	Winter flounder	PYS	16.95
23-Apr-07	LB-3	Winter flounder	ST 2	5.65
23-Apr-07	LB-3	Winter flounder	ST 3	938.13
23-Apr-07	LB-3	Winter flounder	UID	22.61
23-Apr-07	LB-4	Fourbeard rockling	Egg	4.43
23-Apr-07	LB-4	Grubby	PYS	13.30
23-Apr-07	LB-4	Winter flounder	PYS	93.07
23-Apr-07	LB-4	Winter flounder	ST 3	398.88
23-Apr-07	LB-5	Fourbeard rockling	Egg	20.90
23-Apr-07	LB-5	Grubby	PYS	120.19
23-Apr-07	LB-5	Rock gunnel	PYS	31.35
23-Apr-07	LB-5	Winter flounder	PYS	15.68
23-Apr-07	LB-5	Winter flounder	ST 1	47.03
23-Apr-07	LB-5	Winter flounder	ST 2	125.42
23-Apr-07	LB-5	Winter flounder	ST 3	757.74
23-Apr-07	LB-5	Winter flounder	UID	10.45
23-Apr-07	LB-6	Fourbeard rockling	Egg	27.91
23-Apr-07	LB-6	Grubby	PYS	33.49
23-Apr-07	LB-6	Rock gunnel	PYS	5.58
23-Apr-07	LB-6	Winter flounder	ST 3	22.32
24-Apr-07	NB-3	Grubby	PYS	5.40

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
24-Apr-07	NB-3	Winter flounder	ST 1	5.40
24-Apr-07	NB-3	Winter flounder	ST 2	43.18
24-Apr-07	NB-3	Winter flounder	UID	16.19
24-Apr-07	NB-4	Grubby	PYS	13.58
24-Apr-07	NB-4	Winter flounder	ST 2	9.06
24-Apr-07	NB-4	Winter flounder	ST 3	4.53
24-Apr-07	NB-4	Winter flounder	UID	40.75
24-Apr-07	NB-5	Fourbeard rockling	Egg	12.07
24-Apr-07	NB-5	Grubby	PYS	24.14
24-Apr-07	NB-5	Winter flounder	ST 3	4.02
24-Apr-07	NB-6	Atlantic tomcod	PYS	4.13
24-Apr-07	NB-6	Fourbeard rockling	Egg	33.07
24-Apr-07	NB-6	Grubby	PYS	103.36
24-Apr-07	NB-6	Rock gunnel	PYS	4.13
24-Apr-07	NB-6	Winter flounder	ST 1	8.27
24-Apr-07	NB-6	Winter flounder	ST 2	8.27
24-Apr-07	NB-6	Winter flounder	ST 3	8.27
24-Apr-07	NB-7	Grubby	PYS	19.74
24-Apr-07	NB-7	Grubby	YS	6.58
24-Apr-07	NB-7	Winter flounder	ST 1	13.16
24-Apr-07	NB-7	Winter flounder	ST 2	59.23
24-Apr-07	NB-7	Winter flounder	ST 3	26.32
24-Apr-07	NB-7	Winter flounder	UID	13.16
24-Apr-07	SB-1	Fourbeard rockling	Egg	11.25
24-Apr-07	SB-1	Grubby	PYS	123.79
24-Apr-07	SB-1	Winter flounder	ST 3	67.52
24-Apr-07	SB-2	Fourbeard rockling	Egg	74.17
24-Apr-07	SB-2	Grubby	PYS	74.17
24-Apr-07	SB-2	Winter flounder	ST 3	82.42
24-Apr-07	SB-3	Fourbeard rockling	Egg	167.91
24-Apr-07	SB-3	Grubby	PYS	59.26
24-Apr-07	SB-3	Windowpane	Egg	29.63
24-Apr-07	SB-3	Winter flounder	ST 2	9.88
24-Apr-07	SB-4	Atlantic tomcod	PYS	4.99
24-Apr-07	SB-4	Fourbeard rockling	Egg	29.96
24-Apr-07	SB-4	Grubby	PYS	74.90
24-Apr-07	SB-4	Rock gunnel	PYS	4.99
24-Apr-07	SB-4	Winter flounder	ST 3	4.99
25-Apr-07	PJ-1	Grubby	PYS	58.26
25-Apr-07	PJ-1	Rock gunnel	PYS	12.95
25-Apr-07	PJ-1	Winter flounder	ST 2	6.47

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
25-Apr-07	PJ-1	Winter flounder	ST 3	103.57
25-Apr-07	PJ-2	Grubby	PYS	85.05
25-Apr-07	PJ-2	Rock gunnel	PYS	4.48
25-Apr-07	PJ-2	Winter flounder	ST 1	8.95
25-Apr-07	PJ-2	Winter flounder	ST 2	44.76
25-Apr-07	PJ-2	Winter flounder	ST 3	76.10
25-Apr-07	PJ-2	Winter flounder	UID	4.48
25-Apr-07	PJ-3	Grubby	PYS	13.84
25-Apr-07	PJ-3	Rock gunnel	PYS	4.61
25-Apr-07	PJ-3	Winter flounder	ST 3	13.84
25-Apr-07	PJ-3	Winter flounder	UID	23.06
25-Apr-07	PJ-4	Grubby	PYS	73.08
25-Apr-07	PJ-4	Rock gunnel	PYS	4.06
25-Apr-07	PJ-4	Windowpane	Egg	4.06
25-Apr-07	PJ-4	Winter flounder	ST 1	48.72
25-Apr-07	PJ-4	Winter flounder	ST 2	64.96
25-Apr-07	PJ-4	Winter flounder	ST 3	133.98
25-Apr-07	PJ-4	Winter flounder	UID	8.12
25-Apr-07	PJ-5	Atlantic tomcod	PYS	4.54
25-Apr-07	PJ-5	Fourbeard rockling	Egg	18.14
25-Apr-07	PJ-5	Grubby	PYS	77.10
25-Apr-07	PJ-5	Rock gunnel	PYS	9.07
25-Apr-07	PJ-5	Winter flounder	ST 3	18.14
25-Apr-07	PJ-5	Winter flounder	UID	9.07
25-Apr-07	SB-5	Grubby	PYS	81.06
25-Apr-07	SB-5	Summer flounder	PYS	3.12
25-Apr-07	SB-5	Winter flounder	ST 1	6.24
25-Apr-07	SB-5	Winter flounder	ST 2	6.24
25-Apr-07	SB-5	Winter flounder	ST 3	34.29
25-Apr-07	SB-5	Winter flounder	UID	3.12
25-Apr-07	SB-6	Grubby	PYS	45.06
25-Apr-07	SB-6	Smallmouth flounder	JUV	9.01
25-Apr-07	SB-6	Windowpane	Egg	72.09
26-Apr-07	AK-2	Grubby	PYS	17.39
26-Apr-07	AK-2	Winter flounder	ST 3	13.04
26-Apr-07	AK-3	Atlantic tomcod	PYS	12.69
26-Apr-07	AK-3	Fourbeard rockling	Egg	6.34
26-Apr-07	AK-3	Grubby	PYS	95.15
07-May-07	PJ-1	Grubby	PYS	20.02
07-May-07	PJ-1	Unidentified	Egg	60.07
07-May-07	PJ-1	Winter flounder	ST 3	35.04

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
07-May-07	PJ-2	Winter flounder	ST 3	93.52
07-May-07	SB-1	Grubby	PYS	62.02
07-May-07	SB-1	Winter flounder	ST 2	206.72
07-May-07	SB-1	Winter flounder	UID	31.01
07-May-07	SB-2	Fourbeard rockling	Egg	7.94
07-May-07	SB-2	Grubby	PYS	23.83
07-May-07	SB-2	Unidentified	Egg	31.77
07-May-07	SB-2	Winter flounder	ST 3	95.31
07-May-07	SB-2	Winter flounder	UID	7.94
07-May-07	SB-3	Fourbeard rockling	Egg	10.30
07-May-07	SB-3	Gadid unidentified	Egg	5.15
07-May-07	SB-3	Unidentified	Egg	20.60
07-May-07	SB-3	Winter flounder	ST 2	10.30
07-May-07	SB-3	Winter flounder	ST 3	66.94
07-May-07	SB-3	Winter flounder	UID	5.15
07-May-07	SB-4	Gadid unidentified	Egg	6.12
07-May-07	SB-4	Grubby	PYS	55.09
07-May-07	SB-4	Unidentified	Egg	73.45
07-May-07	SB-4	Winter flounder	ST 3	24.48
07-May-07	SB-5	Grubby	PYS	18.26
07-May-07	SB-5	Unidentified	Egg	21.92
07-May-07	SB-5	White perch	YS	3.65
07-May-07	SB-5	Winter flounder	PYS	3.65
07-May-07	SB-5	Winter flounder	ST 1	7.31
07-May-07	SB-5	Winter flounder	ST 2	40.18
07-May-07	SB-5	Winter flounder	ST 3	120.54
07-May-07	SB-5	Winter flounder	UID	7.31
08-May-07	AK-2	Grubby	PYS	12.00
08-May-07	AK-2	Winter flounder	ST 2	4.00
08-May-07	AK-2	Winter flounder	ST 3	23.99
08-May-07	AK-3	Atlantic tomcod	PYS	5.16
08-May-07	AK-3	Gobiid unidentified	PYS	5.16
08-May-07	AK-3	Grubby	PYS	25.80
08-May-07	AK-3	Winter flounder	ST 1	5.16
08-May-07	AK-3	Winter flounder	ST 2	15.48
08-May-07	AK-3	Winter flounder	ST 3	46.44
08-May-07	NB-3	Grubby	PYS	4.85
08-May-07	NB-3	Winter flounder	PYS	4.85
08-May-07	NB-3	Winter flounder	ST 3	14.55
08-May-07	NB-3	Winter flounder	UID	4.85
08-May-07	NB-4	Grubby	PYS	4.10

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
08-May-07	NB-4	Winter flounder	ST 2	24.61
08-May-07	NB-4	Winter flounder	ST 3	86.14
08-May-07	NB-5	Grubby	PYS	9.11
08-May-07	NB-5	Winter flounder	ST 3	50.12
08-May-07	NB-5	Winter flounder	UID	9.11
08-May-07	NB-6	Grubby	PYS	12.31
08-May-07	NB-6	White perch	PYS	4.10
08-May-07	NB-6	White perch	YS	4.10
08-May-07	NB-6	Windowpane	PYS	4.10
08-May-07	NB-6	Winter flounder	ST 2	32.82
08-May-07	NB-6	Winter flounder	ST 3	45.12
08-May-07	NB-7	Grubby	PYS	12.32
08-May-07	NB-7	Winter flounder	ST 2	6.16
08-May-07	NB-7	Winter flounder	ST 3	24.63
08-May-07	PJ-4	Fourbeard rockling	Egg	4.40
08-May-07	PJ-4	Grubby	PYS	4.40
08-May-07	PJ-4	Unidentified	Egg	61.60
08-May-07	PJ-4	Windowpane	PYS	4.40
08-May-07	PJ-4	Winter flounder	ST 2	13.20
08-May-07	PJ-4	Winter flounder	ST 3	70.39
08-May-07	PJ-4	Winter flounder	UID	4.40
08-May-07	PJ-5	Grubby	PYS	32.70
08-May-07	PJ-5	Unidentified	Egg	60.72
08-May-07	PJ-5	Winter flounder	ST 3	182.16
09-May-07	LB-1	Atlantic mackerel	Egg	5.04
09-May-07	LB-1	Grubby	PYS	35.30
09-May-07	LB-1	Unidentified	Egg	151.52
09-May-07	LB-1	Unidentified	Egg	186.57
09-May-07	LB-1	Windowpane	PYS	3.61
09-May-07	LB-1	Winter flounder	ST 2	10.82
09-May-07	LB-1	Winter flounder	ST 3	413.47
09-May-07	LB-1	Winter flounder	ST 3	288.60
09-May-07	LB-3	Grubby	PYS	19.33
09-May-07	LB-3	Unidentified	Egg	376.96
09-May-07	LB-3	Winter flounder	ST 3	1,937.98
09-May-07	LB-4	Atlantic mackerel	Egg	22.37
09-May-07	LB-4	Gadid unidentified	Egg	29.82
09-May-07	LB-4	Grubby	PYS	74.56
09-May-07	LB-4	Unidentified	Egg	454.79
09-May-07	LB-4	Winter flounder	ST 3	663.55
09-May-07	LB-5	Grubby	PYS	45.35

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
09-May-07	LB-5	Unidentified	Egg	2,902.14
09-May-07	LB-5	Winter flounder	ST 3	186.42
09-May-07	LB-5	Winter flounder	ST 4	5.04
09-May-07	LB-6	Unidentified	Egg	177.47
09-May-07	LB-6	Windowpane	PYS	3.94
09-May-07	LB-6	Winter flounder	ST 3	370.72
09-May-07	SB-6	Atlantic mackerel	Egg	3.70
09-May-07	SB-6	Atlantic menhaden	Egg	3.70
09-May-07	SB-6	Grubby	PYS	7.40
09-May-07	SB-6	Unidentified	Egg	74.00
09-May-07	SB-6	Windowpane	PYS	7.40
09-May-07	SB-6	Windowpane	YS	3.70
09-May-07	SB-6	Winter flounder	ST 2	3.70
09-May-07	SB-6	Winter flounder	ST 3	129.50
09-May-07	SB-6	Winter flounder	UID	7.40
21-May-07	PJ-1	Atlantic menhaden	Egg	37.81
21-May-07	PJ-1	Atlantic menhaden	PYS	4.73
21-May-07	PJ-1	Labridae	Egg	567.15
21-May-07	PJ-1	Prionotus sp.	Egg	56.71
21-May-07	PJ-1	Windowpane	Egg	302.48
21-May-07	PJ-1	Windowpane	PYS	127.61
21-May-07	PJ-1	Winter flounder	ST 3	66.17
21-May-07	PJ-2	Labridae	Egg	297.33
21-May-07	PJ-2	Windowpane	Egg	39.64
21-May-07	PJ-2	Windowpane	PYS	69.38
21-May-07	PJ-2	Winter flounder	ST 3	4.96
21-May-07	PJ-3	Atlantic menhaden	Egg	43.87
21-May-07	PJ-3	Atlantic menhaden	PYS	93.23
21-May-07	PJ-3	Atlantic menhaden	UID	60.33
21-May-07	PJ-3	Atlantic menhaden	YS	10.97
21-May-07	PJ-3	Labridae	Egg	153.56
21-May-07	PJ-3	Windowpane	PYS	60.33
21-May-07	SB-1	Atlantic menhaden	Egg	1,955.50
21-May-07	SB-1	Atlantic menhaden	PYS	134.44
21-May-07	SB-1	Atlantic menhaden	UID	48.89
21-May-07	SB-1	Atlantic menhaden	YS	36.67
21-May-07	SB-1	Bay anchovy	Egg	48.89
21-May-07	SB-1	Fourspot flounder	PYS	12.22
21-May-07	SB-1	Labridae	Egg	439.99
21-May-07	SB-1	Prionotus sp.	Egg	97.78
21-May-07	SB-1	Windowpane	Egg	293.33

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
21-May-07	SB-1	Windowpane	PYS	12.22
21-May-07	SB-2	Atlantic menhaden	Egg	67.84
21-May-07	SB-2	Winter flounder	ST 3	16.96
21-May-07	SB-2	Winter flounder	ST 4	16.96
21-May-07	SB-3	Atlantic menhaden	Egg	289.92
21-May-07	SB-3	Atlantic menhaden	PYS	42.95
21-May-07	SB-3	Atlantic menhaden	UID	102.01
21-May-07	SB-3	Atlantic menhaden	YS	16.11
21-May-07	SB-3	Fourbeard rockling	PYS	5.37
21-May-07	SB-3	Labridae	Egg	204.02
21-May-07	SB-3	Prionotus sp.	Egg	10.74
21-May-07	SB-3	Silver hake	Egg	32.21
21-May-07	SB-3	Windowpane	Egg	21.48
21-May-07	SB-3	Windowpane	PYS	5.37
21-May-07	SB-3	Winter flounder	ST 3	5.37
21-May-07	SB-4	Atlantic menhaden	Egg	404.39
21-May-07	SB-4	Bay anchovy	Egg	19.26
21-May-07	SB-4	Grubby	PYS	4.81
21-May-07	SB-4	Labridae	Egg	192.57
21-May-07	SB-4	Prionotus sp.	Egg	134.80
21-May-07	SB-4	Windowpane	Egg	327.36
21-May-07	SB-4	Windowpane	PYS	14.44
21-May-07	SB-4	Winter flounder	ST 3	96.28
21-May-07	SB-5	Atlantic menhaden	Egg	54.91
21-May-07	SB-5	Atlantic menhaden	PYS	9.15
21-May-07	SB-5	Labridae	Egg	146.43
21-May-07	SB-5	Prionotus sp.	Egg	12.20
21-May-07	SB-5	Windowpane	Egg	36.61
21-May-07	SB-5	Windowpane	PYS	73.22
21-May-07	SB-5	Winter flounder	ST 3	112.88
21-May-07	SB-5	Winter flounder	ST 4	12.20
22-May-07	LB-1	Atlantic menhaden	PYS	4.42
22-May-07	LB-1	Grubby	PYS	4.42
22-May-07	LB-1	Labridae	Egg	3,536.82
22-May-07	LB-1	Prionotus sp.	Egg	672.00
22-May-07	LB-1	Windowpane	Egg	2,440.40
22-May-07	LB-1	Windowpane	PYS	287.37
22-May-07	LB-1	Winter flounder	ST 3	88.42
22-May-07	LB-2	Atlantic menhaden	UID	4.43
22-May-07	LB-2	Grubby	PYS	4.43
22-May-07	LB-2	Labridae	Egg	1,558.88

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
22-May-07	LB-2	Windowpane	Egg	2,409.18
22-May-07	LB-2	Windowpane	PYS	593.44
22-May-07	LB-2	Winter flounder	ST 3	48.71
22-May-07	LB-3	Atlantic menhaden	Egg	2,165.76
22-May-07	LB-3	Atlantic menhaden	PYS	198.21
22-May-07	LB-3	Atlantic menhaden	UID	154.70
22-May-07	LB-3	Bay anchovy	Egg	270.72
22-May-07	LB-3	Fourbeard rockling	PYS	4.83
22-May-07	LB-3	Labridae	Egg	812.16
22-May-07	LB-3	Prionotus sp.	Egg	734.81
22-May-07	LB-3	Windowpane	Egg	1,121.55
22-May-07	LB-3	Windowpane	PYS	435.09
22-May-07	LB-3	Winter flounder	ST 3	67.68
22-May-07	LB-4	Atlantic menhaden	Egg	371.88
22-May-07	LB-4	Atlantic menhaden	PYS	46.48
22-May-07	LB-4	Atlantic menhaden	UID	11.62
22-May-07	LB-4	Atlantic menhaden	YS	7.75
22-May-07	LB-4	Bay anchovy	Egg	61.98
22-May-07	LB-4	Grubby	PYS	3.87
22-May-07	LB-4	Labridae	Egg	867.71
22-May-07	LB-4	Prionotus sp.	Egg	185.94
22-May-07	LB-4	Windowpane	Egg	1,084.64
22-May-07	LB-4	Windowpane	PYS	468.72
22-May-07	LB-4	Winter flounder	ST 3	174.32
22-May-07	LB-5	Atlantic menhaden	Egg	447.64
22-May-07	LB-5	Atlantic menhaden	PYS	6.99
22-May-07	LB-5	Bay anchovy	Egg	167.87
22-May-07	LB-5	Labridae	Egg	1,119.11
22-May-07	LB-5	Prionotus sp.	Egg	447.64
22-May-07	LB-5	Windowpane	Egg	1,566.75
22-May-07	LB-5	Windowpane	PYS	314.75
22-May-07	LB-5	Winter flounder	ST 3	27.98
22-May-07	LB-6	Atlantic menhaden	Egg	21.01
22-May-07	LB-6	Bay anchovy	Egg	84.04
22-May-07	LB-6	Labridae	Egg	273.13
22-May-07	LB-6	Prionotus sp.	Egg	42.02
22-May-07	LB-6	Windowpane	Egg	357.17
22-May-07	LB-6	Windowpane	PYS	141.82
22-May-07	LB-6	Winter flounder	ST 3	136.56
23-May-07	NB-3	Atlantic menhaden	PYS	4.66
23-May-07	NB-3	Atlantic menhaden	UID	69.91

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
23-May-07	NB-3	Bay anchovy	Egg	149.14
23-May-07	NB-3	Labridae	Egg	186.42
23-May-07	NB-3	Windowpane	PYS	9.32
23-May-07	NB-4	Atlantic menhaden	PYS	5.26
23-May-07	NB-4	Bay anchovy	Egg	263.19
23-May-07	NB-4	Labridae	Egg	105.28
23-May-07	NB-5	Bay anchovy	Egg	53.56
23-May-07	NB-5	Labridae	Egg	267.78
23-May-07	NB-5	Winter flounder	ST 3	84.80
23-May-07	NB-5	Winter flounder	ST 4	8.93
23-May-07	NB-6	Bay anchovy	Egg	9.06
23-May-07	NB-6	Labridae	Egg	45.32
23-May-07	NB-6	Prionotus sp.	Egg	18.13
23-May-07	NB-6	Windowpane	Egg	18.13
23-May-07	NB-6	Winter flounder	ST 3	117.83
23-May-07	NB-6	Winter flounder	ST 4	36.26
23-May-07	NB-7	Bay anchovy	Egg	103.04
23-May-07	NB-7	Labridae	Egg	32.20
23-May-07	NB-7	Windowpane	PYS	6.44
23-May-07	PJ-4	Atlantic menhaden	Egg	15.55
23-May-07	PJ-4	Labridae	Egg	233.23
23-May-07	PJ-4	Prionotus sp.	Egg	124.39
23-May-07	PJ-4	Windowpane	Egg	217.68
23-May-07	PJ-4	Windowpane	PYS	7.77
23-May-07	PJ-4	Winter flounder	ST 3	7.77
23-May-07	PJ-4	Winter flounder	ST 4	15.55
23-May-07	PJ-5	Atlantic menhaden	Egg	109.58
23-May-07	PJ-5	Atlantic menhaden	PYS	50.22
23-May-07	PJ-5	Atlantic menhaden	UID	18.26
23-May-07	PJ-5	Bay anchovy	Egg	18.26
23-May-07	PJ-5	Labridae	Egg	420.06
23-May-07	PJ-5	Prionotus sp.	Egg	91.32
23-May-07	PJ-5	Windowpane	Egg	365.27
23-May-07	PJ-5	Windowpane	PYS	95.88
23-May-07	PJ-5	Winter flounder	ST 3	68.49
23-May-07	PJ-5	Winter flounder	ST 4	13.70
24-May-07	AK-2	Atlantic menhaden	YS	3.75
24-May-07	AK-2	Bay anchovy	Egg	3.75
24-May-07	AK-2	Labridae	Egg	63.81
24-May-07	AK-2	Windowpane	Egg	3.75
24-May-07	AK-2	Winter flounder	ST 3	33.78

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
24-May-07	AK-2	Winter flounder	UID	3.75
24-May-07	AK-3	Labridae	Egg	53.96
24-May-07	AK-3	Winter flounder	ST 3	8.99
24-May-07	SB-6	Atlantic menhaden	Egg	234.40
24-May-07	SB-6	Atlantic menhaden	PYS	7.32
24-May-07	SB-6	Labridae	Egg	2,168.19
24-May-07	SB-6	Prionotus sp.	Egg	468.80
24-May-07	SB-6	Windowpane	Egg	1,465.00
24-May-07	SB-6	Windowpane	PYS	849.70
24-May-07	SB-6	Winter flounder	ST 3	51.27
05-Jun-07	AK-2	Atlantic menhaden	Egg	372.83
05-Jun-07	AK-2	Atlantic menhaden	PYS	221.37
05-Jun-07	AK-2	Bay anchovy	Egg	4,567.15
05-Jun-07	AK-2	Labridae	Egg	2,609.80
05-Jun-07	AK-2	Northern pipefish	PYS	5.83
05-Jun-07	AK-2	Windowpane	Egg	466.04
05-Jun-07	AK-2	Windowpane	PYS	81.56
05-Jun-07	AK-2	Winter flounder	ST 3	11.65
05-Jun-07	AK-3	Atlantic menhaden	Egg	2,721.90
05-Jun-07	AK-3	Atlantic menhaden	PYS	165.52
05-Jun-07	AK-3	Bay anchovy	Egg	7,282.91
05-Jun-07	AK-3	Bay anchovy	PYS	22.99
05-Jun-07	AK-3	Clupeiformes	UID	27.59
05-Jun-07	AK-3	Labridae	Egg	735.65
05-Jun-07	AK-3	Windowpane	PYS	9.20
05-Jun-07	AK-3	Winter flounder	ST 3	9.20
05-Jun-07	NB-3	Atlantic menhaden	Egg	3,797.06
05-Jun-07	NB-3	Atlantic menhaden	PYS	158.21
05-Jun-07	NB-3	Bay anchovy	Egg	25,995.27
05-Jun-07	NB-3	Bay anchovy	PYS	292.08
05-Jun-07	NB-3	Clupeiformes	UID	273.83
05-Jun-07	NB-3	Labridae	Egg	1,460.41
05-Jun-07	NB-3	Northern pipefish	PYS	36.51
05-Jun-07	NB-3	Weakfish	PYS	352.93
05-Jun-07	NB-3	Windowpane	PYS	6.09
05-Jun-07	NB-4	Atlantic menhaden	Egg	823.22
05-Jun-07	NB-4	Atlantic menhaden	PYS	57.17
05-Jun-07	NB-4	Bay anchovy	Egg	17,927.83
05-Jun-07	NB-4	Labridae	Egg	365.87
05-Jun-07	NB-4	Northern pipefish	PYS	68.60
05-Jun-07	NB-4	Tautog	PYS	5.72

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
05-Jun-07	NB-4	Weakfish	PYS	17.15
05-Jun-07	NB-4	Windowpane	PYS	17.15
05-Jun-07	NB-5	Atlantic menhaden	Egg	3,193.85
05-Jun-07	NB-5	Atlantic menhaden	PYS	170.26
05-Jun-07	NB-5	Atlantic menhaden	YS	5.87
05-Jun-07	NB-5	Bay anchovy	Egg	10,896.66
05-Jun-07	NB-5	Bay anchovy	PYS	23.48
05-Jun-07	NB-5	Clupeiformes	UID	29.36
05-Jun-07	NB-5	Labridae	Egg	3,945.34
05-Jun-07	NB-5	Northern pipefish	PYS	5.87
05-Jun-07	NB-5	Prionotus sp.	Egg	93.94
05-Jun-07	NB-5	Weakfish	PYS	5.87
05-Jun-07	NB-5	Windowpane	PYS	182.00
05-Jun-07	NB-6	Atlantic menhaden	Egg	779.92
05-Jun-07	NB-6	Atlantic menhaden	PYS	182.79
05-Jun-07	NB-6	Bay anchovy	Egg	8,709.14
05-Jun-07	NB-6	Bay anchovy	PYS	8.12
05-Jun-07	NB-6	Clupeiformes	UID	12.19
05-Jun-07	NB-6	Labridae	Egg	1,169.88
05-Jun-07	NB-6	Northern pipefish	PYS	16.25
05-Jun-07	NB-6	Weakfish	PYS	20.31
05-Jun-07	NB-6	Windowpane	PYS	40.62
05-Jun-07	NB-7	Atlantic menhaden	Egg	4,556.68
05-Jun-07	NB-7	Atlantic menhaden	PYS	134.90
05-Jun-07	NB-7	Bay anchovy	Egg	13,670.04
05-Jun-07	NB-7	Bay anchovy	PYS	127.41
05-Jun-07	NB-7	Clupeiformes	UID	509.63
05-Jun-07	NB-7	Northern pipefish	PYS	29.98
05-Jun-07	NB-7	Prionotus sp.	Egg	239.83
05-Jun-07	NB-7	Tautog	PYS	14.99
05-Jun-07	NB-7	Weakfish	PYS	97.43
05-Jun-07	NB-7	Windowpane	PYS	52.46
05-Jun-07	PJ-1	Atlantic menhaden	Egg	222.14
05-Jun-07	PJ-1	Atlantic menhaden	PYS	111.07
05-Jun-07	PJ-1	Bay anchovy	Egg	3,554.21
05-Jun-07	PJ-1	Bay anchovy	PYS	27.77
05-Jun-07	PJ-1	Feather blenny	PYS	4.63
05-Jun-07	PJ-1	Labridae	Egg	1,925.20
05-Jun-07	PJ-1	Northern pipefish	PYS	18.51
05-Jun-07	PJ-1	Prionotus sp.	Egg	1,777.11
05-Jun-07	PJ-1	Tautog	PYS	9.26

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
05-Jun-07	PJ-1	Weakfish	PYS	74.05
05-Jun-07	PJ-1	Windowpane	Egg	370.23
05-Jun-07	PJ-1	Windowpane	PYS	846.90
05-Jun-07	PJ-1	Winter flounder	ST 3	4.63
05-Jun-07	PJ-3	Atlantic menhaden	Egg	1,025.36
05-Jun-07	PJ-3	Atlantic menhaden	PYS	53.40
05-Jun-07	PJ-3	Bay anchovy	Egg	5,810.36
05-Jun-07	PJ-3	Bay anchovy	PYS	58.74
05-Jun-07	PJ-3	Clupeiformes	UID	202.94
05-Jun-07	PJ-3	Labridae	Egg	854.47
05-Jun-07	PJ-3	Weakfish	PYS	32.04
05-Jun-07	PJ-3	Windowpane	PYS	80.11
05-Jun-07	SB-5	Atlantic menhaden	Egg	162.19
05-Jun-07	SB-5	Atlantic menhaden	PYS	50.68
05-Jun-07	SB-5	Bay anchovy	Egg	4,379.08
05-Jun-07	SB-5	Bay anchovy	PYS	10.14
05-Jun-07	SB-5	Labridae	Egg	1,784.07
05-Jun-07	SB-5	Prionotus sp.	Egg	1,946.26
05-Jun-07	SB-5	Prionotus sp.	PYS	5.07
05-Jun-07	SB-5	Tautog	PYS	5.07
05-Jun-07	SB-5	Weakfish	PYS	5.07
05-Jun-07	SB-5	Windowpane	Egg	892.04
05-Jun-07	SB-5	Windowpane	PYS	385.20
05-Jun-07	SB-5	Winter flounder	ST 3	35.48
06-Jun-07	LB-1	Atlantic menhaden	Egg	280.15
06-Jun-07	LB-1	Atlantic menhaden	PYS	11.67
06-Jun-07	LB-1	Bay anchovy	Egg	6,443.36
06-Jun-07	LB-1	Bay anchovy	PYS	11.67
06-Jun-07	LB-1	Labridae	Egg	7,097.04
06-Jun-07	LB-1	Northern pipefish	PYS	17.51
06-Jun-07	LB-1	Prionotus sp.	Egg	11,579.38
06-Jun-07	LB-1	Weakfish	PYS	11.67
06-Jun-07	LB-1	Windowpane	Egg	3,735.28
06-Jun-07	LB-1	Windowpane	PYS	175.09
06-Jun-07	LB-2	Atlantic menhaden	Egg	281.58
06-Jun-07	LB-2	Atlantic menhaden	PYS	61.60
06-Jun-07	LB-2	Bay anchovy	Egg	8,588.12
06-Jun-07	LB-2	Clupeiformes	PYS	17.60
06-Jun-07	LB-2	Labridae	Egg	3,378.93
06-Jun-07	LB-2	Northern pipefish	PYS	35.20
06-Jun-07	LB-2	Prionotus sp.	Egg	1,830.25

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
06-Jun-07	LB-2	Tautog	PYS	8.80
06-Jun-07	LB-2	Weakfish	PYS	8.80
06-Jun-07	LB-2	Windowpane	Egg	3,238.14
06-Jun-07	LB-2	Windowpane	PYS	1,715.86
06-Jun-07	LB-2	Winter flounder	ST 3	35.20
06-Jun-07	LB-3	Atlantic menhaden	Egg	300.29
06-Jun-07	LB-3	Atlantic menhaden	PYS	70.38
06-Jun-07	LB-3	Bay anchovy	Egg	7,807.55
06-Jun-07	LB-3	Bay anchovy	PYS	75.07
06-Jun-07	LB-3	Clupeiformes	PYS	56.30
06-Jun-07	LB-3	Labridae	Egg	3,603.49
06-Jun-07	LB-3	Northern pipefish	PYS	4.69
06-Jun-07	LB-3	Prionotus sp.	Egg	3,153.05
06-Jun-07	LB-3	Tautog	PYS	14.08
06-Jun-07	LB-3	Weakfish	PYS	37.54
06-Jun-07	LB-3	Windowpane	Egg	1,201.16
06-Jun-07	LB-3	Windowpane	PYS	272.14
06-Jun-07	LB-3	Winter flounder	ST 3	9.38
06-Jun-07	LB-4	Atlantic menhaden	PYS	33.05
06-Jun-07	LB-4	Bay anchovy	Egg	22,912.96
06-Jun-07	LB-4	Goosefish	Egg	705.01
06-Jun-07	LB-4	Labridae	Egg	6,697.64
06-Jun-07	LB-4	Prionotus sp.	Egg	11,985.24
06-Jun-07	LB-4	Windowpane	Egg	2,820.06
06-Jun-07	LB-4	Windowpane	PYS	2,632.79
06-Jun-07	LB-4	Winter flounder	ST 3	11.02
06-Jun-07	LB-5	Atlantic menhaden	PYS	7.20
06-Jun-07	LB-5	Atlantic menhaden	YS	7.20
06-Jun-07	LB-5	Bay anchovy	Egg	10,136.47
06-Jun-07	LB-5	Bay anchovy	PYS	7.20
06-Jun-07	LB-5	Clupeiformes	PYS	21.60
06-Jun-07	LB-5	Labridae	Egg	4,377.11
06-Jun-07	LB-5	Northern pipefish	PYS	43.20
06-Jun-07	LB-5	Prionotus sp.	Egg	12,209.84
06-Jun-07	LB-5	Tautog	PYS	14.40
06-Jun-07	LB-5	Weakfish	PYS	36.00
06-Jun-07	LB-5	Windowpane	Egg	2,994.87
06-Jun-07	LB-5	Windowpane	PYS	1,259.86
06-Jun-07	LB-5	Winter flounder	ST 3	7.20
06-Jun-07	LB-6	Atlantic menhaden	Egg	780.79
06-Jun-07	LB-6	Atlantic menhaden	PYS	164.70

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
06-Jun-07	LB-6	Bay anchovy	Egg	23,423.83
06-Jun-07	LB-6	Bay anchovy	PYS	103.70
06-Jun-07	LB-6	Clupeiformes	PYS	61.00
06-Jun-07	LB-6	Cunner	PYS	6.10
06-Jun-07	LB-6	Gobiid unidentified	PYS	6.10
06-Jun-07	LB-6	Labridae	Egg	1,561.59
06-Jun-07	LB-6	Prionotus sp.	Egg	4,294.37
06-Jun-07	LB-6	Weakfish	PYS	36.60
06-Jun-07	LB-6	Windowpane	Egg	3,123.18
06-Jun-07	LB-6	Windowpane	PYS	286.70
06-Jun-07	PJ-2	Atlantic menhaden	Egg	191.39
06-Jun-07	PJ-2	Atlantic menhaden	PYS	89.71
06-Jun-07	PJ-2	Bay anchovy	Egg	4,019.17
06-Jun-07	PJ-2	Bay anchovy	PYS	65.79
06-Jun-07	PJ-2	Feather blenny	PYS	5.98
06-Jun-07	PJ-2	Labridae	Egg	3,540.70
06-Jun-07	PJ-2	Prionotus sp.	Egg	95.69
06-Jun-07	PJ-2	Tautog	PYS	11.96
06-Jun-07	PJ-2	Weakfish	PYS	203.35
06-Jun-07	PJ-2	Windowpane	Egg	191.39
06-Jun-07	PJ-2	Windowpane	PYS	23.92
06-Jun-07	SB-6	Atlantic menhaden	PYS	52.76
06-Jun-07	SB-6	Bay anchovy	Egg	1,205.85
06-Jun-07	SB-6	Bay anchovy	PYS	18.84
06-Jun-07	SB-6	Labridae	Egg	2,532.28
06-Jun-07	SB-6	Northern pipefish	PYS	3.77
06-Jun-07	SB-6	Windowpane	Egg	301.46
06-Jun-07	SB-6	Windowpane	PYS	82.90
07-Jun-07	PJ-4	Atlantic menhaden	Egg	378.49
07-Jun-07	PJ-4	Atlantic menhaden	PYS	153.76
07-Jun-07	PJ-4	Bay anchovy	Egg	189.24
07-Jun-07	PJ-4	Bay anchovy	PYS	118.28
07-Jun-07	PJ-4	Labridae	Egg	1,513.95
07-Jun-07	PJ-4	Prionotus sp.	Egg	315.41
07-Jun-07	PJ-4	Tautog	PYS	3.94
07-Jun-07	PJ-4	Weakfish	PYS	51.25
07-Jun-07	PJ-4	Windowpane	Egg	441.57
07-Jun-07	PJ-4	Windowpane	PYS	74.91
07-Jun-07	PJ-5	Atlantic menhaden	PYS	21.87
07-Jun-07	PJ-5	Bay anchovy	Egg	2,274.01
07-Jun-07	PJ-5	Labridae	Egg	1,749.24

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
07-Jun-07	PJ-5	Prionotus sp.	Egg	1,399.39
07-Jun-07	PJ-5	Weakfish	PYS	5.47
07-Jun-07	PJ-5	Windowpane	Egg	699.70
07-Jun-07	PJ-5	Windowpane	PYS	60.13
07-Jun-07	PJ-5	Winter flounder	ST 3	5.47
07-Jun-07	SB-1	Bay anchovy	Egg	220.56
07-Jun-07	SB-1	Bay anchovy	PYS	15.04
07-Jun-07	SB-1	Labridae	Egg	962.44
07-Jun-07	SB-1	Northern pipefish	PYS	15.04
07-Jun-07	SB-1	Prionotus sp.	Egg	60.15
07-Jun-07	SB-1	Windowpane	PYS	105.27
07-Jun-07	SB-2	Atlantic menhaden	PYS	16.56
07-Jun-07	SB-2	Bay anchovy	Egg	861.02
07-Jun-07	SB-2	Bay anchovy	PYS	8.28
07-Jun-07	SB-2	Clupeiformes	UID	24.84
07-Jun-07	SB-2	Labridae	Egg	3,907.69
07-Jun-07	SB-2	Northern pipefish	PYS	8.28
07-Jun-07	SB-2	Prionotus sp.	Egg	132.46
07-Jun-07	SB-2	Weakfish	PYS	49.67
07-Jun-07	SB-2	Windowpane	PYS	57.95
07-Jun-07	SB-3	Atlantic menhaden	Egg	891.83
07-Jun-07	SB-3	Atlantic menhaden	PYS	278.70
07-Jun-07	SB-3	Atlantic menhaden	YS	23.89
07-Jun-07	SB-3	Bay anchovy	Egg	382.21
07-Jun-07	SB-3	Bay anchovy	PYS	286.66
07-Jun-07	SB-3	Clupeiformes	UID	151.29
07-Jun-07	SB-3	Goosefish	PYS	7.96
07-Jun-07	SB-3	Labridae	Egg	700.72
07-Jun-07	SB-3	Prionotus sp.	Egg	828.13
07-Jun-07	SB-3	Weakfish	PYS	103.52
07-Jun-07	SB-3	Windowpane	Egg	509.62
07-Jun-07	SB-3	Windowpane	PYS	111.48
07-Jun-07	SB-4	Atlantic menhaden	Egg	99.42
07-Jun-07	SB-4	Atlantic menhaden	PYS	68.35
07-Jun-07	SB-4	Bay anchovy	Egg	795.32
07-Jun-07	SB-4	Bay anchovy	PYS	105.63
07-Jun-07	SB-4	Clupeiformes	UID	62.13
07-Jun-07	SB-4	Labridae	Egg	1,690.06
07-Jun-07	SB-4	Prionotus sp.	Egg	2,286.56
07-Jun-07	SB-4	Weakfish	PYS	93.20
07-Jun-07	SB-4	Windowpane	Egg	894.74

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
07-Jun-07	SB-4	Windowpane	PYS	335.53
18-Jun-07	LB-1	Atlantic menhaden	PYS	5.44
18-Jun-07	LB-1	Bay anchovy	Egg	2,525.57
18-Jun-07	LB-1	Labridae	Egg	4,702.79
18-Jun-07	LB-1	Northern pipefish	PYS	21.77
18-Jun-07	LB-1	Northern puffer	PYS	5.44
18-Jun-07	LB-1	Prionotus sp.	Egg	1,480.51
18-Jun-07	LB-1	Windowpane	Egg	1,480.51
18-Jun-07	LB-1	Windowpane	PYS	108.86
18-Jun-07	LB-2	Atlantic menhaden	PYS	11.41
18-Jun-07	LB-2	Bay anchovy	Egg	2,191.38
18-Jun-07	LB-2	Labridae	Egg	913.08
18-Jun-07	LB-2	Northern pipefish	PYS	11.41
18-Jun-07	LB-2	Prionotus sp.	Egg	1,050.04
18-Jun-07	LB-2	Windowpane	Egg	776.11
18-Jun-07	LB-2	Windowpane	PYS	405.18
18-Jun-07	LB-3	Bay anchovy	Egg	2,149.25
18-Jun-07	LB-3	Labridae	Egg	1,862.69
18-Jun-07	LB-3	Prionotus sp.	Egg	1,767.16
18-Jun-07	LB-3	Windowpane	Egg	191.04
18-Jun-07	LB-4	Atlantic menhaden	PYS	272.08
18-Jun-07	LB-4	Bay anchovy	Egg	596.82
18-Jun-07	LB-4	Bay anchovy	PYS	127.26
18-Jun-07	LB-4	Labridae	Egg	245.75
18-Jun-07	LB-4	Northern pipefish	PYS	4.39
18-Jun-07	LB-4	Prionotus sp.	Egg	1,088.32
18-Jun-07	LB-4	Prionotus sp.	PYS	21.94
18-Jun-07	LB-4	Tautog	PYS	8.78
18-Jun-07	LB-4	Windowpane	Egg	386.18
18-Jun-07	LB-4	Windowpane	PYS	118.49
18-Jun-07	LB-4	Winter flounder	ST 3	4.39
18-Jun-07	LB-5	Bay anchovy	Egg	1,698.64
18-Jun-07	LB-5	Labridae	Egg	2,434.72
18-Jun-07	LB-5	Northern pipefish	PYS	21.23
18-Jun-07	LB-5	Prionotus sp.	Egg	2,378.09
18-Jun-07	LB-5	Tautog	PYS	7.08
18-Jun-07	LB-5	Windowpane	Egg	113.24
18-Jun-07	LB-6	Bay anchovy	Egg	8,764.67
18-Jun-07	LB-6	Bay anchovy	PYS	20,137.87
18-Jun-07	LB-6	Gobiid unidentified	PYS	208.68
18-Jun-07	LB-6	Labridae	Egg	834.73

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
18-Jun-07	LB-6	Prionotus sp.	Egg	2,086.83
18-Jun-07	LB-6	Weakfish	PYS	104.34
19-Jun-07	NB-3	Bay anchovy	Egg	630.65
19-Jun-07	NB-3	Bay anchovy	PYS	2,141.58
19-Jun-07	NB-3	Gobiid unidentified	PYS	223.36
19-Jun-07	NB-3	Labridae	Egg	735.76
19-Jun-07	NB-3	Northern pipefish	PYS	26.28
19-Jun-07	NB-3	Weakfish	PYS	6.57
19-Jun-07	NB-3	Winter flounder	ST 4	6.57
19-Jun-07	NB-4	Atlantic menhaden	PYS	9.28
19-Jun-07	NB-4	Bay anchovy	Egg	3,266.33
19-Jun-07	NB-4	Bay anchovy	PYS	2,227.04
19-Jun-07	NB-4	Gobiid unidentified	PYS	640.28
19-Jun-07	NB-4	Labridae	Egg	1,113.52
19-Jun-07	NB-4	Northern pipefish	PYS	64.96
19-Jun-07	NB-4	Tautog	PYS	9.28
19-Jun-07	NB-4	Weakfish	PYS	27.84
19-Jun-07	NB-5	Bay anchovy	Egg	2,145.49
19-Jun-07	NB-5	Bay anchovy	PYS	745.89
19-Jun-07	NB-5	Gobiid unidentified	PYS	171.81
19-Jun-07	NB-5	Labridae	Egg	536.37
19-Jun-07	NB-5	Northern pipefish	PYS	62.86
19-Jun-07	NB-5	Weakfish	PYS	16.76
19-Jun-07	NB-5	Winter flounder	ST 3	4.19
19-Jun-07	NB-6	Atlantic menhaden	PYS	30.90
19-Jun-07	NB-6	Bay anchovy	Egg	5,686.45
19-Jun-07	NB-6	Bay anchovy	PYS	5,624.64
19-Jun-07	NB-6	Gobiid unidentified	PYS	370.86
19-Jun-07	NB-6	Labridae	Egg	494.47
19-Jun-07	NB-7	Atlantic menhaden	PYS	48.81
19-Jun-07	NB-7	Bay anchovy	Egg	25,769.38
19-Jun-07	NB-7	Bay anchovy	PYS	13,616.77
19-Jun-07	NB-7	Gobiid unidentified	PYS	4,002.06
19-Jun-07	NB-7	Labridae	Egg	1,171.34
19-Jun-07	NB-7	Northern pipefish	PYS	146.42
19-Jun-07	NB-7	Weakfish	PYS	195.22
19-Jun-07	PJ-2	Bay anchovy	Egg	1,591.51
19-Jun-07	PJ-2	Bay anchovy	PYS	469.72
19-Jun-07	PJ-2	Fourbeard rockling	PYS	5.53
19-Jun-07	PJ-2	Gobiid unidentified	PYS	49.73
19-Jun-07	PJ-2	Labridae	Egg	2,917.77

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
19-Jun-07	PJ-2	Northern pipefish	PYS	27.63
19-Jun-07	PJ-2	Northern puffer	PYS	11.05
19-Jun-07	PJ-2	Prionotus sp.	Egg	176.83
19-Jun-07	PJ-2	Weakfish	PYS	16.58
19-Jun-07	SB-1	Atlantic menhaden	PYS	92.94
19-Jun-07	SB-1	Bay anchovy	Egg	453.06
19-Jun-07	SB-1	Bay anchovy	PYS	1,033.90
19-Jun-07	SB-1	Gobiid unidentified	PYS	34.85
19-Jun-07	SB-1	Labridae	Egg	906.12
19-Jun-07	SB-1	Northern pipefish	PYS	11.62
19-Jun-07	SB-1	Prionotus sp.	Egg	278.81
19-Jun-07	SB-1	Prionotus sp.	PYS	23.23
19-Jun-07	SB-1	Tautog	PYS	34.85
19-Jun-07	SB-1	Weakfish	PYS	11.62
19-Jun-07	SB-1	Windowpane	Egg	232.34
19-Jun-07	SB-2	Atlantic menhaden	PYS	17.14
19-Jun-07	SB-2	Bay anchovy	Egg	51.42
19-Jun-07	SB-2	Bay anchovy	PYS	59.99
19-Jun-07	SB-2	Gobiid unidentified	PYS	8.57
19-Jun-07	SB-2	Labridae	Egg	994.11
19-Jun-07	SB-2	Prionotus sp.	Egg	137.12
19-Jun-07	SB-2	Tautog	PYS	8.57
19-Jun-07	SB-2	Weakfish	PYS	8.57
19-Jun-07	SB-2	Windowpane	PYS	8.57
20-Jun-07	AK-2	Bay anchovy	Egg	2,312.75
20-Jun-07	AK-2	Labridae	Egg	289.09
20-Jun-07	AK-2	Northern pipefish	PYS	27.10
20-Jun-07	AK-2	Prionotus sp.	Egg	289.09
20-Jun-07	AK-2	Prionotus sp.	PYS	6.78
20-Jun-07	AK-2	Unidentified	PYS	6.78
20-Jun-07	AK-2	Weakfish	PYS	6.78
20-Jun-07	AK-3	Atlantic menhaden	PYS	10.26
20-Jun-07	AK-3	Bay anchovy	Egg	8,780.54
20-Jun-07	AK-3	Bay anchovy	PYS	261.57
20-Jun-07	AK-3	Labridae	Egg	1,230.92
20-Jun-07	AK-3	Northern pipefish	PYS	5.13
20-Jun-07	PJ-1	Atlantic menhaden	PYS	50.87
20-Jun-07	PJ-1	Bay anchovy	Egg	2,950.36
20-Jun-07	PJ-1	Bay anchovy	PYS	3,128.40
20-Jun-07	PJ-1	Gobiid unidentified	PYS	76.30
20-Jun-07	PJ-1	Labridae	Egg	1,322.57

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
20-Jun-07	PJ-1	Northern pipefish	PYS	25.43
20-Jun-07	PJ-1	Prionotus sp.	Egg	406.95
20-Jun-07	PJ-1	Tautog	PYS	12.72
20-Jun-07	PJ-3	Bay anchovy	Egg	4,456.03
20-Jun-07	PJ-3	Bay anchovy	PYS	1,466.78
20-Jun-07	PJ-3	Gobiid unidentified	PYS	13.93
20-Jun-07	PJ-3	Labridae	Egg	2,228.01
20-Jun-07	PJ-3	Prionotus sp.	Egg	148.53
20-Jun-07	PJ-3	Windowpane	Egg	1,262.54
20-Jun-07	PJ-4	Atlantic menhaden	PYS	14.77
20-Jun-07	PJ-4	Bay anchovy	Egg	1,595.54
20-Jun-07	PJ-4	Bay anchovy	PYS	1,351.78
20-Jun-07	PJ-4	Gobiid unidentified	PYS	51.71
20-Jun-07	PJ-4	Labridae	Egg	997.21
20-Jun-07	PJ-4	Northern pipefish	PYS	7.39
20-Jun-07	PJ-4	Northern puffer	PYS	7.39
20-Jun-07	PJ-4	Prionotus sp.	Egg	398.89
20-Jun-07	PJ-4	Prionotus sp.	PYS	7.39
20-Jun-07	PJ-4	Weakfish	PYS	14.77
20-Jun-07	PJ-5	Atlantic menhaden	PYS	49.37
20-Jun-07	PJ-5	Bay anchovy	Egg	1,816.74
20-Jun-07	PJ-5	Bay anchovy	PYS	1,885.85
20-Jun-07	PJ-5	Gobiid unidentified	PYS	19.75
20-Jun-07	PJ-5	Labridae	Egg	1,579.77
20-Jun-07	PJ-5	Northern kingfish	PYS	9.87
20-Jun-07	PJ-5	Prionotus sp.	Egg	2,132.69
21-Jun-07	SB-3	Bay anchovy	Egg	178.21
21-Jun-07	SB-3	Bay anchovy	PYS	6.36
21-Jun-07	SB-3	Gobiid unidentified	PYS	57.28
21-Jun-07	SB-3	Labridae	Egg	2,036.72
21-Jun-07	SB-3	Northern pipefish	PYS	19.09
21-Jun-07	SB-3	Prionotus sp.	Egg	1,196.58
21-Jun-07	SB-3	Weakfish	PYS	25.46
21-Jun-07	SB-4	Bay anchovy	Egg	185.70
21-Jun-07	SB-4	Labridae	Egg	3,249.69
21-Jun-07	SB-4	Northern pipefish	PYS	5.80
21-Jun-07	SB-4	Prionotus sp.	Egg	4,735.27
21-Jun-07	SB-4	Windowpane	Egg	649.94
21-Jun-07	SB-4	Winter flounder	ST 4	5.80
21-Jun-07	SB-5	Atlantic menhaden	PYS	14.55
21-Jun-07	SB-5	Bay anchovy	PYS	1,229.74

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
21-Jun-07	SB-5	Gobiid unidentified	PYS	160.08
21-Jun-07	SB-5	Labridae	Egg	2,794.21
21-Jun-07	SB-5	Northern pipefish	PYS	21.83
21-Jun-07	SB-5	Prionotus sp.	Egg	465.70
21-Jun-07	SB-5	Striped bass	PYS	7.28
21-Jun-07	SB-5	Weakfish	PYS	29.11
21-Jun-07	SB-6	Atlantic menhaden	PYS	7.06
21-Jun-07	SB-6	Bay anchovy	Egg	197.77
21-Jun-07	SB-6	Bay anchovy	PYS	42.38
21-Jun-07	SB-6	Gobiid unidentified	PYS	24.72
21-Jun-07	SB-6	Labridae	Egg	1,525.63
21-Jun-07	SB-6	Northern pipefish	PYS	42.38
21-Jun-07	SB-6	Prionotus sp.	Egg	508.54
21-Jun-07	SB-6	Tautog	PYS	3.53
21-Jun-07	SB-6	Weakfish	PYS	7.06
21-Jun-07	SB-6	Windowpane	PYS	3.53
09-Jul-07	LB-1	Atlantic menhaden	PYS	5.72
09-Jul-07	LB-1	Bay anchovy	PYS	5.72
09-Jul-07	LB-1	Cunner	PYS	5.72
09-Jul-07	LB-1	Gobiid unidentified	PYS	97.24
09-Jul-07	LB-1	Northern kingfish	PYS	28.60
09-Jul-07	LB-1	Northern pipefish	PYS	17.16
09-Jul-07	LB-1	Prionotus sp.	Egg	28.60
09-Jul-07	LB-1	Tautog	PYS	51.48
09-Jul-07	LB-1	Windowpane	PYS	17.16
09-Jul-07	LB-2	Bay anchovy	Egg	26.19
09-Jul-07	LB-2	Bay anchovy	PYS	26.19
09-Jul-07	LB-2	Labridae	Egg	52.37
09-Jul-07	LB-2	Prionotus sp.	Egg	196.40
09-Jul-07	LB-2	Windowpane	PYS	78.56
09-Jul-07	LB-3	Bay anchovy	PYS	5.56
09-Jul-07	LB-3	Prionotus sp.	Egg	5.56
09-Jul-07	LB-3	Windowpane	PYS	16.68
09-Jul-07	LB-4	Atlantic menhaden	PYS	8.61
09-Jul-07	LB-4	Bay anchovy	PYS	25.83
09-Jul-07	LB-4	Northern pipefish	PYS	8.61
09-Jul-07	LB-4	Prionotus sp.	Egg	482.21
09-Jul-07	LB-4	Unidentified	PYS	17.22
09-Jul-07	LB-4	Windowpane	PYS	111.94
09-Jul-07	LB-5	Bay anchovy	PYS	6.62
09-Jul-07	LB-5	Gobiid unidentified	PYS	13.24

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
09-Jul-07	LB-5	Prionotus sp.	Egg	158.87
09-Jul-07	LB-5	Windowpane	PYS	6.62
09-Jul-07	LB-6	Atlantic menhaden	PYS	6.78
09-Jul-07	LB-6	Bay anchovy	Egg	54.25
09-Jul-07	LB-6	Bay anchovy	PYS	332.26
09-Jul-07	LB-6	Gobiid unidentified	PYS	183.08
09-Jul-07	LB-6	Labridae	Egg	6.78
09-Jul-07	LB-6	Northern pipefish	PYS	61.03
09-Jul-07	LB-6	Prionotus sp.	Egg	393.29
09-Jul-07	PJ-1	Atlantic menhaden	PYS	39.61
09-Jul-07	PJ-1	Bay anchovy	Egg	198.06
09-Jul-07	PJ-1	Bay anchovy	PYS	59.42
09-Jul-07	PJ-1	Gobiid unidentified	PYS	4,476.18
09-Jul-07	PJ-1	Labridae	Egg	574.38
09-Jul-07	PJ-1	Northern pipefish	PYS	59.42
09-Jul-07	PJ-1	Prionotus sp.	Egg	158.45
09-Jul-07	PJ-1	Windowpane	Egg	39.61
09-Jul-07	PJ-1	Windowpane	PYS	19.81
09-Jul-07	PJ-2	Bay anchovy	Egg	393.74
09-Jul-07	PJ-2	Bay anchovy	PYS	354.37
09-Jul-07	PJ-2	Cunner	PYS	13.12
09-Jul-07	PJ-2	Gobiid unidentified	PYS	5,118.62
09-Jul-07	PJ-2	Labridae	Egg	1,496.21
09-Jul-07	PJ-2	Northern kingfish	PYS	26.25
09-Jul-07	PJ-2	Northern pipefish	PYS	52.50
09-Jul-07	PJ-2	Prionotus sp.	Egg	26.25
09-Jul-07	SB-1	Atlantic menhaden	PYS	64.95
09-Jul-07	SB-1	Bay anchovy	PYS	119.08
09-Jul-07	SB-1	Gobiid unidentified	PYS	433.03
09-Jul-07	SB-1	Labridae	Egg	519.63
09-Jul-07	SB-1	Northern pipefish	PYS	32.48
09-Jul-07	SB-1	Prionotus sp.	Egg	86.61
09-Jul-07	SB-2	Atlantic menhaden	PYS	8.09
09-Jul-07	SB-2	Bay anchovy	Egg	8.09
09-Jul-07	SB-2	Bay anchovy	PYS	113.21
09-Jul-07	SB-2	Gobiid unidentified	PYS	1,285.69
09-Jul-07	SB-2	Labridae	Egg	371.96
09-Jul-07	SB-2	Northern pipefish	PYS	8.09
09-Jul-07	SB-2	Prionotus sp.	Egg	56.60
09-Jul-07	SB-2	Tautog	PYS	16.17
10-Jul-07	AK-2	Bay anchovy	Egg	11,779.46

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
10-Jul-07	AK-2	Bay anchovy	PYS	226.53
10-Jul-07	AK-2	Gobiid unidentified	PYS	3,964.24
10-Jul-07	AK-2	Labridae	Egg	226.53
10-Jul-07	AK-2	Northern pipefish	PYS	75.51
10-Jul-07	AK-2	Tautog	PYS	18.88
10-Jul-07	AK-3	Bay anchovy	Egg	1,614.51
10-Jul-07	AK-3	Bay anchovy	PYS	315.33
10-Jul-07	AK-3	Gobiid unidentified	PYS	1,072.13
10-Jul-07	AK-3	Labridae	Egg	353.17
10-Jul-07	AK-3	Northern pipefish	PYS	37.84
10-Jul-07	AK-3	Weakfish	PYS	6.31
10-Jul-07	NB-3	Atlantic menhaden	PYS	10.03
10-Jul-07	NB-3	Bay anchovy	Egg	481.33
10-Jul-07	NB-3	Bay anchovy	PYS	1,664.61
10-Jul-07	NB-3	Gobiid unidentified	PYS	1,022.84
10-Jul-07	NB-3	Northern pipefish	PYS	10.03
10-Jul-07	NB-4	Bay anchovy	Egg	377.26
10-Jul-07	NB-4	Bay anchovy	PYS	2,074.93
10-Jul-07	NB-4	Gobiid unidentified	PYS	1,285.04
10-Jul-07	NB-4	Northern pipefish	PYS	11.79
10-Jul-07	NB-5	Bay anchovy	Egg	225.79
10-Jul-07	NB-5	Bay anchovy	PYS	1,856.50
10-Jul-07	NB-5	Gobiid unidentified	PYS	87.81
10-Jul-07	NB-5	Labridae	Egg	50.18
10-Jul-07	NB-5	Northern pipefish	PYS	12.54
10-Jul-07	NB-5	Tautog	PYS	6.27
10-Jul-07	NB-5	Weakfish	JUV	43.90
10-Jul-07	NB-5	Weakfish	PYS	100.35
10-Jul-07	NB-6	Atlantic menhaden	PYS	5.86
10-Jul-07	NB-6	Bay anchovy	Egg	421.77
10-Jul-07	NB-6	Bay anchovy	PYS	2,120.56
10-Jul-07	NB-6	Gobiid unidentified	PYS	181.60
10-Jul-07	NB-6	Labridae	Egg	164.02
10-Jul-07	NB-6	Northern kingfish	PYS	11.72
10-Jul-07	NB-6	Weakfish	PYS	5.86
10-Jul-07	NB-7	Bay anchovy	Egg	884.79
10-Jul-07	NB-7	Bay anchovy	PYS	1,625.81
10-Jul-07	NB-7	Feather blenny	PYS	11.06
10-Jul-07	NB-7	Gobiid unidentified	PYS	1,017.51
10-Jul-07	NB-7	Northern pipefish	PYS	22.12
10-Jul-07	PJ-3	Atlantic menhaden	PYS	27.09

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
10-Jul-07	PJ-3	Bay anchovy	Egg	1,859.92
10-Jul-07	PJ-3	Bay anchovy	PYS	352.12
10-Jul-07	PJ-3	Feather blenny	PYS	9.03
10-Jul-07	PJ-3	Gobiid unidentified	PYS	713.27
10-Jul-07	PJ-3	Labridae	Egg	90.29
10-Jul-07	PJ-3	Northern pipefish	PYS	36.11
10-Jul-07	PJ-3	Tautog	PYS	18.06
10-Jul-07	PJ-4	Bay anchovy	Egg	94.29
10-Jul-07	PJ-4	Bay anchovy	PYS	700.41
10-Jul-07	PJ-4	Gobiid unidentified	PYS	1,050.61
10-Jul-07	PJ-4	Labridae	Egg	956.32
10-Jul-07	PJ-4	Northern pipefish	PYS	17.96
10-Jul-07	PJ-4	Prionotus sp.	Egg	444.49
10-Jul-07	PJ-4	Weakfish	PYS	8.98
10-Jul-07	SB-6	Atlantic menhaden	PYS	19.54
10-Jul-07	SB-6	Bay anchovy	Egg	7.82
10-Jul-07	SB-6	Bay anchovy	PYS	74.26
10-Jul-07	SB-6	Gobiid unidentified	PYS	2,317.80
10-Jul-07	SB-6	Labridae	Egg	168.07
10-Jul-07	SB-6	Northern pipefish	PYS	62.54
10-Jul-07	SB-6	Prionotus sp.	Egg	15.63
10-Jul-07	SB-6	Prionotus sp.	JUV	3.91
11-Jul-07	PJ-5	Bay anchovy	Egg	37.75
11-Jul-07	PJ-5	Bay anchovy	PYS	94.38
11-Jul-07	PJ-5	Gobiid unidentified	PYS	654.35
11-Jul-07	PJ-5	Labridae	Egg	100.67
11-Jul-07	PJ-5	Northern pipefish	PYS	6.29
11-Jul-07	PJ-5	Prionotus sp.	Egg	125.84
11-Jul-07	PJ-5	Weakfish	PYS	6.29
11-Jul-07	PJ-5	Windowpane	PYS	6.29
11-Jul-07	SB-3	Atlantic menhaden	PYS	5.94
11-Jul-07	SB-3	Bay anchovy	Egg	17.81
11-Jul-07	SB-3	Bay anchovy	PYS	29.69
11-Jul-07	SB-3	Gobiid unidentified	Egg	5.94
11-Jul-07	SB-3	Gobiid unidentified	PYS	2,713.60
11-Jul-07	SB-3	Labridae	Egg	142.51
11-Jul-07	SB-3	Northern pipefish	PYS	41.56
11-Jul-07	SB-3	Prionotus sp.	Egg	29.69
11-Jul-07	SB-4	Atlantic menhaden	PYS	14.14
11-Jul-07	SB-4	Bay anchovy	Egg	28.28
11-Jul-07	SB-4	Bay anchovy	PYS	47.13

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities (Number per 1000 m^3) by date and station collected during the 2007 Aquatic Biological Survey (ST-1 to 4 are winter flounder larval life stages 1-4, UID is unidentified larvae).

Date	Station	Common Name	LifeStage	Density
11-Jul-07	SB-4	Butterfish	PYS	4.71
11-Jul-07	SB-4	Gobiid unidentified	PYS	2,837.09
11-Jul-07	SB-4	Labridae	Egg	155.52
11-Jul-07	SB-4	Northern pipefish	PYS	37.70
11-Jul-07	SB-4	Prionotus sp.	Egg	65.98
11-Jul-07	SB-4	Prionotus sp.	PYS	4.71
11-Jul-07	SB-4	Tautog	PYS	14.14
11-Jul-07	SB-5	Bay anchovy	Egg	18.12
11-Jul-07	SB-5	Bay anchovy	PYS	169.08
11-Jul-07	SB-5	Butterfish	PYS	6.04
11-Jul-07	SB-5	Gobiid unidentified	PYS	2,288.59
11-Jul-07	SB-5	Labridae	Egg	199.27
11-Jul-07	SB-5	Northern pipefish	PYS	36.23
11-Jul-07	SB-5	Prionotus sp.	Egg	108.69
11-Jul-07	SB-5	Tautog	PYS	12.08

Appendix C

Water quality data by date and station collected during the 2007 Aquatic Biological Survey.

Appendix C. Water quality data by date and station collected during the 2007 Aquatic Biological Survey. The following parameters were collected: Bottom water temperature (^{o}C), bottom water dissolved oxygen (DO, mg/L), bottom water conductivity (SPC@25^{o}C), bottom water salinity (ppt), and water depth (feet).

Date	Station	Temp.	DO	Cond.	Salinity	Depth	Gear
29-Jan-07	PJ-1	4.9	9.3	35870	22.3	9	Epibenthic Sled
29-Jan-07	PJ-4	6.1	9.1	41500		40	Epibenthic Sled
29-Jan-07	PJ-5	6.4	8.8	44750	28.4	41	Epibenthic Sled
29-Jan-07	SB-1	4.6	9.8	33820	20.8	19	Epibenthic Sled
29-Jan-07	SB-3	4.6	10.3	32200	19.7	15	Epibenthic Sled
29-Jan-07	SB-4	5.9	9.5	34200	25	39	Epibenthic Sled
29-Jan-07	SB-5	6.1	8.9	41490	25	47	Epibenthic Sled
30-Jan-07	LB-1	5.9	9.9	41770	26.5	14	Epibenthic Sled
30-Jan-07	LB-2	6.8	9.5	46240	28.3	49	Epibenthic Sled
30-Jan-07	LB-3	6.4	9.7	40240	25.5	14	Epibenthic Sled
30-Jan-07	LB-4	6.7	9.7	46200	28.6	31	Epibenthic Sled
30-Jan-07	LB-5	2.2	12	38360	23.7	16	Epibenthic Sled
30-Jan-07	LB-6	4.9	10.6	39600	26.8	40	Epibenthic Sled
31-Jan-07	NB-3	3.4	10.8	29120	17.6	6	Epibenthic Sled
31-Jan-07	NB-4	3.4	10.8	29120	17.6	6	Epibenthic Sled
31-Jan-07	NB-5	4.5	10.7	32140	20.4	47	Epibenthic Sled
31-Jan-07	NB-6	4.5	10.7	32140	20.4	47	Epibenthic Sled
31-Jan-07	NB-7	4.6	10.6	32910	20.4	7	Epibenthic Sled
01-Feb-07	AK-2	4.3	10.9	33940	20.9	45	Epibenthic Sled
01-Feb-07	AK-3	4.3	10.9	32710	20	44	Epibenthic Sled
01-Feb-07	AK-4						Epibenthic Sled
01-Feb-07	PJ-2	5.1	10.5	35260	21.8	9	Epibenthic Sled
01-Feb-07	PJ-3	4.8	10.4	34630	22	7	Epibenthic Sled
01-Feb-07	SB-2						Epibenthic Sled
01-Feb-07	SB-6	5.7	10.2	38290	23.6	44	Epibenthic Sled
12-Feb-07	LB-1	3.5	9.7	47120	29.9	16	Epibenthic Sled
12-Feb-07	LB-2	4.4	9.1	47160	29.7	45	Epibenthic Sled
12-Feb-07	LB-3	1.5	11.8	43360	27	13	Epibenthic Sled
12-Feb-07	LB-4	2.5	10.3	45600	29.4	34	Epibenthic Sled
12-Feb-07	LB-5	2.4	10.3	46010	28.8	14	Epibenthic Sled
12-Feb-07	LB-6	2.8	9.9	47240	29.7	39	Epibenthic Sled
13-Feb-07	NB-3	1.7	11.9	33790	20.5	5	Epibenthic Sled
13-Feb-07	NB-4	1.7	11.9	33790	20.5	5	Epibenthic Sled
13-Feb-07	NB-5	2.9	10.9	40680	26.7	44	Epibenthic Sled
13-Feb-07	NB-6	2.6	11	39680	24.5	46	Epibenthic Sled
13-Feb-07	NB-7	2.3	12	35870	22	5	Epibenthic Sled
13-Feb-07	PJ-2	2.1	11.7	32140	19.5	7	Epibenthic Sled
15-Feb-07	AK-2	1.3	10.5	38131	23.4	41	Epibenthic Sled
15-Feb-07	AK-3	1.5	10.2	37957	23.2	41	Epibenthic Sled
15-Feb-07	PJ-1	1.5	10.6	35598	21.7	7	Epibenthic Sled
15-Feb-07	PJ-3	1.3	11.7	34810	21.2	6	Epibenthic Sled
15-Feb-07	PJ-4	2.5	10.1	41530	25.3	39	Epibenthic Sled
15-Feb-07	PJ-5	2.2	10.4	40750	26.4	46	Epibenthic Sled

Appendix C. Water quality data by date and station collected during the 2007 Aquatic Biological Survey. The following parameters were collected: Bottom water temperature (^{o}C), bottom water dissolved oxygen (DO, mg/L), bottom water conductivity (SPC@25^{o}C), bottom water salinity (ppt), and water depth (feet).

Date	Station	Temp.	DO	Cond.	Salinity	Depth	Gear
16-Feb-07	SB-1	1.4	11.5	40001	22.8	19	Epibenthic Sled
16-Feb-07	SB-2						Epibenthic Sled
16-Feb-07	SB-3	1.1	11.6	40735	24	11	Epibenthic Sled
16-Feb-07	SB-4	2	10.8	43280	26.9	39	Epibenthic Sled
16-Feb-07	SB-5	1.9	10.9	42198	26.3	44	Epibenthic Sled
16-Feb-07	SB-6	1.4	11.3	40529	25	39	Epibenthic Sled
27-Feb-07	LB-1	3.7	10.3	47270	29.9	14	Epibenthic Sled
27-Feb-07	LB-2	3.9	10.4	47120	31.1	49	Epibenthic Sled
27-Feb-07	LB-3	3.6	10.5	39080	24.3	13	Epibenthic Sled
27-Feb-07	LB-4	4	10.3	48510	30.8	34	Epibenthic Sled
27-Feb-07	LB-5	2.2	11.7	42450	26.4	17	Epibenthic Sled
27-Feb-07	LB-6	2.1	11.8	44170	27.6	41	Epibenthic Sled
27-Feb-07	SB-1	3.1	10.5	44050	27.6	21	Epibenthic Sled
27-Feb-07	SB-2	2.8	10.1	43190	26.8	28	Epibenthic Sled
28-Feb-07	NB-3	2.9	11.4	33600	20.3	6	Epibenthic Sled
28-Feb-07	NB-4	2.9	11.4	33600	20.3	6	Epibenthic Sled
28-Feb-07	NB-5	2.5	11.5	37470	23.2	48	Epibenthic Sled
28-Feb-07	NB-6	2.5	11.5	37470	23.2	48	Epibenthic Sled
28-Feb-07	NB-7	2.6	11.5	36770	22.7	6	Epibenthic Sled
28-Feb-07	PJ-4	3.6	10.6	45600	28.8	42	Epibenthic Sled
28-Feb-07	PJ-5	3.5	11.2	41590	27.3	43	Epibenthic Sled
01-Mar-07	PJ-1	2.8	10.9	36530	22.4	7	Epibenthic Sled
01-Mar-07	PJ-2	3.5	10.7	39960	24	4	Epibenthic Sled
01-Mar-07	PJ-3	3.1	10.6	40020	24.9	3	Epibenthic Sled
01-Mar-07	SB-3	3.2	10.6	39570	25.1	10	Epibenthic Sled
01-Mar-07	SB-4	3.1	10.7	40660	25.3	32	Epibenthic Sled
01-Mar-07	SB-5	3.1	10.7	41320	25.4	48	Epibenthic Sled
01-Mar-07	SB-6	3.3	10.8	42110	27.2	42	Epibenthic Sled
02-Mar-07	AK-2	3.8	12.5	36430	22.7	47	Epibenthic Sled
02-Mar-07	AK-3	4.4	12	35010	21.6	46	Epibenthic Sled
12-Mar-07	LB-1	4.5	12.7	45990	29.2	14	Epibenthic Sled
12-Mar-07	LB-2	4.8	11.1	48570	30.6	49	Epibenthic Sled
12-Mar-07	LB-3	3.5	13.5	38900	24.2	13	Epibenthic Sled
12-Mar-07	LB-4	4.4	10.2	47680	30.3	34	Epibenthic Sled
12-Mar-07	LB-5	3.2	12	42250	26.5	15	Epibenthic Sled
12-Mar-07	LB-6	3.9	10.9	47000	29.2	39	Epibenthic Sled
12-Mar-07	SB-1	3.5	11.8	39100	24.3	19	Epibenthic Sled
12-Mar-07	SB-2	3.6	11.4	42860	26.8	26	Epibenthic Sled
13-Mar-07	NB-3	3.9	11.7	24170	14.4	5	Epibenthic Sled
13-Mar-07	NB-4	3.9	11.7	24170	14.4	5	Epibenthic Sled
13-Mar-07	NB-5	3.8	11.1	40940	25.3	45	Epibenthic Sled
13-Mar-07	NB-6	3.8	11.1	40940	25.3	48	Epibenthic Sled
13-Mar-07	NB-7	4.1	12	29840	18	5	Epibenthic Sled

Appendix C. Water quality data by date and station collected during the 2007 Aquatic Biological Survey. The following parameters were collected: Bottom water temperature (^{o}C), bottom water dissolved oxygen (DO, mg/L), bottom water conductivity (SPC@25^{o}C), bottom water salinity (ppt), and water depth (feet).

Date	Station	Temp.	DO	Cond.	Salinity	Depth	Gear
13-Mar-07	PJ-1	3.6	12	33130	20.3	13	Epibenthic Sled
13-Mar-07	PJ-2	3.4	11.9	31480	19.1	7	Epibenthic Sled
13-Mar-07	PJ-3	4	12	30660	18.6	7	Epibenthic Sled
14-Mar-07	PJ-4	4	11.3	42610	26.6	43	Epibenthic Sled
14-Mar-07	PJ-5	4.6	11.1	42810	28.6	43	Epibenthic Sled
14-Mar-07	SB-3	4.1	12.2	37440	23.2	16	Epibenthic Sled
14-Mar-07	SB-4	4.6	11.1	45550	28.8	39	Epibenthic Sled
14-Mar-07	SB-6	4.9	12.5	44800	28.2	46	Epibenthic Sled
15-Mar-07	AK-2	5	11.6	34560	21.4	43	Epibenthic Sled
15-Mar-07	AK-3	4.6	11.4	38670	24	46	Epibenthic Sled
15-Mar-07	SB-5	4.7	12	38230	23.6	46	Epibenthic Sled
26-Mar-07	LB-1	5.8	10.8	40000	24.9	16	Epibenthic Sled
26-Mar-07	LB-2	5.1	10.1	49250	31.5	49	Epibenthic Sled
26-Mar-07	LB-3	5.1	9.9	41000	25.2	11	Epibenthic Sled
26-Mar-07	LB-4	5.1	10.4	36900	22.8	34	Epibenthic Sled
26-Mar-07	LB-5	5.3	12.6	36090	22.4	14	Epibenthic Sled
26-Mar-07	LB-6	5.2	10.8	41200	26	39	Epibenthic Sled
27-Mar-07	PJ-1	4.9	11.6	19950	11.9	9	Epibenthic Sled
27-Mar-07	PJ-2	4.7	12.3	11900	6.7	8	Epibenthic Sled
27-Mar-07	PJ-5	5.7	10.4	41970	23.9	42	Epibenthic Sled
27-Mar-07	SB-1	5.3	10.5	34850	21.6	19	Epibenthic Sled
27-Mar-07	SB-2	5.6	10.2	40240	25.3	26	Epibenthic Sled
27-Mar-07	SB-3	5.3	10.7	31460	19.8	15	Epibenthic Sled
27-Mar-07	SB-4	5.6	10.5	39230	23.6	39	Epibenthic Sled
27-Mar-07	SB-5	5.3	10.4	43720	27.6	50	Epibenthic Sled
28-Mar-07	NB-3	7.6	12.1	19700	12.1	5	Epibenthic Sled
28-Mar-07	NB-4	7.6	12.1	19700	12.1	5	Epibenthic Sled
28-Mar-07	NB-5	5.8	11.3	27100	15.8	47	Epibenthic Sled
28-Mar-07	NB-6	5.8	11.3	27100	15.8	47	Epibenthic Sled
28-Mar-07	NB-7	7.2	12.1	21450	13	6	Epibenthic Sled
28-Mar-07	PJ-4	5.3	10.6	43000	27.1	46	Epibenthic Sled
28-Mar-07	SB-6	5.1	11.9	27970	22	47	Epibenthic Sled
29-Mar-07	AK-2	5.8	10.6	33500	20.4	43	Epibenthic Sled
29-Mar-07	AK-3	5.6	10.1	33990	21	39	Epibenthic Sled
29-Mar-07	PJ-3	5.4	11.2	24500	15.7	6	Epibenthic Sled
09-Apr-07	LB-1	5.4	9.8	44550	28.3	16	Epibenthic Sled
09-Apr-07	LB-2	5.2	9.8	46300	29.3	45	Epibenthic Sled
09-Apr-07	LB-3	5.9	12.2	35320	20.3	12	Epibenthic Sled
09-Apr-07	LB-4	5.3	9.2	46710	29.7	34	Epibenthic Sled
09-Apr-07	LB-5	5.4	10	41170	25.9	15	Epibenthic Sled
09-Apr-07	LB-6	5.3	9.8	44160	27.1	41	Epibenthic Sled
09-Apr-07	PJ-1	5.4	11	23150	13.7	11	Epibenthic Sled
09-Apr-07	PJ-2	6	11.2	18540	10.7	6	Epibenthic Sled

Appendix C. Water quality data by date and station collected during the 2007 Aquatic Biological Survey. The following parameters were collected: Bottom water temperature (^{o}C), bottom water dissolved oxygen (DO, mg/L), bottom water conductivity (SPC@25^{o}C), bottom water salinity (ppt), and water depth (feet).

Date	Station	Temp.	DO	Cond.	Salinity	Depth	Gear
09-Apr-07	PJ-3	5.9	11.3	20370	12	8	Epibenthic Sled
10-Apr-07	AK-2	5.6	9.7	41230	26	44	Epibenthic Sled
10-Apr-07	AK-3	6.1	10.4	35000	21.6	43	Epibenthic Sled
10-Apr-07	NB-3	6.6	12.9	24750	14.9	7	Epibenthic Sled
10-Apr-07	NB-4	6.6	12.9	24750	14.9	6	Epibenthic Sled
10-Apr-07	NB-5	5.6	9.3	40520	25.5	47	Epibenthic Sled
10-Apr-07	NB-6	5.6	9.3	40520	25.5	47	Epibenthic Sled
10-Apr-07	NB-7	6.6	12.5	22430	13.6	6	Epibenthic Sled
10-Apr-07	SB-3	5.4	9.9	34600	25.3	14	Epibenthic Sled
10-Apr-07	SB-5	5.3	9.9	42720	26.9	48	Epibenthic Sled
11-Apr-07	PJ-4	5.7	10.1	45610	29	38	Epibenthic Sled
11-Apr-07	PJ-5	5.6	11.5	46190	29.4	44	Epibenthic Sled
11-Apr-07	SB-1	5.7	10.2	41990	26.3	17	Epibenthic Sled
11-Apr-07	SB-2	5.5	9.3	46870	29.9	21	Epibenthic Sled
11-Apr-07	SB-4	5.5	10.1	42380	26.6	33	Epibenthic Sled
11-Apr-07	SB-6	5.5	10.6	44270	27.1	42	Epibenthic Sled
23-Apr-07	LB-1	8.2	10	42300	27.3	14	Epibenthic Sled
23-Apr-07	LB-2	6.6	9.5	46900	29.9	47	Epibenthic Sled
23-Apr-07	LB-3	7.6	10.8	28700	17.5	12	Epibenthic Sled
23-Apr-07	LB-4	7.2	9.1	39100	26.7	33	Epibenthic Sled
23-Apr-07	LB-5	7.8	10.4	25100	15.4	14	Epibenthic Sled
23-Apr-07	LB-6	6.9	9.3	42200	26.7	40	Epibenthic Sled
24-Apr-07	NB-3	13.1	10.7	7330	4.1	11	Epibenthic Sled
24-Apr-07	NB-4	13.1	10.7	7330	4.1	10	Epibenthic Sled
24-Apr-07	NB-5	7.7	9.6	33430	20.9	45	Epibenthic Sled
24-Apr-07	NB-6	7.7	9.6	33430	20.9	50	Epibenthic Sled
24-Apr-07	NB-7	11.3	10.8	13900	7.6	10	Epibenthic Sled
24-Apr-07	SB-1	7.7	10.2	32690	20.2	21	Epibenthic Sled
24-Apr-07	SB-2	7.7	9.8	31120	19.4	27	Epibenthic Sled
24-Apr-07	SB-3	7.9	11.1	28110	16.5	15	Epibenthic Sled
24-Apr-07	SB-4	7.5	9.9	38150	23.8	37	Epibenthic Sled
25-Apr-07	PJ-1	8.7	9.2	14190	8.8	13	Epibenthic Sled
25-Apr-07	PJ-2	8.5	9.1	14190	9.6	10	Epibenthic Sled
25-Apr-07	PJ-3	9	9.1	15560	9.1	10	Epibenthic Sled
25-Apr-07	PJ-4	7.1	7.7	42920	27.3	45	Epibenthic Sled
25-Apr-07	PJ-5	7.2	8	42180	26.8	46	Epibenthic Sled
25-Apr-07	SB-5	7.7	8.5	27170	21.1	45	Epibenthic Sled
25-Apr-07	SB-6	7	8.5	34150	27.6	46	Epibenthic Sled
26-Apr-07	AK-2	8.3	8.8	34300	21.3	40	Epibenthic Sled
26-Apr-07	AK-3	7.9	8.9	35300	22.2	41	Epibenthic Sled
07-May-07	PJ-1	10.2	8.6	33100	20.7	14	Epibenthic Sled
07-May-07	PJ-2	11.4	8.9	25350	15.5	7	Epibenthic Sled
07-May-07	PJ-3	11.5	8.6	25690	15.8	9	Epibenthic Sled

Appendix C. Water quality data by date and station collected during the 2007 Aquatic Biological Survey. The following parameters were collected: Bottom water temperature (^{o}C), bottom water dissolved oxygen (DO, mg/L), bottom water conductivity (SPC@25^{o}C), bottom water salinity (ppt), and water depth (feet).

Date	Station	Temp.	DO	Cond.	Salinity	Depth	Gear
07-May-07	SB-1	10	8.5	34820	21.9	22	Epibenthic Sled
07-May-07	SB-2	10.3	8.6	32500	20.2	27	Epibenthic Sled
07-May-07	SB-3	10.6	8.8	31920	19.8	14	Epibenthic Sled
07-May-07	SB-4	9.8	8.6	37940	24	39	Epibenthic Sled
07-May-07	SB-5	10	9	35440	23.6	49	Epibenthic Sled
08-May-07	AK-2	11.2	8.1	30750	19	44	Epibenthic Sled
08-May-07	AK-3	11.2	7.5	30910	19	39	Epibenthic Sled
08-May-07	NB-3	12.7	7.8	23370	14.2	8	Epibenthic Sled
08-May-07	NB-4	12.7	7.8	23370	14.2	8	Epibenthic Sled
08-May-07	NB-5	10.9	8	32330	20.1	49	Epibenthic Sled
08-May-07	NB-6	10.9	8	32330	20.1	49	Epibenthic Sled
08-May-07	NB-7	12.5	8.8	26000	16	6	Epibenthic Sled
08-May-07	PJ-4	10	8.3	39230	24.9	39	Epibenthic Sled
08-May-07	PJ-5	10.6	9	36240	22.3	44	Epibenthic Sled
09-May-07	LB-1	11.6	9.5	39330	25	13	Epibenthic Sled
09-May-07	LB-1	10.3	9.4	41080	28.1	46	Epibenthic Sled
09-May-07	LB-3	11.8	10.2	32760	20.7	11	Epibenthic Sled
09-May-07	LB-4	11.2	10.1	35810	22.3	30	Epibenthic Sled
09-May-07	LB-5	11.2	9.7	35660	22.3	13	Epibenthic Sled
09-May-07	LB-6	10.1	9.9	42030	26.8	38	Epibenthic Sled
09-May-07	SB-6	10.8	9.3	33750	25.7	42	Epibenthic Sled
21-May-07	PJ-1	14.6	6.7	30830	19.2	14	Epibenthic Sled
21-May-07	PJ-2	15	6.7	29970	18.6	8	Epibenthic Sled
21-May-07	PJ-3	15.1	6.8	28220	17.4	1	Epibenthic Sled
21-May-07	SB-1	14.2	6.2	32500	20.3	19	Epibenthic Sled
21-May-07	SB-2	13.8	6.2	37370	23.7	28	Epibenthic Sled
21-May-07	SB-3	14.7	6.7	29170	18.4	15	Epibenthic Sled
21-May-07	SB-4	13.7	6.3	36640	23.7	36	Epibenthic Sled
21-May-07	SB-5	13.9	6.6	35690	23.1	47	Epibenthic Sled
22-May-07	LB-1	14.2	9.2	43270	27.9	16	Epibenthic Sled
22-May-07	LB-2	10.7	7.6	45650	29.5	49	Epibenthic Sled
22-May-07	LB-3	14.8	8.1	37870	24.1	15	Epibenthic Sled
22-May-07	LB-4	13.4	7.2	39690	25.4	36	Epibenthic Sled
22-May-07	LB-5	14.3	7.9	37380	23.7	16	Epibenthic Sled
22-May-07	LB-6	13.7	7.7	40540	25.9	43	Epibenthic Sled
23-May-07	NB-3	17.3	6.3	27680	17.1	5	Epibenthic Sled
23-May-07	NB-4	7.3	6.3	27680	17.1	5	Epibenthic Sled
23-May-07	NB-5	16	6.5	30900	19.3	47	Epibenthic Sled
23-May-07	NB-6	16	6.5	30900	19.3	47	Epibenthic Sled
23-May-07	NB-7	17.9	7	28080	16.9	4	Epibenthic Sled
23-May-07	PJ-4	13.6	6.8	36430	24.2	39	Epibenthic Sled
23-May-07	PJ-5	13.3	6.8	39040	23.9	38	Epibenthic Sled
24-May-07	AK-2	15	6.1	33210	20.8	42	Epibenthic Sled

Appendix C. Water quality data by date and station collected during the 2007 Aquatic Biological Survey. The following parameters were collected: Bottom water temperature (^{o}C), bottom water dissolved oxygen (DO, mg/L), bottom water conductivity (SPC@25^{o}C), bottom water salinity (ppt), and water depth (feet).

Date	Station	Temp.	DO	Cond.	Salinity	Depth	Gear
24-May-07	AK-3	15.7	6.1	30800	19.1	42	Epibenthic Sled
24-May-07	SB-6	14.2	6.8	38280	24.3	42	Epibenthic Sled
05-Jun-07	AK-2	18.6	6.8	32880	20.5	45	Epibenthic Sled
05-Jun-07	AK-3	18.8	6.6	32260	20.2	42	Epibenthic Sled
05-Jun-07	NB-3	19.4	6.5	30200	18.6	9	Epibenthic Sled
05-Jun-07	NB-4	19.4	6.5	30200	18.6	9	Epibenthic Sled
05-Jun-07	NB-5	18.8	6.4	32300	20.2	44	Epibenthic Sled
05-Jun-07	NB-6	18.8	6.4	32300	20.2	44	Epibenthic Sled
05-Jun-07	NB-7	19.8	6.7	29270	18.1	7	Epibenthic Sled
05-Jun-07	PJ-1	17.3	6.8	35100	22.6	12	Epibenthic Sled
05-Jun-07	PJ-3	18.5	7.7	31850	20	10	Epibenthic Sled
05-Jun-07	SB-5	16.6	6.6	39120	24.9	49	Epibenthic Sled
06-Jun-07	LB-1	18.1	6.1	42350	27.3	14	Epibenthic Sled
06-Jun-07	LB-2	17.3	6.7	41690	26.8	47	Epibenthic Sled
06-Jun-07	LB-3	17.2	6.6	39200	25	11	Epibenthic Sled
06-Jun-07	LB-4	17.3	6.4	40470	25.9	33	Epibenthic Sled
06-Jun-07	LB-5	17.7	6.7	38940	24.8	14	Epibenthic Sled
06-Jun-07	LB-6	16.7	6.3	41520	26.7	39	Epibenthic Sled
06-Jun-07	PJ-2	18	6.7	31900	19.9	7	Epibenthic Sled
06-Jun-07	SB-6	17.5	6.3	38330	24.4	46	Epibenthic Sled
07-Jun-07	PJ-4	17.2	6.1	37720	24.4	41	Epibenthic Sled
07-Jun-07	PJ-5	17.2	6	37080	23.5	43	Epibenthic Sled
07-Jun-07	SB-1	17.7	6.2	33440	21	18	Epibenthic Sled
07-Jun-07	SB-2	17.3	5.2	37890	24.8	26	Epibenthic Sled
07-Jun-07	SB-3	17.8	5.7	33710	21.2	15	Epibenthic Sled
07-Jun-07	SB-4	17.4	5.8	36640	23.2	35	Epibenthic Sled
18-Jun-07	LB-1	19.8	6.3	43380	27.8	14	Epibenthic Sled
18-Jun-07	LB-2	17.4	7	44480	28.7	48	Epibenthic Sled
18-Jun-07	LB-3	19.4	6.1	40980	26.3	17	Epibenthic Sled
18-Jun-07	LB-4	18.9	6.2	41920	27	35	Epibenthic Sled
18-Jun-07	LB-5	19.4	6.1	40980	26.3	17	Epibenthic Sled
18-Jun-07	LB-6	19.4	6.7	40370	25.9	44	Epibenthic Sled
19-Jun-07	NB-3	21.5	5.3	32140	20.1	8	Epibenthic Sled
19-Jun-07	NB-4	21.5	5.3	32140	20.1	9	Epibenthic Sled
19-Jun-07	NB-5	21.1	5.1	33180	20.9	47	Epibenthic Sled
19-Jun-07	NB-6	21.1	5.1	33180	20.9	47	Epibenthic Sled
19-Jun-07	NB-7	21.9	5.5	32230	20	7	Epibenthic Sled
19-Jun-07	PJ-2	21	5.2	34900	22.2	8	Epibenthic Sled
19-Jun-07	SB-1	20	5	35760	22.7	18	Epibenthic Sled
19-Jun-07	SB-2	19.7	4.9	39270	25	25	Epibenthic Sled
20-Jun-07	AK-2	21.2	4.8	33610	21.2	41	Epibenthic Sled
20-Jun-07	AK-3	21.6	4.8	33040	20.7	45	Epibenthic Sled
20-Jun-07	PJ-1	20.7	5.1	33530	21.1	5	Epibenthic Sled

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Date	Station	Temp.	DO	Cond.	Salinity	Depth	Gear
20-Jun-07	PJ-3	21	5	34580	21.9	4	Epibenthic Sled
20-Jun-07	PJ-4	19.7	5.2	39220	25	42	Epibenthic Sled
20-Jun-07	PJ-5	19.9	4.9	38590	24.6	43	Epibenthic Sled
21-Jun-07	SB-3	20.5	4.8	34910	22	12	Epibenthic Sled
21-Jun-07	SB-4	20.1	5.1	38250	23.8	32	Epibenthic Sled
21-Jun-07	SB-5	19.8	5.6	39410	25.2	47	Epibenthic Sled
21-Jun-07	SB-6	18.7	6.2	41700	26.9	45	Epibenthic Sled
09-Jul-07	LB-1	18.7	4.9	42510	27.5	13	Epibenthic Sled
09-Jul-07	LB-2	17.2	4.9	43990	28.6	47	Epibenthic Sled
09-Jul-07	LB-3	18.5	5.5	42680	27.5	11	Epibenthic Sled
09-Jul-07	LB-4	17.4	4.4	43860	27.6	32	Epibenthic Sled
09-Jul-07	LB-5	19.4	4.4	41270	26.5	15	Epibenthic Sled
09-Jul-07	LB-6	18.7	4.7	42420	27.1	38	Epibenthic Sled
09-Jul-07	PJ-1	20.5	5	40570	26	15	Epibenthic Sled
09-Jul-07	PJ-2	21.1	4.9	35130	23.7	7	Epibenthic Sled
09-Jul-07	SB-1	20.3	4.8	40890	26.3	20	Epibenthic Sled
09-Jul-07	SB-2	19.1	3.7	42800	27.5	25	Epibenthic Sled
10-Jul-07	AK-2	21.5	5.6	38280	24.5	41	Epibenthic Sled
10-Jul-07	AK-3	21.4	5.4	38840	24.7	34	Epibenthic Sled
10-Jul-07	NB-3	23	5.1	34300	21.6	4	Epibenthic Sled
10-Jul-07	NB-4	23	5.1	34300	21.6	4	Epibenthic Sled
10-Jul-07	NB-5	21.6	5.5	38370	24.4	45	Epibenthic Sled
10-Jul-07	NB-6	21.6	5.5	38370	24.4	47	Epibenthic Sled
10-Jul-07	NB-7	21.9	5.6	37000	23.2	6	Epibenthic Sled
10-Jul-07	PJ-3	21.5	6.4	38630	24.7	6	Epibenthic Sled
10-Jul-07	PJ-4	18.6	5.5	44300	28.7	45	Epibenthic Sled
10-Jul-07	SB-6	19.2	5.5	43740	28.3	47	Epibenthic Sled
11-Jul-07	PJ-5	18.7	5.7	44220	29.4	44	Epibenthic Sled
11-Jul-07	SB-3	20.1	4.7	41820	26.9	15	Epibenthic Sled
11-Jul-07	SB-4	19.5	5	43350	27.9	36	Epibenthic Sled
11-Jul-07	SB-5	19.4	5.2	43260	28.2	49	Epibenthic Sled