

NEW YORK AND NEW JERSEY HARBOR NAVIGATION PROJECT

**AQUATIC BIOLOGICAL SURVEY REPORT
2002–2003**

Report

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1.0 INTRODUCTION

1.1 BACKGROUND

This report summarizes and presents results of a biological sampling program conducted in the New York and New Jersey Harbor (Harbor) from December 2002 through July 2003 (2002–2003 Aquatic Biological Sampling Program). The program's focus was the collection of adult and early life stages of finfish, with an emphasis on winter flounder (*Pseudopleuronectes americanus*).

The 2002–2003 Biological Sampling Program supplements data gathered in the baseline 1998–1999 New York and New Jersey Harbor Navigation (NYNJHN) Study, 2000–2001 Supplemental Sampling Program and the 2001–2002 Aquatic Biological Sampling Program. Collectively, the four studies comprise the NYNJHN Project. A primary goal of the NYNJHN investigation is to collect biological data on Harbor finfish, shellfish, and macroinvertebrate distribution patterns, community structure, and seasonal patterns of habitat use, as well as data about water quality. 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 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 Mid-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 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 baseline program 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 further understand the species' spatial and temporal occurrence patterns within



the Harbor, its use of Harbor navigation channels and shallow/shoal areas, and the role played by Lower New York Bay (Lower Bay) with respect to winter flounder overwintering and spawning. Furthermore, it was determined that data for multiple years are needed to understand whether the use of navigation channels and shallow/shoal areas by winter flounder is consistent over time. The 2001-2002 Aquatic Biological Sampling Program was conducted to meet the need for additional data about how finfish use the Harbor.

The 2001-2002 Aquatic Biological Sampling Program provided additional support to the findings of the Supplemental Sampling Program (2000-2001) that winter flounder disperse into the New York and New Jersey Harbor Estuary after hatching. These results suggested that winter flounder eggs are laid primarily in the Lower Bay and to a lesser degree in other areas of the Harbor. After hatching and developing into larvae, winter flounder move from the Lower Bay into the Upper Harbor. These movement patterns may be important to winter flounder population dynamics because larvae that move directly to the ocean without using the nursery habitat could be lost to the population (Chant et al. 2000).

Although there is some indication from the 2000-2001 and 2001-2002 sampling programs that winter flounder in the New York and New Jersey Harbor Estuary exhibit these movement patterns, more data are required to determine if this pattern is repeated multiple years. As a result, additional sampling was conducted in 2002-2003 to expand the temporal coverage of the Biological Monitoring Program Database, especially with respect to the Lower Bay. To allow for direct comparisons across years, the sample objectives in the 2002-2003 Aquatic Biological Sampling Program remained the same as the 2001-2002 Aquatic Biological Sampling Program.

1.2 STUDY OBJECTIVES

During the 2002–2003 Aquatic Biological Sampling Program data were collected on adult and early life stages of finfish in the Harbor with an emphasis on winter flounder



between the months of December and July. This is typically 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 habitat designated as essential fish habitat (EFH) for adults for the months of December through June.
- Determine the utilization and significance of Harbor habitat designated as essential fish habitat (EFH) for early life stages (eggs and larvae) from January through July.
- Determine spawning areas and periodicity by analyzing the sex ratio of adults in the Harbor.

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

This report describes the 2002–2003 Aquatic Biological Sampling Program and presents results. This report is organized as follows: Chapter 2 describes sampling stations and summarizes the methods used to sample adult finfish and ichthyoplankton in the Harbor. Chapter 3 presents the results of bottom-trawl and epibenthic-sled sampling. Chapter 4 discusses how the data collected relate to program objectives as well as to previous NYNJHN investigations



2.0 METHODS

2.1 SAMPLING LOCATIONS

The same twenty-six (26) sampling locations that were selected for the 2001–2002 Aquatic Biological Sampling Program were sampled throughout the 2002–2003 Aquatic Biological Sampling Program to optimize the evaluation of different Harbor areas and habitat (Table 2-1 and Figure 2-1). Of these, 14 were located in shallow/shoal or interpier areas, and 12 were located in navigation channels.

For the Biological Sampling Program, the Harbor was divided into three study areas based on geography: Arthur Kill/Newark Bay (AKNB), Upper Bay (UB), and Lower Bay (LB). Among the study areas, stations were established as follows:

- Arthur Kill and Newark Bay (AK and NB)
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 the three remaining Arthur Kill/Newark Bay stations: NB-3, NB-4, and NB-7.
- Upper New York 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 (1) in Bay Ridge Channel (SB-4) and two (2) in the Anchorage Channel (SB-5 and SB-6). Three (3) shallow/shoal area stations were located in Port Jersey (PJ-1, PJ-2, PJ-3) and two (2) were located in Port Jersey Channel (PJ-4 and PJ-5).



- Lower New York Bay

Six (6) stations were located in this area—three (3) in channels (LB-2, LB-4 and LB-6) and three (3) 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 EFH in the Harbor.

2.2 ADULT FINFISH SAMPLING (BOTTOM TRAWLS)

Adult finfish were sampled via bottom trawl surveys conducted from 15 December 2002 to 15 June 2003. Trawls were conducted on a stratified sampling schedule to target the period when adult winter flounder historically are present in the Harbor to spawn. Sampling was conducted twice monthly on an alternating-week schedule from January through March and once monthly during December 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 NYNJHNP. 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 4.9 feet/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 258 bottom trawls were conducted (Table 2-3)—118 at navigation channel stations and 140 at shallow/shoal stations.

All fish were identified and enumerated directly on the research vessel. Total lengths of each winter flounder caught were recorded to the nearest millimeter (mm). When available, 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 each non-target species, 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 19 January to 6 July 2003. A stratified sampling schedule was used to target winter flounder spawning and early development in the Harbor. The 26 sampling 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 2-4). Typically, a 4:1 ratio of cable length to bottom depth was used. 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 312 epibenthic sled tows were conducted—144 at navigation channel stations and 168 at shallow/shoal stations (Table 2-3). 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-sack larvae, or juvenile), and enumerated. Data about unidentified species were recorded when eggs or larvae could not be identified to 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. Unidentified specimens were a small percentage of the total larval catch (2%).

Strict quality control (QC) procedures consisting of a continuous sampling plan (CSP) 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

On each sampling date at each station, dissolved oxygen (DO), temperature, and conductivity and salinity were measured after each trawl and epibenthic sled tow (Table 2-5). Water quality parameters were recorded one foot (0.3 m) above the substrate using calibrated meters.

2.5 DATA ANALYSIS

2.5.1 Trawl

Catch per unit effort (CPUE), defined as number per 10 minute trawl tow, was determined for each trawl tow based on the time each net sampled on the bottom. When tow times were less than 10 minutes, catch data were multiplied by the appropriate factor to standardize for a ten minute tow.



2.5.2 Ichthyoplankton

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



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 (Upper New York Bay, Arthur Kill / Newark Bay, and Lower New York 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 ALL SPECIES

3.1.1 Adults (Trawl Sampling)

A total of 51 fish species were identified during the bottom trawl survey. 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 of the 2002–2003 Aquatic Biological Sampling Program. The greatest fish abundance occurred in the Arthur Kill/Newark Bay and the most common species (e.g., spotted hake and bay anchovy) were collected throughout the Harbor, regardless of sample area or station depth (Tables 3-2a to 3-2c). As shown in Figure 3-1, which plots weekly abundance by station type (navigation channel vs. shallow/shoal) in the three Harbor areas examined, fish abundance ranged from less than 10 to greater than 250. Two peaks in abundance, one early in the program from December to January and another during May were



observed at shallow/shoal stations in the Arthur Kill/Newark Bay and at navigation channel stations in the Lower Bay stations, where the CPUEs exceeded 150. The highest CPUE (268 fish) was observed at the Arthur Kill/Newark Bay shallow/shoal stations during December.

Figures 3-2 through 3-4 present monthly species composition collected via trawl sampling in the three Harbor areas. Monthly species composition was inconsistent across the harbor. From December through March, white perch and striped bass dominated the Arthur Kill/Newark Bay species composition, combining for 75% of the catch, and spotted hake and bay anchovy were most common from April to June. White perch were not as abundant in the Upper or Lower Bays. In the Upper Bay, striped bass (December-January), winter flounder (February), windowpane flounder (February-March), spotted hake (April) and bay anchovy (May-June) dominated monthly species composition, representing 28% to 50% of the catch. Spotted hake (December-January, April), little skate (February), bay anchovy (March) and Atlantic herring (May-June) dominated the monthly catch in the Lower Bay, representing 45% to 63% of the catch.

As can be seen in Figures 3-2 to 3-4, composition of flounder species was inconsistent across sampling areas and months. In the Arthur Kill/Newark Bay and Lower Bay, flounder species did not dominate any catches. Winter flounder and windowpane flounder dominated the catch in the Upper Bay during February, and combined, they comprised 56% of the catch.

In general, fish were collected in greater abundance at the navigation channel stations in the Lower Bay and at shallow/shoal stations in the Arthur Kill/Newark Bay and Upper Bay. Spotted hake and white perch had higher CPUEs at navigation channel stations, while bay anchovy and striped bass were more common at shallow/shoal stations (Tables 3-2a through 3-2c).



3.1.2 Ichthyoplankton (Epibenthic Sled Sampling)

Among the eggs, larvae, and juveniles collected throughout the 2002–2003 Aquatic Biological Sampling Program, 31 species were identified.

The greatest Ichthyoplankton densities were recorded during June and July in all three study areas regardless of station depth, except shallow/shoal stations in the Lower Bay when the greatest densities were collected during June and April (Tables 3-3a through 3-3f). Throughout the Harbor, fish eggs were the most abundant ichthyoplankton life stage collected during the sampling program, followed by post yolk-sac larvae; except at shallow/shoal stations in the Arthur Kill/Newark Bay where post yolk-sac larvae was the most abundant lifestage. The highest egg densities were collected in the Lower Bay at shallow/shoal stations, and the highest post yolk-sac larvae densities were collected in the Lower Bay at navigation channel stations.

3.1.2.1 Eggs

Eggs were collected in the Harbor from February to July, with the greatest densities collected in the Lower Bay during early and late June (Figure 3-5). In each of the areas sampled, the highest egg densities were collected in late-June, including the peak density of 24,171/1000 m³ at shallow/shoal stations in the Lower Bay. Peak densities were greater at navigation channel stations in the Arthur Kill/Newark Bay and Upper Bay and at shallow/shoal stations in the Lower Bay.

No eggs were collected during January and February in the Arthur Kill/Newark Bay and during January in the Upper Bay and Lower Bay (Figures 3-6 through 3-8). Winter flounder dominated overall ichthyoplankton densities in the Arthur Kill/Newark Bay during March and April, and in the Upper Bay and Lower Bay during February and March. Windowpane flounder dominated catches during June in the Arthur Kill/Newark Bay, from April through June in the Upper Bay, and during April and May in the Lower Bay. Bay anchovy dominated ichthyoplankton densities during July in the Arthur Kill/Newark Bay and Upper Bay, while *Prionotus* sp. (i.e. searobin) dominated in the Lower Bay.



3.1.2.2 *Yolk-sac Larvae*

Yolk-sac larvae were collected from February to June and ranged in density from 1/1000 m³ to 453/1000 m³ (Figure 3-9). The highest average yolk-sac larvae density (453/1000 m³) was observed at shallow/shoal stations in the Lower Bay during early April. Peaks in yolk-sac larvae abundance in the Arthur Kill/Newark Bay and Upper Bay areas also occurred during the early-April sampling period at shallow/shoal stations.

Yolk-sac larvae were not collected during January or February, except for one American sandlance collected in the Lower Bay during February (Figures 3-10 through 3-12). During March and April, winter flounder and grubby were the only species collected in the Arthur Kill/Newark Bay, while four species (rock gunnel, grubby, winter flounder and longhorn sculpin) contributed to the catch in the Lower Bay. Species diversity increased in the Arthur Kill/Newark Bay during May and June, while it decreased in the Lower Bay where only two species (Atlantic menhaden and windowpane flounder) were present in catches. Species diversity was low (≤ 2 species) during each sampling month in the Upper Bay; winter flounder dominated catches from March through May and Atlantic menhaden dominated the catch in June. Fourspot flounder was the only species caught during July and was collected from the Upper Bay.

3.1.2.3 *Post Yolk-sac Larvae*

Post yolk-sac larvae were the most diverse early lifestage collected. Post yolk-sac larvae densities were relatively low ($<50/1000$ m³) from December through March (Figure 3-13). During April, densities increased throughout the Harbor, especially in the Lower Bay where the highest density (3,795/1000 m³) was recorded at shallow/shoal stations. The greatest densities collected from the Arthur Kill/Newark Bay (1,581/1000 m³) and the Upper Bay (815/1000 m³) were recorded during July.

Species composition varied by Harbor area during January where Atlantic croaker (Arthur Kill/Newark Bay), summer flounder (Upper Bay) and rock gunnel (Lower Bay) dominated the catches (Figures 3-14 through 3-16). During February, rock gunnel dominated catches throughout the Harbor. Rock gunnel dominated ichthyoplankton



densities again in the Lower Bay during March, while Atlantic herring dominated in the Arthur Kill/Newark Bay and Upper Bay. Winter flounder dominated catches throughout the Harbor (>88% of the catch) during April and May. Species composition shifted during June when Atlantic menhaden dominated the catch in the Arthur Kill/Newark Bay (40%) and was common (36%) in the Upper Bay. Windowpane flounder was common in the Upper Bay (36%) and dominated catches in the Lower Bay (54%) during June. Species composition was similar throughout the Harbor in July when bay anchovy (\geq 64%) was the most common species recorded.

3.1.2.4 Juveniles

Juveniles represented the lowest densities of all ichthyoplankton life stages collected. Juvenile densities ranged from 1/1000 m³ to 14/1000 m³ and were more common at navigation channel stations (Figure 3-17). The peak juvenile density (14/1000 m³) was recorded during July in the Arthur Kill/Newark Bay at navigation channel stations.

Species composition of juveniles by Harbor area is shown in Figures 3-18 through 3-20. Bay anchovy and Atlantic croaker were the only species recorded during January in the Arthur Kill/Newark Bay and Upper Bay; no juveniles were collected during January in the Lower Bay (Figures 3-18 through 3-20). No juveniles were collected during February and March at any of the study areas. Atlantic tomcod was the only species caught during April (Upper Bay) and May (Arthur Kill/Newark Bay). During June, windowpane flounder and winter flounder were the only species collected throughout the harbor. Juveniles collected during July in the Arthur Kill/Newark Bay were represented by three species: northern pipefish (56%), winter flounder (33%) and windowpane flounder (11%).



3.2 WINTER FLOUNDER

3.2.1 Adults (Trawl Sampling)

3.2.1.1 Densities

Winter flounder were collected in trawls from December to June throughout the Harbor (Table 3-2a to 3-2c). Winter flounder were caught monthly across the Arthur Kill/Newark Bay and Upper Bay stations, whereas catches in the Lower Bay were more sporadic. The highest winter flounder CPUE (20) was recorded in mid-June 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 Lower Bay, while CPUEs were similar at both navigation channel and shallow/shoal stations in the Upper Bay. When CPUE data were analyzed on a temporal scale by sampling week, no trends in habitat preference were observed (Figure 3-21).

3.2.1.2 Size Distribution

All winter flounder caught in the trawl were measured. Of the 508 winter flounder measured; total lengths ranged from 20 mm to 390 mm (Figure 3-22). A length frequency plot of winter flounder lengths from all Harbor areas combined exhibited a bimodal distribution pattern, with an initial length frequency cluster ranging from 30 to 50 mm – representative of young-of-year fish – and a second larger cluster with lengths ranging from 90 mm to 150 mm. The greatest frequencies of winter flounder were collected between 110 mm and 130 mm.

Temporal occurrence of winter flounder length frequencies in the three Harbor areas is shown in Figures 3-23 through 3-25. Winter flounder collected in the Arthur Kill/Newark Bay area generally were less than 250 mm. Winter flounder were typically less than 250 mm in the Upper Bay from December through February, whereas larger individuals (greater than 250 mm) were more abundant during April and May. Most winter flounder in June samples in the Arthur Kill/Newark Bay and Upper Bay areas ranged from 20 mm to 50 mm, and are likely young-of-year individuals. In the Lower Bay, winter flounder were generally greater than 250 mm across all sampling months. Since relatively few



individuals were collected from the Lower Bay, trends in size distribution are unclear. There were no peaks in density of small winter flounder (between 20 mm and 50 mm) in June in the Lower Bay.

3.2.1.3 Sex Ratio

Of the 108 winter flounder analyzed for sex determination ranging in preserved length from 235 mm to 385 mm 85 were female and 23 were male. Mature winter flounder were collected in greater numbers in the Upper Bay and Lower Bay than at Arthur Kill/Newark Bay stations (Figure 3-26). More females than males were collected in each area; the sex ratio was 1.6:1 females to males in the Arthur Kill/Newark Bay, 8.6:1 females to males in the Upper Bay and 2.6:1 females to males in the Lower Bay.

3.2.2 Ichthyoplankton (Epibenthic Sled Sampling)

The winter flounder egg, yolk-sac and post yolk-sac larvae life stages were collected throughout the Harbor: the greatest abundance of each life stage was collected from the Lower Bay, followed by the Upper Bay and then the Arthur Kill/Newark Bay (Figure 3-27). Post yolk-sac larvae were the dominant life stage collected (80.9%), followed by yolk-sac larvae, eggs and then juveniles. Winter flounder eggs were collected in greater densities in the Lower Bay than any other area, constituting 74% of the winter flounder eggs. The Upper Bay had the second highest percentage of winter flounder eggs (25%). In the Arthur Kill/Newark Bay area, representing the lowest percentage (1%) of the total winter flounder eggs collected, eggs were collected on only three sampling weeks.

Winter flounder eggs were collected in the Harbor from mid-February through late April (Figure 3-28). Peak egg densities (331/1000 m³) were collected in mid-February at the Lower Bay navigation channel stations; high egg densities (325/1000 m³) were also collected at shallow/shoal stations in the Lower Bay. In the Upper Bay, winter flounder egg densities were greater at the navigation channel stations.



Winter flounder yolk-sac larvae densities were greatest in the Lower Bay, where a peak density (450/1000 m³) was observed at the shallow/shoal stations during early April (Figure 3-29). Yolk-sac larvae were collected in the lowest densities in the Arthur Kill/Newark Bay area. They were collected over the longest time frame (early March to late April in the Upper Bay). In general, peak yolk-sac larvae densities occurred throughout the Harbor at shallow/shoal stations during early-April.

Post yolk-sac larvae were the most abundant winter flounder life stage; it was collected in the Harbor from mid-March to early June (Figure 3-30). Densities were highest at Lower Bay shallow/shoal stations, where density gradually increased during the sample program to a late-April peak (3782/1000 m³). Post yolk-sac larvae densities were similar to each other (\leq 430/1000 m³) in the Arthur Kill/Newark Bay and Upper Bay areas.

Winter flounder juveniles were collected June at navigation channel stations in the Upper Bay and during July at shallow/shoal stations in the Arthur Kill/Newark Bay. Station depth preference (i.e., navigation channel vs. shallow/shoal station) could not be determined among Harbor areas because too few winter flounder juveniles were collected throughout the sampling program.

3.3.3 Annual Comparison

In this section, comparisons are made between the winter flounder CPUE and density data presented above and data from the 2001-2002 Biological Monitoring Program (USACE 2002) to identify trends across years. Because the 2001-2002 program was conducted over a similar temporal scale and at the same stations using the same gear as the 2002-2003 program, direct comparison were made by month.

Winter flounder CPUE was lower during 2002-2003 than in 2001-2002 (Figure 3-31). 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 3-32). Similarly, the winter flounder catch in the Upper Bay during June



2001-2002 was dominated by young-of year fish (Figure 3-33). Although June winter flounder CPUE was lower in 2002-2003, the same trend of young-of year fish using the Arthur Kill/Newark Bay and the Upper Bay areas during June was observed. In both program years, the winter flounder that are expected to be sexually mature (>250 mm) were collected throughout the Harbor from February -May (Figure 3-32 to 3-34). 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 2001-2002 especially in the Lower and Upper bays (Figure 3-35). In both program years, few eggs were collected in the Arthur Kill/Newark Bay, while the greatest egg densities were observed in the Lower Bay during February and March and to a lesser degree in the Upper Bay.

Larval densities (YS and PYS combined) were generally greater in 2002-2003 than in 2001-2002 in all three areas (Figure 3-36). The temporal occurrence of winter flounder shifted between years. In 2001-2002 larvae were first collected in February, whereas larvae were not collected until March in 2002-2003 and did not peak until April. The greatest larval densities collected during both program years were in the Lower Bay.

3.3 WATER QUALITY

Average bottom water temperatures ranged from a low of 1.6°C in the Arthur Kill/Newark Bay during January to a high of 23.3°C during July also in the Arthur Kill/Newark Bay (Figure 3-37). Water temperatures were lowest at the Arthur Kill/Newark Bay and highest at the Lower Bay stations from January through February. During March, water temperatures shifted when warmer temperatures were measured at the Arthur Kill/Newark Bay and cooler temperatures were measured at the Lower Bay stations throughout the remaining sampling periods.



Salinity recorded from near bottom depth during ichthyoplankton surveys ranged between 13.4 ppt and 29.3 ppt over the course of the program (Figure 3-37). Salinities were consistently lowest in the Arthur Kill/Newark Bay and highest in the Lower Bay.

Dissolved oxygen concentration in water is largely dependent on the water temperature, and to a lesser degree, the 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 mg/L and 12.3 mg/L from January through March and decreasing throughout the program to between 5.5 mg/L and 6.7 mg/L during July. 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 lowest 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. The Lower Bay is more characteristic of the marine/oceanic environment (i.e., exhibit the least variability, more stable environment) than the Arthur Kill/Newark Bay and the Upper Bay (USACE 2002) while the Arthur Kill/Newark Bay and Upper Bay areas are more characteristic of a nearshore, estuarine environment. 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 and the area is depositional area with a greater potential for biological, chemical, and sediment oxygen demand.



4.1 ALL SPECIES

The finfish composition is typical of Atlantic seaboard estuaries within the Middle Atlantic Bight. White perch, spotted hake and bay anchovy dominated the species composition in the Harbor during the bottom trawl survey. White perch are semi-anadromous and can tolerate a range of salinities, typically preferring higher salinities in during the winter (Able and Fahay 1998). Spotted hake and bay anchovy were more common in the Lower and Upper bays. These species are common in shallow estuaries; using the habitat as a nursery and for foraging (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 Atlantic menhaden, bay anchovy, windowpane, and winter flounder were present in high densities during their seasonal spawning period (March through July). Other species - American shad, bay anchovy, striped bass and white perch were less abundant because they do not typically spawn in the harbor proper.

4.2 WINTER FLOUNDER

Spatial and temporal trends observed in winter flounder abundance in 2002-2003 support that different areas of the Harbor are important to winter flounder at different stages of their life history. Of the three Harbor areas sampled, adult winter flounder were most common in the Upper and Lower Bays during January to March, the peak spawning period in the study area (Able and Fahay 1998).

Sexually mature winter flounder were collected in larger numbers in the Upper Bay and the Lower Bay than in the Arthur Kill/Newark Bay. Sex ratios varied slightly among the main sampling areas. The sex ratio favored females at all sites but the difference was most pronounced in the Upper Bay and Lower Bay. Stoner et al. (1999) identified in the



Navesink River estuary that females outnumbered males in the middle and upper reaches of the estuary, with males more abundant in the lower estuary.

Winter flounder adults were collected in both the shallow/shoals and navigation channel habitats; consistent with previous Harbor studies (NMFS 1994; USACE 1999). In the 2001–2002 program, however, winter flounder adults were more common in the navigation channels (USACE 2002). Winter flounder can spawn over depths ranging from 2 to 80 m (NMFS 1999), thus the potential for spawning in both habitat types throughout the Harbor exists. The differences in the depth at which eggs were found across years may result from multiple factors (e.g. temperature, flow, sediment) acting either alone or in combination.

The predominance of winter flounder eggs from February to March in the Lower Bay and to a lesser degree in the Upper Bay in both the 2001-2002 and 2002-2003 programs provides further support for the view that the Lower Bay provides important winter flounder spawning habitat. Alternatively, few winter flounder eggs were collected in the Arthur Kill/Newark Bay. 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.

Winter flounder juveniles seek nursery habitat in estuaries of the Middle Atlantic Bight to feed and grow (Able and Fahay 1998). Juvenile winter flounder were most common in the upper sections of the Harbor (Arthur Kill/Newark Bay and parts of the Upper Bay), where little spawning occurred. The previous sampling programs in the Harbor 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). The 2002–2003 Aquatic Biological Survey provides additional support to these findings, which indicate that winter flounder move or disperse further into the New York and New Jersey Harbor Estuary after hatching. This pattern suggests that winter flounder eggs are laid primarily in the Lower Bay and to a lesser degree in



other areas of the Harbor. After hatching and developing into larvae, winter flounder move from the spawning areas further into the Harbor seeking nursery habitat.



5.0 LITERATURE CITED

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Table 2-1 Description of stations sampled during the 2002–2003 Aquatic Biological Sampling Program.

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 bottom trawl used to collect adult finfish during the 2001-2002 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 0.75-in (79.2 x 39.6 x 3.1 cm)
Tow line length	5 times maximum station water depth



Table 2-3 Specifications of epibenthic sled and plankton net used to collect early life stages of finfish during the 2001-2002 Aquatic Biological Sampling Program.

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



Table 2-4 Water quality and velocity measurements made during the 2001-2002 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



Table 3-1a Monthly average trawl CPUE by species for all navigation channel stations combined during the 2002-2003 Aquatic Biological Sampling Program.

Species	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03
Alewife	2.50	1.68					
Alosa sp.		0.04					
American Eel	0.08					0.09	0.25
American Sandlance	0.08						
American Shad	0.42	0.30	0.14	0.30			
Atlantic Croaker	0.83	1.38					
Atlantic Herring		0.17			1.33	28.19	18.75
Atlantic Menhaden	1.58	0.08					0.12
Atlantic Silverside		0.04	0.15				
Atlantic Tomcod			0.04				3.64
Bay Anchovy	2.46	0.54		1.74		5.46	8.98
Black Sea Bass		0.04			0.08		
Blueback Herring	3.77	2.33	0.61	0.30	0.08	0.17	0.17
Bluefish							0.12
Butterfish	0.08						0.25
Clearnose Skate		0.04					
Conger Eel	0.17	0.04					
Cunner	0.08	0.13		0.13	0.25		0.08
Gadid unidentified						0.08	
Gizzard Shad	0.17	0.04		0.05			
Grubby			0.04	0.09		0.09	
Hogchocker			0.04				
Little Skate	2.40	4.17	0.51	0.61	0.67	0.50	
Naked Goby		0.04		0.09			
Northern Pipefish	0.25	0.29		0.09			
Northern Puffer					0.25		
Northern Searobin	0.08					0.08	0.08
Northern Stargazer						0.08	
Oyster Toadfish							0.08
Red Hake	0.60	3.46	0.29	0.39	0.33	1.42	0.25
Scup						0.33	0.83
Seaboard Goby	0.08						
Silver Hake	3.00	0.54					
Smallmouth Flounder		0.21			0.25	0.09	0.32
Spiny Dogfish							0.08
Spotted Hake	29.25	20.67		0.29	35.25	51.28	16.81
Striped Bass	9.60	7.67	2.83	1.00	1.25	0.45	
Striped Cuskeel					0.67		
Striped Mullet		0.04					
Striped Searobin						1.01	0.42
Summer Flounder	0.48	0.21			0.33	1.09	0.50
Tautog		0.13	0.04			0.08	
Weakfish	0.50						0.08
White Mullet	0.08						
White Perch	28.25	24.54	3.98	0.44	0.08		
Windowpane	0.98	2.31	1.75	1.87	3.75	2.09	0.95
Winter Flounder	1.42	4.02	2.61	0.90	1.67	2.92	1.87



Table 3-1b Monthly average trawl CPUE by species for all shallow/shoal stations combined during the 2002-2003 Aquatic Biological Sampling Program.

Species	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03
Alewife	8.36	0.86			1.99	0.45	
American Eel					0.08		
American Sandlance	4.92						
American Shad	0.62	0.04	0.06	0.04			0.09
Atlantic Cod	1.67						
Atlantic Croaker	1.96	2.24					
Atlantic Herring			0.04		2.94	2.64	
Atlantic Menhaden	0.14					0.07	
Atlantic Silverside		1.41	0.07	0.10			
Atlantic Tomcod						8.48	14.50
Bay Anchovy	0.74	0.19		0.46		78.25	29.52
Black Sea Bass						0.07	
Blueback Herring	6.71	0.11	0.07	0.04	0.60	0.07	0.14
Bluefish							0.07
Conger Eel		0.04	0.12				
Cunner	0.31	0.12	0.07	0.04	0.07	0.07	
Gadid unidentified						0.07	
Gizzard Shad	0.65	0.04					
Grubby		0.19	0.04	0.04	0.14	0.07	
Little Skate	0.89	0.07	0.50		0.29	0.21	
Naked Goby	0.21	0.06	0.09				
Northern Pipefish	0.07	0.04		0.13			0.07
Northern Puffer					0.36		
Northern Searobin					0.43		
Pollock					0.14	0.14	
Red Hake				0.07	0.21	0.14	0.07
Scup						0.07	0.21
Seaboard Goby		0.11		0.04			
Silver Hake	0.34	0.05					
Smallmouth Flounder		0.64	0.07		3.64	0.21	0.24
Spiny Dogfish							0.07
Spotted Hake	2.68	0.65	0.04	0.04	21.86	10.79	2.24
Striped Bass	37.07	15.24	0.29	1.61	23.31	2.05	0.99
Striped Cuskeel					0.43		0.07
Striped Killifish		0.07	0.04				
Striped Mullet		0.06					
Striped Searobin						1.00	
Summer Flounder	0.97	0.14			0.08	2.50	0.66
Tautog						0.07	
Weakfish							0.14
White Mullet	0.18						
White Perch	73.46	19.53	0.74	0.26	4.83	0.45	
Windowpane	0.38	0.36	0.46	0.75	1.36	1.40	0.67
Winter Flounder	1.73	3.27	0.49	0.42	6.21	3.38	0.74



Table 3-2 a Monthly average CPUE by species for all navigation channel and shallow/shoal stations combined at Arthur Kill/Newark Bay during the 2002-2003 Aquatic Biological Sampling Program.

Navigation Channel Stations							
Species	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03
Alewife	3.75	0.41					
American Eel						0.28	0.75
American Shad		0.16					
Atlantic Croaker		0.13					
Atlantic Herring					3.00	3.50	0.25
Atlantic Menhaden	1.50						0.36
Atlantic Tomcod							9.68
Bay Anchovy	0.25	0.25				7.22	6.18
Black Sea Bass					0.25		
Blueback Herring	2.50	0.25		0.43		0.50	
Bluefish							0.36
Cunner	0.25	0.13					0.25
Gizzard Shad	0.50	0.13					
Hogchoker			0.13				
Northern Pipefish				0.14			
Northern Searobin	0.25					0.25	0.25
Northern Stargazer						0.25	
Oyster Toadfish							0.25
Red Hake	0.25		0.21			0.50	0.25
Smallmouth Flounder						0.28	0.96
Spotted Hake	0.50	0.13		0.14	21.00	70.33	41.43
Striped Bass	21.25	17.13	4.46	2.59	2.25	1.36	
Striped Searobin						0.53	
Summer Flounder					0.50	0.28	0.75
Tautog		0.13					
White Perch	83.00	73.63	11.68	1.44	0.25		
Windowpane		0.44	0.21	0.29		1.28	1.36
Winter Flounder	0.75	5.94	2.20	0.71	1.00	0.25	3.86

Shallow/Shoal Stations							
Species	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03
Alewife	9.09	1.19			0.84	0.60	
American Eel					0.22		
American Sandlance	0.20						
American Shad			0.17	0.10			0.25
Atlantic Croaker		0.10					
Atlantic Herring					8.24	0.80	
Atlantic Menhaden	0.40						
Atlantic Silverside		2.20					
Atlantic Tomcod						1.20	0.60
Bay Anchovy	0.49	0.43		0.10		170.02	10.26
Blueback Herring					1.00		
Cunner					0.20		
Gizzard Shad	1.83	0.10					
Naked Goby	0.20	0.17					
Northern Pipefish	0.20	0.10					0.20
Northern Puffer					0.20		
Red Hake					0.20		
Seaboard Goby				0.10			
Silver Hake	0.29	0.14					
Smallmouth Flounder					8.60		
Spotted Hake	0.57	0.10	0.10		27.27	5.80	0.54
Striped Bass	45.60	28.90	0.43	3.22	17.47	2.60	2.58
Striped Cuskeel					1.20		
Striped Killifish		0.20	0.10				
Striped Mullet		0.17					
Summer Flounder					0.22	1.80	0.86
Tautog						0.20	
White Perch	205.49	54.69	1.97	0.73	13.51	0.60	
Windowpane					1.00		
Winter Flounder	3.20	3.91	0.56	0.57	2.18	1.00	0.89



Table 3-2 b Monthly average CPUE by species for all navigation channel and shallow/shoal stations combined at Upper Bay during the 2002-2003 Aquatic Biological Sampling Program.

Navigation Channel Stations							
Species	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03
Alewife	1.60	1.30					
Alosa sp.		0.10					
American Shad	0.80		0.33	0.60			
Atlantic Croaker	1.40	3.20					
Atlantic Herring		0.30			0.80	8.44	
Atlantic Menhaden	0.60	0.10					
Atlantic Silverside			0.17				
Atlantic Tomcod			0.10				1.00
Bay Anchovy	1.10	0.70		0.90		7.13	4.40
Black Sea Bass		0.10					
Blueback Herring	6.85	1.30	1.37	0.40	0.20		0.40
Clearnose Skate		0.10					
Conger Eel		0.10					
Cunner		0.20		0.20	0.60		
Gizzard Shad				0.11			
Grubby			0.10	0.20		0.22	
Little Skate	1.15	4.00	0.33	0.80	1.60	0.60	
Naked Goby		0.10		0.20			
Northern Pipefish	0.40	0.10		0.10			
Northern Puffer					0.60		
Red Hake	0.65	0.80	0.53	0.80	0.60	2.40	0.40
Silver Hake		0.10					
Smallmouth Flounder		0.40			0.60		
Spotted Hake	11.80	6.10		0.57	66.60	21.20	6.00
Striped Bass	5.05	4.50	3.23	0.50	1.20		
Striped Cuskeel					1.60		
Striped Mullet		0.10					
Striped Searobin						2.00	0.20
Summer Flounder	0.75	0.10			0.40	1.20	0.40
Tautog		0.20				0.20	
Weakfish	0.60						0.20
White Perch	1.00		0.20				
Windowpane	0.95	4.10	3.93	3.30	8.80	2.60	0.40
Winter Flounder	1.80	4.10	4.40	1.58	2.20	1.20	1.00

Shallow/Shoal Stations							
Species	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03
Alewife	11.11	0.93			3.94	0.56	
American Sandlance	1.97						
American Shad	1.28						
Atlantic Cod	3.89						
Atlantic Croaker	4.58	5.14					
Atlantic Herring						4.83	
Atlantic Menhaden						0.17	
Atlantic Silverside		0.79		0.22			
Atlantic Tomcod						18.78	33.33
Bay Anchovy	0.17	0.09		1.00		39.89	40.67
Black Sea Bass						0.17	
Blueback Herring	15.67	0.08		0.08	0.56	0.17	
Conger Eel		0.08	0.28				
Cunner	0.56	0.28	0.17	0.08		0.17	
Grubby		0.44	0.08	0.08	0.33	0.17	
Little Skate	1.25	0.08			0.17	0.17	
Naked Goby	0.33		0.21				
Northern Pipefish				0.29			
Northern Puffer					0.17		
Northern Searobin					0.83		
Pollock					0.33	0.33	
Red Hake				0.17		0.33	0.17
Scup						0.17	
Seaboard Goby		0.25					
Silver Hake	0.56						
Smallmouth Flounder		1.50	0.08		1.17	0.50	0.56
Spotted Hake	3.61	1.28		0.08	20.78	13.33	3.44
Striped Bass	48.50	11.49	0.33	1.08	39.83	2.61	0.17
Striped Searobin						2.00	
Summer Flounder	1.60					4.00	0.83
Weakfish							0.33
White Mullet	0.42						
White Perch	0.17		0.08			0.56	
Windowpane	0.21	0.33	1.00	1.25	1.83	2.61	1.56
Winter Flounder	1.21	4.28	0.59	0.42	10.50	6.89	0.83

Table 3-2 c Monthly average CPUE by species for all navigation channel and shallow/shoal stations combined at Lower Bay during the 2002-2003 Aquatic Biological Sampling Program.

Navigation Channel Stations							
Species	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03
Alewife	2.33	4.00					
American Eel	0.33						
American Sandlance	0.33						
American Shad	0.33	1.00		0.17			
Atlantic Croaker	1.00						
Atlantic Herring		0.17				94.00	74.67
Atlantic Menhaden	3.33	0.17					
Atlantic Silverside		0.17	0.33				
Bay Anchovy	7.67	0.67		5.17		0.33	20.33
Blueback Herring	0.33	6.83	0.17				
Butterfish	0.33						1.00
Conger Eel	0.67						
Cunner				0.17			
Gadid unidentified						0.33	
Little Skate	7.67	10.00	1.50	1.00		1.00	
Northern Pipefish	0.33	1.00					
Red Hake	1.00	12.50		0.17	0.33	1.00	
Scup						1.33	3.33
Seaboard Goby	0.33						
Silver Hake	12.00	2.00					
Smallmouth Flounder		0.17					
Spiny Dogfish							0.33
Spotted Hake	96.67	72.33			2.00	76.00	2.00
Striped Bass	1.67	0.33					
Striped Searobin							1.33
Summer Flounder	0.67	0.67				2.00	0.33
Tautog			0.17				
Weakfish	1.00						
White Mullet	0.33						
White Perch	0.67						
Windowpane	2.33	1.83	0.17	1.33	0.33	2.33	1.33
Winter Flounder	1.67	1.33	0.17		1.67	9.33	0.67

Shallow/Shoal Stations							
Species	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03
Alewife	1.67	0.17					
American Sandlance	18.67						
American Shad	0.33	0.17					
Atlantic Herring			0.17			1.33	
Atlantic Silverside		1.33	0.33				
Bay Anchovy	2.33					2.00	39.33
Blueback Herring		0.33	0.33				0.67
Bluefish							0.33
Cunner	0.33						
Gadid unidentified						0.33	
Little Skate	1.67	0.17	2.33		1.00	0.67	
Northern Puffer					1.00		
Northern Searobin					0.33		
Red Hake					0.67		
Scup							1.00
Smallmouth Flounder			0.17		0.33		
Spiny Dogfish							0.33
Spotted Hake	4.33	0.33			15.00	14.00	2.67
Striped Cuskeel							0.33
Striped Searobin						0.67	
Summer Flounder	1.33	0.67				0.67	
Windowpane	1.33	1.00	0.17	1.00	1.00	1.33	
Winter Flounder	0.33	0.17	0.17	0.17	4.33	0.33	0.33

Table 3-3 a Monthly average ichthyoplankton density (Number/1000 m³) by species for all navigation channel stations in Arthur Kill/Newark Bay, 2002-2003 Aquatic Biological Sampling Program.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden					82.29	255.78	
Bay anchovy						189.68	966.27
Fourbeard rockling				0.87			
Labridae					10.32	16.55	89.00
Prionotus sp.						33.29	
Unidentified			0.53				
Weakfish							56.54
Windowpane					41.34	304.21	
Winter flounder				0.91			

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
Grubby				0.68			
Winter flounder			0.53	63.10			

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sand lance			0.53	1.86			
Atlantic croaker	2.24						
Atlantic herring			7.05	2.16	1.58		
Atlantic mackerel						3.61	
Atlantic menhaden						0.53	
Atlantic silverside					0.75	0.69	
Atlantic tomcod				1.53			
Bay anchovy						4.80	1524.12
Clupeid unidentified						3.27	1.72
Gobiid unidentified							40.23
Grubby			1.29	26.23	1.64		
Northern pipefish						2.14	
Rock gunnel	1.10						
Striped bass						0.53	
Summer flounder		0.70					
Tautog							2.55
Unidentified						5.96	
Weakfish							10.12
Windowpane						2.96	2.55
Winter flounder			1.06	40.73	170.74	23.96	

Juvenile

Species	January	February	March	April	May	June	July
Atlantic croaker	2.11						
Atlantic tomcod					1.58		
Bay anchovy	0.99						
Northern pipefish							8.55
Windowpane						1.43	1.72



Table 3-3 b Monthly average ichthyoplankton density (Number/1000 m³) by species for all shallow/shoal stations in Arthur Kill/Newark Bay, 2002-2003 Aquatic Biological Sampling Program.

Egg

Species	January	February	March	April	May	June	July
Atlantic menhaden					5.19	219.05	
Bay anchovy						127.23	41.02
Hogchocker						21.93	
Labridae					2.67	8.95	59.79
Weakfish							4.17
Windowpane					9.45	315.64	
Winter flounder			1.15	0.55			

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
Atlantic menhaden						1.28	
Atlantic silverside						0.78	
Grubby			0.56		0.87		
Unidentified						0.53	
White perch						8.39	
Windowpane					0.73	0.53	
Winter flounder				97.65	1.60		

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sandlance				1.80			
Atlantic croaker	2.46						
Atlantic herring			1.81			0.60	
Atlantic menhaden	2.99				0.56	37.48	13.46
Atlantic silverside					1.03	0.95	
Bay anchovy							1221.90
Clupeid unidentified						0.47	
Fourspot flounder				0.46			
Gobiid unidentified					0.50		166.44
Grubby			1.87	12.54	1.68		
Longhorn sculpin			1.87				
Northern pipefish						3.32	15.55
Rock gunnel		1.18		0.45			
Striped bass						5.68	
Unidentified						5.27	
Weakfish						0.49	9.60
Windowpane					2.31	1.15	
Winter flounder			0.63	298.46	89.06	3.72	

Lifestage: Juvenile

Species	January	February	March	April	May	June	July
Bay anchovy	2.35						
Winter flounder							1.23



Table 3-3 c Monthly average ichthyoplankton density (Number/1000 m³) by species for all navigation channel stations in Upper Bay, 2002-2003 Aquatic Biological Sampling Program.

Egg

Species	January	February	March	April	May	June	July
Atlantic mackerel					26.43		
Atlantic menhaden					4.87	1715.34	
Bay anchovy						917.16	146.96
Fourbeard rockling				13.16	0.57		
Hogchocker						41.06	2.16
Labridae					3.57	1977.62	926.87
Prionotus sp.						1132.56	479.08
Weakfish						103.69	526.45
Windowpane				11.83	233.84	4035.46	
Winter flounder		2.72	121.43	1.31	0.43		

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
Grubby				3.11			
Winter flounder			1.16	55.29	4.11		

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sandlance			0.62	2.99	2.14		
Atlantic herring			8.05	7.99			
Atlantic mackerel						9.54	
Atlantic menhaden					0.53	7.86	9.98
Atlantic silverside						0.76	
Bay anchovy							377.84
Clupeid unidentified							22.14
Conger eel						0.59	
Fourbeard rockling						0.52	
Gobiid unidentified							122.44
Grubby			1.27	12.47	10.44		
Northern pipefish							11.58
Northern puffer							0.82
Rock gunnel		0.36	0.84	4.09	7.59		
Striped bass						0.59	
Summer flounder	2.07						
Tautog							5.05
Unidentified						4.75	
Weakfish							33.40
Windowpane					1.60	50.54	12.90
Winter flounder				240.91	450.17	15.07	

Juvenile

Species	January	February	March	April	May	June	July
Atlantic croaker	8.71						
Atlantic tomcod				0.37			
Windowpane						3.59	



Table 3-3 d Monthly average ichthyoplankton density (Number/1000 m³) by species for all shallow/shoal stations in Upper Bay, 2002-2003 Aquatic Biological Sampling Program.

Egg							
Species	January	February	March	April	May	June	July
Atlantic mackerel					10.93		
Atlantic menhaden						2417.75	23.11
Bay anchovy						987.23	3047.74
Fourbeard rockling				7.29			
Hogchocker						11.51	
Labridae					8.55	544.01	2137.47
Prionotus sp.						169.56	335.47
Unidentified			0.42				
Weakfish							1003.26
Windowpane				25.92	168.69	2144.11	
Winter flounder		0.83	26.91	1.18			

Yolk-sac Larvae							
Species	January	February	March	April	May	June	July
Atlantic menhaden						2.88	
Fourspot flounder							1.44
Grubby				5.39			
Longhorn sculpin			0.53				
Windowpane						1.23	
Winter flounder			9.78	90.62			

Post-yolk sac Larvae							
Species	January	February	March	April	May	June	July
American sandlance				0.87			
Atlantic croaker	1.12						
Atlantic herring				3.85			
Atlantic mackerel						2.68	
Atlantic menhaden						54.04	11.00
Bay anchovy						1.00	517.86
Gobiid unidentified							233.04
Grubby			2.64	28.45			
Northern pipefish						3.98	31.70
Northern puffer							2.34
Rock gunnel		1.84		2.09			
Striped bass						0.96	
Tautog							4.19
Unidentified						12.35	
Walleye							2.89
Weakfish							10.71
Windowpane						17.99	1.69
Winter flounder			2.38	270.79	111.60	4.77	

Juvenile							
Species	January	February	March	April	May	June	July
Atlantic croaker	3.96						
Atlantic tomcod				0.28			

Table 3-3 e Monthly average ichthyoplankton density (Number/1000 m³) by species for all navigation channel stations in Lower Bay, 2002-2003 Aquatic Biological Sampling Program.

Egg							
Species	January	February	March	April	May	June	July
Atlantic mackerel					134.97		
Atlantic menhaden					24.83	3412.38	
Bay anchovy						1769.95	127.66
Gadid unidentified			0.84				
Labridae					16.69	1363.57	122.58
Prionotus sp.						740.13	91.53
Weakfish						176.86	130.49
Windowpane				29.62	209.02	1640.39	
Winter flounder		165.72	14.78	6.46			

Yolk-sac Larvae							
Species	January	February	March	April	May	June	July
Atlantic menhaden					1.55		
Grubby			0.84	2.95			
Rock gunnel			1.68				
Windowpane					3.10	0.76	
Winter flounder				82.21			

Post-yolk sac Larvae							
Species	January	February	March	April	May	June	July
American sandlance			1.42	7.53			
Atlantic herring			1.12				
Atlantic mackerel						86.22	
Atlantic menhaden					4.66	8.80	
Atlantic tomcod					1.55		
Bay anchovy						12.45	1119.90
Clupeid unidentified				0.86			66.38
Gobiid unidentified							147.20
Grubby			1.55	103.02			
Northern pipefish						5.94	53.89
Rock gunnel		1.61	3.51	12.22			
Unidentified							3.84
Walleye						1.38	
Weakfish							34.73
Windowpane					33.14	153.13	11.21
Winter flounder				347.19	676.87	5.40	

Juvenile							
Species	January	February	March	April	May	June	July
Windowpane						1.17	



Table 3-3 f Monthly average ichthyoplankton density (Number/1000 m³) by species for all shallow/shoal stations in Lower Bay, 2002-2003 Aquatic Biological Sampling Program.

Egg

Species	January	February	March	April	May	June	July
Atlantic mackerel					104.74		
Atlantic menhaden					38.12	10353.47	1.82
Bay anchovy						5263.38	38.60
Labridae					13.20	5264.90	62.35
Prionotus sp.						448.61	257.82
Unidentified							8.25
Weakfish						168.81	149.16
Windowpane				89.06	172.50	2173.57	
Winter flounder		8.14	168.00	3.20			

Yolk-sac Larvae

Species	January	February	March	April	May	June	July
American sandlance		0.78					
Atlantic menhaden					3.49		
Grubby				5.98			
Longhorn sculpin			0.91				
Windowpane						1.13	
Winter flounder			1.26	153.51			

Post-yolk sac Larvae

Species	January	February	March	April	May	June	July
American sandlance				3.79			
Atlantic mackerel						25.08	
Atlantic menhaden					22.67	9.33	
Bay anchovy						14.25	271.36
Fourbeard rockling					1.62	0.74	2.84
Gobiid unidentified							56.27
Grubby				36.77	3.59		
Northern pipefish						8.70	14.46
Rock gunnel	1.48	3.19	0.94	2.24			
Tautog							2.56
Unidentified						8.51	
Weakfish						0.97	8.77
Windowpane					22.67	72.44	
Winter flounder				1889.01	406.16	3.35	

Juvenile

Species	January	February	March	April	May	June	July



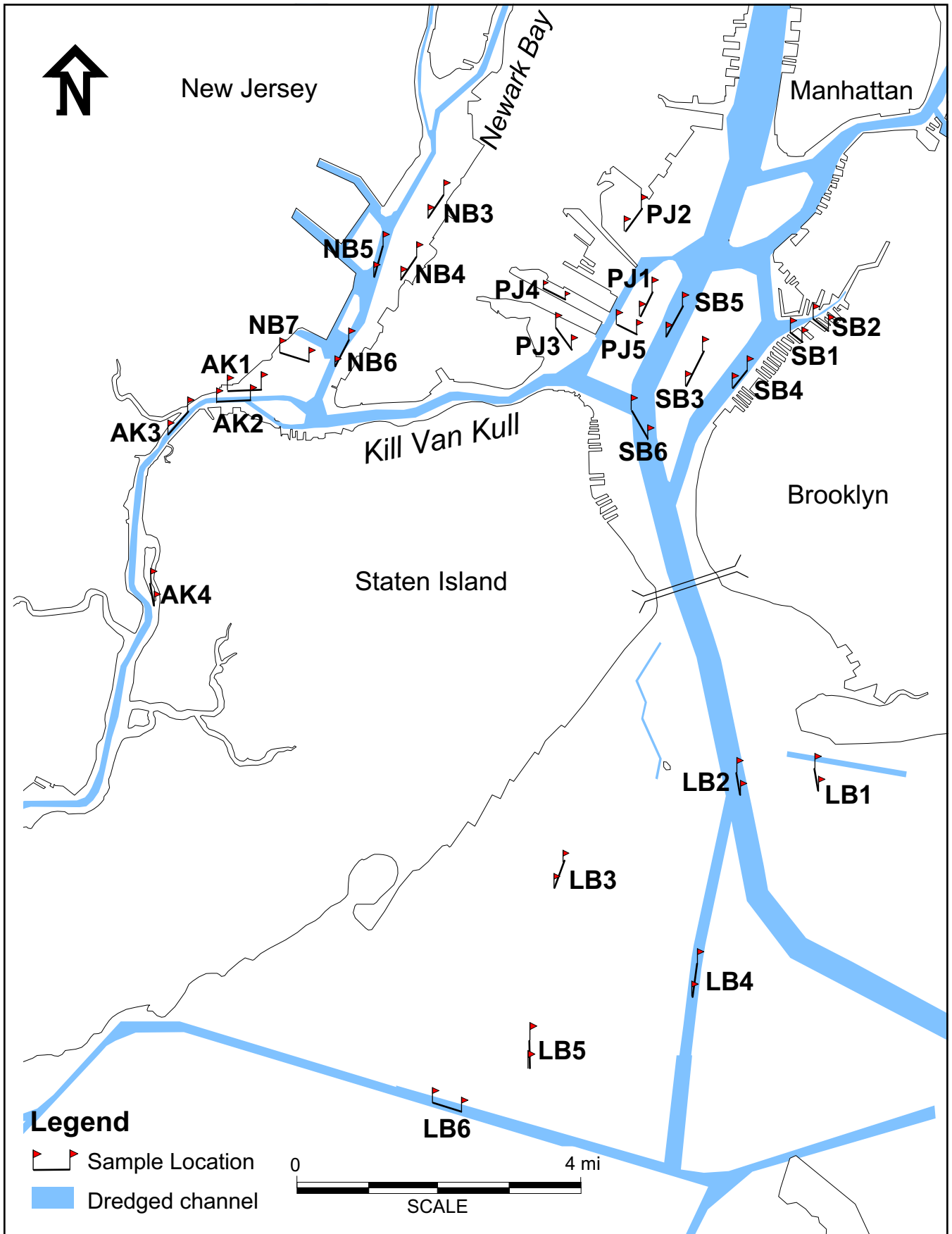


Figure 2-1. Map of sampling stations during the 2011-2012 Aquatic Biological Sampling Program.

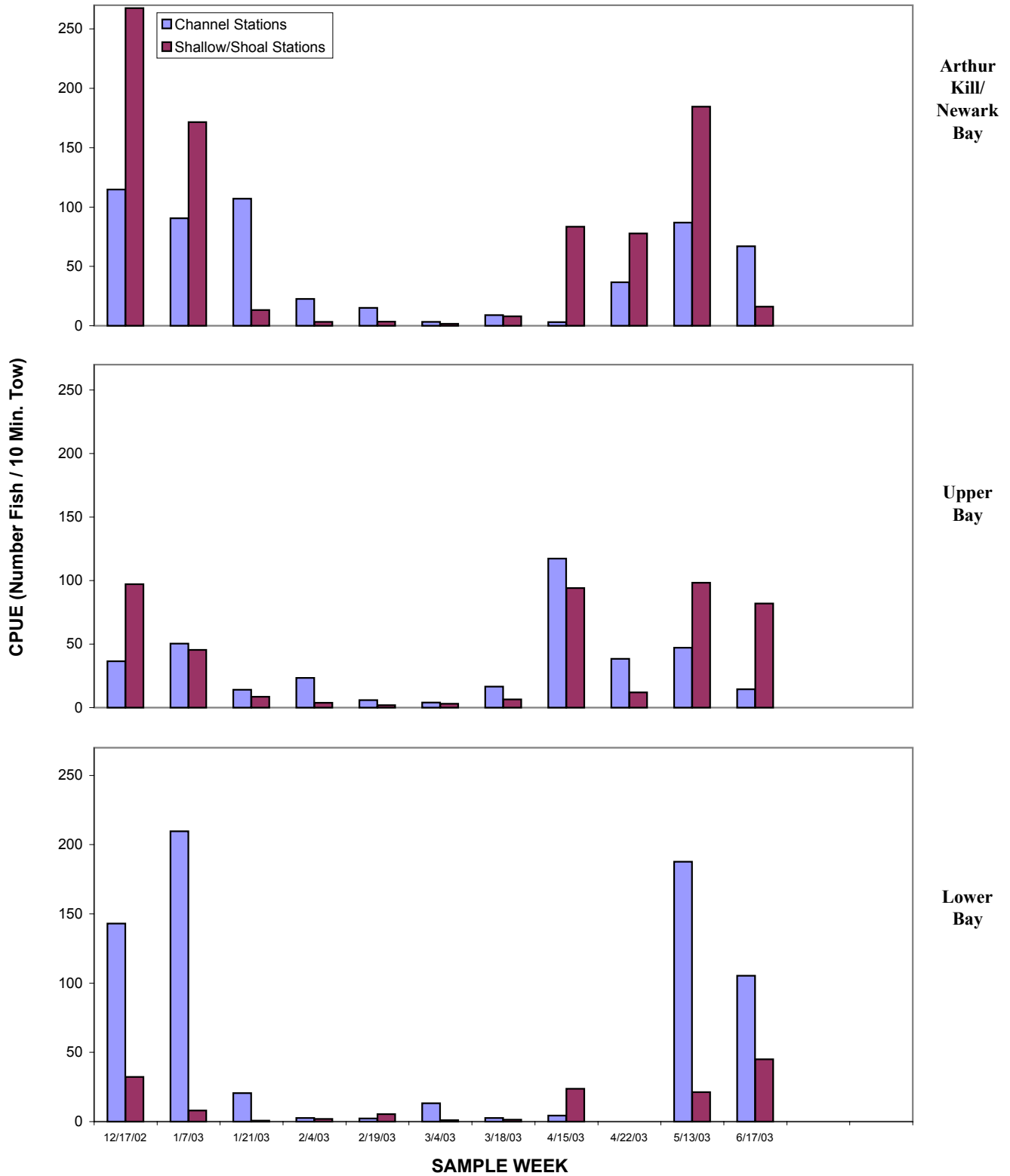
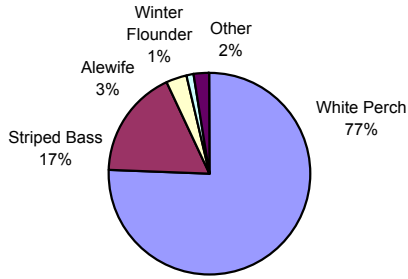


Figure 3-1 Average weekly trawl CPUE for all species combined at navigation channel and shallow/shoal stations in the three study areas, 2002-2003 Aquatic Biological Sampling Program.

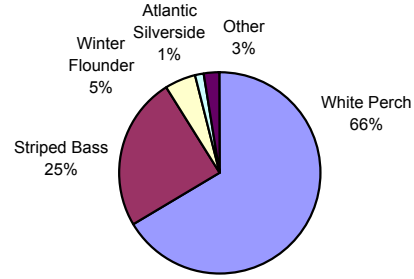
Note(s) Dates listed indicate the first day of each sample week.



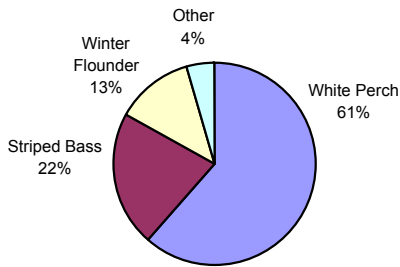
2002-December (total collected=1797)



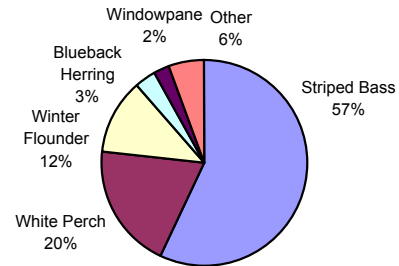
2003-January (total collected=1714)



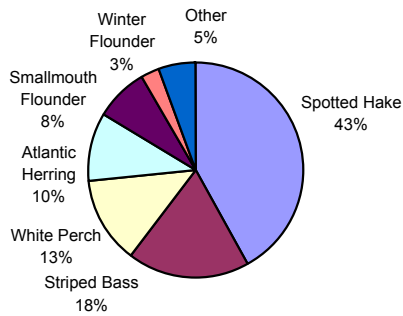
2003-February (total collected=184)



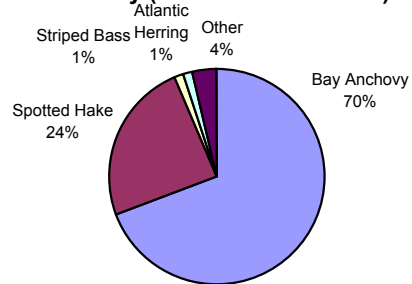
2003-March (total collected=88)



2003-April (total collected=525)



2003-May (total collected=1270)



2003-June (total collected=349)

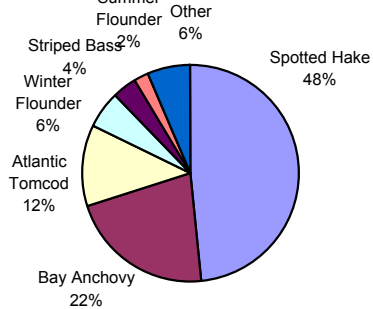
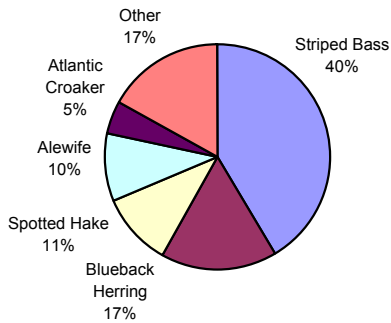


Figure 3-2

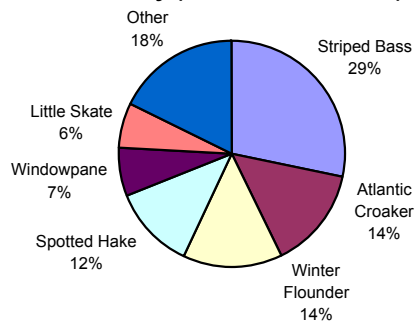
**Species composition of trawl catches from Arthur Kill/
Newark Bay stations during the 2002-2003 Aquatic Biological
Sampling Program.**



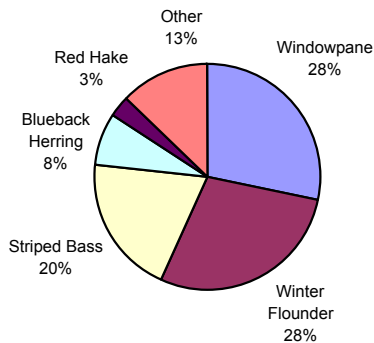
2002-December (total collected=765)



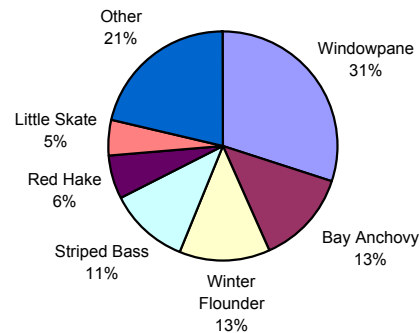
2003-January (total collected=647)



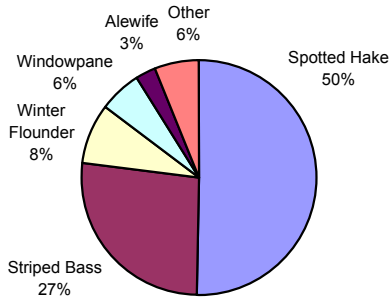
2003-February (total collected=181)



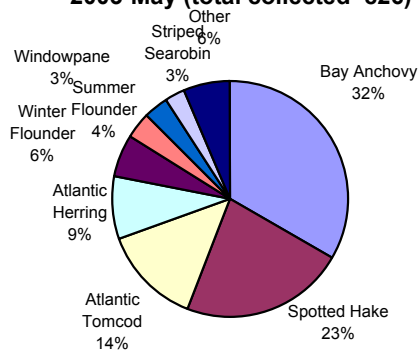
2003-March (total collected=160)



2003-April (total collected=912)



2003-May (total collected=826)



2003-June (total collected=563)

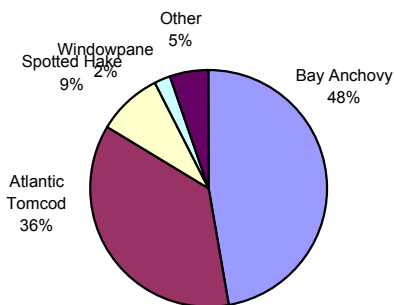


Figure 3-3

Species composition of trawl catches from Upper Bay stations during the 2002-2003 Aquatic Biological Sampling Program.



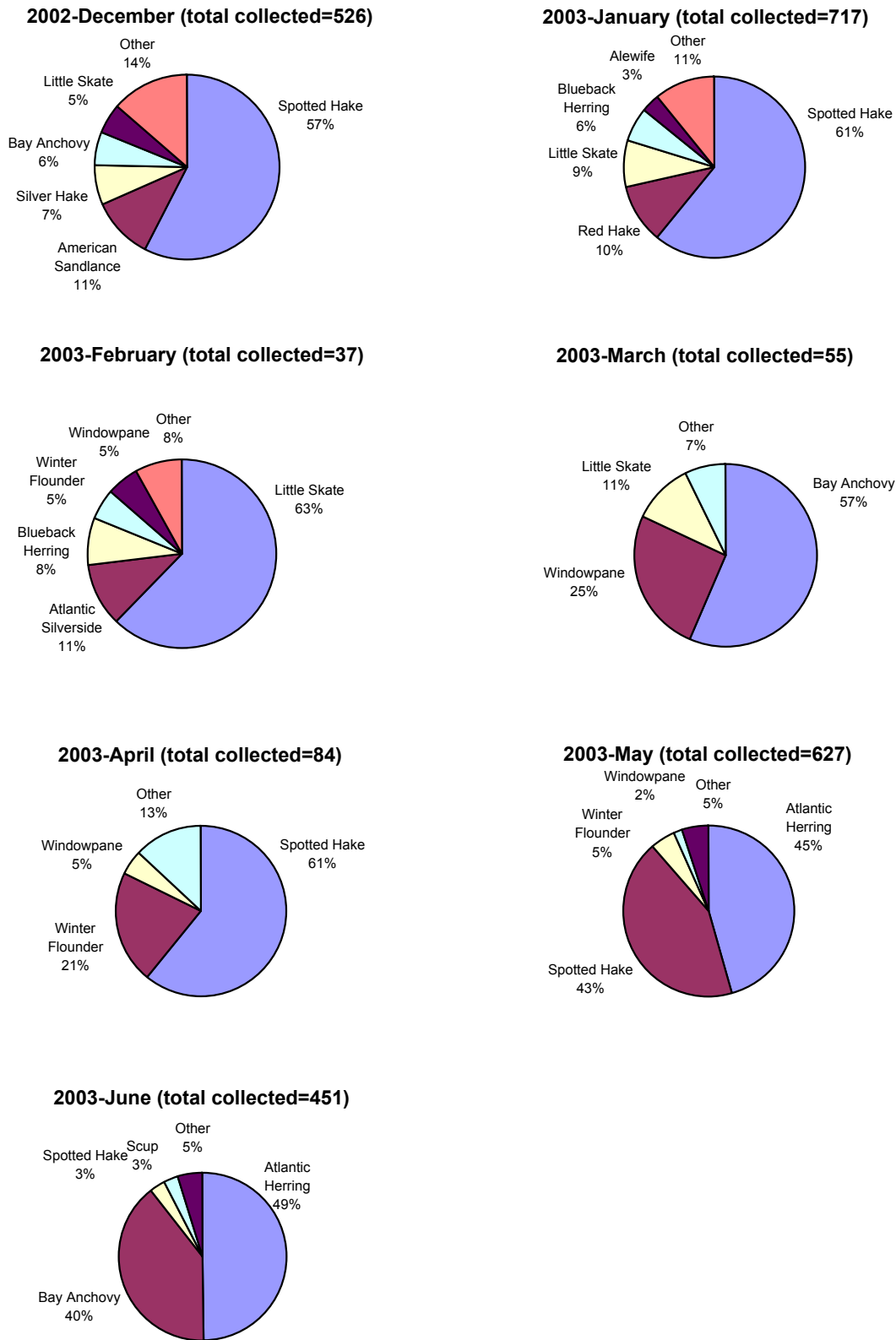


Figure 3-4

Species composition of trawl catches from Lower Bay stations during the 2002-2003 Aquatic Biological Sampling Program.



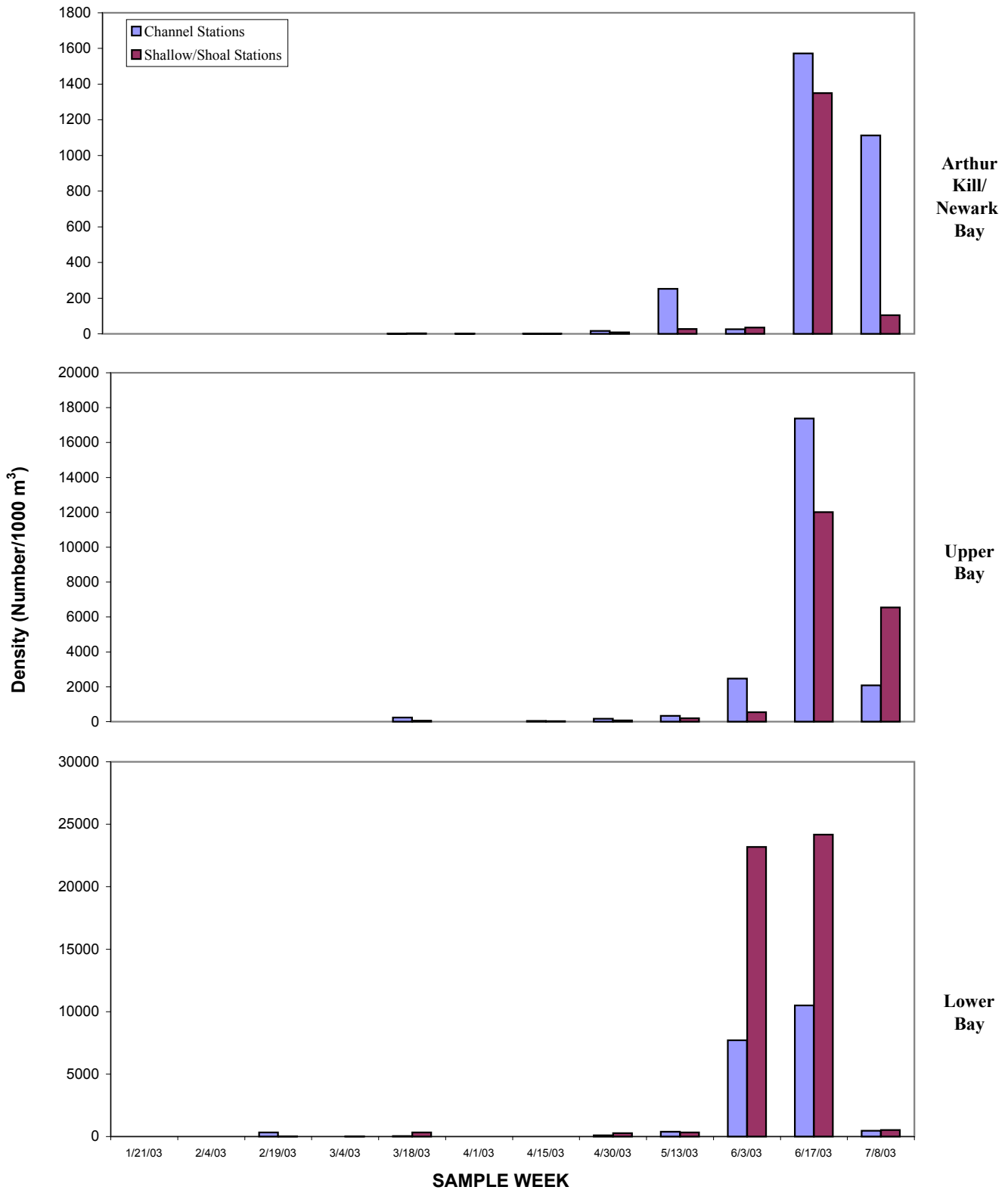


Figure 3-5 Average weekly egg density of all species combined at navigation channel and shallow/shoal stations in the three study areas, 2002-2003 Aquatic Biological Sampling Program.

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



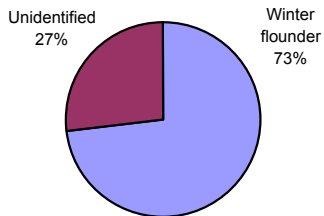
2003-January (total collected=0)

No Eggs Collected

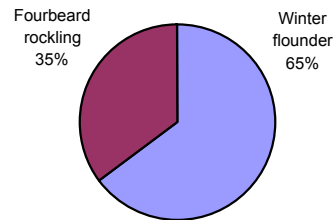
2003-February (total collected=0)

No Eggs Collected

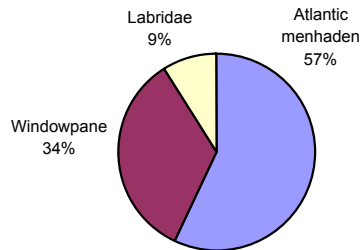
2003-March (total collected=3)



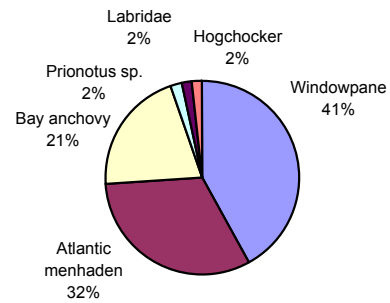
2003-April (total collected=3)



2003-May (total collected=172)



2003-June (total collected=1951)



2003-July (total collected=770)

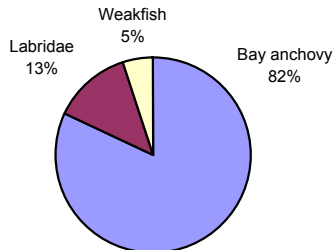


Figure 3-6

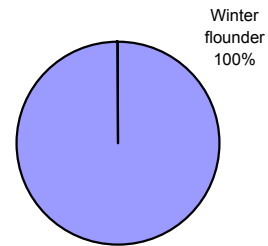
Species composition of eggs collected at Arthur Kill/Newark Bay stations during the 2002-2003 Aquatic Biological Sampling Program.



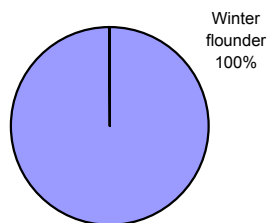
2003-January (total collected=0)

No Eggs Collected

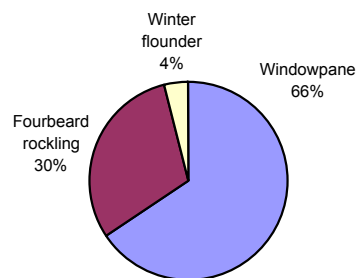
2003-February (total collected=7)



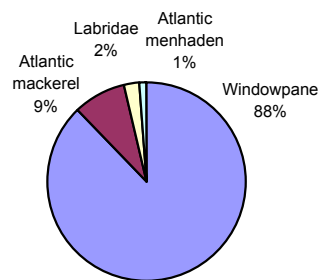
2003-March (total collected=232)



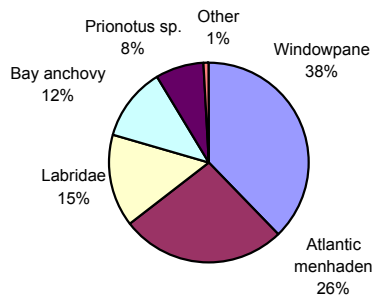
2003-April (total collected=147)



2003-May (total collected=663)



2003-June (total collected=24695)



2003-July (total collected=7910)

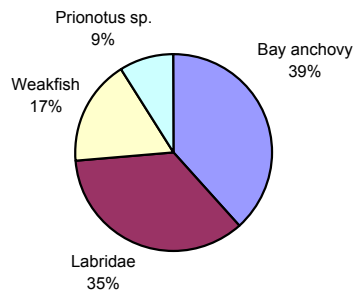


Figure 3-7

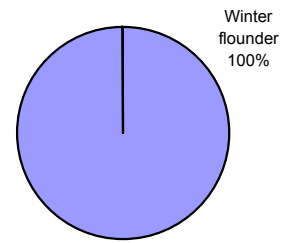
Species composition of eggs collected at Upper Bay stations during the 2002-2003 Aquatic Biological Sampling Program.



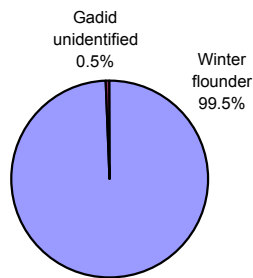
2003-January (total collected=0)

No Eggs Collected

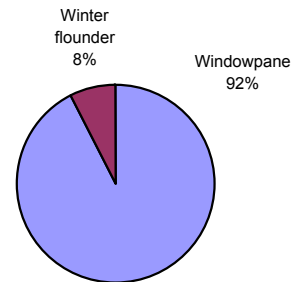
2003-February (total collected=154)



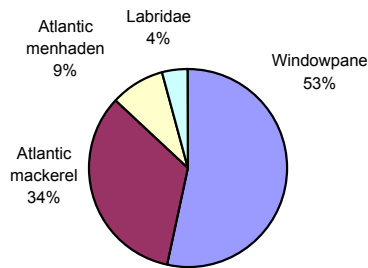
2003-March (total collected=193)



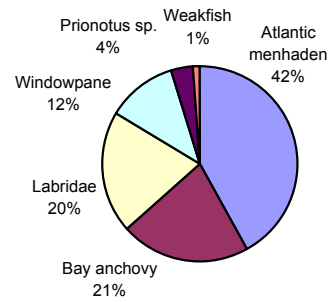
2003-April (total collected=208)



2003-May (total collected=418)



2003-June (total collected=32292)



2003-July (total collected=361)

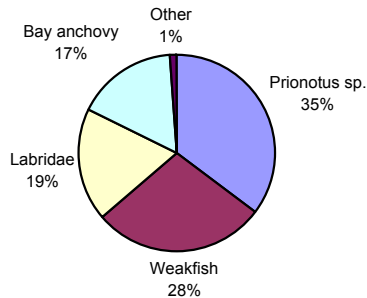


Figure 3-8

Species composition of eggs collected at Lower Bay stations during the 2002-2003 Aquatic Biological Sampling Program.



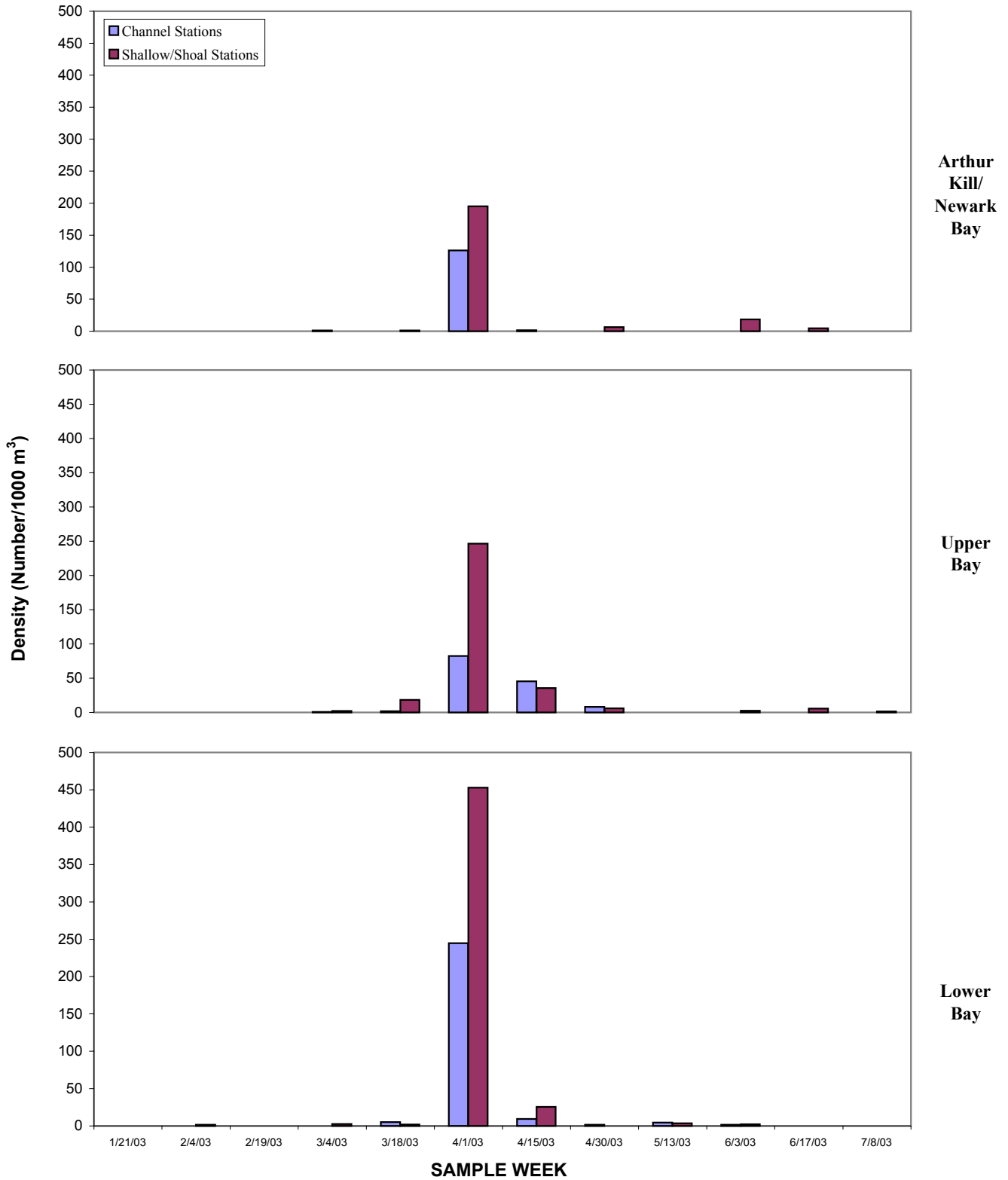


Figure 3-9 Average weekly yolk-sac larvae density of all species combined at navigation channel and shallow/shoal sampling stations in the three study areas, 2002-2003 Aquatic Biological Sampling Program.

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



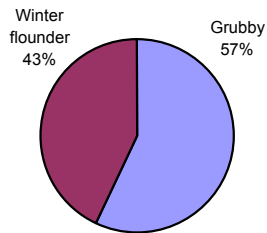
2003-January (total collected=0)

No Yolk-Sac Larvae
Collected

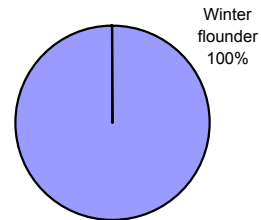
2003-February (total collected=0)

No Yolk-Sac Larvae Collected

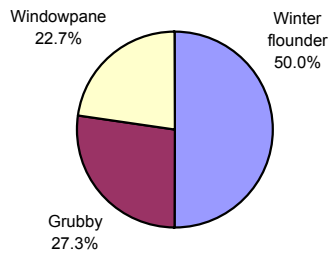
2003-March (total collected=2)



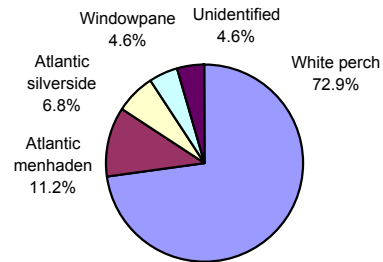
2003-April (total collected=289)



2003-May (total collected=4)



2003-June (total collected=21)



2003-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 2002-2003 Aquatic Biological Sampling Program.



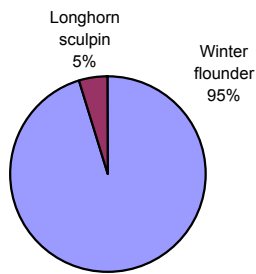
2003-January (total collected=0)

No Yolk-Sac Larvae
Collected

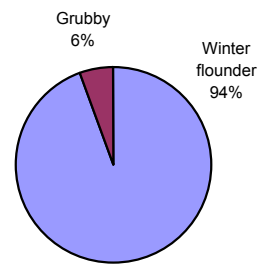
2003-February (total collected=0)

No Yolk-Sac Larvae Collected

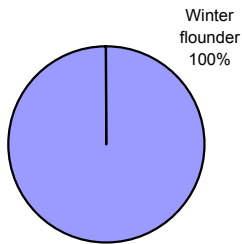
2003-March (total collected=24)



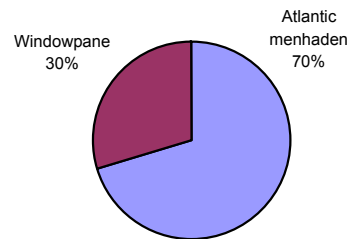
2003-April (total collected=345)



2003-May (total collected=9)



2003-June (total collected=6)



2003-July (total collected=2)

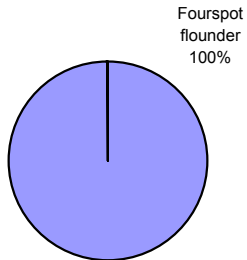


Figure 3-11

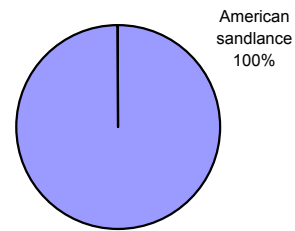
Species composition of yolk-sac larvae collected at Upper Bay stations during the 2002-2003 Aquatic Biological Sampling Program.



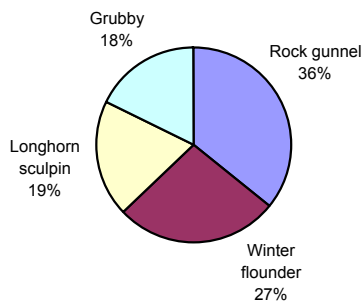
2003-January (total collected=0)

No Yolk-Sac Larvae
Collected

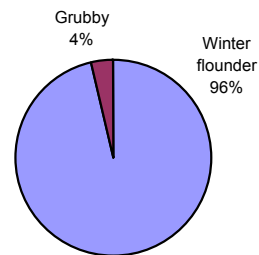
2003-February (total collected=1)



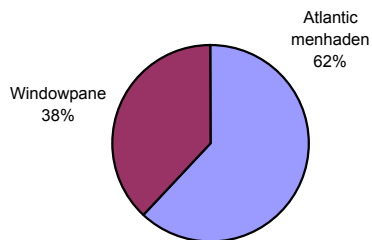
2003-March (total collected=5)



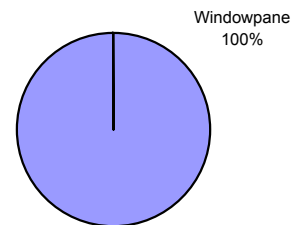
2003-April (total collected=327)



2003-May (total collected=5)



2003-June (total collected=2)



2003-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 2002-2003 Aquatic Biological Sampling Program.



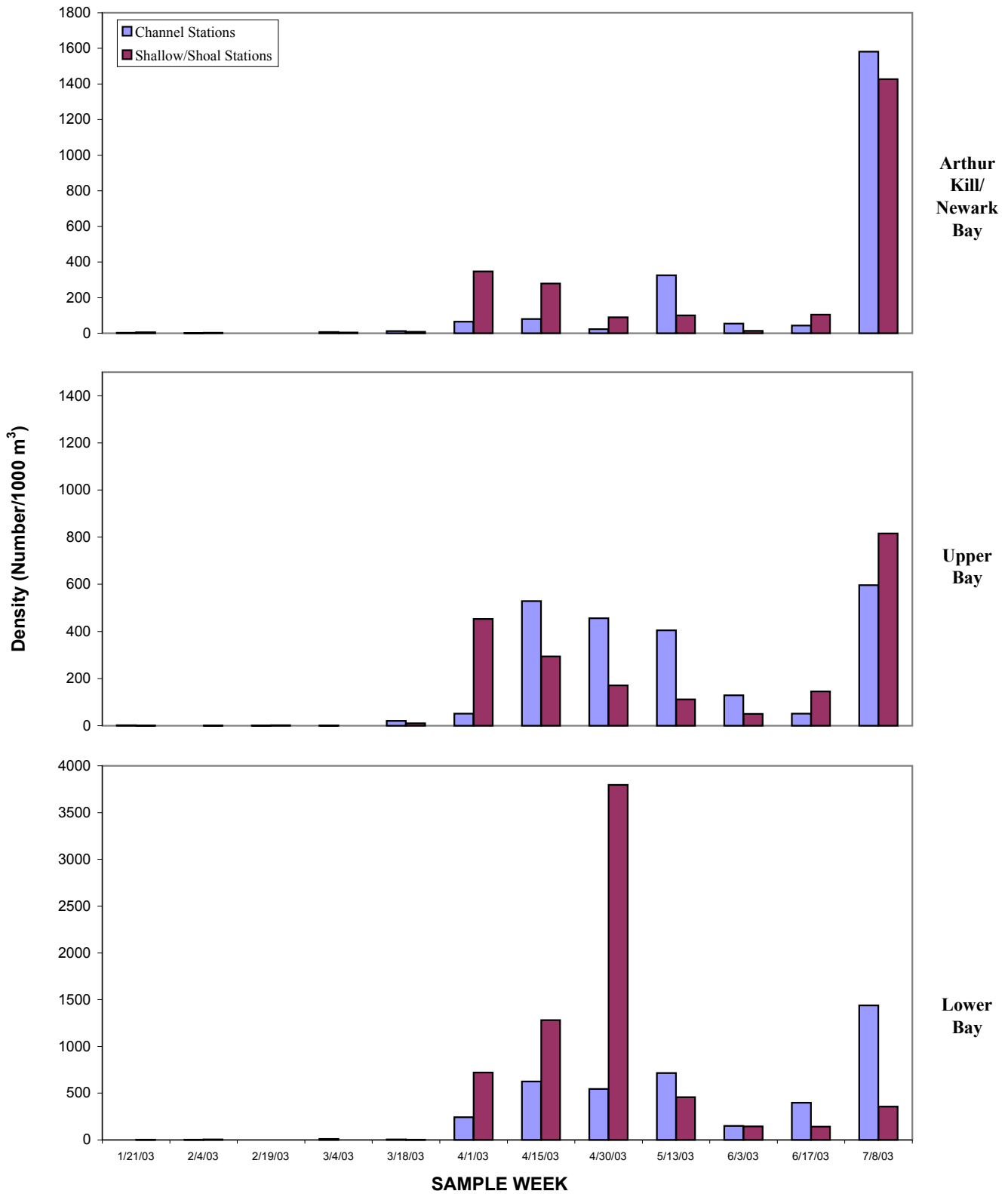
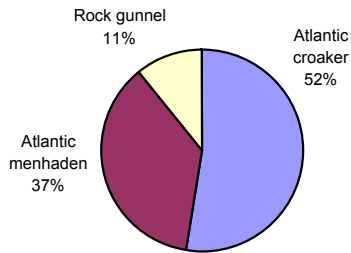


Figure 3-13 Average weekly post yolk-sac larvae density of all species combined at navigation channel and shallow/shoal stations in the three study areas, 2002-2003 Aquatic Biological Sampling Program.

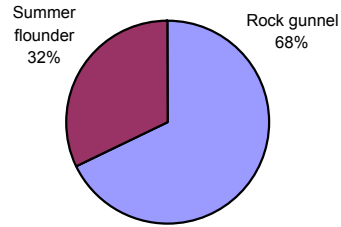
Note(s): Dates listed indicate the first day of each sample week.



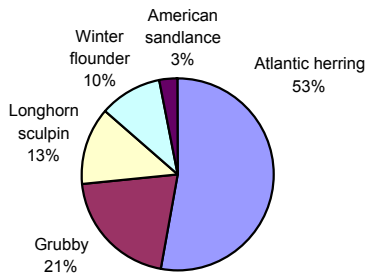
2003-January (total collected=8)



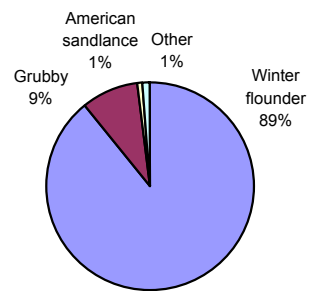
2003-February (total collected=3)



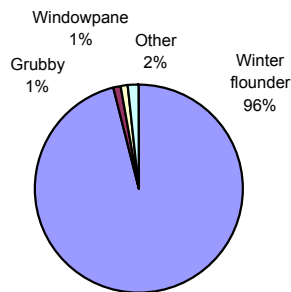
2003-March (total collected=23)



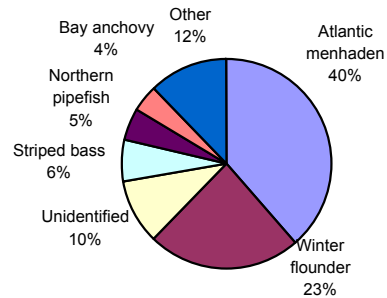
2003-April (total collected=735)



2003-May (total collected=389)



2003-June (total collected=170)



2003-July (total collected=2251)

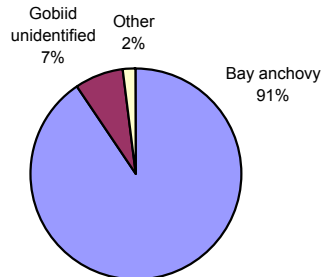
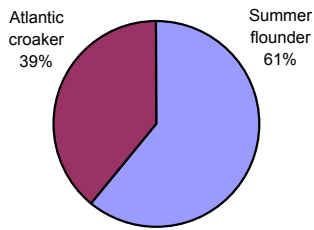


Figure 3-14

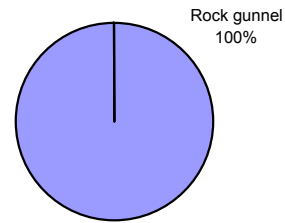
Species composition of post yolk-sac larvae collected at Arthur Kill/Newark Bay stations during the 2002-2003 Aquatic Biological Sampling Program.



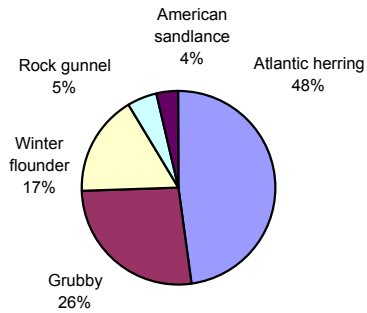
2003-January (total collected=2)



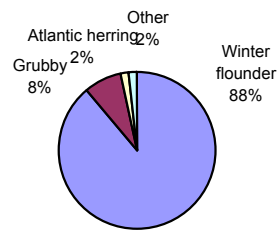
2003-February (total collected=4)



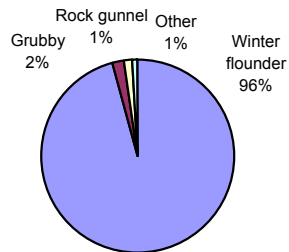
2003-March (total collected=26)



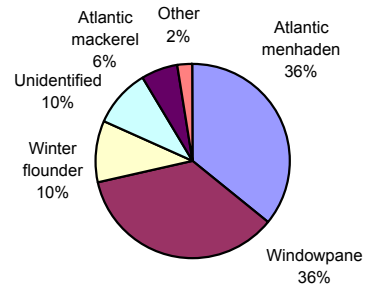
2003-April (total collected=1391)



2003-May (total collected=969)



2003-June (total collected=308)



2003-July (total collected=1464)

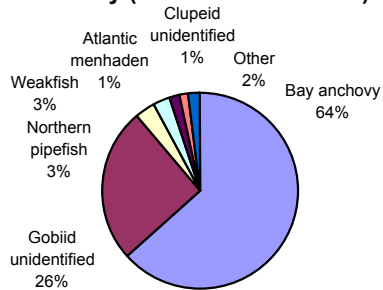
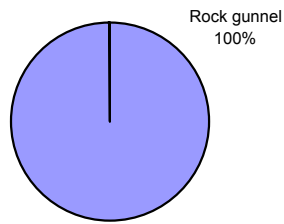


Figure 3-15

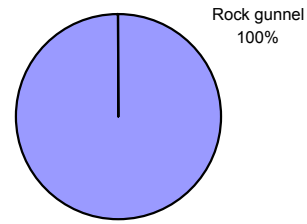
Species composition of post yolk-sac larvae collected at Upper Bay stations during the 2002-2003 Aquatic Biological Sampling Program.



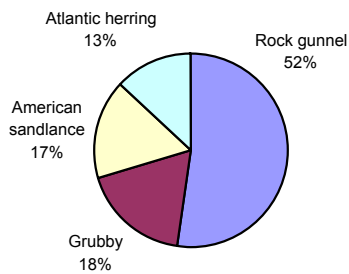
2003-January (total collected=1)



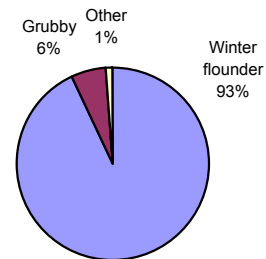
2003-February (total collected=6)



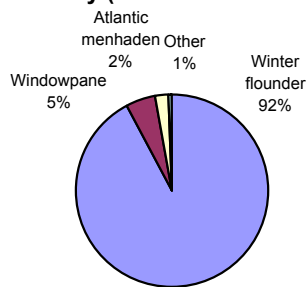
2003-March (total collected=9)



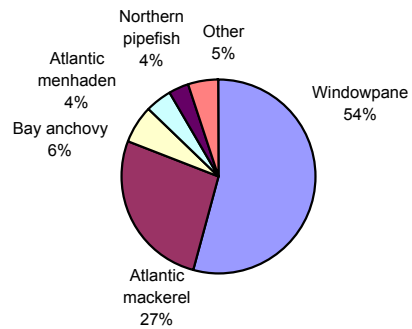
2003-April (total collected=3707)



2003-May (total collected=700)



2003-June (total collected=420)



2003-July (total collected=716)

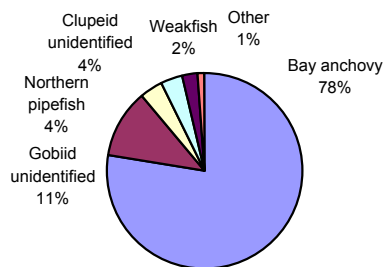


Figure 3-16

Species composition of post yolk-sac larvae collected at Lower Bay stations during the 2002-2003 Aquatic Biological Sampling Program.



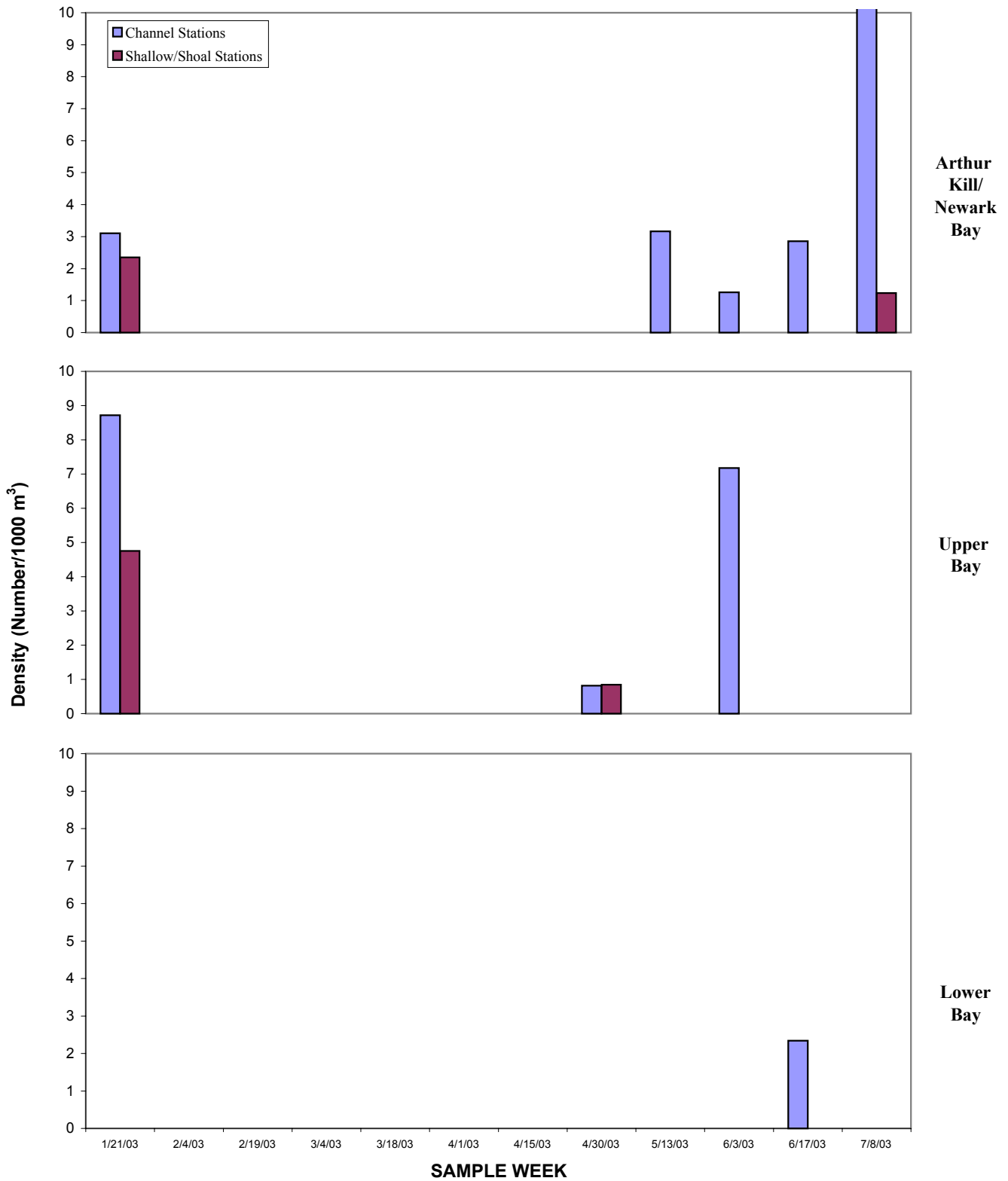
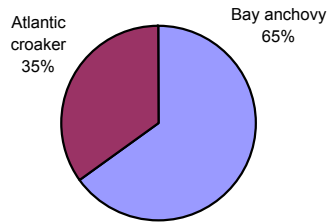


Figure 3-17 Average weekly juvenile density of all species combined at navigation channel and shallow/shoal stations in the three sampling areas, 2002-2003 Aquatic Biological Sampling Program.

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



2003-January (total collected=5)



2003-February (total collected=0)

No Juveniles Collected

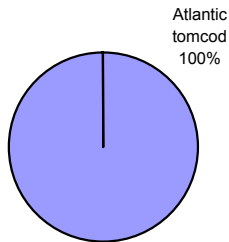
2003-March (total collected=0)

No Juveniles Collected

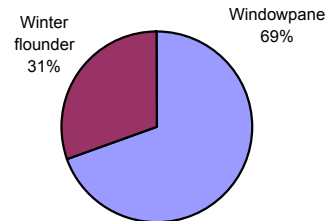
2003-April (total collected=0)

No Juveniles Collected

2003-May (total collected=2)



2003-June (total collected=3)



2003-July (total collected=10)

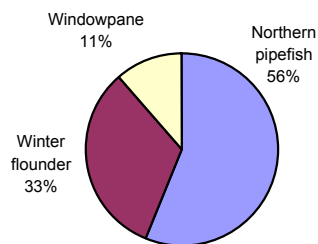
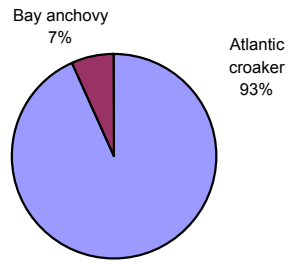


Figure 3-18

Species composition of juveniles collected at Arthur Kill/Newark Bay stations during the 2002-2003 Aquatic Biological Sampling Program.



2003-January (total collected=12)



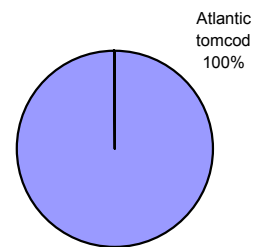
2003-February (total collected=0)

No Juveniles Collected

2003-March (total collected=0)

No Juveniles Collected

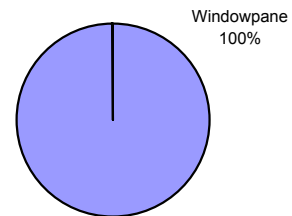
2003-April (total collected=2)



2003-May (total collected=0)

No Juveniles Collected

2003-June (total collected=4)



2003-July (total collected=0)

No Juveniles Collected

Figure 3-19

Species composition of juveniles collected at Upper Bay stations during the 2002-2003 Aquatic Biological Sampling Program.



2003-January (total collected=0)

No Juveniles Collected

2003-February (total collected=0)

No Juveniles Collected

2003-March (total collected=0)

No Juveniles Collected

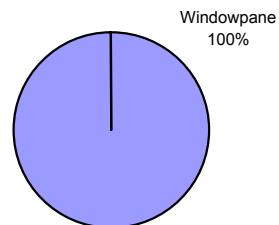
2003-April (total collected=0)

No Juveniles Collected

2003-May (total collected=0)

No Juveniles Collected

2003-June (total collected=1)



2003-July (total collected=0)

No Juveniles Collected

Figure 3-20

Species composition of juveniles collected at Lower Bay stations during the 2002-2003 Aquatic Biological Sampling Program.



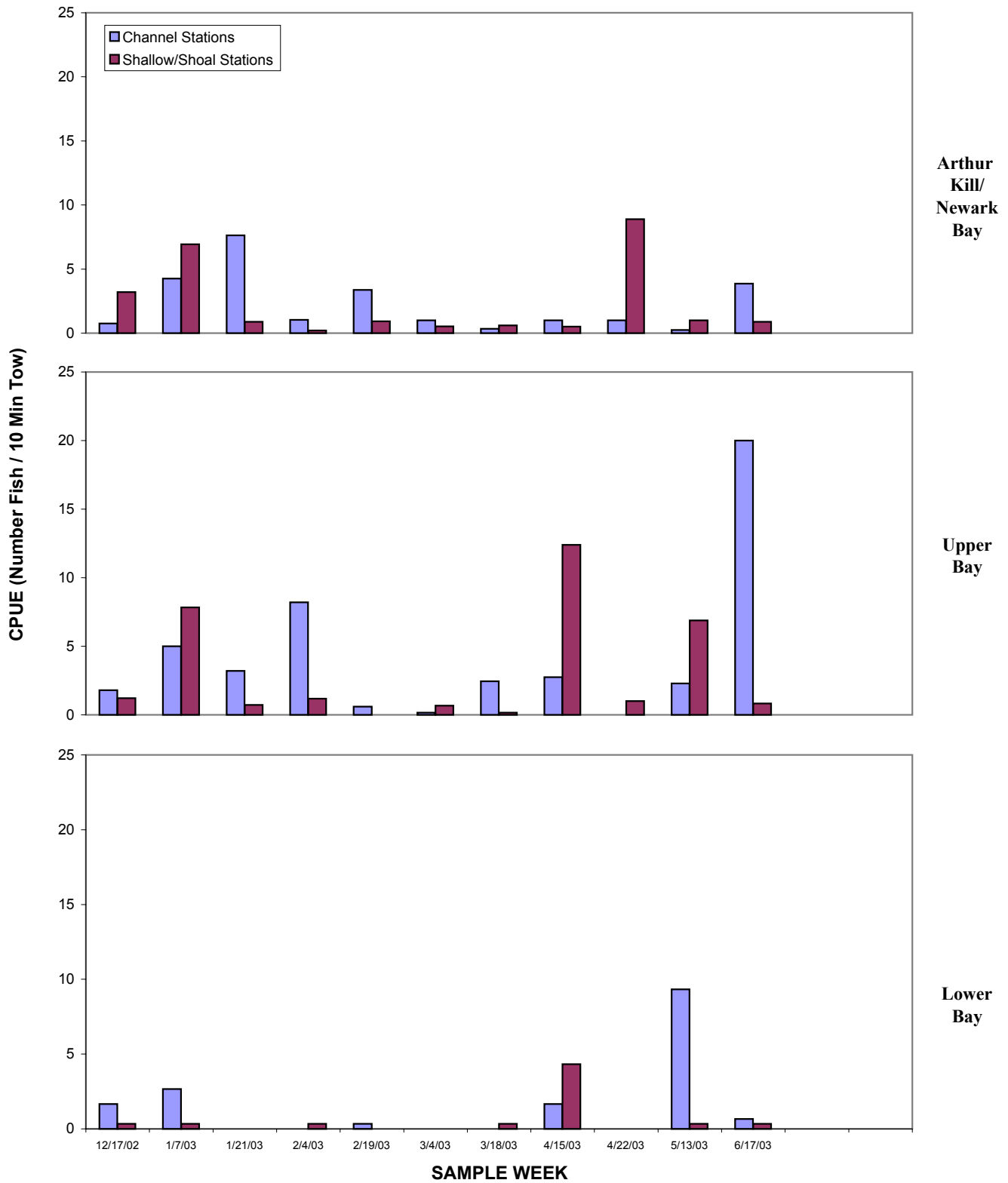


Figure 3-21 Average weekly winter flounder trawl CPUE at navigation channel and shallow/shoal stations in the three study areas during 2002-2003 Aquatic Biological Sampling Program.



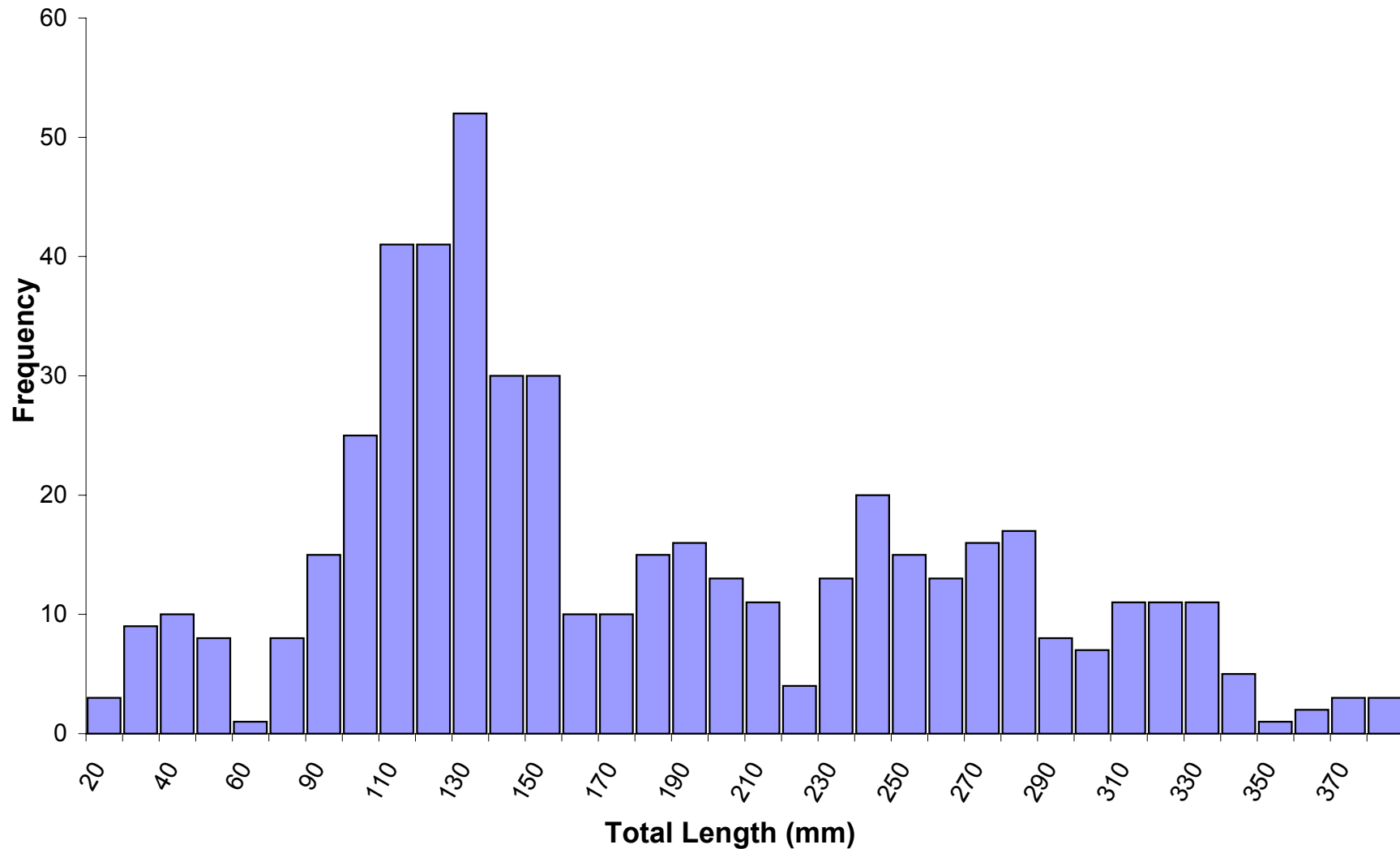


Figure 3-22 Length frequency distribution of all winter flounder collected during trawl sampling during 2002-2003 Aquatic Biological Sampling Program.



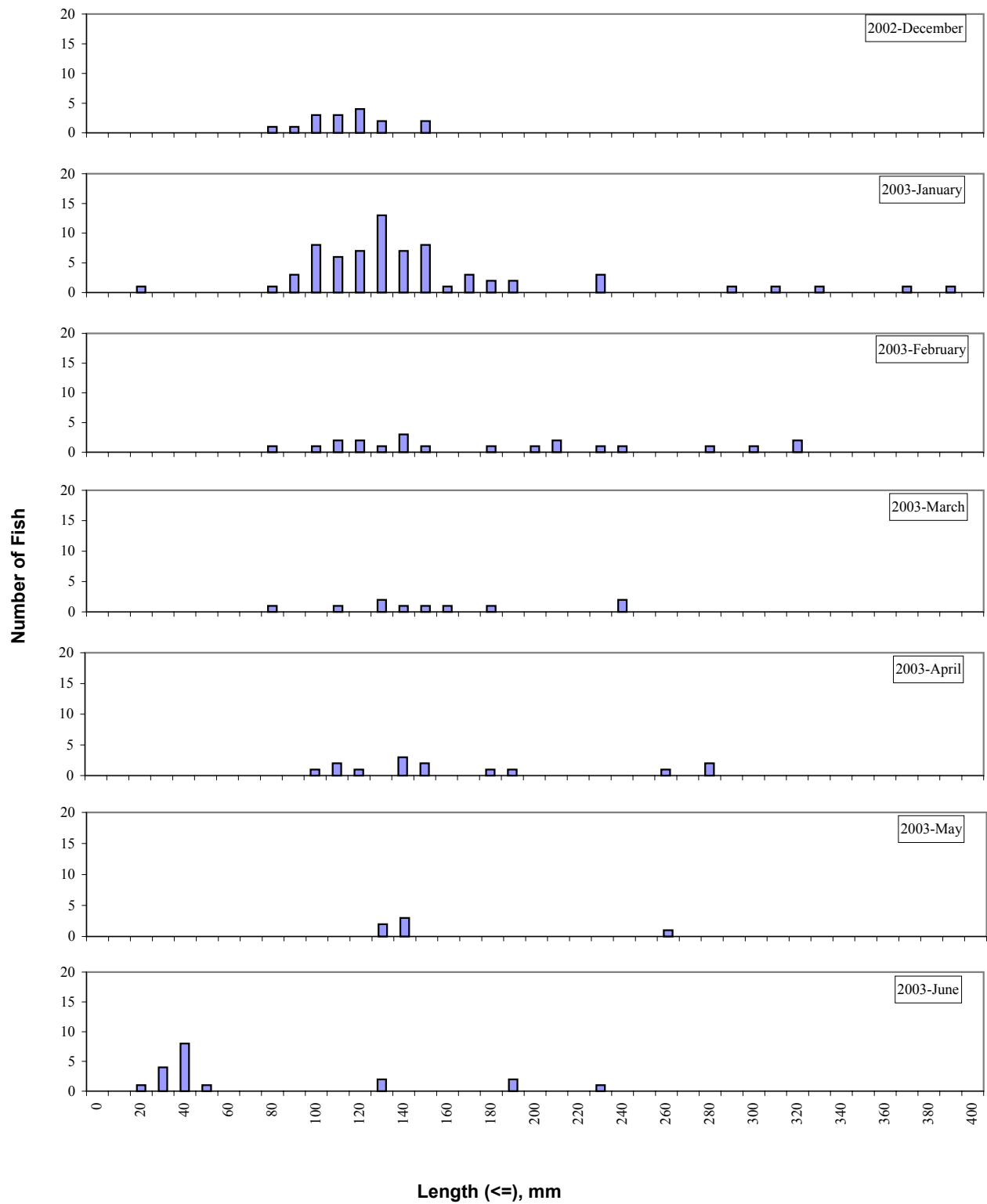


Figure 3-23 Length frequency distribution of winter flounder collected during trawl sampling at Arthur Kill/Newark Bay stations, 2002-2003 Aquatic Biological Sampling Program.



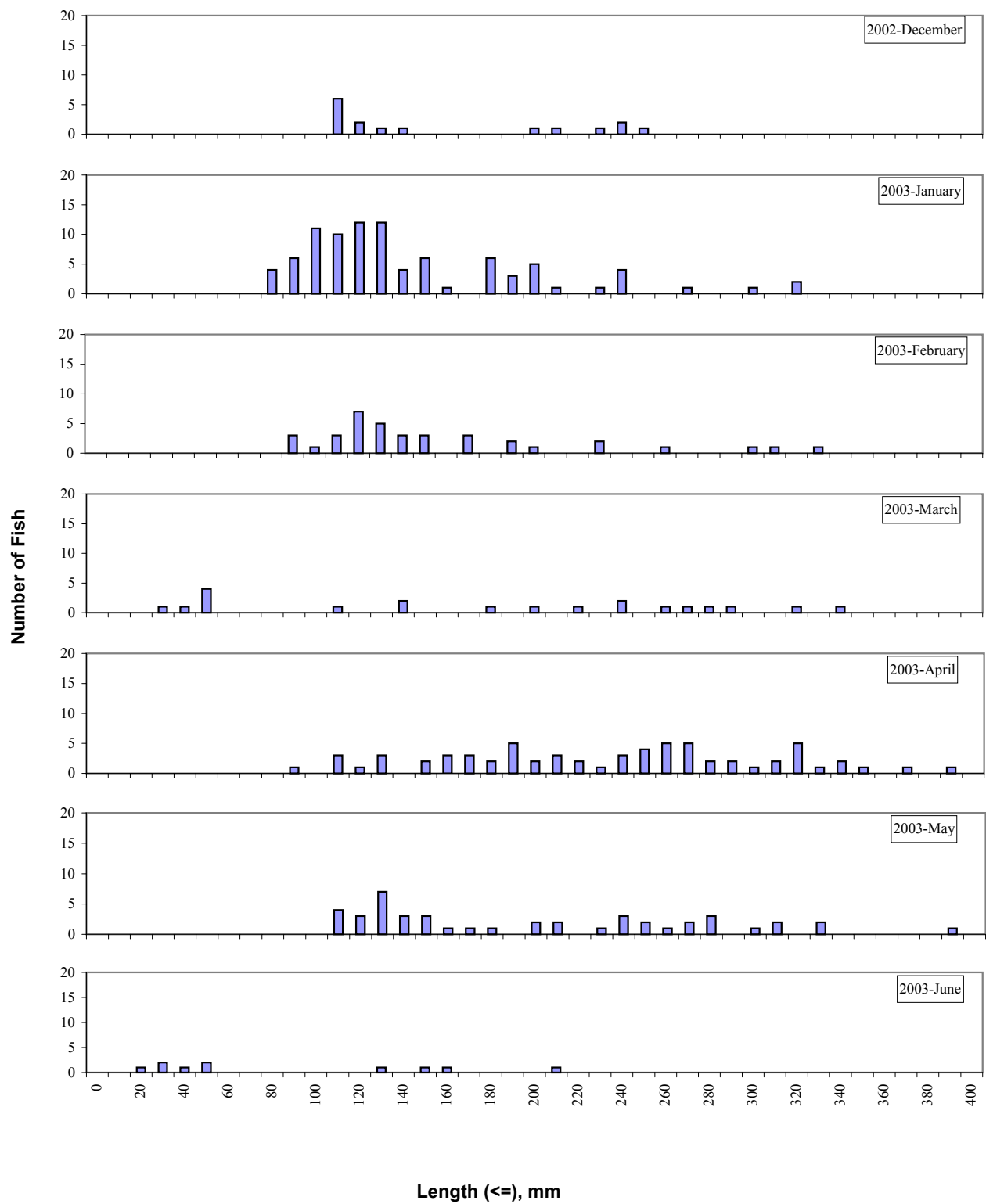


Figure 3-24 Length frequency distribution of winter flounder collected during trawl sampling at Upper Bay stations, 2002-2003 Aquatic Biological Sampling Program.



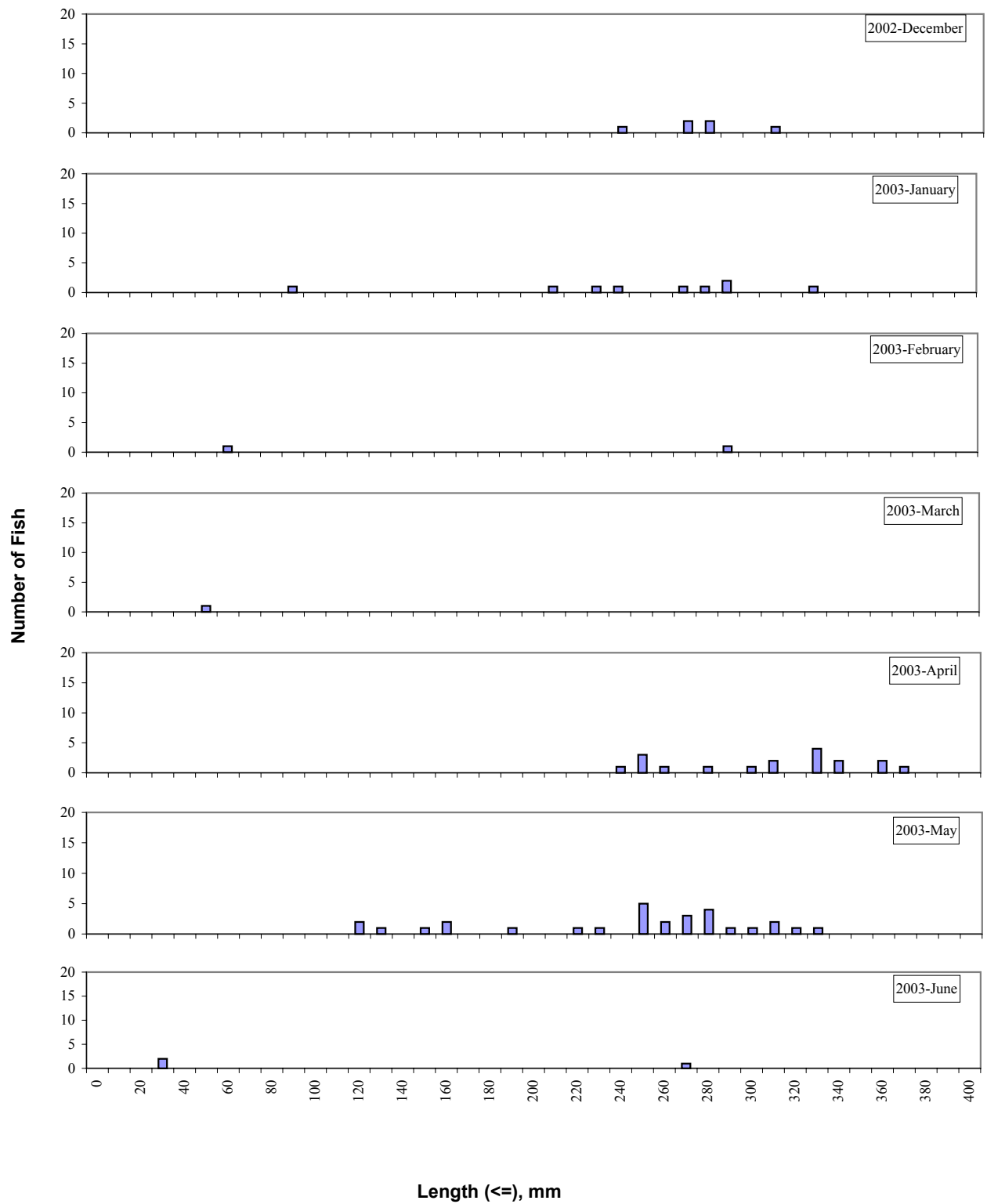


Figure 3-25 Length frequency distribution of winter flounder collected during trawl sampling at Lower Bay stations, 2002-2003 Aquatic Biological Sampling Program.



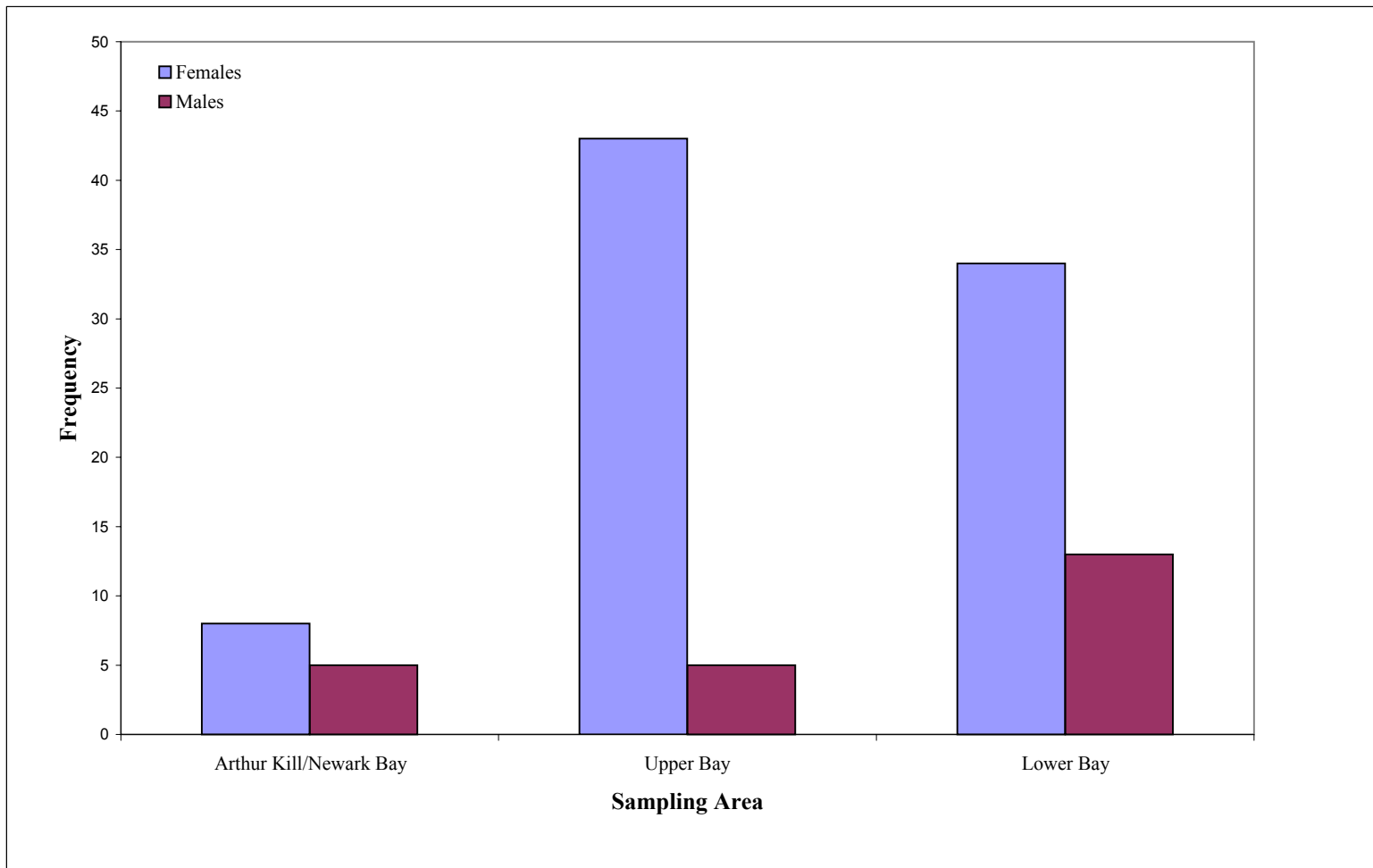


Figure 3-26 Sex Frequency of 108 Winter Flounder (Total length \leq 235 mm)
 Collected in Trawls During 2002-2003 Aquatic Biological Sampling Program.



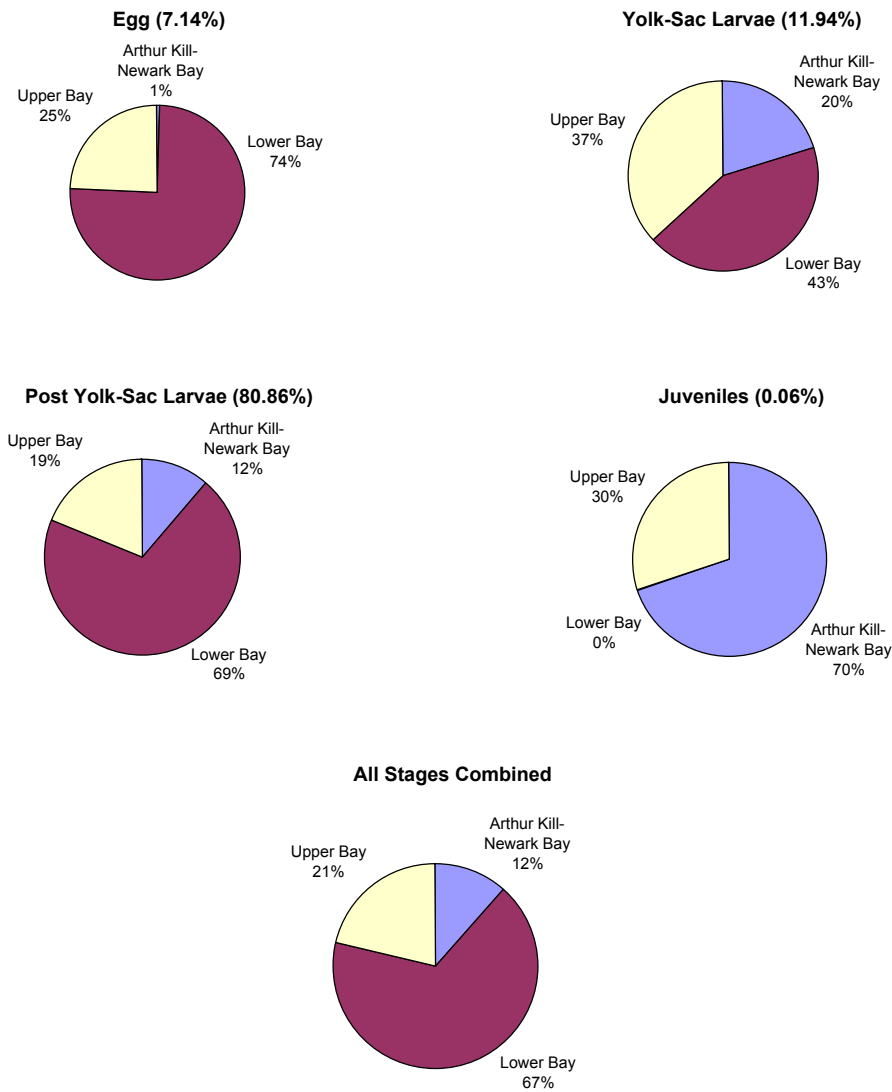


Figure 3-27 Distribution of winter flounder lifestages collected in the three study areas, 2002-2003 Aquatic Biological Sampling Program.

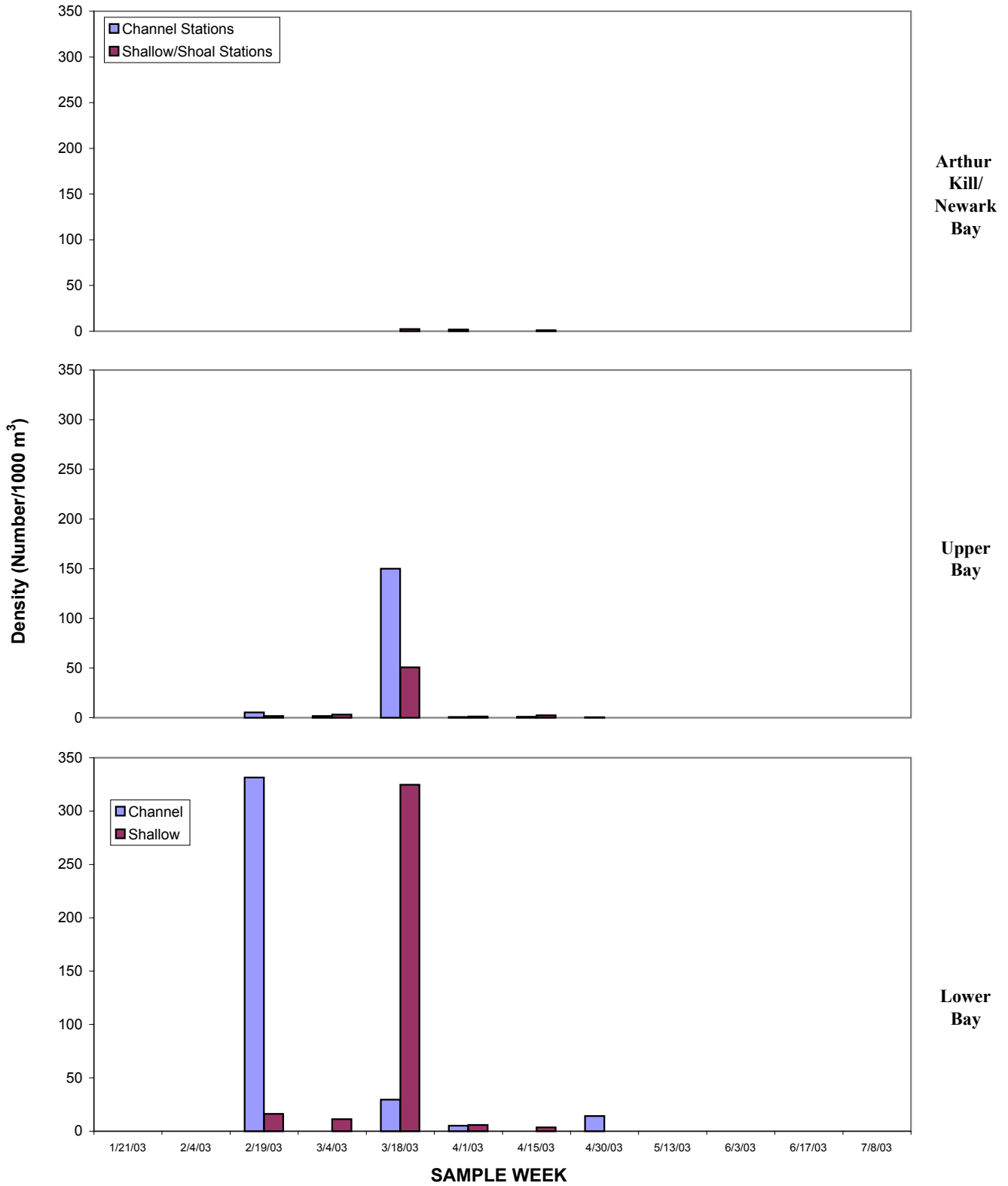


Figure 3-28 Average weekly winter flounder egg density at navigation channel and shallow/shoal stations in the three study areas, 2002-2003 Aquatic Biological Sampling Program.

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



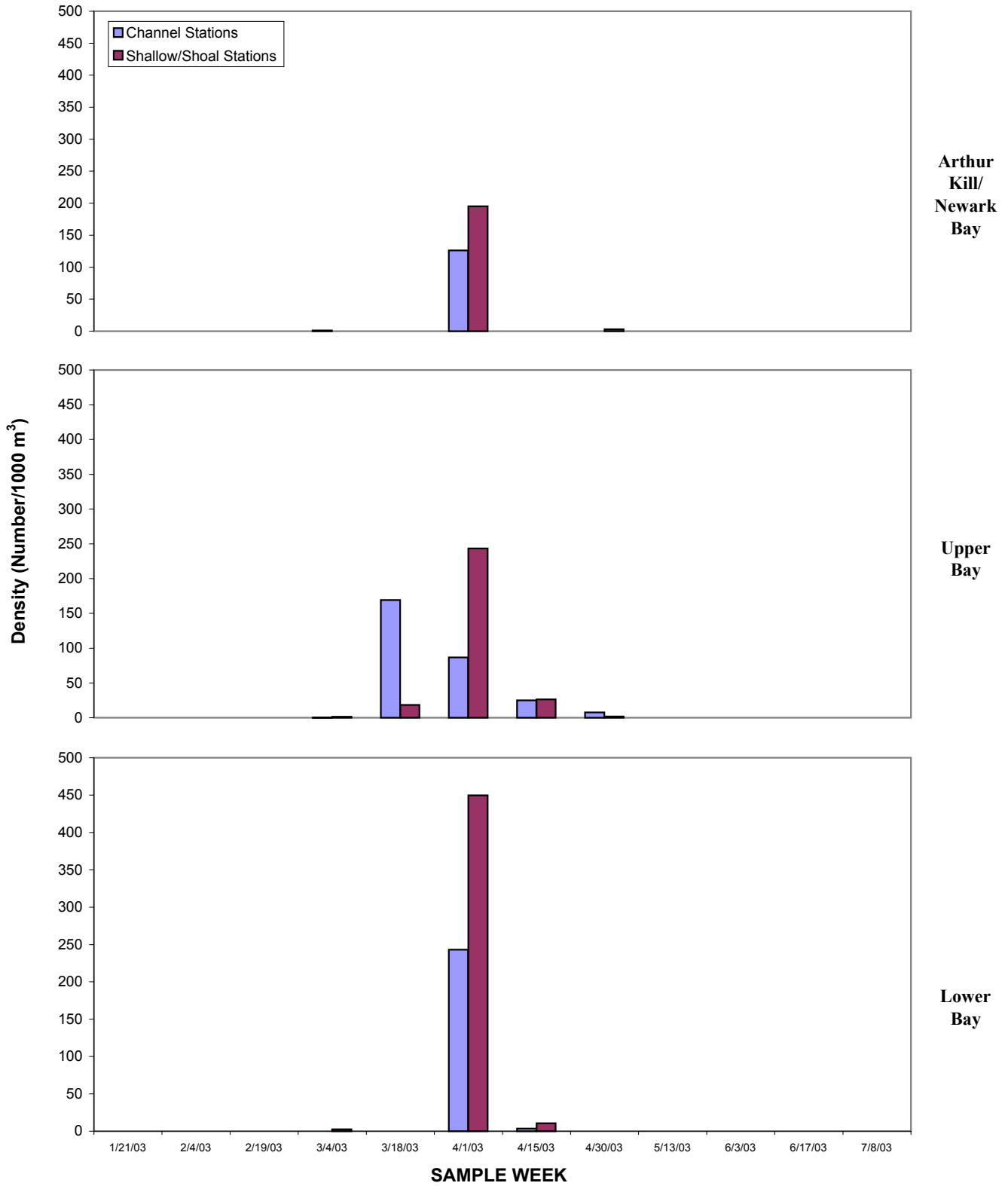


Figure 3-29 Average weekly winter flounder yolk-sac density at navigation channel and shallow/shoal stations in the three study areas, 2002-2003 Aquatic Biological Sampling Program.

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



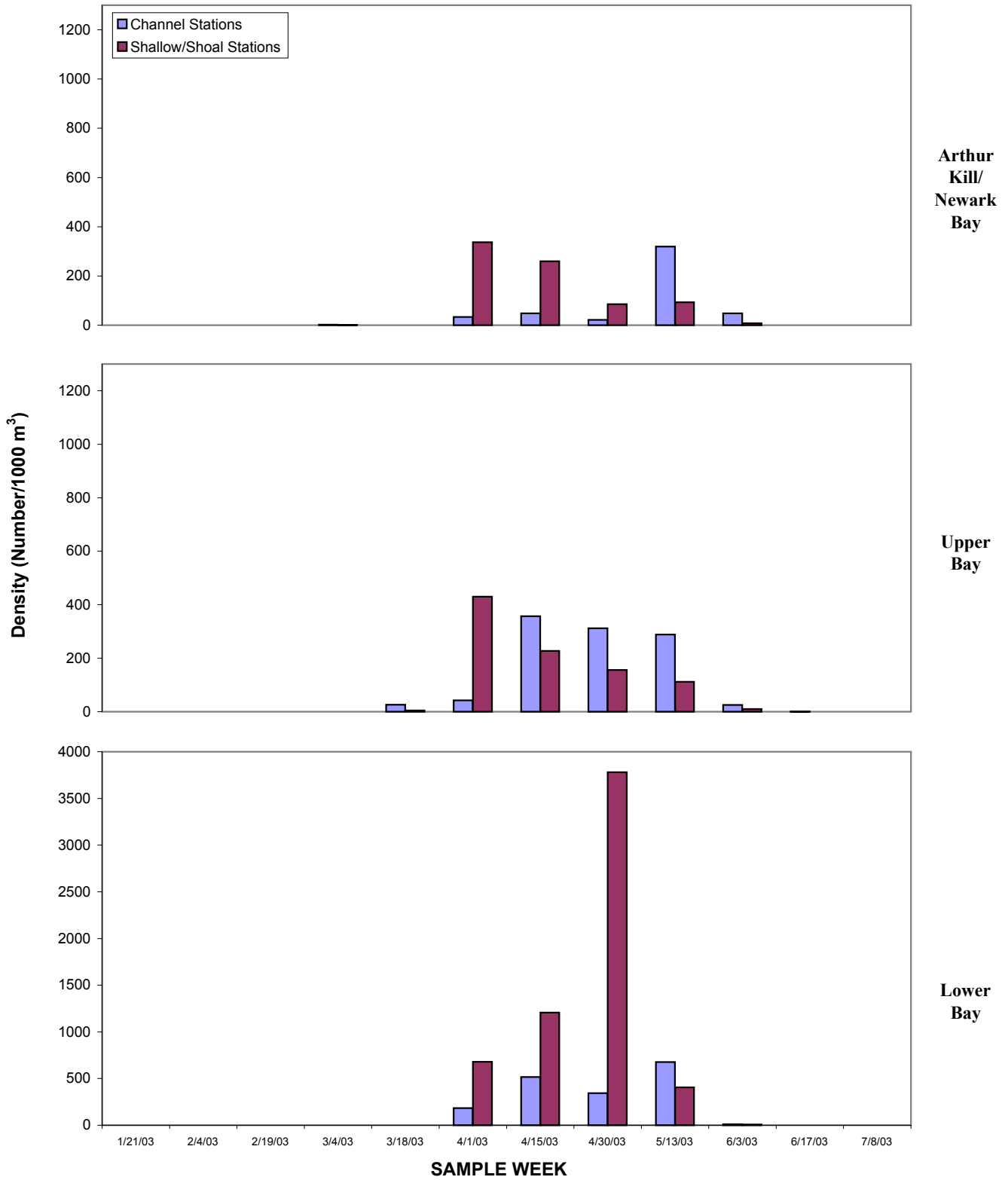


Figure 3-30 Average weekly winter flounder post yolk-sac density at navigation channel and shallow/shoal stations in the three study areas, 2002-2003 Aquatic Biological Sampling Program.

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



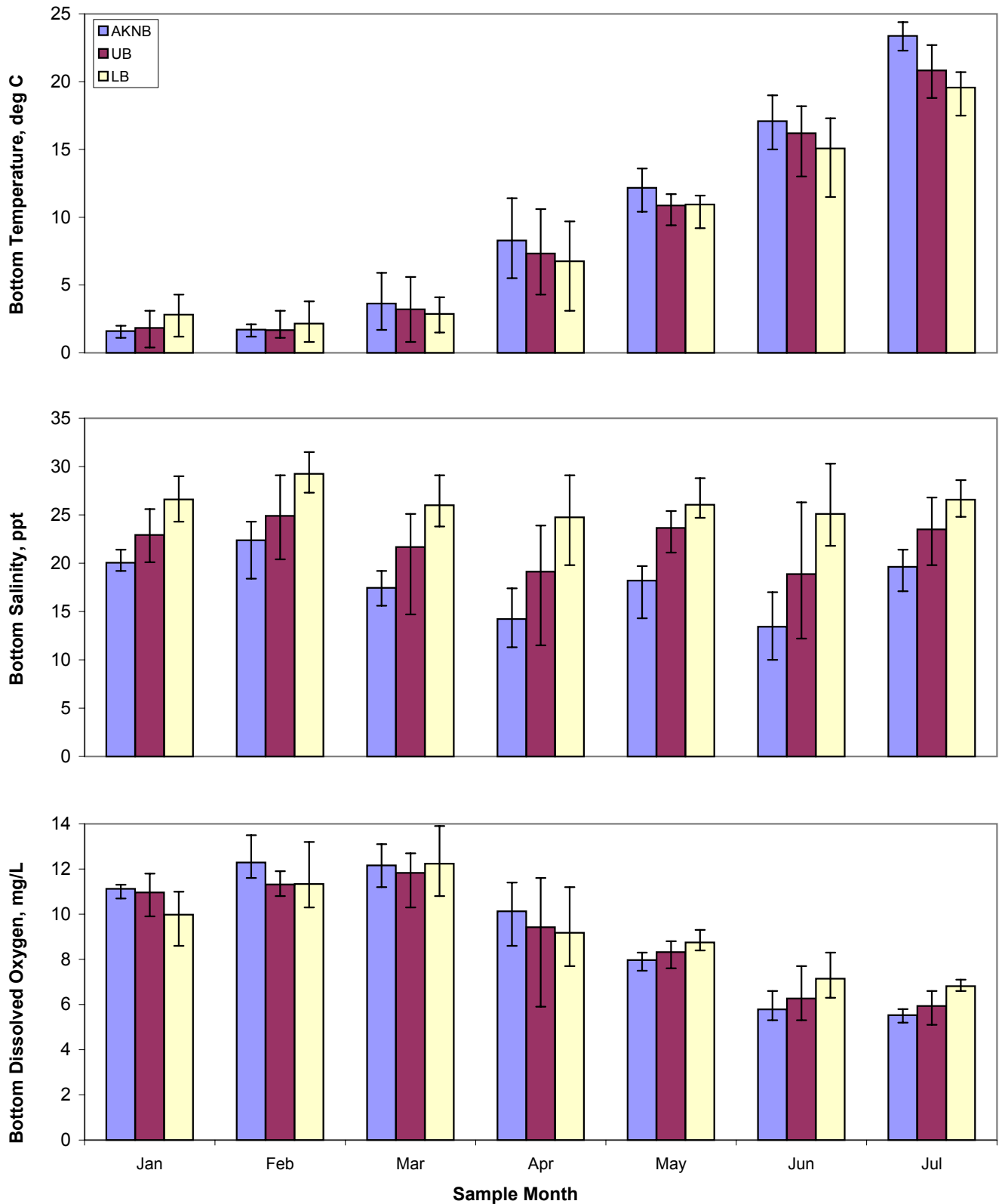


Figure 3-37 Average monthly water quality measurements by area in the three sampling areas during the 2002-2003 Aquatic Biological Sampling Program.

Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 1 of 22)

Date	Station	Common Name	CPUE
12/17/2002	LB-1	Alewife	3.0
12/17/2002	LB-1	American Sandlance	4.0
12/17/2002	LB-1	Bay Anchovy	3.0
12/17/2002	LB-1	Cunner	1.0
12/17/2002	LB-1	Little Skate	3.0
12/17/2002	LB-1	Spotted Hake	3.0
12/17/2002	LB-1	Winter Flounder	1.0
12/17/2002	LB-2	American Shad	1.0
12/17/2002	LB-2	Bay Anchovy	6.0
12/17/2002	LB-2	Butterfish	1.0
12/17/2002	LB-2	Conger Eel	1.0
12/17/2002	LB-2	Little Skate	3.0
12/17/2002	LB-2	Silver Hake	22.0
12/17/2002	LB-2	Spotted Hake	22.0
12/17/2002	LB-2	Summer Flounder	2.0
12/17/2002	LB-2	Weakfish	1.0
12/17/2002	LB-2	Windowpane	1.0
12/17/2002	LB-3	Alewife	1.0
12/17/2002	LB-3	American Sandlance	47.0
12/17/2002	LB-3	American Shad	1.0
12/17/2002	LB-3	Bay Anchovy	4.0
12/17/2002	LB-3	Spotted Hake	3.0
12/17/2002	LB-3	Summer Flounder	1.0
12/17/2002	LB-3	Windowpane	2.0
12/17/2002	LB-4	Alewife	7.0
12/17/2002	LB-4	Atlantic Croaker	3.0
12/17/2002	LB-4	Atlantic Menhaden	10.0
12/17/2002	LB-4	Bay Anchovy	15.0
12/17/2002	LB-4	Blueback Herring	1.0
12/17/2002	LB-4	Little Skate	10.0
12/17/2002	LB-4	Northern Pipefish	1.0
12/17/2002	LB-4	Red Hake	3.0
12/17/2002	LB-4	Seaboard Goby	1.0
12/17/2002	LB-4	Silver Hake	14.0
12/17/2002	LB-4	Spotted Hake	171.0
12/17/2002	LB-4	Striped Bass	5.0
12/17/2002	LB-4	Weakfish	2.0
12/17/2002	LB-4	White Mullet	1.0
12/17/2002	LB-4	Windowpane	2.0
12/17/2002	LB-4	Winter Flounder	1.0
12/17/2002	LB-5	Alewife	1.0
12/17/2002	LB-5	American Sandlance	5.0
12/17/2002	LB-5	Little Skate	2.0
12/17/2002	LB-5	Spotted Hake	7.0
12/17/2002	LB-5	Summer Flounder	3.0
12/17/2002	LB-5	Windowpane	2.0
12/17/2002	LB-6	American Eel	1.0
12/17/2002	LB-6	American Sandlance	1.0
12/17/2002	LB-6	Bay Anchovy	2.0
12/17/2002	LB-6	Conger Eel	1.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 2 of 22)

Date	Station	Common Name	CPUE
12/17/2002	LB-6	Little Skate	10.0
12/17/2002	LB-6	Spotted Hake	97.0
12/17/2002	LB-6	White Perch	2.0
12/17/2002	LB-6	Windowpane	4.0
12/17/2002	LB-6	Winter Flounder	4.0
12/17/2002	SB-3	Bay Anchovy	1.0
12/17/2002	SB-3	Blueback Herring	92.0
12/17/2002	SB-3	Naked Goby	2.0
12/17/2002	SB-4	Alewife	3.0
12/17/2002	SB-4	Atlantic Croaker	1.0
12/17/2002	SB-4	Bay Anchovy	1.0
12/17/2002	SB-4	Blueback Herring	3.0
12/17/2002	SB-4	Little Skate	1.0
12/17/2002	SB-4	Spotted Hake	9.0
12/17/2002	SB-4	Striped Bass	7.0
12/17/2002	SB-4	Winter Flounder	1.0
12/17/2002	SB-6	Bay Anchovy	2.5
12/17/2002	SB-6	Blueback Herring	1.3
12/17/2002	SB-6	Little Skate	3.8
12/17/2002	SB-6	Red Hake	1.3
12/17/2002	SB-6	Spotted Hake	15.0
12/17/2002	SB-6	Striped Bass	1.3
12/17/2002	SB-6	Summer Flounder	3.8
12/17/2002	SB-6	Windowpane	3.8
12/18/2002	AK-1	Bay Anchovy	1.4
12/18/2002	AK-1	Gizzard Shad	2.9
12/18/2002	AK-1	Striped Bass	157.1
12/18/2002	AK-1	White Perch	864.3
12/18/2002	AK-2	Alewife	8.0
12/18/2002	AK-2	Atlantic Menhaden	1.0
12/18/2002	AK-2	Bay Anchovy	1.0
12/18/2002	AK-2	Blueback Herring	5.0
12/18/2002	AK-2	Cunner	1.0
12/18/2002	AK-2	Northern Searobin	1.0
12/18/2002	AK-2	Red Hake	1.0
12/18/2002	AK-2	Spotted Hake	1.0
12/18/2002	AK-2	Striped Bass	1.0
12/18/2002	AK-2	White Perch	11.0
12/18/2002	AK-3	White Perch	3.0
12/18/2002	AK-4	Alewife	1.0
12/18/2002	AK-4	Northern Pipefish	1.0
12/18/2002	AK-4	Striped Bass	13.0
12/18/2002	AK-4	White Perch	2.0
12/18/2002	NB-3	Alewife	4.0
12/18/2002	NB-3	American Sandlance	1.0
12/18/2002	NB-3	Atlantic Menhaden	1.0
12/18/2002	NB-3	Bay Anchovy	1.0
12/18/2002	NB-3	Striped Bass	11.0
12/18/2002	NB-3	White Perch	72.0
12/18/2002	NB-3	Winter Flounder	5.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 3 of 22)

Date	Station	Common Name	CPUE
12/18/2002	NB-4	Alewife	9.0
12/18/2002	NB-4	Atlantic Menhaden	1.0
12/18/2002	NB-4	Gizzard Shad	2.0
12/18/2002	NB-4	Naked Goby	1.0
12/18/2002	NB-4	Striped Bass	24.0
12/18/2002	NB-4	White Perch	22.0
12/18/2002	NB-4	Winter Flounder	1.0
12/18/2002	NB-5	Alewife	2.0
12/18/2002	NB-5	Blueback Herring	1.0
12/18/2002	NB-5	Gizzard Shad	2.0
12/18/2002	NB-5	Striped Bass	28.0
12/18/2002	NB-5	White Perch	96.0
12/18/2002	NB-5	Winter Flounder	1.0
12/18/2002	NB-7	Alewife	31.4
12/18/2002	NB-7	Gizzard Shad	4.3
12/18/2002	NB-7	Silver Hake	1.4
12/18/2002	NB-7	Spotted Hake	2.9
12/18/2002	NB-7	Striped Bass	22.9
12/18/2002	NB-7	White Perch	67.1
12/18/2002	NB-7	Winter Flounder	10.0
12/18/2002	SB-1	Alewife	46.7
12/18/2002	SB-1	American Sandlance	3.3
12/18/2002	SB-1	American Shad	6.7
12/18/2002	SB-1	Atlantic Cod	23.3
12/18/2002	SB-1	Cunner	3.3
12/18/2002	SB-1	Silver Hake	3.3
12/18/2002	SB-1	Spotted Hake	6.7
12/18/2002	SB-1	Striped Bass	100.0
12/18/2002	SB-1	Summer Flounder	3.3
12/18/2002	SB-2	Alewife	10.0
12/18/2002	SB-2	American Sandlance	5.0
12/18/2002	SB-2	Atlantic Croaker	27.5
12/18/2002	SB-2	Little Skate	7.5
12/18/2002	SB-2	Spotted Hake	15.0
12/18/2002	SB-2	Striped Bass	110.0
12/18/2002	SB-2	White Mullet	2.5
12/19/2002	NB-6	Alewife	5.0
12/19/2002	NB-6	Atlantic Menhaden	5.0
12/19/2002	NB-6	Blueback Herring	4.0
12/19/2002	NB-6	Spotted Hake	1.0
12/19/2002	NB-6	Striped Bass	56.0
12/19/2002	NB-6	White Perch	222.0
12/19/2002	NB-6	Winter Flounder	2.0
12/19/2002	PJ-1	Alewife	2.0
12/19/2002	PJ-1	Striped Bass	18.0
12/19/2002	PJ-1	Summer Flounder	5.0
12/19/2002	PJ-2	Alewife	8.0
12/19/2002	PJ-2	American Sandlance	1.0
12/19/2002	PJ-2	American Shad	1.0
12/19/2002	PJ-2	Blueback Herring	2.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 4 of 22)

Date	Station	Common Name	CPUE
12/19/2002	PJ-2	Striped Bass	53.0
12/19/2002	PJ-2	White Perch	1.0
12/19/2002	PJ-2	Winter Flounder	6.0
12/19/2002	PJ-3	American Sandlance	2.5
12/19/2002	PJ-3	Striped Bass	10.0
12/19/2002	PJ-3	Summer Flounder	1.3
12/19/2002	PJ-3	Windowpane	1.3
12/19/2002	PJ-3	Winter Flounder	1.3
12/19/2002	PJ-4	Alewife	2.0
12/19/2002	PJ-4	American Shad	4.0
12/19/2002	PJ-4	Atlantic Croaker	5.0
12/19/2002	PJ-4	Blueback Herring	7.0
12/19/2002	PJ-4	Northern Pipefish	1.0
12/19/2002	PJ-4	Spotted Hake	12.0
12/19/2002	PJ-4	Striped Bass	5.0
12/19/2002	PJ-4	White Perch	4.0
12/19/2002	PJ-4	Winter Flounder	1.0
12/19/2002	PJ-5	Alewife	1.0
12/19/2002	PJ-5	Atlantic Croaker	1.0
12/19/2002	PJ-5	Atlantic Menhaden	1.0
12/19/2002	PJ-5	Bay Anchovy	2.0
12/19/2002	PJ-5	Blueback Herring	5.0
12/19/2002	PJ-5	Northern Pipefish	1.0
12/19/2002	PJ-5	Spotted Hake	18.0
12/19/2002	PJ-5	Striped Bass	12.0
12/19/2002	PJ-5	Weakfish	3.0
12/19/2002	PJ-5	White Perch	1.0
12/19/2002	PJ-5	Winter Flounder	6.0
12/19/2002	SB-5	Alewife	2.0
12/19/2002	SB-5	Atlantic Menhaden	2.0
12/19/2002	SB-5	Blueback Herring	18.0
12/19/2002	SB-5	Little Skate	1.0
12/19/2002	SB-5	Red Hake	2.0
12/19/2002	SB-5	Spotted Hake	5.0
12/19/2002	SB-5	Windowpane	1.0
12/19/2002	SB-5	Winter Flounder	1.0
1/7/2003	AK-4	Striped Bass	19.0
1/7/2003	NB-3	Atlantic Silverside	4.0
1/7/2003	NB-3	Gizzard Shad	1.0
1/7/2003	NB-3	Striped Bass	13.0
1/7/2003	NB-3	White Perch	55.0
1/7/2003	NB-3	Winter Flounder	3.0
1/7/2003	NB-4	Alewife	2.0
1/7/2003	NB-4	Atlantic Silverside	9.0
1/7/2003	NB-4	Striped Bass	13.0
1/7/2003	NB-4	White Perch	81.0
1/7/2003	NB-4	Winter Flounder	2.0
1/7/2003	NB-5	Bay Anchovy	1.0
1/7/2003	NB-5	Blueback Herring	2.0
1/7/2003	NB-5	Spotted Hake	1.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 5 of 22)

Date	Station	Common Name	CPUE
1/7/2003	NB-5	Striped Bass	17.0
1/7/2003	NB-5	White Perch	103.0
1/7/2003	NB-5	Winter Flounder	2.0
1/7/2003	NB-6	Alewife	1.0
1/7/2003	NB-6	Gizzard Shad	1.0
1/7/2003	NB-6	Striped Bass	31.0
1/7/2003	NB-6	White Perch	60.0
1/7/2003	NB-6	Winter Flounder	7.0
1/7/2003	NB-7	Striped Bass	86.0
1/7/2003	NB-7	White Perch	92.0
1/7/2003	NB-7	Winter Flounder	28.0
1/8/2003	AK-1	Naked Goby	1.7
1/8/2003	AK-1	Striped Bass	150.0
1/8/2003	AK-1	Striped Mullet	1.7
1/8/2003	AK-1	White Perch	295.0
1/8/2003	AK-1	Winter Flounder	1.7
1/8/2003	AK-2	Striped Bass	12.0
1/8/2003	AK-2	White Perch	23.0
1/8/2003	AK-2	Windowpane	1.0
1/8/2003	AK-2	Winter Flounder	7.0
1/8/2003	AK-3	Striped Bass	26.0
1/8/2003	AK-3	White Perch	66.0
1/8/2003	AK-3	Winter Flounder	1.0
1/8/2003	LB-1	Atlantic Silverside	1.0
1/8/2003	LB-1	Little Skate	1.0
1/8/2003	LB-1	Summer Flounder	3.0
1/8/2003	LB-1	Windowpane	5.0
1/8/2003	LB-1	Winter Flounder	1.0
1/8/2003	LB-2	Alewife	4.0
1/8/2003	LB-2	American Shad	6.0
1/8/2003	LB-2	Blueback Herring	1.0
1/8/2003	LB-2	Little Skate	3.0
1/8/2003	LB-2	Northern Pipefish	1.0
1/8/2003	LB-2	Red Hake	7.0
1/8/2003	LB-2	Silver Hake	2.0
1/8/2003	LB-2	Spotted Hake	37.0
1/8/2003	LB-2	Summer Flounder	3.0
1/8/2003	LB-3	Alewife	1.0
1/8/2003	LB-3	American Shad	1.0
1/8/2003	LB-3	Atlantic Silverside	6.0
1/8/2003	LB-3	Blueback Herring	2.0
1/8/2003	LB-3	Spotted Hake	2.0
1/8/2003	LB-3	Windowpane	1.0
1/8/2003	LB-4	Alewife	11.0
1/8/2003	LB-4	Atlantic Menhaden	1.0
1/8/2003	LB-4	Bay Anchovy	4.0
1/8/2003	LB-4	Blueback Herring	10.0
1/8/2003	LB-4	Little Skate	26.0
1/8/2003	LB-4	Northern Pipefish	4.0
1/8/2003	LB-4	Red Hake	68.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 6 of 22)

Date	Station	Common Name	CPUE
1/8/2003	LB-4	Silver Hake	10.0
1/8/2003	LB-4	Smallmouth Flounder	1.0
1/8/2003	LB-4	Spotted Hake	313.0
1/8/2003	LB-4	Striped Bass	1.0
1/8/2003	LB-4	Windowpane	4.0
1/8/2003	LB-4	Winter Flounder	2.0
1/8/2003	LB-6	Little Skate	21.0
1/8/2003	LB-6	Northern Pipefish	1.0
1/8/2003	LB-6	Spotted Hake	76.0
1/8/2003	LB-6	Windowpane	6.0
1/8/2003	LB-6	Winter Flounder	6.0
1/8/2003	PJ-2	Atlantic Silverside	2.0
1/8/2003	PJ-2	Smallmouth Flounder	1.0
1/8/2003	PJ-2	Striped Bass	25.0
1/8/2003	PJ-2	Windowpane	2.0
1/8/2003	PJ-2	Winter Flounder	24.0
1/8/2003	PJ-3	Atlantic Silverside	1.0
1/8/2003	PJ-3	Striped Bass	10.0
1/8/2003	PJ-3	Winter Flounder	9.0
1/9/2003	PJ-1	Blueback Herring	1.0
1/9/2003	PJ-1	Striped Bass	14.0
1/9/2003	PJ-1	Winter Flounder	1.0
1/9/2003	PJ-4	Alewife	1.0
1/9/2003	PJ-4	Atlantic Croaker	18.0
1/9/2003	PJ-4	Atlantic Menhaden	1.0
1/9/2003	PJ-4	Bay Anchovy	1.0
1/9/2003	PJ-4	Blueback Herring	1.0
1/9/2003	PJ-4	Conger Eel	1.0
1/9/2003	PJ-4	Little Skate	1.0
1/9/2003	PJ-4	Red Hake	1.0
1/9/2003	PJ-4	Spotted Hake	6.0
1/9/2003	PJ-4	Striped Bass	9.0
1/9/2003	PJ-4	Striped Mullet	1.0
1/9/2003	PJ-4	Windowpane	1.0
1/9/2003	PJ-4	Winter Flounder	7.0
1/9/2003	PJ-5	Alewife	2.0
1/9/2003	PJ-5	Atlantic Croaker	9.0
1/9/2003	PJ-5	Bay Anchovy	1.0
1/9/2003	PJ-5	Cunner	1.0
1/9/2003	PJ-5	Little Skate	5.0
1/9/2003	PJ-5	Smallmouth Flounder	1.0
1/9/2003	PJ-5	Spotted Hake	11.0
1/9/2003	PJ-5	Striped Bass	25.0
1/9/2003	PJ-5	Windowpane	2.0
1/9/2003	PJ-5	Winter Flounder	10.0
1/9/2003	SB-1	Alewife	3.3
1/9/2003	SB-1	Atlantic Croaker	36.7
1/9/2003	SB-1	Spotted Hake	3.3
1/9/2003	SB-1	Striped Bass	23.3
1/9/2003	SB-2	Alewife	2.5



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 7 of 22)

Date	Station	Common Name	CPUE
1/9/2003	SB-2	Atlantic Croaker	25.0
1/9/2003	SB-2	Atlantic Silverside	2.5
1/9/2003	SB-2	Striped Bass	12.5
1/9/2003	SB-3	Alewife	2.0
1/9/2003	SB-3	Grubby	2.0
1/9/2003	SB-3	Seaboard Goby	3.0
1/9/2003	SB-3	Smallmouth Flounder	16.0
1/9/2003	SB-3	Spotted Hake	2.0
1/9/2003	SB-3	Striped Bass	34.0
1/9/2003	SB-3	Windowpane	2.0
1/9/2003	SB-3	Winter Flounder	13.0
1/9/2003	SB-4	Alewife	1.0
1/9/2003	SB-4	Atlantic Croaker	1.0
1/9/2003	SB-4	Bay Anchovy	1.0
1/9/2003	SB-4	Spotted Hake	2.0
1/9/2003	SB-4	Striped Bass	1.0
1/9/2003	SB-5	Alewife	1.0
1/9/2003	SB-5	Atlantic Croaker	1.0
1/9/2003	SB-5	Blueback Herring	2.0
1/9/2003	SB-5	Little Skate	11.0
1/9/2003	SB-5	Northern Pipefish	1.0
1/9/2003	SB-5	Spotted Hake	7.0
1/9/2003	SB-5	Striped Bass	5.0
1/9/2003	SB-5	Windowpane	1.0
1/9/2003	SB-5	Winter Flounder	5.0
1/9/2003	SB-6	Alosa sp.	1.0
1/9/2003	SB-6	Atlantic Croaker	2.0
1/9/2003	SB-6	Black Sea Bass	1.0
1/9/2003	SB-6	Blueback Herring	7.0
1/9/2003	SB-6	Cunner	1.0
1/9/2003	SB-6	Little Skate	15.0
1/9/2003	SB-6	Naked Goby	1.0
1/9/2003	SB-6	Red Hake	7.0
1/9/2003	SB-6	Smallmouth Flounder	3.0
1/9/2003	SB-6	Spotted Hake	28.0
1/9/2003	SB-6	Striped Bass	2.0
1/9/2003	SB-6	Summer Flounder	1.0
1/9/2003	SB-6	Tautog	1.0
1/9/2003	SB-6	Windowpane	23.0
1/9/2003	SB-6	Winter Flounder	3.0
1/21/2003	LB-1	Summer Flounder	1.0
1/21/2003	LB-2	Alewife	1.0
1/21/2003	LB-2	Blueback Herring	1.0
1/21/2003	LB-2	Spotted Hake	6.0
1/21/2003	LB-2	Summer Flounder	1.0
1/21/2003	LB-4	Alewife	4.0
1/21/2003	LB-4	Atlantic Herring	1.0
1/21/2003	LB-4	Atlantic Silverside	1.0
1/21/2003	LB-4	Blueback Herring	29.0
1/21/2003	LB-4	Little Skate	1.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 8 of 22)

Date	Station	Common Name	CPUE
1/21/2003	LB-4	Spotted Hake	2.0
1/21/2003	LB-5	Atlantic Silverside	1.0
1/21/2003	LB-6	Alewife	4.0
1/21/2003	LB-6	Little Skate	9.0
1/21/2003	LB-6	Striped Bass	1.0
1/21/2003	LB-6	Windowpane	1.0
1/21/2003	PJ-2	Bay Anchovy	1.1
1/22/2003	AK-4	Alewife	5.0
1/22/2003	AK-4	Atlantic Silverside	1.0
1/22/2003	AK-4	Striped Bass	1.0
1/22/2003	AK-4	Striped Killifish	2.0
1/22/2003	AK-4	White Perch	1.0
1/22/2003	NB-7	Alewife	2.9
1/22/2003	NB-7	Bay Anchovy	4.3
1/22/2003	NB-7	Silver Hake	1.4
1/22/2003	NB-7	White Perch	2.9
1/22/2003	NB-7	Winter Flounder	1.4
1/22/2003	PJ-1	Conger Eel	1.0
1/22/2003	PJ-1	Striped Bass	9.0
1/22/2003	PJ-1	Winter Flounder	1.0
1/22/2003	PJ-3	Atlantic Silverside	4.0
1/22/2003	PJ-4	Atlantic Croaker	1.0
1/22/2003	PJ-4	Bay Anchovy	4.0
1/22/2003	PJ-4	Blueback Herring	1.0
1/22/2003	PJ-4	Striped Bass	2.0
1/22/2003	PJ-5	Alewife	3.0
1/22/2003	PJ-5	Little Skate	2.0
1/22/2003	PJ-5	Spotted Hake	3.0
1/22/2003	PJ-5	Windowpane	1.0
1/22/2003	PJ-5	Winter Flounder	9.0
1/22/2003	SB-1	Spotted Hake	10.0
1/22/2003	SB-1	Striped Bass	3.3
1/22/2003	SB-2	Alewife	3.3
1/22/2003	SB-2	Cunner	3.3
1/22/2003	SB-2	Grubby	3.3
1/22/2003	SB-2	Striped Bass	6.7
1/22/2003	SB-2	Winter Flounder	3.3
1/22/2003	SB-3	Little Skate	1.0
1/22/2003	SB-3	Smallmouth Flounder	1.0
1/22/2003	SB-4	Alewife	5.0
1/22/2003	SB-4	Atlantic Herring	2.0
1/22/2003	SB-4	Windowpane	1.0
1/22/2003	SB-6	Atlantic Herring	1.0
1/22/2003	SB-6	Blueback Herring	2.0
1/22/2003	SB-6	Windowpane	1.0
1/23/2003	AK-1	Alewife	2.0
1/23/2003	AK-1	Striped Bass	4.0
1/23/2003	AK-1	White Perch	10.0
1/23/2003	AK-2	Atlantic Croaker	1.0
1/23/2003	AK-2	Striped Bass	19.0

Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 9 of 22)

Date	Station	Common Name	CPUE
1/23/2003	AK-2	Tautog	1.0
1/23/2003	AK-2	White Perch	31.0
1/23/2003	AK-2	Winter Flounder	18.0
1/23/2003	AK-3	Alewife	1.3
1/23/2003	AK-3	American Shad	1.3
1/23/2003	AK-3	Striped Bass	5.0
1/23/2003	AK-3	White Perch	50.0
1/23/2003	AK-3	Windowpane	2.5
1/23/2003	AK-3	Winter Flounder	7.5
1/23/2003	NB-3	Atlantic Silverside	4.0
1/23/2003	NB-3	Northern Pipefish	1.0
1/23/2003	NB-3	Spotted Hake	1.0
1/23/2003	NB-3	Striped Bass	2.0
1/23/2003	NB-3	White Perch	10.0
1/23/2003	NB-3	Winter Flounder	2.0
1/23/2003	NB-4	Atlantic Croaker	1.0
1/23/2003	NB-4	Atlantic Silverside	4.0
1/23/2003	NB-4	Striped Bass	1.0
1/23/2003	NB-4	Winter Flounder	1.0
1/23/2003	NB-5	Cunner	1.0
1/23/2003	NB-5	Striped Bass	24.0
1/23/2003	NB-5	White Perch	247.0
1/23/2003	NB-5	Winter Flounder	5.0
1/23/2003	NB-6	Alewife	1.0
1/23/2003	NB-6	Bay Anchovy	1.0
1/23/2003	NB-6	Striped Bass	3.0
1/23/2003	NB-6	White Perch	9.0
1/23/2003	SB-5	Clearnose Skate	1.0
1/23/2003	SB-5	Little Skate	6.0
1/23/2003	SB-5	Silver Hake	1.0
1/23/2003	SB-5	Spotted Hake	4.0
1/23/2003	SB-5	Striped Bass	1.0
1/23/2003	SB-5	Tautog	1.0
1/23/2003	SB-5	Windowpane	11.0
1/23/2003	SB-5	Winter Flounder	7.0
2/4/2003	AK-3	Striped Bass	3.3
2/4/2003	AK-3	White Perch	7.8
2/4/2003	AK-3	Winter Flounder	1.1
2/4/2003	AK-4	White Perch	1.0
2/4/2003	NB-3	Striped Killifish	1.0
2/4/2003	NB-3	White Perch	4.0
2/4/2003	NB-3	Winter Flounder	1.0
2/4/2003	NB-4	Striped Bass	1.0
2/4/2003	NB-4	White Perch	5.0
2/4/2003	NB-5	Red Hake	1.7
2/4/2003	NB-5	Striped Bass	8.3
2/4/2003	NB-5	White Perch	56.7
2/4/2003	NB-5	Windowpane	1.7
2/4/2003	NB-6	Striped Bass	2.0
2/4/2003	NB-6	White Perch	3.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 10 of 22)

Date	Station	Common Name	CPUE
2/4/2003	NB-6	Winter Flounder	1.0
2/5/2003	AK-1	American Shad	1.7
2/5/2003	AK-1	White Perch	1.7
2/5/2003	AK-2	Striped Bass	1.0
2/5/2003	AK-2	White Perch	1.0
2/5/2003	AK-2	Winter Flounder	2.0
2/5/2003	LB-2	Tautog	1.0
2/5/2003	LB-3	Little Skate	3.0
2/5/2003	LB-3	Smallmouth Flounder	1.0
2/5/2003	LB-3	Windowpane	1.0
2/5/2003	LB-3	Winter Flounder	1.0
2/5/2003	LB-6	Atlantic Silverside	2.0
2/5/2003	LB-6	Little Skate	4.0
2/5/2003	LB-6	Windowpane	1.0
2/5/2003	SB-6	American Shad	3.3
2/5/2003	SB-6	Blueback Herring	6.7
2/5/2003	SB-6	Little Skate	3.3
2/5/2003	SB-6	Red Hake	3.3
2/5/2003	SB-6	Windowpane	16.7
2/5/2003	SB-6	Winter Flounder	13.3
2/6/2003	PJ-1	Windowpane	1.0
2/6/2003	PJ-2	Winter Flounder	1.1
2/6/2003	PJ-4	Striped Bass	10.0
2/6/2003	PJ-4	Winter Flounder	6.7
2/6/2003	PJ-5	Striped Bass	4.0
2/6/2003	PJ-5	Winter Flounder	8.0
2/6/2003	SB-2	Naked Goby	2.5
2/6/2003	SB-3	Grubby	1.0
2/6/2003	SB-3	Striped Bass	1.0
2/6/2003	SB-3	Windowpane	10.0
2/6/2003	SB-3	Winter Flounder	6.0
2/6/2003	SB-4	Blueback Herring	7.0
2/6/2003	SB-4	Grubby	1.0
2/6/2003	SB-4	White Perch	1.0
2/6/2003	SB-5	Striped Bass	1.0
2/6/2003	SB-5	Windowpane	19.0
2/6/2003	SB-5	Winter Flounder	13.0
2/19/2003	LB-1	Atlantic Herring	1.0
2/19/2003	LB-1	Atlantic Silverside	1.0
2/19/2003	LB-1	Blueback Herring	1.0
2/19/2003	LB-1	Little Skate	10.0
2/19/2003	LB-3	Atlantic Silverside	1.0
2/19/2003	LB-3	Blueback Herring	1.0
2/19/2003	LB-3	Little Skate	1.0
2/19/2003	LB-4	Blueback Herring	1.0
2/19/2003	LB-4	Little Skate	4.0
2/19/2003	LB-4	Winter Flounder	1.0
2/19/2003	LB-6	Little Skate	1.0
2/19/2003	PJ-2	Striped Bass	2.0
2/20/2003	AK-1	Striped Bass	1.3



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 11 of 22)

Date	Station	Common Name	CPUE
2/20/2003	AK-1	White Perch	5.0
2/20/2003	AK-1	Winter Flounder	2.5
2/20/2003	AK-2	Hogchocker	1.0
2/20/2003	AK-2	Striped Bass	19.0
2/20/2003	AK-2	White Perch	18.0
2/20/2003	AK-2	Winter Flounder	10.0
2/20/2003	AK-4	White Perch	1.0
2/20/2003	NB-5	Striped Bass	2.0
2/20/2003	NB-5	White Perch	7.0
2/20/2003	NB-5	Winter Flounder	1.0
2/20/2003	PJ-1	Cunner	2.0
2/20/2003	PJ-1	Smallmouth Flounder	1.0
2/20/2003	PJ-1	Striped Bass	1.0
2/20/2003	PJ-3	White Perch	1.0
2/20/2003	PJ-5	Atlantic Tomcod	1.0
2/20/2003	PJ-5	Striped Bass	5.0
2/20/2003	PJ-5	Windowpane	1.0
2/20/2003	PJ-5	Winter Flounder	2.0
2/21/2003	NB-3	Spotted Hake	1.0
2/21/2003	NB-3	White Perch	1.0
2/21/2003	NB-3	Winter Flounder	1.0
2/21/2003	NB-4	Striped Bass	2.0
2/21/2003	NB-4	White Perch	1.0
2/21/2003	NB-6	Winter Flounder	2.5
2/21/2003	NB-7	Winter Flounder	1.1
2/21/2003	PJ-4	Atlantic Silverside	1.7
2/21/2003	PJ-4	Striped Bass	8.3
2/21/2003	PJ-4	Windowpane	1.7
2/21/2003	SB-2	Conger Eel	3.3
2/21/2003	SB-3	Windowpane	1.0
2/21/2003	SB-4	Red Hake	2.0
2/21/2003	SB-4	Striped Bass	3.0
2/21/2003	SB-4	Windowpane	1.0
2/21/2003	SB-4	Winter Flounder	1.0
2/21/2003	SB-6	Striped Bass	1.0
2/21/2003	SB-6	White Perch	1.0
3/4/2003	LB-2	Bay Anchovy	18.0
3/4/2003	LB-2	Windowpane	1.0
3/4/2003	LB-4	American Shad	1.0
3/4/2003	LB-4	Bay Anchovy	13.0
3/4/2003	LB-4	Cunner	1.0
3/4/2003	LB-4	Little Skate	2.0
3/4/2003	LB-4	Windowpane	2.0
3/4/2003	LB-5	Windowpane	3.0
3/4/2003	LB-6	Little Skate	1.0
3/4/2003	LB-6	Windowpane	1.0
3/4/2003	PJ-2	Atlantic Silverside	1.7
3/5/2003	AK-3	Striped Bass	1.1
3/5/2003	AK-3	White Perch	1.1
3/5/2003	NB-6	Striped Bass	6.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 12 of 22)

Date	Station	Common Name	CPUE
3/5/2003	NB-6	White Perch	1.0
3/5/2003	NB-6	Winter Flounder	4.0
3/5/2003	NB-7	Striped Bass	1.7
3/5/2003	NB-7	Winter Flounder	1.7
3/5/2003	PJ-4	Gizzard Shad	1.1
3/5/2003	PJ-5	Winter Flounder	1.1
3/6/2003	AK-1	Striped Bass	3.0
3/6/2003	AK-1	White Perch	1.0
3/6/2003	AK-1	Winter Flounder	1.0
3/7/2003	HR-1	Naked Goby	4.0
3/7/2003	PJ-1	Atlantic Silverside	1.0
3/7/2003	PJ-1	Grubby	1.0
3/7/2003	PJ-1	Winter Flounder	2.0
3/7/2003	SB-3	Red Hake	1.0
3/7/2003	SB-3	Windowpane	10.0
3/7/2003	SB-3	Winter Flounder	2.0
3/7/2003	SB-4	Blueback Herring	2.0
3/7/2003	SB-4	Little Skate	1.0
3/7/2003	SB-4	Red Hake	1.0
3/7/2003	SB-4	Windowpane	6.0
3/7/2003	SB-6	Cunner	1.0
3/7/2003	SB-6	Little Skate	1.0
3/7/2003	SB-6	Windowpane	4.0
3/8/2003	HR-2	Striped Killifish	5.0
3/8/2003	SB-5	Blueback Herring	1.0
3/8/2003	SB-5	Grubby	1.0
3/18/2003	LB-1	Winter Flounder	1.0
3/18/2003	LB-2	Windowpane	1.0
3/18/2003	LB-3	Windowpane	2.0
3/18/2003	LB-4	Windowpane	1.0
3/18/2003	LB-5	Windowpane	1.0
3/18/2003	LB-6	Little Skate	3.0
3/18/2003	LB-6	Red Hake	1.0
3/18/2003	LB-6	Windowpane	2.0
3/18/2003	SB-4	Bay Anchovy	3.0
3/18/2003	SB-4	Cunner	1.0
3/18/2003	SB-4	Grubby	1.0
3/18/2003	SB-4	Little Skate	1.0
3/18/2003	SB-4	Naked Goby	1.0
3/18/2003	SB-4	Red Hake	4.0
3/18/2003	SB-4	Spotted Hake	1.0
3/18/2003	SB-4	Windowpane	5.0
3/18/2003	SB-4	Winter Flounder	4.0
3/19/2003	AK-4	Bay Anchovy	1.0
3/19/2003	AK-4	Seaboard Goby	1.0
3/19/2003	AK-4	Striped Bass	1.0
3/19/2003	AK-4	White Perch	1.0
3/19/2003	SB-1	Bay Anchovy	5.0
3/19/2003	SB-2	Northern Pipefish	2.5
3/19/2003	SB-3	Bay Anchovy	7.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 13 of 22)

Date	Station	Common Name	CPUE
3/19/2003	SB-3	Blueback Herring	1.0
3/19/2003	SB-3	Cunner	1.0
3/19/2003	SB-3	Northern Pipefish	1.0
3/19/2003	SB-3	Red Hake	1.0
3/19/2003	SB-3	Windowpane	4.0
3/19/2003	SB-3	Winter Flounder	1.0
3/19/2003	SB-6	Blueback Herring	1.0
3/19/2003	SB-6	Little Skate	2.0
3/19/2003	SB-6	Naked Goby	1.0
3/19/2003	SB-6	Red Hake	3.0
3/19/2003	SB-6	Spotted Hake	2.0
3/19/2003	SB-6	Windowpane	17.0
3/19/2003	SB-6	Winter Flounder	3.0
3/21/2003	NB-3	American Shad	1.0
3/21/2003	NB-3	Striped Bass	2.0
3/21/2003	NB-3	White Perch	1.0
3/21/2003	NB-4	Striped Bass	2.0
3/21/2003	NB-4	White Perch	1.0
3/21/2003	NB-4	Winter Flounder	3.0
3/21/2003	NB-5	Striped Bass	2.0
3/21/2003	NB-5	White Perch	3.0
3/21/2003	NB-6	Striped Bass	3.0
3/22/2003	AK-1	Striped Bass	10.0
3/22/2003	AK-1	White Perch	3.3
3/22/2003	AK-3	Blueback Herring	3.0
3/22/2003	AK-3	Northern Pipefish	1.0
3/22/2003	AK-3	Spotted Hake	1.0
3/22/2003	AK-3	Striped Bass	6.0
3/22/2003	AK-3	White Perch	5.0
3/22/2003	AK-3	Windowpane	2.0
3/22/2003	AK-3	Winter Flounder	1.0
3/22/2003	NB-7	Striped Bass	12.5
3/22/2003	PJ-2	Spotted Hake	1.0
3/22/2003	PJ-2	Striped Bass	10.0
3/22/2003	PJ-2	Windowpane	1.0
3/23/2003	HR-1	Bay Anchovy	2.0
3/23/2003	HR-1	Conger Eel	4.0
3/23/2003	HR-1	Striped Bass	4.0
3/23/2003	PJ-1	Striped Bass	1.0
3/23/2003	PJ-3	Striped Bass	2.0
3/23/2003	PJ-4	Spotted Hake	1.7
3/23/2003	PJ-4	Striped Bass	5.0
3/23/2003	PJ-4	Winter Flounder	1.7
3/23/2003	PJ-5	Bay Anchovy	5.0
3/23/2003	PJ-5	Northern Pipefish	1.0
3/23/2003	SB-5	American Shad	6.0
3/23/2003	SB-5	Bay Anchovy	1.0
3/23/2003	SB-5	Little Skate	3.0
3/23/2003	SB-5	Spotted Hake	1.0
3/23/2003	SB-5	Windowpane	1.0

Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 14 of 22)

Date	Station	Common Name	CPUE
3/23/2003	SB-5	Winter Flounder	6.0
4/15/2003	LB-6	Winter Flounder	3.0
4/16/2003	LB-1	Little Skate	2.0
4/16/2003	LB-1	Northern Puffer	2.0
4/16/2003	LB-1	Northern Searobin	1.0
4/16/2003	LB-1	Smallmouth Flounder	1.0
4/16/2003	LB-1	Spotted Hake	4.0
4/16/2003	LB-1	Windowpane	2.0
4/16/2003	LB-1	Winter Flounder	11.0
4/16/2003	LB-2	Windowpane	1.0
4/16/2003	LB-3	Little Skate	1.0
4/16/2003	LB-3	Northern Puffer	1.0
4/16/2003	LB-3	Red Hake	2.0
4/16/2003	LB-3	Spotted Hake	41.0
4/16/2003	LB-3	Windowpane	1.0
4/16/2003	LB-3	Winter Flounder	2.0
4/16/2003	LB-4	Red Hake	1.0
4/16/2003	LB-4	Spotted Hake	6.0
4/16/2003	LB-4	Winter Flounder	2.0
4/16/2003	SB-6	Cunner	2.0
4/16/2003	SB-6	Little Skate	5.0
4/16/2003	SB-6	Northern Puffer	2.0
4/16/2003	SB-6	Red Hake	1.0
4/16/2003	SB-6	Smallmouth Flounder	3.0
4/16/2003	SB-6	Spotted Hake	89.0
4/16/2003	SB-6	Striped Cuskeel	4.0
4/16/2003	SB-6	Summer Flounder	1.0
4/16/2003	SB-6	Windowpane	34.0
4/17/2003	AK-1	Atlantic Herring	6.0
4/17/2003	AK-1	Blueback Herring	2.0
4/17/2003	AK-1	Smallmouth Flounder	8.0
4/17/2003	AK-1	Spotted Hake	118.0
4/17/2003	AK-1	Striped Bass	34.0
4/17/2003	AK-1	Striped Cuskeel	6.0
4/17/2003	AK-1	White Perch	18.0
4/17/2003	AK-1	Windowpane	4.0
4/17/2003	AK-3	Striped Bass	1.0
4/17/2003	AK-3	Summer Flounder	1.0
4/17/2003	AK-3	Winter Flounder	1.0
4/17/2003	AK-4	Alewife	2.0
4/17/2003	AK-4	Atlantic Herring	13.0
4/17/2003	AK-4	Blueback Herring	2.0
4/17/2003	HR-2	Atlantic Herring	5.0
4/17/2003	HR-2	Silver Hake	5.0
4/17/2003	HR-2	Spotted Hake	30.0
4/17/2003	HR-2	Striped Bass	10.0
4/17/2003	PJ-1	Grubby	2.0
4/17/2003	PJ-1	Striped Bass	14.0
4/17/2003	PJ-1	Windowpane	2.0
4/17/2003	PJ-1	Winter Flounder	33.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 15 of 22)

Date	Station	Common Name	CPUE
4/17/2003	PJ-2	Pollock	2.0
4/17/2003	PJ-2	Spotted Hake	1.0
4/17/2003	PJ-2	Striped Bass	3.0
4/17/2003	PJ-2	Winter Flounder	4.0
4/17/2003	SB-1	Alewife	15.0
4/17/2003	SB-1	Northern Searobin	5.0
4/17/2003	SB-1	Smallmouth Flounder	5.0
4/17/2003	SB-1	Spotted Hake	35.0
4/17/2003	SB-1	Striped Bass	170.0
4/17/2003	SB-1	Windowpane	5.0
4/17/2003	SB-1	Winter Flounder	10.0
4/17/2003	SB-2	Alewife	6.7
4/17/2003	SB-2	Blueback Herring	3.3
4/17/2003	SB-2	Spotted Hake	76.7
4/17/2003	SB-2	Striped Bass	30.0
4/17/2003	SB-3	Little Skate	1.0
4/17/2003	SB-3	Northern Puffer	1.0
4/17/2003	SB-3	Smallmouth Flounder	2.0
4/17/2003	SB-3	Spotted Hake	10.0
4/17/2003	SB-3	Striped Bass	15.0
4/17/2003	SB-3	Windowpane	4.0
4/17/2003	SB-3	Winter Flounder	15.0
4/17/2003	SB-4	Little Skate	3.0
4/17/2003	SB-4	Northern Puffer	1.0
4/17/2003	SB-4	Spotted Hake	161.0
4/17/2003	SB-4	Striped Bass	4.0
4/17/2003	SB-4	Striped Cuskeel	2.0
4/17/2003	SB-4	Summer Flounder	1.0
4/17/2003	SB-4	Windowpane	9.0
4/17/2003	SB-4	Winter Flounder	8.0
4/17/2003	SB-5	Red Hake	2.0
4/17/2003	SB-5	Spotted Hake	14.0
4/17/2003	SB-5	Striped Cuskeel	2.0
4/17/2003	SB-5	Windowpane	1.0
4/17/2003	SB-5	Winter Flounder	3.0
4/18/2003	NB-3	Atlantic Herring	9.0
4/18/2003	NB-3	Blueback Herring	1.0
4/18/2003	NB-3	Cunner	1.0
4/18/2003	NB-3	Northern Puffer	1.0
4/18/2003	NB-3	Red Hake	1.0
4/18/2003	NB-3	Smallmouth Flounder	35.0
4/18/2003	NB-3	Spotted Hake	13.0
4/18/2003	NB-3	Striped Bass	10.0
4/18/2003	NB-3	White Perch	30.0
4/18/2003	NB-3	Windowpane	1.0
4/18/2003	NB-3	Winter Flounder	2.0
4/18/2003	NB-4	Atlantic Herring	1.0
4/18/2003	NB-4	Spotted Hake	2.0
4/18/2003	NB-4	Striped Bass	10.0
4/18/2003	NB-4	White Perch	4.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 16 of 22)

Date	Station	Common Name	CPUE
4/22/2003	NB-5	Spotted Hake	33.0
4/22/2003	NB-5	Striped Bass	5.0
4/22/2003	NB-5	White Perch	1.0
4/22/2003	NB-7	Alewife	2.2
4/22/2003	NB-7	American Eel	1.1
4/22/2003	NB-7	Atlantic Herring	12.2
4/22/2003	NB-7	Spotted Hake	3.3
4/22/2003	NB-7	Striped Bass	33.3
4/22/2003	NB-7	Summer Flounder	1.1
4/22/2003	NB-7	White Perch	15.6
4/22/2003	NB-7	Winter Flounder	8.9
4/23/2003	AK-2	Spotted Hake	7.0
4/23/2003	AK-2	Striped Bass	1.0
4/23/2003	AK-2	Winter Flounder	2.0
4/23/2003	HR-1	Atlantic Herring	5.0
4/23/2003	HR-1	Spotted Hake	15.0
4/23/2003	NB-6	Atlantic Herring	12.0
4/23/2003	NB-6	Black Sea Bass	1.0
4/23/2003	NB-6	Spotted Hake	44.0
4/23/2003	NB-6	Striped Bass	2.0
4/23/2003	NB-6	Summer Flounder	1.0
4/23/2003	NB-6	Winter Flounder	1.0
4/23/2003	PJ-3	Alewife	2.0
4/23/2003	PJ-3	Spotted Hake	2.0
4/23/2003	PJ-3	Striped Bass	7.0
4/23/2003	PJ-3	Winter Flounder	1.0
4/23/2003	PJ-4	Atlantic Herring	2.0
4/23/2003	PJ-4	Blueback Herring	1.0
4/23/2003	PJ-4	Cunner	1.0
4/23/2003	PJ-4	Spotted Hake	68.0
4/23/2003	PJ-4	Striped Bass	2.0
4/23/2003	PJ-5	Atlantic Herring	2.0
4/23/2003	PJ-5	Spotted Hake	1.0
5/13/2003	LB-1	Bay Anchovy	2.0
5/13/2003	LB-1	Little Skate	1.0
5/13/2003	LB-1	Winter Flounder	1.0
5/13/2003	LB-2	Little Skate	2.0
5/13/2003	LB-2	Scup	4.0
5/13/2003	LB-2	Spotted Hake	15.0
5/13/2003	LB-2	Summer Flounder	1.0
5/13/2003	LB-2	Windowpane	2.0
5/13/2003	LB-2	Winter Flounder	7.0
5/13/2003	LB-4	Atlantic Herring	20.0
5/13/2003	LB-4	Bay Anchovy	1.0
5/13/2003	LB-4	Gadid unidentified	1.0
5/13/2003	LB-4	Little Skate	1.0
5/13/2003	LB-4	Red Hake	1.0
5/13/2003	LB-4	Spotted Hake	198.0
5/13/2003	LB-4	Summer Flounder	3.0
5/13/2003	LB-4	Windowpane	3.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 17 of 22)

Date	Station	Common Name	CPUE
5/13/2003	LB-4	Winter Flounder	14.0
5/13/2003	LB-5	Bay Anchovy	2.0
5/13/2003	LB-5	Spotted Hake	29.0
5/13/2003	LB-5	Striped Searobin	2.0
5/13/2003	LB-5	Summer Flounder	1.0
5/13/2003	LB-5	Windowpane	4.0
5/14/2003	AK-1	Bay Anchovy	1.1
5/14/2003	AK-2	Bay Anchovy	2.0
5/14/2003	AK-2	Blueback Herring	1.0
5/14/2003	AK-2	Northern Searobin	1.0
5/14/2003	AK-2	Red Hake	2.0
5/14/2003	AK-2	Spotted Hake	45.0
5/14/2003	AK-2	Windowpane	3.0
5/14/2003	AK-3	American Eel	1.1
5/14/2003	AK-3	Bay Anchovy	18.9
5/14/2003	AK-3	Smallmouth Flounder	1.1
5/14/2003	AK-3	Spotted Hake	63.3
5/14/2003	AK-3	Striped Bass	4.4
5/14/2003	AK-3	Striped Searobin	1.1
5/14/2003	AK-3	Summer Flounder	1.1
5/14/2003	AK-3	Windowpane	1.1
5/14/2003	AK-4	Atlantic Herring	1.0
5/14/2003	AK-4	Bay Anchovy	5.0
5/14/2003	AK-4	Spotted Hake	4.0
5/14/2003	AK-4	Striped Bass	3.0
5/14/2003	AK-4	White Perch	1.0
5/14/2003	AK-4	Winter Flounder	1.0
5/14/2003	LB-3	Atlantic Herring	4.0
5/14/2003	LB-3	Bay Anchovy	2.0
5/14/2003	LB-3	Gadid unidentified	1.0
5/14/2003	LB-3	Little Skate	1.0
5/14/2003	LB-3	Spotted Hake	13.0
5/14/2003	LB-3	Summer Flounder	1.0
5/14/2003	LB-6	Atlantic Herring	262.0
5/14/2003	LB-6	Red Hake	2.0
5/14/2003	LB-6	Spotted Hake	15.0
5/14/2003	LB-6	Summer Flounder	2.0
5/14/2003	LB-6	Windowpane	2.0
5/14/2003	LB-6	Winter Flounder	7.0
5/15/2003	HR-1	Atlantic Tomcod	35.0
5/15/2003	HR-1	Bay Anchovy	45.0
5/15/2003	HR-1	Naked Goby	5.0
5/15/2003	HR-1	Spotted Hake	60.0
5/15/2003	HR-1	Striped Searobin	30.0
5/15/2003	HR-1	Summer Flounder	5.0
5/15/2003	HR-1	Windowpane	5.0
5/15/2003	HR-1	Winter Flounder	10.0
5/15/2003	HR-2	Atlantic Herring	7.5
5/15/2003	HR-2	Bay Anchovy	15.0
5/15/2003	HR-2	Spotted Hake	10.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 18 of 22)

Date	Station	Common Name	CPUE
5/15/2003	NB-3	Bay Anchovy	6.0
5/15/2003	NB-3	Spotted Hake	7.0
5/15/2003	NB-3	Striped Bass	5.0
5/15/2003	NB-3	Summer Flounder	1.0
5/15/2003	NB-3	White Perch	1.0
5/15/2003	NB-3	Winter Flounder	1.0
5/15/2003	NB-4	Alewife	2.0
5/15/2003	NB-4	Atlantic Herring	2.0
5/15/2003	NB-4	Bay Anchovy	53.0
5/15/2003	NB-4	Spotted Hake	6.0
5/15/2003	NB-4	Striped Bass	2.0
5/15/2003	NB-4	Summer Flounder	1.0
5/15/2003	NB-4	Tautog	1.0
5/15/2003	NB-4	White Perch	1.0
5/15/2003	NB-4	Winter Flounder	1.0
5/15/2003	NB-5	Atlantic Herring	3.0
5/15/2003	NB-5	Bay Anchovy	6.0
5/15/2003	NB-5	Spotted Hake	166.0
5/15/2003	NB-5	Striped Bass	1.0
5/15/2003	NB-5	Windowpane	1.0
5/15/2003	NB-6	Atlantic Herring	11.0
5/15/2003	NB-6	Bay Anchovy	2.0
5/15/2003	NB-6	Blueback Herring	1.0
5/15/2003	NB-6	Northern Stargazer	1.0
5/15/2003	NB-6	Spotted Hake	7.0
5/15/2003	NB-6	Striped Searobin	1.0
5/15/2003	NB-6	Winter Flounder	1.0
5/15/2003	NB-7	Alewife	1.0
5/15/2003	NB-7	Atlantic Herring	1.0
5/15/2003	NB-7	Atlantic Tomcod	6.0
5/15/2003	NB-7	Bay Anchovy	785.0
5/15/2003	NB-7	Spotted Hake	12.0
5/15/2003	NB-7	Striped Bass	3.0
5/15/2003	NB-7	Summer Flounder	7.0
5/15/2003	NB-7	Winter Flounder	2.0
5/15/2003	PJ-2	Atlantic Tomcod	100.0
5/15/2003	PJ-2	Bay Anchovy	35.0
5/15/2003	PJ-2	Cunner	1.0
5/15/2003	PJ-2	Pollock	1.0
5/15/2003	PJ-2	Spotted Hake	9.0
5/15/2003	PJ-2	Striped Bass	5.0
5/15/2003	PJ-2	Striped Searobin	2.0
5/15/2003	PJ-2	Summer Flounder	4.0
5/15/2003	PJ-2	Windowpane	2.0
5/15/2003	PJ-2	Winter Flounder	2.0
5/15/2003	PJ-3	Atlantic Herring	5.0
5/15/2003	PJ-3	Atlantic Tomcod	2.0
5/15/2003	PJ-3	Bay Anchovy	31.0
5/15/2003	PJ-3	Pollock	1.0
5/15/2003	PJ-3	Spotted Hake	9.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 19 of 22)

Date	Station	Common Name	CPUE
5/15/2003	PJ-3	Striped Bass	2.0
5/15/2003	PJ-3	Summer Flounder	3.0
5/15/2003	PJ-3	Windowpane	1.0
5/15/2003	PJ-3	Winter Flounder	5.0
5/15/2003	PJ-4	Atlantic Herring	17.0
5/15/2003	PJ-4	Bay Anchovy	2.0
5/15/2003	PJ-4	Spotted Hake	23.0
5/15/2003	PJ-4	Striped Searobin	1.0
5/15/2003	PJ-4	Summer Flounder	3.0
5/15/2003	PJ-4	Windowpane	1.0
5/15/2003	SB-1	Alewife	3.3
5/15/2003	SB-1	Atlantic Tomcod	3.3
5/15/2003	SB-1	Bay Anchovy	80.0
5/15/2003	SB-1	Spotted Hake	10.0
5/15/2003	SB-1	Striped Bass	6.7
5/15/2003	SB-1	White Perch	3.3
5/15/2003	SB-1	Windowpane	6.7
5/15/2003	SB-1	Winter Flounder	3.3
5/15/2003	SB-2	Atlantic Herring	20.0
5/15/2003	SB-2	Atlantic Tomcod	3.3
5/15/2003	SB-2	Bay Anchovy	63.3
5/15/2003	SB-3	Atlantic Herring	1.0
5/15/2003	SB-3	Atlantic Menhaden	1.0
5/15/2003	SB-3	Atlantic Tomcod	1.0
5/15/2003	SB-3	Bay Anchovy	19.0
5/15/2003	SB-3	Black Sea Bass	1.0
5/15/2003	SB-3	Little Skate	1.0
5/15/2003	SB-3	Red Hake	2.0
5/15/2003	SB-3	Scup	1.0
5/15/2003	SB-3	Smallmouth Flounder	2.0
5/15/2003	SB-3	Spotted Hake	28.0
5/15/2003	SB-3	Striped Searobin	6.0
5/15/2003	SB-3	Summer Flounder	12.0
5/15/2003	SB-3	Windowpane	4.0
5/15/2003	SB-3	Winter Flounder	5.0
5/15/2003	SB-4	Atlantic Herring	7.0
5/15/2003	SB-4	Bay Anchovy	13.0
5/15/2003	SB-4	Little Skate	1.0
5/15/2003	SB-4	Spotted Hake	48.0
5/15/2003	SB-4	Striped Searobin	8.0
5/15/2003	SB-4	Windowpane	2.0
5/15/2003	SB-4	Winter Flounder	3.0
5/16/2003	PJ-1	Atlantic Herring	3.0
5/16/2003	PJ-1	Atlantic Tomcod	3.0
5/16/2003	PJ-1	Bay Anchovy	11.0
5/16/2003	PJ-1	Blueback Herring	1.0
5/16/2003	PJ-1	Grubby	1.0
5/16/2003	PJ-1	Smallmouth Flounder	1.0
5/16/2003	PJ-1	Spotted Hake	24.0
5/16/2003	PJ-1	Striped Bass	2.0



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 20 of 22)

Date	Station	Common Name	CPUE
5/16/2003	PJ-1	Striped Searobin	4.0
5/16/2003	PJ-1	Summer Flounder	5.0
5/16/2003	PJ-1	Windowpane	2.0
5/16/2003	PJ-1	Winter Flounder	26.0
5/16/2003	PJ-5	Atlantic Herring	12.2
5/16/2003	PJ-5	Bay Anchovy	16.7
5/16/2003	PJ-5	Grubby	1.1
5/16/2003	SB-5	Red Hake	12.0
5/16/2003	SB-5	Spotted Hake	23.0
5/16/2003	SB-5	Tautog	1.0
5/16/2003	SB-5	Windowpane	3.0
5/16/2003	SB-5	Winter Flounder	2.0
5/16/2003	SB-6	Atlantic Herring	6.0
5/16/2003	SB-6	Bay Anchovy	4.0
5/16/2003	SB-6	Little Skate	2.0
5/16/2003	SB-6	Spotted Hake	12.0
5/16/2003	SB-6	Striped Searobin	1.0
5/16/2003	SB-6	Summer Flounder	3.0
5/16/2003	SB-6	Windowpane	7.0
5/16/2003	SB-6	Winter Flounder	1.0
6/17/2003	LB-3	Bay Anchovy	81.0
6/17/2003	LB-3	Blueback Herring	1.0
6/17/2003	LB-3	Bluefish	1.0
6/17/2003	LB-3	Scup	3.0
6/17/2003	LB-3	Spotted Hake	4.0
6/17/2003	LB-3	Striped Cuskeel	1.0
6/17/2003	PJ-2	Atlantic Tomcod	6.0
6/17/2003	PJ-2	Bay Anchovy	67.0
6/17/2003	PJ-2	Spotted Hake	1.0
6/17/2003	PJ-2	Summer Flounder	1.0
6/17/2003	PJ-2	Windowpane	1.0
6/18/2003	AK-1	American Shad	1.3
6/18/2003	AK-1	Bay Anchovy	20.0
6/18/2003	AK-1	Spotted Hake	1.3
6/18/2003	AK-1	Striped Bass	3.8
6/18/2003	AK-2	American Eel	2.0
6/18/2003	AK-2	Atlantic Tomcod	5.0
6/18/2003	AK-2	Bay Anchovy	3.0
6/18/2003	AK-2	Smallmouth Flounder	1.0
6/18/2003	AK-2	Spotted Hake	35.0
6/18/2003	AK-2	Summer Flounder	1.0
6/18/2003	AK-2	Windowpane	1.0
6/18/2003	AK-2	Winter Flounder	12.0
6/18/2003	AK-3	Atlantic Tomcod	7.1
6/18/2003	AK-3	Bay Anchovy	2.9
6/18/2003	AK-3	Bluefish	1.4
6/18/2003	AK-3	Smallmouth Flounder	2.9
6/18/2003	AK-3	Spotted Hake	42.9
6/18/2003	AK-3	Windowpane	1.4
6/18/2003	AK-3	Winter Flounder	1.4



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 21 of 22)

Date	Station	Common Name	CPUE
6/18/2003	AK-4	Bay Anchovy	4.0
6/18/2003	AK-4	Northern Pipefish	1.0
6/18/2003	HR-1	Atlantic Tomcod	125.0
6/18/2003	HR-1	Bay Anchovy	105.0
6/18/2003	HR-1	Blueback Herring	5.0
6/18/2003	HR-1	Red Hake	5.0
6/18/2003	HR-1	Shortnose Sturgeon	10.0
6/18/2003	HR-1	Spotted Hake	75.0
6/18/2003	HR-1	Summer Flounder	5.0
6/18/2003	HR-1	Weakfish	10.0
6/18/2003	HR-1	Winter Flounder	115.0
6/18/2003	PJ-3	Atlantic Tomcod	10.0
6/18/2003	PJ-3	Bay Anchovy	71.0
6/18/2003	PJ-3	Red Hake	1.0
6/18/2003	PJ-3	Spotted Hake	2.0
6/18/2003	PJ-3	Striped Bass	1.0
6/18/2003	PJ-3	Summer Flounder	3.0
6/18/2003	PJ-3	Weakfish	1.0
6/18/2003	PJ-3	Winter Flounder	4.0
6/18/2003	PJ-4	Atlantic Tomcod	1.0
6/18/2003	PJ-4	Bay Anchovy	18.0
6/18/2003	PJ-4	Blueback Herring	2.0
6/18/2003	PJ-4	Spotted Hake	2.0
6/18/2003	PJ-5	Atlantic Tomcod	4.0
6/18/2003	PJ-5	Bay Anchovy	4.0
6/18/2003	PJ-5	Red Hake	2.0
6/18/2003	PJ-5	Spotted Hake	25.0
6/18/2003	PJ-5	Striped Searobin	1.0
6/18/2003	PJ-5	Summer Flounder	1.0
6/18/2003	PJ-5	Weakfish	1.0
6/18/2003	PJ-5	Windowpane	2.0
6/18/2003	PJ-5	Winter Flounder	5.0
6/18/2003	SB-1	Atlantic Tomcod	85.0
6/18/2003	SB-1	Bay Anchovy	75.0
6/18/2003	SB-1	Spotted Hake	5.0
6/18/2003	SB-1	Windowpane	5.0
6/18/2003	SB-2	Atlantic Tomcod	60.0
6/18/2003	SB-2	Bay Anchovy	10.0
6/18/2003	SB-2	Smallmouth Flounder	3.3
6/18/2003	SB-2	Spotted Hake	6.7
6/18/2003	SB-2	Windowpane	3.3
6/18/2003	SB-3	Atlantic Tomcod	11.0
6/18/2003	SB-3	Spotted Hake	3.0
6/19/2003	NB-3	Atlantic Tomcod	3.0
6/19/2003	NB-3	Bay Anchovy	2.0
6/19/2003	NB-3	Striped Bass	2.0
6/19/2003	NB-3	Winter Flounder	1.0
6/19/2003	NB-4	Bay Anchovy	1.0
6/19/2003	NB-4	Winter Flounder	2.0
6/19/2003	NB-5	Atlantic Menhaden	1.4



Appendix A. Adult finfish (trawl) CPUEs by date and sample location. (page 22 of 22)

Date	Station	Common Name	CPUE
6/19/2003	NB-5	Atlantic Tomcod	8.6
6/19/2003	NB-5	Bay Anchovy	12.9
6/19/2003	NB-5	Spotted Hake	2.9
6/19/2003	NB-6	American Eel	1.0
6/19/2003	NB-6	Atlantic Herring	1.0
6/19/2003	NB-6	Atlantic Tomcod	18.0
6/19/2003	NB-6	Bay Anchovy	6.0
6/19/2003	NB-6	Cunner	1.0
6/19/2003	NB-6	Northern Searobin	1.0
6/19/2003	NB-6	Oyster Toadfish	1.0
6/19/2003	NB-6	Red Hake	1.0
6/19/2003	NB-6	Spotted Hake	85.0
6/19/2003	NB-6	Summer Flounder	2.0
6/19/2003	NB-6	Windowpane	3.0
6/19/2003	NB-6	Winter Flounder	2.0
6/19/2003	NB-7	Bay Anchovy	24.3
6/19/2003	NB-7	Spotted Hake	1.4
6/19/2003	NB-7	Striped Bass	7.1
6/19/2003	NB-7	Summer Flounder	4.3
6/19/2003	NB-7	Winter Flounder	1.4
6/19/2003	PJ-1	Atlantic Tomcod	28.0
6/19/2003	PJ-1	Bay Anchovy	21.0
6/19/2003	PJ-1	Spotted Hake	3.0
6/19/2003	PJ-1	Summer Flounder	1.0
6/19/2003	PJ-1	Weakfish	1.0
6/19/2003	PJ-1	Winter Flounder	1.0
6/19/2003	SB-5	Spotted Hake	3.0
6/19/2003	SB-5	Summer Flounder	1.0
6/20/2003	LB-1	Bay Anchovy	6.0
6/20/2003	LB-1	Spiny Dogfish	1.0
6/20/2003	LB-2	Butterfish	2.0
6/20/2003	LB-4	Atlantic Herring	48.0
6/20/2003	LB-4	Bay Anchovy	34.0
6/20/2003	LB-4	Butterfish	1.0
6/20/2003	LB-4	Scup	10.0
6/20/2003	LB-4	Spiny Dogfish	1.0
6/20/2003	LB-4	Spotted Hake	6.0
6/20/2003	LB-4	Striped Searobin	4.0
6/20/2003	LB-4	Summer Flounder	1.0
6/20/2003	LB-4	Windowpane	2.0
6/20/2003	LB-5	Bay Anchovy	31.0
6/20/2003	LB-5	Blueback Herring	1.0
6/20/2003	LB-5	Spotted Hake	4.0
6/20/2003	LB-5	Winter Flounder	1.0
6/20/2003	LB-6	Atlantic Herring	176.0
6/20/2003	LB-6	Bay Anchovy	27.0
6/20/2003	LB-6	Windowpane	2.0
6/20/2003	LB-6	Winter Flounder	2.0



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

Date	Station	Common Name	Life Stage	Number Caught	Density
1/21/2003	LB-3	Rock gunnel	PYS	1	4.4
1/22/2003	NB-3	Atlantic croaker	PYS	1	7.9
1/22/2003	NB-3	Atlantic menhaden	PYS	1	7.9
1/22/2003	NB-4	Atlantic croaker	PYS	1	4.4
1/22/2003	NB-5	Atlantic croaker	PYS	2	4.5
1/22/2003	NB-6	Atlantic croaker	PYS	1	4.5
1/22/2003	NB-6	Atlantic croaker	JUV	1	4.5
1/22/2003	NB-7	Atlantic menhaden	PYS	1	7.0
1/22/2003	NB-7	Bay anchovy	JUV	1	7.0
1/22/2003	AK-2	Atlantic croaker	JUV	1	4.0
1/22/2003	AK-2	Bay anchovy	JUV	1	4.0
1/22/2003	AK-3	Rock gunnel	PYS	1	4.4
1/22/2003	AK-4	Bay anchovy	JUV	1	4.8
1/23/2003	PJ-4	Atlantic croaker	JUV	3	31.1
1/23/2003	PJ-4	Summer flounder	PYS	1	10.4
1/23/2003	PJ-5	Atlantic croaker	JUV	2	8.5
1/23/2003	SB-5	Atlantic croaker	JUV	1	4.0
1/23/2003	PJ-1	Atlantic croaker	PYS	1	6.7
1/23/2003	PJ-2	Atlantic croaker	JUV	5	23.8
1/23/2003	PJ-2	Bay anchovy	JUV	1	4.8
2/4/2003	LB-5	American sandlance	YS	1	4.7
2/4/2003	LB-4	Rock gunnel	PYS	1	5.2
2/4/2003	LB-3	Rock gunnel	PYS	1	5.0
2/4/2003	LB-2	Rock gunnel	PYS	1	4.4
2/4/2003	LB-1	Rock gunnel	PYS	3	14.1
2/5/2003	AK-3	Summer flounder	PYS	1	5.6
2/5/2003	AK-4	Rock gunnel	PYS	1	5.0
2/5/2003	NB-7	Rock gunnel	PYS	1	6.8
2/6/2003	SB-2	Rock gunnel	PYS	1	9.1
2/19/2003	LB-5	Winter flounder	Egg	7	43.4
2/19/2003	LB-4	Winter flounder	Egg	146	994.3
2/19/2003	LB-1	Winter flounder	Egg	1	5.4
2/19/2003	SB-6	Winter flounder	Egg	3	15.0
2/19/2003	SB-3	Winter flounder	Egg	2	9.9
2/19/2003	SB-4	Winter flounder	Egg	2	12.2
2/21/2003	SB-5	Rock gunnel	PYS	1	3.6
2/21/2003	PJ-3	Rock gunnel	PYS	1	6.4
2/21/2003	PJ-2	Rock gunnel	PYS	1	6.6
3/4/2003	PJ-2	Winter flounder	YS	1	7.4
3/4/2003	LB-3	Winter flounder	YS	1	7.6
3/4/2003	LB-5	Winter flounder	Egg	3	17.3
3/4/2003	LB-6	Atlantic herring	PYS	1	6.7
3/4/2003	LB-4	American sandlance	PYS	2	8.5
3/4/2003	LB-4	Grubby	PYS	1	4.3
3/4/2003	LB-2	Rock gunnel	PYS	1	8.1
3/4/2003	LB-1	Winter flounder	Egg	2	16.6
3/4/2003	PJ-5	Winter flounder	Egg	3	14.0
3/4/2003	PJ-1	Longhorn sculpin	YS	1	6.3
3/4/2003	PJ-1	Winter flounder	Egg	3	19.0
3/6/2003	SB-6	Rock gunnel	PYS	1	3.2



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 2 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
3/6/2003	SB-6	Winter flounder	YS	1	3.2
3/6/2003	HR-1	Grubby	PYS	1	15.4
3/7/2003	AK-3	Atlantic herring	PYS	2	11.1
3/7/2003	AK-1	Grubby	PYS	1	6.3
3/7/2003	AK-1	Longhorn sculpin	PYS	1	6.3
3/7/2003	AK-1	Winter flounder	PYS	1	6.3
3/7/2003	AK-2	American sandlance	PYS	1	4.2
3/7/2003	AK-2	Grubby	PYS	1	4.2
3/7/2003	AK-2	Winter flounder	YS	1	4.2
3/7/2003	AK-2	Winter flounder	PYS	2	8.5
3/18/2003	LB-3	Longhorn sculpin	YS	1	5.5
3/18/2003	LB-3	Winter flounder	Egg	2	10.9
3/18/2003	LB-5	Grubby	UID	1	5.6
3/18/2003	LB-5	Rock gunnel	PYS	1	5.6
3/18/2003	LB-5	Winter flounder	Egg	166	933.5
3/18/2003	LB-6	Winter flounder	Egg	1	7.2
3/18/2003	LB-4	Gadid unidentified	Egg	1	5.0
3/18/2003	LB-4	Grubby	YS	1	5.0
3/18/2003	LB-4	Grubby	PYS	1	5.0
3/18/2003	LB-4	Rock gunnel	YS	2	10.1
3/18/2003	LB-4	Rock gunnel	PYS	1	5.0
3/18/2003	LB-4	Winter flounder	Egg	13	65.6
3/18/2003	LB-1	Winter flounder	Egg	3	29.7
3/18/2003	LB-2	Rock gunnel	PYS	1	7.9
3/18/2003	LB-2	Winter flounder	Egg	2	15.8
3/18/2003	SB-6	Grubby	PYS	1	6.5
3/18/2003	SB-6	Winter flounder	Egg	159	1031.6
3/18/2003	SB-3	Winter flounder	Egg	15	174.7
3/18/2003	SB-4	American sandlance	PYS	1	6.2
3/18/2003	SB-4	Atlantic herring	PYS	3	18.7
3/18/2003	SB-4	Grubby	PYS	1	6.2
3/18/2003	SB-4	Winter flounder	Egg	27	168.7
3/18/2003	SB-1	Grubby	PYS	2	25.8
3/19/2003	AK-1	Atlantic herring	PYS	1	12.3
3/19/2003	AK-1	Grubby	PYS	1	12.3
3/19/2003	AK-1	Longhorn sculpin	PYS	1	12.3
3/19/2003	AK-4	Atlantic herring	PYS	1	5.8
3/19/2003	AK-4	Winter flounder	Egg	2	11.5
3/19/2003	AK-3	Atlantic herring	PYS	5	21.3
3/19/2003	AK-3	Unidentified	Egg	1	4.3
3/19/2003	NB-3	Grubby	YS	1	5.6
3/19/2003	NB-5	Atlantic herring	PYS	1	5.6
3/19/2003	NB-6	Atlantic herring	PYS	3	18.4
3/19/2003	NB-6	Grubby	PYS	1	6.1
3/19/2003	SB-5	Atlantic herring	PYS	6	44.1
3/21/2003	PJ-3	Winter flounder	Egg	23	124.2
3/21/2003	PJ-4	Atlantic herring	PYS	1	5.1
3/21/2003	PJ-4	Rock gunnel	PYS	1	5.1
3/21/2003	PJ-5	Atlantic herring	PYS	3	12.5
3/21/2003	PJ-5	Winter flounder	YS	2	8.4



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 3 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
3/21/2003	PJ-1	Winter flounder	Egg	1	5.1
3/21/2003	PJ-1	Winter flounder	YS	2	10.2
3/21/2003	PJ-1	Winter flounder	PYS	1	5.1
3/21/2003	PJ-1	Unidentified	Egg	1	5.1
3/21/2003	PJ-2	Grubby	PYS	1	5.9
3/21/2003	PJ-2	Winter flounder	YS	17	99.7
3/21/2003	PJ-2	Winter flounder	PYS	4	23.5
3/21/2003	HR-3	Winter flounder	YS	23	612.1
3/21/2003	HR-3	Winter flounder	PYS	5	133.1
3/21/2003	HR-3	Unidentified	Egg	1	26.6
3/21/2003	HR-2	Grubby	YS	1	18.3
3/21/2003	HR-2	Winter flounder	YS	40	733.3
3/21/2003	HR-2	Winter flounder	PYS	4	73.3
3/21/2003	HR-2	Winter flounder	UID	5	91.7
4/1/2003	LB-3	Grubby	YS	1	9.9
4/1/2003	LB-3	Grubby	PYS	6	59.3
4/1/2003	LB-3	Winter flounder	YS	103	1018.7
4/1/2003	LB-3	Winter flounder	PYS	93	919.8
4/1/2003	LB-3	Winter flounder	UID	153	1513.2
4/1/2003	LB-5	Grubby	PYS	8	46.3
4/1/2003	LB-5	Rock gunnel	PYS	2	11.6
4/1/2003	LB-5	Winter flounder	YS	54	312.8
4/1/2003	LB-5	Winter flounder	PYS	156	903.7
4/1/2003	LB-5	Winter flounder	UID	7	40.6
4/1/2003	LB-6	Clupeid unidentified	PYS	1	7.8
4/1/2003	LB-6	Windowpane	Egg	1	7.8
4/1/2003	LB-6	Winter flounder	Egg	2	15.6
4/1/2003	LB-6	Winter flounder	YS	10	77.8
4/1/2003	LB-6	Unidentified	UID	3	23.3
4/1/2003	LB-4	Grubby	YS	1	4.7
4/1/2003	LB-4	Grubby	PYS	33	154.7
4/1/2003	LB-4	Rock gunnel	PYS	4	18.8
4/1/2003	LB-4	Winter flounder	YS	139	651.8
4/1/2003	LB-4	Winter flounder	PYS	110	515.8
4/1/2003	LB-4	Winter flounder	UID	30	140.7
4/1/2003	LB-1	American sandlance	PYS	1	8.8
4/1/2003	LB-1	Winter flounder	Egg	2	17.7
4/1/2003	LB-1	Winter flounder	YS	2	17.7
4/1/2003	LB-1	Winter flounder	PYS	24	212.0
4/1/2003	LB-1	Winter flounder	UID	1	8.8
4/1/2003	LB-2	Winter flounder	PYS	4	30.9
4/1/2003	LB-2	Winter flounder	UID	3	23.2
4/1/2003	SB-6	American sandlance	PYS	1	5.5
4/1/2003	SB-6	Rock gunnel	PYS	1	5.5
4/1/2003	SB-6	Winter flounder	YS	41	226.7
4/1/2003	SB-6	Winter flounder	PYS	16	88.5
4/1/2003	SB-6	Winter flounder	UID	12	66.4
4/1/2003	SB-3	Grubby	YS	1	7.0
4/1/2003	SB-3	Grubby	PYS	1	7.0
4/1/2003	SB-3	Rock gunnel	PYS	1	7.0



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 4 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
4/1/2003	SB-3	Winter flounder	Egg	1	7.0
4/1/2003	SB-3	Winter flounder	YS	78	546.9
4/1/2003	SB-3	Winter flounder	PYS	194	1360.3
4/1/2003	SB-3	Winter flounder	UID	11	77.1
4/1/2003	SB-4	Grubby	PYS	3	14.9
4/1/2003	SB-4	Windowpane	Egg	2	9.9
4/1/2003	SB-4	Winter flounder	PYS	9	44.6
4/1/2003	SB-1	Grubby	YS	1	9.6
4/1/2003	SB-1	Grubby	PYS	3	28.9
4/1/2003	SB-1	Winter flounder	YS	87	837.6
4/1/2003	SB-1	Winter flounder	PYS	107	1030.1
4/1/2003	SB-1	Winter flounder	UID	23	221.4
4/1/2003	SB-2	Grubby	PYS	4	35.4
4/1/2003	SB-2	Rock gunnel	PYS	1	8.9
4/1/2003	SB-2	Winter flounder	YS	2	17.7
4/1/2003	SB-2	Winter flounder	PYS	11	97.4
4/1/2003	SB-2	Winter flounder	UID	5	44.3
4/1/2003	PJ-1	Grubby	PYS	3	17.7
4/1/2003	PJ-1	Windowpane	Egg	1	5.9
4/1/2003	PJ-1	Winter flounder	PYS	5	29.5
4/2/2003	AK-4	Grubby	PYS	2	9.8
4/2/2003	AK-4	Winter flounder	YS	154	757.5
4/2/2003	AK-4	Winter flounder	PYS	154	757.5
4/2/2003	AK-4	Winter flounder	UID	28	137.7
4/2/2003	NB-7	Winter flounder	PYS	2	11.2
4/2/2003	NB-7	Winter flounder	UID	2	11.2
4/2/2003	NB-6	Atlantic herring	PYS	1	5.6
4/2/2003	NB-6	Grubby	PYS	2	11.1
4/2/2003	NB-6	Winter flounder	YS	18	100.3
4/2/2003	NB-6	Winter flounder	PYS	7	39.0
4/2/2003	NB-6	Winter flounder	UID	4	22.3
4/2/2003	NB-4	Winter flounder	YS	32	161.8
4/2/2003	NB-4	Winter flounder	PYS	139	702.8
4/2/2003	NB-4	Winter flounder	UID	39	197.2
4/2/2003	NB-3	Winter flounder	PYS	23	120.5
4/2/2003	NB-3	Winter flounder	UID	68	356.3
4/2/2003	NB-5	Atlantic herring	PYS	2	11.7
4/2/2003	NB-5	Grubby	PYS	2	11.7
4/2/2003	NB-5	Winter flounder	YS	6	35.1
4/2/2003	NB-5	Winter flounder	PYS	1	5.9
4/2/2003	NB-5	Winter flounder	UID	2	11.7
4/2/2003	AK-3	Atlantic tomcod	PYS	1	5.3
4/2/2003	AK-3	Grubby	PYS	4	21.1
4/2/2003	AK-3	Winter flounder	YS	70	369.4
4/2/2003	AK-3	Winter flounder	PYS	17	89.7
4/2/2003	AK-3	Winter flounder	UID	3	15.8
4/2/2003	AK-2	Grubby	PYS	8	58.4
4/2/2003	AK-2	Winter flounder	Egg	1	7.3
4/2/2003	AK-2	Winter flounder	UID	4	29.2
4/2/2003	AK-1	Grubby	PYS	6	42.9



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 5 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
4/2/2003	AK-1	Winter flounder	YS	8	57.2
4/2/2003	AK-1	Winter flounder	PYS	13	93.0
4/2/2003	AK-1	Winter flounder	UID	2	14.3
4/2/2003	SB-5	Winter flounder	Egg	1	6.4
4/2/2003	SB-5	Winter flounder	YS	18	115.0
4/2/2003	SB-5	Winter flounder	PYS	7	44.7
4/2/2003	SB-5	Winter flounder	UID	11	70.3
4/2/2003	PJ-5	Grubby	PYS	5	21.7
4/2/2003	PJ-5	Rock gunnel	PYS	1	4.3
4/2/2003	PJ-5	Winter flounder	PYS	2	8.7
4/3/2003	PJ-3	Grubby	PYS	2	10.1
4/3/2003	PJ-3	Winter flounder	YS	2	10.1
4/3/2003	PJ-3	Winter flounder	PYS	10	50.7
4/3/2003	PJ-3	Winter flounder	UID	10	50.7
4/3/2003	PJ-2	Grubby	PYS	3	16.4
4/3/2003	PJ-2	Rock gunnel	PYS	1	5.5
4/3/2003	PJ-2	Winter flounder	YS	9	49.1
4/3/2003	PJ-2	Winter flounder	PYS	2	10.9
4/3/2003	PJ-2	Winter flounder	UID	13	71.0
4/3/2003	HR-1	Grubby	PYS	2	21.6
4/3/2003	HR-1	Winter flounder	YS	16	172.6
4/3/2003	HR-1	Winter flounder	PYS	14	151.0
4/3/2003	HR-1	Winter flounder	UID	2	21.6
4/3/2003	PJ-4	Atlantic herring	PYS	1	4.4
4/3/2003	PJ-4	Grubby	YS	1	4.4
4/3/2003	PJ-4	Grubby	PYS	3	13.1
4/3/2003	PJ-4	Winter flounder	YS	15	65.4
4/3/2003	PJ-4	Winter flounder	UID	5	21.8
4/3/2003	HR-2	Winter flounder	YS	6	114.4
4/3/2003	HR-2	Winter flounder	UID	2	38.1
4/15/2003	PJ-3	Fourbeard rockling	Egg	1	4.9
4/15/2003	PJ-3	Grubby	YS	1	4.9
4/15/2003	PJ-3	Grubby	PYS	3	14.7
4/15/2003	PJ-3	Winter flounder	PYS	76	373.4
4/15/2003	PJ-3	Winter flounder	UID	26	127.7
4/15/2003	LB-3	American sandlance	PYS	2	14.2
4/15/2003	LB-3	Grubby	YS	5	35.4
4/15/2003	LB-3	Grubby	PYS	16	113.2
4/15/2003	LB-3	Winter flounder	YS	3	21.2
4/15/2003	LB-3	Winter flounder	PYS	134	948.4
4/15/2003	LB-3	Winter flounder	UID	4	28.3
4/15/2003	LB-5	Grubby	YS	1	8.6
4/15/2003	LB-5	Grubby	PYS	5	42.8
4/15/2003	LB-5	Rock gunnel	PYS	1	8.6
4/15/2003	LB-5	Windowpane	Egg	2	17.1
4/15/2003	LB-5	Winter flounder	PYS	131	1122.5
4/15/2003	LB-6	American sandlance	PYS	1	7.5
4/15/2003	LB-6	Grubby	PYS	3	22.6
4/15/2003	LB-6	Windowpane	Egg	1	7.5
4/15/2003	LB-6	Winter flounder	PYS	100	753.0



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 6 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
4/15/2003	LB-6	Winter flounder	UID	4	30.1
4/15/2003	LB-4	Grubby	YS	2	10.3
4/15/2003	LB-4	Grubby	PYS	31	159.1
4/15/2003	LB-4	Rock gunnel	PYS	7	35.9
4/15/2003	LB-4	Windowpane	Egg	1	5.1
4/15/2003	LB-4	Winter flounder	YS	2	10.3
4/15/2003	LB-4	Winter flounder	PYS	109	559.5
4/15/2003	LB-4	Winter flounder	UID	1	5.1
4/15/2003	LB-2	American sandlance	PYS	6	43.4
4/15/2003	LB-2	Grubby	YS	1	7.2
4/15/2003	LB-2	Grubby	PYS	7	50.6
4/15/2003	LB-2	Rock gunnel	PYS	1	7.2
4/15/2003	LB-2	Winter flounder	PYS	33	238.5
4/15/2003	LB-1	American sandlance	PYS	2	11.2
4/15/2003	LB-1	Grubby	PYS	5	27.9
4/15/2003	LB-1	Winter flounder	Egg	2	11.2
4/15/2003	LB-1	Winter flounder	YS	2	11.2
4/15/2003	LB-1	Winter flounder	PYS	278	1550.0
4/15/2003	LB-1	Winter flounder	UID	2	11.2
4/15/2003	SB-3	Fourbeard rockling	Egg	7	33.3
4/15/2003	SB-3	Grubby	PYS	10	47.6
4/15/2003	SB-3	Windowpane	Egg	1	4.8
4/15/2003	SB-3	Winter flounder	Egg	3	14.3
4/15/2003	SB-3	Winter flounder	YS	19	90.5
4/15/2003	SB-3	Winter flounder	PYS	37	176.3
4/15/2003	SB-4	American sandlance	PYS	1	4.9
4/15/2003	SB-4	Atlantic herring	PYS	5	24.4
4/15/2003	SB-4	Fourbeard rockling	Egg	16	78.1
4/15/2003	SB-4	Grubby	YS	1	4.9
4/15/2003	SB-4	Grubby	PYS	12	58.6
4/15/2003	SB-4	Rock gunnel	PYS	2	9.8
4/15/2003	SB-4	Windowpane	Egg	2	9.8
4/15/2003	SB-4	Winter flounder	YS	37	180.7
4/15/2003	SB-4	Winter flounder	PYS	146	713.1
4/15/2003	SB-4	Winter flounder	UID	6	29.3
4/15/2003	SB-1	Fourbeard rockling	Egg	1	11.2
4/15/2003	SB-1	Grubby	PYS	7	78.5
4/15/2003	SB-1	Winter flounder	PYS	12	134.5
4/15/2003	SB-1	Winter flounder	UID	1	11.2
4/15/2003	SB-2	American sandlance	PYS	1	9.4
4/15/2003	SB-2	Fourbeard rockling	Egg	8	75.6
4/15/2003	SB-2	Grubby	YS	1	9.4
4/15/2003	SB-2	Grubby	PYS	7	66.1
4/15/2003	SB-2	Winter flounder	YS	4	37.8
4/15/2003	SB-2	Winter flounder	PYS	55	519.7
4/15/2003	PJ-1	Atlantic herring	PYS	12	63.0
4/15/2003	PJ-1	Grubby	YS	3	15.7
4/15/2003	PJ-1	Grubby	PYS	4	21.0
4/15/2003	PJ-1	Rock gunnel	PYS	2	10.5
4/15/2003	PJ-1	Windowpane	Egg	1	5.2

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 7 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
4/15/2003	PJ-1	Winter flounder	YS	1	5.2
4/15/2003	PJ-1	Winter flounder	PYS	17	89.2
4/16/2003	AK-4	Grubby	PYS	1	5.8
4/16/2003	AK-4	Winter flounder	PYS	18	105.1
4/16/2003	AK-3	Grubby	PYS	1	6.4
4/16/2003	AK-3	Winter flounder	PYS	10	64.5
4/16/2003	AK-3	Winter flounder	UID	1	6.4
4/16/2003	NB-3	Fourspot flounder	PYS	1	4.6
4/16/2003	NB-3	Grubby	PYS	6	27.5
4/16/2003	NB-3	Winter flounder	PYS	57	261.4
4/16/2003	NB-3	Winter flounder	UID	2	9.2
4/16/2003	NB-4	Grubby	PYS	2	10.4
4/16/2003	NB-4	Winter flounder	PYS	37	192.1
4/16/2003	NB-4	Winter flounder	UID	11	57.1
4/16/2003	NB-5	American sandlance	PYS	2	10.9
4/16/2003	NB-5	Grubby	YS	1	5.5
4/16/2003	NB-5	Grubby	PYS	7	38.3
4/16/2003	NB-5	Winter flounder	PYS	5	27.3
4/16/2003	NB-6	Atlantic tomcod	PYS	1	7.0
4/16/2003	NB-6	Fourbeard rockling	Egg	1	7.0
4/16/2003	NB-6	Grubby	PYS	9	62.8
4/16/2003	NB-6	Unidentified	UID	1	7.0
4/16/2003	NB-7	Grubby	PYS	2	10.9
4/16/2003	NB-7	Winter flounder	Egg	1	5.5
4/16/2003	NB-7	Winter flounder	PYS	36	196.7
4/16/2003	AK-2	American sandlance	PYS	1	4.0
4/16/2003	AK-2	Winter flounder	PYS	25	99.5
4/16/2003	AK-1	American sandlance	PYS	4	18.0
4/16/2003	AK-1	Grubby	PYS	4	18.0
4/16/2003	AK-1	Rock gunnel	PYS	1	4.5
4/16/2003	AK-1	Winter flounder	PYS	121	544.3
4/16/2003	AK-1	Unidentified	UID	19	85.5
4/16/2003	SB-5	American sandlance	PYS	1	7.0
4/16/2003	SB-5	Atlantic herring	PYS	3	21.1
4/16/2003	SB-5	Grubby	PYS	1	7.0
4/16/2003	SB-5	Rock gunnel	PYS	1	7.0
4/16/2003	SB-5	Windowpane	Egg	1	7.0
4/16/2003	SB-5	Winter flounder	PYS	14	98.6
4/16/2003	SB-5	Winter flounder	UID	3	21.1
4/17/2003	SB-6	American sandlance	PYS	1	4.0
4/17/2003	SB-6	Atlantic herring	PYS	3	12.0
4/17/2003	SB-6	Grubby	PYS	2	8.0
4/17/2003	SB-6	Winter flounder	Egg	2	8.0
4/17/2003	SB-6	Winter flounder	PYS	318	1270.7
4/17/2003	SB-6	Winter flounder	UID	146	583.4
4/17/2003	PJ-5	Atlantic herring	PYS	4	20.3
4/17/2003	PJ-5	Fourbeard rockling	Egg	3	15.2
4/17/2003	PJ-5	Grubby	YS	3	15.2
4/17/2003	PJ-5	Rock gunnel	PYS	2	10.1
4/17/2003	PJ-5	Winter flounder	YS	4	20.3

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 8 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
4/17/2003	PJ-5	Winter flounder	PYS	42	213.1
4/17/2003	PJ-5	Winter flounder	UID	4	20.3
4/17/2003	PJ-4	American sandlance	PYS	2	11.4
4/17/2003	PJ-4	Atlantic herring	PYS	1	5.7
4/17/2003	PJ-4	Fourbeard rockling	Egg	9	51.4
4/17/2003	PJ-4	Grubby	YS	1	5.7
4/17/2003	PJ-4	Grubby	PYS	1	5.7
4/17/2003	PJ-4	Windowpane	Egg	1	5.7
4/17/2003	PJ-4	Winter flounder	PYS	23	131.5
4/17/2003	PJ-4	Winter flounder	UID	3	17.1
4/17/2003	HR-1	Atlantic herring	PYS	1	14.2
4/17/2003	HR-1	Fourbeard rockling	Egg	1	14.2
4/17/2003	HR-1	Grubby	YS	1	14.2
4/17/2003	HR-1	Grubby	PYS	6	85.4
4/17/2003	HR-1	Rock gunnel	PYS	2	28.5
4/17/2003	HR-1	Winter flounder	PYS	1	14.2
4/17/2003	PJ-2	American sandlance	PYS	1	6.2
4/17/2003	PJ-2	Atlantic herring	PYS	1	6.2
4/17/2003	PJ-2	Fourbeard rockling	Egg	1	6.2
4/17/2003	PJ-2	Grubby	YS	4	24.9
4/17/2003	PJ-2	Grubby	PYS	13	81.1
4/17/2003	PJ-2	Winter flounder	YS	4	24.9
4/17/2003	PJ-2	Winter flounder	PYS	11	68.6
4/17/2003	PJ-2	Winter flounder	UID	1	6.2
4/17/2003	HR-2	Atlantic herring	PYS	1	14.0
4/17/2003	HR-2	Winter flounder	PYS	13	181.9
4/17/2003	HR-3	Winter flounder	PYS	6	230.3
4/30/2003	PJ-2	Grubby	PYS	1	5.9
4/30/2003	PJ-2	Rock gunnel	PYS	1	5.9
4/30/2003	PJ-2	Winter flounder	PYS	4	23.5
4/30/2003	PJ-3	Grubby	PYS	1	6.8
4/30/2003	PJ-3	Winter flounder	PYS	20	137.0
4/30/2003	LB-3	Windowpane	Egg	44	251.7
4/30/2003	LB-3	Winter flounder	PYS	752	4302.3
4/30/2003	LB-5	Grubby	PYS	4	20.7
4/30/2003	LB-5	Windowpane	Egg	88	455.6
4/30/2003	LB-5	Winter flounder	PYS	42	217.4
4/30/2003	LB-6	Windowpane	Egg	8	39.0
4/30/2003	LB-4	Grubby	YS	1	4.4
4/30/2003	LB-4	Grubby	PYS	90	396.4
4/30/2003	LB-4	Rock gunnel	PYS	9	39.6
4/30/2003	LB-4	Windowpane	Egg	24	105.7
4/30/2003	LB-4	Winter flounder	Egg	2	8.8
4/30/2003	LB-4	Winter flounder	PYS	47	207.0
4/30/2003	LB-2	American sandlance	PYS	2	16.9
4/30/2003	LB-2	Grubby	PYS	17	143.7
4/30/2003	LB-2	Rock gunnel	PYS	1	8.5
4/30/2003	LB-2	Windowpane	Egg	12	101.4
4/30/2003	LB-2	Winter flounder	Egg	4	33.8
4/30/2003	LB-2	Winter flounder	PYS	97	820.0

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 9 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
4/30/2003	LB-1	Grubby	PYS	4	20.6
4/30/2003	LB-1	Windowpane	Egg	15	77.1
4/30/2003	LB-1	Winter flounder	PYS	1328	6824.9
4/30/2003	SB-3	Atlantic tomcod	JUV	1	5.1
4/30/2003	SB-3	Grubby	YS	5	25.3
4/30/2003	SB-3	Grubby	PYS	2	10.1
4/30/2003	SB-3	Windowpane	Egg	25	126.5
4/30/2003	SB-3	Winter flounder	PYS	22	111.3
4/30/2003	SB-4	Atlantic tomcod	JUV	1	4.1
4/30/2003	SB-4	Grubby	YS	1	4.1
4/30/2003	SB-4	Grubby	PYS	2	8.1
4/30/2003	SB-4	Rock gunnel	PYS	2	8.1
4/30/2003	SB-4	Windowpane	Egg	24	97.7
4/30/2003	SB-4	Winter flounder	PYS	9	36.6
4/30/2003	SB-1	Grubby	PYS	5	56.2
4/30/2003	SB-1	Windowpane	Egg	10	112.4
4/30/2003	SB-1	Winter flounder	YS	1	11.2
4/30/2003	SB-1	Winter flounder	PYS	34	382.3
4/30/2003	SB-2	Grubby	PYS	1	8.4
4/30/2003	SB-2	Windowpane	Egg	23	193.5
4/30/2003	SB-2	Winter flounder	PYS	26	218.8
4/30/2003	PJ-1	Windowpane	Egg	3	18.2
4/30/2003	PJ-1	Winter flounder	PYS	10	60.8
5/1/2003	AK-4	Gobiid unidentified	PYS	1	5.0
5/1/2003	AK-4	Windowpane	Egg	1	5.0
5/1/2003	AK-4	Winter flounder	PYS	9	44.6
5/1/2003	AK-3	Winter flounder	PYS	5	28.3
5/1/2003	AK-1	Grubby	PYS	1	8.0
5/1/2003	AK-1	Windowpane	Egg	2	16.1
5/1/2003	AK-1	Winter flounder	PYS	8	64.3
5/1/2003	AK-2	Grubby	PYS	1	7.7
5/1/2003	AK-2	Windowpane	Egg	7	54.2
5/1/2003	AK-2	Winter flounder	PYS	2	15.5
5/1/2003	NB-7	Grubby	YS	1	8.7
5/1/2003	NB-7	Grubby	PYS	1	8.7
5/1/2003	NB-7	Windowpane	Egg	2	17.5
5/1/2003	NB-7	Winter flounder	YS	1	8.7
5/1/2003	NB-7	Winter flounder	PYS	7	61.1
5/1/2003	NB-4	Winter flounder	PYS	9	58.5
5/1/2003	NB-3	Windowpane	YS	1	7.3
5/1/2003	NB-3	Winter flounder	YS	1	7.3
5/1/2003	NB-3	Winter flounder	PYS	27	196.0
5/1/2003	NB-5	Winter flounder	PYS	3	32.5
5/1/2003	NB-6	Windowpane	Egg	1	10.3
5/1/2003	NB-6	Winter flounder	PYS	1	10.3
5/1/2003	PJ-5	Fourbeard rockling	Egg	1	5.1
5/1/2003	PJ-5	Grubby	PYS	1	5.1
5/1/2003	PJ-5	Windowpane	Egg	45	229.1
5/1/2003	PJ-5	Winter flounder	PYS	8	40.7
5/1/2003	PJ-4	Grubby	PYS	1	8.5

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 10 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
5/1/2003	PJ-4	Windowpane	Egg	16	135.8
5/1/2003	PJ-4	Winter flounder	PYS	8	67.9
5/2/2003	HR-1	Windowpane	Egg	10	120.7
5/2/2003	HR-1	Winter flounder	YS	2	24.1
5/2/2003	HR-1	Winter flounder	PYS	19	229.3
5/2/2003	SB-6	American sandlance	PYS	4	19.3
5/2/2003	SB-6	Atlantic menhaden	PYS	1	4.8
5/2/2003	SB-6	Grubby	PYS	11	53.0
5/2/2003	SB-6	Rock gunnel	PYS	2	9.6
5/2/2003	SB-6	Windowpane	Egg	24	115.5
5/2/2003	SB-6	Winter flounder	YS	2	9.6
5/2/2003	SB-6	Winter flounder	PYS	256	1232.5
5/2/2003	SB-5	Grubby	PYS	7	27.4
5/2/2003	SB-5	Rock gunnel	PYS	15	58.7
5/2/2003	SB-5	Windowpane	Egg	66	258.3
5/2/2003	SB-5	Winter flounder	Egg	1	3.9
5/2/2003	SB-5	Winter flounder	YS	7	27.4
5/2/2003	SB-5	Winter flounder	PYS	179	700.6
5/2/2003	HR-2	Windowpane	Egg	5	62.2
5/2/2003	HR-2	Winter flounder	PYS	10	124.5
5/2/2003	HR-3	Winter flounder	PYS	2	63.6
5/13/2003	PJ-2	Windowpane	Egg	34	140.5
5/13/2003	PJ-2	Winter flounder	PYS	53	219.1
5/13/2003	PJ-3	Windowpane	Egg	12	48.7
5/13/2003	PJ-3	Winter flounder	PYS	15	60.9
5/13/2003	PJ-3	Labridae	Egg	1	4.1
5/13/2003	PJ-4	Atlantic menhaden	Egg	12	39.7
5/13/2003	PJ-4	Atlantic menhaden	UID	5	16.6
5/13/2003	PJ-4	Windowpane	Egg	82	271.6
5/13/2003	PJ-4	Windowpane	PYS	2	6.6
5/13/2003	PJ-4	Winter flounder	PYS	9	29.8
5/13/2003	PJ-4	Labridae	Egg	2	6.6
5/13/2003	PJ-5	Atlantic mackerel	Egg	3	11.2
5/13/2003	PJ-5	Windowpane	Egg	41	152.9
5/13/2003	PJ-5	Windowpane	PYS	1	3.7
5/13/2003	PJ-5	Winter flounder	PYS	25	93.2
5/13/2003	SB-5	Atlantic mackerel	Egg	20	116.1
5/13/2003	SB-5	Windowpane	Egg	43	249.6
5/13/2003	SB-5	Winter flounder	PYS	75	435.3
5/13/2003	SB-5	Labridae	Egg	3	17.4
5/13/2003	SB-6	Atlantic mackerel	Egg	6	24.4
5/13/2003	SB-6	Atlantic menhaden	Egg	1	4.1
5/13/2003	SB-6	Atlantic menhaden	UID	1	4.1
5/13/2003	SB-6	Windowpane	Egg	46	186.8
5/13/2003	SB-6	Windowpane	PYS	1	4.1
5/13/2003	SB-6	Winter flounder	PYS	39	158.4
5/13/2003	SB-6	Labridae	Egg	2	8.1
5/13/2003	SB-3	Atlantic mackerel	Egg	3	26.0
5/13/2003	SB-3	Windowpane	Egg	26	225.6
5/13/2003	SB-3	Winter flounder	PYS	6	52.1



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 11 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
5/13/2003	SB-3	Labridae	Egg	3	26.0
5/13/2003	SB-4	Atlantic mackerel	Egg	14	86.2
5/13/2003	SB-4	Windowpane	Egg	82	504.9
5/13/2003	SB-4	Winter flounder	PYS	210	1293.1
5/13/2003	SB-1	Atlantic mackerel	Egg	1	10.6
5/13/2003	SB-1	Windowpane	Egg	26	275.5
5/13/2003	SB-1	Winter flounder	PYS	11	116.6
5/13/2003	SB-1	Labridae	Egg	2	21.2
5/13/2003	SB-2	Windowpane	Egg	18	155.3
5/13/2003	SB-2	Winter flounder	PYS	8	69.0
5/13/2003	PJ-1	Atlantic mackerel	Egg	4	29.0
5/13/2003	PJ-1	Windowpane	Egg	23	166.5
5/13/2003	PJ-1	Winter flounder	PYS	21	152.0
5/14/2003	NB-7	Atlantic menhaden	Egg	4	24.4
5/14/2003	NB-7	Windowpane	Egg	3	18.3
5/14/2003	NB-7	Windowpane	PYS	2	12.2
5/14/2003	NB-7	Winter flounder	PYS	39	237.7
5/14/2003	NB-4	Atlantic silverside	PYS	1	4.9
5/14/2003	NB-4	Windowpane	Egg	2	9.8
5/14/2003	NB-4	Winter flounder	PYS	16	78.4
5/14/2003	NB-4	Labridae	Egg	1	4.9
5/14/2003	NB-3	Winter flounder	PYS	6	30.6
5/14/2003	NB-3	Labridae	Egg	1	5.1
5/14/2003	AK-4	Atlantic menhaden	Egg	2	10.8
5/14/2003	AK-4	Atlantic silverside	PYS	1	5.4
5/14/2003	AK-4	Windowpane	PYS	1	5.4
5/14/2003	AK-4	Winter flounder	PYS	16	86.0
5/14/2003	AK-3	Atlantic herring	PYS	1	5.3
5/14/2003	AK-3	Atlantic tomcod	JUV	1	5.3
5/14/2003	AK-3	Grubby	PYS	1	5.3
5/14/2003	AK-3	Windowpane	Egg	3	16.0
5/14/2003	AK-3	Winter flounder	PYS	164	877.1
5/14/2003	AK-3	Labridae	Egg	1	5.3
5/14/2003	AK-2	Atlantic menhaden	Egg	1	6.0
5/14/2003	AK-2	Atlantic silverside	PYS	1	6.0
5/14/2003	AK-2	Windowpane	Egg	8	48.2
5/14/2003	AK-2	Winter flounder	PYS	35	210.8
5/14/2003	AK-1	Atlantic menhaden	Egg	3	16.7
5/14/2003	AK-1	Atlantic menhaden	PYS	1	5.6
5/14/2003	AK-1	Windowpane	Egg	5	27.9
5/14/2003	AK-1	Windowpane	PYS	1	5.6
5/14/2003	AK-1	Winter flounder	PYS	6	33.5
5/14/2003	AK-1	Labridae	Egg	3	16.7
5/14/2003	NB-6	Atlantic herring	PYS	1	7.3
5/14/2003	NB-6	Atlantic menhaden	Egg	86	630.1
5/14/2003	NB-6	Atlantic tomcod	JUV	1	7.3
5/14/2003	NB-6	Windowpane	Egg	20	146.5
5/14/2003	NB-6	Winter flounder	PYS	11	80.6
5/14/2003	NB-6	Labridae	Egg	6	44.0
5/14/2003	NB-5	Atlantic menhaden	Egg	2	22.2



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 12 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
5/14/2003	NB-5	Windowpane	Egg	5	55.4
5/14/2003	NB-5	Winter flounder	PYS	10	110.8
5/14/2003	NB-5	Labridae	Egg	3	33.3
5/15/2003	HR-2	Atlantic mackerel	YS	5	62.0
5/15/2003	HR-2	Atlantic mackerel	PYS	3	37.2
5/15/2003	HR-2	Atlantic mackerel	UID	7	86.8
5/15/2003	HR-2	Atlantic menhaden	Egg	26	322.5
5/15/2003	HR-2	Atlantic menhaden	YS	8	99.2
5/15/2003	HR-2	Atlantic menhaden	UID	6	74.4
5/15/2003	HR-2	Windowpane	Egg	7	86.8
5/15/2003	HR-2	Windowpane	PYS	2	24.8
5/15/2003	HR-2	Winter flounder	PYS	7	86.8
5/15/2003	HR-2	Labridae	Egg	1	12.4
5/15/2003	HR-3	Atlantic mackerel	Egg	1	69.7
5/15/2003	HR-3	Atlantic menhaden	Egg	2	139.4
5/15/2003	HR-3	Windowpane	Egg	2	139.4
5/15/2003	HR-3	Winter flounder	PYS	3	209.0
5/15/2003	LB-3	Atlantic mackerel	Egg	5	26.2
5/15/2003	LB-3	Atlantic menhaden	Egg	20	104.6
5/15/2003	LB-3	Atlantic menhaden	YS	2	10.5
5/15/2003	LB-3	Atlantic menhaden	PYS	13	68.0
5/15/2003	LB-3	Atlantic menhaden	UID	9	47.1
5/15/2003	LB-3	Windowpane	Egg	42	219.7
5/15/2003	LB-3	Windowpane	PYS	13	68.0
5/15/2003	LB-3	Winter flounder	PYS	126	659.2
5/15/2003	LB-3	Labridae	Egg	2	10.5
5/15/2003	LB-5	Atlantic mackerel	Egg	6	35.5
5/15/2003	LB-5	Grubby	PYS	1	5.9
5/15/2003	LB-5	Windowpane	Egg	29	171.4
5/15/2003	LB-5	Winter flounder	PYS	19	112.3
5/15/2003	LB-6	Windowpane	Egg	36	226.3
5/15/2003	LB-6	Windowpane	PYS	1	6.3
5/15/2003	LB-6	Winter flounder	PYS	41	257.8
5/15/2003	LB-6	Labridae	Egg	5	31.4
5/15/2003	LB-4	Atlantic mackerel	Egg	68	316.6
5/15/2003	LB-4	Atlantic menhaden	Egg	16	74.5
5/15/2003	LB-4	Atlantic menhaden	YS	1	4.7
5/15/2003	LB-4	Atlantic menhaden	PYS	3	14.0
5/15/2003	LB-4	Atlantic tomcod	PYS	1	4.7
5/15/2003	LB-4	Windowpane	Egg	82	381.8
5/15/2003	LB-4	Windowpane	YS	2	9.3
5/15/2003	LB-4	Windowpane	PYS	20	93.1
5/15/2003	LB-4	Winter flounder	PYS	332	1545.8
5/15/2003	LB-4	Labridae	Egg	4	18.6
5/15/2003	LB-2	Atlantic mackerel	Egg	14	88.3
5/15/2003	LB-2	Windowpane	Egg	3	18.9
5/15/2003	LB-2	Winter flounder	PYS	36	227.0
5/15/2003	LB-1	Atlantic mackerel	Egg	52	252.6
5/15/2003	LB-1	Atlantic menhaden	Egg	2	9.7
5/15/2003	LB-1	Fourbeard rockling	PYS	1	4.9

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 13 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
5/15/2003	LB-1	Grubby	PYS	1	4.9
5/15/2003	LB-1	Windowpane	Egg	26	126.3
5/15/2003	LB-1	Winter flounder	PYS	92	446.9
5/15/2003	LB-1	Labridae	Egg	6	29.1
5/15/2003	HR-1	Windowpane	Egg	16	181.5
6/3/2003	LB-3	Atlantic menhaden	Egg	1376	9330.5
6/3/2003	LB-3	Bay anchovy	Egg	768	5207.7
6/3/2003	LB-3	Windowpane	Egg	176	1193.4
6/3/2003	LB-3	Windowpane	YS	1	6.8
6/3/2003	LB-3	Windowpane	PYS	15	101.7
6/3/2003	LB-3	Winter flounder	PYS	1	6.8
6/3/2003	LB-3	Labridae	Egg	352	2386.9
6/3/2003	LB-5	Atlantic menhaden	Egg	4416	31269.8
6/3/2003	LB-5	Bay anchovy	Egg	320	2265.9
6/3/2003	LB-5	Prionotus sp.	Egg	64	453.2
6/3/2003	LB-5	Weakfish	Egg	128	906.4
6/3/2003	LB-5	Windowpane	Egg	576	4078.7
6/3/2003	LB-5	Windowpane	PYS	24	169.9
6/3/2003	LB-5	Unidentified	PYS	1	7.1
6/3/2003	LB-5	Labridae	Egg	1600	11329.6
6/3/2003	LB-6	Atlantic menhaden	Egg	32	163.3
6/3/2003	LB-6	Atlantic menhaden	PYS	4	20.4
6/3/2003	LB-6	Bay anchovy	Egg	192	979.9
6/3/2003	LB-6	Prionotus sp.	Egg	16	81.7
6/3/2003	LB-6	Weakfish	Egg	64	326.6
6/3/2003	LB-6	Windowpane	Egg	32	163.3
6/3/2003	LB-6	Windowpane	PYS	2	10.2
6/3/2003	LB-6	Labridae	Egg	352	1796.4
6/3/2003	LB-4	Atlantic menhaden	Egg	3136	14724.0
6/3/2003	LB-4	Atlantic menhaden	PYS	4	18.8
6/3/2003	LB-4	Bay anchovy	Egg	32	150.2
6/3/2003	LB-4	Prionotus sp.	Egg	128	601.0
6/3/2003	LB-4	Weakfish	Egg	96	450.7
6/3/2003	LB-4	Windowpane	Egg	160	751.2
6/3/2003	LB-4	Windowpane	PYS	33	154.9
6/3/2003	LB-4	Winter flounder	PYS	4	18.8
6/3/2003	LB-4	Labridae	Egg	448	2103.4
6/3/2003	LB-2	Atlantic menhaden	Egg	40	181.7
6/3/2003	LB-2	Atlantic menhaden	PYS	3	13.6
6/3/2003	LB-2	Bay anchovy	Egg	16	72.7
6/3/2003	LB-2	Prionotus sp.	Egg	12	54.5
6/3/2003	LB-2	Weakfish	Egg	24	109.0
6/3/2003	LB-2	Windowpane	Egg	40	181.7
6/3/2003	LB-2	Windowpane	YS	1	4.5
6/3/2003	LB-2	Windowpane	PYS	43	195.3
6/3/2003	LB-2	Winter flounder	PYS	3	13.6
6/3/2003	LB-2	Labridae	Egg	56	254.3
6/3/2003	LB-1	Atlantic menhaden	Egg	80	354.9
6/3/2003	LB-1	Bay anchovy	Egg	8	35.5
6/3/2003	LB-1	Fourbeard rockling	PYS	1	4.4



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 14 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
6/3/2003	LB-1	Prionotus sp.	Egg	4	17.7
6/3/2003	LB-1	Weakfish	Egg	24	106.5
6/3/2003	LB-1	Windowpane	Egg	64	283.9
6/3/2003	LB-1	Windowpane	PYS	29	128.6
6/3/2003	LB-1	Winter flounder	PYS	3	13.3
6/3/2003	LB-1	Labridae	Egg	68	301.6
6/3/2003	PJ-2	Windowpane	YS	2	14.7
6/3/2003	PJ-2	Windowpane	PYS	5	36.8
6/3/2003	PJ-3	Atlantic menhaden	PYS	1	6.2
6/3/2003	PJ-3	Bay anchovy	Egg	3	18.6
6/3/2003	PJ-3	Windowpane	PYS	9	55.9
6/3/2003	SB-6	Atlantic menhaden	Egg	16	82.7
6/3/2003	SB-6	Bay anchovy	Egg	48	248.0
6/3/2003	SB-6	Fourbeard rockling	PYS	1	5.2
6/3/2003	SB-6	Prionotus sp.	Egg	32	165.4
6/3/2003	SB-6	Windowpane	Egg	288	1488.2
6/3/2003	SB-6	Windowpane	PYS	29	149.9
6/3/2003	SB-6	Winter flounder	PYS	16	82.7
6/3/2003	SB-6	Labridae	Egg	464	2397.7
6/3/2003	SB-4	Atlantic menhaden	Egg	16	72.1
6/3/2003	SB-4	Atlantic menhaden	PYS	6	27.0
6/3/2003	SB-4	Bay anchovy	Egg	64	288.3
6/3/2003	SB-4	Windowpane	Egg	80	360.4
6/3/2003	SB-4	Windowpane	PYS	20	90.1
6/3/2003	SB-4	Winter flounder	PYS	1	4.5
6/3/2003	SB-4	Labridae	Egg	200	901.0
6/3/2003	SB-3	Windowpane	PYS	2	10.9
6/4/2003	NB-6	Windowpane	Egg	1	5.0
6/4/2003	NB-6	Winter flounder	PYS	1	5.0
6/4/2003	NB-6	Winter flounder	JUV	1	5.0
6/4/2003	NB-6	Labridae	Egg	1	5.0
6/4/2003	NB-3	Atlantic silverside	PYS	1	4.9
6/4/2003	NB-3	Bay anchovy	Egg	2	9.7
6/4/2003	NB-3	Northern pipefish	PYS	1	4.9
6/4/2003	NB-3	Weakfish	PYS	1	4.9
6/4/2003	NB-3	White perch	YS	9	43.8
6/4/2003	NB-3	Windowpane	PYS	1	4.9
6/4/2003	NB-4	Atlantic menhaden	Egg	2	9.2
6/4/2003	NB-4	Atlantic silverside	PYS	1	4.6
6/4/2003	NB-4	Bay anchovy	Egg	1	4.6
6/4/2003	NB-4	White perch	YS	3	13.8
6/4/2003	NB-4	Labridae	Egg	1	4.6
6/4/2003	NB-5	Winter flounder	PYS	3	15.9
6/4/2003	NB-7	White perch	YS	1	6.7
6/4/2003	NB-7	Windowpane	PYS	1	6.7
6/4/2003	AK-4	Bay anchovy	Egg	6	35.8
6/4/2003	AK-4	White perch	YS	2	11.9
6/4/2003	AK-4	Winter flounder	PYS	1	6.0
6/4/2003	AK-4	Labridae	Egg	6	35.8
6/4/2003	AK-3	Bay anchovy	Egg	7	48.8



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 15 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
6/4/2003	AK-3	Windowpane	PYS	2	14.0
6/4/2003	AK-3	Winter flounder	PYS	4	27.9
6/4/2003	AK-3	Labridae	Egg	2	14.0
6/4/2003	AK-2	Atlantic silverside	PYS	1	5.5
6/4/2003	AK-2	Bay anchovy	Egg	2	11.0
6/4/2003	AK-2	Windowpane	PYS	1	5.5
6/4/2003	AK-2	Winter flounder	PYS	26	142.8
6/4/2003	AK-2	Labridae	Egg	4	22.0
6/4/2003	AK-1	Atlantic silverside	YS	1	7.8
6/4/2003	AK-1	Bay anchovy	Egg	6	46.8
6/4/2003	AK-1	White perch	YS	1	7.8
6/4/2003	AK-1	Winter flounder	PYS	4	31.2
6/4/2003	AK-1	Labridae	Egg	4	31.2
6/5/2003	HR-1	Atlantic menhaden	Egg	184	2691.9
6/5/2003	HR-1	Bay anchovy	Egg	96	1404.5
6/5/2003	HR-1	Weakfish	Egg	40	585.2
6/5/2003	HR-1	Windowpane	Egg	56	819.3
6/5/2003	HR-1	Windowpane	PYS	1	14.6
6/5/2003	HR-1	Winter flounder	PYS	2	29.3
6/5/2003	HR-1	Labridae	Egg	176	2574.9
6/5/2003	PJ-4	Atlantic menhaden	Egg	280	2117.2
6/5/2003	PJ-4	Atlantic menhaden	PYS	2	15.1
6/5/2003	PJ-4	Atlantic silverside	PYS	1	7.6
6/5/2003	PJ-4	Bay anchovy	Egg	12	90.7
6/5/2003	PJ-4	Prionotus sp.	Egg	8	60.5
6/5/2003	PJ-4	Windowpane	Egg	96	725.9
6/5/2003	PJ-4	Windowpane	PYS	11	83.2
6/5/2003	PJ-4	Winter flounder	PYS	1	7.6
6/5/2003	PJ-4	Labridae	Egg	148	1119.1
6/5/2003	PJ-5	Atlantic menhaden	Egg	56	330.9
6/5/2003	PJ-5	Atlantic menhaden	PYS	1	5.9
6/5/2003	PJ-5	Bay anchovy	Egg	24	141.8
6/5/2003	PJ-5	Conger eel	PYS	1	5.9
6/5/2003	PJ-5	Prionotus sp.	Egg	16	94.5
6/5/2003	PJ-5	Striped bass	PYS	1	5.9
6/5/2003	PJ-5	Windowpane	Egg	56	330.9
6/5/2003	PJ-5	Windowpane	PYS	7	41.4
6/5/2003	PJ-5	Winter flounder	PYS	7	41.4
6/5/2003	PJ-5	Labridae	Egg	112	661.8
6/5/2003	SB-5	Atlantic menhaden	Egg	8	71.7
6/5/2003	SB-5	Bay anchovy	Egg	2	17.9
6/5/2003	SB-5	Prionotus sp.	Egg	8	71.7
6/5/2003	SB-5	Windowpane	Egg	28	251.1
6/5/2003	SB-5	Windowpane	PYS	7	62.8
6/5/2003	SB-5	Windowpane	JUV	4	35.9
6/5/2003	SB-5	Winter flounder	PYS	1	9.0
6/5/2003	SB-5	Labridae	Egg	28	251.1
6/5/2003	PJ-1	Atlantic menhaden	Egg	4	46.1
6/5/2003	PJ-1	Bay anchovy	Egg	64	738.2
6/5/2003	PJ-1	Striped bass	PYS	1	11.5



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 16 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
6/5/2003	PJ-1	Windowpane	PYS	2	23.1
6/5/2003	PJ-1	Unidentified	PYS	1	11.5
6/5/2003	PJ-1	Labridae	Egg	8	92.3
6/5/2003	HR-2	Atlantic menhaden	Egg	6	108.1
6/5/2003	HR-2	Bay anchovy	Egg	10	180.2
6/5/2003	HR-2	Windowpane	PYS	1	18.0
6/5/2003	HR-2	Labridae	Egg	8	144.2
6/5/2003	HR-3	Bay anchovy	Egg	6	166.0
6/5/2003	HR-3	Windowpane	Egg	1	27.7
6/5/2003	HR-3	Windowpane	PYS	4	110.6
6/5/2003	HR-3	Winter flounder	PYS	1	27.7
6/5/2003	HR-3	Labridae	Egg	8	221.3
6/5/2003	SB-1	Atlantic menhaden	Egg	10	106.9
6/5/2003	SB-1	Bay anchovy	Egg	100	1069.0
6/5/2003	SB-1	Windowpane	Egg	6	64.1
6/5/2003	SB-1	Windowpane	PYS	3	32.1
6/5/2003	SB-1	Labridae	Egg	26	277.9
6/5/2003	SB-2	Atlantic menhaden	Egg	32	305.1
6/5/2003	SB-2	Bay anchovy	Egg	8	76.3
6/5/2003	SB-2	Windowpane	PYS	6	57.2
6/5/2003	SB-2	Winter flounder	PYS	6	57.2
6/5/2003	SB-2	Labridae	Egg	48	457.7
6/17/2003	LB-6	Atlantic mackerel	PYS	3	24.9
6/17/2003	LB-6	Atlantic menhaden	Egg	528	4381.5
6/17/2003	LB-6	Bay anchovy	Egg	560	4647.1
6/17/2003	LB-6	Bay anchovy	PYS	9	74.7
6/17/2003	LB-6	Northern pipefish	PYS	1	8.3
6/17/2003	LB-6	Prionotus sp.	Egg	16	132.8
6/17/2003	LB-6	Walleye	PYS	1	8.3
6/17/2003	LB-6	Windowpane	Egg	416	3452.1
6/17/2003	LB-6	Windowpane	PYS	4	33.2
6/17/2003	LB-6	Unidentified	UID	2	16.6
6/17/2003	LB-6	Labridae	Egg	64	531.1
6/17/2003	LB-5	Atlantic mackerel	PYS	4	22.0
6/17/2003	LB-5	Atlantic menhaden	Egg	2560	14064.5
6/17/2003	LB-5	Atlantic menhaden	PYS	7	38.5
6/17/2003	LB-5	Bay anchovy	Egg	1728	9493.5
6/17/2003	LB-5	Bay anchovy	PYS	6	33.0
6/17/2003	LB-5	Northern pipefish	PYS	1	5.5
6/17/2003	LB-5	Prionotus sp.	Egg	64	351.6
6/17/2003	LB-5	Windowpane	Egg	512	2812.9
6/17/2003	LB-5	Windowpane	PYS	2	11.0
6/17/2003	LB-5	Unidentified	PYS	8	44.0
6/17/2003	LB-5	Labridae	Egg	2688	14767.7
6/17/2003	LB-4	Atlantic mackerel	PYS	31	169.4
6/17/2003	LB-4	Atlantic menhaden	Egg	64	349.7
6/17/2003	LB-4	Bay anchovy	Egg	544	2972.1
6/17/2003	LB-4	Northern pipefish	PYS	5	27.3
6/17/2003	LB-4	Prionotus sp.	Egg	160	874.1
6/17/2003	LB-4	Weakfish	Egg	32	174.8



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 17 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
6/17/2003	LB-4	Windowpane	Egg	352	1923.1
6/17/2003	LB-4	Windowpane	PYS	1	5.5
6/17/2003	LB-4	Labridae	Egg	352	1923.1
6/17/2003	LB-3	Atlantic menhaden	Egg	1216	7101.2
6/17/2003	LB-3	Atlantic menhaden	PYS	3	17.5
6/17/2003	LB-3	Bay anchovy	Egg	1408	8222.4
6/17/2003	LB-3	Bay anchovy	PYS	9	52.6
6/17/2003	LB-3	Prionotus sp.	Egg	32	186.9
6/17/2003	LB-3	Weakfish	PYS	1	5.8
6/17/2003	LB-3	Windowpane	Egg	288	1681.9
6/17/2003	LB-3	Windowpane	PYS	1	5.8
6/17/2003	LB-3	Unidentified	UID	6	35.0
6/17/2003	LB-3	Labridae	Egg	128	747.5
6/17/2003	LB-2	Atlantic mackerel	PYS	46	323.0
6/17/2003	LB-2	Atlantic menhaden	Egg	96	674.2
6/17/2003	LB-2	Bay anchovy	Egg	256	1797.8
6/17/2003	LB-2	Prionotus sp.	Egg	384	2696.7
6/17/2003	LB-2	Windowpane	Egg	480	3370.9
6/17/2003	LB-2	Windowpane	PYS	74	519.7
6/17/2003	LB-2	Windowpane	JUV	1	7.0
6/17/2003	LB-2	Labridae	Egg	224	1573.1
6/17/2003	LB-1	Atlantic mackerel	PYS	22	128.5
6/17/2003	LB-1	Bay anchovy	Egg	1088	6355.2
6/17/2003	LB-1	Northern pipefish	PYS	8	46.7
6/17/2003	LB-1	Prionotus sp.	Egg	288	1682.3
6/17/2003	LB-1	Windowpane	Egg	512	2990.7
6/17/2003	LB-1	Windowpane	PYS	3	17.5
6/17/2003	LB-1	Labridae	Egg	352	2056.1
6/17/2003	PJ-3	Atlantic menhaden	Egg	12	71.7
6/17/2003	PJ-3	Atlantic menhaden	PYS	5	29.9
6/17/2003	PJ-3	Bay anchovy	Egg	80	478.2
6/17/2003	PJ-3	Bay anchovy	PYS	2	12.0
6/17/2003	PJ-3	Northern pipefish	PYS	2	12.0
6/17/2003	PJ-3	Windowpane	Egg	4	23.9
6/17/2003	PJ-3	Unidentified	UID	4	23.9
6/17/2003	HR-1	Atlantic menhaden	Egg	76	1208.3
6/17/2003	HR-1	Bay anchovy	Egg	12	190.8
6/17/2003	HR-1	Prionotus sp.	Egg	1	15.9
6/17/2003	HR-1	Weakfish	Egg	2	31.8
6/17/2003	HR-1	Windowpane	Egg	80	1271.9
6/17/2003	HR-1	Winter flounder	JUV	1	15.9
6/17/2003	HR-1	Labridae	Egg	22	349.8
6/17/2003	PJ-2	Atlantic menhaden	Egg	64	434.8
6/17/2003	PJ-2	Atlantic menhaden	PYS	34	231.0
6/17/2003	PJ-2	Bay anchovy	Egg	136	924.0
6/17/2003	PJ-2	Northern pipefish	PYS	4	27.2
6/17/2003	PJ-2	Windowpane	Egg	8	54.4
6/17/2003	PJ-2	Unidentified	PYS	17	115.5
6/17/2003	PJ-2	Labridae	Egg	32	217.4
6/17/2003	PJ-1	Atlantic menhaden	Egg	39	281.8



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 18 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
6/17/2003	PJ-1	Atlantic menhaden	PYS	5	36.1
6/17/2003	PJ-1	Bay anchovy	Egg	13	93.9
6/17/2003	PJ-1	Windowpane	Egg	9	65.0
6/17/2003	PJ-1	Unidentified	UID	3	21.7
6/17/2003	PJ-1	Labridae	Egg	3	21.7
6/17/2003	PJ-5	Atlantic mackerel	PYS	5	29.2
6/17/2003	PJ-5	Atlantic menhaden	Egg	288	1682.3
6/17/2003	PJ-5	Bay anchovy	Egg	112	654.2
6/17/2003	PJ-5	Prionotus sp.	Egg	96	560.8
6/17/2003	PJ-5	Weakfish	Egg	48	280.4
6/17/2003	PJ-5	Windowpane	Egg	752	4392.6
6/17/2003	PJ-5	Windowpane	PYS	1	5.8
6/17/2003	PJ-5	Labridae	Egg	224	1308.4
6/17/2003	PJ-4	Atlantic menhaden	Egg	384	2167.4
6/17/2003	PJ-4	Atlantic menhaden	PYS	2	11.3
6/17/2003	PJ-4	Bay anchovy	Egg	432	2438.4
6/17/2003	PJ-4	Windowpane	Egg	16	90.3
6/17/2003	PJ-4	Winter flounder	PYS	1	5.6
6/17/2003	PJ-4	Unidentified	PYS	2	11.3
6/17/2003	PJ-4	Labridae	Egg	80	451.5
6/17/2003	SB-5	Atlantic mackerel	PYS	8	39.8
6/17/2003	SB-5	Atlantic menhaden	Egg	192	954.3
6/17/2003	SB-5	Bay anchovy	Egg	448	2226.6
6/17/2003	SB-5	Prionotus sp.	Egg	1344	6679.9
6/17/2003	SB-5	Windowpane	Egg	3328	16540.7
6/17/2003	SB-5	Windowpane	PYS	1	5.0
6/17/2003	SB-5	Unidentified	PYS	6	29.8
6/17/2003	SB-5	Labridae	Egg	1600	7952.2
6/18/2003	AK-4	Atlantic menhaden	PYS	1	4.7
6/18/2003	AK-4	Bay anchovy	Egg	56	263.5
6/18/2003	AK-4	Clupeid unidentified	PYS	1	4.7
6/18/2003	AK-4	Northern pipefish	PYS	1	4.7
6/18/2003	AK-4	Striped bass	PYS	1	4.7
6/18/2003	AK-3	Atlantic mackerel	PYS	3	14.9
6/18/2003	AK-3	Bay anchovy	Egg	80	396.9
6/18/2003	AK-3	Unidentified	PYS	1	5.0
6/18/2003	AK-2	Atlantic mackerel	PYS	2	8.5
6/18/2003	AK-2	Atlantic menhaden	Egg	6	25.6
6/18/2003	AK-2	Atlantic menhaden	PYS	1	4.3
6/18/2003	AK-2	Bay anchovy	Egg	38	162.3
6/18/2003	AK-2	Bay anchovy	PYS	9	38.4
6/18/2003	AK-2	Clupeid unidentified	PYS	1	4.3
6/18/2003	AK-2	Northern pipefish	PYS	4	17.1
6/18/2003	AK-2	Striped bass	PYS	1	4.3
6/18/2003	AK-2	Windowpane	Egg	10	42.7
6/18/2003	AK-2	Windowpane	PYS	1	4.3
6/18/2003	AK-2	Unidentified	PYS	10	42.7
6/18/2003	AK-1	Atlantic menhaden	Egg	224	2047.0
6/18/2003	AK-1	Atlantic menhaden	PYS	4	36.6
6/18/2003	AK-1	Bay anchovy	Egg	72	657.9



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 19 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
6/18/2003	AK-1	Hogchocker	Egg	24	219.3
6/18/2003	AK-1	Striped bass	PYS	5	45.7
6/18/2003	AK-1	Windowpane	Egg	344	3143.5
6/18/2003	NB-7	Atlantic menhaden	Egg	20	128.4
6/18/2003	NB-7	Atlantic menhaden	YS	2	12.8
6/18/2003	NB-7	Atlantic menhaden	PYS	37	237.6
6/18/2003	NB-7	Bay anchovy	Egg	16	102.8
6/18/2003	NB-7	Northern pipefish	PYS	1	6.4
6/18/2003	NB-7	Striped bass	PYS	1	6.4
6/18/2003	NB-7	Windowpane	Egg	2	12.8
6/18/2003	NB-4	Atlantic herring	PYS	1	6.0
6/18/2003	NB-4	Atlantic menhaden	Egg	1	6.0
6/18/2003	NB-4	Atlantic menhaden	PYS	9	53.8
6/18/2003	NB-4	Bay anchovy	Egg	20	119.5
6/18/2003	NB-4	Northern pipefish	PYS	2	11.9
6/18/2003	NB-4	Unidentified	UID	4	23.9
6/18/2003	NB-4	Labridae	Egg	3	17.9
6/18/2003	NB-3	Atlantic menhaden	PYS	8	42.2
6/18/2003	NB-3	Bay anchovy	Egg	6	31.6
6/18/2003	NB-3	Northern pipefish	PYS	1	5.3
6/18/2003	NB-3	Windowpane	YS	1	5.3
6/18/2003	NB-3	Unidentified	YS	1	5.3
6/18/2003	NB-3	Unidentified	PYS	10	52.7
6/18/2003	NB-6	Atlantic mackerel	PYS	1	5.5
6/18/2003	NB-6	Atlantic menhaden	Egg	64	349.8
6/18/2003	NB-6	Bay anchovy	Egg	112	612.1
6/18/2003	NB-6	Clupeid unidentified	PYS	4	21.9
6/18/2003	NB-6	Prionotus sp.	Egg	40	218.6
6/18/2003	NB-6	Windowpane	Egg	192	1049.3
6/18/2003	NB-6	Windowpane	JUV	1	5.5
6/18/2003	NB-6	Labridae	Egg	8	43.7
6/18/2003	NB-5	Atlantic menhaden	Egg	280	1670.8
6/18/2003	NB-5	Bay anchovy	Egg	48	286.4
6/18/2003	NB-5	Prionotus sp.	Egg	8	47.7
6/18/2003	NB-5	Windowpane	Egg	224	1336.7
6/18/2003	NB-5	Windowpane	JUV	1	6.0
6/18/2003	NB-5	Labridae	Egg	8	47.7
6/19/2003	SB-2	Atlantic mackerel	PYS	1	10.6
6/19/2003	SB-2	Atlantic menhaden	Egg	2112	22381.7
6/19/2003	SB-2	Bay anchovy	Egg	320	3391.2
6/19/2003	SB-2	Prionotus sp.	Egg	192	2034.7
6/19/2003	SB-2	Windowpane	Egg	1920	20347.0
6/19/2003	SB-2	Unidentified	PYS	2	21.2
6/19/2003	SB-2	Labridae	Egg	320	3391.2
6/19/2003	SB-1	Atlantic mackerel	PYS	1	12.9
6/19/2003	SB-1	Atlantic menhaden	Egg	32	412.6
6/19/2003	SB-1	Bay anchovy	Egg	328	4228.7
6/19/2003	SB-1	Windowpane	Egg	80	1031.4
6/19/2003	SB-1	Labridae	Egg	32	412.6
6/19/2003	SB-4	Atlantic mackerel	PYS	3	19.2



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 20 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
6/19/2003	SB-4	Atlantic menhaden	Egg	1472	9444.2
6/19/2003	SB-4	Atlantic menhaden	PYS	3	19.2
6/19/2003	SB-4	Bay anchovy	Egg	352	2258.4
6/19/2003	SB-4	Hogchocker	Egg	64	410.6
6/19/2003	SB-4	Prionotus sp.	Egg	288	1847.8
6/19/2003	SB-4	Weakfish	Egg	64	410.6
6/19/2003	SB-4	Windowpane	Egg	1856	11908.0
6/19/2003	SB-4	Windowpane	PYS	6	38.5
6/19/2003	SB-4	Unidentified	PYS	1	6.4
6/19/2003	SB-4	Labridae	Egg	576	3695.6
6/19/2003	SB-3	Atlantic mackerel	PYS	1	8.6
6/19/2003	SB-3	Atlantic menhaden	Egg	576	4972.2
6/19/2003	SB-3	Atlantic menhaden	YS	4	34.5
6/19/2003	SB-3	Atlantic menhaden	PYS	40	345.3
6/19/2003	SB-3	Bay anchovy	Egg	96	828.7
6/19/2003	SB-3	Hogchocker	Egg	16	138.1
6/19/2003	SB-3	Northern pipefish	PYS	1	8.6
6/19/2003	SB-3	Windowpane	Egg	480	4143.5
6/19/2003	SB-3	Labridae	Egg	192	1657.4
6/19/2003	SB-6	Atlantic mackerel	PYS	1	7.2
6/19/2003	SB-6	Atlantic menhaden	Egg	32	230.6
6/19/2003	SB-6	Bay anchovy	Egg	112	807.2
6/19/2003	SB-6	Prionotus sp.	Egg	256	1845.0
6/19/2003	SB-6	Weakfish	Egg	48	345.9
6/19/2003	SB-6	Windowpane	Egg	592	4266.7
6/19/2003	SB-6	Windowpane	PYS	4	28.8
6/19/2003	SB-6	Labridae	Egg	144	1037.8
6/19/2003	HR-2	Atlantic menhaden	Egg	256	2904.7
6/19/2003	HR-2	Atlantic menhaden	PYS	6	68.1
6/19/2003	HR-2	Bay anchovy	Egg	624	7080.3
6/19/2003	HR-2	Bay anchovy	PYS	1	11.3
6/19/2003	HR-2	Prionotus sp.	Egg	16	181.5
6/19/2003	HR-2	Weakfish	Egg	16	181.5
6/19/2003	HR-2	Windowpane	Egg	64	726.2
6/19/2003	HR-2	Unidentified	PYS	3	34.0
6/19/2003	HR-2	Labridae	Egg	112	1270.8
6/19/2003	HR-3	Atlantic menhaden	Egg	36	967.1
6/19/2003	HR-3	Bay anchovy	Egg	88	2364.0
6/19/2003	HR-3	Windowpane	Egg	16	429.8
6/19/2003	HR-3	Unidentified	PYS	2	53.7
6/19/2003	HR-3	Labridae	Egg	8	214.9
7/8/2003	LB-3	Atlantic menhaden	Egg	1	5.5
7/8/2003	LB-3	Bay anchovy	Egg	9	49.2
7/8/2003	LB-3	Bay anchovy	PYS	75	410.2
7/8/2003	LB-3	Gobiid unidentified	PYS	14	76.6
7/8/2003	LB-3	Northern pipefish	PYS	2	10.9
7/8/2003	LB-3	Prionotus sp.	Egg	40	218.8
7/8/2003	LB-3	Weakfish	Egg	1	5.5
7/8/2003	LB-3	Weakfish	PYS	2	10.9
7/8/2003	LB-3	Labridae	Egg	3	16.4



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 21 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
7/8/2003	LB-5	Bay anchovy	Egg	2	15.4
7/8/2003	LB-5	Bay anchovy	PYS	47	361.2
7/8/2003	LB-5	Gobiid unidentified	PYS	12	92.2
7/8/2003	LB-5	Northern pipefish	PYS	2	15.4
7/8/2003	LB-5	Prionotus sp.	Egg	10	76.9
7/8/2003	LB-5	Tautog	PYS	1	7.7
7/8/2003	LB-5	Weakfish	Egg	2	15.4
7/8/2003	LB-5	Weakfish	PYS	2	15.4
7/8/2003	LB-5	Unidentified	Egg	1	7.7
7/8/2003	LB-6	Bay anchovy	Egg	16	184.1
7/8/2003	LB-6	Bay anchovy	PYS	167	1921.8
7/8/2003	LB-6	Bay anchovy	UID	9	103.6
7/8/2003	LB-6	Gobiid unidentified	PYS	10	115.1
7/8/2003	LB-6	Northern pipefish	PYS	4	46.0
7/8/2003	LB-6	Weakfish	PYS	6	69.0
7/8/2003	LB-6	Unidentified	PYS	1	11.5
7/8/2003	LB-4	Bay anchovy	Egg	20	117.1
7/8/2003	LB-4	Bay anchovy	PYS	242	1417.5
7/8/2003	LB-4	Clupeid unidentified	PYS	34	199.2
7/8/2003	LB-4	Gobiid unidentified	PYS	54	316.3
7/8/2003	LB-4	Northern pipefish	PYS	18	105.4
7/8/2003	LB-4	Prionotus sp.	Egg	12	70.3
7/8/2003	LB-4	Weakfish	Egg	18	105.4
7/8/2003	LB-4	Weakfish	PYS	12	35.1
7/8/2003	LB-4	Windowpane	PYS	4	23.4
7/8/2003	LB-1	Bay anchovy	Egg	6	51.2
7/8/2003	LB-1	Bay anchovy	PYS	5	42.7
7/8/2003	LB-1	Fourbeard rockling	PYS	1	8.5
7/8/2003	LB-1	Northern pipefish	PYS	2	17.1
7/8/2003	LB-1	Prionotus sp.	Egg	56	477.8
7/8/2003	LB-1	Weakfish	Egg	50	426.6
7/8/2003	LB-1	Unidentified	Egg	2	17.1
7/8/2003	LB-1	Labridae	Egg	20	170.7
7/8/2003	LB-2	Bay anchovy	Egg	8	81.7
7/8/2003	LB-2	Bay anchovy	PYS	2	20.4
7/8/2003	LB-2	Gobiid unidentified	PYS	1	10.2
7/8/2003	LB-2	Northern pipefish	PYS	1	10.2
7/8/2003	LB-2	Prionotus sp.	Egg	20	204.3
7/8/2003	LB-2	Weakfish	Egg	28	286.0
7/8/2003	LB-2	Windowpane	PYS	1	10.2
7/8/2003	LB-2	Labridae	Egg	36	367.7
7/8/2003	SB-6	Bay anchovy	Egg	12	117.0
7/8/2003	SB-6	Bay anchovy	PYS	3	29.3
7/8/2003	SB-6	Gobiid unidentified	PYS	3	29.3
7/8/2003	SB-6	Prionotus sp.	Egg	128	1248.2
7/8/2003	SB-6	Weakfish	Egg	108	1053.1
7/8/2003	SB-6	Labridae	Egg	184	1794.2
7/8/2003	SB-3	Atlantic menhaden	Egg	32	138.7
7/8/2003	SB-3	Atlantic menhaden	PYS	13	56.3
7/8/2003	SB-3	Bay anchovy	Egg	16	69.3



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 22 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
7/8/2003	SB-3	Bay anchovy	PYS	133	576.3
7/8/2003	SB-3	Fourspot flounder	YS	2	8.7
7/8/2003	SB-3	Gobiid unidentified	PYS	23	99.7
7/8/2003	SB-3	Northern pipefish	PYS	1	4.3
7/8/2003	SB-3	Northern puffer	PYS	1	4.3
7/8/2003	SB-3	Prionotus sp.	Egg	120	520.0
7/8/2003	SB-3	Walleye	PYS	4	17.3
7/8/2003	SB-3	Weakfish	Egg	176	762.6
7/8/2003	SB-3	Labridae	Egg	200	866.6
7/8/2003	SB-4	Atlantic menhaden	PYS	6	25.5
7/8/2003	SB-4	Bay anchovy	Egg	112	476.8
7/8/2003	SB-4	Bay anchovy	PYS	272	1157.9
7/8/2003	SB-4	Clupeid unidentified	PYS	26	110.7
7/8/2003	SB-4	Gobiid unidentified	PYS	64	272.5
7/8/2003	SB-4	Northern pipefish	PYS	4	17.0
7/8/2003	SB-4	Prionotus sp.	Egg	136	579.0
7/8/2003	SB-4	Tautog	PYS	4	17.0
7/8/2003	SB-4	Weakfish	Egg	176	749.2
7/8/2003	SB-4	Weakfish	PYS	2	8.5
7/8/2003	SB-4	Windowpane	PYS	4	17.0
7/8/2003	SB-4	Labridae	Egg	368	1566.6
7/8/2003	SB-1	Bay anchovy	Egg	36	365.0
7/8/2003	SB-1	Bay anchovy	PYS	12	121.7
7/8/2003	SB-1	Gobiid unidentified	PYS	8	81.1
7/8/2003	SB-1	Northern pipefish	PYS	1	10.1
7/8/2003	SB-1	Prionotus sp.	Egg	92	932.8
7/8/2003	SB-1	Tautog	PYS	2	20.3
7/8/2003	SB-1	Weakfish	Egg	84	851.7
7/8/2003	SB-1	Windowpane	PYS	1	10.1
7/8/2003	SB-1	Labridae	Egg	304	3082.2
7/8/2003	SB-2	Bay anchovy	Egg	40	329.5
7/8/2003	SB-2	Gobiid unidentified	PYS	1	8.2
7/8/2003	SB-2	Northern pipefish	PYS	1	8.2
7/8/2003	SB-2	Prionotus sp.	Egg	68	560.1
7/8/2003	SB-2	Weakfish	Egg	124	1021.3
7/8/2003	SB-2	Labridae	Egg	344	2833.4
7/8/2003	PJ-3	Atlantic menhaden	PYS	2	9.7
7/8/2003	PJ-3	Bay anchovy	Egg	576	2791.5
7/8/2003	PJ-3	Bay anchovy	PYS	29	140.5
7/8/2003	PJ-3	Gobiid unidentified	PYS	10	48.5
7/8/2003	PJ-3	Northern pipefish	PYS	4	19.4
7/8/2003	PJ-3	Northern puffer	PYS	2	9.7
7/8/2003	PJ-3	Tautog	PYS	1	4.8
7/8/2003	PJ-3	Weakfish	Egg	120	581.6
7/8/2003	PJ-3	Weakfish	PYS	3	14.5
7/8/2003	PJ-3	Labridae	Egg	160	775.4
7/9/2003	NB-7	Atlantic menhaden	PYS	12	67.3
7/9/2003	NB-7	Bay anchovy	PYS	984	5519.4
7/9/2003	NB-7	Gobiid unidentified	PYS	140	785.3
7/9/2003	NB-7	Northern pipefish	PYS	12	67.3



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 23 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
7/9/2003	NB-7	Weakfish	PYS	4	22.4
7/9/2003	NB-7	Labridae	Egg	48	269.2
7/9/2003	NB-4	Clupeid unidentified	UID	5	30.9
7/9/2003	NB-4	Winter flounder	JUV	1	6.2
7/9/2003	NB-3	Bay anchovy	PYS	97	505.8
7/9/2003	NB-3	Gobiid unidentified	PYS	9	46.9
7/9/2003	NB-3	Northern pipefish	PYS	2	10.4
7/9/2003	NB-3	Weakfish	Egg	4	20.9
7/9/2003	NB-3	Weakfish	PYS	3	15.6
7/9/2003	NB-5	Bay anchovy	Egg	6	41.3
7/9/2003	NB-5	Bay anchovy	PYS	45	309.8
7/9/2003	NB-5	Clupeid unidentified	PYS	1	6.9
7/9/2003	NB-5	Northern pipefish	JUV	1	6.9
7/9/2003	NB-5	Weakfish	Egg	1	6.9
7/9/2003	NB-5	Windowpane	JUV	1	6.9
7/9/2003	NB-5	Labridae	Egg	4	27.5
7/9/2003	NB-6	Bay anchovy	Egg	3	22.7
7/9/2003	NB-6	Bay anchovy	PYS	402	3040.9
7/9/2003	NB-6	Weakfish	Egg	2	15.1
7/9/2003	NB-6	Weakfish	PYS	4	30.3
7/9/2003	NB-6	Labridae	Egg	2	15.1
7/9/2003	AK-1	Bay anchovy	Egg	1	6.9
7/9/2003	AK-1	Bay anchovy	PYS	5	34.7
7/9/2003	AK-2	Bay anchovy	Egg	92	469.5
7/9/2003	AK-2	Bay anchovy	PYS	360	1837.2
7/9/2003	AK-2	Gobiid unidentified	PYS	14	71.4
7/9/2003	AK-2	Northern pipefish	JUV	4	20.4
7/9/2003	AK-2	Tautog	PYS	2	10.2
7/9/2003	AK-2	Weakfish	Egg	40	204.1
7/9/2003	AK-2	Weakfish	PYS	2	10.2
7/9/2003	AK-2	Windowpane	PYS	2	10.2
7/9/2003	AK-2	Labridae	Egg	56	285.8
7/9/2003	AK-3	Bay anchovy	Egg	484	3331.6
7/9/2003	AK-3	Bay anchovy	PYS	132	908.6
7/9/2003	AK-3	Gobiid unidentified	PYS	13	89.5
7/9/2003	AK-3	Northern pipefish	JUV	1	6.9
7/9/2003	AK-3	Winter flounder	JUV	2	13.8
7/9/2003	AK-3	Labridae	Egg	4	27.5
7/9/2003	AK-4	Bay anchovy	Egg	20	198.1
7/9/2003	AK-4	Bay anchovy	PYS	5	49.5
7/9/2003	AK-4	Weakfish	PYS	1	9.9
7/9/2003	AK-4	Labridae	Egg	3	29.7
7/9/2003	PJ-1	Bay anchovy	Egg	2304	14633.8
7/9/2003	PJ-1	Bay anchovy	PYS	158	1003.5
7/9/2003	PJ-1	Gobiid unidentified	PYS	174	552.6
7/9/2003	PJ-1	Northern pipefish	PYS	8	50.8
7/9/2003	PJ-1	Weakfish	Egg	288	1829.2
7/9/2003	PJ-1	Weakfish	PYS	4	25.4
7/9/2003	PJ-1	Labridae	Egg	768	4877.9
7/10/2003	HR-3	Atlantic menhaden	PYS	2	63.6

Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 24 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
7/10/2003	HR-3	Bay anchovy	PYS	2	63.6
7/10/2003	HR-3	Gobiid unidentified	PYS	5	159.1
7/10/2003	HR-3	Hogchocker	Egg	8	254.5
7/10/2003	HR-3	Northern pipefish	PYS	5	159.1
7/10/2003	HR-3	Weakfish	Egg	24	763.6
7/10/2003	HR-2	Bay anchovy	Egg	2	53.1
7/10/2003	HR-2	Bay anchovy	PYS	1	26.5
7/10/2003	HR-2	Northern pipefish	PYS	4	106.2
7/10/2003	HR-2	Weakfish	Egg	10	265.5
7/10/2003	HR-2	Weakfish	PYS	1	26.5
7/10/2003	HR-2	Labridae	Egg	15	398.2
7/10/2003	PJ-2	Bay anchovy	Egg	16	97.3
7/10/2003	PJ-2	Bay anchovy	PYS	208	1265.1
7/10/2003	PJ-2	Gobiid unidentified	PYS	100	608.2
7/10/2003	PJ-2	Northern pipefish	PYS	16	97.3
7/10/2003	PJ-2	Weakfish	Egg	160	973.1
7/10/2003	PJ-2	Weakfish	PYS	4	24.3
7/10/2003	PJ-2	Labridae	Egg	64	389.3
7/10/2003	PJ-5	Bay anchovy	Egg	8	43.2
7/10/2003	PJ-5	Gobiid unidentified	PYS	2	10.8
7/10/2003	PJ-5	Hogchocker	Egg	2	10.8
7/10/2003	PJ-5	Prionotus sp.	Egg	36	194.2
7/10/2003	PJ-5	Weakfish	Egg	26	140.2
7/10/2003	PJ-5	Windowpane	PYS	2	10.8
7/10/2003	PJ-5	Labridae	Egg	14	75.5
7/10/2003	PJ-4	Atlantic menhaden	PYS	3	24.4
7/10/2003	PJ-4	Bay anchovy	Egg	8	65.0
7/10/2003	PJ-4	Bay anchovy	PYS	49	398.1
7/10/2003	PJ-4	Gobiid unidentified	PYS	1	8.1
7/10/2003	PJ-4	Northern pipefish	PYS	2	16.2
7/10/2003	PJ-4	Prionotus sp.	Egg	42	341.2
7/10/2003	PJ-4	Weakfish	Egg	4	32.5
7/10/2003	PJ-4	Weakfish	PYS	19	154.4
7/10/2003	PJ-4	Windowpane	PYS	3	24.4
7/10/2003	PJ-4	Labridae	Egg	14	113.7
7/10/2003	HR-1	Bay anchovy	Egg	2	22.6
7/10/2003	HR-1	Bay anchovy	PYS	17	192.5
7/10/2003	HR-1	Gobiid unidentified	PYS	2	22.6
7/10/2003	HR-1	Northern pipefish	PYS	2	22.6
7/10/2003	HR-1	Prionotus sp.	Egg	56	634.0
7/10/2003	HR-1	Weakfish	Egg	16	181.1
7/10/2003	HR-1	Weakfish	PYS	6	67.9
7/10/2003	HR-1	Windowpane	PYS	1	11.3
7/10/2003	HR-1	Unidentified	Egg	2	22.6
7/10/2003	HR-1	Labridae	Egg	20	226.4
7/10/2003	SB-5	Bay anchovy	Egg	8	32.9
7/10/2003	SB-5	Bay anchovy	PYS	74	303.9
7/10/2003	SB-5	Gobiid unidentified	PYS	71	291.6
7/10/2003	SB-5	Northern pipefish	PYS	6	24.6
7/10/2003	SB-5	Northern puffer	PYS	1	4.1



Appendix B. Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled. (page 25 of 25)

Date	Station	Common Name	Life Stage	Number Caught	Density
7/10/2003	SB-5	Prionotus sp.	Egg	8	32.9
7/10/2003	SB-5	Tautog	PYS	2	8.2
7/10/2003	SB-5	Weakfish	Egg	160	657.1
7/10/2003	SB-5	Weakfish	PYS	1	4.1
7/10/2003	SB-5	Windowpane	PYS	3	12.3
7/10/2003	SB-5	Labridae	Egg	264	1084.3



Appendix C. Water quality by date and station sampled. (page 1 of 7)

Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
1/21/2003	LB-1	2.8	9.9	44700	28.0
1/21/2003	LB-2	4.3	9.6	45760	29.0
1/21/2003	LB-3	3.2	10.1	41230	25.7
1/21/2003	LB-4	2.8	10.7	43630	27.3
1/21/2003	LB-5	2.6	8.6	39250	24.3
1/21/2003	LB-6	1.2	11.0	41051	25.3
1/21/2003	SB-3	2.7	10.2	36790	22.7
1/21/2003	SB-4	3.0	9.9	41080	25.6
1/21/2003	SB-6	3.1	10.0	40030	24.9
1/22/2003	AK-1	1.8	11.3	33706	20.5
1/22/2003	AK-2	1.8	11.1	35896	19.8
1/22/2003	AK-3	2.0	11.0	32905	20.1
1/22/2003	AK-4	1.8	10.9	32808	19.8
1/22/2003	NB-3	1.5	10.7	31570	19.2
1/22/2003	NB-4	1.1	11.2	31738	19.3
1/22/2003	NB-5	1.7	11.3	35227	21.4
1/22/2003	NB-6	1.7	11.3	32606	21.0
1/22/2003	NB-7	1.1	11.3	32235	19.4
1/23/2003	PJ-1	1.3	11.3	38021	23.2
1/23/2003	PJ-2	1.8	11.2	37531	23.0
1/23/2003	PJ-3	0.9	11.6	34464	21.1
1/23/2003	PJ-4	1.7	10.8	37696	23.2
1/23/2003	PJ-5	2.3	11.0	38363	23.7
1/23/2003	SB-1	0.8	11.7	33211	20.1
1/23/2003	SB-2	0.4	11.8	34161	20.4
1/23/2003	SB-5	2.2	11.1	39077	24.3
2/4/2003	LB-1	3.8	10.7	49440	31.5
2/4/2003	LB-2	3.5	10.7	48730	30.9
2/4/2003	LB-3	2.9	11.3	45920	29.0
2/4/2003	LB-4	2.1	12.3	45300	28.3
2/4/2003	LB-5	2.6	11.3	43760	27.4
2/4/2003	LB-6	2.5	11.7	43600	27.3
2/4/2003	PJ-5	3.1	11.2	45840	28.9
2/4/2003	SB-5	2.9	11.2	45190	28.4
2/4/2003	SB-6	3.1	11.2	46010	29.1
2/5/2003	AK-1	1.8	11.8	36561	22.3
2/5/2003	AK-2	1.8	11.7	36507	22.3
2/5/2003	AK-3	1.7	11.6	35461	21.7
2/5/2003	AK-4	1.8	12.0	35340	21.6
2/5/2003	NB-3	1.8	12.2	30545	18.4
2/5/2003	NB-4	1.7	12.2	30614	18.4
2/5/2003	NB-5	1.8	11.8	37153	22.7
2/5/2003	NB-6	1.8	11.8	36378	22.6
2/5/2003	NB-7	1.6	11.9	35385	21.6
2/6/2003	PJ-1	1.6	11.3	35964	22.0
2/6/2003	PJ-2	1.6	11.5	33667	20.5
2/6/2003	PJ-3	1.5	11.7	33621	20.4
2/6/2003	PJ-4	1.8	11.2	38788	23.9
2/6/2003	SB-1	1.2	11.6	34817	21.2
2/6/2003	SB-2	1.8	11.1	37513	23.1
2/6/2003	SB-3	1.5	11.6	34274	20.8
2/6/2003	SB-4	1.8	11.3	39775	24.5
2/19/2003	LB-1	1.6	10.8	49326	31.1

Appendix C. Water quality by date and station sampled. (page 2 of 7)

Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
2/19/2003	LB-2	2.1	10.3	49626	31.3
2/19/2003	LB-3	1.2	10.9	45231	28.3
2/19/2003	LB-4	1.6	11.4	47590	29.8
2/19/2003	LB-5	1.1	11.5	45482	28.3
2/19/2003	SB-1	1.5	10.8	44108	27.5
2/19/2003	SB-2	1.3	10.8	43356	26.8
2/19/2003	SB-3	1.6	10.8	44841	28.0
2/19/2003	SB-4	1.1	10.9	44121	27.4
2/19/2003	SB-6	2.0	10.8	43838	27.4
2/20/2003	AK-1	1.3	12.6	38386	23.5
2/20/2003	AK-2	1.3	12.6	39501	24.3
2/20/2003	AK-3	1.2	12.8	37934	23.1
2/20/2003	AK-4	1.7	13.5	37011	22.7
2/20/2003	LB-6	0.8	13.2	45279	27.9
2/20/2003	NB-3	2.1	12.5	37400	23.1
2/20/2003	NB-4	2.1	12.5	37420	23.1
2/20/2003	NB-5	1.8	12.5	38069	23.4
2/20/2003	NB-6	1.5	12.6	39300	24.1
2/20/2003	NB-7	1.9	12.6	38762	23.7
2/21/2003	PJ-1	1.1	11.8	37644	23.2
2/21/2003	PJ-2	1.4	11.6	38763	23.6
2/21/2003	PJ-3	1.4	11.9	37779	23.8
2/21/2003	PJ-4	1.2	11.4	42408	26.2
2/21/2003	PJ-5	1.1	11.5	41600	25.7
2/21/2003	SB-5	1.2	11.8	41289	25.3
3/4/2003	LB-1	1.7	11.4	43498	27.1
3/4/2003	LB-2	2.2	10.8	46393	29.1
3/4/2003	LB-3	1.5	12.0	39282	24.2
3/4/2003	LB-4	1.8	11.8	42002	26.1
3/4/2003	LB-5	1.7	11.5	38669	23.8
3/4/2003	LB-6	1.8	12.4	28931	23.9
3/4/2003	PJ-1	1.8	11.6	34711	21.2
3/4/2003	PJ-2	1.2	11.8	30931	18.6
3/4/2003	PJ-3	0.8	12.0	31425	18.9
3/4/2003	PJ-4	1.8	11.4	38321	23.5
3/4/2003	PJ-5	2.0	11.4	38368	23.7
3/4/2003	SB-5	1.9	11.2	40659	25.1
3/5/2003	SB-1	2.4	11.3	35982	21.9
3/5/2003	SB-2	2.3	11.3	36192	22.3
3/5/2003	SB-3	1.9	10.3	40301	24.8
3/5/2003	SB-4	2.0	11.4	39968	24.6
3/6/2003	HR-1	1.9	11.9	35433	21.7
3/6/2003	HR-2	1.9	12.2	31658	19.1
3/6/2003	HR-3	1.8	12.1	32161	19.3
3/6/2003	SB-6	2.1	12.4	31670	19.2
3/7/2003	AK-1	2.1	12.7	29200	17.5
3/7/2003	AK-2	1.7	12.8	27660	17.3
3/7/2003	AK-3	1.9	12.7	26504	15.8
3/7/2003	AK-4	2.9	12.5	27400	16.5
3/7/2003	NB-3	2.0	13.1	26280	15.6
3/7/2003	NB-4	2.0	13.1	26280	15.6
3/7/2003	NB-5	2.0	12.5	29340	17.5
3/7/2003	NB-6	1.9	12.9	30244	18.7

Appendix C. Water quality by date and station sampled. (page 3 of 7)

Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
3/7/2003	NB-7	1.9	13.1	27613	16.4
3/18/2003	LB-1	4.0	12.0	44910	28.2
3/18/2003	LB-2	3.8	12.4	45320	28.6
3/18/2003	LB-3	3.9	12.8	41790	26.1
3/18/2003	LB-4	4.1	13.9	41240	25.9
3/18/2003	LB-5	4.0	12.7	39830	24.9
3/18/2003	LB-6	3.9	13.1	38690	24.2
3/18/2003	SB-1	4.4	12.7	37870	23.5
3/18/2003	SB-2	4.2	12.2	38420	24.0
3/18/2003	SB-3	4.3	12.5	39360	24.7
3/18/2003	SB-4	4.3	12.6	37750	23.6
3/18/2003	SB-6	4.5	12.7	38970	24.3
3/19/2003	AK-1	4.9	11.6	30020	18.3
3/19/2003	AK-2	5.5	11.5	29820	18.2
3/19/2003	AK-3	5.6	11.3	29750	18.2
3/19/2003	AK-4	5.9	11.2	29120	17.8
3/19/2003	NB-3	5.1	11.6	29110	17.7
3/19/2003	NB-4	5.0	11.5	28650	17.4
3/19/2003	NB-5	4.7	11.7	31080	19.0
3/19/2003	NB-6	5.2	11.6	31280	19.2
3/19/2003	NB-7	5.2	11.5	28850	17.5
3/19/2003	SB-5	4.2	12.2	35620	22.1
3/21/2003	HR-1	5.4	11.9	26810	16.2
3/21/2003	HR-2	5.6	11.8	23640	14.2
3/21/2003	HR-3	5.6	11.8	23640	14.2
3/21/2003	PJ-1	4.8	11.9	26220	15.8
3/21/2003	PJ-2	4.8	12.0	24500	14.7
3/21/2003	PJ-3	5.6	12.0	24920	14.9
3/21/2003	PJ-4	4.5	11.4	36680	22.7
3/21/2003	PJ-5	4.8	11.9	36300	22.5
4/1/2003	LB-1	3.8	10.8	41690	26.0
4/1/2003	LB-2	3.1	10.5	46210	29.1
4/1/2003	LB-3	4.8	10.9	34650	21.4
4/1/2003	LB-4	4.2	10.5	40400	25.3
4/1/2003	LB-5	4.7	11.2	32220	19.8
4/1/2003	LB-6	4.6	10.6	37700	23.5
4/1/2003	PJ-1	5.2	11.2	23040	13.8
4/1/2003	SB-1	4.9	10.9	30220	18.4
4/1/2003	SB-2	4.9	10.8	30360	18.5
4/1/2003	SB-3	5.0	11.2	25630	15.4
4/1/2003	SB-4	4.7	10.8	34420	21.3
4/1/2003	SB-6	4.3	10.6	38350	23.8
4/2/2003	AK-1	7.3	11.1	19930	11.8
4/2/2003	AK-2	6.6	11.0	22040	13.2
4/2/2003	AK-3	6.3	11.2	24680	14.9
4/2/2003	AK-4	7.2	11.0	19960	11.8
4/2/2003	NB-3	7.2	10.8	19250	11.3
4/2/2003	NB-4	7.2	10.8	19250	11.3
4/2/2003	NB-5	6.3	11.2	24140	14.5
4/2/2003	NB-6	5.5	11.2	27270	16.6
4/2/2003	NB-7	6.3	11.4	20180	12.0
4/2/2003	PJ-5	4.5	11.3	36980	23.0
4/2/2003	SB-5	4.3	11.3	38390	23.9

Appendix C. Water quality by date and station sampled. (page 4 of 7)

Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
4/3/2003	HR-1	5.3	11.3	29080	17.7
4/3/2003	HR-2	6.0	11.7	18440	10.8
4/3/2003	HR-3	6.0	11.7	18470	10.8
4/3/2003	PJ-2	5.6	11.6	21200	12.6
4/3/2003	PJ-3	6.1	11.5	19560	11.5
4/3/2003	PJ-4	4.9	10.9	34180	21.1
4/15/2003	LB-1	7.1	9.1	37810	24.0
4/15/2003	LB-2	7.6	8.5	44500	28.1
4/15/2003	LB-3	6.9	8.8	37610	23.6
4/15/2003	LB-4	8.4	8.8	39460	24.8
4/15/2003	LB-5	7.0	9.1	35810	22.4
4/15/2003	LB-6	6.6	8.7	38190	24.0
4/15/2003	PJ-1	8.4	9.6	28810	17.7
4/15/2003	PJ-3	7.9	9.8	26910	16.2
4/15/2003	SB-1	8.3	9.2	31350	19.6
4/15/2003	SB-2	7.7	8.9	33720	21.0
4/15/2003	SB-3	9.1	9.0	31494	19.7
4/15/2003	SB-4	7.7	8.5	33020	20.5
4/16/2003	AK-1	11.4	10.5	24940	15.2
4/16/2003	AK-2	9.4	9.0	26770	16.5
4/16/2003	AK-3	10.0	8.8	25390	15.5
4/16/2003	AK-4	10.6	8.6	24350	14.8
4/16/2003	NB-3	9.7	9.1	23340	14.1
4/16/2003	NB-4	9.8	9.5	22570	13.6
4/16/2003	NB-5	9.3	9.0	26780	16.4
4/16/2003	NB-6	9.0	9.1	28280	17.4
4/16/2003	NB-7	10.2	9.0	24650	15.0
4/16/2003	SB-5	8.3	9.2	34340	21.4
4/17/2003	HR-1	8.1	8.4	33590	20.8
4/17/2003	HR-2	7.8	8.9	26570	16.2
4/17/2003	HR-3	7.8	8.9	26590	16.2
4/17/2003	PJ-2	7.9	8.6	29790	18.3
4/17/2003	PJ-4	8.0	8.8	30380	18.7
4/17/2003	PJ-5	7.5	8.7	33610	21.0
4/17/2003	SB-6	8.0	8.9	28840	17.7
4/30/2003	LB-1	9.0	8.0	43040	27.2
4/30/2003	LB-2	7.6	8.1	45150	29.0
4/30/2003	LB-3	9.2	7.7	37370	23.5
4/30/2003	LB-4	8.0	7.7	43190	27.6
4/30/2003	LB-5	9.3	8.0	36500	23.0
4/30/2003	LB-6	9.7	8.1	36360	23.0
4/30/2003	PJ-1	10.6	8.3	27700	17.6
4/30/2003	PJ-2	9.7	5.9	29560	18.4
4/30/2003	PJ-3	10.0	7.7	29190	18.0
4/30/2003	SB-1	9.5	7.1	35710	22.1
4/30/2003	SB-2	9.3	7.5	35590	22.3
4/30/2003	SB-3	9.9	7.6	33080	20.6
4/30/2003	SB-4	10.0	8.0	32900	20.5
5/1/2003	AK-1	11.4	7.9	28590	17.7
5/1/2003	AK-2	10.4	7.8	31200	19.3
5/1/2003	AK-3	11.9	7.8	27860	17.2
5/1/2003	AK-4	12.7	7.5	23670	14.3
5/1/2003	NB-3	11.8	8.0	27780	16.4

Appendix C. Water quality by date and station sampled. (page 5 of 7)

Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
5/1/2003	NB-4	11.8	8.0	27730	16.4
5/1/2003	NB-5	10.6	7.8	31080	19.3
5/1/2003	NB-6	10.6	7.8	31280	19.3
5/1/2003	NB-7	11.0	8.0	29540	18.2
5/1/2003	PJ-4	9.4	7.6	37610	24.0
5/1/2003	PJ-5	9.4	8.0	39850	25.2
5/2/2003	HR-1	10.4	7.7	33200	21.0
5/2/2003	HR-2	10.8	7.4	29000	17.9
5/2/2003	HR-3	10.8	7.4	29000	17.9
5/2/2003	SB-5	9.6	7.9	39000	24.8
5/2/2003	SB-6	9.6	8.0	39600	25.1
5/13/2003	PJ-1	11.7	8.4	34250	21.5
5/13/2003	PJ-2	11.7	8.6	32640	21.5
5/13/2003	PJ-3	11.7	8.5	33700	21.1
5/13/2003	PJ-4	10.9	8.2	39260	25.0
5/13/2003	PJ-5	11.3	8.7	38690	24.6
5/13/2003	SB-1	11.6	8.3	35870	22.6
5/13/2003	SB-2	11.4	8.2	36580	23.1
5/13/2003	SB-3	11.2	8.5	34290	21.5
5/13/2003	SB-4	11.3	8.5	38430	24.4
5/13/2003	SB-5	11.1	8.8	39920	25.4
5/13/2003	SB-6	11.2	8.6	39290	24.9
5/14/2003	AK-1	13.0	8.3	30400	18.9
5/14/2003	AK-2	12.8	8.3	30700	19.1
5/14/2003	AK-3	12.9	8.2	30690	19.0
5/14/2003	AK-4	13.6	8.0	30400	18.9
5/14/2003	NB-3	13.3	7.8	28320	17.5
5/14/2003	NB-4	13.3	7.8	28320	17.5
5/14/2003	NB-5	12.6	8.1	31640	19.7
5/14/2003	NB-6	12.6	8.1	31640	19.7
5/14/2003	NB-7	12.7	8.2	30920	19.2
5/15/2003	HR-1	11.8	8.1	36000	22.7
5/15/2003	HR-2	11.9	7.8	30660	19.0
5/15/2003	HR-3	11.9	7.8	30660	19.0
5/15/2003	LB-1	10.9	8.9	42810	27.4
5/15/2003	LB-2	9.2	9.3	44830	28.8
5/15/2003	LB-3	11.3	8.5	38840	24.7
5/15/2003	LB-4	11.2	8.6	39930	25.4
5/15/2003	LB-5	11.4	8.4	38920	24.8
5/15/2003	LB-6	11.6	8.8	39600	25.2
6/3/2003	LB-1	13.4	7.7	41900	26.9
6/3/2003	LB-2	11.5	8.3	46780	30.3
6/3/2003	LB-3	14.3	7.5	36220	22.9
6/3/2003	LB-4	12.3	7.7	43730	28.2
6/3/2003	LB-5	14.5	7.5	35530	22.5
6/3/2003	LB-6	13.5	7.6	40840	26.1
6/3/2003	PJ-2	15.6	7.0	25100	15.4
6/3/2003	PJ-3	16.0	7.1	24280	14.8
6/3/2003	SB-3	15.0	7.2	29350	18.2
6/3/2003	SB-4	13.5	7.4	38710	24.7
6/3/2003	SB-6	13.0	7.7	41040	26.3
6/4/2003	AK-1	15.5	5.9	22470	13.6
6/4/2003	AK-2	15.2	6.1	24670	15.1

Appendix C. Water quality by date and station sampled. (page 6 of 7)

Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
6/4/2003	AK-3	16.0	5.6	22510	13.6
6/4/2003	AK-4	16.1	5.3	23700	14.4
6/4/2003	NB-3	15.7	6.2	18240	10.8
6/4/2003	NB-4	15.7	6.2	18300	10.9
6/4/2003	NB-5	15.0	6.1	27590	17.0
6/4/2003	NB-6	15.0	6.1	26190	16.1
6/4/2003	NB-7	15.5	6.6	17670	10.5
6/5/2003	HR-1	13.9	6.2	33320	20.9
6/5/2003	HR-2	15.1	6.3	23780	14.5
6/5/2003	HR-3	15.1	6.3	23650	14.4
6/5/2003	PJ-1	15.5	6.8	20180	12.2
6/5/2003	PJ-4	13.3	6.1	35910	22.7
6/5/2003	PJ-5	15.2	6.8	21550	13.0
6/5/2003	SB-1	14.5	6.2	29930	18.6
6/5/2003	SB-2	14.2	6.0	31780	19.9
6/5/2003	SB-5	15.2	6.6	22220	13.4
6/17/2003	HR-1	17.2	5.5	34130	21.5
6/17/2003	LB-1	17.3	6.3	40830	26.2
6/17/2003	LB-2	16.8	6.6	40670	26.1
6/17/2003	LB-3	17.2	6.9	36090	22.9
6/17/2003	LB-4	16.6	6.3	37140	23.6
6/17/2003	LB-5	16.9	6.6	34370	21.8
6/17/2003	LB-6	16.5	6.7	37470	23.8
6/17/2003	PJ-1	17.8	6.0	29580	18.4
6/17/2003	PJ-2	17.8	5.8	28420	17.6
6/17/2003	PJ-3	18.2	5.8	27440	16.8
6/17/2003	PJ-4	17.5	5.8	31700	19.8
6/17/2003	PJ-5	17.1	6.0	34720	21.9
6/17/2003	SB-5	17.4	5.9	36810	23.3
6/18/2003	AK-1	18.3	5.5	24480	14.8
6/18/2003	AK-2	18.3	5.5	24480	14.8
6/18/2003	AK-3	18.7	5.6	19780	11.9
6/18/2003	AK-4	18.9	5.4	20820	12.5
6/18/2003	NB-3	19.0	5.6	19540	11.5
6/18/2003	NB-4	19.0	5.6	19540	11.5
6/18/2003	NB-5	18.5	5.5	26620	16.4
6/18/2003	NB-6	18.5	5.5	26620	16.4
6/18/2003	NB-7	18.8	5.8	16980	10.0
6/19/2003	HR-2	18.3	5.6	27020	16.6
6/19/2003	HR-3	18.3	5.6	27020	16.6
6/19/2003	SB-1	17.9	5.7	31460	19.6
6/19/2003	SB-2	17.7	5.6	33970	21.4
6/19/2003	SB-3	18.1	5.3	30080	18.7
6/19/2003	SB-4	17.9	5.5	30980	19.3
6/19/2003	SB-6	18.0	5.5	30640	19.0
7/8/2003	LB-1	18.5	6.9	42940	27.7
7/8/2003	LB-2	17.5	6.8	44090	28.6
7/8/2003	LB-3	20.5	7.1	39980	25.6
7/8/2003	LB-4	19.7	6.7	42280	27.2
7/8/2003	LB-5	20.7	6.8	38850	24.8
7/8/2003	LB-6	20.5	6.6	39960	25.6
7/8/2003	PJ-3	22.7	6.2	33550	21.1
7/8/2003	SB-1	21.5	5.6	36340	23.0



Appendix C. Water quality by date and station sampled. (page 7 of 7)

Date	Station	Temperature (deg C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
7/8/2003	SB-2	21.0	5.3	36930	23.4
7/8/2003	SB-3	21.7	5.1	35050	22.1
7/8/2003	SB-4	20.4	6.3	38980	24.9
7/8/2003	SB-6	20.5	6.5	39450	25.2
7/9/2003	AK-1	23.0	5.7	32140	20.1
7/9/2003	AK-2	22.8	5.7	32630	20.4
7/9/2003	AK-3	23.3	5.5	32020	20.0
7/9/2003	AK-4	24.4	5.3	30940	19.2
7/9/2003	NB-3	24.2	5.2	27830	17.1
7/9/2003	NB-4	24.2	5.2	27830	17.1
7/9/2003	NB-5	22.3	5.8	34100	21.4
7/9/2003	NB-6	22.3	5.8	34100	21.4
7/9/2003	NB-7	23.9	5.6	31920	19.9
7/9/2003	PJ-1	22.3	5.8	31690	19.8
7/10/2003	HR-1	20.2	5.5	38320	24.4
7/10/2003	HR-2	21.4	5.7	33320	20.9
7/10/2003	HR-3	21.4	5.7	33320	20.9
7/10/2003	PJ-2	21.5	5.8	32120	20.1
7/10/2003	PJ-4	19.8	5.6	39870	25.5
7/10/2003	PJ-5	18.9	6.6	41430	26.6
7/10/2003	SB-5	18.8	6.5	41710	26.8

