

NEW YORK AND NEW JERSEY HARBOR DEEPENING PROJECT

**AQUATIC BIOLOGICAL SURVEY REPORT
2004**

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1.0 INTRODUCTION

1.1 BACKGROUND

This report presents and summarizes results of the 2004 Aquatic Biological Sampling Program conducted in the New York and New Jersey Harbor (Harbor) from January through July 2004. The program's focus was to collect spatial and temporal data on adult and early life stages of finfish in the Harbor, with an emphasis on winter flounder (*Pseudopleuronectes americanus*).

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

The NYNJHDP is the culmination of several prior projects. In December 1999 the U.S. Army Corps of Engineers released their Final Feasibility Report and Environmental Impact Statement, a comprehensive report detailing existing conditions of the Harbor, evaluating alternative actions and recommending a plan for channel improvements in the Harbor. In December 2000 the U.S. Congress issued the Water Resources Development Act allowing the Harbor Navigation Study to commence. In 2002 Congress released the Conference Report on the Energy and Water Appropriations Act of 2002 which orders



the USACE to consolidate each of its dredging projects into the Harbor Deepening Project. In June 2002 a Record of Decision was issued for the Final Environmental Impact Statement for the Harbor Navigation Study.

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

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

The 2001-2002 Aquatic Biological Sampling Program provided additional support to the findings of the Supplemental Sampling Program (2000-2001) that winter flounder disperse throughout the Hudson-Raritan Estuary after hatching within the primary spawning areas in the Lower New York Bay. After hatching, winter flounder larvae move from the Lower Bay into the Upper Harbor. These movement patterns may be important to winter flounder population dynamics as larvae that move directly to the ocean without using the nursery habitat may be lost to the population, as they are unlikely



to survive in the open ocean due to lack of nursery habitat and predation (Chant et al. 2000; Curran and Able 2002).

Although there is some indication from the 2000-2001 and 2001-2002 sampling programs, and to a lesser extent from the 1998-1999 program, that winter flounder in the Hudson-Raritan Estuary exhibit these movement patterns, more data are required to determine if this pattern is consistent among years. As a result, additional sampling was conducted during 2002-2003 and 2004 to expand the temporal coverage of the Biological Monitoring Program Database, especially with respect to the Lower Bay. To allow for direct comparisons among years, the sample objectives in the 2002-2003 and 2004 Aquatic Biological Sampling Programs remained the same as the 2001-2002 Aquatic Biological Sampling Program.

1.2 STUDY OBJECTIVES

During the 2004 Aquatic Biological Sampling Program data were collected on adult and early life stages of finfish in the Harbor with an emphasis on winter flounder – sampling was conducted during the period when winter flounder spawning and early lifestages occur in the Harbor. The specific objectives were to:

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

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



1.3 REPORT ORGANIZATION

The remainder of this report, which describes the 2004 Aquatic Biological Sampling Program methodology and presents results, is organized as follows: Section 2 describes sampling stations and summarizes the sampling methods used; Section 3 presents the results of bottom-trawl and epibenthic-sled sampling; and Section 4 discusses how the data collected relate to 2004 program objectives and compare to previous years of the NYNJHDP.



2.0 METHODS

2.1 SAMPLING LOCATIONS

The same 26 locations sampled during the 2001–2002 and 2002-2003 Aquatic Biological Sampling Programs were sampled during 2004 (Table 2-1). Of these 26 stations, 14 were located in shallow/shoal or interpier areas, and 12 were located in navigation channels.

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

- Arthur Kill and Newark Bay

Nine stations were located in this area. Of these, two were in Arthur Kill shallow/shoal areas (AK-1 and AK-4) and two were in channels at the Arthur Kill/Kill Van Kull confluence area (AK-2 and AK-3). Two other stations were located in the navigation channel in Newark Bay (NB-5, and NB-6), while the shallow/shoal areas were represented by three Arthur Kill/Newark Bay stations: NB-3, NB-4, and NB-7.

- Upper New York Bay (“Upper Bay”)

In the Upper Bay, which includes South Brooklyn (SB) and Port Jersey (PJ), 11 stations were sampled. Two were in the South Brooklyn interpier areas (shallow/shoal area stations SB-1 and SB-2) and one was on the Bay Ridge Flats (SB-3). Three stations were located in navigation channels—one in Bay Ridge Channel (SB-4) and two in the Anchorage Channel (SB-5 and SB-6). Three shallow/shoal area stations were located in Port Jersey (PJ-1, PJ-2, and PJ-3) and two were located in Port Jersey Channel (PJ-4 and PJ-5).



- Lower New York Bay (“Lower Bay”)

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

2.2 ADULT FINFISH SAMPLING (BOTTOM TRAWLS)

Adult finfish were sampled via a single valid bottom trawl in bi-weekly surveys conducted from 18 January through 18 June 2004. Trawls were conducted on a stratified schedule bracketing the period when adult winter flounder historically are present in the Harbor to spawn. The 26 sampling stations were sampled twice monthly during February and March and once monthly during January and April through June.

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

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

A total of 201 bottom trawls were conducted—96 at navigation channel stations and 105 at shallow/shoal/interpier stations.

All fish were identified and enumerated on the research vessel immediately following collection. Total length of each winter flounder caught was recorded to the nearest millimeter (mm). When available, up to a total of 10 winter flounder per trawl that



measured greater than 250 mm were preserved on ice and returned to the laboratory for sex determination. A 250-mm total length was established to limit the number of immature fish kept for analysis. Winter flounder typically exhibit adult gonad development at 250 mm total length and reach sexual maturity between 280 mm and 300 mm (Witherell 1993).

For all other species collected, total length was measured for a minimum of 25 individuals in each trawl sample. An unbiased selection of 25 specimens was made for non-target species 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 18 January to 2 July 2004. The 26 stations were sampled twice monthly from February through June and once monthly during January and July.

Samples were collected with an epibenthic sled-mounted 0.5-m mouth diameter plankton net with 0.5-mm mesh (Table 2-3). Typically, a 4:1 ratio of cable length to station depth was used and an inclinometer was used to determine the warp angle from the boat to confirm that the sled was on the bottom. The net was fitted with a General Oceanics flowmeter (Model 2030R) to calculate sample volume.

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

A total of 309 epibenthic sled tows were conducted—143 at navigation channel stations and 166 at shallow/shoal stations. Each sample was washed from the plankton net into



containers and preserved with 5% buffered formalin containing the vital stain rose bengal. Samples were returned to the laboratory for sorting and identification.

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

Strict quality control procedures consisting of a continuous sampling plan to assure an average outgoing quality limit (AOQL) of $\geq 90\%$ were followed during sample sorting, enumeration, life-stage designation, and identification.

2.4 WATER QUALITY MEASUREMENTS

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

2.5 DATA ANALYSIS

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

2.5.1 Trawl

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



$$CPUE = N \times \frac{10}{T}$$

Where:

N equals the number of fishes collected during the tow.

T equals the actual tow time expressed in minutes.

2.5.2 Ichthyoplankton

Ichthyoplankton densities (number per 1000 cubic meters [number / 1000 m³]) were determined for each epibenthic sled tow. The volume of water sampled was determined using the area of the net mouth and flowmeter revolutions recorded during each tow.



3.0 RESULTS

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

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

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

3.1 FINFISH

3.1.1 Adults (Trawl Sampling)

A total of 35 fish species were collected during the 2004 bottom trawl survey (Table 2-5). Thirty-one (31) species were collected from the channel stations (Table 3-1a) and 34 species were collected from the shallow/shoal stations (Table 3-1b). Tables 3-1a and 3-1b report average trawl CPUEs by species for all navigation channel stations combined and for all shallow/shoal stations combined for each month sampled (January-June) during 2004, respectively.

Bay anchovy, striped bass, white perch and Atlantic tomcod were the most abundant species collected in the Harbor during the 2004 sampling program. Overall, the total annual catch in the Harbor was similar among the shallow/shoal stations and the navigation channel stations; however species composition differed among station type.



When considering only the navigation channel stations, striped bass, white perch and blueback herring, respectively, were the most abundant species (Table 3-1a). At shallow/shoal stations bay anchovy was the most abundant species collected, with most of the individuals collected in June. Atlantic tomcod, alewife and striped bass were also abundant in the shallow/shoal stations throughout the Harbor (Table 3-1b).

When considering both shallow/shoal stations and navigation channel stations, greater numbers of fish were collected during the spring than during the winter in all of the sampling areas. The greatest collections occurred in June, and the smallest number of fish was collected during February. However, when considering only the navigation channel stations, more fish were collected during the winter months (January through March) than during the spring (Figure 3-1). The monthly average CPUE for the navigation channel stations ranged from 49 to 96 fish per 10-minute tow during the winter months, and from 20 to 39 fish per tow between April and June (Table 3-1a). The greatest numbers of fish were collected from the shallow/shoal stations during the spring (April through June), when the average monthly CPUE ranged between 65 and 135 fish per tow. Very few fish were collected from the shallow/shoal stations during the winter months. The monthly average CPUE for the shallow stations ranged from 9 to 11 fish per 10-minute tow for the months of January through March (Table 3-1b).

Species distribution varied among season and among station type (i.e. shallow/shoal vs. navigation channel stations). During the winter months (January through March), striped bass, white perch and winter flounder dominated the collections. This is the case for all stations combined, and for the shallow/shoal stations and the navigation channel stations considered separately (Tables 3-1a and 3-1b). Bay anchovy, Atlantic tomcod and alewife dominated the collections between April and June when all stations are combined, and when considering only the shallow/shoal stations (Tables 3-1a and 3-1b). However, when considering only the navigation channel stations, bay anchovy, spotted hake and blueback herring were the most abundant species collected during the spring. Few alewives were collected from the channel stations in the spring.



3.1.1.1 Arthur Kill/Newark Bay

A total of 26 species were collected from the Arthur Kill/Newark Bay sampling area, with 23 species collected from the navigation channel stations and 21 collected from the shallow/shoal stations. Catches were most diverse in April when 16 species were collected from the channel stations and 11 species were collected from the shallow/shoal stations (Table 3-2a).

Overall, the total annual catch in the Arthur Kill/Newark Bay sampling area was similar among the shallow/shoal stations and the navigation channel stations; however species composition differed among station type (Table 3-2a). White perch and striped bass were the most abundant species in the navigation channel stations, accounting for 36% and 33% of the total annual catch in these stations, respectively. Bay anchovy, alewife and white perch were the most abundant species in the shallow/shoal stations, making up 40%, 16% and 14% of the annual catch, respectively.

Of all the sampling areas, the greatest fish abundance occurred in the Arthur Kill/Newark Bay, with peak catches occurring in March (Figure 3-1). In general, finfish abundance in the Arthur Kill/Newark Bay sampling area was highest between January and March in the navigation channel stations and between April and June in the shallow/shoal stations (Tables 3-2a and 3-2b). The monthly average CPUE in the navigation channels ranged from 76 to 248 fish per 10-minute tow between January and March, with the peak abundance occurring in March (Table 3-2a). In the shallow/shoal stations abundance was greatest between April and June when the monthly average CPUE ranged from 97 to 207 fish per tow, with peak collections in June (Table 3-2b).

Figure 3-2 presents the monthly species composition for the Arthur Kill/Newark Bay sampling area. Striped bass and white perch were the most abundant species collected from the Arthur Kill/Newark Bay sampling area, with peak collections occurring in the winter when they accounted for 78% to 85% of the fish collected. Alewife was the most abundant species collected in April, accounting for 32% of the catch. Atlantic herring



accounted for 48% of May collections, and June collections were dominated by bay anchovy which made up 95% of the catch.

3.1.1.2 Upper Bay

A total of 27 species were collected from the Upper Bay sampling area, with 20 species collected from the navigation channel stations and 26 collected from the shallow/shoal stations (Table 3-3a).

Striped bass, winter flounder and blueback herring were the most abundant species collected during the winter in the Upper Bay sampling area (Figure 3-3). Striped bass and winter flounder were collected from both navigation and shallow/shoal stations, and blueback herring was collected mainly from the shallow/shoal stations (Tables 3-3a and 3-3b). Peak collections occurred in May and June, when Atlantic tomcod and bay anchovy dominated the catch. These species made up 84% of May collections and 97% of June collections (Figure 3-3). While bay anchovy was collected from both channel and shallow/shoal stations, Atlantic tomcod was mainly collected from shallow/shoal stations (Tables 3-3a and 3-3b).

3.1.1.3 Lower Bay

Collections from the Lower Bay sampling area were the lowest in diversity and abundance when compared to the other sampling areas. A total of 23 species were collected from the Lower Bay, with 20 species collected from the navigation channel stations and 18 collected from the shallow/shoal stations (Table 3-4a). Peak collections occurred in January, and most of the fish were collected from the channel stations (Figure 3-1).

Atlantic herring and bay anchovy were the most abundant species in the Lower Bay. Atlantic herring was collected only from navigation channels, and only in January when they accounted for 62% of the total catch (Tables 3-4a and 3-4b). Bay anchovy was collected during May and June, accounting for 53% and 90% of the collections, respectively (Figure 3-4). Although collected from both station types, bay anchovy were



more abundant in the navigation channels (Tables 3-4a and 3-4b).

3.1.2 Ichthyoplankton (Epibenthic Sled Sampling)

Among the eggs, larvae, and juveniles collected throughout the 2004 Aquatic Biological Sampling Program, 34 species were identified. Fish eggs were the most abundant ichthyoplankton life stage collected during the sampling program, followed by post yolk-sac larvae. The highest egg densities were collected in the Arthur Kill/Newark Bay at shallow/shoal stations, and the highest post yolk-sac larvae densities were collected in the Lower Bay at navigation channel stations. Regardless of station depth, the greatest ichthyoplankton densities were recorded during June and July in all three study areas. (Tables 3-3a through 3-3f).

3.1.2.1 Eggs

The highest egg densities (all species included) were collected throughout the Harbor during June and July – predominantly bay anchovy. The greatest weekly egg densities (85,241/1000 m³) were collected at the Lower Bay navigation channel stations during this period, i.e. early-June (Figure 3-5). No eggs were collected during January in the Arthur Kill/Newark Bay, during January and February in the Upper Bay and during February in the Lower Bay (Figures 3-6 through 3-8), but were present through after March. Egg densities were typically higher in the Lower Bay and Upper Bay navigation channel stations than in the Lower Bay and Upper Bay shallow/shoal stations. Whereas egg densities were greater at Arthur Kill/Newark Bay shallow/shoal stations than in the Arthur Kill/Newark Bay navigation channel stations.

With exception to the Lower Bay where winter flounder dominated the catch, winter flounder was the only species collected as eggs prior to April, regardless of Harbor area. Weakfish dominated catches during April throughout the Harbor and Atlantic menhaden was the dominant species during May, especially in the Upper Bay and Lower Bay. Labridae was the most dominant family collected during May in the Arthur Kill/Newark Bay. Bay anchovy was the most common species collected as eggs in the later months of the program ranging from 40%-52% of the catch.



3.1.2.2 *Yolk-sac Larvae*

Yolk-sac larvae were collected in the Harbor throughout the sampling program and ranged in density (all species included) from 0.9/1000 m³ to 66/1000 m³ (Figure 3-9). The highest average yolk-sac larvae density (66/1000 m³) was observed at shallow/shoal stations in the Upper Bay during early June. Peaks in yolk-sac larvae abundance in the Arthur Kill/Newark Bay occurred at navigation channel stations and at shallow/shoal stations in the Lower Bay during late March.

Yolk-sac larvae were not collected during January, except for one American sandlance collected in the Lower Bay (Figures 3-10 through 3-12). During February, three species (grubby, winter flounder and American sandlance) were collected in the Arthur Kill/Newark Bay, winter flounder was the only species collected in the Upper Bay and American sandlance was the only species collected in the Lower Bay. Grubby dominated catches throughout the Harbor during March and in the Arthur Kill/Newark Bay during April. Winter flounder was the dominant species in April catches in the Upper and Lower Bay. No yolk-sac larvae were collected during May in the Arthur Kill/Newark Bay and the Lower Bay, and one winter flounder was collected in the Upper Bay. During June, Atlantic silverside was the only species collected in the Arthur Kill/Newark Bay, Atlantic menhaden dominated the catch in the Upper Bay and no yolk-sac larvae were collected in the Lower Bay. One Gobiid species was collected during July in the Upper Bay and no other yolk-sac larvae were collected throughout the Harbor during July.

3.1.2.3 *Post Yolk-sac Larvae*

Post yolk-sac larvae (all species included) were collected in each of the three areas of the harbor during the entire 2004 sampling program. The highest post yolk-sac larvae densities were collected during June and July – predominantly bay anchovy. Post yolk-sac larvae densities were relatively low (<500/1000 m³) from January through March (Figure 3-13). Densities increased throughout the Harbor, especially in the Lower Bay, during late March and early April. After a slight decrease in densities in post yolk-sac larvae during May (<660/1000 m³), densities increased again by early June. Although,



post yolk-sac larvae densities fluctuated, the highest densities were recorded in the Lower Bay (8742/1000 m³) the Arthur Kill/Newark Bay (1829/1000 m³) and the Upper Bay (5869/1000 m³) during June and July.

Post yolk-sac larvae were the most species-rich lifestage (20 species) collected during the 2004 ichthyoplankton sampling. Few species were collected during January - Atlantic croaker was the only species collected in the Arthur Kill/Newark Bay and Lower Bay and one summer flounder was collected in the Upper Bay (Figures 3-14 through 3-16). Species diversity increased from January to February with the occurrence of winter flounder, American sandlance, rock gunnel, Atlantic tomcod and grubby. The highest post yolk-sac larvae densities were collected throughout the Harbor during June and July – predominantly bay anchovy. Winter flounder (34%) dominating February catches in the Arthur Kill/Newark Bay and rock gunnel dominated catches in the Upper and Lower Bay (38% and 56%, respectively). During March, grubby dominated catches in the Arthur Kill/Newark Bay (58%) and the Lower Bay (82%). Winter flounder dominated the catch during March in the Upper Bay and throughout the Harbor (>73% of the catch) during April and May. Species composition shifted from May to June with bay anchovy dominating the catches throughout the Harbor during June and in the Upper and Lower Bay during July.

3.1.2.4 Juveniles

Juveniles represented the lowest densities of all the life stages collected. Average weekly juvenile density of all species combined ranged up to a peak of 12.5/1000 m³ during the week of 26 April in the channels of the Lower Bay (Figure 3-17). In general, juveniles were more common at navigation channel stations, particularly in the Lower Bay where no juveniles were collected at shallow/shoal stations (Figure 3-17).

Species composition of juveniles in each of the three Harbor areas is shown in Figures 3-18 through 3-20. No juveniles were collected throughout the Harbor during January and February. Only one juvenile was collected in March samples (a windowpane flounder in the Lower Bay). Grubby dominated juvenile densities during April throughout the



Harbor; in the Upper and Lower Bay, grubby (80% and 83%, respectively) and winter flounder (20% and 17%, respectively) were the only species collected, while grubby (52%), winter flounder (26%) and Atlantic herring (22%) juveniles were collected in the Arthur Kill/Newark Bay. Three Atlantic tomcod were collected during May in the Arthur Kill/Newark Bay while no juveniles were collected in either the Upper or Lower Bays. No juveniles were collected during June, except in the Lower Bay where one northern pipefish juvenile was reported. No juveniles were collected in the Arthur Kill/Newark Bay during July. July catch in the Upper Bay was represented by three species: northern pipefish (72%), *Prionotus* spp. (14%) and butterfish (14%). Grubby (83%) and winter flounder (17%) were the only two species reported in the Lower Bay during July.

3.2 WINTER FLOUNDER

3.2.1 Adults (Trawl Sampling)

3.2.1.1 Catch Per Unit Effort (CPUE)

Winter flounder were collected in trawls at shallow/shoal stations during all sampling months (January to June) in each of the three Harbor areas (Table 3-2a to 3-2c). At navigation channel stations, winter flounder were also collected during every month of sampling in the Arthur Kill/Newark Bay, but only during January through March and in June in the Upper Bay, and January through March in the Lower Bay. The highest monthly average winter flounder CPUE (17) was recorded during January at navigation channel stations in the Upper Bay. Overall winter flounder CPUEs were higher at navigation channel stations in the Arthur Kill/Newark Bay and Upper Bay, while CPUEs were similar among the shallow/shoal stations in all three Harbor areas and navigation channel stations in the Lower Bay. When CPUE data were analyzed temporally (by sampling week), there is some indication that winter flounder transition from deep-water to shallow-water habitats over the January to June sampling period, particularly in the Arthur Kill/Newark Bay and Upper Bay. (Figure 3-21).



3.2.1.2 Size Distribution

A total of 612 winter flounder were collected during 2004 and all were measured for total length. Lengths ranged from 9 to 371 mm, with the majority of fish measuring between 60 to 160 mm (Figure 3-22).

In the three Harbor areas, most winter flounder were collected from January to April while few were collected during May and June (Figures 3-23 through 25). Most winter flounder collected in the Upper Bay were typically less than 160 mm. Larger individuals (greater than 160 mm) were more abundant during January, March and April in the Upper Bay. In the Lower Bay, most winter flounder were collected during February and March, and were typically less than 140 mm. The few winter flounder greater than 140 mm in the Lower Bay were collected during April.

3.2.2 Ichthyoplankton (Epibenthic Sled Sampling)

Winter flounder eggs, yolk-sac and post yolk-sac larvae were collected throughout the Harbor during the 2004 sampling (Figure 3-27). A majority of the ichthyoplankton (all life stages combined) were collected from the Lower Bay (68%), followed by the Upper Bay (19%) and then the Arthur Kill/Newark Bay (13%). Most of the winter flounder eggs were collected in the Lower Bay (90%), followed by the Arthur Kill/Newark Bay (6%). Yolk-sac larvae were collected mostly in the Upper Bay (75%), then the Lower Bay (19%). Post yolk-sac larvae and juveniles distribution patterns were similar, with most occurring in the Lower Bay (68% and 41%, respectively), followed by the Upper Bay (19% and 31%, respectively). Post yolk-sac larvae were the most common life stage collected (99.12%), followed by yolk-sac larvae (0.43%), eggs (0.42%) and then juveniles (0.03%).

Winter flounder eggs were collected in the Harbor from late January through mid-April (Figure 3-28). Peak egg densities (16.7/1000 m³) were collected in late March at the Lower Bay navigation channel stations; high egg densities were also collected at both navigation channel and shallow/shoal stations in the Lower Bay during mid March and



mid April. In the Upper Bay, winter flounder eggs were only collected at the navigation channel stations during mid March.

Winter flounder yolk-sac larvae densities were greatest in the Upper Bay, where a peak density of nearly 40/1000 m³ was observed at the navigation channel stations during mid April (Figure 3-29). Yolk-sac larvae were collected in the lowest densities in the Arthur Kill/Newark Bay area. In general, yolk-sac larvae were collected sporadically throughout the Harbor with the highest densities occurring in the Upper Bay, followed by the Lower Bay, during April.

As mentioned earlier, post yolk-sac larvae were the most abundant winter flounder life stage in ichthyoplankton collections. This larval life stage was collected in the Harbor mostly from mid-March to mid-May (Figure 3-30). Densities were highest in the Lower Bay, where the peak densities occurred at shallow/shoal stations during mid April (3,219.5/1000 m³) and late April (3,100.1/1000 m³). High post-yolk sac larvae densities also occurred in the Lower Bay at navigation channel stations during mid April (1,998.5/1000 m³) and late April (1,786.7/1000 m³). Post yolk-sac larvae densities were similar to each other in the Arthur Kill/Newark Bay and Upper Bay. The highest post yolk-sac larvae densities in the Arthur Kill/Newark Bay (1,301.8/1000 m³) and the Upper Bay (1,212.7/1000 m³) were reported at navigation channel stations during late April.

Winter flounder juveniles were collected during late April at navigation channel stations in the Upper Bay and Lower Bay, and at shallow/shoal stations in the Arthur Kill/Newark Bay (Figure 3-31). Winter flounder juveniles comprised 0.03% of the total winter flounder catch during the 2004 sampling program and average weekly densities ranged from 1.3/1000 m³ (Arthur Kill/Newark Bay) to 2.2/1000 m³ (Lower Bay).

3.3.3 Comparison with Previous Years

In this section, comparisons are made between the winter flounder CPUE and density data presented above and data from the 2001-2002 and 2002-2003 Biological Monitoring



Programs (USACE 2002, USACE 2003) to identify trends across years. Direct comparisons were made by month since the three sampling programs were conducted during the same time of year at the same sampling stations using the same gear.

Winter flounder CPUE was generally lower during 2002-2003 than in 2001-2002 and in 2004 (Figure 3-32). This was especially true in the Arthur Kill/Newark Bay and Lower Bay areas. The highest abundance of winter flounder in the Arthur Kill/Newark Bay occurred during June 2001-2002. This catch was dominated by small (<90 mm), likely young-of-year fish (Figure 3-33). Winter flounder were collected in greatest abundance in the Upper Bay during January 2004 and the catch was dominated by small fish mostly between 60 mm and 120 mm total length, representing young-of-year (Figure 3-34). During the three program years, the winter flounder that are expected to be sexually mature (>250 mm) were collected throughout the Harbor from January through May (Figure 3-33 to 3-35). The majority of these sexually mature fish were collected in the Upper Bay and Lower Bay.

Egg densities were greater throughout the Harbor in 2002-2003 than in the 2001-2002 and 2004 sampling programs, especially in the Upper Bay and Lower Bay (Figure 3-36). In all three program years, few eggs were collected in the Arthur Kill/Newark Bay, while the highest egg densities occurred during February and March in the Lower Bay and during March in the Upper Bay.

Larval densities (yolk-sac and post yolk-sac combined) in April were generally greater in 2004 than in 2001-2002 and 2002-2003 sampling programs in all three areas, while densities in May were greater during 2002-2003 (Figure 3-37). In 2001-2002 and then again in 2004, larvae were first collected in February and March, whereas larvae were generally not collected until April in 2002-2003. The highest larval densities collected during all three program years were in the Lower Bay.



3.3 WATER QUALITY

During 2004 water quality sampling, average near bottom water temperatures in the Harbor ranged from a low of 0.4°C in the Arthur Kill/Newark Bay during January to a high of 22.7°C during July also in the Arthur Kill/Newark Bay (Figure 3-38). At the onset of the winter flounder spawning period in February, water temperatures were similar throughout the three areas of the Harbor. During the peak spawning period in March, warmer temperatures (5.6°C) were measured at the Arthur Kill/Newark Bay than in the Upper Bay and Lower Bay.

Salinity recorded from near bottom depth during ichthyoplankton surveys ranged between 17.7 ppt and 27.9 ppt over the course of the program (Figure 3-38). Salinities were consistently lowest in the Arthur Kill/Newark Bay and highest in the Lower Bay throughout the 2004 sampling season.

Dissolved oxygen concentration in water is largely dependent on water temperature, and to a lesser degree, salinity. As temperature increases, the amount of oxygen capable of being held in solution decreases. Similarly, as salinity increases, the amount of oxygen that can be held in solution decreases. Trends in dissolved oxygen levels were similar across the three Harbor areas, remaining between 10.6 mg/L and 11.6 mg/L from January through March and decreasing throughout the program to between 5.7 mg/L and 6.3 mg/L during July (Figure 3-38). From May through July, dissolved oxygen levels were inversely proportional to temperatures throughout the Harbor, that is, when temperatures were highest in the Arthur Kill/Newark Bay and lowest in the Lower Bay, then dissolved oxygen levels were low in the Arthur Kill/Newark Bay and highest in the Lower Bay.

All water quality sampling data are presented in Appendix C.



4.0 DISCUSSION

The water quality and habitat characteristics of the areas sampled may affect the spatial and temporal occurrence of finfish in the Harbor, particularly winter flounder. As previously demonstrated the Lower Bay is more characteristic of the marine/oceanic environment (i.e., this area exhibits the least variability suggesting a more stable environment) than the Arthur Kill/Newark Bay and the Upper Bay while the Arthur Kill/Newark Bay and Upper Bay areas are more characteristic of a nearshore, estuarine environment (USACE 2002). Based on the water quality data it appears that the Upper Bay may be more ocean-like than the Arthur Kill/Newark Bay by virtue of the relatively broad connection between Lower Bay and Upper Bay through The Narrows. As identified in previous reports (USACE 2002, USACE 2003) the predominance of fine bottom sediments in the Arthur Kill/Newark Bay area suggests that there is limited tidal exchange resulting in a depositional area with a greater potential for high biological, chemical, and sediment oxygen demand.

4.1 ALL SPECIES

The finfish composition collected in the 2004 sampling program is typical of Atlantic seaboard estuaries and consistent with the species composition observed in previous years of the project. Composition of dominant species shifted slightly between the 2003 and the 2004 programs with striped bass replacing white perch and spotted hake as dominant species. Bay anchovy remained the most dominant species collected, while white perch, Atlantic herring and Atlantic tomcod were also collected in notable numbers throughout the Harbor. These species are common in estuaries and known to rely on the Harbor for spawning, nursery and foraging habitat (Able and Fahay 1998).

Many species spawn in the harbor seasonally, while others spawn offshore on the continental shelf or in the Harbor tributaries. This seasonality and preference for different spawning habitat influenced the occurrence and relative density of species



collected during the sampling program. Species that spawn in the Harbor, such as bay anchovy, windowpane flounder, and winter flounder, were present in higher densities during their seasonal spawning periods.

4.2 WINTER FLOUNDER

The occurrence of adult winter flounder during the peak spawning period and the subsequent occurrence of eggs and larvae were used to identify where and when winter flounder are spawning in the Harbor. Because winter flounder produce demersal eggs that adhere to the substrate it is assumed that the location in which the eggs are collected is primary spawning habitat.

Adult winter flounder were most common in the Arthur Kill/Newark Bay and Upper Bay during January to March. In the NJ, NY, CT, RI waters, winter flounder spawn from late January to early April at temperatures of 1 to 10 °C and salinities of 10 to 35 ppt (Scarlett and Allen 1992, Percy 1962, Crawford and Carey 1985). In the NY/NJ Harbor area, peak spawning occurs from February to March (Able and Fahay 1998, Stoner et. al 1999) with optimum temperatures generally ranging from 3 to 8 °C and salinities from 15 to 25 ppt. The incubation period to hatching varies with temperature and reports range from 11 to 63 days at 8 to 1.8 °C, respectively. Adults are believed to reach maturity in 2 to 3 years at 200 to 250 mm (Witherell and Burnett 1993) and spawn in shallow and conservative hydrodynamic areas of estuaries to retain larvae in spawning and nursery habitat (Percy 1962, Crawford and Carey 1985). In previous program years more spawning size (>250 mm) adults were collected in the Lower Bay than the other areas of the Harbor. Although winter flounder adults were collected in both the shallow/shoals and navigation channel habitats, adults were more abundant at navigation channel habitats, especially from January through March in the Arthur Kill/Newark Bay and Upper Bay. No consistent pattern in a depth preference of winter flounder adults has been identified in the NYNJHN Studies (USACE 1999 USACE 2003) or the NYNJHD Project (USACE 2004). There is little indication that winter flounder spawn in the channels, during the expected peak of the spawning season (late February to mid March



for the Harbor area), few WFL 250 mm in total length or larger are collected prior to late March or April (Reference & Data - Figures 3.23-25). Channels are likely the primary migration route for adult winter flounder moving to and from spawning areas. (The presence of winter flounder in early life stages (eggs and yolk-sac larvae) suggest some spawning had occurred near the channel stations, however this may not be the case as bottom disturbance caused by traffic in some areas which in combination with strong currents may result in the displacement and transport of eggs and yolk sac larvae from adjacent non-channel areas to areas where spawning may not have occurred.)

Sampling conducted as part of NYNJHN Study 2001-2004 has consistently demonstrated the importance of the Lower Bay of New York/New Jersey Harbor to winter flounder. The predominance of winter flounder eggs in the Lower Bay during the peak spawning period (i.e. February to March) coupled with the relatively high densities of post yolk-sac larvae supports that the Lower Bay provides important winter flounder spawning habitat. Although, winter flounder spawning does occur in the Upper Bay and Arthur Kill/Newark Bay areas of the Harbor, the intensity is notably less than in the Lower Bay and is potentially the result of less preferential habitat (e.g. water quality and sediment quality) in these areas.

The previous sampling programs have identified that young winter flounder move from the primary spawning area in the Lower Bay and the lower reaches of the Upper Bay to areas further into the Harbor estuary (USACE 2001, USACE 2002, USACE 2003) based on the increase in winter flounder juveniles collected in the Arthur Kill/Newark Bay during June. This pattern of juvenile migration into the estuary was not evident in the results of the 2004 trawl program, suggesting that the relatively high densities of post yolk-sac larvae collected in 2004 as compared to previous program years did not result in a strong year class of early summer juveniles.

As demonstrated in previous program years (USACE 2003; USACE 2004), the spatial and temporal trends observed in winter flounder occurrence as adults, eggs and larvae during the 2004 sampling program further supports that winter flounder use the different



Harbor areas for different stages of their life history. These sampling programs have consistently demonstrated the importance of the Lower Bay for winter flounder spawning and the Arthur Kill/Newark Bay and Upper Bay as nursery habitat.



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Table 2-1 Description of stations sampled during the 1999–2004 Aquatic Biological Sampling Programs.

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

* Also sampled during the 2000 - 2001 Supplemental Sampling Program

** Also sampled during the NYNJHN 1998 – 1999 Baseline Program and 2000-2001 Supplemental Sampling Program



Table 2-2. Specifications of the bottom trawl used to collect adult finfish during the 2004 Aquatic Biological Sampling Program

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 to collect early life stages of finfish during the 2004 Aquatic Biological Sampling Program.

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 measurements made during the 2004 Aquatic Biological Sampling Program.

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 2-5. Species identified in trawl and epibenthic sled (ichthyoplankton) samples collected during the 2004 Aquatic Biological Survey Report. (page 1 of 3)

Common Name	Scientific Name	Sled	Trawl
Alewife	<i>Alosa pseudoharengus</i>		x
American eel	<i>Anguilla rostrata</i>		x
American shad	<i>Alosa sapidissima</i>		x
American sandlance	<i>Ammodytes americanus</i>	x	
Atlantic cod	<i>Gadus morhua</i>	x	
Atlantic Croaker	<i>Micropogonias undulatus</i>	x	
Atlantic Herring	<i>Alosa sapidissima</i>	x	x
Atlantic Mackerel	<i>Scomber scombrus</i>	x	
Atlantic menhaden	<i>Brevoortia tyrannus</i>	x	x
Atlantic silverside	<i>Menidia menidia</i>	x	x
Atlantic tomcod	<i>Microgadus tomcod</i>	x	x
Bay anchovy	<i>Anchoa mitchilli</i>	x	x
Blueback herring	<i>Alosa aestivalis</i>		x
Bluefish	<i>Pomatomus saltatrix</i>		x
Butterfish	<i>Peprilus triacanthus</i>	x	x
Cunner	<i>Tautoglabrus adspersus</i>	x	x
Fourbeard Rockling	<i>Enchelyopus cimbrius</i>	x	
Fourspot flounder	<i>Hippoglossina oblonga</i>	x	
<i>Gadid</i> spp.	<i>Gadid</i> spp.	x	
Gizzard shad	<i>Dorosoma cepedianum</i>		x
<i>Gobiid</i> spp.	<i>Gobiid</i> spp.	x	
Goosefish	<i>Lophius americanus</i>	x	



Table 2-5. Species identified in trawl and epibenthic sled (ichthyoplankton) samples collected during the 2004 Aquatic Biological Survey Report. (page 2 of 3)

Grubby	<i>Myoxocephalus aeneus</i>	x	x
Labridae	<i>Labridae</i> spp.	x	
Little skate	<i>Raja erinacea</i>		x
Hogchoker	<i>Trinectes maculatus</i>	x	
Longhorn sculpin	<i>Myoxocephalus octodecemspinosus</i>	x	
Naked goby	<i>Gobiosoma bosc</i>	x	x
Northern Kingfish	<i>Menticirrhus saxatilis</i>	x	
Northern pipefish	<i>Syngnathus fuscus</i>	x	x
Northern puffer	<i>Sphoeroides maculatus</i>	x	x
<i>Prionotus</i> sp.	<i>Prionotus</i> sp.	x	
Red hake	<i>Urophycis chuss</i>		x
Rock gunnel	<i>Pholis gunnellus</i>	x	x
Scup	<i>Stenotomus chrysops</i>		x
Silver hake	<i>Merluccius bilinearis</i>		x
Smallmouth flounder	<i>Etropus microstomus</i>	x	x
Spotted hake	<i>Urophycis regia</i>		x
Striped bass	<i>Morone saxatilis</i>		x
Striped killifish	<i>Fundulus majalis</i>		x
Striped searobin	<i>Prionotus evolans</i>	x	x
Summer flounder	<i>Paralichthys dentatus</i>	x	x
Tautog	<i>Tautoga onitis</i>	x	x
Threespine stickleback	<i>Gasterosteus aculeatus</i>		x
Weakfish	<i>Cynoscion Regalis</i>	x	x



Table 2-5. Species identified in trawl and epibenthic sled (ichthyoplankton) samples collected during the 2004 Aquatic Biological Survey Report. (page 3 of 3)

White perch	<i>Morone americana</i>		x
Windowpane flounder	<i>Scophthalmus aquosus</i>	x	x
Winter flounder	<i>Pleuronectes americanus</i>	x	x
Winter skate	<i>Raja ocellata</i>		x



Table 3-3 a Monthly average ichthyoplankton density (Number/1000 m³) by species for all navigation channel stations in Arthur Kill/Newark Bay, 2004 Aquatic Biological Sampling Program.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden					4.89	1026.46	
Bay anchovy						19661.38	50568.81
Fourbeard rockling					1.81		
Gadid unidentified				1.80			
Labridae					30.52	1812.39	2557.48
Prionotus sp.							160.21
Weakfish				44.04	8.72		
Windowpane						579.16	235.95
Winter flounder		0.79	0.61				

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
Atlantic silverside						3.34	
Atlantic tomcod			2.23				
Grubby			19.75	3.48			
Winter flounder		0.79					

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
Atlantic herring				0.93	9.28		
Atlantic menhaden						69.40	
Atlantic silverside						1.76	
Atlantic tomcod			1.84	0.93			
Bay anchovy						969.51	655.87
Gobiid unidentified						29.44	354.22
Grubby		0.82	162.29	172.97	4.00		
Longhorn sculpin				3.15			
Northern pipefish						5.69	19.93
Rock gunnel				4.30			
Summer flounder	1.13						
Tautog						2.50	
Unidentified				1.01		234.96	
Weakfish						29.97	10.99
Windowpane						2.39	
Winter flounder		0.70	30.17	819.90	45.97	13.70	

Juvenile

Species	January	February	March	April	May	June	July
Atlantic herring				0.79			
Atlantic tomcod					3.91		
Grubby				1.92			



Table 3-3 b Monthly average ichthyoplankton density (Number/1000 m³) by species for all shallow/shoal stations in Arthur Kill/Newark Bay, 2004 Aquatic Biological Sampling Program.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden					3.93	70.69	
Bay anchovy						12202.21	67296.97
Labridae					30.57	347.83	473.12
Prionotus sp.							49.64
Weakfish				1.41	1.97		74.14
Windowpane						44.53	99.27
Winter flounder		0.54					

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
American sand lance		0.63					
Atlantic tomcod			2.75				
Grubby		1.12	3.03	0.60			
Winter flounder				1.25			

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sand lance		0.54					
American shad						1.12	
Atlantic cod				0.58			
Atlantic croaker	4.75						
Atlantic menhaden					1.19	55.24	
Atlantic silverside					1.19	1.80	
Atlantic tomcod		0.67	1.56				
Bay anchovy						1066.13	626.17
Gobiid unidentified						31.47	922.07
Grubby		0.67	22.16	32.76			
Northern pipefish						15.76	42.79
Northern puffer							1.13
Rock gunnel		0.67		0.59			
Summer flounder	1.87						
Tautog						2.81	2.78
Unidentified						163.44	
Weakfish						12.89	12.09
Windowpane					1.14	1.29	
Winter flounder		1.08	85.77	151.72	3.16		

Lifestage: Juvenile

Species	January	February	March	April	May	June	July
Winter flounder				0.65			



Table 3-3 c Monthly average ichthyoplankton density (Number/1000 m³) by species for all navigation channel stations in Upper Bay, 2004 Aquatic Biological Sampling Program.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden					137.52	2394.43	
Bay anchovy						8127.35	2098.97
Fourbeard rockling				6.05	7.43		
Gadid unidentified				10.28		18.67	8.42
Goosefish							17.13
Labridae					19.47	1884.56	1367.32
Prionotus sp.						199.18	732.94
Weakfish				121.12	93.13	56.01	136.33
Windowpane				1.14		767.31	441.97
Winter flounder			1.02				

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
Grubby			4.88	5.39			
Rock gunnel			0.23				
Windowpane						0.62	
Winter flounder		0.69		18.95			

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sandlance		1.20	0.32	6.20			
Atlantic herring				0.99			
Atlantic menhaden						684.91	15.15
Atlantic tomcod		1.38	0.62				
Bay anchovy						1268.29	455.48
Butterfish							18.20
Cunner							6.52
Fourspot flounder							4.53
Gobiid unidentified							53.02
Grubby		2.26	66.37	279.66	3.78		
Longhorn sculpin				10.79			
Northern pipefish						1.40	8.21
Prionotus sp.							3.19
Rock gunnel		2.23	2.14	13.08			
Smallmouth flounder							3.21
Summer flounder	1.07						
Tautog						7.50	11.10
Unidentified						1333.41	20.28
Weakfish						8.58	16.50
Windowpane					2.59	13.53	
Winter flounder			64.23	974.45	235.19	1.00	

Juvenile

Species	January	February	March	April	May	June	July
Grubby				1.73			
Northern pipefish							2.11
Prionotus sp.							1.07
Winter flounder				0.86			



Table 3-3 d Monthly average ichthyoplankton density (Number/1000 m³) by species for all shallow/shoal stations in Upper Bay, 2004 Aquatic Biological Sampling Program.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden				13.19	127.20	2257.02	
Bay anchovy						12238.41	4506.74
Fourbeard rockling				3.59	3.74		
Gadid unidentified				6.89		8.82	
Goosefish							7.02
Labridae					10.99	906.50	2639.72
Prionotus sp.						21.00	291.01
Weakfish				68.34	77.26	27.64	62.79
Windowpane				0.52		341.97	575.03

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
Atlantic menhaden						36.21	
Gobiid unidentified							0.95
Grubby			4.84	1.93			
Rock gunnel			0.36				
Winter flounder				8.01	0.94		

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sandlance		0.51	0.57				
Atlantic menhaden						347.15	
Atlantic tomcod			0.78				
Bay anchovy						1808.01	276.92
Butterfish							4.94
Cunner						1.07	12.73
Gobiid unidentified							89.46
Grubby		0.43	40.98	52.16			
Longhorn sculpin				1.79			
Northern pipefish						3.92	14.53
Northern puffer						2.22	
Rock gunnel		1.28	0.83				
Tautog						22.05	39.52
Unidentified						490.02	5.26
Weakfish						18.74	13.28
Windowpane					2.01	12.55	
Winter flounder			84.99	275.46	10.36		

Juvenile

Species	January	February	March	April	May	June	July
Butterfish							0.88
Grubby				1.64			
Northern pipefish							2.85



Table 3-3 e Monthly average ichthyoplankton density (Number/1000 m³) by species for all navigation channel stations in Lower Bay, 2004 Aquatic Biological Sampling Program.

Egg							
Species	January	February	March	April	May	June	July
Atlantic mackerel					15.48	3.39	
Atlantic menhaden				4.32	477.24	2370.95	
Bay anchovy						27899.91	1018.61
Cunner						379.45	
Fourbeard rockling			0.72				
Gadid unidentified			0.72			60.63	
Goosefish							14.94
Hogchocker						700.01	
Labridae					25.85	5182.40	365.57
Prionotus sp.						8920.58	761.09
Weakfish				300.73	194.46	1542.05	
Windowpane				27.12		4147.42	44.81
Winter flounder	2.01		8.40	5.11			

Yolk-sac Larvae							
Species	January	February	March	April	May	June	July
American sandlance	2.22						
Grubby			3.96				
Winter flounder				5.02			

Post-yolk sac Larvae							
Species	January	February	March	April	May	June	July
American sandlance				2.77			
Atlantic croaker	4.02						
Atlantic menhaden						289.45	154.17
Atlantic silverside						3.37	
Bay anchovy						1031.81	7614.96
Butterfish							52.55
Cunner						2.19	39.46
Fourspot flounder							5.12
Gobiid unidentified						1.70	81.72
Grubby			35.31	213.15	13.95		
Longhorn sculpin				15.70			
Morone sp.						2.19	
Northern pipefish						22.44	54.30
Rock gunnel		0.93	1.41	14.61			
Smallmouth flounder							7.42
Tautog							14.35
Unidentified						717.87	1.87
Weakfish						8.15	392.34
Windowpane						58.23	6.51
Winter flounder			5.99	1892.61	644.22	4.07	

Juvenile							
Species	January	February	March	April	May	June	July
Butterfish							3.73
Fourspot flounder							3.73
Grubby				5.18			
Northern pipefish						1.68	
Smallmouth flounder							1.39
Windowpane			1.41				
Winter flounder				1.08			



Table 3-3 f Monthly average ichthyoplankton density (Number/1000 m³) by species for all shallow/shoal stations in Lower Bay, 2004 Aquatic Biological Sampling Program.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden				43.98	614.15	291.33	
Bay anchovy						30213.09	955.44
Fourbeard rockling					4.25		
Gadid unidentified			3.95	10.76		47.75	
Goosefish							5.26
Labridae					43.16	1414.90	425.96
Prionotus sp.						276.63	1185.72
Weakfish				384.21	530.53	248.58	103.63
Windowpane						546.94	44.69
Winter flounder			3.70	6.18			

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
American sandlance		2.56					
Grubby			15.58				
Rock gunnel			0.59				
Winter flounder				1.55			

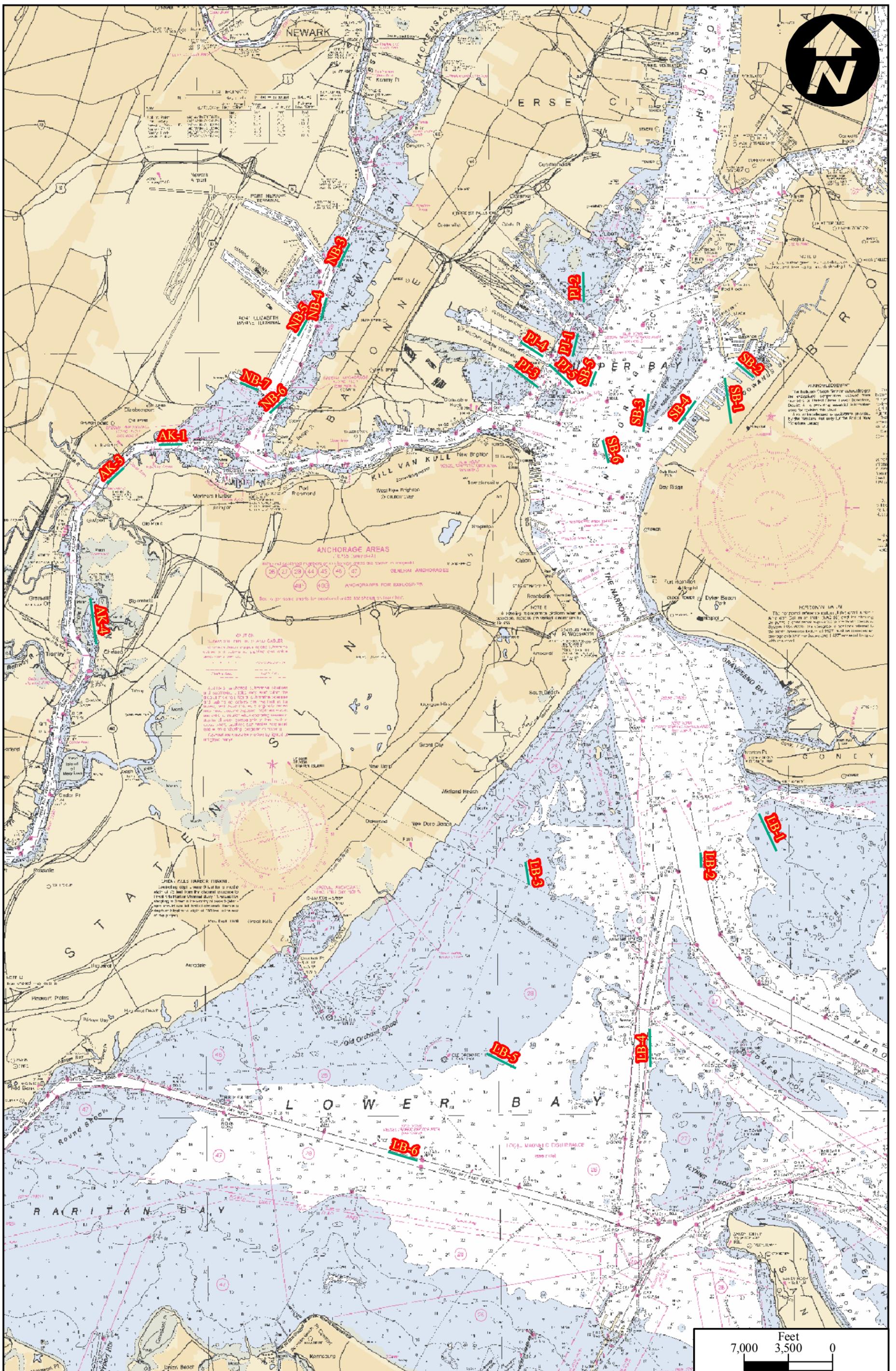
Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sandlance			0.74				
Atlantic croaker	2.11						
Atlantic menhaden						80.27	2.63
Atlantic silverside						1.80	
Bay anchovy						2049.42	162.08
Butterfish							2.63
Cunner						7.77	5.65
Fourspot flounder							4.17
Gobiid unidentified						1.80	169.33
Grubby		4.55	96.66	44.62	4.25		
Longhorn sculpin				7.53			
Northern kingfish							2.83
Northern pipefish						13.39	41.38
Prionotus sp.							2.09
Rock gunnel		4.82	7.53				
Smallmouth flounder							2.63
Tautog						1.69	12.46
Unidentified						1110.01	
Weakfish						19.99	18.46
Windowpane					4.25	65.63	11.91
Winter flounder			12.58	3159.81	291.18		

Juvenile

Species	January	February	March	April	May	June	July





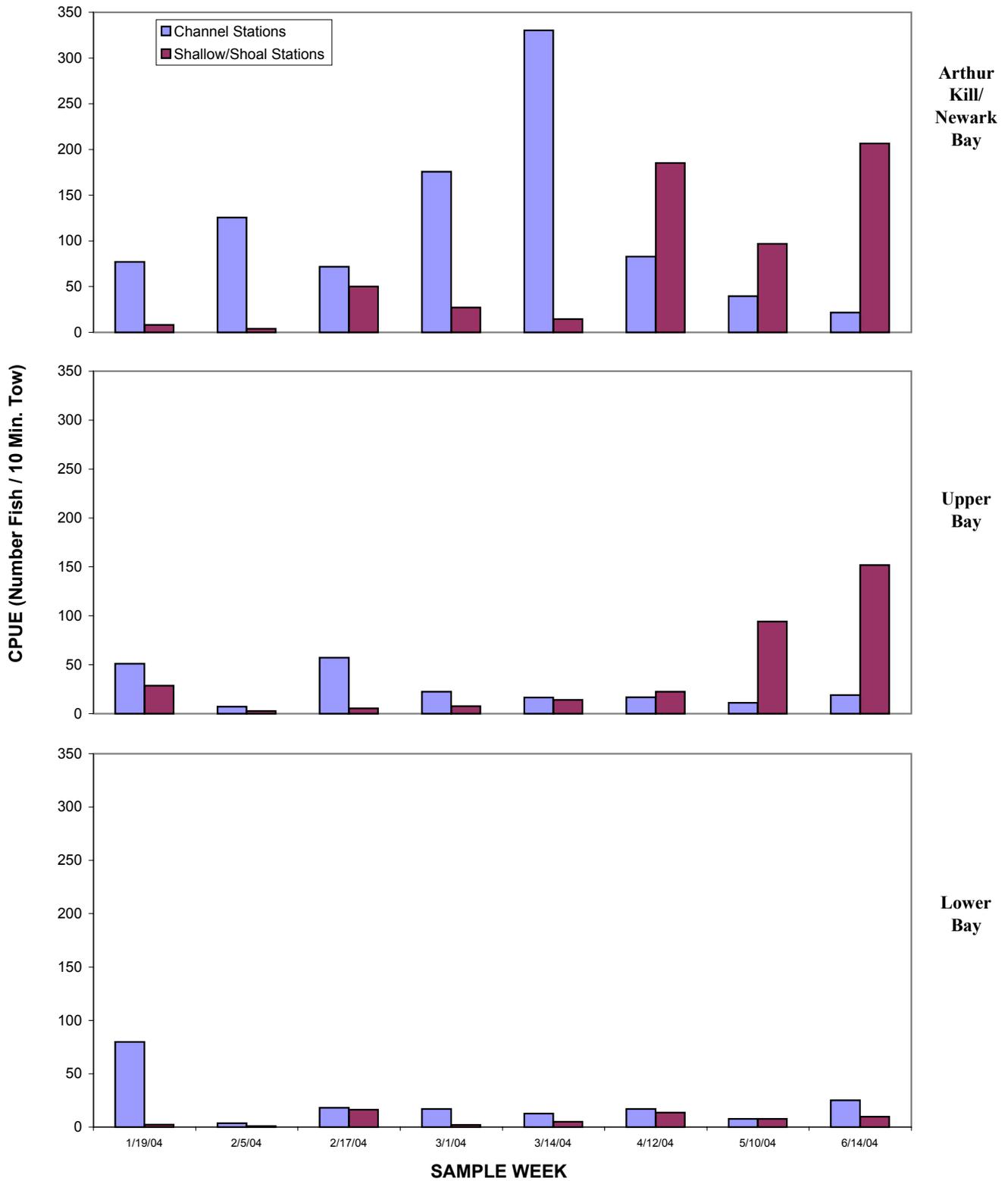
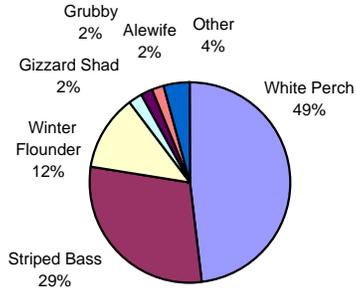


Figure 3-1 Average weekly trawl CPUE for all species combined at navigation channel and shallow/shoal stations in the three study areas, 2004 Aquatic Biological Sampling Program.

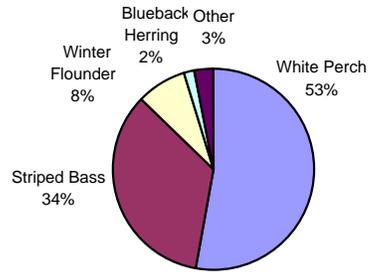
Note(s) Dates listed indicate the first day of each sample week.



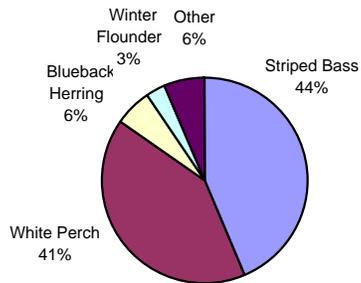
2004-January (total collected=349)



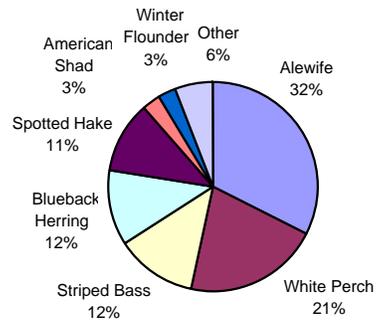
2004-February (total collected=1009)



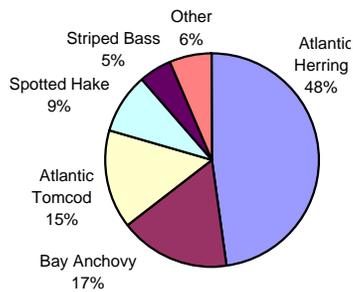
2004-March (total collected=2191)



2004-April (total collected=1072)



2004-May (total collected=546)



2004-June (total collected=912)

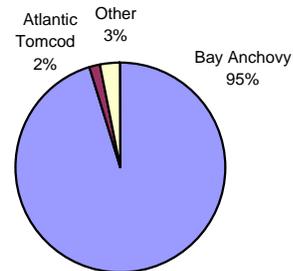
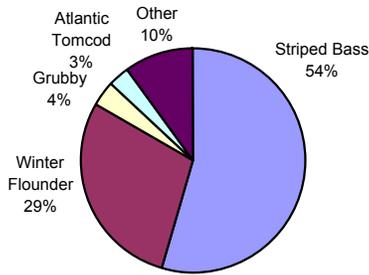


Figure 3-2

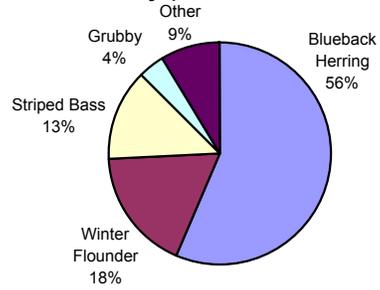
**Species composition of trawl catches from Arthur Kill/
Newark Bay stations during the 2004 Aquatic Biological
Sampling Program.**



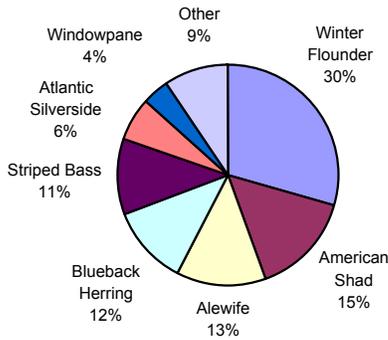
2004-January (total collected=427)



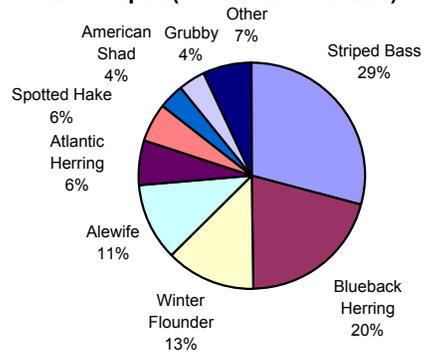
2004-February (total collected=370)



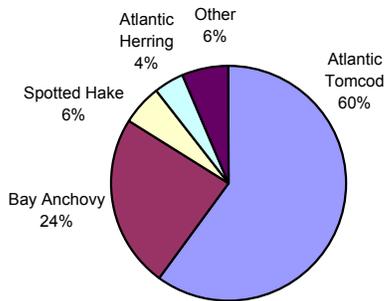
2004-March (total collected=309)



2004-April (total collected=218)



2004-May (total collected=621)



2004-June (total collected=1005)

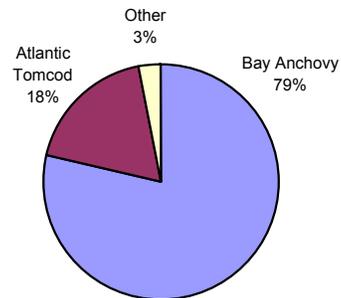


Figure 3-3

Species composition of trawl catches from Upper Bay stations during the 2004 Aquatic Biological Sampling Program.



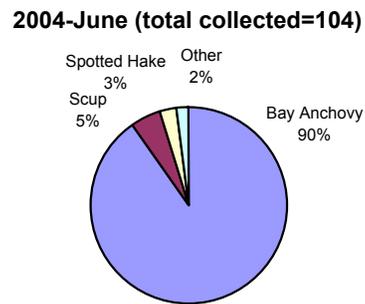
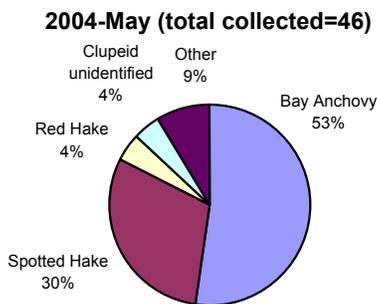
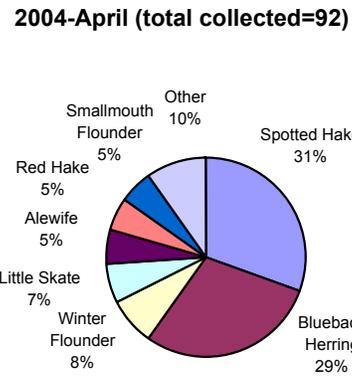
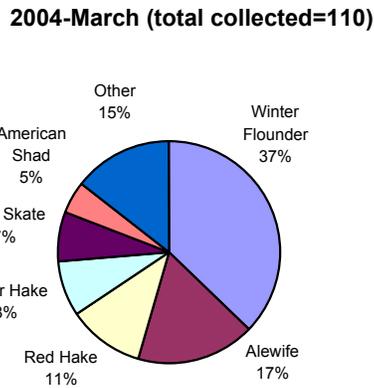
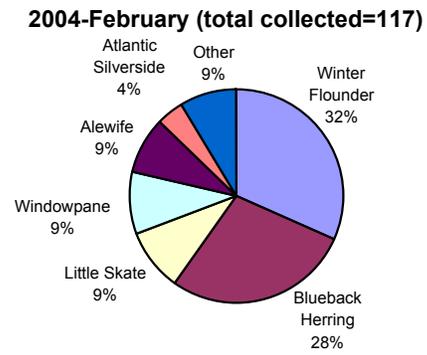
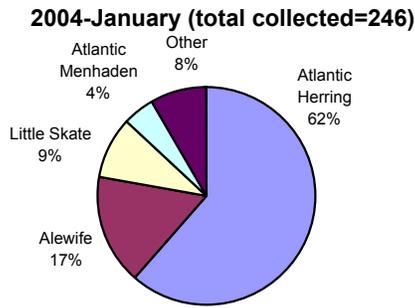


Figure 3-4

Species composition of trawl catches from Lower Bay stations during the 2004 Aquatic Biological Sampling Program.



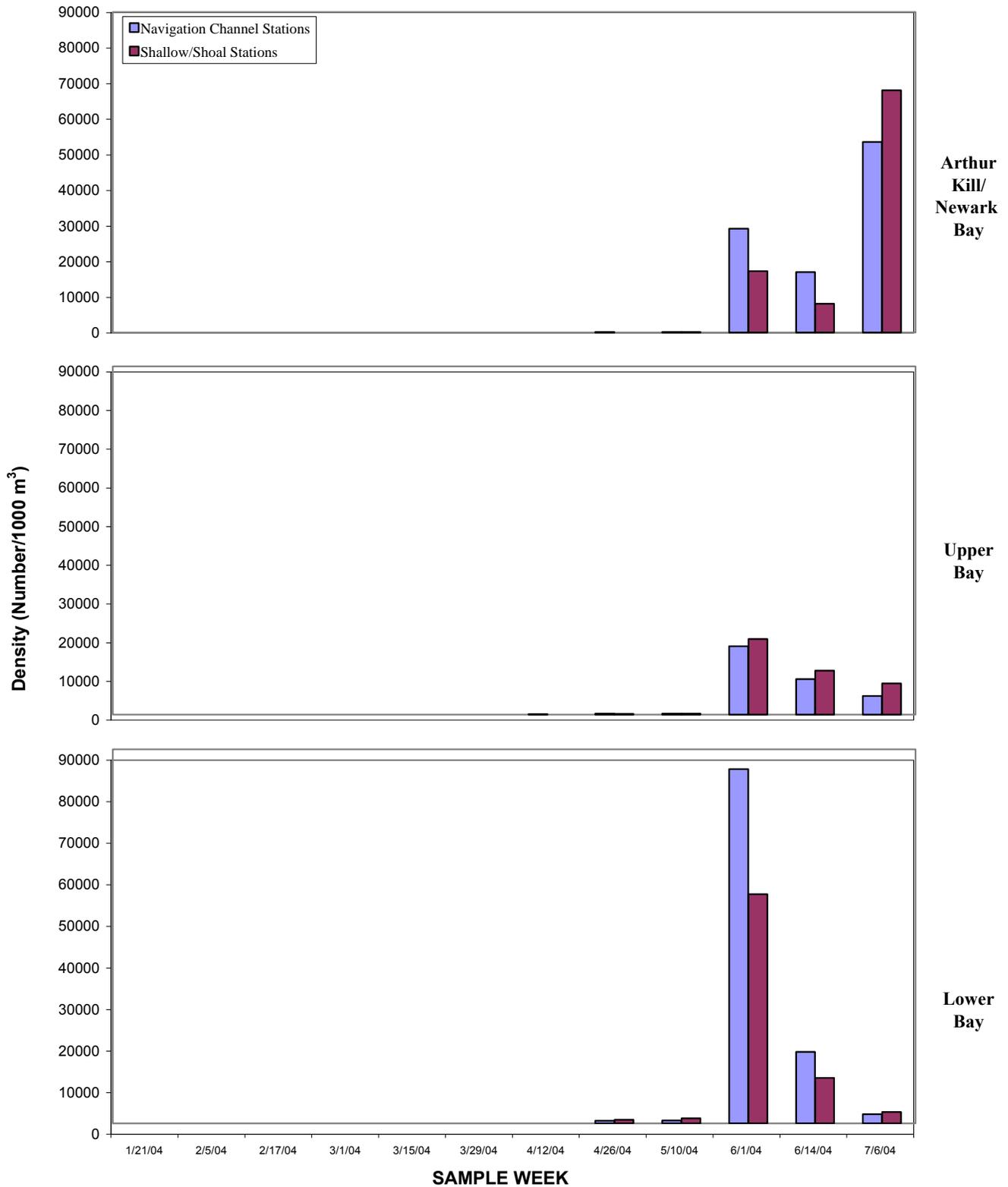


Figure 3-5 Average weekly egg density of all species combined at navigation channel and shallow/shoal stations in the three study areas, 2004 Aquatic Biological Sampling Program.

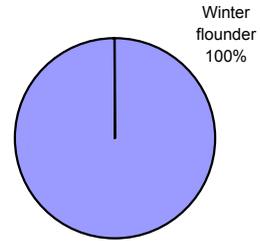
Note(s): Dates listed indicate the first day of each sample week. Note scale change for the three study areas.



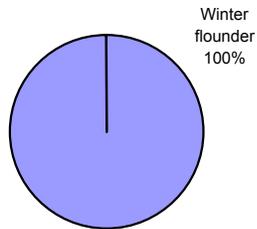
2004-January (total collected=0)

No Eggs Collected

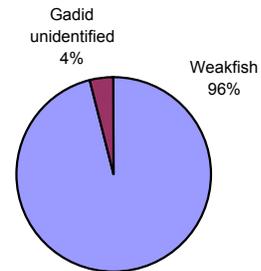
2004-February (total collected=2)



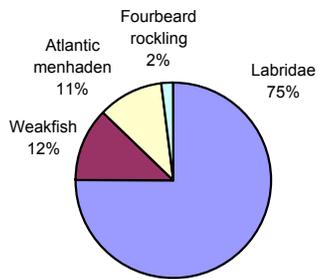
2004-March (total collected=1)



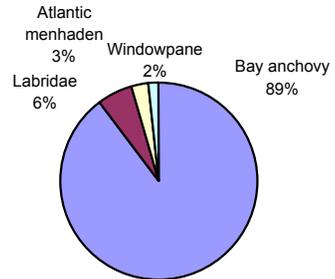
2004-April (total collected=52)



2004-May (total collected=55)



2004-June (total collected=50224)



2004-July (total collected=91806)

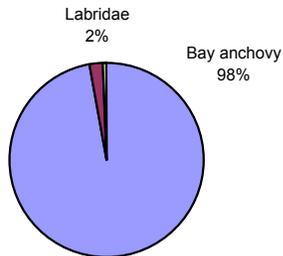


Figure 3-6

Species composition of eggs collected at Arthur Kill/Newark Bay stations during the 2004 Aquatic Biological Sampling Program.



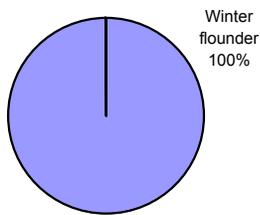
2004-January (total collected=0)

No Eggs Collected

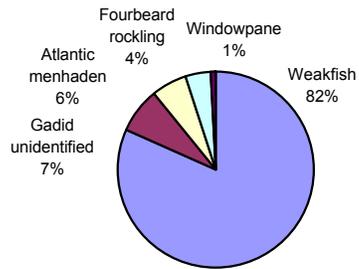
2004-February (total collected=0)

No Eggs Collected

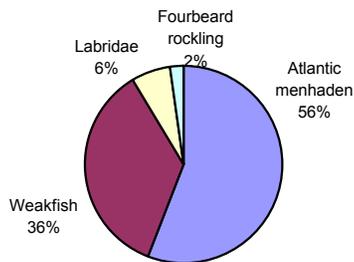
2004-March (total collected=2)



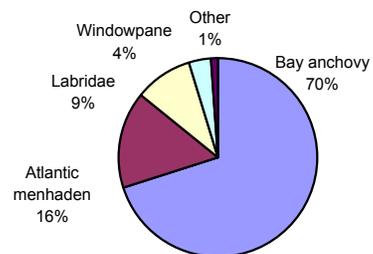
2004-April (total collected=303)



2004-May (total collected=394)



2004-June (total collected=53864)



2004-July (total collected=10380)

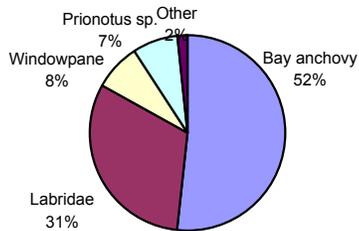
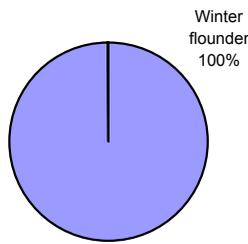


Figure 3-7

Species composition of eggs collected at Upper Bay stations during the 2004 Aquatic Biological Sampling Program.



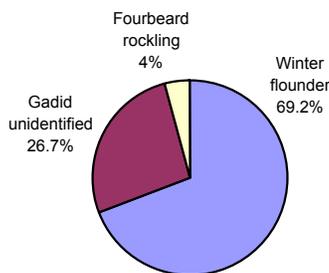
2004-January (total collected=1)



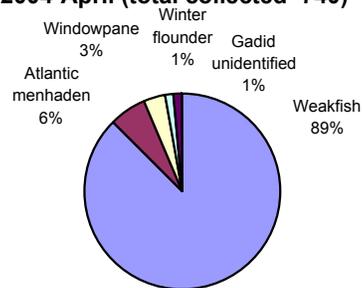
2004-February (total collected=0)

No Eggs Collected

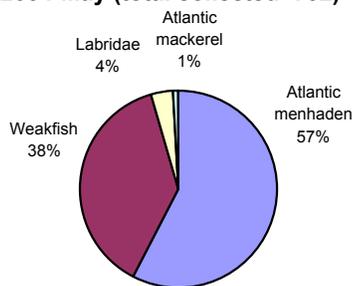
2004-March (total collected=20)



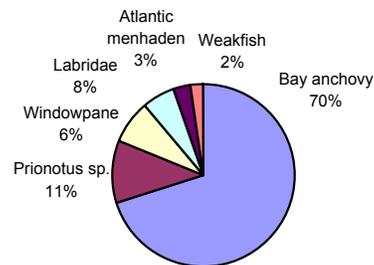
2004-April (total collected=740)



2004-May (total collected=702)



2004-June (total collected=84378)



2004-July (total collected=2496)

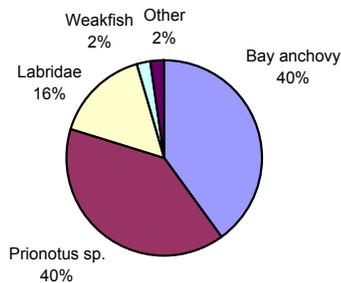


Figure 3-8 Species composition of eggs collected at Lower Bay stations during the 2004 Aquatic Biological Sampling Program.



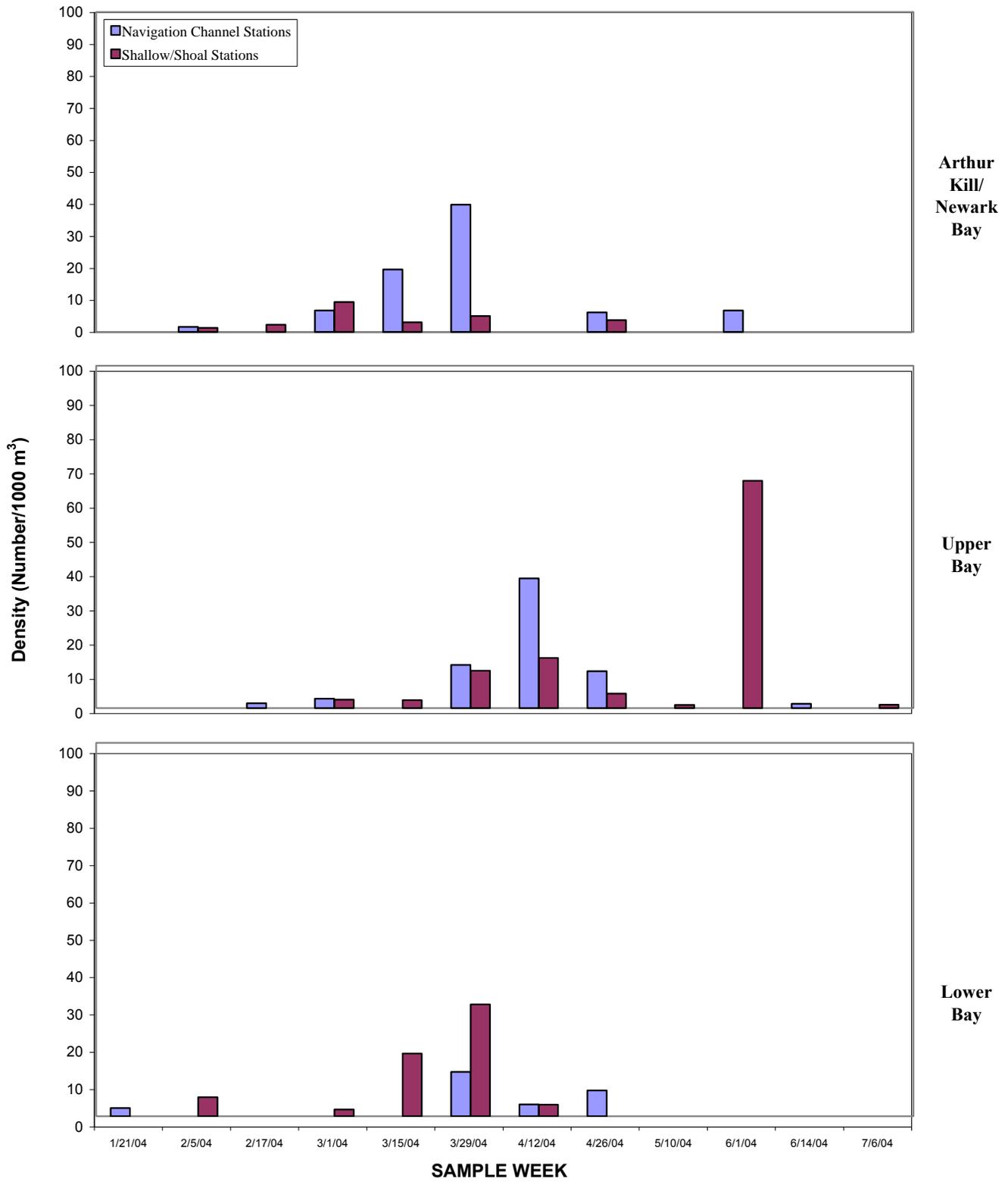


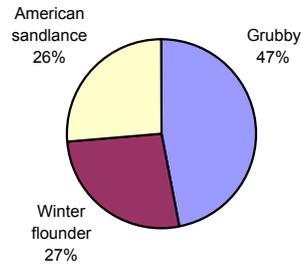
Figure 3-9 Average weekly yolk-sac larvae density of all species combined at navigation channel and shallow/shoal sampling stations in the three study areas, 2004 Aquatic Biological Sampling Program.

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

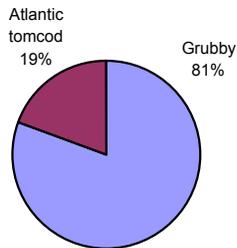
2004-January (total collected=0)

No Yolk-Sac Larvae
Collected

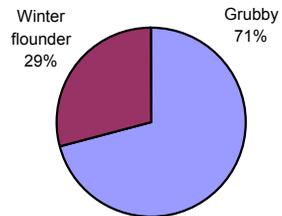
2004-February (total collected=3)



2004-March (total collected=52)



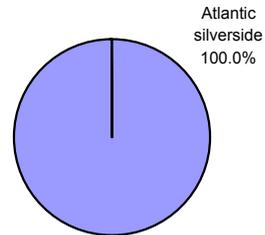
2004-April (total collected=7)



2004-May (total collected=0)

No Yolk-Sac Larvae
Collected

2004-June (total collected=4)



2004-July (total collected=0)

No Yolk-Sac Larvae
Collected

Figure 3-10

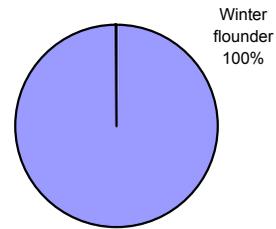
Species composition of yolk-sac larvae collected at Arthur Kill/
Newark Bay during the 2004 Aquatic Biological Sampling Program.



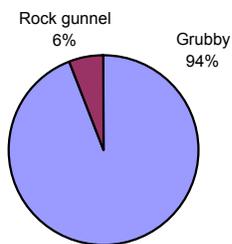
2004-January (total collected=0)

No Yolk-Sac Larvae
Collected

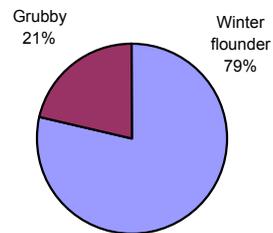
2004-February (total collected=1)



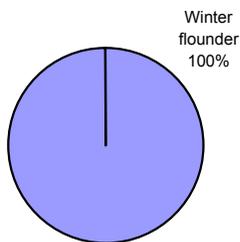
2004-March (total collected=24)



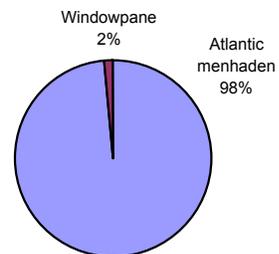
2004-April (total collected=50)



2004-May (total collected=1)



2004-June (total collected=66)



2004-July (total collected=1)

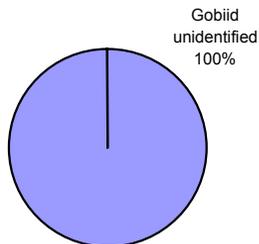
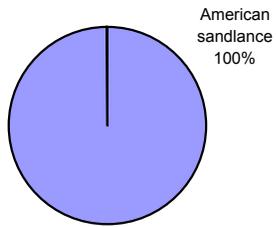


Figure 3-11

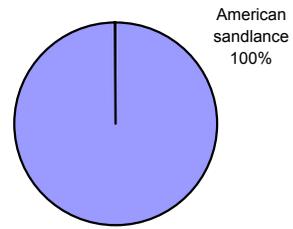
Species composition of yolk-sac larvae collected at Upper Bay
stations during the 2004 Aquatic Biological Sampling Program.



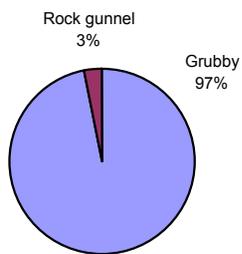
2004-January (total collected=1)



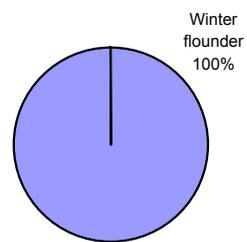
2004-February (total collected=2)



2004-March (total collected=23)



2004-April (total collected=6)



2004-May (total collected=0)

No Yolk-Sac Larvae
Collected

2004-June (total collected=0)

No Yolk-Sac Larvae
Collected

2004-July (total collected=0)

No Yolk-Sac Larvae
Collected

Figure 3-12

Species composition of yolk-sac larvae collected at Lower Bay stations during the 2004 Aquatic Biological Sampling Program.



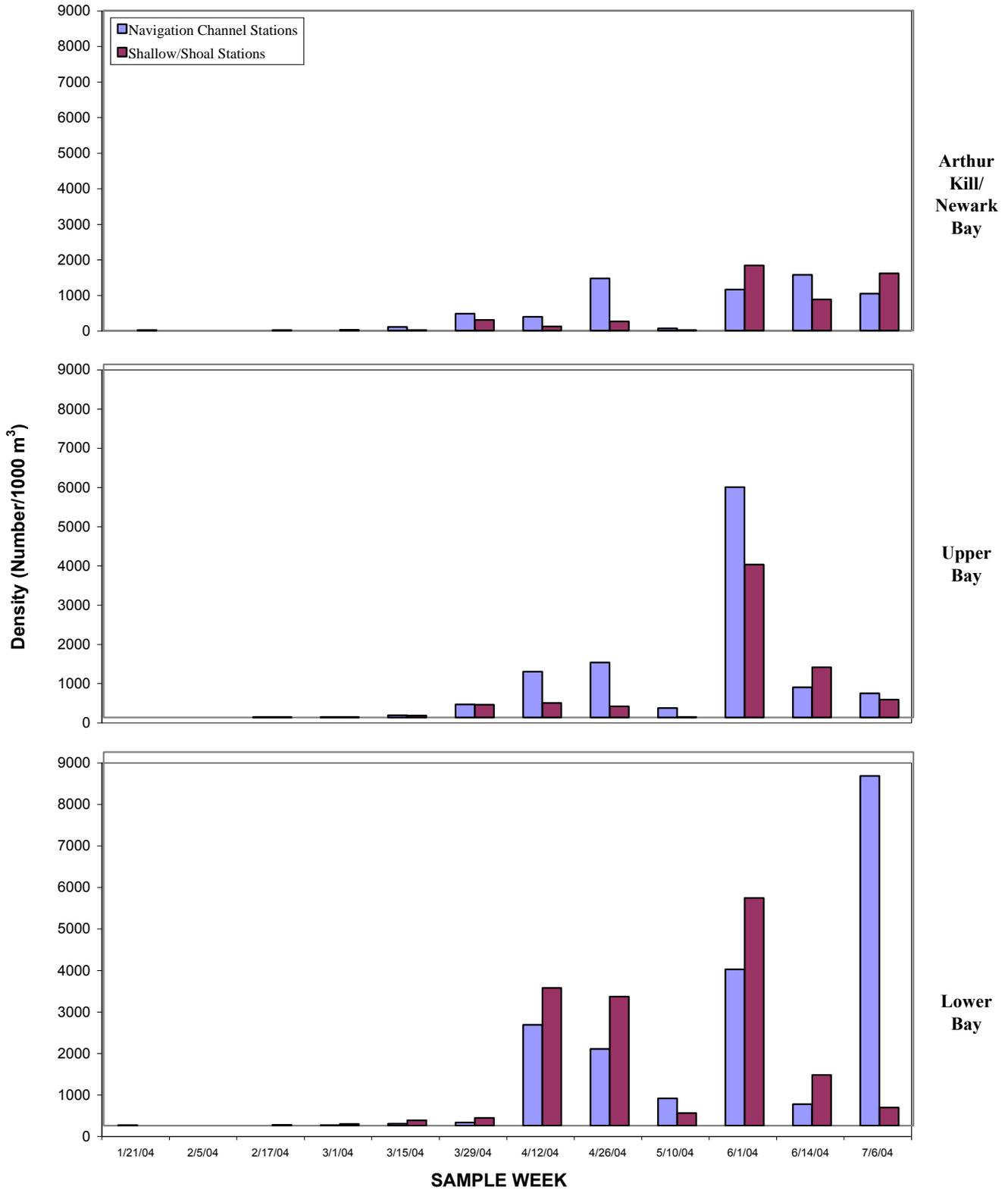
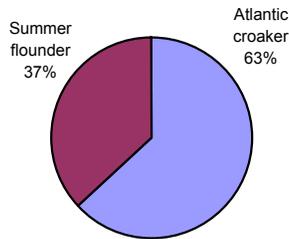


Figure 3-13 Average weekly post yolk-sac larvae density of all species combined at navigation channel and shallow/shoal stations in the three study areas, 2004 Aquatic Biological Sampling Program.

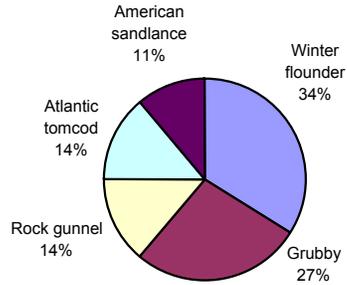
Note(s): Dates listed indicate the first day of each sample week.



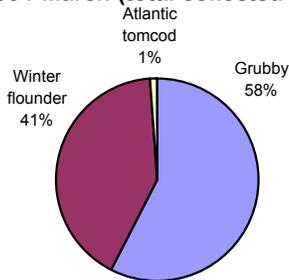
2004-January (total collected=7)



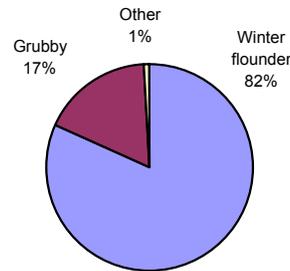
2004-February (total collected=8)



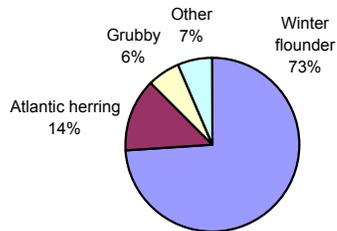
2004-March (total collected=598)



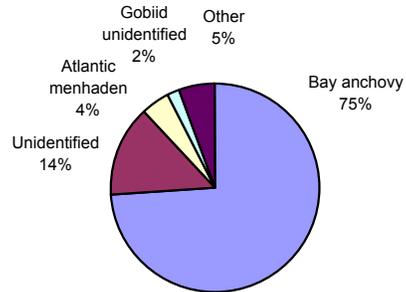
2004-April (total collected=1438)



2004-May (total collected=46)



2004-June (total collected=4239)



2004-July (total collected=1839)

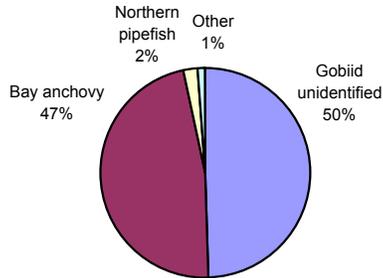
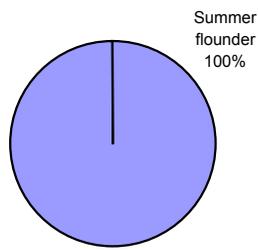


Figure 3-14

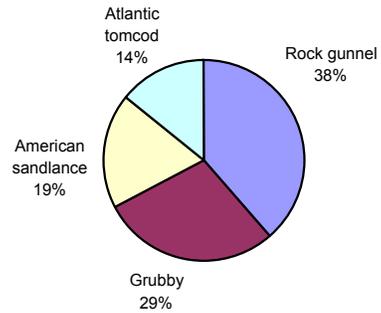
Species composition of post yolk-sac larvae collected at Arthur Kill/Newark Bay stations during the 2004 Aquatic Biological Sampling Program.



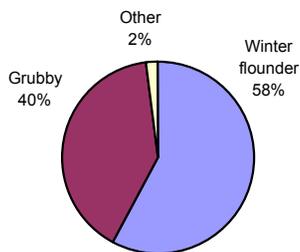
2004-January (total collected=1)



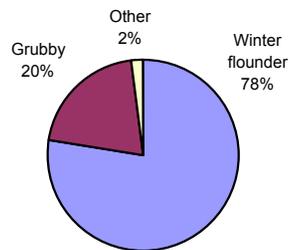
2004-February (total collected=14)



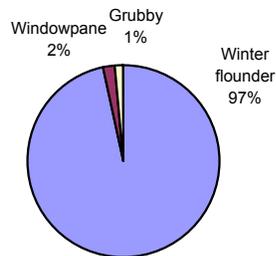
2004-March (total collected=578)



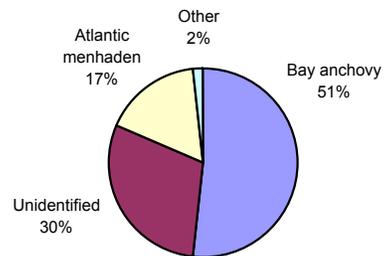
2004-April (total collected=2277)



2004-May (total collected=211)



2004-June (total collected=10591)



2004-July (total collected=921)

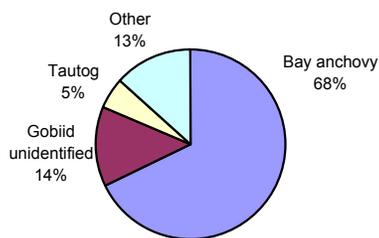
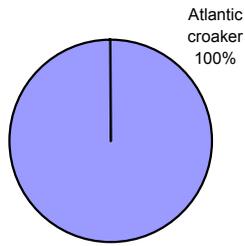


Figure 3-15

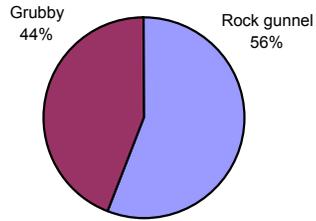
Species composition of post yolk-sac larvae collected at Upper Bay stations during the 2004 Aquatic Biological Sampling Program.



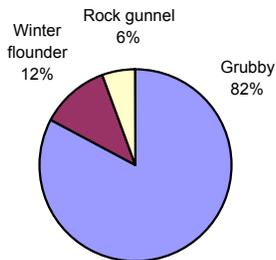
2004-January (total collected=3)



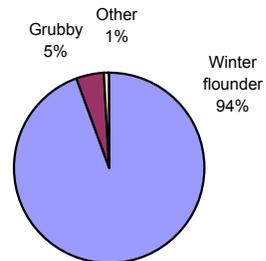
2004-February (total collected=11)



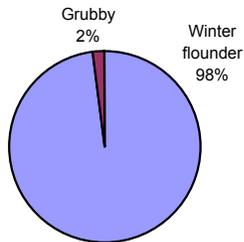
2004-March (total collected=186)



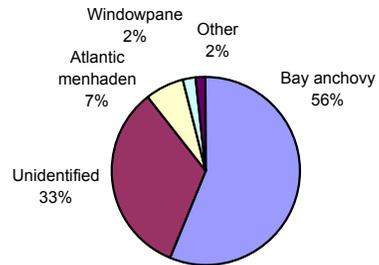
2004-April (total collected=5356)



2004-May (total collected=369)



2004-June (total collected=5806)



2004-July (total collected=3772)

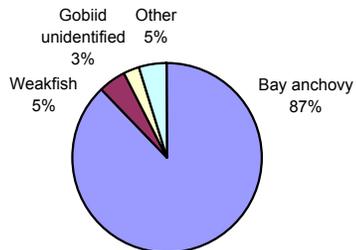


Figure 3-16

Species composition of post yolk-sac larvae collected at Lower Bay stations during the 2004 Aquatic Biological Sampling Program.



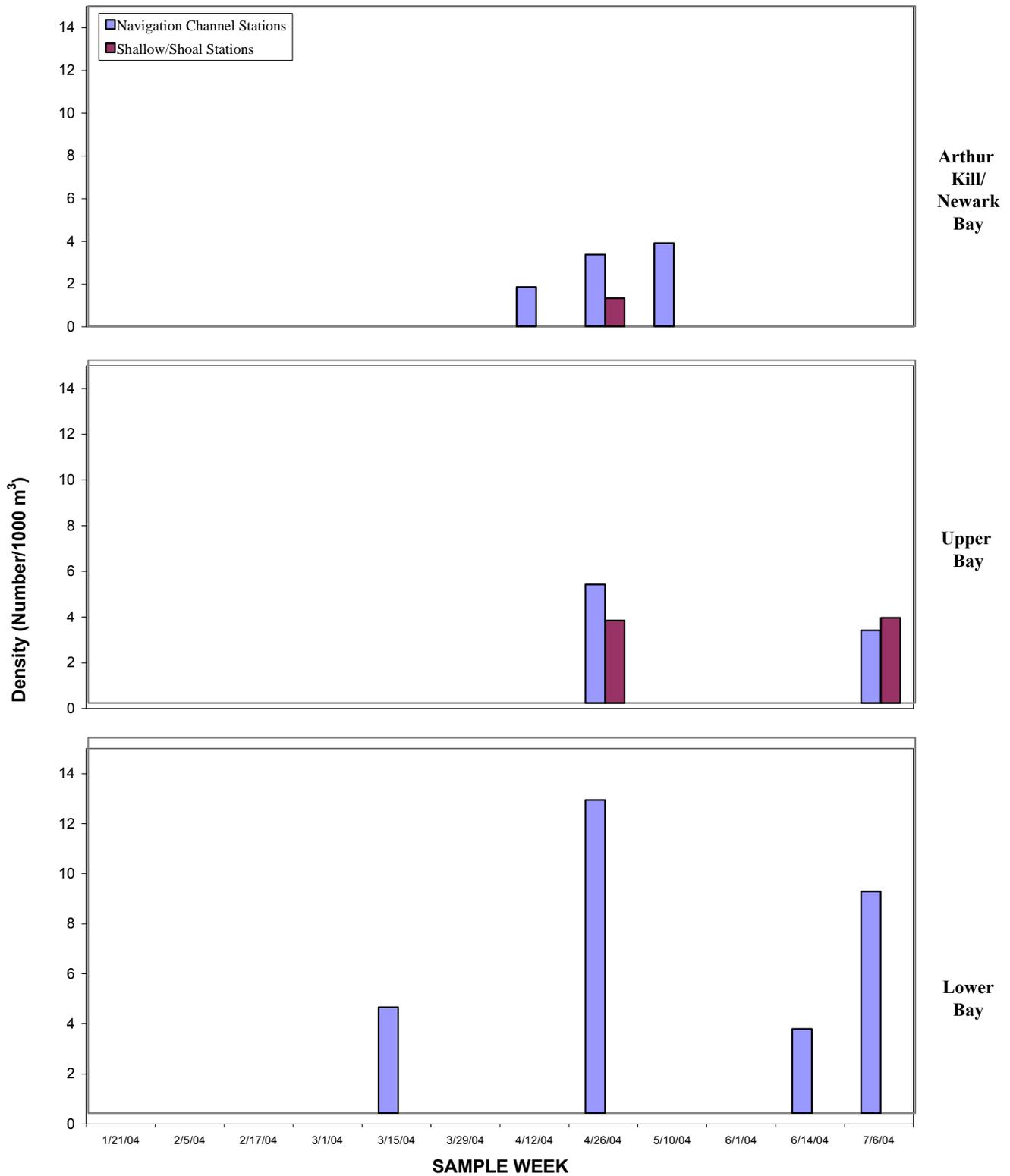


Figure 3-17 Average weekly juvenile density of all species combined at navigation channel and shallow/shoal stations in the three sampling areas, 2004 Aquatic Biological Sampling Program.

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



2004-January (total collected=0)

No Juveniles Collected

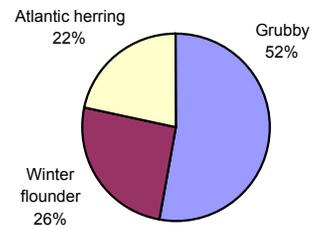
2004-February (total collected=0)

No Juveniles Collected

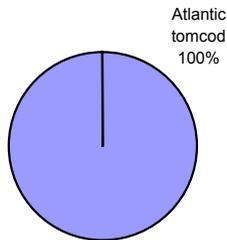
2004-March (total collected=0)

No Juveniles Collected

2004-April (total collected=4)



2004-May (total collected=3)



2004-June (total collected=0)

No Juveniles Collected

2004-July (total collected=0)

No Juveniles Collected

Figure 3-18

Species composition of juveniles collected at Arthur Kill/Newark Bay stations during the 2004 Aquatic Biological Sampling Program.



2004-January (total collected=0)

No Juveniles Collected

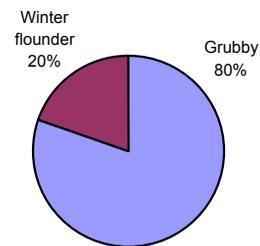
2004-February (total collected=0)

No Juveniles Collected

2004-March (total collected=0)

No Juveniles Collected

2004-April (total collected=6)



2004-May (total collected=0)

No Juveniles Collected

2004-June (total collected=0)

No Juveniles Collected

2004-July (total collected=7)

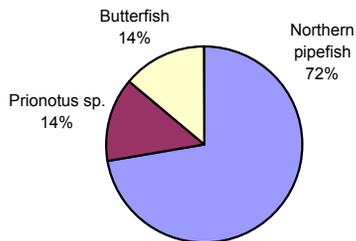


Figure 3-19

Species composition of juveniles collected at Upper Bay stations during the 2004 Aquatic Biological Sampling Program.



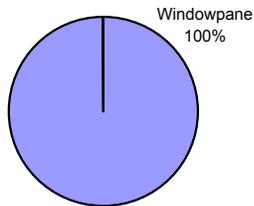
2004-January (total collected=0)

No Juveniles Collected

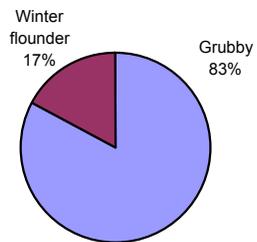
2004-February (total collected=0)

No Juveniles Collected

2004-March (total collected=1)



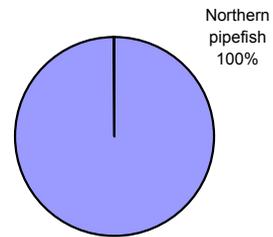
2004-April (total collected=4)



2004-May (total collected=0)

No Juveniles Collected

2004-June (total collected=1)



2004-July (total collected=5)

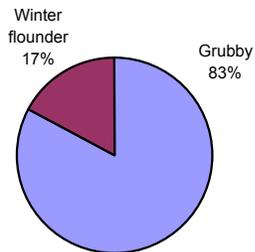


Figure 3-20

Species composition of juveniles collected at Lower Bay stations during the 2004 Aquatic Biological Sampling Program.



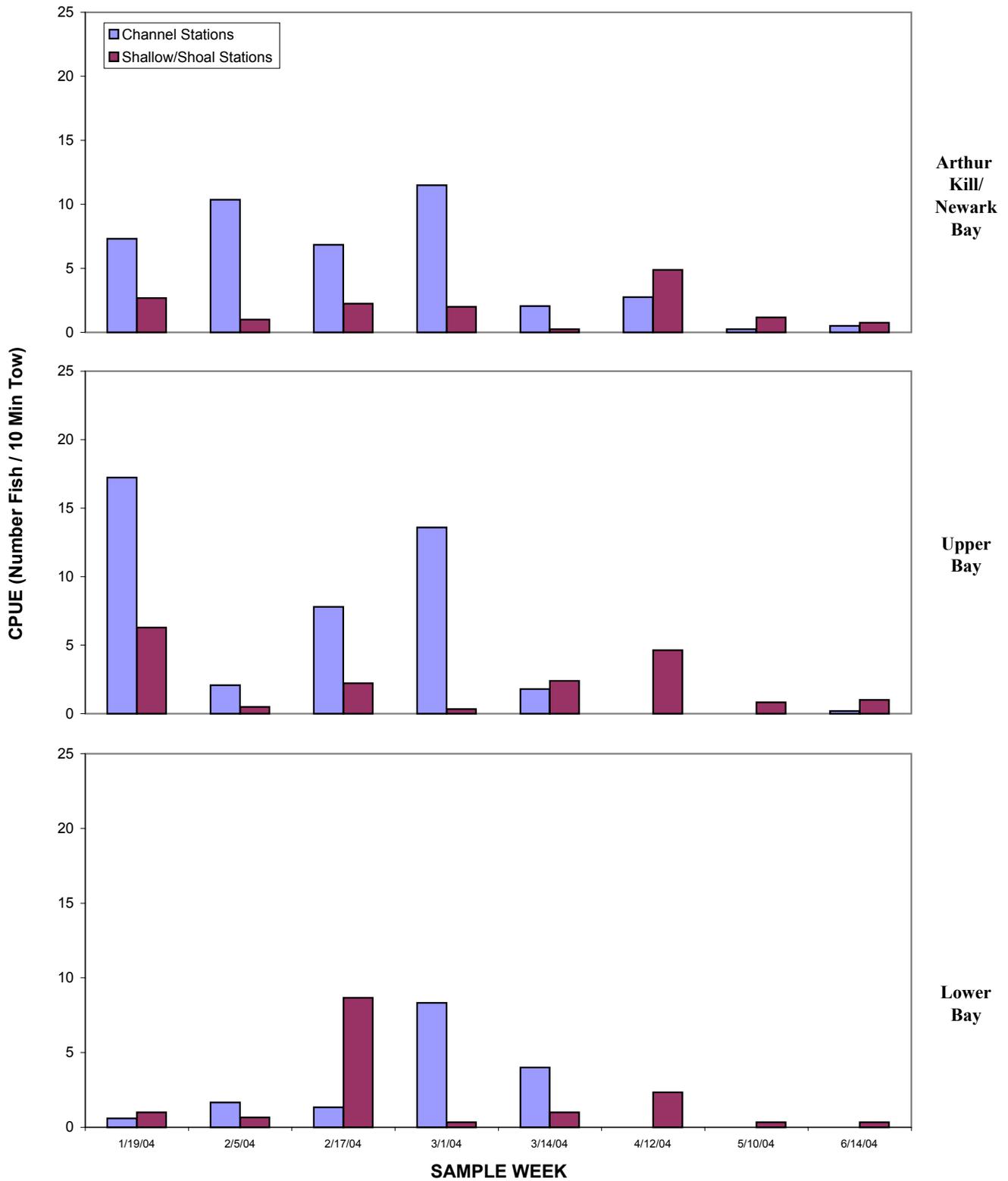


Figure 3-21 Average weekly winter flounder trawl CPUE at navigation channel and shallow/shoal stations in the three study areas during 2004 Aquatic Biological Sampling Program.



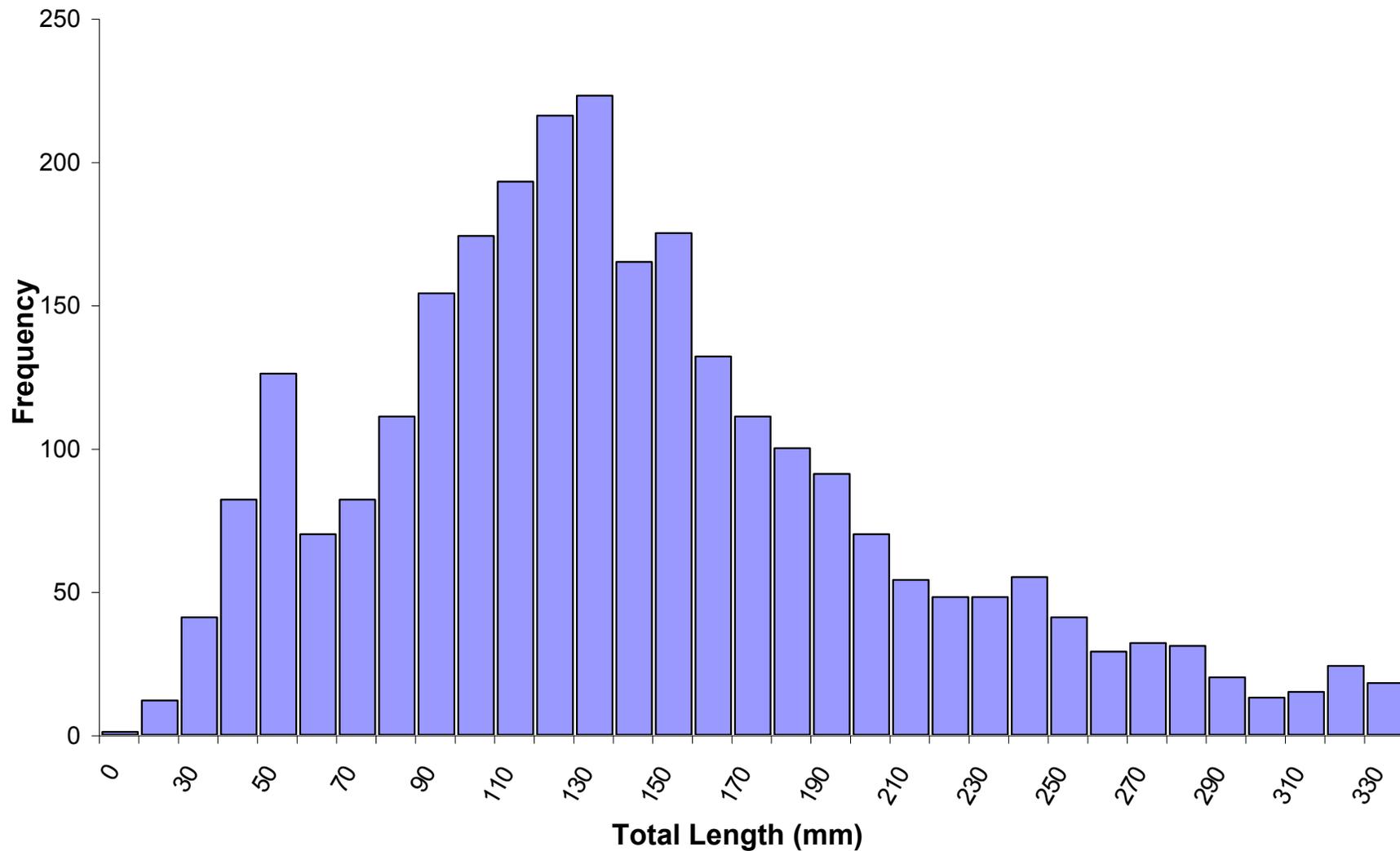


Figure 3-22 Length frequency distribution (10 mm intervals) of all winter flounder collected during trawl sampling during 2004 Aquatic Biological Sampling Program.



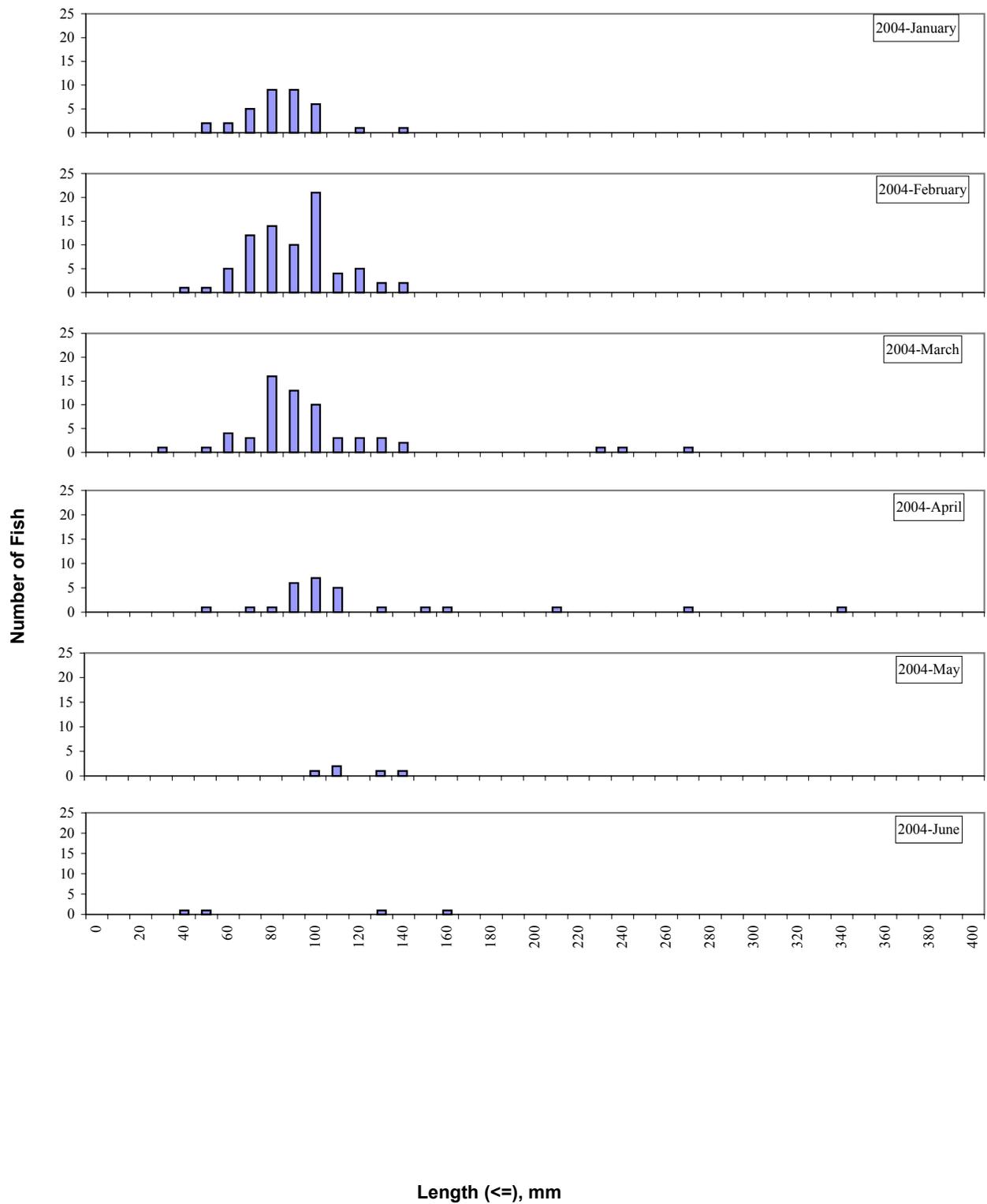


Figure 3-23 Length frequency distribution of winter flounder collected during trawl sampling at Arthur Kill/Newark Bay stations, 2004 Aquatic Biological Sampling Program.



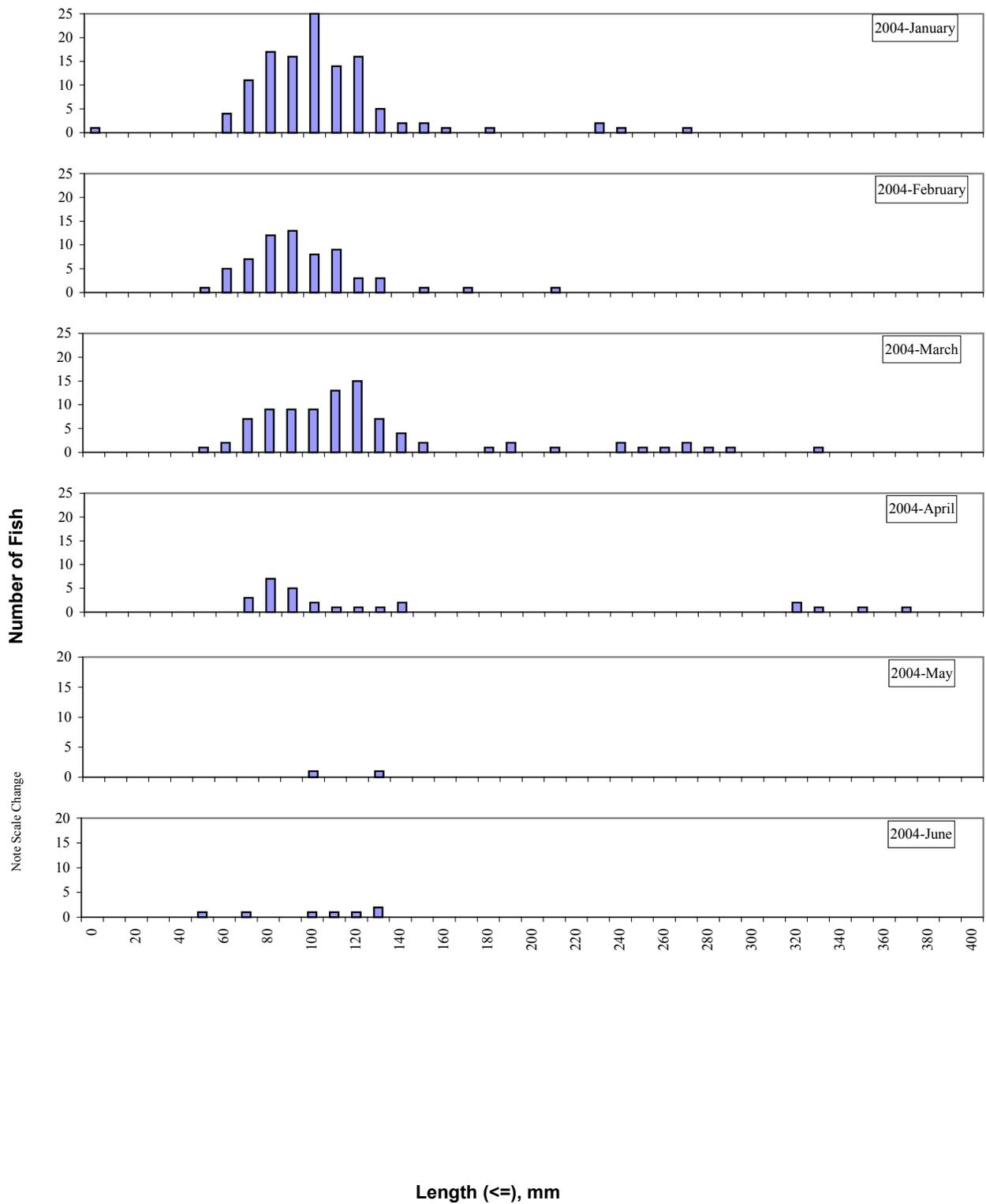


Figure 3-24 Length frequency distribution of winter flounder collected during trawl sampling at Upper Bay stations, 2004 Aquatic Biological Sampling Program.



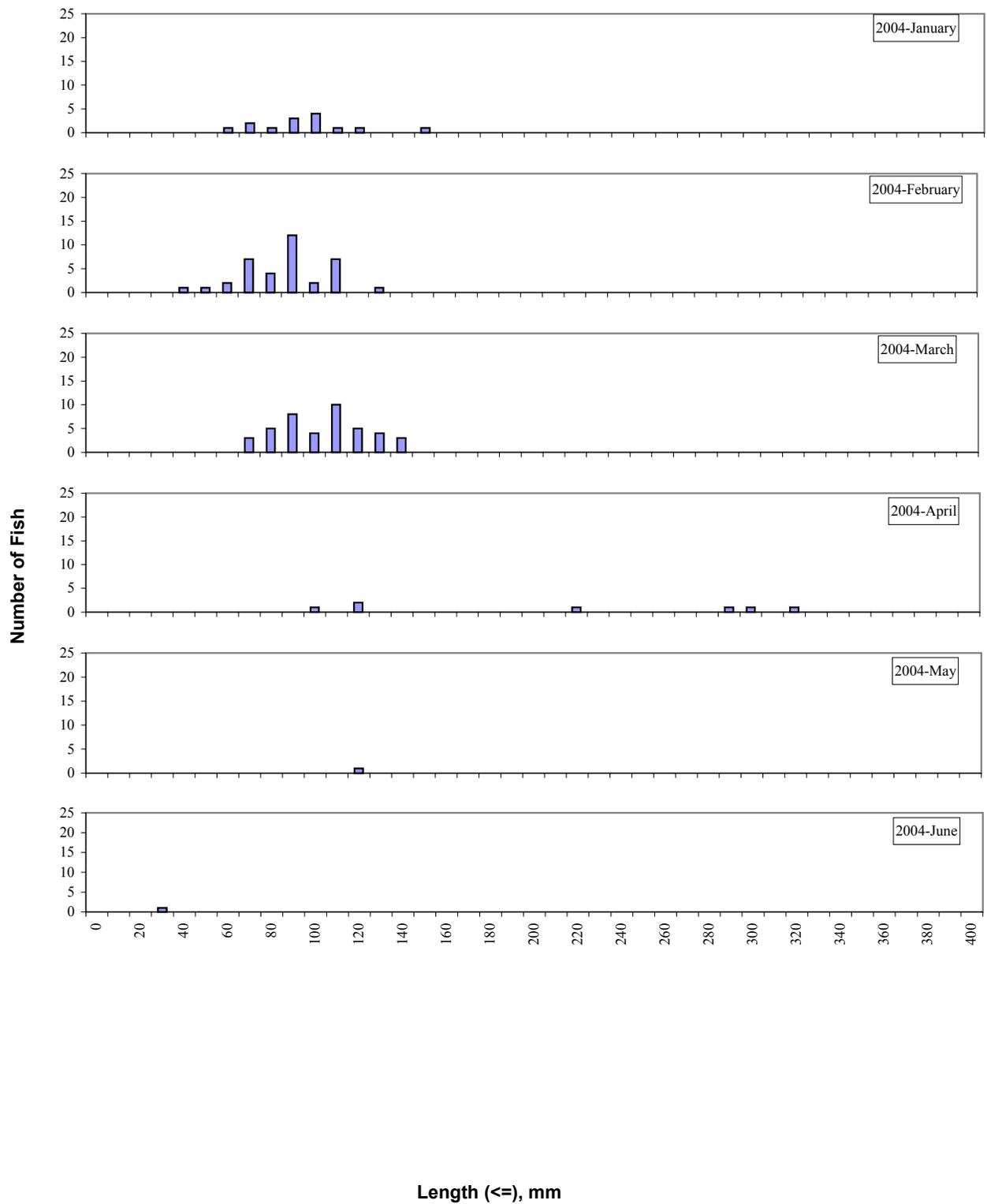


Figure 3-25 Length frequency distribution of winter flounder collected during trawl sampling at Lower Bay stations, 2004 Aquatic Biological Sampling Program.





Figure 3-27 Distribution of winter flounder lifestages collected in the three study areas, 2004 Aquatic Biological Sampling Program.

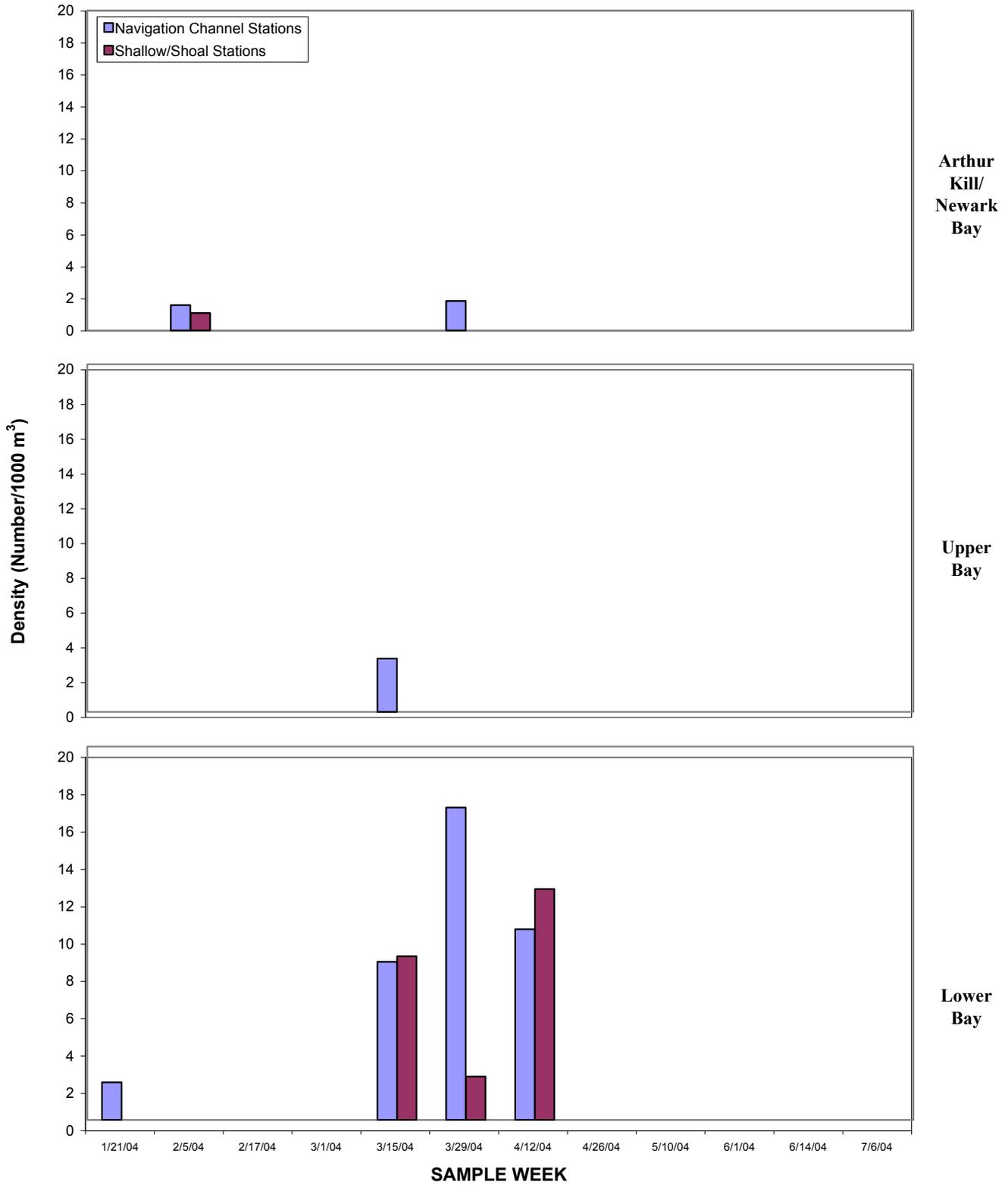


Figure 3-28 Average weekly winter flounder egg density at navigation channel and shallow/shoal stations in the three study areas, 2004 Aquatic Biological Sampling Program.

Note(s): Dates listed indicate the first day of each sample week. Note scale change for Lower Bay.



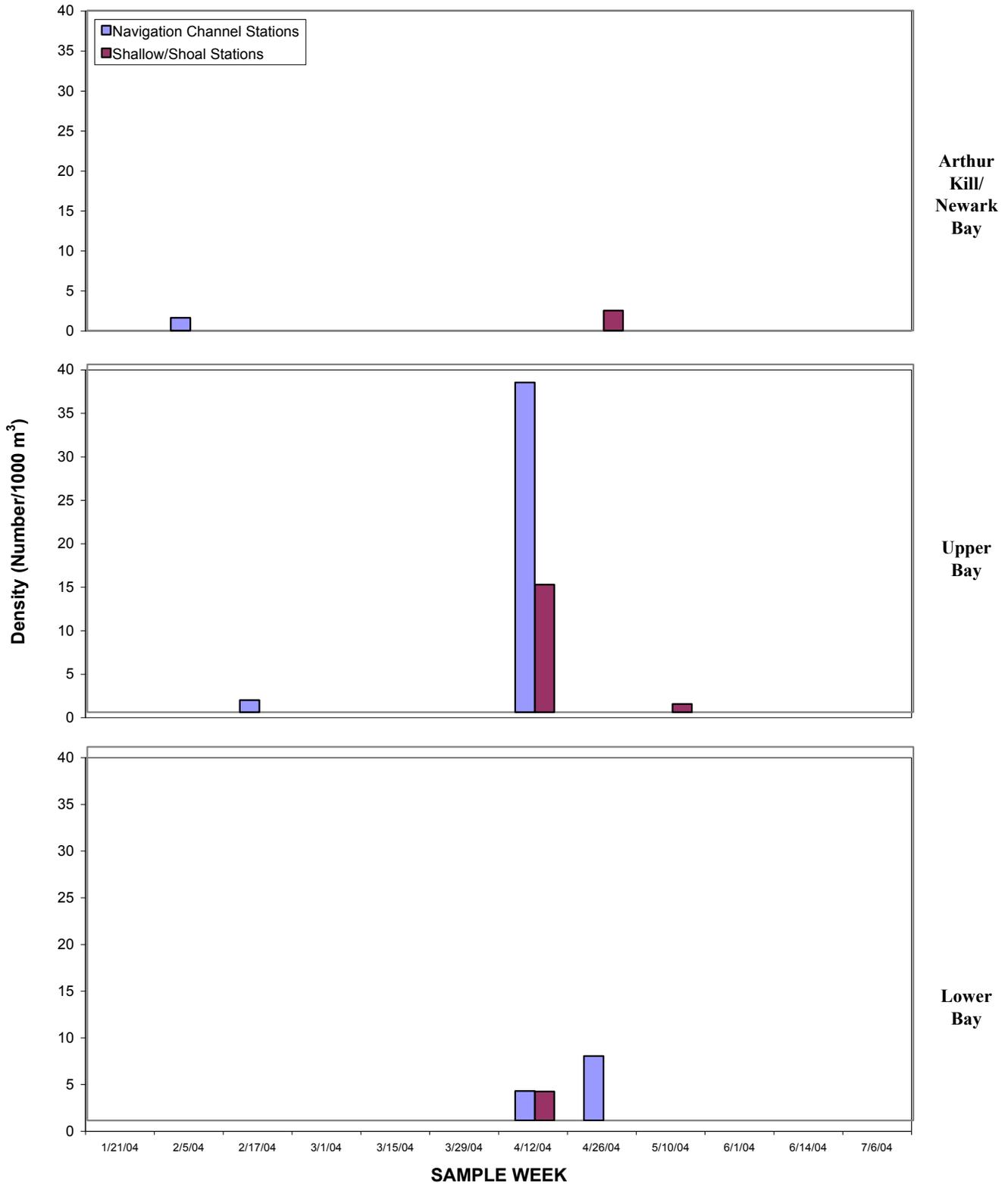


Figure 3-29 Average weekly winter flounder yolk-sac density at navigation channel and shallow/shoal stations in the three study areas, 2004 Aquatic Biological Sampling Program.

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



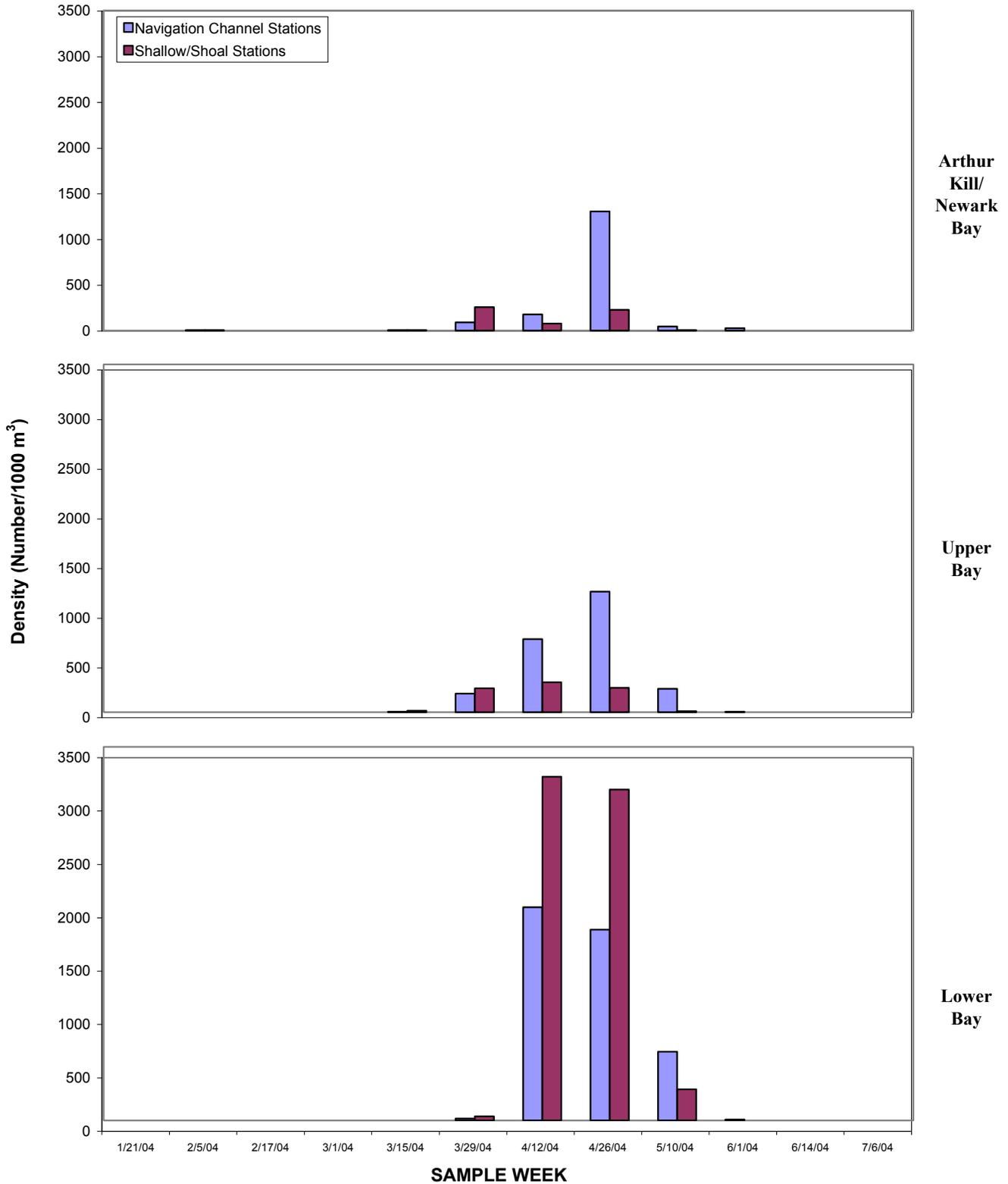


Figure 3-30 Average weekly winter flounder post yolk-sac density at navigation channel and shallow/shoal stations in the three study areas, 2004 Aquatic Biological Sampling Program.

Note(s): Dates listed indicate the first day of each sample week. Note scale change for Lower Bay.



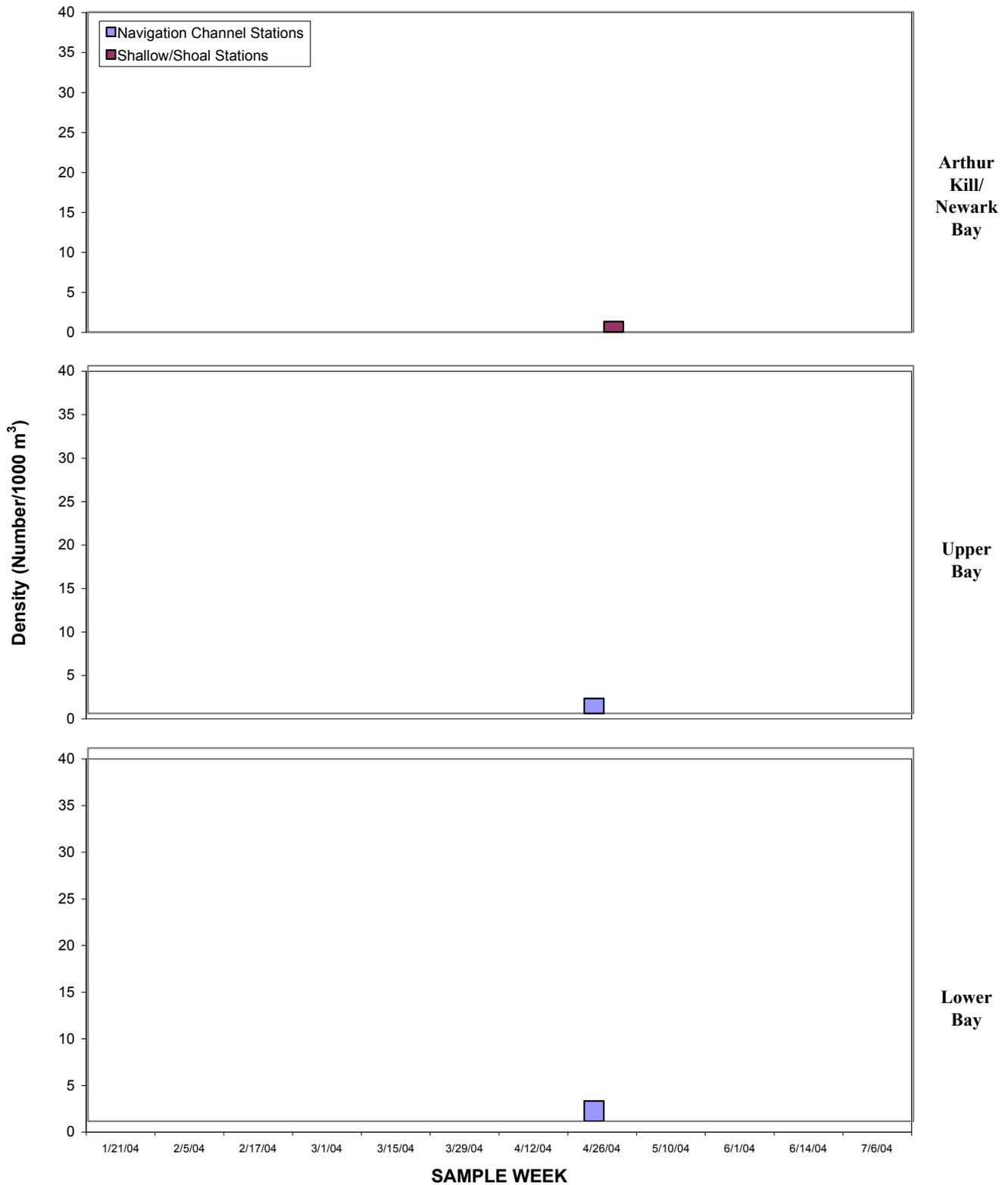


Figure 3-31 Average weekly winter flounder juvenile density at navigation channel and shallow/shoal stations in the three study areas, 2004 Aquatic Biological Sampling Program.

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



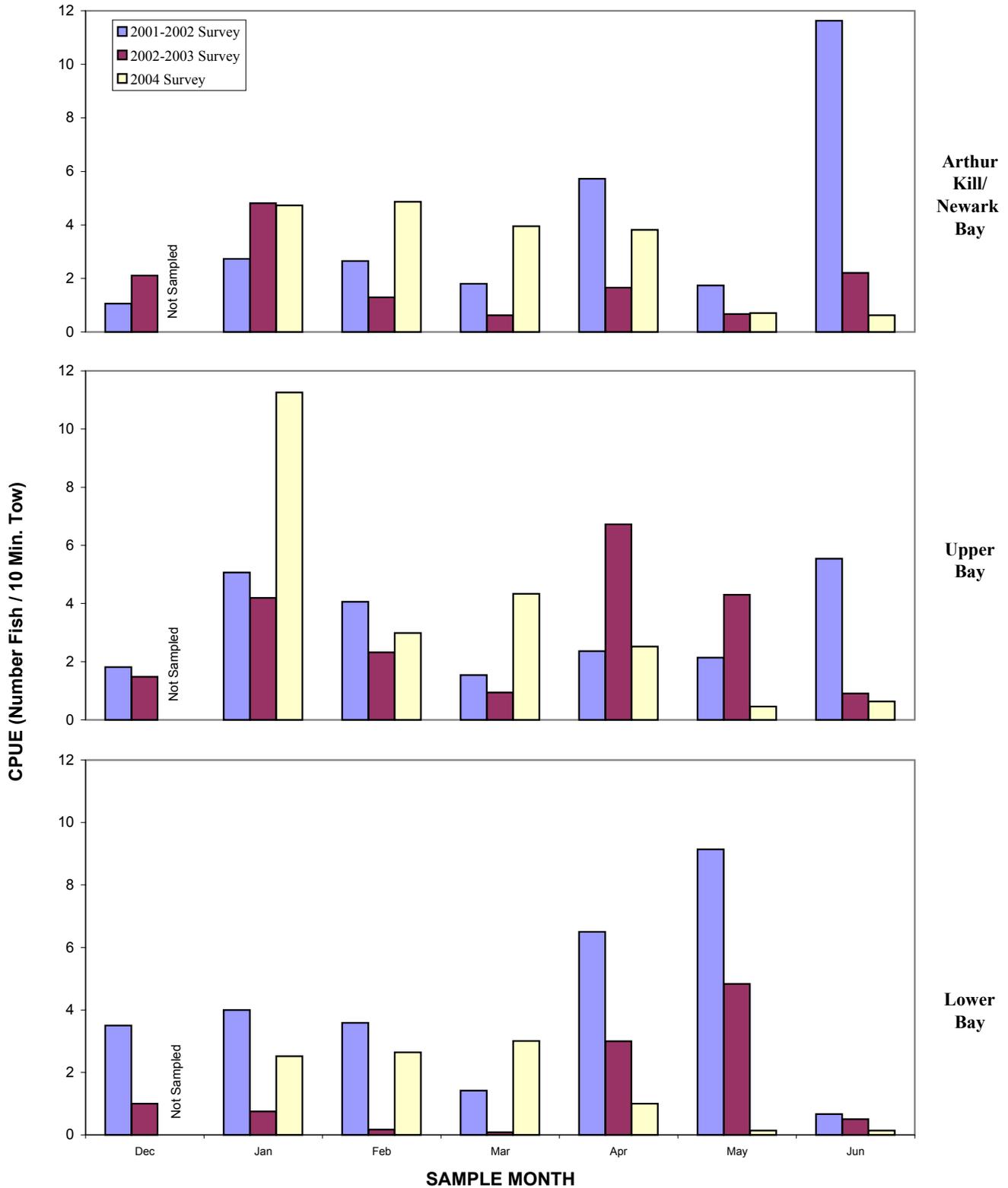


Figure 3-32 Average monthly trawl CPUE of winter flounder during the 2001-2002, 2002-2003, and 2004 surveys in the three study areas.



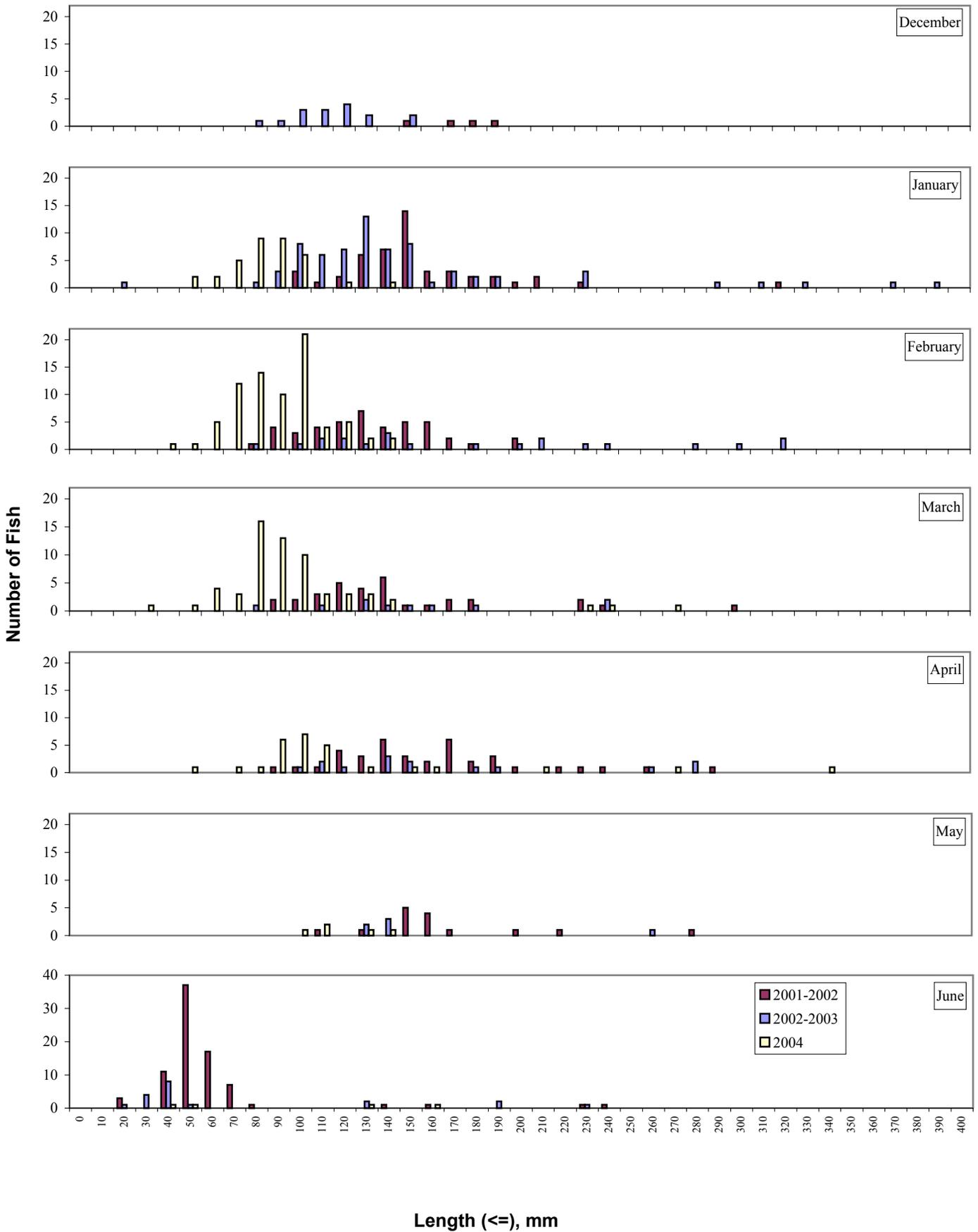


Figure 3-33 Length frequency distribution of winter flounder collected during trawl sampling at Arthur Kill/Newark Bay stations, 2001-2004 Aquatic Biological Sampling Programs.



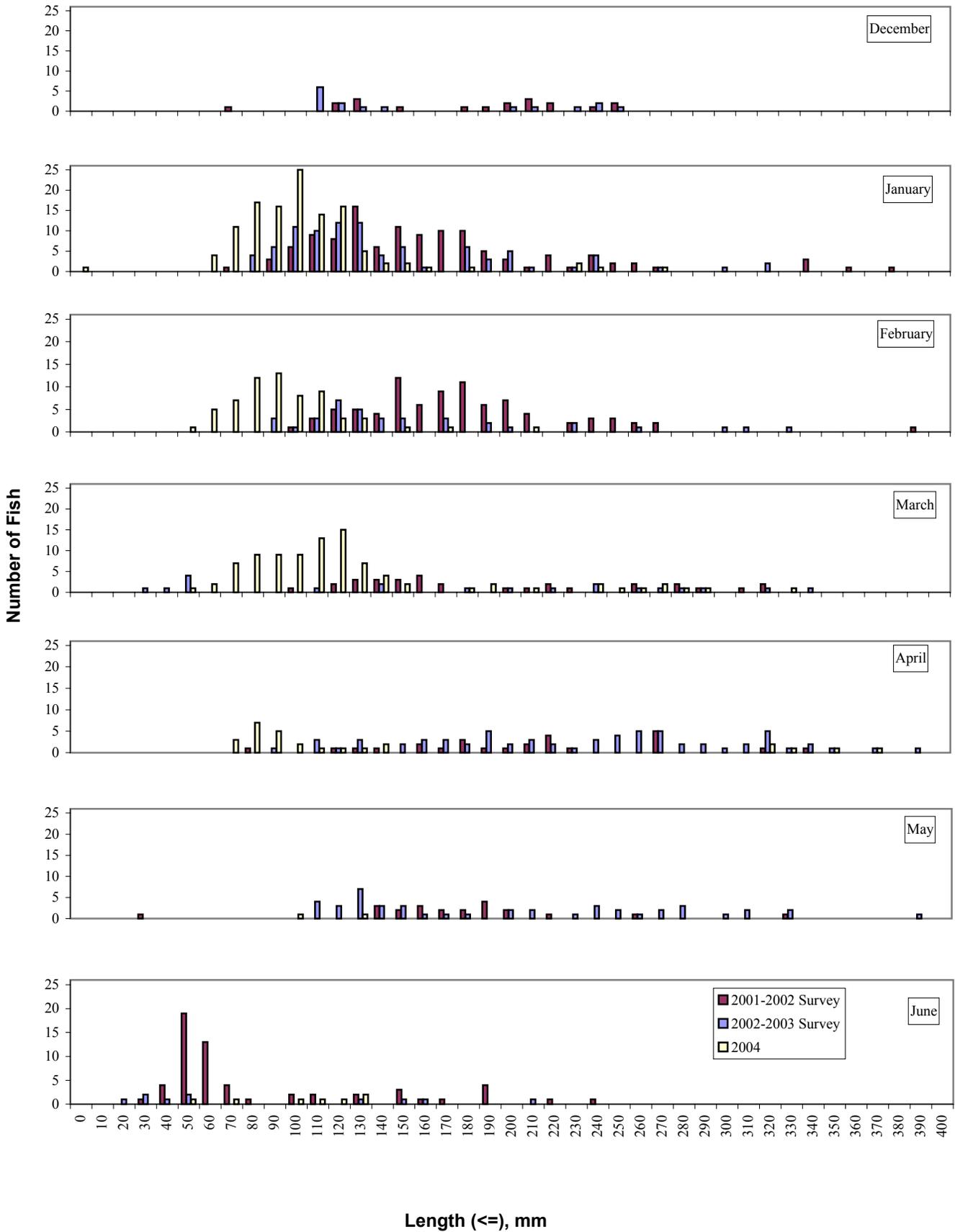


Figure 3-34 Length frequency distribution of winter flounder collected during trawl sampling at Upper Bay stations, 2001-2004 Aquatic Biological Sampling Programs.



Note(s) No sampling in December 2003

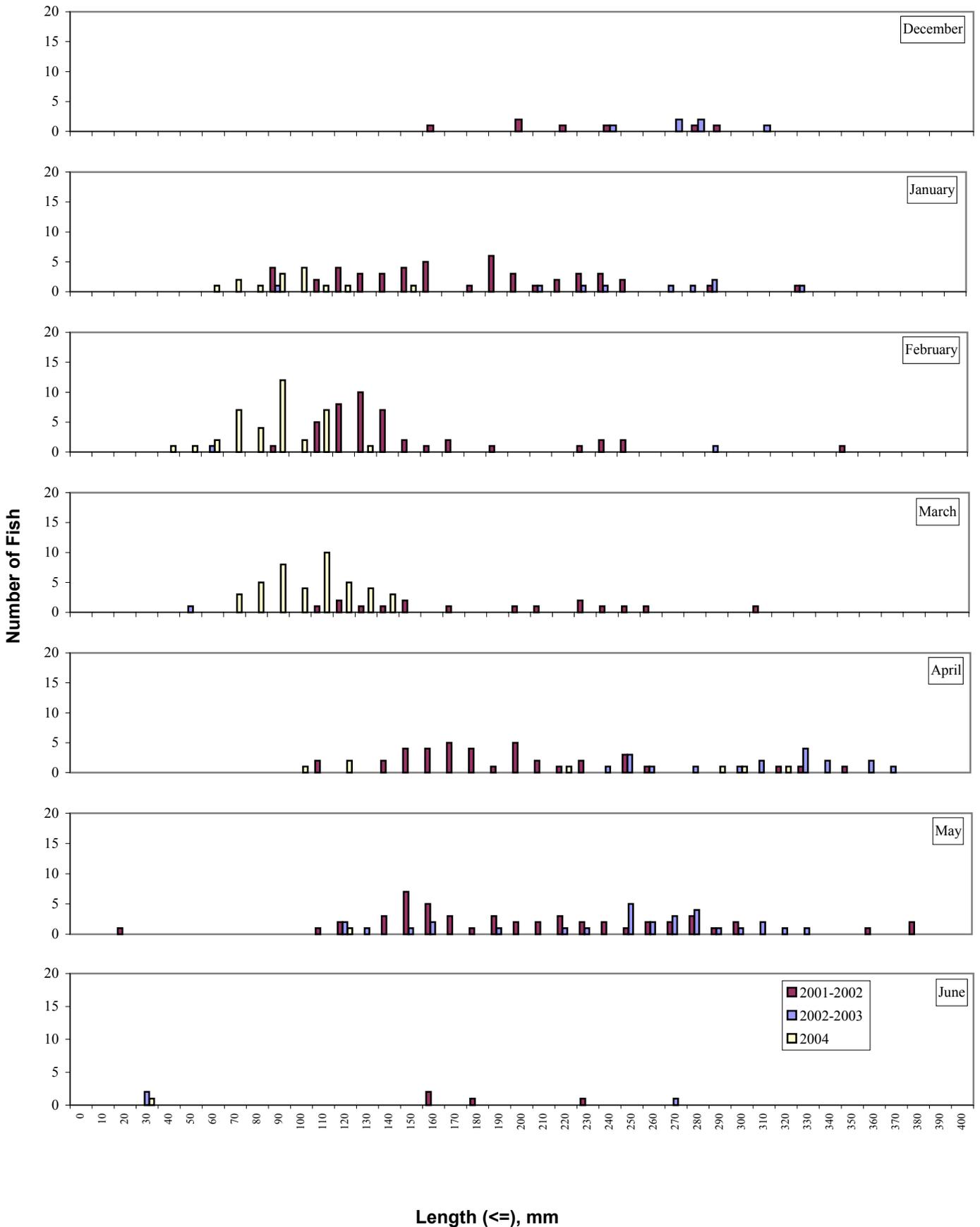


Figure 3-35 Length frequency distribution of winter flounder collected during trawl sampling at Lower Bay stations, 2001-2004 Aquatic Biological Sampling Programs.

Note(s): No sampling in December 2003



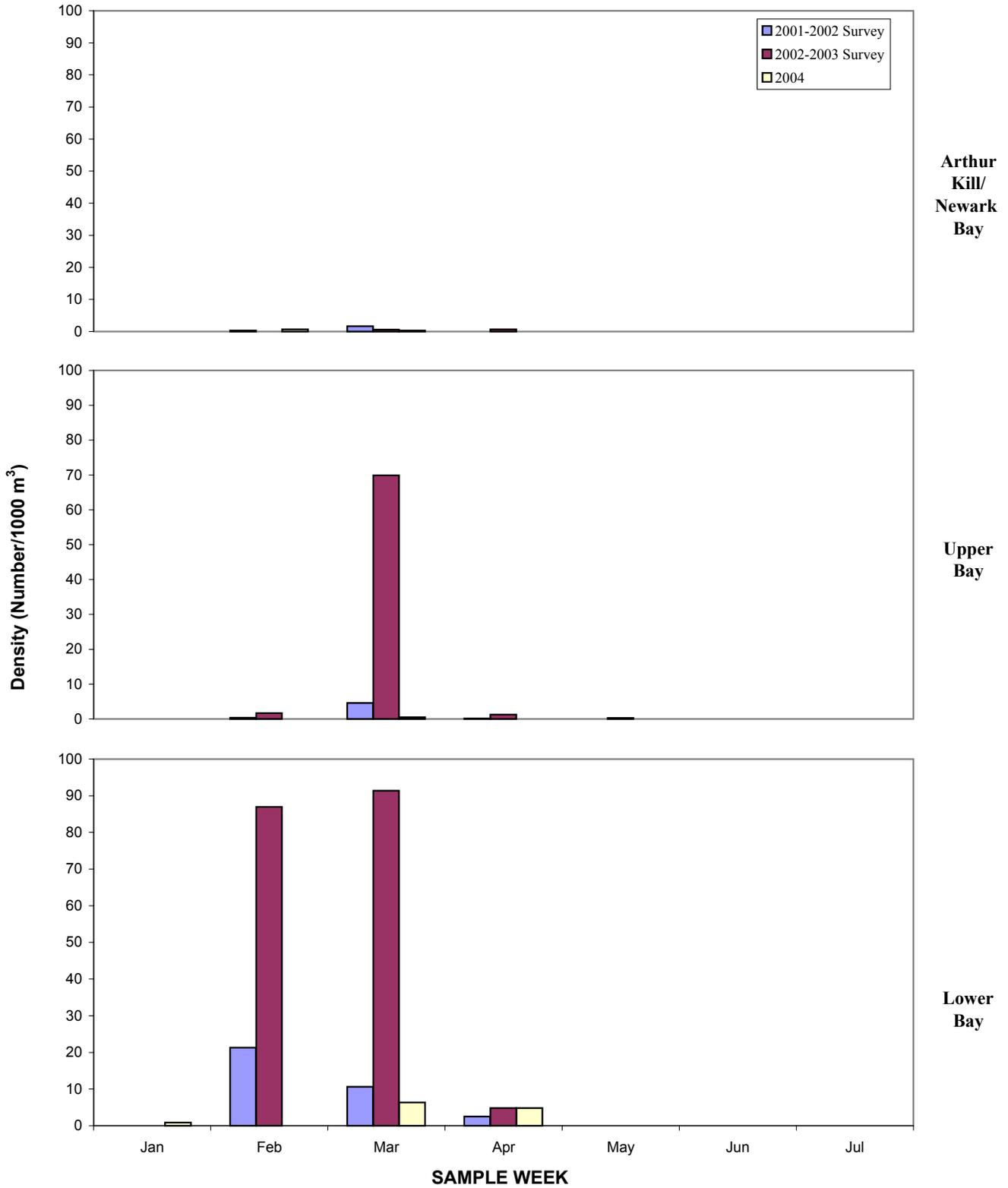


Figure 3-36 Average monthly Winter Flounder egg density during the 2001-2002, 2002-2003 and 2004 surveys in the three study areas.



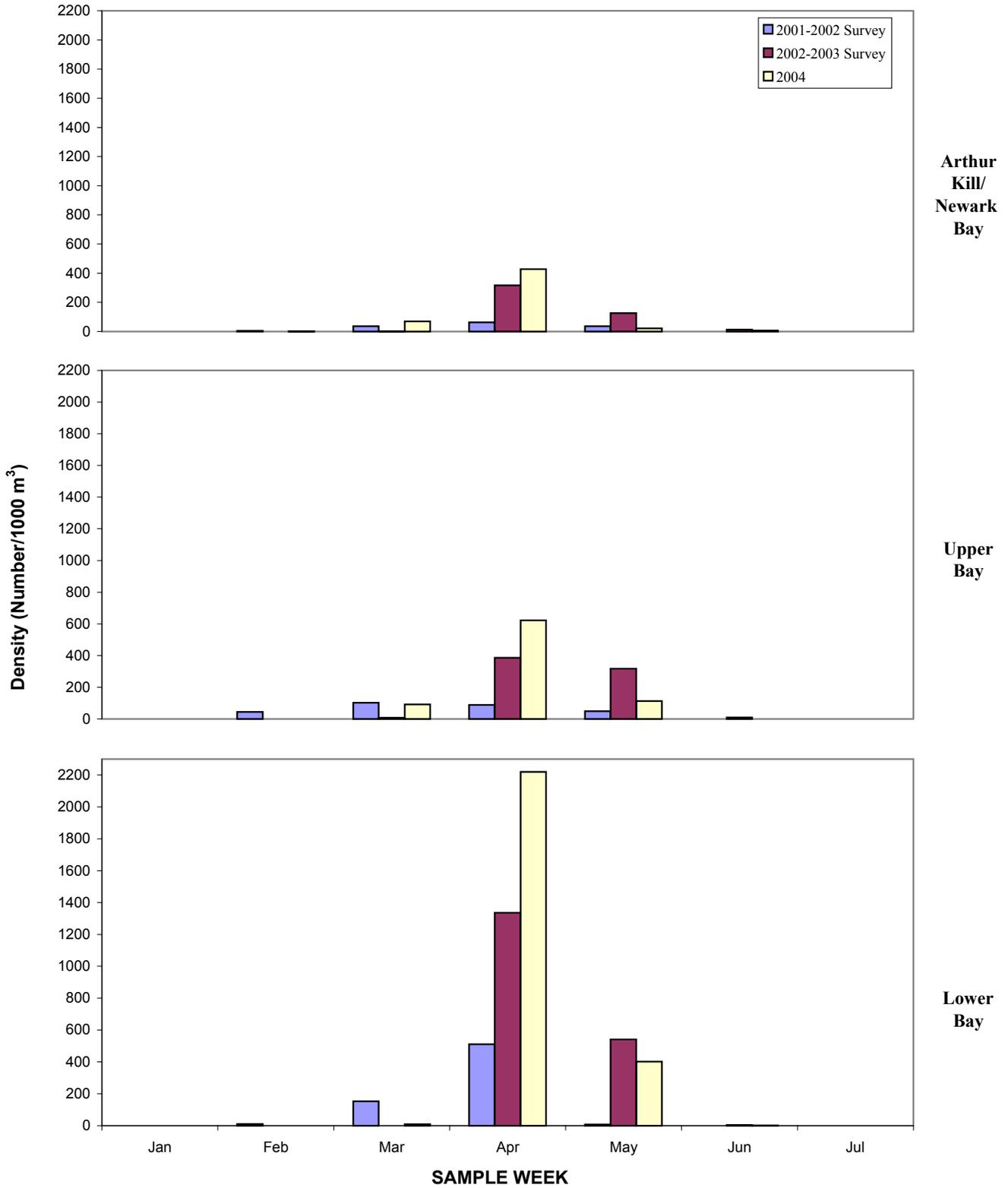


Figure 3-37 Average monthly Winter Flounder larvae density during the 2001-2002, 2002-2003 and 2004 surveys in the three study areas.



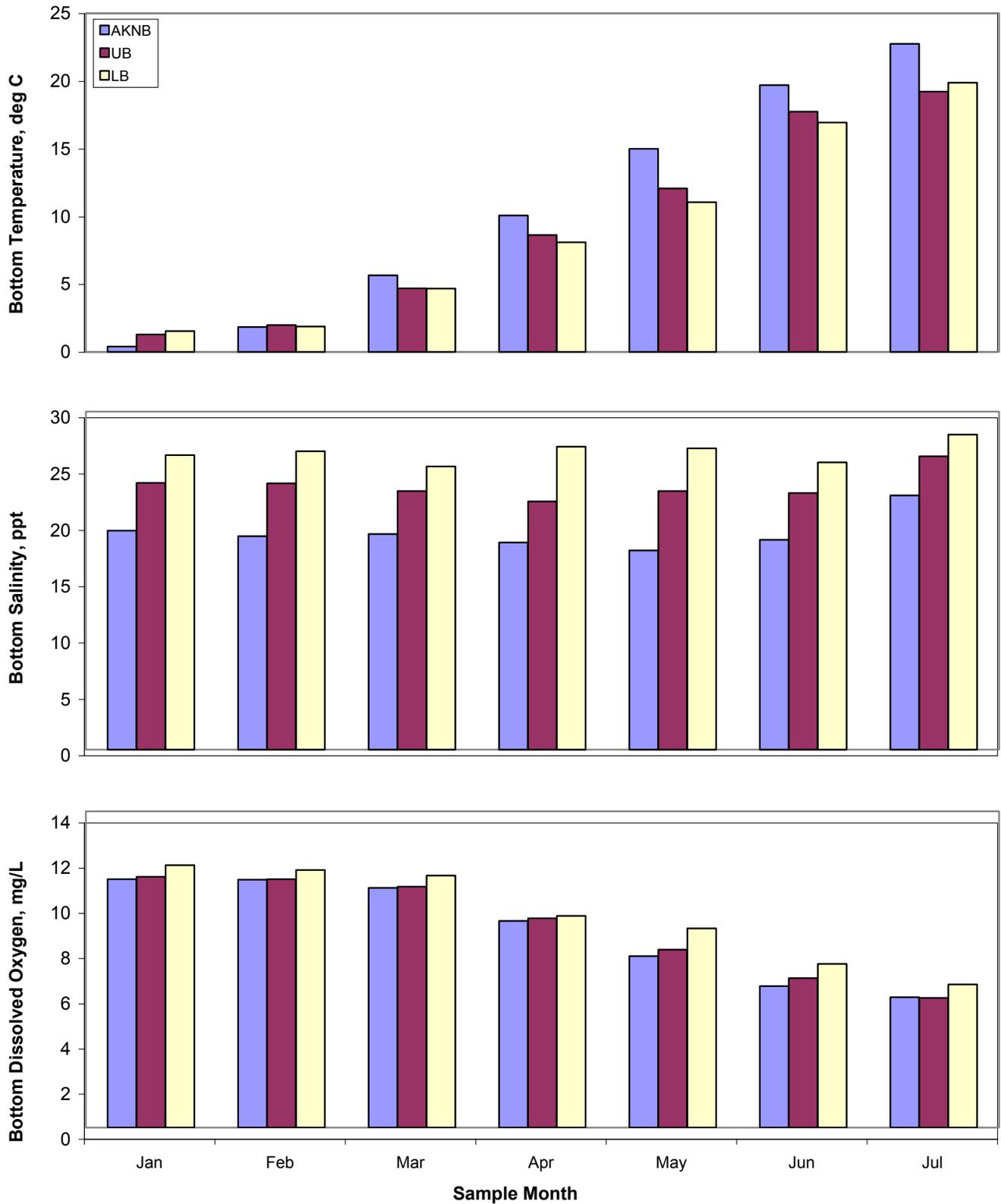


Figure 3-38 Average monthly water quality measurements by area in the three sampling areas during the 2004 Aquatic Biological Sampling Program.



Date	Station	Common Name	CPUE
1/23/2004	AK-1	Alewife	1.7
1/23/2004	AK-1	Grubby	5.0
1/23/2004	AK-1	Striped Bass	5.0
1/23/2004	AK-1	White Perch	3.3
1/23/2004	AK-1	Winter Flounder	10.0
1/23/2004	AK-2	Striped Bass	7.5
1/23/2004	AK-2	Threespine Stickleback	1.3
1/23/2004	AK-2	White Perch	6.3
1/23/2004	AK-2	Winter Flounder	3.8
2/19/2004	AK-2	American Shad	1.0
2/19/2004	AK-2	Atlantic Tomcod	2.0
2/19/2004	AK-2	Blueback Herring	7.0
2/19/2004	AK-2	Striped Bass	6.0
2/19/2004	AK-2	White Perch	2.0
2/19/2004	AK-2	Windowpane	1.0
2/19/2004	AK-2	Winter Flounder	14.0
3/3/2004	AK-2	American Shad	1.0
3/3/2004	AK-2	Atlantic Tomcod	13.0
3/3/2004	AK-2	Blueback Herring	6.0
3/3/2004	AK-2	Grubby	1.0
3/3/2004	AK-2	Silver Hake	2.0
3/3/2004	AK-2	Striped Bass	14.0
3/3/2004	AK-2	White Perch	7.0
3/3/2004	AK-2	Windowpane	1.0
3/3/2004	AK-2	Winter Flounder	34.0
3/14/2004	AK-2	Alewife	6.7
3/14/2004	AK-2	American Shad	1.1
3/14/2004	AK-2	Atlantic Tomcod	1.1
3/14/2004	AK-2	Blueback Herring	16.7
3/14/2004	AK-2	Grubby	2.2
3/14/2004	AK-2	Striped Bass	3.3
3/14/2004	AK-2	White Perch	4.4
3/14/2004	AK-2	Winter Flounder	1.1
4/14/2004	AK-2	Atlantic Herring	1.7
4/14/2004	AK-2	Blueback Herring	8.3
5/12/2004	AK-2	Atlantic Herring	6.7
5/12/2004	AK-2	Bay Anchovy	3.3
5/12/2004	AK-2	Spotted Hake	1.7
6/16/2004	AK-2	Atlantic Tomcod	2.0
6/16/2004	AK-2	Bay Anchovy	24.0
1/20/2004	AK-3	Alewife	1.3
1/20/2004	AK-3	Grubby	1.3
1/20/2004	AK-3	Silver Hake	1.3
1/20/2004	AK-3	Striped Bass	21.3
1/20/2004	AK-3	White Perch	38.8
1/20/2004	AK-3	Winter Flounder	12.5
2/10/2004	AK-3	Grubby	2.2
2/10/2004	AK-3	Rock Gunnel	1.1
2/10/2004	AK-3	Striped Bass	25.6
2/10/2004	AK-3	White Perch	98.9



Date	Station	Common Name	CPUE
2/10/2004	AK-3	Windowpane	1.1
2/10/2004	AK-3	Winter Flounder	14.4
2/19/2004	AK-3	Alewife	1.1
2/19/2004	AK-3	Atlantic Tomcod	2.2
2/19/2004	AK-3	Blueback Herring	1.1
2/19/2004	AK-3	Grubby	1.1
2/19/2004	AK-3	Striped Bass	10.0
2/19/2004	AK-3	White Perch	73.3
2/19/2004	AK-3	Winter Flounder	3.3
3/3/2004	AK-3	American Shad	1.1
3/3/2004	AK-3	Atlantic Tomcod	4.4
3/3/2004	AK-3	Blueback Herring	8.9
3/3/2004	AK-3	Grubby	3.3
3/3/2004	AK-3	Striped Bass	35.6
3/3/2004	AK-3	White Perch	106.7
3/14/2004	AK-3	Alewife	6.7
3/14/2004	AK-3	American Shad	2.2
3/14/2004	AK-3	Blueback Herring	46.7
3/14/2004	AK-3	Striped Bass	25.6
3/14/2004	AK-3	White Perch	51.1
3/14/2004	AK-3	Winter Flounder	1.1
4/14/2004	AK-3	American Shad	1.3
4/14/2004	AK-3	Atlantic Herring	3.8
4/14/2004	AK-3	Atlantic Tomcod	1.3
4/14/2004	AK-3	Blueback Herring	22.5
4/14/2004	AK-3	Northern Pipefish	1.3
4/14/2004	AK-3	Smallmouth Flounder	1.3
4/14/2004	AK-3	Spotted Hake	16.3
4/14/2004	AK-3	Striped Bass	6.3
4/14/2004	AK-3	White Perch	7.5
5/12/2004	AK-3	Alewife	1.0
5/12/2004	AK-3	Atlantic Herring	1.0
5/12/2004	AK-3	Atlantic Tomcod	6.0
5/12/2004	AK-3	Bay Anchovy	12.0
5/12/2004	AK-3	Blueback Herring	2.0
5/12/2004	AK-3	Spotted Hake	3.0
5/12/2004	AK-3	Threespine Stickleback	3.0
5/12/2004	AK-3	White Perch	1.0
5/12/2004	AK-3	Winter Flounder	1.0
6/16/2004	AK-3	Bay Anchovy	22.2
1/20/2004	AK-4	Alewife	2.2
1/20/2004	AK-4	Atlantic Herring	1.1
1/20/2004	AK-4	Striped Killifish	1.1
1/20/2004	AK-4	Winter Flounder	2.2
2/10/2004	AK-4	White Perch	2.0
2/19/2004	AK-4	Alewife	1.0
2/19/2004	AK-4	Blueback Herring	3.0
2/19/2004	AK-4	Striped Bass	24.0
2/19/2004	AK-4	Striped Killifish	1.0
2/19/2004	AK-4	White Perch	138.0



Date	Station	Common Name	CPUE
2/19/2004	AK-4	Winter Flounder	3.0
3/3/2004	AK-4	American Shad	3.0
3/3/2004	AK-4	Blueback Herring	2.0
3/3/2004	AK-4	Striped Bass	3.0
3/3/2004	AK-4	White Perch	1.0
3/3/2004	AK-4	Winter Flounder	6.0
3/14/2004	AK-4	Alewife	1.0
3/14/2004	AK-4	Atlantic Silverside	2.0
3/14/2004	AK-4	Blueback Herring	5.0
3/14/2004	AK-4	Cunner	1.0
3/14/2004	AK-4	Striped Bass	9.0
3/14/2004	AK-4	White Perch	4.0
3/14/2004	AK-4	Winter Flounder	1.0
4/14/2004	AK-4	Alewife	218.9
4/14/2004	AK-4	American Eel	1.1
4/14/2004	AK-4	American Shad	16.7
4/14/2004	AK-4	Atlantic Herring	1.1
4/14/2004	AK-4	Blueback Herring	33.3
4/14/2004	AK-4	Striped Bass	15.6
4/14/2004	AK-4	White Perch	26.7
4/14/2004	AK-4	Winter Flounder	1.1
5/12/2004	AK-4	American Shad	2.0
5/12/2004	AK-4	Atlantic Tomcod	2.0
5/12/2004	AK-4	Bay Anchovy	4.0
5/12/2004	AK-4	Blueback Herring	1.0
5/12/2004	AK-4	Striped Bass	17.0
5/12/2004	AK-4	White Perch	1.0
5/12/2004	AK-4	Winter Flounder	1.0
6/16/2004	AK-4	Bay Anchovy	37.0
1/21/2004	LB-1	Winter Flounder	3.0
2/6/2004	LB-1	Little Skate	1.0
2/6/2004	LB-1	Winter Flounder	1.0
2/17/2004	LB-1	Blueback Herring	1.0
2/17/2004	LB-1	Windowpane	2.0
2/17/2004	LB-1	Winter Flounder	4.0
3/1/2004	LB-1	American Shad	1.0
3/15/2004	LB-1	Alewife	1.0
3/15/2004	LB-1	Little Skate	1.0
3/15/2004	LB-1	Spotted Hake	2.0
3/15/2004	LB-1	Windowpane	1.0
3/15/2004	LB-1	Winter Flounder	1.0
3/15/2004	LB-1	Winter Skate	1.0
4/16/2004	LB-1	Alewife	3.0
4/16/2004	LB-1	American Shad	2.0
4/16/2004	LB-1	Blueback Herring	6.0
4/16/2004	LB-1	Little Skate	2.0
4/16/2004	LB-1	Smallmouth Flounder	3.0
4/16/2004	LB-1	Spotted Hake	2.0
4/16/2004	LB-1	Windowpane	2.0
4/16/2004	LB-1	Winter Flounder	5.0



Date	Station	Common Name	CPUE
4/16/2004	LB-1	Yellowtail Flounder	1.0
5/11/2004	LB-1	Alewife	1.0
5/11/2004	LB-1	Bay Anchovy	4.0
5/11/2004	LB-1	Spotted Hake	8.0
5/11/2004	LB-1	Summer Flounder	1.0
6/15/2004	LB-1	Scup	4.0
1/21/2004	LB-2	Alewife	25.4
1/21/2004	LB-2	Atlantic Herring	116.2
1/21/2004	LB-2	Atlantic Menhaden	3.1
1/21/2004	LB-2	Little Skate	0.8
1/21/2004	LB-2	Red Hake	0.8
1/21/2004	LB-2	Silver Hake	0.8
1/21/2004	LB-2	Windowpane	1.5
1/21/2004	LB-2	Winter Flounder	0.8
2/5/2004	LB-2	Blueback Herring	3.0
2/5/2004	LB-2	Red Hake	2.0
2/17/2004	LB-2	Winter Flounder	1.0
3/1/2004	LB-2	American Shad	3.0
3/1/2004	LB-2	Grubby	1.0
3/1/2004	LB-2	Red Hake	3.0
3/1/2004	LB-2	Silver Hake	5.0
3/1/2004	LB-2	Smallmouth Flounder	1.0
3/1/2004	LB-2	Winter Flounder	4.0
3/15/2004	LB-2	Alewife	5.0
3/15/2004	LB-2	Grubby	1.0
3/15/2004	LB-2	Red Hake	1.0
3/15/2004	LB-2	Smallmouth Flounder	2.0
3/15/2004	LB-2	Windowpane	1.0
3/15/2004	LB-2	Winter Flounder	3.0
4/15/2004	LB-2	Red Hake	1.0
4/15/2004	LB-2	Windowpane	1.0
5/11/2004	LB-2	Bay Anchovy	9.0
5/11/2004	LB-2	Striped Searobin	1.0
6/15/2004	LB-2	Bay Anchovy	1.0
1/21/2004	LB-3	Atlantic Herring	2.0
1/21/2004	LB-3	Grubby	1.0
2/17/2004	LB-3	American Shad	1.0
2/17/2004	LB-3	Atlantic Silverside	2.0
2/17/2004	LB-3	Blueback Herring	4.0
2/17/2004	LB-3	Little Skate	6.0
2/17/2004	LB-3	Windowpane	1.0
2/17/2004	LB-3	Winter Flounder	3.0
3/2/2004	LB-3	American Shad	1.0
3/2/2004	LB-3	Little Skate	1.0
3/2/2004	LB-3	Winter Flounder	1.0
3/15/2004	LB-3	Alewife	3.0
3/15/2004	LB-3	Winter Flounder	1.0
4/15/2004	LB-3	Red Hake	2.0
4/15/2004	LB-3	Spotted Hake	1.0
4/15/2004	LB-3	Summer Flounder	1.0



Date	Station	Common Name	CPUE
4/15/2004	LB-3	Winter Flounder	2.0
5/12/2004	LB-3	Bay Anchovy	2.0
5/12/2004	LB-3	Red Hake	1.0
5/12/2004	LB-3	Spotted Hake	1.0
5/12/2004	LB-3	Winter Flounder	1.0
6/16/2004	LB-3	Bay Anchovy	4.0
1/21/2004	LB-4	Alewife	14.0
1/21/2004	LB-4	Atlantic Herring	33.0
1/21/2004	LB-4	Atlantic Menhaden	7.0
1/21/2004	LB-4	Atlantic Silverside	2.0
1/21/2004	LB-4	Blueback Herring	4.0
1/21/2004	LB-4	Grubby	1.0
1/21/2004	LB-4	Little Skate	1.0
3/2/2004	LB-4	Red Hake	1.0
3/2/2004	LB-4	Silver Hake	1.0
3/2/2004	LB-4	Winter Flounder	18.0
3/15/2004	LB-4	Alewife	4.0
3/15/2004	LB-4	Blueback Herring	1.0
3/15/2004	LB-4	Little Skate	1.0
3/15/2004	LB-4	Red Hake	4.0
3/15/2004	LB-4	Rock Gunnel	1.0
3/15/2004	LB-4	Winter Flounder	9.0
3/15/2004	LB-4	Winter Skate	1.0
4/15/2004	LB-4	Alewife	1.0
5/11/2004	LB-4	Bay Anchovy	7.0
5/11/2004	LB-4	Red Hake	1.0
5/11/2004	LB-4	Spotted Hake	1.0
6/16/2004	LB-4	Bay Anchovy	15.0
6/16/2004	LB-4	Butterfish	1.0
1/21/2004	LB-5	Atlantic Menhaden	1.0
2/5/2004	LB-5	Winter Flounder	1.0
2/17/2004	LB-5	Blueback Herring	1.0
2/17/2004	LB-5	Little Skate	1.0
2/17/2004	LB-5	Windowpane	4.0
2/17/2004	LB-5	Winter Flounder	19.0
3/2/2004	LB-5	Silver Hake	1.0
3/2/2004	LB-5	Windowpane	1.0
3/15/2004	LB-5	Alewife	1.0
3/15/2004	LB-5	Red Hake	2.0
3/15/2004	LB-5	Winter Flounder	1.0
4/15/2004	LB-5	Little Skate	1.0
4/15/2004	LB-5	Smallmouth Flounder	2.0
4/15/2004	LB-5	Spotted Hake	5.0
4/15/2004	LB-5	Windowpane	1.0
5/12/2004	LB-5	Bay Anchovy	2.0
5/12/2004	LB-5	Spotted Hake	2.0
6/16/2004	LB-5	Bay Anchovy	16.0
6/16/2004	LB-5	Scup	1.0
6/16/2004	LB-5	Spotted Hake	3.0
6/16/2004	LB-5	Winter Flounder	1.0



Date	Station	Common Name	CPUE
1/21/2004	LB-6	Alewife	1.0
1/21/2004	LB-6	Blueback Herring	2.0
1/21/2004	LB-6	Grubby	1.0
1/21/2004	LB-6	Little Skate	21.0
1/21/2004	LB-6	Red Hake	1.0
1/21/2004	LB-6	Windowpane	1.0
1/21/2004	LB-6	Winter Flounder	1.0
2/5/2004	LB-6	Atlantic Silverside	1.0
2/5/2004	LB-6	Winter Flounder	5.0
2/17/2004	LB-6	Alewife	10.0
2/17/2004	LB-6	American Shad	3.0
2/17/2004	LB-6	Atlantic Silverside	2.0
2/17/2004	LB-6	Blueback Herring	24.0
2/17/2004	LB-6	Grubby	4.0
2/17/2004	LB-6	Little Skate	3.0
2/17/2004	LB-6	Windowpane	4.0
2/17/2004	LB-6	Winter Flounder	3.0
3/2/2004	LB-6	Alewife	3.0
3/2/2004	LB-6	Little Skate	5.0
3/2/2004	LB-6	Silver Hake	2.0
3/2/2004	LB-6	Winter Flounder	3.0
3/2/2004	LB-6	Winter Skate	1.0
3/15/2004	LB-6	Alewife	2.0
3/15/2004	LB-6	Grubby	1.0
3/15/2004	LB-6	Red Hake	1.0
4/15/2004	LB-6	Alewife	1.0
4/15/2004	LB-6	Blueback Herring	21.0
4/15/2004	LB-6	Little Skate	3.0
4/15/2004	LB-6	Northern Pipefish	1.0
4/15/2004	LB-6	Red Hake	2.0
4/15/2004	LB-6	Spotted Hake	20.0
5/12/2004	LB-6	Clupeid unidentified	2.0
5/12/2004	LB-6	Spotted Hake	2.0
6/16/2004	LB-6	Bay Anchovy	58.0
2/10/2004	NB-3	Grubby	1.0
2/10/2004	NB-3	Striped Bass	4.0
2/10/2004	NB-3	White Perch	2.0
2/19/2004	NB-3	Striped Bass	8.0
2/19/2004	NB-3	White Perch	11.0
2/19/2004	NB-3	Winter Flounder	1.0
3/3/2004	NB-3	Alewife	1.0
3/3/2004	NB-3	American Shad	1.0
3/3/2004	NB-3	Striped Bass	19.0
3/3/2004	NB-3	White Perch	30.0
3/14/2004	NB-3	Atlantic Silverside	2.0
3/14/2004	NB-3	Blueback Herring	1.0
3/14/2004	NB-3	Striped Bass	1.0
3/14/2004	NB-3	White Perch	2.0
4/15/2004	NB-3	Alewife	12.0
4/15/2004	NB-3	Blueback Herring	2.0



Date	Station	Common Name	CPUE
4/15/2004	NB-3	Striped Bass	32.0
4/15/2004	NB-3	White Perch	121.0
4/15/2004	NB-3	Winter Flounder	3.0
5/13/2004	NB-3	Alewife	3.0
5/13/2004	NB-3	American Shad	1.0
5/13/2004	NB-3	Atlantic Tomcod	2.0
5/13/2004	NB-3	Bay Anchovy	2.0
5/13/2004	NB-3	Striped Bass	7.0
5/13/2004	NB-3	White Perch	1.0
5/13/2004	NB-3	Winter Flounder	2.0
6/16/2004	NB-3	Atlantic Tomcod	5.0
6/16/2004	NB-3	Bay Anchovy	134.0
6/16/2004	NB-3	Striped Bass	3.0
6/16/2004	NB-3	Winter Flounder	1.0
1/22/2004	NB-4	Gizzard Shad	1.1
1/22/2004	NB-4	Striped Bass	1.1
1/22/2004	NB-4	White Perch	2.2
1/22/2004	NB-4	Winter Flounder	1.1
2/10/2004	NB-4	Alewife	1.0
2/10/2004	NB-4	Striped Bass	1.0
3/3/2004	NB-4	Alewife	1.0
3/3/2004	NB-4	Striped Bass	2.0
3/3/2004	NB-4	White Perch	6.0
3/14/2004	NB-4	Alewife	4.0
3/14/2004	NB-4	Atlantic Silverside	3.0
3/14/2004	NB-4	Blueback Herring	2.0
3/14/2004	NB-4	Striped Bass	1.0
3/14/2004	NB-4	White Perch	1.0
4/15/2004	NB-4	Alewife	87.0
4/15/2004	NB-4	Atlantic Herring	1.0
4/15/2004	NB-4	Atlantic Silverside	1.0
4/15/2004	NB-4	Blueback Herring	21.0
4/15/2004	NB-4	Striped Bass	14.0
4/15/2004	NB-4	White Perch	5.0
4/15/2004	NB-4	Winter Flounder	4.0
5/13/2004	NB-4	Alewife	2.0
5/13/2004	NB-4	Atlantic Herring	248.0
5/13/2004	NB-4	Atlantic Tomcod	6.0
5/13/2004	NB-4	Bay Anchovy	9.0
5/13/2004	NB-4	Striped Bass	2.0
5/13/2004	NB-4	Threespine Stickleback	1.0
6/16/2004	NB-4	American Shad	1.0
6/16/2004	NB-4	Bay Anchovy	328.0
6/16/2004	NB-4	Bluefish	2.0
6/16/2004	NB-4	Striped Bass	1.0
1/22/2004	NB-5	Alewife	1.0
1/22/2004	NB-5	Gizzard Shad	5.0
1/22/2004	NB-5	Grubby	1.0
1/22/2004	NB-5	Red Hake	2.0
1/22/2004	NB-5	Striped Bass	59.0



Date	Station	Common Name	CPUE
1/22/2004	NB-5	White Perch	111.0
1/22/2004	NB-5	Windowpane	1.0
1/22/2004	NB-5	Winter Flounder	8.0
2/11/2004	NB-5	Atlantic Silverside	1.0
2/11/2004	NB-5	Gizzard Shad	1.0
2/11/2004	NB-5	Silver Hake	2.0
2/11/2004	NB-5	Striped Bass	167.0
2/11/2004	NB-5	Striped Killifish	1.0
2/11/2004	NB-5	White Perch	146.0
2/11/2004	NB-5	Winter Flounder	12.0
2/19/2004	NB-5	Blueback Herring	1.0
2/19/2004	NB-5	Striped Bass	81.0
2/19/2004	NB-5	White Perch	54.0
3/3/2004	NB-5	American Shad	2.0
3/3/2004	NB-5	Atlantic Tomcod	7.0
3/3/2004	NB-5	Blueback Herring	5.0
3/3/2004	NB-5	Striped Bass	46.0
3/3/2004	NB-5	White Perch	111.0
3/3/2004	NB-5	Winter Flounder	5.0
3/14/2004	NB-5	Alewife	3.0
3/14/2004	NB-5	American Shad	4.0
3/14/2004	NB-5	Atlantic Tomcod	4.0
3/14/2004	NB-5	Blueback Herring	7.0
3/14/2004	NB-5	Spotted Hake	2.0
3/14/2004	NB-5	Striped Bass	149.0
3/14/2004	NB-5	White Perch	257.0
4/15/2004	NB-5	Alewife	5.0
4/15/2004	NB-5	Atlantic Tomcod	12.0
4/15/2004	NB-5	Blueback Herring	8.0
4/15/2004	NB-5	Grubby	1.0
4/15/2004	NB-5	Red Hake	8.0
4/15/2004	NB-5	Silver Hake	1.0
4/15/2004	NB-5	Spotted Hake	78.0
4/15/2004	NB-5	Striped Bass	18.0
4/15/2004	NB-5	Summer Flounder	1.0
4/15/2004	NB-5	White Perch	27.0
4/15/2004	NB-5	Windowpane	1.0
4/15/2004	NB-5	Winter Flounder	6.0
5/13/2004	NB-5	Alewife	1.0
5/13/2004	NB-5	American Shad	1.0
5/13/2004	NB-5	Atlantic Herring	1.0
5/13/2004	NB-5	Atlantic Tomcod	53.0
5/13/2004	NB-5	Blueback Herring	3.0
5/13/2004	NB-5	Northern Pipefish	1.0
5/13/2004	NB-5	Spotted Hake	41.0
6/17/2004	NB-5	Alewife	1.0
6/17/2004	NB-5	Bay Anchovy	11.0
6/17/2004	NB-5	Striped Bass	1.0
6/17/2004	NB-5	Weakfish	1.0
1/22/2004	NB-6	Atlantic Silverside	1.0



Date	Station	Common Name	CPUE
1/22/2004	NB-6	Atlantic Tomcod	1.0
1/22/2004	NB-6	Red Hake	2.0
1/22/2004	NB-6	Striped Bass	9.0
1/22/2004	NB-6	White Perch	6.0
1/22/2004	NB-6	Windowpane	1.0
1/22/2004	NB-6	Winter Flounder	5.0
2/11/2004	NB-6	Grubby	2.0
2/11/2004	NB-6	Striped Bass	10.0
2/11/2004	NB-6	White Perch	2.0
2/11/2004	NB-6	Winter Flounder	15.0
2/19/2004	NB-6	Atlantic Tomcod	2.0
2/19/2004	NB-6	Blueback Herring	4.0
2/19/2004	NB-6	Grubby	1.0
2/19/2004	NB-6	Striped Bass	8.0
2/19/2004	NB-6	White Perch	1.0
2/19/2004	NB-6	Winter Flounder	10.0
3/3/2004	NB-6	Atlantic Tomcod	15.0
3/3/2004	NB-6	Blueback Herring	4.0
3/3/2004	NB-6	Grubby	1.0
3/3/2004	NB-6	Red Hake	2.0
3/3/2004	NB-6	Striped Bass	227.0
3/3/2004	NB-6	White Perch	32.0
3/3/2004	NB-6	Winter Flounder	7.0
3/14/2004	NB-6	Alewife	6.0
3/14/2004	NB-6	American Shad	5.0
3/14/2004	NB-6	Atlantic Tomcod	9.0
3/14/2004	NB-6	Blueback Herring	21.0
3/14/2004	NB-6	Spotted Hake	3.0
3/14/2004	NB-6	Striped Bass	394.0
3/14/2004	NB-6	White Perch	281.0
3/14/2004	NB-6	Winter Flounder	6.0
4/14/2004	NB-6	Alewife	6.0
4/14/2004	NB-6	Atlantic Herring	11.0
4/14/2004	NB-6	Atlantic Tomcod	7.0
4/14/2004	NB-6	Blueback Herring	24.0
4/14/2004	NB-6	Northern Pipefish	1.0
4/14/2004	NB-6	Red Hake	1.0
4/14/2004	NB-6	Spotted Hake	25.0
4/14/2004	NB-6	Striped Bass	13.0
4/14/2004	NB-6	White Perch	1.0
4/14/2004	NB-6	Winter Flounder	5.0
5/12/2004	NB-6	Atlantic Herring	1.0
5/12/2004	NB-6	Atlantic Tomcod	8.0
5/12/2004	NB-6	Bay Anchovy	1.0
5/12/2004	NB-6	Blueback Herring	1.0
5/12/2004	NB-6	Spotted Hake	4.0
5/12/2004	NB-6	Windowpane	1.0
6/16/2004	NB-6	Atlantic Tomcod	6.0
6/16/2004	NB-6	Bay Anchovy	14.0
6/16/2004	NB-6	Spotted Hake	2.0



Date	Station	Common Name	CPUE
6/16/2004	NB-6	Winter Flounder	2.0
1/22/2004	NB-7	Gizzard Shad	2.0
1/22/2004	NB-7	Silver Hake	2.0
2/11/2004	NB-7	Mummichog	1.7
2/11/2004	NB-7	White Perch	1.7
2/11/2004	NB-7	Winter Flounder	5.0
2/19/2004	NB-7	Atlantic Silverside	1.7
2/19/2004	NB-7	Striped Bass	1.7
2/19/2004	NB-7	White Perch	1.7
2/19/2004	NB-7	Winter Flounder	5.0
3/4/2004	NB-7	Alewife	2.0
3/4/2004	NB-7	American Shad	2.0
3/4/2004	NB-7	Atlantic Silverside	2.0
3/4/2004	NB-7	Striped Bass	22.0
3/4/2004	NB-7	White Perch	4.0
3/4/2004	NB-7	Winter Flounder	2.0
3/14/2004	NB-7	American Shad	5.0
3/14/2004	NB-7	Atlantic Silverside	1.7
3/14/2004	NB-7	Blueback Herring	5.0
3/14/2004	NB-7	Striped Bass	5.0
3/14/2004	NB-7	White Perch	1.7
4/15/2004	NB-7	Alewife	18.6
4/15/2004	NB-7	American Shad	10.0
4/15/2004	NB-7	Atlantic Silverside	1.4
4/15/2004	NB-7	Blueback Herring	7.1
4/15/2004	NB-7	Grubby	1.4
4/15/2004	NB-7	Striped Bass	32.9
4/15/2004	NB-7	White Perch	37.1
4/15/2004	NB-7	Windowpane	2.9
4/15/2004	NB-7	Winter Flounder	11.4
5/13/2004	NB-7	American Shad	1.7
5/13/2004	NB-7	Atlantic Herring	3.3
5/13/2004	NB-7	Atlantic Tomcod	5.0
5/13/2004	NB-7	Bay Anchovy	60.0
5/13/2004	NB-7	Striped Bass	1.7
5/13/2004	NB-7	Winter Flounder	1.7
6/16/2004	NB-7	Atlantic Tomcod	2.0
6/16/2004	NB-7	Bay Anchovy	298.0
6/16/2004	NB-7	Bluefish	8.0
6/16/2004	NB-7	Summer Flounder	4.0
6/16/2004	NB-7	Winter Flounder	2.0
1/19/2004	PJ-1	Atlantic Tomcod	1.0
1/19/2004	PJ-1	Gizzard Shad	1.0
1/19/2004	PJ-1	Grubby	3.0
1/19/2004	PJ-1	Striped Bass	78.0
1/19/2004	PJ-1	White Perch	1.0
1/19/2004	PJ-1	Windowpane	5.0
1/19/2004	PJ-1	Winter Flounder	14.0
2/9/2004	PJ-1	Grubby	1.0
2/9/2004	PJ-1	Striped Bass	6.0



Date	Station	Common Name	CPUE
2/9/2004	PJ-1	Winter Flounder	1.0
2/18/2004	PJ-1	Atlantic Silverside	1.0
2/18/2004	PJ-1	Grubby	1.0
2/18/2004	PJ-1	Striped Bass	5.0
2/18/2004	PJ-1	White Perch	1.0
2/18/2004	PJ-1	Winter Flounder	5.0
3/2/2004	PJ-1	American Shad	2.0
3/2/2004	PJ-1	Atlantic Silverside	1.0
3/2/2004	PJ-1	Blueback Herring	3.0
3/2/2004	PJ-1	Striped Bass	1.0
3/2/2004	PJ-1	Windowpane	1.0
3/2/2004	PJ-1	Winter Flounder	2.0
3/18/2004	PJ-1	Alewife	1.0
3/18/2004	PJ-1	Atlantic Herring	1.0
3/18/2004	PJ-1	Grubby	2.0
3/18/2004	PJ-1	Northern Puffer	1.0
3/18/2004	PJ-1	Striped Bass	5.0
3/18/2004	PJ-1	Winter Flounder	6.0
4/16/2004	PJ-1	Atlantic Herring	3.0
4/16/2004	PJ-1	Atlantic Tomcod	2.0
4/16/2004	PJ-1	Blueback Herring	1.0
4/16/2004	PJ-1	Grubby	6.0
4/16/2004	PJ-1	Northern Pipefish	1.0
4/16/2004	PJ-1	Silver Hake	2.0
4/16/2004	PJ-1	Spotted Hake	7.0
4/16/2004	PJ-1	Striped Bass	36.0
4/16/2004	PJ-1	Windowpane	4.0
4/16/2004	PJ-1	Winter Flounder	20.0
5/13/2004	PJ-1	Alewife	1.0
5/13/2004	PJ-1	Atlantic Herring	1.0
5/13/2004	PJ-1	Bay Anchovy	7.0
6/15/2004	PJ-1	Alewife	1.0
6/15/2004	PJ-1	American Shad	4.0
6/15/2004	PJ-1	Atlantic Tomcod	151.0
6/15/2004	PJ-1	Bay Anchovy	252.0
6/15/2004	PJ-1	Scup	1.0
6/15/2004	PJ-1	Spotted Hake	1.0
6/15/2004	PJ-1	Winter Flounder	4.0
1/19/2004	PJ-2	Grubby	3.8
1/19/2004	PJ-2	Silver Hake	1.3
1/19/2004	PJ-2	Striped Bass	12.5
1/19/2004	PJ-2	White Perch	1.3
1/19/2004	PJ-2	Windowpane	1.3
1/19/2004	PJ-2	Winter Flounder	13.8
2/9/2004	PJ-2	Striped Bass	1.0
2/9/2004	PJ-2	Winter Flounder	1.0
2/18/2004	PJ-2	Grubby	1.1
2/18/2004	PJ-2	Striped Bass	5.6
2/18/2004	PJ-2	Winter Flounder	3.3
3/2/2004	PJ-2	American Shad	2.0



Date	Station	Common Name	CPUE
3/2/2004	PJ-2	White Perch	1.0
3/18/2004	PJ-2	Atlantic Herring	1.0
3/18/2004	PJ-2	Atlantic Silverside	1.0
3/18/2004	PJ-2	Blueback Herring	1.0
4/16/2004	PJ-2	Alewife	3.3
4/16/2004	PJ-2	American Shad	2.2
4/16/2004	PJ-2	Atlantic Herring	1.1
4/16/2004	PJ-2	Atlantic Tomcod	1.1
4/16/2004	PJ-2	Blueback Herring	1.1
4/16/2004	PJ-2	Grubby	1.1
4/16/2004	PJ-2	Striped Bass	26.7
4/16/2004	PJ-2	Tautog	1.1
4/16/2004	PJ-2	Windowpane	1.1
4/16/2004	PJ-2	Winter Flounder	7.8
5/13/2004	PJ-2	Alewife	2.0
5/13/2004	PJ-2	Atlantic Herring	2.0
5/13/2004	PJ-2	Atlantic Tomcod	25.0
5/13/2004	PJ-2	Bay Anchovy	4.0
5/13/2004	PJ-2	Silver Hake	1.0
6/15/2004	PJ-2	American Shad	7.0
6/15/2004	PJ-2	Atlantic Tomcod	32.0
6/15/2004	PJ-2	Bay Anchovy	278.0
6/15/2004	PJ-2	Bluefish	2.0
6/15/2004	PJ-2	Striped Bass	1.0
6/15/2004	PJ-2	Winter Flounder	2.0
1/19/2004	PJ-3	Bay Anchovy	4.3
1/19/2004	PJ-3	Grubby	2.9
1/19/2004	PJ-3	Striped Bass	8.6
1/19/2004	PJ-3	White Perch	1.4
2/9/2004	PJ-3	Grubby	1.1
2/9/2004	PJ-3	Windowpane	1.1
2/18/2004	PJ-3	Atlantic Silverside	1.0
2/18/2004	PJ-3	Naked Goby	1.0
2/18/2004	PJ-3	Threespine Stickleback	1.0
2/18/2004	PJ-3	Winter Flounder	3.0
3/2/2004	PJ-3	Alewife	1.0
3/2/2004	PJ-3	American Shad	2.0
3/16/2004	PJ-3	Alewife	4.0
3/16/2004	PJ-3	Atlantic Silverside	6.0
3/16/2004	PJ-3	Blueback Herring	1.0
3/16/2004	PJ-3	Striped Bass	3.0
3/16/2004	PJ-3	Winter Flounder	2.0
4/12/2004	PJ-3	Alewife	1.0
5/13/2004	PJ-3	Alewife	1.0
5/13/2004	PJ-3	Atlantic Herring	19.0
5/13/2004	PJ-3	Bay Anchovy	16.0
5/13/2004	PJ-3	Blueback Herring	1.0
6/15/2004	PJ-3	Atlantic Tomcod	1.0
6/15/2004	PJ-3	Bay Anchovy	138.0
6/15/2004	PJ-3	Bluefish	2.0



Date	Station	Common Name	CPUE
6/15/2004	PJ-3	Spotted Hake	1.0
6/15/2004	PJ-3	Summer Flounder	2.0
1/23/2004	PJ-4	Atlantic Tomcod	1.4
1/23/2004	PJ-4	Red Hake	1.4
1/23/2004	PJ-4	Striped Bass	32.9
1/23/2004	PJ-4	White Perch	2.9
1/23/2004	PJ-4	Winter Flounder	7.1
3/18/2004	PJ-4	American Shad	1.1
3/18/2004	PJ-4	Spotted Hake	1.1
4/16/2004	PJ-4	Alewife	7.5
4/16/2004	PJ-4	American Shad	1.3
4/16/2004	PJ-4	Atlantic Herring	2.5
4/16/2004	PJ-4	Blueback Herring	5.0
4/16/2004	PJ-4	Spotted Hake	1.3
4/16/2004	PJ-4	Striped Bass	1.3
5/13/2004	PJ-4	Atlantic Herring	1.3
5/13/2004	PJ-4	Atlantic Tomcod	3.8
6/15/2004	PJ-4	Bay Anchovy	16.7
1/19/2004	PJ-5	Alewife	3.0
1/19/2004	PJ-5	Atlantic Tomcod	6.0
1/19/2004	PJ-5	Grubby	5.0
1/19/2004	PJ-5	Little Skate	1.0
1/19/2004	PJ-5	Red Hake	2.0
1/19/2004	PJ-5	Spotted Hake	5.0
1/19/2004	PJ-5	Striped Bass	76.0
1/19/2004	PJ-5	White Perch	1.0
1/19/2004	PJ-5	Winter Flounder	78.0
2/9/2004	PJ-5	Atlantic Tomcod	3.8
2/9/2004	PJ-5	Grubby	2.5
2/9/2004	PJ-5	Striped Bass	15.0
2/9/2004	PJ-5	Winter Flounder	6.3
2/18/2004	PJ-5	Blueback Herring	1.3
3/2/2004	PJ-5	Alewife	5.0
3/2/2004	PJ-5	American Shad	2.0
3/2/2004	PJ-5	Grubby	2.0
3/2/2004	PJ-5	Winter Flounder	18.0
3/18/2004	PJ-5	Alewife	1.0
3/18/2004	PJ-5	Atlantic Herring	1.0
3/18/2004	PJ-5	Blueback Herring	1.0
3/18/2004	PJ-5	Windowpane	1.0
3/18/2004	PJ-5	Winter Flounder	4.0
4/16/2004	PJ-5	Alewife	5.6
4/16/2004	PJ-5	Atlantic Herring	2.2
4/16/2004	PJ-5	Bay Anchovy	1.1
4/16/2004	PJ-5	Blueback Herring	5.6
4/16/2004	PJ-5	Spotted Hake	1.1
5/12/2004	PJ-5	Atlantic Herring	1.0
5/12/2004	PJ-5	Bay Anchovy	3.0
5/12/2004	PJ-5	Clupeid unidentified	2.0
6/15/2004	PJ-5	Bay Anchovy	15.0



Date	Station	Common Name	CPUE
3/1/2004	SB-1	American Shad	3.3
3/1/2004	SB-1	Atlantic Silverside	6.7
3/1/2004	SB-1	Striped Bass	3.3
3/18/2004	SB-1	Alewife	6.7
3/18/2004	SB-1	Atlantic Silverside	3.3
3/18/2004	SB-1	Striped Bass	6.7
5/10/2004	SB-1	Atlantic Tomcod	35.0
5/10/2004	SB-1	Bay Anchovy	47.5
5/10/2004	SB-1	Spotted Hake	5.0
6/14/2004	SB-1	Bay Anchovy	16.7
2/10/2004	SB-2	Silver Hake	2.5
3/1/2004	SB-2	Striped Bass	12.5
3/1/2004	SB-2	Windowpane	2.5
4/12/2004	SB-2	American Shad	2.5
5/10/2004	SB-2	Alewife	2.5
5/10/2004	SB-2	Atlantic Tomcod	307.5
5/10/2004	SB-2	Bay Anchovy	17.5
5/10/2004	SB-2	Cunner	2.5
5/10/2004	SB-2	Red Hake	2.5
5/10/2004	SB-2	Spotted Hake	27.5
5/10/2004	SB-2	Striped Bass	2.5
5/10/2004	SB-2	Summer Flounder	7.5
5/10/2004	SB-2	Windowpane	7.5
5/10/2004	SB-2	Winter Flounder	5.0
6/14/2004	SB-2	Bay Anchovy	10.0
1/22/2004	SB-3	Grubby	1.0
1/22/2004	SB-3	Silver Hake	1.0
1/22/2004	SB-3	Striped Bass	2.0
1/22/2004	SB-3	Tautog	1.0
1/22/2004	SB-3	Windowpane	2.0
1/22/2004	SB-3	Winter Flounder	10.0
2/9/2004	SB-3	Winter Flounder	1.0
2/18/2004	SB-3	Striped Bass	1.0
2/18/2004	SB-3	Winter Flounder	2.0
3/1/2004	SB-3	Atlantic Silverside	1.0
3/18/2004	SB-3	Alewife	3.0
3/18/2004	SB-3	American Shad	3.0
3/18/2004	SB-3	Blueback Herring	3.0
3/18/2004	SB-3	Cunner	1.0
3/18/2004	SB-3	Rock Gunnel	1.0
3/18/2004	SB-3	Windowpane	3.0
3/18/2004	SB-3	Winter Flounder	4.0
4/12/2004	SB-3	Bay Anchovy	1.0
4/12/2004	SB-3	Blueback Herring	1.0
5/12/2004	SB-3	Bay Anchovy	15.0
6/14/2004	SB-3	Bay Anchovy	4.0
1/22/2004	SB-4	Alewife	1.0
1/22/2004	SB-4	Atlantic Herring	1.0
1/22/2004	SB-4	Atlantic Silverside	1.0
1/22/2004	SB-4	Atlantic Tomcod	3.0



Date	Station	Common Name	CPUE
1/22/2004	SB-4	Blueback Herring	1.0
1/22/2004	SB-4	Red Hake	1.0
1/22/2004	SB-4	Striped Bass	20.0
1/22/2004	SB-4	Threespine Stickleback	1.0
2/9/2004	SB-4	Atlantic Tomcod	1.0
2/9/2004	SB-4	Winter Flounder	3.0
2/18/2004	SB-4	Alewife	5.0
2/18/2004	SB-4	American Shad	5.0
2/18/2004	SB-4	Blueback Herring	168.0
2/18/2004	SB-4	Grubby	1.0
2/18/2004	SB-4	Striped Bass	16.0
2/18/2004	SB-4	Windowpane	1.0
2/18/2004	SB-4	Winter Flounder	9.0
3/1/2004	SB-4	Alewife	1.0
3/1/2004	SB-4	Blueback Herring	1.0
3/1/2004	SB-4	Silver Hake	3.0
3/1/2004	SB-4	Striped Bass	3.0
3/1/2004	SB-4	Winter Flounder	28.0
3/18/2004	SB-4	Alewife	4.0
3/18/2004	SB-4	American Shad	20.0
3/18/2004	SB-4	Blueback Herring	20.0
3/18/2004	SB-4	Red Hake	2.0
3/18/2004	SB-4	Winter Flounder	5.0
4/12/2004	SB-4	American Shad	2.0
4/12/2004	SB-4	Blueback Herring	3.0
5/12/2004	SB-4	Atlantic Tomcod	2.0
5/12/2004	SB-4	Bay Anchovy	29.0
5/12/2004	SB-4	Clupeid unidentified	1.0
5/12/2004	SB-4	Northern Puffer	1.0
6/14/2004	SB-4	Atlantic Herring	1.0
6/14/2004	SB-4	Bay Anchovy	17.0
6/14/2004	SB-4	Winter Flounder	1.0
1/22/2004	SB-5	Atlantic Tomcod	1.0
1/22/2004	SB-5	Striped Bass	2.0
1/22/2004	SB-5	Winter Flounder	1.0
2/5/2004	SB-5	Atlantic Herring	1.0
3/2/2004	SB-5	Alewife	1.0
3/2/2004	SB-5	American Shad	5.0
3/2/2004	SB-5	Blueback Herring	1.0
3/2/2004	SB-5	Red Hake	1.0
3/2/2004	SB-5	Silver Hake	3.0
3/2/2004	SB-5	Windowpane	1.0
3/2/2004	SB-5	Winter Flounder	7.0
3/15/2004	SB-5	Grubby	1.0
4/16/2004	SB-5	Alewife	3.0
4/16/2004	SB-5	Atlantic Herring	3.0
4/16/2004	SB-5	Blueback Herring	5.0
4/16/2004	SB-5	Grubby	1.0
4/16/2004	SB-5	Spotted Hake	1.0
4/16/2004	SB-5	Windowpane	1.0



Date	Station	Common Name	CPUE
5/12/2004	SB-5	Bay Anchovy	3.0
5/12/2004	SB-5	Spotted Hake	2.0
6/14/2004	SB-5	Bay Anchovy	11.0
2/6/2004	SB-6	Northern Pipefish	1.1
2/6/2004	SB-6	White Perch	1.1
2/6/2004	SB-6	Winter Flounder	1.1
2/18/2004	SB-6	Alewife	3.0
2/18/2004	SB-6	Blueback Herring	39.0
2/18/2004	SB-6	Cunner	1.0
2/18/2004	SB-6	Grubby	7.0
2/18/2004	SB-6	Winter Flounder	30.0
3/1/2004	SB-6	Alewife	3.0
3/1/2004	SB-6	American Shad	3.0
3/1/2004	SB-6	Grubby	1.0
3/1/2004	SB-6	Little Skate	1.0
3/1/2004	SB-6	Northern Puffer	1.0
3/1/2004	SB-6	Silver Hake	2.0
3/1/2004	SB-6	Windowpane	4.0
3/1/2004	SB-6	Winter Flounder	15.0
3/18/2004	SB-6	Alewife	10.0
3/18/2004	SB-6	American Shad	3.0
3/18/2004	SB-6	Blueback Herring	5.0
3/18/2004	SB-6	Red Hake	1.0
3/18/2004	SB-6	Spotted Hake	1.0
4/12/2004	SB-6	Alewife	4.0
4/12/2004	SB-6	Atlantic Herring	2.0
4/12/2004	SB-6	Blueback Herring	23.0
4/12/2004	SB-6	Spotted Hake	2.0
5/12/2004	SB-6	Atlantic Herring	1.0
5/12/2004	SB-6	Bay Anchovy	6.0
6/14/2004	SB-6	Bay Anchovy	33.0



Appendix B. Ichthyoplankton densities (epibenthic sled) by life stage and date and sample location. (page 1 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
1/21/2004	LB-5	Atlantic croaker	PYS	1	6.3
1/21/2004	LB-6	Atlantic croaker	PYS	2	12.1
1/21/2004	LB-6	Winter flounder	Egg	1	6.0
1/21/2004	LB-4	American sandlance	YS	1	6.6
1/22/2004	AK-4	Atlantic croaker	PYS	2	9.3
1/22/2004	AK-4	Summer flounder	PYS	2	9.3
1/22/2004	AK-3	Summer flounder	PYS	1	4.5
1/22/2004	NB-7	Atlantic croaker	PYS	1	6.4
1/22/2004	HR-1	Atlantic croaker	PYS	1	19.9
1/22/2004	PJ-4	Summer flounder	PYS	1	5.4
1/23/2004	AK-1	Atlantic croaker	PYS	1	8.0
2/5/2004	SB-6	American sandlance	PYS	1	5.0
2/5/2004	LB-5	American sandlance	YS	2	15.3
2/6/2004	AK-1	American sandlance	PYS	1	5.4
2/6/2004	AK-1	Winter flounder	Egg	1	5.4
2/6/2004	AK-1	Winter flounder	PYS	1	5.4
2/6/2004	AK-2	Winter flounder	Egg	1	6.3
2/6/2004	AK-2	Winter flounder	YS	1	6.3
2/6/2004	AK-3	Winter flounder	PYS	1	5.6
2/6/2004	AK-4	Winter flounder	PYS	1	5.3
2/6/2004	NB-7	American sandlance	YS	1	6.3
2/6/2004	PJ-3	American sandlance	PYS	1	6.2
2/17/2004	SB-4	American sandlance	PYS	1	6.9
2/17/2004	SB-4	Atlantic tomcod	PYS	1	6.9
2/17/2004	SB-4	Winter flounder	YS	1	6.9
2/17/2004	SB-3	Rock gunnel	PYS	1	10.2
2/17/2004	SB-6	Rock gunnel	PYS	1	8.6
2/17/2004	LB-3	Rock gunnel	PYS	1	7.1
2/17/2004	LB-6	Rock gunnel	PYS	1	5.6
2/17/2004	LB-1	Grubby	PYS	5	27.3
2/17/2004	LB-1	Rock gunnel	PYS	4	21.8
2/17/2004	PJ-1	Grubby	PYS	1	5.2
2/17/2004	PJ-1	Rock gunnel	PYS	1	5.2
2/17/2004	PJ-5	Grubby	PYS	1	7.8
2/19/2004	AK-1	Grubby	YS	1	11.2
2/19/2004	AK-2	Grubby	PYS	1	6.5
2/19/2004	AK-3	Unidentified	UID	1	7.1
2/19/2004	NB-7	Grubby	UID	1	8.4
2/19/2004	NB-5	Unidentified	UID	1	7.3
2/19/2004	NB-3	Atlantic tomcod	PYS	1	6.7
2/19/2004	NB-3	Grubby	PYS	1	6.7
2/19/2004	NB-3	Rock gunnel	PYS	1	6.7
2/19/2004	HR-4	Grubby	PYS	1	5.4
2/19/2004	HR-1	Atlantic tomcod	YS	1	14.2
2/19/2004	HR-1	Grubby	PYS	1	14.2
2/19/2004	PJ-4	Atlantic tomcod	PYS	1	6.8
2/19/2004	PJ-4	Rock gunnel	PYS	2	13.7
2/19/2004	SB-5	Grubby	PYS	2	14.9
3/1/2004	SB-2	Grubby	PYS	1	8.3
3/1/2004	SB-2	Rock gunnel	PYS	1	8.3



Date	Station	Common Name	Life Stage	Number Caught	Density
3/1/2004	SB-1	Grubby	PYS	1	10.9
3/1/2004	SB-4	Rock gunnel	PYS	1	6.8
3/1/2004	SB-3	Grubby	YS	1	8.1
3/1/2004	LB-3	Grubby	PYS	7	55.1
3/1/2004	LB-3	Rock gunnel	PYS	5	39.3
3/1/2004	LB-6	Grubby	PYS	1	4.3
3/1/2004	LB-2	Grubby	PYS	2	7.4
3/1/2004	LB-1	Grubby	PYS	3	16.0
3/1/2004	LB-1	Rock gunnel	YS	1	5.3
3/1/2004	LB-1	Rock gunnel	PYS	2	10.7
3/1/2004	SB-5	Grubby	YS	1	3.5
3/1/2004	SB-5	Grubby	PYS	2	7.0
3/1/2004	SB-5	Rock gunnel	YS	1	3.5
3/1/2004	SB-5	Rock gunnel	PYS	3	10.5
3/1/2004	PJ-4	Grubby	YS	1	6.8
3/1/2004	PJ-4	Grubby	PYS	3	20.5
3/1/2004	PJ-5	Grubby	PYS	2	12.5
3/1/2004	PJ-1	Atlantic tomcod	PYS	1	6.9
3/1/2004	PJ-2	Grubby	PYS	1	7.3
3/2/2004	PJ-3	Rock gunnel	YS	1	6.5
3/2/2004	HR-4	Grubby	PYS	5	34.4
3/2/2004	HR-1	Grubby	PYS	3	62.7
3/2/2004	AK-1	Grubby	PYS	2	11.7
3/2/2004	AK-3	Grubby	PYS	1	7.4
3/2/2004	AK-4	Grubby	PYS	4	27.2
3/2/2004	AK-4	Unidentified	UID	1	6.8
3/2/2004	NB-7	Grubby	PYS	1	8.2
3/2/2004	NB-6	Atlantic tomcod	YS	1	11.6
3/2/2004	NB-5	Atlantic tomcod	YS	3	15.1
3/2/2004	NB-5	Grubby	PYS	1	5.0
3/2/2004	NB-4	Atlantic tomcod	YS	4	24.2
3/2/2004	NB-4	Atlantic tomcod	PYS	2	12.1
3/2/2004	NB-3	Atlantic tomcod	YS	3	17.0
3/2/2004	NB-3	Atlantic tomcod	PYS	2	11.3
3/2/2004	NB-3	Grubby	YS	1	5.7
3/2/2004	NB-3	Grubby	PYS	4	22.7
3/15/2004	AK-2	Grubby	YS	1	6.9
3/15/2004	AK-2	Grubby	PYS	5	34.5
3/15/2004	AK-2	Winter flounder	PYS	1	6.9
3/15/2004	AK-1	Grubby	YS	1	7.9
3/15/2004	AK-3	Grubby	PYS	2	13.5
3/15/2004	AK-4	Grubby	PYS	2	16.6
3/15/2004	NB-7	Grubby	PYS	3	21.3
3/15/2004	NB-7	Winter flounder	PYS	1	7.1
3/15/2004	NB-3	Grubby	YS	1	7.1
3/15/2004	NB-5	Atlantic tomcod	PYS	2	15.4
3/15/2004	NB-5	Grubby	YS	4	30.8
3/15/2004	NB-5	Grubby	PYS	32	246.6
3/15/2004	NB-6	Atlantic tomcod	PYS	1	6.7
3/15/2004	NB-6	Grubby	YS	6	40.3



Date	Station	Common Name	Life Stage	Number Caught	Density
3/15/2004	NB-6	Grubby	PYS	14	93.9
3/15/2004	HR-1	Grubby	PYS	2	27.4
3/15/2004	HR-1	Winter flounder	UID	1	13.7
3/15/2004	HR-4	Grubby	YS	1	5.7
3/15/2004	HR-4	Grubby	PYS	2	11.4
3/15/2004	PJ-3	American sandlance	PYS	1	5.3
3/15/2004	PJ-1	Grubby	YS	1	6.6
3/15/2004	PJ-1	Grubby	PYS	1	6.6
3/15/2004	PJ-1	Rock gunnel	PYS	1	6.6
3/15/2004	PJ-1	Winter flounder	PYS	1	6.6
3/15/2004	PJ-4	Grubby	PYS	7	62.3
3/15/2004	PJ-5	Grubby	PYS	5	26.2
3/15/2004	SB-5	Grubby	PYS	7	34.8
3/15/2004	SB-5	Rock gunnel	PYS	3	14.9
3/15/2004	SB-5	Winter flounder	PYS	3	14.9
3/15/2004	PJ-2	Atlantic tomcod	PYS	1	7.1
3/15/2004	PJ-2	Grubby	YS	1	7.1
3/15/2004	PJ-2	Grubby	PYS	6	42.8
3/16/2004	LB-3	Gadid unidentified	Egg	2	22.3
3/16/2004	LB-3	Grubby	YS	3	33.4
3/16/2004	LB-3	Grubby	PYS	14	155.8
3/16/2004	LB-3	Rock gunnel	PYS	1	11.1
3/16/2004	LB-3	Winter flounder	Egg	1	11.1
3/16/2004	LB-5	Grubby	PYS	19	126.1
3/16/2004	LB-5	Rock gunnel	PYS	1	6.6
3/16/2004	LB-5	Winter flounder	Egg	1	6.6
3/16/2004	LB-6	Grubby	PYS	13	96.0
3/16/2004	LB-4	Grubby	PYS	1	8.5
3/17/2004	LB-2	Grubby	PYS	2	25.4
3/17/2004	LB-2	Rock gunnel	PYS	1	12.7
3/17/2004	LB-2	Windowpane	JUV	1	12.7
3/17/2004	LB-2	Winter flounder	Egg	2	25.4
3/17/2004	LB-1	Grubby	YS	2	17.0
3/17/2004	LB-1	Grubby	PYS	9	76.7
3/17/2004	LB-1	Winter flounder	Egg	1	8.5
3/17/2004	SB-6	Grubby	PYS	5	63.4
3/17/2004	SB-6	Winter flounder	PYS	1	12.7
3/17/2004	SB-3	Grubby	PYS	5	59.8
3/17/2004	SB-4	Grubby	PYS	8	61.2
3/17/2004	SB-4	Winter flounder	Egg	2	15.3
3/17/2004	SB-1	Grubby	PYS	7	89.4
3/17/2004	SB-1	Winter flounder	PYS	6	76.7
3/29/2004	LB-1	Grubby	YS	2	20.0
3/29/2004	LB-1	Grubby	PYS	17	169.9
3/29/2004	LB-1	Grubby	UID	2	20.0
3/29/2004	LB-1	Winter flounder	PYS	6	60.0
3/29/2004	LB-1	Winter flounder	UID	1	10.0
3/29/2004	AK-4	Grubby	YS	2	12.7
3/29/2004	AK-4	Grubby	PYS	19	121.0
3/29/2004	AK-4	Winter flounder	PYS	142	904.1



Date	Station	Common Name	Life Stage	Number Caught	Density
3/29/2004	AK-4	Winter flounder	UID	34	216.5
3/29/2004	AK-3	Grubby	YS	4	23.6
3/29/2004	AK-3	Grubby	PYS	24	141.7
3/29/2004	AK-3	Winter flounder	PYS	24	141.7
3/29/2004	AK-1	Grubby	YS	1	5.4
3/29/2004	AK-1	Grubby	PYS	2	10.7
3/29/2004	AK-1	Winter flounder	PYS	32	171.9
3/29/2004	AK-1	Winter flounder	UID	3	16.1
3/29/2004	AK-2	Grubby	YS	3	24.4
3/29/2004	AK-2	Grubby	PYS	29	235.6
3/29/2004	AK-2	Winter flounder	PYS	23	186.8
3/29/2004	NB-3	Grubby	PYS	10	60.6
3/29/2004	NB-3	Winter flounder	PYS	25	151.5
3/29/2004	NB-4	Grubby	YS	1	6.6
3/29/2004	NB-4	Grubby	PYS	2	13.3
3/29/2004	NB-4	Winter flounder	PYS	4	26.5
3/29/2004	NB-5	Grubby	YS	7	45.1
3/29/2004	NB-5	Grubby	PYS	95	612.5
3/29/2004	NB-5	Winter flounder	PYS	3	19.3
3/29/2004	NB-6	Grubby	YS	9	65.9
3/29/2004	NB-6	Grubby	PYS	76	556.8
3/29/2004	NB-6	Grubby	UID	3	22.0
3/29/2004	NB-6	Winter flounder	Egg	1	7.3
3/29/2004	NB-6	Winter flounder	PYS	1	7.3
3/29/2004	NB-7	Grubby	PYS	3	19.0
3/29/2004	NB-7	Winter flounder	PYS	4	25.4
3/29/2004	HR-1	Gadid unidentified	Egg	2	26.9
3/29/2004	HR-1	Grubby	PYS	16	215.5
3/29/2004	HR-1	Winter flounder	PYS	4	53.9
3/29/2004	HR-4	Gadid unidentified	Egg	6	36.0
3/29/2004	HR-4	Grubby	YS	3	18.0
3/29/2004	HR-4	Grubby	PYS	25	150.2
3/29/2004	HR-4	Winter flounder	Egg	4	24.0
3/29/2004	PJ-3	Grubby	YS	1	5.2
3/29/2004	PJ-3	Grubby	PYS	1	5.2
3/29/2004	PJ-3	Winter flounder	PYS	21	109.4
3/30/2004	LB-2	Grubby	YS	2	17.0
3/30/2004	LB-2	Grubby	PYS	11	93.4
3/30/2004	LB-2	Winter flounder	Egg	1	8.5
3/30/2004	LB-4	Fourbeard rockling	Egg	1	6.4
3/30/2004	LB-4	Gadid unidentified	Egg	1	6.4
3/30/2004	LB-4	Grubby	YS	2	12.9
3/30/2004	LB-4	Grubby	PYS	3	19.3
3/30/2004	LB-4	Winter flounder	Egg	2	12.9
3/30/2004	LB-4	Winter flounder	PYS	3	19.3
3/30/2004	LB-6	Grubby	YS	1	5.8
3/30/2004	LB-6	Grubby	PYS	11	63.4
3/30/2004	LB-6	Winter flounder	Egg	5	28.8
3/30/2004	LB-6	Winter flounder	PYS	6	34.6
3/30/2004	LB-5	Grubby	YS	10	69.8



Date	Station	Common Name	Life Stage	Number Caught	Density
3/30/2004	LB-5	Grubby	PYS	33	230.4
3/30/2004	LB-5	Winter flounder	Egg	1	7.0
3/30/2004	LB-5	Winter flounder	UID	1	7.0
3/30/2004	LB-3	American sandlance	PYS	1	6.7
3/30/2004	LB-3	Gadid unidentified	Egg	2	13.3
3/30/2004	LB-3	Grubby	PYS	6	39.9
3/30/2004	LB-3	Winter flounder	PYS	8	53.2
3/30/2004	SB-6	Atlantic tomcod	PYS	1	9.3
3/30/2004	SB-6	Grubby	YS	3	27.8
3/30/2004	SB-6	Grubby	PYS	29	268.3
3/30/2004	SB-6	Grubby	UID	3	27.8
3/30/2004	SB-6	Winter flounder	PYS	9	83.3
3/30/2004	SB-3	Grubby	PYS	5	54.3
3/30/2004	SB-3	Winter flounder	PYS	55	597.8
3/30/2004	SB-3	Winter flounder	UID	7	76.1
3/30/2004	SB-4	Grubby	PYS	7	31.6
3/30/2004	SB-4	Winter flounder	PYS	29	130.7
3/30/2004	SB-2	Grubby	YS	5	60.1
3/30/2004	SB-2	Grubby	PYS	36	433.0
3/30/2004	SB-2	Winter flounder	PYS	44	529.2
3/30/2004	SB-2	Winter flounder	UID	18	216.5
3/30/2004	SB-5	Grubby	YS	3	11.1
3/30/2004	SB-5	Grubby	PYS	35	129.0
3/30/2004	SB-5	Winter flounder	PYS	28	103.2
3/30/2004	SB-5	Winter flounder	UID	13	47.9
3/30/2004	PJ-4	Grubby	PYS	16	119.5
3/30/2004	PJ-4	Winter flounder	PYS	57	425.9
3/30/2004	PJ-4	Winter flounder	UID	3	22.4
3/30/2004	PJ-5	American sandlance	PYS	1	4.8
3/30/2004	PJ-5	Grubby	YS	5	24.1
3/30/2004	PJ-5	Grubby	PYS	33	159.1
3/30/2004	PJ-5	Winter flounder	PYS	40	192.8
3/30/2004	PJ-5	Winter flounder	UID	13	62.7
3/30/2004	PJ-1	American sandlance	PYS	1	5.0
3/30/2004	PJ-1	Grubby	PYS	4	20.0
3/30/2004	PJ-1	Winter flounder	PYS	42	210.0
3/30/2004	PJ-1	Winter flounder	UID	17	85.0
3/30/2004	PJ-2	Winter flounder	UID	4	22.7
4/12/2004	LB-3	Longhorn sculpin	PYS	2	11.3
4/12/2004	LB-3	Winter flounder	PYS	514	2903.6
4/12/2004	LB-5	Longhorn sculpin	PYS	4	19.9
4/12/2004	LB-5	Winter flounder	PYS	900	4487.5
4/12/2004	LB-6	Grubby	PYS	16	75.5
4/12/2004	LB-6	Longhorn sculpin	PYS	4	18.9
4/12/2004	LB-6	Rock gunnel	PYS	8	37.8
4/12/2004	LB-6	Windowpane	Egg	1	4.7
4/12/2004	LB-6	Winter flounder	Egg	1	4.7
4/12/2004	LB-6	Winter flounder	YS	2	9.4
4/12/2004	LB-6	Winter flounder	PYS	608	2870.0
4/12/2004	LB-4	American sandlance	PYS	2	16.6



Date	Station	Common Name	Life Stage	Number Caught	Density
4/12/2004	LB-4	Grubby	PYS	118	980.9
4/12/2004	LB-4	Longhorn sculpin	PYS	8	66.5
4/12/2004	LB-4	Rock gunnel	PYS	6	49.9
4/12/2004	LB-4	Winter flounder	Egg	1	8.3
4/12/2004	LB-4	Winter flounder	PYS	268	2227.8
4/12/2004	LB-2	Grubby	PYS	4	35.2
4/12/2004	LB-2	Longhorn sculpin	PYS	1	8.8
4/12/2004	LB-2	Winter flounder	Egg	2	17.6
4/12/2004	LB-2	Winter flounder	PYS	102	897.7
4/12/2004	LB-1	Grubby	PYS	52	241.1
4/12/2004	LB-1	Longhorn sculpin	PYS	3	13.9
4/12/2004	LB-1	Winter flounder	Egg	8	37.1
4/12/2004	LB-1	Winter flounder	YS	2	9.3
4/12/2004	LB-1	Winter flounder	PYS	489	2267.4
4/12/2004	SB-6	American sandlance	PYS	1	10.1
4/12/2004	SB-6	Fourbeard rockling	Egg	1	10.1
4/12/2004	SB-6	Grubby	PYS	124	1250.3
4/12/2004	SB-6	Longhorn sculpin	PYS	7	70.6
4/12/2004	SB-6	Rock gunnel	PYS	2	20.2
4/12/2004	SB-6	Winter flounder	YS	4	40.3
4/12/2004	SB-6	Winter flounder	PYS	179	1804.8
4/12/2004	SB-3	Grubby	PYS	10	56.7
4/12/2004	SB-3	Windowpane	Egg	1	5.7
4/12/2004	SB-3	Winter flounder	YS	4	22.7
4/12/2004	SB-3	Winter flounder	PYS	67	380.2
4/12/2004	SB-3	Winter flounder	UID	1	5.7
4/12/2004	SB-4	American sandlance	PYS	1	6.2
4/12/2004	SB-4	Fourbeard rockling	Egg	4	24.9
4/12/2004	SB-4	Gadid unidentified	Egg	10	62.3
4/12/2004	SB-4	Grubby	PYS	76	473.3
4/12/2004	SB-4	Longhorn sculpin	PYS	6	37.4
4/12/2004	SB-4	Rock gunnel	PYS	1	6.2
4/12/2004	SB-4	Windowpane	Egg	1	6.2
4/12/2004	SB-4	Winter flounder	YS	15	93.4
4/12/2004	SB-4	Winter flounder	PYS	103	641.4
4/12/2004	SB-2	Fourbeard rockling	Egg	4	39.5
4/12/2004	SB-2	Gadid unidentified	Egg	7	69.1
4/12/2004	SB-2	Grubby	PYS	20	197.3
4/12/2004	SB-2	Longhorn sculpin	PYS	2	19.7
4/12/2004	SB-2	Winter flounder	PYS	12	118.4
4/12/2004	SB-5	Grubby	PYS	15	93.0
4/12/2004	SB-5	Rock gunnel	PYS	1	6.2
4/12/2004	SB-5	Winter flounder	YS	9	55.8
4/12/2004	SB-5	Winter flounder	PYS	105	651.0
4/12/2004	PJ-1	Grubby	PYS	12	59.7
4/12/2004	PJ-1	Winter flounder	YS	1	5.0
4/12/2004	PJ-1	Winter flounder	PYS	93	462.4
4/12/2004	PJ-1	Winter flounder	UID	2	9.9
4/12/2004	PJ-5	Fourbeard rockling	Egg	3	15.6
4/12/2004	PJ-5	Gadid unidentified	Egg	6	31.1



Date	Station	Common Name	Life Stage	Number Caught	Density
4/12/2004	PJ-5	Grubby	PYS	21	108.9
4/12/2004	PJ-5	Windowpane	Egg	1	5.2
4/12/2004	PJ-5	Winter flounder	PYS	69	357.7
4/12/2004	PJ-4	Gadid unidentified	Egg	2	9.4
4/12/2004	PJ-4	Grubby	PYS	18	84.8
4/12/2004	PJ-4	Winter flounder	PYS	48	226.1
4/12/2004	HR-1	Gadid unidentified	Egg	1	14.3
4/12/2004	HR-1	Grubby	PYS	9	128.8
4/12/2004	HR-1	Winter flounder	PYS	10	143.1
4/12/2004	HR-4	Gadid unidentified	Egg	2	10.0
4/12/2004	HR-4	Grubby	PYS	13	65.3
4/12/2004	HR-4	Winter flounder	PYS	72	361.5
4/12/2004	PJ-3	Grubby	PYS	6	38.5
4/12/2004	PJ-3	Winter flounder	PYS	45	288.5
4/12/2004	PJ-2	Gadid unidentified	Egg	1	6.7
4/12/2004	PJ-2	Grubby	PYS	5	33.6
4/12/2004	PJ-2	Winter flounder	YS	9	60.4
4/12/2004	PJ-2	Winter flounder	PYS	82	550.6
4/13/2004	AK-4	Grubby	PYS	14	63.4
4/13/2004	AK-4	Winter flounder	PYS	19	86.0
4/13/2004	AK-3	Gadid unidentified	Egg	1	7.1
4/13/2004	AK-3	Grubby	PYS	17	120.3
4/13/2004	AK-3	Longhorn sculpin	PYS	1	7.1
4/13/2004	AK-3	Rock gunnel	PYS	1	7.1
4/13/2004	AK-3	Unidentified	PYS	1	7.1
4/13/2004	AK-1	Grubby	PYS	12	71.1
4/13/2004	AK-1	Rock gunnel	PYS	1	5.9
4/13/2004	AK-1	Winter flounder	PYS	19	112.6
4/13/2004	NB-4	Grubby	PYS	2	12.8
4/13/2004	NB-4	Winter flounder	PYS	13	83.2
4/13/2004	NB-3	Atlantic cod	PYS	1	5.8
4/13/2004	NB-3	Grubby	PYS	1	5.8
4/13/2004	NB-3	Winter flounder	PYS	3	17.3
4/13/2004	NB-5	Atlantic herring	JUV	1	5.5
4/13/2004	NB-5	Gadid unidentified	Egg	1	5.5
4/13/2004	NB-5	Grubby	PYS	69	382.2
4/13/2004	NB-5	Longhorn sculpin	PYS	2	11.1
4/13/2004	NB-5	Rock gunnel	PYS	3	16.6
4/13/2004	NB-5	Winter flounder	PYS	36	199.4
4/13/2004	NB-6	Grubby	PYS	18	70.5
4/13/2004	NB-6	Longhorn sculpin	PYS	1	3.9
4/13/2004	NB-6	Winter flounder	PYS	85	332.8
4/13/2004	NB-6	Winter flounder	UID	4	15.7
4/13/2004	NB-7	Grubby	PYS	2	15.5
4/13/2004	NB-7	Winter flounder	PYS	11	85.4
4/26/2004	PJ-2	Grubby	PYS	2	11.4
4/26/2004	PJ-2	Grubby	JUV	1	5.7
4/26/2004	PJ-2	Winter flounder	PYS	6	34.2
4/26/2004	PJ-1	Grubby	PYS	17	105.0
4/26/2004	PJ-1	Grubby	JUV	2	12.4



Date	Station	Common Name	Life Stage	Number Caught	Density
4/26/2004	PJ-1	Weakfish	Egg	6	37.1
4/26/2004	PJ-1	Winter flounder	PYS	44	271.8
4/26/2004	PJ-5	American sandlance	PYS	2	10.4
4/26/2004	PJ-5	Grubby	PYS	22	114.9
4/26/2004	PJ-5	Weakfish	Egg	40	208.8
4/26/2004	PJ-5	Winter flounder	PYS	169	882.4
4/26/2004	PJ-4	American sandlance	PYS	2	16.7
4/26/2004	PJ-4	Grubby	YS	2	16.7
4/26/2004	PJ-4	Grubby	PYS	23	191.8
4/26/2004	PJ-4	Weakfish	Egg	34	283.5
4/26/2004	PJ-4	Winter flounder	PYS	183	1526.1
4/26/2004	PJ-3	Grubby	PYS	2	11.3
4/26/2004	PJ-3	Weakfish	Egg	2	11.3
4/26/2004	PJ-3	Winter flounder	PYS	12	67.8
4/26/2004	HR-1	Fourbeard rockling	Egg	2	27.3
4/26/2004	HR-1	Grubby	PYS	2	27.3
4/26/2004	HR-1	Weakfish	Egg	8	109.1
4/26/2004	HR-1	Winter flounder	PYS	33	450.1
4/26/2004	HR-4	Atlantic menhaden	Egg	1	5.8
4/26/2004	HR-4	Fourbeard rockling	Egg	1	5.8
4/26/2004	HR-4	Grubby	PYS	4	23.2
4/26/2004	HR-4	Weakfish	Egg	49	283.7
4/26/2004	HR-4	Winter flounder	PYS	62	359.0
4/26/2004	SB-5	American sandlance	PYS	1	9.9
4/26/2004	SB-5	Atlantic herring	PYS	1	9.9
4/26/2004	SB-5	Fourbeard rockling	Egg	1	9.9
4/26/2004	SB-5	Grubby	YS	2	19.9
4/26/2004	SB-5	Grubby	PYS	29	288.4
4/26/2004	SB-5	Rock gunnel	PYS	9	89.5
4/26/2004	SB-5	Weakfish	Egg	15	149.2
4/26/2004	SB-5	Winter flounder	PYS	124	1233.3
4/26/2004	SB-6	American sandlance	PYS	1	8.6
4/26/2004	SB-6	Grubby	YS	2	17.3
4/26/2004	SB-6	Grubby	PYS	9	77.8
4/26/2004	SB-6	Grubby	JUV	2	17.3
4/26/2004	SB-6	Rock gunnel	PYS	1	8.6
4/26/2004	SB-6	Weakfish	Egg	37	320.0
4/26/2004	SB-6	Winter flounder	PYS	78	674.7
4/26/2004	SB-6	Winter flounder	JUV	1	8.6
4/27/2004	LB-1	Grubby	PYS	3	21.6
4/27/2004	LB-1	Weakfish	Egg	15	108.0
4/27/2004	LB-1	Winter flounder	PYS	89	641.0
4/27/2004	LB-2	Grubby	PYS	7	91.5
4/27/2004	LB-2	Weakfish	Egg	13	169.9
4/27/2004	LB-2	Winter flounder	PYS	100	1306.8
4/27/2004	LB-3	Atlantic menhaden	Egg	12	64.6
4/27/2004	LB-3	Gadid unidentified	Egg	12	64.6
4/27/2004	LB-3	Weakfish	Egg	312	1679.1
4/27/2004	LB-3	Winter flounder	PYS	1472	7922.0
4/27/2004	LB-4	Grubby	PYS	8	82.8



Date	Station	Common Name	Life Stage	Number Caught	Density
4/27/2004	LB-4	Grubby	JUV	3	31.1
4/27/2004	LB-4	Weakfish	Egg	94	972.9
4/27/2004	LB-4	Windowpane	Egg	9	93.2
4/27/2004	LB-4	Winter flounder	YS	2	20.7
4/27/2004	LB-4	Winter flounder	PYS	349	3612.3
4/27/2004	LB-5	Atlantic menhaden	Egg	40	199.3
4/27/2004	LB-5	Grubby	PYS	1	5.0
4/27/2004	LB-5	Weakfish	Egg	104	518.1
4/27/2004	LB-5	Winter flounder	PYS	148	737.3
4/27/2004	LB-6	Atlantic menhaden	Egg	4	25.9
4/27/2004	LB-6	Grubby	PYS	2	13.0
4/27/2004	LB-6	Weakfish	Egg	102	661.6
4/27/2004	LB-6	Windowpane	Egg	10	64.9
4/27/2004	LB-6	Winter flounder	PYS	68	441.0
4/27/2004	LB-6	Winter flounder	JUV	1	6.5
4/27/2004	AK-4	Grubby	PYS	13	85.0
4/27/2004	AK-4	Winter flounder	YS	1	6.5
4/27/2004	AK-4	Winter flounder	PYS	64	418.7
4/27/2004	AK-4	Winter flounder	JUV	1	6.5
4/27/2004	AK-3	Grubby	YS	1	4.9
4/27/2004	AK-3	Grubby	PYS	5	24.4
4/27/2004	AK-3	Weakfish	Egg	1	4.9
4/27/2004	AK-3	Winter flounder	PYS	59	287.3
4/27/2004	AK-2	Grubby	YS	2	12.8
4/27/2004	AK-2	Grubby	PYS	40	255.9
4/27/2004	AK-2	Rock gunnel	PYS	1	6.4
4/27/2004	AK-2	Weakfish	Egg	27	172.7
4/27/2004	AK-2	Winter flounder	PYS	314	2008.9
4/27/2004	AK-1	Grubby	PYS	3	24.4
4/27/2004	AK-1	Weakfish	Egg	1	8.1
4/27/2004	AK-1	Winter flounder	PYS	39	316.6
4/27/2004	NB-3	Grubby	PYS	2	13.7
4/27/2004	NB-3	Winter flounder	PYS	2	13.7
4/27/2004	NB-4	Grubby	PYS	1	5.9
4/27/2004	NB-4	Winter flounder	PYS	4	23.4
4/27/2004	NB-5	Atlantic herring	PYS	1	6.5
4/27/2004	NB-5	Atlantic tomcod	PYS	1	6.5
4/27/2004	NB-5	Grubby	PYS	22	142.7
4/27/2004	NB-5	Weakfish	Egg	16	103.8
4/27/2004	NB-5	Winter flounder	PYS	131	849.7
4/27/2004	NB-7	Grubby	YS	1	6.0
4/27/2004	NB-7	Grubby	PYS	5	30.0
4/27/2004	NB-7	Weakfish	Egg	1	6.0
4/27/2004	NB-7	Winter flounder	YS	1	6.0
4/27/2004	NB-7	Winter flounder	PYS	60	360.2
4/27/2004	NB-6	Grubby	YS	1	6.7
4/27/2004	NB-6	Grubby	PYS	32	214.8
4/27/2004	NB-6	Grubby	JUV	2	13.4
4/27/2004	NB-6	Weakfish	Egg	4	26.9
4/27/2004	NB-6	Winter flounder	PYS	307	2061.1



Date	Station	Common Name	Life Stage	Number Caught	Density
4/27/2004	SB-3	Atlantic menhaden	Egg	4	24.5
4/27/2004	SB-3	Grubby	YS	1	6.1
4/27/2004	SB-3	Weakfish	Egg	41	251.4
4/27/2004	SB-3	Winter flounder	PYS	34	208.5
4/27/2004	SB-4	Grubby	PYS	20	113.4
4/27/2004	SB-4	Weakfish	Egg	44	249.6
4/27/2004	SB-4	Winter flounder	PYS	308	1747.1
4/27/2004	SB-1	Atlantic menhaden	Egg	8	120.5
4/27/2004	SB-1	Grubby	YS	1	15.1
4/27/2004	SB-1	Grubby	PYS	4	60.3
4/27/2004	SB-1	Weakfish	Egg	30	452.0
4/27/2004	SB-1	Winter flounder	PYS	43	647.9
5/10/2004	SB-2	Atlantic menhaden	Egg	16	193.0
5/10/2004	SB-2	Weakfish	Egg	13	156.8
5/10/2004	SB-2	Winter flounder	PYS	2	24.1
5/10/2004	SB-2	Labridae	Egg	1	12.1
5/10/2004	SB-1	Atlantic menhaden	Egg	3	39.4
5/10/2004	SB-1	Weakfish	Egg	2	26.3
5/10/2004	SB-1	Labridae	Egg	2	26.3
5/10/2004	SB-4	Atlantic menhaden	Egg	6	30.9
5/10/2004	SB-4	Fourbeard rockling	Egg	2	10.3
5/10/2004	SB-4	Weakfish	Egg	11	56.7
5/10/2004	SB-4	Winter flounder	PYS	6	30.9
5/10/2004	SB-4	Labridae	Egg	3	15.5
5/10/2004	SB-3	Atlantic menhaden	Egg	34	190.8
5/10/2004	SB-3	Atlantic menhaden	UID	5	28.1
5/10/2004	SB-3	Fourbeard rockling	Egg	4	22.4
5/10/2004	SB-3	Weakfish	Egg	25	140.3
5/10/2004	SB-3	Windowpane	PYS	1	5.6
5/10/2004	SB-3	Winter flounder	YS	1	5.6
5/10/2004	SB-3	Winter flounder	PYS	4	22.4
5/10/2004	SB-3	Labridae	Egg	1	5.6
5/10/2004	SB-6	Atlantic menhaden	Egg	14.66666667	64.9
5/10/2004	SB-6	Fourbeard rockling	Egg	1.333333333	5.9
5/10/2004	SB-6	Weakfish	Egg	17.33333333	76.7
5/10/2004	SB-6	Winter flounder	PYS	15	66.4
5/10/2004	SB-6	Labridae	Egg	1.333333333	5.9
5/10/2004	LB-3	Atlantic menhaden	Egg	82	523.0
5/10/2004	LB-3	Fourbeard rockling	Egg	2	12.8
5/10/2004	LB-3	Grubby	PYS	2	12.8
5/10/2004	LB-3	Weakfish	Egg	64	408.2
5/10/2004	LB-3	Windowpane	PYS	2	12.8
5/10/2004	LB-3	Winter flounder	PYS	124	790.9
5/10/2004	LB-3	Labridae	Egg	14	89.3
5/10/2004	LB-5	Atlantic menhaden	Egg	112	907.6
5/10/2004	LB-5	Weakfish	Egg	120	972.4
5/10/2004	LB-5	Winter flounder	PYS	4	32.4
5/10/2004	LB-6	Atlantic menhaden	Egg	116	1124.5
5/10/2004	LB-6	Weakfish	Egg	28	271.4
5/10/2004	LB-6	Winter flounder	PYS	83	804.6



Date	Station	Common Name	Life Stage	Number Caught	Density
5/10/2004	LB-6	Labridae	Egg	8	77.5
5/10/2004	LB-4	Atlantic menhaden	Egg	36	251.5
5/10/2004	LB-4	Grubby	PYS	2	14.0
5/10/2004	LB-4	Weakfish	Egg	38	265.5
5/10/2004	LB-4	Winter flounder	PYS	91	635.8
5/10/2004	LB-2	Atlantic mackerel	Egg	5	46.4
5/10/2004	LB-2	Atlantic menhaden	Egg	6	55.7
5/10/2004	LB-2	Grubby	PYS	3	27.9
5/10/2004	LB-2	Weakfish	Egg	5	46.4
5/10/2004	LB-2	Winter flounder	PYS	53	492.2
5/10/2004	LB-1	Atlantic menhaden	Egg	41	411.8
5/10/2004	LB-1	Weakfish	Egg	21	210.9
5/10/2004	LB-1	Winter flounder	PYS	5	50.2
5/10/2004	LB-1	Labridae	Egg	4	40.2
5/10/2004	SB-5	Atlantic menhaden	Egg	52	309.9
5/10/2004	SB-5	Grubby	PYS	2	11.9
5/10/2004	SB-5	Weakfish	Egg	18	107.3
5/10/2004	SB-5	Windowpane	PYS	1	6.0
5/10/2004	SB-5	Winter flounder	PYS	136	810.4
5/10/2004	SB-5	Labridae	Egg	6	35.8
5/10/2004	PJ-4	Atlantic menhaden	Egg	19	132.8
5/10/2004	PJ-4	Fourbeard rockling	Egg	3	21.0
5/10/2004	PJ-4	Grubby	PYS	1	7.0
5/10/2004	PJ-4	Weakfish	Egg	26	181.7
5/10/2004	PJ-4	Windowpane	PYS	1	7.0
5/10/2004	PJ-4	Winter flounder	PYS	37	258.6
5/10/2004	PJ-4	Labridae	Egg	3	21.0
5/10/2004	PJ-5	Atlantic menhaden	Egg	31	149.1
5/10/2004	PJ-5	Weakfish	Egg	9	43.3
5/10/2004	PJ-5	Winter flounder	PYS	2	9.6
5/10/2004	PJ-5	Labridae	Egg	4	19.2
5/10/2004	PJ-1	Atlantic menhaden	Egg	42	327.2
5/10/2004	PJ-1	Weakfish	Egg	18	140.2
5/10/2004	PJ-1	Winter flounder	PYS	2	15.6
5/10/2004	PJ-1	Labridae	Egg	2	15.6
5/11/2004	AK-1	Atlantic menhaden	Egg	2	19.7
5/11/2004	AK-1	Weakfish	Egg	1	9.8
5/11/2004	AK-1	Winter flounder	PYS	1	9.8
5/11/2004	AK-1	Labridae	Egg	2	19.7
5/11/2004	AK-2	Weakfish	Egg	2	13.4
5/11/2004	AK-2	Winter flounder	PYS	1	6.7
5/11/2004	AK-2	Labridae	Egg	1	6.7
5/11/2004	AK-3	Atlantic menhaden	Egg	2	14.5
5/11/2004	AK-3	Fourbeard rockling	Egg	1	7.3
5/11/2004	AK-3	Winter flounder	PYS	10	72.5
5/11/2004	AK-3	Labridae	Egg	13	94.3
5/11/2004	AK-4	Atlantic menhaden	PYS	1	6.0
5/11/2004	AK-4	Atlantic silverside	PYS	1	6.0
5/11/2004	AK-4	Winter flounder	PYS	1	6.0
5/11/2004	AK-4	Labridae	Egg	20	119.2



Date	Station	Common Name	Life Stage	Number Caught	Density
5/11/2004	NB-4	Windowpane	PYS	1	5.7
5/11/2004	NB-4	Labridae	Egg	1	5.7
5/11/2004	NB-5	Atlantic herring	PYS	4	21.9
5/11/2004	NB-5	Atlantic tomcod	JUV	1	5.5
5/11/2004	NB-5	Grubby	PYS	2	10.9
5/11/2004	NB-5	Weakfish	Egg	3	16.4
5/11/2004	NB-5	Winter flounder	PYS	8	43.8
5/11/2004	NB-5	Labridae	Egg	2	10.9
5/11/2004	NB-6	Atlantic herring	PYS	3	15.2
5/11/2004	NB-6	Atlantic menhaden	Egg	1	5.1
5/11/2004	NB-6	Atlantic tomcod	JUV	2	10.2
5/11/2004	NB-6	Grubby	PYS	1	5.1
5/11/2004	NB-6	Weakfish	Egg	1	5.1
5/11/2004	NB-6	Winter flounder	PYS	12	60.9
5/11/2004	NB-6	Labridae	Egg	2	10.2
5/11/2004	NB-7	Labridae	Egg	1	8.3
5/11/2004	HR-1	Atlantic menhaden	Egg	1	15.1
5/11/2004	HR-1	Labridae	Egg	4	60.2
5/11/2004	PJ-3	Atlantic menhaden	Egg	2	12.9
5/11/2004	PJ-3	Windowpane	PYS	1	6.4
5/11/2004	PJ-3	Labridae	Egg	1	6.4
5/11/2004	HR-4	Atlantic menhaden	Egg	55	385.9
5/11/2004	HR-4	Weakfish	Egg	3	21.1
5/11/2004	HR-4	Winter flounder	PYS	1	7.0
5/11/2004	HR-4	Labridae	Egg	7	49.1
6/1/2004	LB-3	Atlantic menhaden	Egg	128	745.7
6/1/2004	LB-3	Atlantic menhaden	PYS	72	419.5
6/1/2004	LB-3	Bay anchovy	Egg	3744	21813.0
6/1/2004	LB-3	Bay anchovy	PYS	1264	7364.2
6/1/2004	LB-3	Cunner	PYS	8	46.6
6/1/2004	LB-3	Weakfish	Egg	256	1491.5
6/1/2004	LB-3	Weakfish	PYS	16	93.2
6/1/2004	LB-3	Windowpane	PYS	56	326.3
6/1/2004	LB-3	Unidentified	PYS	1032	6012.6
6/1/2004	LB-3	Labridae	Egg	160	932.2
6/1/2004	LB-5	Atlantic menhaden	PYS	3	15.2
6/1/2004	LB-5	Bay anchovy	Egg	21504	108765.2
6/1/2004	LB-5	Bay anchovy	PYS	244	1234.1
6/1/2004	LB-5	Weakfish	PYS	1	5.1
6/1/2004	LB-5	Windowpane	PYS	1	5.1
6/1/2004	LB-5	Unidentified	PYS	63	318.6
6/1/2004	LB-5	Labridae	Egg	512	2589.6
6/1/2004	LB-6	Atlantic menhaden	Egg	512	3368.5
6/1/2004	LB-6	Atlantic menhaden	PYS	30	197.4
6/1/2004	LB-6	Bay anchovy	Egg	9216	60633.1
6/1/2004	LB-6	Bay anchovy	PYS	168	1105.3
6/1/2004	LB-6	Cunner	PYS	2	13.2
6/1/2004	LB-6	Morone sp.	PYS	2	13.2
6/1/2004	LB-6	Northern pipefish	PYS	8	52.6
6/1/2004	LB-6	Prionotus sp.	Egg	7424	48843.3



Date	Station	Common Name	Life Stage	Number Caught	Density
6/1/2004	LB-6	Weakfish	Egg	768	5052.8
6/1/2004	LB-6	Windowpane	Egg	2560	16842.5
6/1/2004	LB-6	Windowpane	PYS	8	52.6
6/1/2004	LB-6	Unidentified	PYS	178	1171.1
6/1/2004	LB-6	Labridae	Egg	1792	11789.8
6/1/2004	LB-4	Atlantic menhaden	Egg	1152	5122.6
6/1/2004	LB-4	Atlantic menhaden	PYS	152	675.9
6/1/2004	LB-4	Bay anchovy	Egg	11264	50087.7
6/1/2004	LB-4	Bay anchovy	PYS	720	3201.6
6/1/2004	LB-4	Cunner	Egg	512	2276.7
6/1/2004	LB-4	Windowpane	Egg	256	1138.4
6/1/2004	LB-4	Unidentified	PYS	632	2810.3
6/1/2004	LB-1	Atlantic menhaden	Egg	192	1002.3
6/1/2004	LB-1	Atlantic menhaden	PYS	9	47.0
6/1/2004	LB-1	Bay anchovy	Egg	4800	25056.6
6/1/2004	LB-1	Bay anchovy	PYS	35	182.7
6/1/2004	LB-1	Northern pipefish	PYS	1	5.2
6/1/2004	LB-1	Prionotus sp.	Egg	64	334.1
6/1/2004	LB-1	Tautog	PYS	1	5.2
6/1/2004	LB-1	Windowpane	Egg	192	1002.3
6/1/2004	LB-1	Windowpane	PYS	8	41.8
6/1/2004	LB-1	Unidentified	PYS	63	328.9
6/1/2004	LB-1	Labridae	Egg	320	1670.4
6/1/2004	LB-2	Atlantic menhaden	Egg	704	5734.6
6/1/2004	LB-2	Atlantic menhaden	PYS	106	863.4
6/1/2004	LB-2	Bay anchovy	Egg	2432	19810.4
6/1/2004	LB-2	Bay anchovy	PYS	63	513.2
6/1/2004	LB-2	Prionotus sp.	Egg	448	3649.3
6/1/2004	LB-2	Weakfish	Egg	384	3128.0
6/1/2004	LB-2	Weakfish	PYS	6	48.9
6/1/2004	LB-2	Windowpane	Egg	448	3649.3
6/1/2004	LB-2	Windowpane	PYS	27	219.9
6/1/2004	LB-2	Winter flounder	PYS	3	24.4
6/1/2004	LB-2	Unidentified	PYS	40	325.8
6/1/2004	LB-2	Labridae	Egg	1792	14597.1
6/1/2004	SB-6	Atlantic menhaden	Egg	832	5257.4
6/1/2004	SB-6	Atlantic menhaden	PYS	816	5156.3
6/1/2004	SB-6	Bay anchovy	Egg	512	3235.3
6/1/2004	SB-6	Bay anchovy	PYS	864	5459.6
6/1/2004	SB-6	Prionotus sp.	Egg	192	1213.2
6/1/2004	SB-6	Windowpane	Egg	256	1617.7
6/1/2004	SB-6	Unidentified	PYS	1264	7987.2
6/1/2004	SB-6	Labridae	Egg	160	1011.0
6/1/2004	SB-3	Atlantic menhaden	Egg	448	2547.4
6/1/2004	SB-3	Atlantic menhaden	PYS	150	852.9
6/1/2004	SB-3	Bay anchovy	Egg	384	2183.5
6/1/2004	SB-3	Bay anchovy	PYS	100	568.6
6/1/2004	SB-3	Prionotus sp.	Egg	16	91.0
6/1/2004	SB-3	Tautog	PYS	6	34.1
6/1/2004	SB-3	Weakfish	PYS	8	45.5



Date	Station	Common Name	Life Stage	Number Caught	Density
6/1/2004	SB-3	Windowpane	Egg	144	818.8
6/1/2004	SB-3	Windowpane	PYS	2	11.4
6/1/2004	SB-3	Unidentified	PYS	192	1091.7
6/1/2004	SB-3	Labridae	Egg	64	363.9
6/1/2004	SB-4	Atlantic menhaden	Egg	416	2084.5
6/1/2004	SB-4	Atlantic menhaden	PYS	186	932.0
6/1/2004	SB-4	Bay anchovy	Egg	544	2725.9
6/1/2004	SB-4	Bay anchovy	PYS	210	1052.3
6/1/2004	SB-4	Tautog	PYS	10	50.1
6/1/2004	SB-4	Weakfish	PYS	4	20.0
6/1/2004	SB-4	Windowpane	Egg	160	801.7
6/1/2004	SB-4	Windowpane	PYS	2	10.0
6/1/2004	SB-4	Winter flounder	PYS	2	10.0
6/1/2004	SB-4	Unidentified	PYS	202	1012.2
6/1/2004	SB-4	Labridae	Egg	96	481.0
6/1/2004	SB-1	Atlantic menhaden	Egg	88	1033.5
6/1/2004	SB-1	Atlantic menhaden	YS	1	11.7
6/1/2004	SB-1	Atlantic menhaden	PYS	14	164.4
6/1/2004	SB-1	Bay anchovy	Egg	216	2536.7
6/1/2004	SB-1	Bay anchovy	PYS	114	1338.8
6/1/2004	SB-1	Cunner	PYS	1	11.7
6/1/2004	SB-1	Windowpane	Egg	24	281.9
6/1/2004	SB-1	Windowpane	PYS	1	11.7
6/1/2004	SB-1	Unidentified	PYS	52	610.7
6/1/2004	SB-1	Labridae	Egg	32	375.8
6/1/2004	SB-2	Atlantic menhaden	Egg	32	284.0
6/1/2004	SB-2	Bay anchovy	Egg	184	1632.8
6/1/2004	SB-2	Bay anchovy	PYS	67	594.6
6/1/2004	SB-2	Windowpane	PYS	1	8.9
6/1/2004	SB-2	Unidentified	PYS	13	115.4
6/1/2004	SB-2	Labridae	Egg	40	355.0
6/1/2004	SB-5	Atlantic menhaden	Egg	704	2879.8
6/1/2004	SB-5	Atlantic menhaden	PYS	92	376.3
6/1/2004	SB-5	Bay anchovy	Egg	1024	4188.8
6/1/2004	SB-5	Bay anchovy	PYS	232	949.0
6/1/2004	SB-5	Tautog	PYS	4	16.4
6/1/2004	SB-5	Weakfish	PYS	4	16.4
6/1/2004	SB-5	Windowpane	Egg	96	392.7
6/1/2004	SB-5	Windowpane	PYS	20	81.8
6/1/2004	SB-5	Unidentified	PYS	372	1521.7
6/1/2004	SB-5	Labridae	Egg	224	916.3
6/2/2004	PJ-2	Atlantic menhaden	Egg	704	4304.9
6/2/2004	PJ-2	Atlantic menhaden	PYS	168	1027.3
6/2/2004	PJ-2	Bay anchovy	Egg	4096	25046.8
6/2/2004	PJ-2	Bay anchovy	PYS	560	3424.4
6/2/2004	PJ-2	Northern puffer	PYS	4	24.5
6/2/2004	PJ-2	Tautog	PYS	8	48.9
6/2/2004	PJ-2	Windowpane	Egg	96	587.0
6/2/2004	PJ-2	Windowpane	PYS	12	73.4
6/2/2004	PJ-2	Unidentified	PYS	268	1638.8



Date	Station	Common Name	Life Stage	Number Caught	Density
6/2/2004	PJ-2	Labridae	Egg	160	978.4
6/2/2004	PJ-1	Atlantic menhaden	Egg	1856	11211.1
6/2/2004	PJ-1	Atlantic menhaden	YS	64	386.6
6/2/2004	PJ-1	Atlantic menhaden	PYS	256	1546.4
6/2/2004	PJ-1	Bay anchovy	Egg	6592	39818.7
6/2/2004	PJ-1	Bay anchovy	PYS	1256	7586.8
6/2/2004	PJ-1	Tautog	PYS	24	145.0
6/2/2004	PJ-1	Weakfish	PYS	8	48.3
6/2/2004	PJ-1	Windowpane	Egg	128	773.2
6/2/2004	PJ-1	Unidentified	PYS	152	918.1
6/2/2004	PJ-1	Labridae	Egg	192	1159.8
6/2/2004	HR-1	Atlantic menhaden	Egg	368	4268.7
6/2/2004	HR-1	Atlantic menhaden	YS	5	58.0
6/2/2004	HR-1	Atlantic menhaden	PYS	32	371.2
6/2/2004	HR-1	Bay anchovy	Egg	1208	14012.5
6/2/2004	HR-1	Bay anchovy	PYS	157	1821.2
6/2/2004	HR-1	Prionotus sp.	Egg	8	92.8
6/2/2004	HR-1	Weakfish	PYS	4	46.4
6/2/2004	HR-1	Windowpane	Egg	40	464.0
6/2/2004	HR-1	Unidentified	PYS	73	846.8
6/2/2004	HR-1	Labridae	Egg	88	1020.8
6/2/2004	HR-4	Atlantic menhaden	Egg	304	1407.0
6/2/2004	HR-4	Atlantic menhaden	PYS	10	46.3
6/2/2004	HR-4	Bay anchovy	Egg	1888	8738.5
6/2/2004	HR-4	Bay anchovy	PYS	61	282.3
6/2/2004	HR-4	Tautog	PYS	1	4.6
6/2/2004	HR-4	Weakfish	PYS	2	9.3
6/2/2004	HR-4	Windowpane	PYS	1	4.6
6/2/2004	HR-4	Unidentified	PYS	52	240.7
6/2/2004	HR-4	Labridae	Egg	128	592.4
6/2/2004	PJ-3	Atlantic menhaden	Egg	1024	5446.4
6/2/2004	PJ-3	Atlantic menhaden	PYS	32	170.2
6/2/2004	PJ-3	Bay anchovy	Egg	2720	14466.9
6/2/2004	PJ-3	Bay anchovy	PYS	106	563.8
6/2/2004	PJ-3	Northern pipefish	PYS	1	5.3
6/2/2004	PJ-3	Weakfish	Egg	32	170.2
6/2/2004	PJ-3	Weakfish	PYS	1	5.3
6/2/2004	PJ-3	Windowpane	Egg	64	340.4
6/2/2004	PJ-3	Windowpane	PYS	3	16.0
6/2/2004	PJ-3	Unidentified	PYS	128	680.8
6/2/2004	PJ-3	Labridae	Egg	64	340.4
6/2/2004	PJ-4	Atlantic menhaden	Egg	1408	6967.4
6/2/2004	PJ-4	Atlantic menhaden	PYS	36	178.1
6/2/2004	PJ-4	Bay anchovy	Egg	3776	18685.2
6/2/2004	PJ-4	Bay anchovy	PYS	196	969.9
6/2/2004	PJ-4	Windowpane	Egg	64	316.7
6/2/2004	PJ-4	Unidentified	PYS	408	2018.9
6/2/2004	PJ-4	Labridae	Egg	256	1266.8
6/2/2004	PJ-5	Atlantic menhaden	Egg	1536	6557.6
6/2/2004	PJ-5	Atlantic menhaden	PYS	44	187.8



Date	Station	Common Name	Life Stage	Number Caught	Density
6/2/2004	PJ-5	Bay anchovy	Egg	6144	26230.4
6/2/2004	PJ-5	Bay anchovy	PYS	120	512.3
6/2/2004	PJ-5	Tautog	PYS	2	8.5
6/2/2004	PJ-5	Weakfish	PYS	4	17.1
6/2/2004	PJ-5	Windowpane	Egg	128	546.5
6/2/2004	PJ-5	Windowpane	PYS	2	8.5
6/2/2004	PJ-5	Unidentified	PYS	186	794.1
6/2/2004	PJ-5	Labridae	Egg	256	1092.9
6/2/2004	NB-7	Atlantic menhaden	Egg	32	201.4
6/2/2004	NB-7	Atlantic menhaden	PYS	40	251.7
6/2/2004	NB-7	Bay anchovy	Egg	2560	16109.7
6/2/2004	NB-7	Bay anchovy	PYS	612	3851.2
6/2/2004	NB-7	Unidentified	PYS	148	931.3
6/2/2004	NB-6	Atlantic menhaden	Egg	256	1649.9
6/2/2004	NB-6	Atlantic menhaden	PYS	7	45.1
6/2/2004	NB-6	Bay anchovy	Egg	6720	43310.5
6/2/2004	NB-6	Bay anchovy	PYS	9	58.0
6/2/2004	NB-6	Weakfish	PYS	2	12.9
6/2/2004	NB-6	Windowpane	Egg	128	825.0
6/2/2004	NB-6	Windowpane	PYS	1	6.4
6/2/2004	NB-6	Winter flounder	PYS	2	12.9
6/2/2004	NB-6	Unidentified	PYS	49	315.8
6/2/2004	NB-6	Labridae	Egg	128	825.0
6/2/2004	NB-5	Atlantic menhaden	Egg	160	1014.6
6/2/2004	NB-5	Atlantic menhaden	PYS	15	95.1
6/2/2004	NB-5	Bay anchovy	Egg	1760	11160.6
6/2/2004	NB-5	Bay anchovy	PYS	148	938.5
6/2/2004	NB-5	Northern pipefish	PYS	3	19.0
6/2/2004	NB-5	Weakfish	PYS	10	63.4
6/2/2004	NB-5	Windowpane	PYS	1	6.3
6/2/2004	NB-5	Winter flounder	PYS	8	50.7
6/2/2004	NB-5	Unidentified	PYS	92	583.4
6/2/2004	NB-5	Labridae	Egg	96	608.8
6/2/2004	NB-4	Atlantic menhaden	Egg	16	95.5
6/2/2004	NB-4	Atlantic menhaden	PYS	4	23.9
6/2/2004	NB-4	Bay anchovy	Egg	2224	13270.2
6/2/2004	NB-4	Bay anchovy	PYS	156	930.8
6/2/2004	NB-4	Gobiid unidentified	PYS	2	11.9
6/2/2004	NB-4	Northern pipefish	PYS	5	29.8
6/2/2004	NB-4	Weakfish	PYS	2	11.9
6/2/2004	NB-4	Unidentified	PYS	49	292.4
6/2/2004	NB-4	Labridae	Egg	32	190.9
6/2/2004	NB-3	Atlantic menhaden	Egg	4	22.5
6/2/2004	NB-3	Atlantic menhaden	PYS	34	191.1
6/2/2004	NB-3	Bay anchovy	Egg	852	4789.6
6/2/2004	NB-3	Bay anchovy	PYS	90	505.9
6/2/2004	NB-3	Northern pipefish	PYS	1	5.6
6/2/2004	NB-3	Tautog	PYS	2	11.2
6/2/2004	NB-3	Weakfish	PYS	3	16.9
6/2/2004	NB-3	Unidentified	PYS	12	67.5



Date	Station	Common Name	Life Stage	Number Caught	Density
6/2/2004	NB-3	Labridae	Egg	8	45.0
6/2/2004	AK-2	Atlantic menhaden	Egg	288	1703.4
6/2/2004	AK-2	Atlantic menhaden	PYS	16	94.6
6/2/2004	AK-2	Bay anchovy	Egg	2656	15709.1
6/2/2004	AK-2	Bay anchovy	PYS	65	384.4
6/2/2004	AK-2	Northern pipefish	PYS	1	5.9
6/2/2004	AK-2	Tautog	PYS	1	5.9
6/2/2004	AK-2	Weakfish	PYS	4	23.7
6/2/2004	AK-2	Windowpane	Egg	32	189.3
6/2/2004	AK-2	Winter flounder	PYS	1	5.9
6/2/2004	AK-2	Unidentified	PYS	115	680.2
6/2/2004	AK-2	Labridae	Egg	224	1324.9
6/2/2004	AK-1	Atlantic menhaden	Egg	64	387.5
6/2/2004	AK-1	Atlantic menhaden	PYS	13	78.7
6/2/2004	AK-1	Bay anchovy	Egg	5696	34490.2
6/2/2004	AK-1	Bay anchovy	PYS	267	1616.7
6/2/2004	AK-1	Gobiid unidentified	PYS	1	6.1
6/2/2004	AK-1	Northern pipefish	PYS	2	12.1
6/2/2004	AK-1	Weakfish	PYS	1	6.1
6/2/2004	AK-1	Windowpane	PYS	1	6.1
6/2/2004	AK-1	Unidentified	PYS	41	248.3
6/2/2004	AK-3	Atlantic menhaden	Egg	576	3843.8
6/2/2004	AK-3	Atlantic menhaden	PYS	48	320.3
6/2/2004	AK-3	Atlantic silverside	YS	4	26.7
6/2/2004	AK-3	Bay anchovy	Egg	4544	30323.2
6/2/2004	AK-3	Bay anchovy	PYS	71	473.8
6/2/2004	AK-3	Gobiid unidentified	PYS	1	6.7
6/2/2004	AK-3	Weakfish	PYS	7	46.7
6/2/2004	AK-3	Windowpane	Egg	256	1708.3
6/2/2004	AK-3	Windowpane	PYS	1	6.7
6/2/2004	AK-3	Winter flounder	PYS	6	40.0
6/2/2004	AK-3	Unidentified	PYS	45	300.3
6/2/2004	AK-3	Labridae	Egg	384	2562.5
6/2/2004	AK-4	Bay anchovy	Egg	2864	15822.6
6/2/2004	AK-4	Bay anchovy	PYS	2	11.0
6/2/2004	AK-4	Northern pipefish	PYS	3	16.6
6/2/2004	AK-4	Weakfish	PYS	2	11.0
6/2/2004	AK-4	Labridae	Egg	144	795.5
6/14/2004	LB-3	Atlantic silverside	PYS	2	10.8
6/14/2004	LB-3	Bay anchovy	Egg	1568	8487.0
6/14/2004	LB-3	Bay anchovy	PYS	394	2132.6
6/14/2004	LB-3	Gobiid unidentified	PYS	2	10.8
6/14/2004	LB-3	Northern pipefish	PYS	2	10.8
6/14/2004	LB-3	Prionotus sp.	Egg	128	692.8
6/14/2004	LB-3	Weakfish	PYS	4	21.7
6/14/2004	LB-3	Windowpane	Egg	160	866.0
6/14/2004	LB-3	Windowpane	PYS	2	10.8
6/14/2004	LB-3	Labridae	Egg	160	866.0
6/14/2004	LB-5	Bay anchovy	Egg	1280	11461.1
6/14/2004	LB-5	Bay anchovy	PYS	118	1056.6



Date	Station	Common Name	Life Stage	Number Caught	Density
6/14/2004	LB-5	Gadid unidentified	Egg	32	286.5
6/14/2004	LB-5	Windowpane	Egg	96	859.6
6/14/2004	LB-5	Labridae	Egg	192	1719.2
6/14/2004	LB-6	Atlantic silverside	PYS	2	20.2
6/14/2004	LB-6	Bay anchovy	Egg	1696	17123.3
6/14/2004	LB-6	Bay anchovy	PYS	39	393.8
6/14/2004	LB-6	Gadid unidentified	Egg	32	323.1
6/14/2004	LB-6	Hogchocker	Egg	416	4200.1
6/14/2004	LB-6	Northern pipefish	JUV	1	10.1
6/14/2004	LB-6	Windowpane	Egg	192	1938.5
6/14/2004	LB-6	Windowpane	PYS	3	30.3
6/14/2004	LB-6	Labridae	Egg	256	2584.7
6/14/2004	LB-4	Bay anchovy	Egg	2336	18645.7
6/14/2004	LB-4	Bay anchovy	PYS	102	814.2
6/14/2004	LB-4	Northern pipefish	PYS	9	71.8
6/14/2004	LB-4	Prionotus sp.	Egg	96	766.3
6/14/2004	LB-4	Weakfish	Egg	96	766.3
6/14/2004	LB-4	Windowpane	Egg	96	766.3
6/14/2004	LB-4	Windowpane	PYS	2	16.0
6/14/2004	LB-4	Labridae	Egg	192	1532.5
6/14/2004	LB-2	Atlantic mackerel	Egg	2	20.4
6/14/2004	LB-2	Bay anchovy	Egg	108	1099.3
6/14/2004	LB-2	Bay anchovy	PYS	16	162.9
6/14/2004	LB-2	Gadid unidentified	Egg	4	40.7
6/14/2004	LB-2	Gobiid unidentified	PYS	1	10.2
6/14/2004	LB-2	Northern pipefish	PYS	1	10.2
6/14/2004	LB-2	Prionotus sp.	Egg	26	264.6
6/14/2004	LB-2	Weakfish	Egg	30	305.3
6/14/2004	LB-2	Windowpane	Egg	54	549.6
6/14/2004	LB-2	Windowpane	PYS	3	30.5
6/14/2004	LB-2	Labridae	Egg	58	590.3
6/14/2004	LB-1	Bay anchovy	Egg	1152	5695.7
6/14/2004	LB-1	Bay anchovy	PYS	66	326.3
6/14/2004	LB-1	Northern pipefish	PYS	13	64.3
6/14/2004	LB-1	Prionotus sp.	Egg	128	632.9
6/14/2004	LB-1	Tautog	PYS	1	4.9
6/14/2004	LB-1	Windowpane	Egg	112	553.7
6/14/2004	LB-1	Windowpane	PYS	2	9.9
6/14/2004	LB-1	Labridae	Egg	144	712.0
6/14/2004	SB-6	Bay anchovy	Egg	912	3563.7
6/14/2004	SB-6	Bay anchovy	PYS	118	461.1
6/14/2004	SB-6	Northern pipefish	PYS	2	7.8
6/14/2004	SB-6	Prionotus sp.	Egg	16	62.5
6/14/2004	SB-6	Labridae	Egg	64	250.1
6/14/2004	SB-3	Bay anchovy	Egg	1104	4830.6
6/14/2004	SB-3	Bay anchovy	PYS	182	796.3
6/14/2004	SB-3	Northern pipefish	PYS	1	4.4
6/14/2004	SB-3	Prionotus sp.	Egg	32	140.0
6/14/2004	SB-3	Weakfish	PYS	2	8.8
6/14/2004	SB-3	Labridae	Egg	160	700.1



Date	Station	Common Name	Life Stage	Number Caught	Density
6/14/2004	SB-4	Bay anchovy	Egg	816	6127.9
6/14/2004	SB-4	Bay anchovy	PYS	75	563.2
6/14/2004	SB-4	Windowpane	Egg	80	600.8
6/14/2004	SB-4	Windowpane	PYS	3	22.5
6/14/2004	SB-4	Labridae	Egg	400	3003.8
6/14/2004	SB-2	Bay anchovy	Egg	664	8054.0
6/14/2004	SB-2	Bay anchovy	PYS	86	1043.1
6/14/2004	SB-2	Gadid unidentified	Egg	8	97.0
6/14/2004	SB-2	Windowpane	Egg	24	291.1
6/14/2004	SB-2	Labridae	Egg	184	2231.8
6/14/2004	SB-5	Bay anchovy	Egg	1312	5721.1
6/14/2004	SB-5	Bay anchovy	PYS	412	1796.6
6/14/2004	SB-5	Prionotus sp.	Egg	32	139.5
6/14/2004	SB-5	Weakfish	PYS	6	26.2
6/14/2004	SB-5	Windowpane	Egg	128	558.2
6/14/2004	SB-5	Labridae	Egg	320	1395.4
6/14/2004	PJ-5	Atlantic menhaden	Egg	32	197.6
6/14/2004	PJ-5	Atlantic menhaden	PYS	3	18.5
6/14/2004	PJ-5	Bay anchovy	Egg	720	4447.0
6/14/2004	PJ-5	Bay anchovy	PYS	145	895.6
6/14/2004	PJ-5	Northern pipefish	PYS	1	6.2
6/14/2004	PJ-5	Prionotus sp.	Egg	48	296.5
6/14/2004	PJ-5	Weakfish	PYS	1	6.2
6/14/2004	PJ-5	Windowpane	Egg	112	691.8
6/14/2004	PJ-5	Windowpane	YS	1	6.2
6/14/2004	PJ-5	Windowpane	PYS	2	12.4
6/14/2004	PJ-5	Labridae	Egg	544	3360.0
6/14/2004	PJ-4	Bay anchovy	Egg	1088	6348.2
6/14/2004	PJ-4	Bay anchovy	PYS	4	23.3
6/14/2004	PJ-4	Gadid unidentified	Egg	32	186.7
6/14/2004	PJ-4	Prionotus sp.	Egg	48	280.1
6/14/2004	PJ-4	Weakfish	Egg	96	560.1
6/14/2004	PJ-4	Windowpane	Egg	368	2147.2
6/14/2004	PJ-4	Labridae	Egg	1040	6068.2
6/14/2004	HR-1	Bay anchovy	Egg	1392	22592.6
6/14/2004	HR-1	Bay anchovy	PYS	55	892.7
6/14/2004	HR-1	Gobiid unidentified	PYS	1	16.2
6/14/2004	HR-1	Northern pipefish	PYS	1	16.2
6/14/2004	HR-1	Prionotus sp.	Egg	16	259.7
6/14/2004	HR-1	Windowpane	Egg	64	1038.7
6/14/2004	HR-1	Labridae	Egg	480	7790.5
6/14/2004	PJ-3	Bay anchovy	Egg	1872	13292.2
6/14/2004	PJ-3	Bay anchovy	PYS	57	404.7
6/14/2004	PJ-3	Labridae	Egg	128	908.9
6/14/2004	HR-4	Atlantic menhaden	PYS	4	26.9
6/14/2004	HR-4	Atlantic silverside	PYS	1	6.7
6/14/2004	HR-4	Bay anchovy	Egg	2944	19791.1
6/14/2004	HR-4	Bay anchovy	PYS	127	853.8
6/14/2004	HR-4	Northern pipefish	PYS	3	20.2
6/14/2004	HR-4	Northern puffer	PYS	1	6.7



Date	Station	Common Name	Life Stage	Number Caught	Density
6/14/2004	HR-4	Windowpane	Egg	64	430.2
6/14/2004	HR-4	Labridae	Egg	736	4947.8
6/14/2004	PJ-1	Atlantic menhaden	PYS	6	50.2
6/14/2004	PJ-1	Bay anchovy	Egg	1632	13654.5
6/14/2004	PJ-1	Bay anchovy	PYS	374	3129.1
6/14/2004	PJ-1	Northern pipefish	PYS	4	33.5
6/14/2004	PJ-1	Weakfish	Egg	16	133.9
6/14/2004	PJ-1	Weakfish	PYS	10	83.7
6/14/2004	PJ-1	Windowpane	Egg	80	669.3
6/14/2004	PJ-1	Windowpane	PYS	2	16.7
6/14/2004	PJ-1	Unidentified	PYS	40	334.7
6/14/2004	PJ-1	Labridae	Egg	208	1740.3
6/15/2004	PJ-2	Atlantic menhaden	PYS	1	7.3
6/15/2004	PJ-2	Bay anchovy	Egg	1248	9105.8
6/15/2004	PJ-2	Bay anchovy	PYS	60	437.8
6/15/2004	PJ-2	Tautog	PYS	2	14.6
6/15/2004	PJ-2	Weakfish	PYS	2	14.6
6/15/2004	PJ-2	Labridae	Egg	112	817.2
6/15/2004	AK-2	Atlantic silverside	PYS	1	14.1
6/15/2004	AK-2	Bay anchovy	Egg	1248	17559.3
6/15/2004	AK-2	Bay anchovy	PYS	97	1364.8
6/15/2004	AK-2	Gobiid unidentified	PYS	3	42.2
6/15/2004	AK-2	Northern pipefish	PYS	1	14.1
6/15/2004	AK-2	Tautog	PYS	1	14.1
6/15/2004	AK-2	Weakfish	PYS	3	42.2
6/15/2004	AK-2	Windowpane	Egg	48	675.4
6/15/2004	AK-2	Labridae	Egg	256	3601.9
6/15/2004	AK-1	Atlantic menhaden	PYS	1	7.0
6/15/2004	AK-1	Bay anchovy	Egg	2272	15808.3
6/15/2004	AK-1	Bay anchovy	PYS	91	633.2
6/15/2004	AK-1	Gobiid unidentified	PYS	13	90.5
6/15/2004	AK-1	Northern pipefish	PYS	1	7.0
6/15/2004	AK-1	Weakfish	PYS	2	13.9
6/15/2004	AK-1	Windowpane	Egg	64	445.3
6/15/2004	AK-1	Labridae	Egg	288	2003.9
6/15/2004	AK-3	Bay anchovy	Egg	3712	24162.8
6/15/2004	AK-3	Bay anchovy	PYS	49	319.0
6/15/2004	AK-3	Gobiid unidentified	PYS	17	110.7
6/15/2004	AK-3	Northern pipefish	PYS	1	6.5
6/15/2004	AK-3	Weakfish	PYS	4	26.0
6/15/2004	AK-3	Windowpane	Egg	64	416.6
6/15/2004	AK-3	Labridae	Egg	288	1874.7
6/15/2004	AK-4	American shad	PYS	2	11.2
6/15/2004	AK-4	Atlantic silverside	PYS	2	11.2
6/15/2004	AK-4	Bay anchovy	Egg	832	4647.2
6/15/2004	AK-4	Bay anchovy	PYS	254	1418.8
6/15/2004	AK-4	Gobiid unidentified	PYS	21	117.3
6/15/2004	AK-4	Northern pipefish	PYS	11	61.4
6/15/2004	AK-4	Tautog	PYS	2	11.2
6/15/2004	AK-4	Weakfish	PYS	4	22.3



Date	Station	Common Name	Life Stage	Number Caught	Density
6/15/2004	AK-4	Unidentified	PYS	17	95.0
6/15/2004	AK-4	Labridae	Egg	32	178.7
6/15/2004	NB-7	Atlantic silverside	PYS	1	6.8
6/15/2004	NB-7	Bay anchovy	Egg	2080	14207.5
6/15/2004	NB-7	Bay anchovy	PYS	207	1413.9
6/15/2004	NB-7	Gobiid unidentified	PYS	3	20.5
6/15/2004	NB-7	Northern pipefish	PYS	2	13.7
6/15/2004	NB-7	Weakfish	PYS	6	41.0
6/15/2004	NB-7	Windowpane	PYS	1	6.8
6/15/2004	NB-7	Labridae	Egg	32	218.6
6/15/2004	NB-5	Bay anchovy	Egg	2368	15418.3
6/15/2004	NB-5	Bay anchovy	PYS	658	4284.3
6/15/2004	NB-5	Gobiid unidentified	PYS	12	78.1
6/15/2004	NB-5	Weakfish	PYS	4	26.0
6/15/2004	NB-5	Windowpane	Egg	128	833.4
6/15/2004	NB-5	Labridae	Egg	576	3750.4
6/15/2004	NB-4	Bay anchovy	Egg	504	2876.7
6/15/2004	NB-4	Bay anchovy	PYS	49	279.7
6/15/2004	NB-4	Gobiid unidentified	PYS	12	68.5
6/15/2004	NB-4	Northern pipefish	PYS	2	11.4
6/15/2004	NB-4	Tautog	PYS	1	5.7
6/15/2004	NB-4	Weakfish	PYS	1	5.7
6/15/2004	NB-4	Labridae	Egg	8	45.7
7/6/2004	PJ-2	Bay anchovy	Egg	1536	8746.5
7/6/2004	PJ-2	Bay anchovy	PYS	40	227.8
7/6/2004	PJ-2	Butterfish	PYS	1	5.7
7/6/2004	PJ-2	Cunner	PYS	2	11.4
7/6/2004	PJ-2	Gobiid unidentified	PYS	6	34.2
7/6/2004	PJ-2	Northern pipefish	JUV	2	11.4
7/6/2004	PJ-2	Tautog	PYS	2	11.4
7/6/2004	PJ-2	Weakfish	Egg	32	182.2
7/6/2004	PJ-2	Weakfish	PYS	3	17.1
7/6/2004	PJ-2	Windowpane	Egg	32	182.2
7/6/2004	PJ-2	Labridae	Egg	384	2186.6
7/6/2004	PJ-1	Bay anchovy	Egg	360	2058.4
7/6/2004	PJ-1	Bay anchovy	PYS	33	188.7
7/6/2004	PJ-1	Cunner	PYS	6	34.3
7/6/2004	PJ-1	Gobiid unidentified	YS	1	5.7
7/6/2004	PJ-1	Gobiid unidentified	PYS	21	120.1
7/6/2004	PJ-1	Northern pipefish	PYS	6	34.3
7/6/2004	PJ-1	Northern pipefish	JUV	1	5.7
7/6/2004	PJ-1	Tautog	PYS	1	5.7
7/6/2004	PJ-1	Weakfish	Egg	8	45.7
7/6/2004	PJ-1	Weakfish	PYS	3	17.2
7/6/2004	PJ-1	Windowpane	Egg	24	137.2
7/6/2004	PJ-1	Labridae	Egg	32	183.0
7/6/2004	PJ-4	Bay anchovy	Egg	292	1657.8
7/6/2004	PJ-4	Bay anchovy	PYS	45	255.5
7/6/2004	PJ-4	Cunner	PYS	2	11.4
7/6/2004	PJ-4	Gobiid unidentified	PYS	4	22.7



Date	Station	Common Name	Life Stage	Number Caught	Density
7/6/2004	PJ-4	Prionotus sp.	Egg	200	1135.5
7/6/2004	PJ-4	Weakfish	Egg	24	136.3
7/6/2004	PJ-4	Weakfish	PYS	6	34.1
7/6/2004	PJ-4	Windowpane	Egg	64	363.4
7/6/2004	PJ-4	Labridae	Egg	196	1112.8
7/6/2004	PJ-5	Bay anchovy	Egg	688	3621.8
7/6/2004	PJ-5	Bay anchovy	PYS	56	294.8
7/6/2004	PJ-5	Cunner	PYS	2	10.5
7/6/2004	PJ-5	Gadid unidentified	Egg	8	42.1
7/6/2004	PJ-5	Gobiid unidentified	PYS	6	31.6
7/6/2004	PJ-5	Northern pipefish	PYS	1	5.3
7/6/2004	PJ-5	Northern pipefish	JUV	2	10.5
7/6/2004	PJ-5	Prionotus sp.	Egg	88	463.3
7/6/2004	PJ-5	Prionotus sp.	PYS	1	5.3
7/6/2004	PJ-5	Weakfish	Egg	40	210.6
7/6/2004	PJ-5	Weakfish	PYS	1	5.3
7/6/2004	PJ-5	Windowpane	Egg	136	715.9
7/6/2004	PJ-5	Labridae	Egg	304	1600.4
7/6/2004	HR-1	Bay anchovy	Egg	1104	11735.4
7/6/2004	HR-1	Bay anchovy	PYS	71	754.7
7/6/2004	HR-1	Gobiid unidentified	PYS	16	170.1
7/6/2004	HR-1	Weakfish	PYS	7	74.4
7/6/2004	HR-1	Windowpane	Egg	32	340.2
7/6/2004	HR-1	Labridae	Egg	48	510.2
7/6/2004	HR-4	Bay anchovy	Egg	608	3380.4
7/6/2004	HR-4	Bay anchovy	PYS	109	606.0
7/6/2004	HR-4	Butterfish	PYS	1	5.6
7/6/2004	HR-4	Gadid unidentified	Egg	224	1245.4
7/6/2004	HR-4	Gobiid unidentified	PYS	48	266.9
7/6/2004	HR-4	Northern pipefish	PYS	2	11.1
7/6/2004	HR-4	Prionotus sp.	Egg	32	177.9
7/6/2004	HR-4	Weakfish	PYS	3	16.7
7/6/2004	HR-4	Windowpane	Egg	96	533.7
7/6/2004	PJ-3	Bay anchovy	Egg	968	5095.9
7/6/2004	PJ-3	Bay anchovy	PYS	24	126.3
7/6/2004	PJ-3	Butterfish	PYS	3	15.8
7/6/2004	PJ-3	Butterfish	JUV	1	5.3
7/6/2004	PJ-3	Gobiid unidentified	PYS	9	47.4
7/6/2004	PJ-3	Northern pipefish	PYS	5	26.3
7/6/2004	PJ-3	Prionotus sp.	Egg	80	421.1
7/6/2004	PJ-3	Tautog	PYS	3	15.8
7/6/2004	PJ-3	Weakfish	Egg	8	42.1
7/6/2004	PJ-3	Weakfish	PYS	3	15.8
7/6/2004	PJ-3	Windowpane	Egg	72	379.0
7/6/2004	PJ-3	Unidentified	PYS	6	31.6
7/6/2004	PJ-3	Goosefish	Egg	8	42.1
7/6/2004	PJ-3	Labridae	Egg	152	800.2
7/6/2004	SB-5	Atlantic menhaden	PYS	5	32.9
7/6/2004	SB-5	Bay anchovy	Egg	252	1659.3
7/6/2004	SB-5	Bay anchovy	PYS	44	289.7



Date	Station	Common Name	Life Stage	Number Caught	Density
7/6/2004	SB-5	Fourspot flounder	PYS	1	6.6
7/6/2004	SB-5	Gobiid unidentified	PYS	3	19.8
7/6/2004	SB-5	Northern pipefish	PYS	3	19.8
7/6/2004	SB-5	Prionotus sp.	Egg	140	921.8
7/6/2004	SB-5	Weakfish	Egg	20	131.7
7/6/2004	SB-5	Weakfish	PYS	3	19.8
7/6/2004	SB-5	Windowpane	Egg	52	342.4
7/6/2004	SB-5	Unidentified	PYS	2	13.2
7/6/2004	SB-5	Labridae	Egg	204	1343.2
7/6/2004	SB-6	Atlantic menhaden	PYS	8	42.8
7/6/2004	SB-6	Bay anchovy	Egg	368	1969.6
7/6/2004	SB-6	Bay anchovy	PYS	237	1268.5
7/6/2004	SB-6	Butterfish	PYS	17	91.0
7/6/2004	SB-6	Cunner	PYS	2	10.7
7/6/2004	SB-6	Fourspot flounder	PYS	3	16.1
7/6/2004	SB-6	Gobiid unidentified	PYS	11	58.9
7/6/2004	SB-6	Northern pipefish	PYS	3	16.1
7/6/2004	SB-6	Prionotus sp.	Egg	104	556.6
7/6/2004	SB-6	Prionotus sp.	PYS	2	10.7
7/6/2004	SB-6	Prionotus sp.	JUV	1	5.4
7/6/2004	SB-6	Smallmouth flounder	PYS	3	16.1
7/6/2004	SB-6	Tautog	PYS	9	48.2
7/6/2004	SB-6	Weakfish	Egg	16	85.6
7/6/2004	SB-6	Weakfish	PYS	3	16.1
7/6/2004	SB-6	Windowpane	Egg	32	171.3
7/6/2004	SB-6	Unidentified	PYS	11	58.9
7/6/2004	SB-6	Goosefish	Egg	16	85.6
7/6/2004	SB-6	Labridae	Egg	256	1370.2
7/6/2004	SB-4	Bay anchovy	Egg	216	1586.3
7/6/2004	SB-4	Bay anchovy	PYS	23	168.9
7/6/2004	SB-4	Gobiid unidentified	PYS	18	132.2
7/6/2004	SB-4	Prionotus sp.	Egg	80	587.5
7/6/2004	SB-4	Tautog	PYS	1	7.3
7/6/2004	SB-4	Weakfish	Egg	16	117.5
7/6/2004	SB-4	Weakfish	PYS	1	7.3
7/6/2004	SB-4	Windowpane	Egg	84	616.9
7/6/2004	SB-4	Unidentified	PYS	4	29.4
7/6/2004	SB-4	Labridae	Egg	192	1410.1
7/6/2004	SB-3	Bay anchovy	Egg	152	1241.7
7/6/2004	SB-3	Bay anchovy	PYS	111	906.8
7/6/2004	SB-3	Butterfish	PYS	1	8.2
7/6/2004	SB-3	Cunner	PYS	1	8.2
7/6/2004	SB-3	Gobiid unidentified	PYS	22	179.7
7/6/2004	SB-3	Northern pipefish	PYS	1	8.2
7/6/2004	SB-3	Prionotus sp.	Egg	96	784.3
7/6/2004	SB-3	Tautog	PYS	25	204.2
7/6/2004	SB-3	Weakfish	PYS	2	16.3
7/6/2004	SB-3	Windowpane	Egg	64	522.8
7/6/2004	SB-3	Labridae	Egg	124	1013.0
7/6/2004	SB-1	Bay anchovy	Egg	312	4159.6



Date	Station	Common Name	Life Stage	Number Caught	Density
7/6/2004	SB-1	Bay anchovy	PYS	9	120.0
7/6/2004	SB-1	Cunner	PYS	1	13.3
7/6/2004	SB-1	Gobiid unidentified	PYS	2	26.7
7/6/2004	SB-1	Prionotus sp.	Egg	24	320.0
7/6/2004	SB-1	Weakfish	Egg	8	106.7
7/6/2004	SB-1	Weakfish	PYS	1	13.3
7/6/2004	SB-1	Windowpane	Egg	112	1493.2
7/6/2004	SB-1	Labridae	Egg	648	8639.3
7/6/2004	SB-2	Bay anchovy	Egg	624	5738.4
7/6/2004	SB-2	Bay anchovy	PYS	10	92.0
7/6/2004	SB-2	Cunner	PYS	1	9.2
7/6/2004	SB-2	Gobiid unidentified	PYS	14	128.7
7/6/2004	SB-2	Northern pipefish	PYS	2	18.4
7/6/2004	SB-2	Prionotus sp.	Egg	24	220.7
7/6/2004	SB-2	Windowpane	Egg	80	735.7
7/6/2004	SB-2	Labridae	Egg	328	3016.3
7/7/2004	LB-1	Bay anchovy	Egg	416	2604.3
7/7/2004	LB-1	Bay anchovy	PYS	34	212.9
7/7/2004	LB-1	Fourspot flounder	PYS	2	12.5
7/7/2004	LB-1	Gobiid unidentified	PYS	11	68.9
7/7/2004	LB-1	Northern pipefish	PYS	11	68.9
7/7/2004	LB-1	Prionotus sp.	Egg	240	1502.5
7/7/2004	LB-1	Prionotus sp.	PYS	1	6.3
7/7/2004	LB-1	Tautog	PYS	2	12.5
7/7/2004	LB-1	Weakfish	Egg	32	200.3
7/7/2004	LB-1	Weakfish	PYS	1	6.3
7/7/2004	LB-1	Windowpane	Egg	16	100.2
7/7/2004	LB-1	Windowpane	PYS	3	18.8
7/7/2004	LB-1	Labridae	Egg	176	1101.8
7/7/2004	LB-2	Bay anchovy	Egg	408	1698.3
7/7/2004	LB-2	Bay anchovy	PYS	52	216.5
7/7/2004	LB-2	Butterfish	PYS	15	62.4
7/7/2004	LB-2	Cunner	PYS	1	4.2
7/7/2004	LB-2	Fourspot flounder	PYS	1	4.2
7/7/2004	LB-2	Gobiid unidentified	PYS	18	74.9
7/7/2004	LB-2	Northern pipefish	PYS	9	37.5
7/7/2004	LB-2	Prionotus sp.	Egg	104	432.9
7/7/2004	LB-2	Smallmouth flounder	PYS	4	16.7
7/7/2004	LB-2	Smallmouth flounder	JUV	1	4.2
7/7/2004	LB-2	Tautog	PYS	9	37.5
7/7/2004	LB-2	Weakfish	PYS	7	29.1
7/7/2004	LB-2	Windowpane	PYS	2	8.3
7/7/2004	LB-2	Labridae	Egg	144	599.4
7/7/2004	LB-4	Atlantic menhaden	PYS	1	5.6
7/7/2004	LB-4	Bay anchovy	Egg	120	672.1
7/7/2004	LB-4	Bay anchovy	PYS	2	11.2
7/7/2004	LB-4	Butterfish	PYS	17	95.2
7/7/2004	LB-4	Butterfish	JUV	2	11.2
7/7/2004	LB-4	Fourspot flounder	PYS	2	11.2
7/7/2004	LB-4	Fourspot flounder	JUV	2	11.2



Appendix B. Ichthyoplankton densities (epibentic sled) by life stage and date and sample location. (page 25 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
7/7/2004	LB-4	Gobiid unidentified	PYS	10	56.0
7/7/2004	LB-4	Northern pipefish	PYS	2	11.2
7/7/2004	LB-4	Prionotus sp.	Egg	208	1165.0
7/7/2004	LB-4	Smallmouth flounder	PYS	1	5.6
7/7/2004	LB-4	Tautog	PYS	1	5.6
7/7/2004	LB-4	Weakfish	PYS	1	5.6



Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
1/21/2004	LB-1	1.5	11.4	37550	23.6
1/21/2004	LB-2	3.1	10.9	44550	28.7
1/21/2004	LB-3	2.8	11.1	44970	28.2
1/21/2004	LB-4	1.5	11.5	42750	27.4
1/21/2004	LB-5	0.2	12.2	38900	24.6
1/21/2004	LB-6	0.1	12.6	38750	24.4
1/21/2004	SB-3	1.0	11.7	33250	20.6
1/21/2004	SB-4	1.6	10.8	37750	23.7
1/21/2004	SB-6	1.9	11.4	40050	25.3
1/22/2004	AK-3	0.8	10.7	30330	18.6
1/22/2004	AK-4	0.6	10.5	30800	18.9
1/22/2004	HR-1	1.9	10.5	39900	25.3
1/22/2004	HR-4	1.9	10.5	39900	25.3
1/22/2004	NB-7	0.8	10.6	32100	19.8
1/22/2004	PJ-3	1.3	10.8	36400	22.8
1/22/2004	PJ-4	1.9	10.6	39500	25.0
1/22/2004	PJ-5	1.9	10.7	39500	25.0
1/22/2004	SB-5	1.5	10.9	36700	23.0
1/23/2004	AK-1	0.3	11.2	31250	19.2
1/23/2004	AK-2	0.3	11.2	31250	19.2
1/23/2004	NB-3	-0.1	11.0	30900	19.0
1/23/2004	NB-4	-0.1	11.0	30900	19.0
1/23/2004	NB-5	0.5	11.4	33250	20.6
1/23/2004	NB-6	0.5	11.4	33250	20.6
1/23/2004	PJ-1	0.4	11.0	40000	25.4
1/23/2004	PJ-2	0.5	11.7	34000	22.1
1/23/2004	SB-1	0.9	11.4	38000	23.9
1/23/2004	SB-2	0.0	0.0	0	0.0
2/5/2004	LB-1	1.7	10.4	42300	27.0
2/5/2004	LB-2	2.6	10.1	46500	30.2
2/5/2004	LB-3	1.5	11.1	40400	25.7
2/5/2004	LB-4	1.0	11.1	41000	26.1
2/5/2004	LB-5	0.9	11.6	38600	24.4
2/5/2004	LB-6	0.8	11.7	41250	26.3
2/5/2004	PJ-1	1.2	11.0	32700	20.2
2/5/2004	PJ-2	1.3	11.0	32400	20.0
2/5/2004	PJ-4	1.6	10.3	39800	25.2
2/5/2004	PJ-5	1.4	10.6	38600	24.4
2/5/2004	SB-1	0.0	0.0	0	0.0
2/5/2004	SB-2	0.0	0.0	0	0.0
2/5/2004	SB-3	1.4	10.7	37100	23.3
2/5/2004	SB-4	1.3	10.6	37250	23.4
2/5/2004	SB-5	1.6	10.7	39800	25.2
2/5/2004	SB-6	1.6	11.0	40390	25.6
2/6/2004	AK-1	1.6	10.4	30700	18.9
2/6/2004	AK-2	1.4	10.8	31500	19.4
2/6/2004	AK-3	1.7	10.6	30900	19.0
2/6/2004	AK-4	1.2	10.9	31900	19.7
2/6/2004	HR-1	1.5	11.4	39500	22.4
2/6/2004	HR-4	1.5	11.3	36000	22.5
2/6/2004	NB-3	0.6	10.3	25800	15.6
2/6/2004	NB-4	0.7	10.3	27400	16.6
2/6/2004	NB-5	1.1	10.7	32000	19.8



Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
2/6/2004	NB-6	1.2	11.3	33000	20.5
2/6/2004	NB-7	1.1	11.0	31600	19.5
2/6/2004	PJ-3	1.2	11.8	31400	19.3
2/17/2004	LB-1	2.9	10.6	45330	28.5
2/17/2004	LB-2	2.7	10.8	44670	28.5
2/17/2004	LB-3	2.4	11.6	40670	25.2
2/17/2004	LB-4	2.3	11.6	41250	25.6
2/17/2004	LB-5	1.8	13.4	39500	25.0
2/17/2004	LB-6	1.9	12.9	39800	25.2
2/17/2004	PJ-1	1.9	11.3	33500	20.7
2/17/2004	PJ-5	2.3	11.1	37820	23.2
2/17/2004	SB-1	2.5	10.8	40480	25.1
2/17/2004	SB-2	2.2	11.1	37770	23.2
2/17/2004	SB-3	2.3	11.1	38770	23.9
2/17/2004	SB-4	2.7	10.8	41820	26.1
2/17/2004	SB-6	2.7	10.8	42560	26.6
2/19/2004	AK-1	2.4	11.2	31860	19.3
2/19/2004	AK-2	2.3	11.3	36280	22.3
2/19/2004	AK-3	2.5	11.1	31710	19.2
2/19/2004	AK-4	2.2	11.4	31900	19.3
2/19/2004	HR-1	2.6	10.9	41130	25.6
2/19/2004	HR-4	2.7	11.1	41350	25.8
2/19/2004	NB-3	2.9	11.1	25250	15.1
2/19/2004	NB-4	2.7	11.2	29560	17.9
2/19/2004	NB-5	2.3	11.2	29490	17.7
2/19/2004	NB-6	2.4	11.4	34560	21.0
2/19/2004	NB-7	2.6	11.3	32770	20.0
2/19/2004	PJ-2	3.1	11.6	37330	23.0
2/19/2004	PJ-3	2.3	11.3	39300	24.3
2/19/2004	PJ-4	2.6	11.1	40880	25.4
2/19/2004	SB-5	2.5	11.2	39470	24.4
3/1/2004	LB-1	4.0	10.8	45730	29.0
3/1/2004	LB-2	4.1	10.2	48520	30.9
3/1/2004	LB-3	3.7	11.9	40720	25.5
3/1/2004	LB-4	3.9	10.6	45470	28.7
3/1/2004	LB-5	3.5	11.3	41230	26.0
3/1/2004	LB-6	3.8	10.6	45790	28.3
3/1/2004	PJ-1	4.3	11.8	27730	17.2
3/1/2004	PJ-2	4.3	12.0	22760	13.6
3/1/2004	PJ-4	3.9	10.3	44640	28.1
3/1/2004	PJ-5	3.9	10.3	46010	29.1
3/1/2004	SB-1	3.6	11.0	40080	25.5
3/1/2004	SB-2	3.9	10.6	43390	27.2
3/1/2004	SB-3	3.8	10.8	39580	24.7
3/1/2004	SB-4	3.7	10.5	44610	28.0
3/1/2004	SB-5	4.1	10.2	44660	28.3
3/1/2004	SB-6	3.8	10.5	45720	28.9
3/2/2004	AK-1	4.6	11.2	32340	19.8
3/2/2004	AK-2	4.4	10.9	36750	22.3
3/2/2004	AK-3	4.4	10.9	35710	22.1
3/2/2004	AK-4	5.1	10.9	33020	20.4
3/2/2004	HR-1	3.9	9.6	42900	26.9
3/2/2004	HR-4	3.8	10.0	44460	28.0



Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
3/2/2004	NB-3	4.8	10.6	31380	19.5
3/2/2004	NB-4	4.8	11.1	31330	19.4
3/2/2004	NB-5	3.9	10.2	39550	24.6
3/2/2004	NB-6	4.1	10.4	39850	25.0
3/2/2004	NB-7	5.1	11.3	30980	19.0
3/2/2004	PJ-3	4.1	11.2	32020	19.6
3/15/2004	AK-1	5.4	10.9	28530	17.3
3/15/2004	AK-2	4.9	10.8	30590	18.7
3/15/2004	AK-3	4.9	10.6	30430	18.6
3/15/2004	AK-4	6.7	10.5	26580	16.1
3/15/2004	HR-1	4.8	10.7	34200	21.0
3/15/2004	HR-4	4.7	10.4	35960	22.2
3/15/2004	NB-3	6.7	10.6	21400	12.7
3/15/2004	NB-4	6.7	10.6	21400	12.7
3/15/2004	NB-5	4.8	10.3	33840	20.8
3/15/2004	NB-6	4.9	10.6	32450	19.9
3/15/2004	NB-7	5.7	10.6	26420	16.0
3/15/2004	PJ-1	5.0	10.7	29550	17.8
3/15/2004	PJ-2	4.7	10.5	29410	17.9
3/15/2004	PJ-3	5.3	10.8	30830	18.8
3/15/2004	PJ-4	4.5	9.8	39330	24.6
3/15/2004	PJ-5	4.4	10.3	41130	25.7
3/15/2004	SB-5	4.2	10.4	41000	26.2
3/16/2004	LB-3	4.4	10.6	40430	26.0
3/16/2004	LB-4	0.0	0.0	0	0.0
3/16/2004	LB-5	4.5	11.2	37990	24.1
3/16/2004	LB-6	4.6	11.2	38000	24.1
3/17/2004	LB-1	3.8	10.5	39560	24.7
3/17/2004	LB-2	3.7	10.6	45790	29.0
3/17/2004	SB-1	4.2	10.2	36570	22.6
3/17/2004	SB-2	0.0	0.0	0	0.0
3/17/2004	SB-3	4.2	10.3	35930	22.2
3/17/2004	SB-4	4.2	10.4	36480	22.5
3/17/2004	SB-6	4.0	10.3	40790	25.5
3/29/2004	AK-1	6.9	10.5	29520	18.1
3/29/2004	AK-2	6.0	9.8	34590	21.5
3/29/2004	AK-3	6.0	10.2	32770	19.5
3/29/2004	AK-4	7.7	10.6	28390	17.4
3/29/2004	HR-1	5.0	9.6	38760	23.7
3/29/2004	HR-4	5.0	9.6	38760	23.7
3/29/2004	LB-1	5.9	11.3	35450	21.1
3/29/2004	NB-3	7.5	10.2	27810	17.0
3/29/2004	NB-4	7.5	10.2	27810	17.0
3/29/2004	NB-5	5.5	10.2	36340	22.5
3/29/2004	NB-6	5.5	10.2	36340	22.5
3/29/2004	NB-7	7.9	11.6	27060	16.5
3/29/2004	PJ-3	7.2	11.3	21240	12.7
3/30/2004	LB-2	5.6	11.1	32680	20.7
3/30/2004	LB-3	6.4	12.7	31130	19.1
3/30/2004	LB-4	4.8	9.9	42170	26.5
3/30/2004	LB-5	6.5	12.8	33180	20.5
3/30/2004	LB-6	6.3	12.4	37180	23.2
3/30/2004	PJ-1	6.0	11.4	26110	15.8



Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
3/30/2004	PJ-2	5.8	10.9	33100	20.4
3/30/2004	PJ-4	5.1	10.3	41150	26.0
3/30/2004	PJ-5	5.3	10.8	43430	27.5
3/30/2004	SB-1	0.0	0.0	0	0.0
3/30/2004	SB-2	5.5	10.7	37260	23.2
3/30/2004	SB-3	5.7	10.8	33390	20.6
3/30/2004	SB-4	5.4	10.3	41710	26.3
3/30/2004	SB-5	5.6	10.8	36680	22.8
3/30/2004	SB-6	5.4	10.4	36180	22.4
4/12/2004	HR-1	6.5	9.3	39010	24.4
4/12/2004	HR-4	6.5	9.3	39010	24.4
4/12/2004	LB-1	6.1	9.6	44210	28.1
4/12/2004	LB-2	5.9	9.9	40860	26.3
4/12/2004	LB-3	6.3	10.8	38260	23.9
4/12/2004	LB-4	6.4	9.4	39780	25.0
4/12/2004	LB-5	6.6	10.3	37600	23.5
4/12/2004	LB-6	6.1	10.4	43650	27.7
4/12/2004	PJ-1	6.9	9.7	30800	19.0
4/12/2004	PJ-2	7.2	9.8	24540	17.8
4/12/2004	PJ-3	7.3	10.0	26810	16.2
4/12/2004	PJ-4	6.5	9.6	36480	22.8
4/12/2004	PJ-5	6.5	9.7	39300	24.7
4/12/2004	SB-1	0.0	0.0	0	0.0
4/12/2004	SB-2	6.6	9.4	37530	23.3
4/12/2004	SB-3	6.9	9.5	33680	21.0
4/12/2004	SB-4	6.3	9.5	40540	25.6
4/12/2004	SB-5	6.3	9.6	37890	25.6
4/12/2004	SB-6	6.5	9.8	37480	23.0
4/13/2004	AK-1	7.8	10.2	29800	18.4
4/13/2004	AK-3	8.2	10.2	28930	17.7
4/13/2004	AK-4	8.5	10.6	30430	18.7
4/13/2004	NB-3	8.4	10.0	25630	15.4
4/13/2004	NB-4	8.4	10.0	25630	15.4
4/13/2004	NB-5	7.8	10.1	29020	18.0
4/13/2004	NB-6	7.8	10.1	29020	18.0
4/13/2004	NB-7	7.7	10.3	29990	18.1
4/26/2004	HR-1	10.2	8.0	39800	25.8
4/26/2004	HR-4	10.2	8.0	39810	25.6
4/26/2004	PJ-1	11.0	8.8	26470	16.5
4/26/2004	PJ-2	11.1	8.9	24600	15.1
4/26/2004	PJ-3	11.0	8.9	28600	17.6
4/26/2004	PJ-4	9.9	8.5	41160	25.4
4/26/2004	PJ-5	9.9	8.5	41160	25.4
4/26/2004	SB-5	12.8	10.2	37030	23.0
4/26/2004	SB-6	9.7	8.6	45310	29.0
4/27/2004	AK-1	11.5	8.5	32020	20.0
4/27/2004	AK-2	11.8	8.5	29660	18.4
4/27/2004	AK-3	11.1	8.1	35050	21.9
4/27/2004	AK-4	12.6	7.6	27160	16.6
4/27/2004	LB-1	9.9	8.9	44910	28.8
4/27/2004	LB-2	9.5	9.2	46290	30.7
4/27/2004	LB-3	10.6	8.4	37720	24.5
4/27/2004	LB-4	10.0	8.5	41700	28.1



Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
4/27/2004	LB-5	10.1	8.2	40770	26.0
4/27/2004	LB-6	9.5	8.9	46750	30.1
4/27/2004	NB-3	12.9	7.9	25310	15.5
4/27/2004	NB-4	12.9	7.9	25310	15.5
4/27/2004	NB-5	10.7	8.5	37590	23.7
4/27/2004	NB-6	10.7	8.5	37590	23.7
4/27/2004	NB-7	12.2	8.6	28680	17.7
4/27/2004	SB-1	0.0	0.0	0	0.0
4/27/2004	SB-3	11.6	8.5	30130	18.6
4/27/2004	SB-4	10.0	8.5	44930	28.9
5/10/2004	LB-1	11.3	9.0	43690	28.1
5/10/2004	LB-2	9.3	9.0	45300	29.1
5/10/2004	LB-3	11.9	8.5	39050	24.8
5/10/2004	LB-4	10.7	8.7	42120	26.8
5/10/2004	LB-5	11.9	8.4	38370	24.4
5/10/2004	LB-6	11.2	9.3	42510	27.3
5/10/2004	PJ-1	11.9	7.8	37590	23.7
5/10/2004	PJ-2	13.8	7.8	29870	18.5
5/10/2004	PJ-4	11.5	7.9	38250	24.2
5/10/2004	PJ-5	11.3	8.2	39960	25.2
5/10/2004	SB-1	12.2	7.7	34680	21.7
5/10/2004	SB-2	11.7	7.7	38060	24.0
5/10/2004	SB-3	12.2	7.3	34520	21.6
5/10/2004	SB-4	11.8	7.7	37010	23.3
5/10/2004	SB-5	10.9	8.4	41600	26.6
5/10/2004	SB-6	11.2	8.1	39740	25.3
5/11/2004	AK-1	15.3	8.0	27470	17.0
5/11/2004	AK-2	14.1	7.7	31000	19.3
5/11/2004	AK-3	14.7	7.6	29760	18.4
5/11/2004	AK-4	16.3	6.9	28290	17.5
5/11/2004	HR-1	13.5	9.4	32370	20.4
5/11/2004	HR-4	12.2	7.8	35870	22.6
5/11/2004	NB-3	15.0	7.1	25150	15.9
5/11/2004	NB-4	15.8	7.3	24560	15.1
5/11/2004	NB-5	13.9	7.7	31070	19.4
5/11/2004	NB-6	14.0	7.6	31450	19.6
5/11/2004	NB-7	15.8	8.4	27370	16.9
5/11/2004	PJ-3	14.1	8.0	29590	18.3
6/1/2004	LB-1	17.1	6.7	35300	22.3
6/1/2004	LB-2	16.0	7.3	40630	25.8
6/1/2004	LB-3	16.6	6.6	39030	24.7
6/1/2004	LB-4	15.2	7.6	42980	27.7
6/1/2004	LB-5	17.3	6.2	35580	22.5
6/1/2004	LB-6	16.9	5.3	38410	24.4
6/1/2004	SB-1	17.2	5.8	35420	22.2
6/1/2004	SB-2	17.2	5.8	35420	22.2
6/1/2004	SB-3	17.7	5.7	33380	20.6
6/1/2004	SB-4	17.0	6.3	36090	22.9
6/1/2004	SB-5	16.9	6.5	36350	23.0
6/1/2004	SB-6	16.7	6.4	36250	23.3
6/2/2004	AK-1	19.1	6.0	29040	17.9
6/2/2004	AK-2	17.7	6.7	32270	20.2
6/2/2004	AK-3	18.5	6.1	30250	18.9



Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
6/2/2004	AK-4	20.3	5.8	27890	17.2
6/2/2004	HR-1	16.8	6.3	36830	23.4
6/2/2004	HR-4	16.8	6.3	36830	23.4
6/2/2004	NB-3	19.7	5.9	25630	15.7
6/2/2004	NB-4	19.7	5.9	25630	15.7
6/2/2004	NB-5	17.9	6.2	31480	19.6
6/2/2004	NB-6	17.9	6.2	31480	19.6
6/2/2004	NB-7	19.0	6.2	29070	18.0
6/2/2004	PJ-1	16.9	6.6	36370	23.0
6/2/2004	PJ-2	17.4	6.3	32320	20.1
6/2/2004	PJ-3	17.4	6.4	33440	21.0
6/2/2004	PJ-4	17.2	6.5	36690	23.1
6/2/2004	PJ-5	17.2	6.1	36690	23.1
6/14/2004	HR-1	18.3	7.0	37600	23.9
6/14/2004	HR-4	18.3	7.0	37600	23.9
6/14/2004	LB-1	17.6	7.8	41160	26.5
6/14/2004	LB-2	15.4	7.9	45330	29.3
6/14/2004	LB-3	18.1	7.7	39800	25.5
6/14/2004	LB-4	17.0	7.6	42590	27.6
6/14/2004	LB-5	18.0	8.1	39100	24.7
6/14/2004	LB-6	17.9	8.1	39410	25.1
6/14/2004	PJ-1	18.3	6.9	32500	23.5
6/14/2004	PJ-3	19.5	7.0	31760	19.8
6/14/2004	PJ-4	17.9	7.0	39270	25.1
6/14/2004	PJ-5	17.8	7.4	39440	25.3
6/14/2004	SB-2	18.8	6.4	35360	22.4
6/14/2004	SB-3	18.5	7.0	35740	22.6
6/14/2004	SB-4	18.1	7.3	37920	24.1
6/14/2004	SB-5	17.5	7.4	41200	26.5
6/14/2004	SB-6	18.0	7.3	39040	24.9
6/15/2004	AK-1	20.2	6.3	31340	19.5
6/15/2004	AK-2	19.3	6.7	33120	20.7
6/15/2004	AK-3	20.6	6.3	30800	19.2
6/15/2004	AK-4	21.5	6.3	29670	18.4
6/15/2004	NB-3	21.7	6.3	27640	17.0
6/15/2004	NB-4	21.7	6.3	27640	17.0
6/15/2004	NB-5	19.5	6.6	33330	20.9
6/15/2004	NB-6	19.5	6.6	33330	20.9
6/15/2004	NB-7	20.5	6.3	30260	18.9
6/15/2004	PJ-2	19.3	6.8	31950	19.7
7/6/2004	HR-1	19.9	5.7	41180	26.4
7/6/2004	HR-4	19.9	5.7	41180	26.4
7/6/2004	PJ-1	21.4	5.4	38720	24.5
7/6/2004	PJ-2	20.6	5.9	37600	23.9
7/6/2004	PJ-3	20.9	5.9	38690	24.7
7/6/2004	PJ-4	19.5	5.3	42370	27.3
7/6/2004	PJ-5	19.9	5.9	41850	26.9
7/6/2004	SB-1	20.4	5.5	39390	25.3
7/6/2004	SB-2	20.2	5.2	40560	25.4
7/6/2004	SB-3	9.2	5.8	39500	26.0
7/6/2004	SB-4	19.9	5.9	42330	27.3
7/6/2004	SB-5	19.7	6.1	45530	27.4
7/6/2004	SB-6	19.6	6.2	43090	27.8



Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
7/7/2004	AK-1	22.4	5.5	35980	22.8
7/7/2004	AK-2	22.6	5.5	35640	22.5
7/7/2004	AK-3	23.3	5.7	34920	22.0
7/7/2004	AK-4	24.1	5.1	34200	21.5
7/7/2004	LB-1	20.0	6.1	42730	27.5
7/7/2004	LB-2	19.3	6.5	45220	29.3
7/7/2004	LB-3	19.6	6.3	43850	28.3
7/7/2004	LB-4	19.8	6.1	45580	27.4
7/7/2004	LB-5	20.0	6.4	42680	27.5
7/7/2004	LB-6	20.5	6.6	43060	27.8
7/7/2004	NB-3	22.7	6.3	35740	22.5
7/7/2004	NB-4	22.9	6.4	35450	22.4
7/7/2004	NB-5	21.8	5.7	37020	23.5
7/7/2004	NB-6	21.8	5.7	37010	23.4
7/7/2004	NB-7	23.0	6.0	35430	22.4
1/0/1900	0	0.0	0.0	0	0.0
1/0/1900	0	0.0	0.0	0	0.0
1/0/1900	0	0.0	0.0	0	0.0
1/0/1900	0	0.0	0.0	0	0.0
1/0/1900	0	0.0	0.0	0	0.0
1/0/1900	0	0.0	0.0	0	0.0

