

**NEW YORK AND NEW JERSEY HARBOR NAVIGATION PROJECT**

**AQUATIC BIOLOGICAL SAMPLING PROGRAM  
SURVEY REPORT  
2001–2002**

**Final Report**

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# 1.0 INTRODUCTION

## 1.1 BACKGROUND

This report presents and summarizes results of a biological sampling program conducted in the New York and New Jersey Harbor (Harbor) from December 2001 through July 2002 (2001–2002 Aquatic Biological Sampling Program). The program’s focus was the collection of adult and early life stages of finfish and macroinvertebrates, with an emphasis on winter flounder (*Pseudopleuronectes americanus*).

The 2001–2002 Aquatic Biological Sampling Program supplements data gathered in the baseline 1998–1999 New York and New Jersey Harbor Navigation Study (NYNJHNS) and a 2000–2001 Supplemental Sampling Program. Collectively, the three studies comprise the NYNJHN Project (NYNJHNP). A primary goal of the NYNJHNP 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 water quality. The information collected will assist 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 NYNJHNS found that the Harbor finfish community consisted 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 on the use of Harbor habitats by early life stages of fish, particularly winter flounder, the NYNJHN Supplemental Sampling Program was conducted during 2000–2001.

Although both the 1998–1999 NYNJHNS 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, 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 covering multiple years are needed to understand whether the use of navigation channels and shallow/shoal areas by winter flounder is consistent over time. The Aquatic Biological Sampling Program was designed to meet the need for additional data about how finfish use the New York and New Jersey Harbor.

## **1.2 STUDY OBJECTIVES**

The 2001–2002 Aquatic Biological Sampling Program, with its emphasis on winter flounder, collected data on adult and early life stages of finfish resident in the Harbor between the months of December and July. This is typically the period when winter flounder spawning and early lifestages occur in the New York and New Jersey Harbor.

With regard to winter flounder, 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 sample early life stages.



### **1.3 REPORT ORGANIZATION**

This report describes the 2001–2002 Aquatic Biological Sampling Program and presents and summarizes the data collected. This report is organized as follows: Chapter 2 describes sampling stations and summarizes the methods used to sample adult finfish and ichthyoplankton. Chapter 3 presents the results of bottom-trawl and epibenthic-sled sampling. The final chapter (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

Twenty-six (26) sampling locations were selected for the 2001–2002 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. Of the 26 stations, eight were sampled during both the 2000–2001 Supplemental Sampling Program and 2001–2002 Aquatic Biological Sampling Program; an additional eight stations were sampled during the NYNJHN baseline program as well as the 2000–2001 and 2001–2002 sampling programs.

For the Aquatic Biological Sampling Program, the Harbor was divided into three areas based on geography: Arthur Kill/Newark Bay (AKNB), Upper Bay (UB), and Lower Bay (LB). Among the three 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. Note that stations NB-1 and NB-2, which were sampled the 1998–1999 NYNJHN baseline program and the 2000–2001 Supplemental Sampling Program, were not included in the Aquatic Biological Sampling Program in order to add stations in Lower New York Bay.

- Upper New York Bay

Eleven stations were sampled in the Upper Bay, which includes South Brooklyn (SB) and Port Jersey (PJ) marine facilities. 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 the immediate vicinity of 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 Aquatic 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 and bottom dwelling macroinvertebrates were sampled via bottom trawl surveys conducted from 16 December 2001 to 20 June 2002. 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 the 1998–1999 NYNJHNS baseline program. 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 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 255 bottom trawls were conducted (Table 2-3): 118 at navigation channel stations and 137 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 species collected, total length was measured for a minimum of 25 individuals in each trawl sample. An unbiased selection of 25 specimens was made for non-target species when the number of fish collected exceeded 25. Except for winter flounder preserved for laboratory analysis, all fish collected were released after on-board examination.

### **2.3 ICHTHYOPLANKTON SAMPLING (EPIBENTHIC SLED TOWS)**

Ichthyoplankton sampling was conducted from 22 January to 11 July 2002. 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 and an inclinometer was used to determine the warp angle from the boat to



confirm that the sled was on the bottom. The net was fitted with a General Oceanics flowmeter (Model 2030R) to calculate sample volume.

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

A total of 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 (egg, yolk-sack larvae, post yolk-sac larvae, or juvenile) based on morphometric characteristics, 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 life stage during analysis because these 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, identification, enumeration, and life-stage designation.

## **2.4 WATER QUALITY AND VELOCITY MEASUREMENTS**

On each sampling date at each station, dissolved oxygen (DO), temperature, 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.

Measurement of current velocity and direction was also done during three sample events (19-21 February, 2-4 April and 4-6 June) at each of the 26 stations using a calibrated Endeco Type 110 Current Meter. Current velocity readings were taken with the sampling vessel anchored in the middle of each station. Velocity measurements were recorded at three depths: one foot (0.3 m) below the surface, mid-way in the water column, and one foot (0.3 m) above the bottom. When the water depth was less than 10 feet (3 m), only the surface and mid-water-column readings were recorded

## **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. Trawl duration was ten minutes; however, total tow times were reduced to account for obstructions, limited transect distances, commercial traffic, etc.

### **2.5.2 Ichthyoplankton**

Ichthyoplankton densities (Number per 1000 cubic meters [ $m^3$ ]) 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 (Arthur Kill/Newark Bay, Upper 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 50 fish species representing 29 families 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 2001–2002 Aquatic Biological Sampling Program.

The lowest fish abundance occurred in the Lower Bay (Tables 3-2a to 3-2c). The most common species (e.g., spotted hake and striped bass) were collected throughout the Harbor, regardless of sample area or station depth. 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 100





during a number of weeks, and was typically higher in navigation channel areas. Peaks in abundance were observed at the Arthur Kill/Newark Bay and Lower Bay stations, where the CPUEs exceeded 150. The highest CPUE (252 fish) was observed at the Arthur Kill navigation channel stations during mid-April.

Figures 3-2 through 3-4 present monthly species composition collected in the three Harbor areas. As can be seen, flounder species abundance was patchy. Winter flounder were collected throughout the program, but at relatively low abundances except in the Arthur Kill/Newark Bay area during June, when they represented 23% of the catch. Windowpane were collected from April to June in the Upper Bay and Lower Bay, and during April in the Arthur Kill/Newark Bay. Smallmouth flounder were collected at Lower Bay stations from December through May but were most abundant during winter months (December through February). Smallmouth flounder were not collected in the Arthur Kill/Newark Bay, and few were collected during December in the Upper Bay. Summer flounder were collected during June in the Arthur Kill/Newark Bay and Upper Bay but were more abundant in the Upper Bay. No summer flounder were collected at Lower Bay stations.

Blueback herring, white perch and striped bass were the dominant species in the Arthur Kill/Newark Bay during the winter months (December through February), representing approximately 40% to 55% of the catch (Figure 3-2). In the Upper Bay, species diversity was high during the winter months, represented by 22 species (Figure 3-3). Consistent with the high species diversity, no one species dominated in the Upper Bay during the winter months, although alewife, blueback herring, spot, spotted hake, and winter flounder were all common. During the same period, spotted hake, smallmouth flounder, and, to a lesser degree, winter flounder dominated the catch in the Lower Bay (Figure 3-4). Species composition was more consistent throughout the Harbor from March to May, when spotted hake was the most common species (28%–75%). Spotted hake remained a large component of the species composition through June at the Arthur Kill/Newark Bay and Upper Bay stations, while bay anchovy, scup, and striped searobin were common at



the Lower Bay stations in May and June.

In general, fish were collected in greater abundance at the navigation channel stations. This was especially true in the Lower Bay, where CPUEs were generally two to three times greater for the navigation channel stations than for the shallow/shoal stations. Spotted hake, the dominant species collected throughout the Harbor, had higher CPUEs at the navigation channel stations than at the shallow/shoal stations (Tables 3-2a through 3-2c). Bay anchovy, a common species from May to June, was collected more often at the shallow sites in the Upper and Lower Bays.

### **3.1.2 Ichthyoplankton (Epibenthic Sled Sampling)**

Among the eggs, larvae, and juveniles collected throughout the 2001–2002 Aquatic Biological Sampling Program, fish eggs and larvae of 36 species representing 23 families were identified.

The greatest densities were recorded during May and June in the Lower Bay and during June and July in the Arthur Kill/Newark Bay and Upper Bay areas (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.

#### **3.1.2.1 Eggs**

Eggs were collected in the Harbor from January to July, with the greatest densities collected in the Lower Bay from late May to late June (ranging from 89/1000 m<sup>3</sup> to 25,603/1000 m<sup>3</sup>) and in the Arthur Kill/Newark Bay and Upper Bay during June (Figure 3-5). In each of the areas sampled, the highest egg densities were collected in early June, including the peak density of 25,603/1000 m<sup>3</sup> in the Lower Bay. The Arthur Kill/Newark Bay area consistently had lower egg densities compared to the Upper Bay and Lower Bay throughout the month of June. Egg densities were similar between navigation channel and shallow/shoal stations throughout the sampling program except during early June.



During June, in both the Upper Bay and Lower Bay, high bay anchovy and Labridae spp. densities resulted in nearly twice as many eggs at the shallow/shoal stations compared to the navigation channel stations.

Winter flounder dominated overall ichthyoplankton densities in the Arthur Kill/Newark Bay and Lower Bay during February and March (Figures 3-6 through 3-8). Throughout the Harbor, Atlantic menhaden and winter flounder were most common in March catches, while weakfish dominated in April. Bay anchovy dominated June catches throughout the Harbor, while the dominant abundances in the Upper Bay and Lower Bay shifted to other species (labridae and hogchoker, respectively) during July.

### **3.1.2.2 *Yolk-sac Larvae***

Yolk-sac larvae were collected from February to June and ranged in density from 1/1000 m<sup>3</sup> to 231/1000 m<sup>3</sup> (Figure 3-9). The highest average yolk-sac larvae density (231/1000 m<sup>3</sup>) was observed at shallow/shoal stations in the Lower Bay during mid-May. In contrast to Lower Bay densities, those at the Arthur Kill/Newark Bay and Upper Bay stations generally were similar, remaining below 52/1000 m<sup>3</sup> throughout the sampling time frame. Yolk-sac larvae densities were similar between navigation channel and shallow/shoal stations throughout the Harbor except in the Lower Bay, where yolk-sac larvae were more common at the shallow/shoal stations.

Species composition was consistent throughout the Harbor from February through April, when winter flounder and grubby dominated catches (Figures 3-10 through 3-12). It shifted in May, when Atlantic menhaden dominated Upper Bay catches (80%) and was the only species collected at the Arthur Kill/Newark Bay and Lower Bay stations. The highest diversity of yolk-sac larvae were caught during June, in the Upper Bay, where unidentified clupeid (37%) and goosefish (20%) were common in the catch. June catches in the Arthur Kill/Newark Bay area were dominated by bay anchovy (69%), while weakfish and goosefish were the only yolk-sac larvae collected in the Lower Bay. Throughout the Harbor, no yolk-sac larvae were collected in July.



### **3.1.2.3 Post Yolk-sac Larvae**

Post yolk-sac larvae densities were greater than 2,000 /1000 m<sup>3</sup> throughout the Harbor prior to June (Figure 3-13). The peak post yolk-sac larvae densities were collected in June and July, especially in the Lower Bay during mid-June, when the highest density (12,000 /1000 m<sup>3</sup>) was recorded. In general, post yolk-sac larvae densities at the shallow/shoal stations were greater than at navigation channel stations in Arthur Kill/Newark Bay and Lower Bay. During the June peak in Lower Bay, post yolk-sac densities were nearly five-fold greater at the shallow/shoal stations than at the navigation channel stations.

The species composition of post yolk-sac larvae was similar throughout the Harbor during January through April: rock gunnel dominated the catch during January, while winter flounder and grubby were the most common species from February through April (Figures 3-14 to 3-16). In May, species composition varied by Harbor area, with winter flounder dominating in the Arthur Kill/Newark Bay and Upper Bay, and windowpane dominating in the Lower Bay. Bay anchovy and Clupeidae spp. dominated the catch across sampling areas (>61% of the total) in June, when the highest post yolk-sac densities were observed. As in June, species composition shifted again in July. In this final sampling month, unidentified members of the Gobidae were the most commonly collected post yolk-sac larvae throughout the Harbor.

### **3.1.2.4 Juveniles**

Juveniles represented the lowest densities of all ichthyoplankton life stages collected. They were present in samples from mid-May to July (Figure 3-17). The greatest density of juveniles (<10/1000 m<sup>3</sup>) was observed at navigation channel stations in the Upper Bay. The Lower Bay had the lowest juvenile densities of the Harbor areas sampled, and juveniles were collected only at the navigation channel stations in the Lower Bay.



Species composition of juveniles by Harbor area is shown in Figures 3-18 through 3-20. The peak abundance of juveniles in May in the Upper Bay (Figure 3-17) was entirely Atlantic tomcod (Figure 3-19). The northern pipefish was the most abundant juvenile species throughout the Harbor during June and at Arthur Kill/Newark Bay and Lower Bay stations in July. Northern pipefish was the only juvenile species collected in multiple months.

## **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 (Figure 3-21). The highest winter flounder CPUE (19) was recorded in mid-June at shallow/shoal stations in the Arthur Kill/Newark Bay area. In general, winter flounder CPUEs were similar in the three Harbor areas. Winter flounder were more common at navigation channel stations from December through April, especially in the Lower Bay. In the Arthur Kill/Newark Bay and Upper Bay areas, abundance shifted toward shallow/shoal stations later in the sampling schedule. Overall, however, winter flounder were collected in greater densities at the navigation channel stations.

#### ***3.2.1.2 Size Distribution***

All winter flounder caught in the trawl were measured. Of a total of 828 winter flounder measured, total lengths ranged from 25 mm to 397 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 25 to 80 mm and a second larger cluster with lengths ranging from 90-220 mm. The smaller length frequency cluster is representative of the young-of-year fish, and the larger length cluster is representative of immature and adult fish.



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 from December to March— the period when winter flounder typically spawn in the Harbor— generally were less than 240 mm. By June in this area, smaller winter flounder (20 to 80 mm) were collected, and few large fish (>200 mm) were observed. Most of the winter flounder collected at Upper Bay stations from December to March were between 100 mm and 260 mm. Similar to Arthur Kill/Newark Bay collections, most winter flounder in June samples in the Upper Bay area ranged from 30 mm to 80 mm. In general, winter flounder collected in the Lower Bay ranged from 110 mm to 290 mm. A peak in the density of small winter flounder in June was not observed in the Lower Bay.

### **3.2.1.3 Sex Ratio**

Of 93 winter flounder analyzed for sex determination, ranging in preserved length from 229 mm to 371 mm, 2 were immature, 71 were female, and 20 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 were collected in both the Upper Bay and the Lower Bay; the sex ratio was 4:1 females to male in the Upper Bay and 2.5:1 in the Lower Bay. No mature male winter flounder were collected in the Arthur Kill/Newark Bay area.

### **3.2.2 Ichthyoplankton (Epibenthic Sled Sampling)**

The winter flounder egg, yolk-sac larvae, and post yolk-sac larvae life stages were distributed similarly 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 area (Figure 3-27). No juvenile winter flounder were collected during the ichthyoplankton sampling program. Post yolk-sac larvae was the dominant life stage collected (88.8%), followed by yolk-sac larvae and eggs. Winter flounder eggs were collected in greater densities in the Lower Bay than any other area, constituting 83% of the winter flounder eggs collected. The Upper Bay had the second highest percentage of



winter flounder eggs (12%). In the Arthur Kill/Newark Bay area, representing the lowest percentage (5%) of the total winter flounder eggs collected, eggs were collected on only two dates (Figure 3-28).

Winter flounder eggs were collected in the Harbor from mid-February through late April (Figure 3-28). Peak egg densities (85/1000 m<sup>3</sup>) were collected in mid-February at the Lower Bay shallow/shoal stations. Throughout the Harbor, winter flounder egg densities were greater at the shallow/shoal stations than at the navigation channel stations.

Winter flounder yolk-sac larvae densities were greatest in the Lower Bay, where a peak density of 99/1000 m<sup>3</sup> was observed at the shallow/shoal stations (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 (mid-February to late April) in the Upper Bay. Preference for station depth (i.e., navigation channel vs. shallow/shoal station) could not be determined at the Arthur Kill/Newark Bay stations because too few yolk-sac larvae were collected. Winter flounder yolk-sac larvae densities were greater at navigation channel stations in the Upper Bay and at shallow/shoal stations in the Lower Bay.

Post yolk-sac larvae was the most abundant winter flounder life stage; it was collected in the Harbor from mid-February to mid-May (Figure 3-30). Densities were highest at Lower Bay navigation channel stations, where density gradually increased during the sample program to a mid-April peak (>1616/1000 m<sup>3</sup>). Post yolk-sac larvae densities were similar to each other (<200/1000 m) in the Arthur Kill/Newark Bay and Upper Bay areas.

### **3.3 WATER QUALITY**

Average bottom water temperatures ranged from a low of 4.9 °C in the Arthur Kill/Newark Bay and Lower Bay areas during January to a high of 22.6 °C in Arthur Kill/Newark Bay during July (Figure 3-31). Water temperatures among the three Harbor areas were similar across the sampling period; however, temperatures at the Arthur



Kill/Newark Bay stations were warmer than those at Lower Bay and Upper Bay stations toward the final weeks of the program.

Salinity recorded from near bottom depth during ichthyoplankton surveys ranged between 17.3 ppt and 28.6 ppt over the course of the program. Salinities in the Arthur Kill/Newark Bay and the Upper Bay were similar, whereas the Lower Bay had higher salinity.

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 near 10 mg/L during January through February and decreasing throughout the remainder of the program to approximately 6 mg/L during June and July. All water quality sampling data are presented in Appendix C.





## 4.0 DISCUSSION

### 4.1 ALL SPECIES

Finfish species composition in the Harbor based on bottom trawl surveys was dominated by spotted hake juveniles (<100 mm total length). Juvenile spotted hake use the Harbor as nursery habitat and are common in shallow estuaries of the Middle Atlantic Bight (Able and Fahay 1998). Few spotted hake ichthyoplankton were collected during the Biological Sampling Program because the species' spawning does not occur within the sampling areas (Able and Fahay 1998).

In the trawl sampling done as part of the 1998–1999 NYNJHNS baseline program, spotted hake were a relatively small component of the catch, while bay anchovy, striped bass, and weakfish dominated the collections (USACE 1999). As with many fish populations, these species exhibit year-to-year fluctuations in recruitment success that can influence their relative abundance during annual surveys. Although bay anchovy were not common in trawls during the 2001–2002 Aquatic Biological Sampling Program, they were a common species in the Harbor during the program time frame, as indicated by egg and post yolk-sac larvae catches.

### 4.2 WINTER FLOUNDER

Spatial and temporal trends observed in the Aquatic Biological Sampling Program's winter flounder abundance patterns suggest 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). The winter flounder collected during the spawning period were the largest individuals collected (>250 mm), and most of these fish (98%) were sexually mature.

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 ratio of females to males was 4:1 in the Upper Bay and 2.5:1 in the Lower Bay; in the Arthur Kill/Newark Bay area, no mature male winter flounder were collected. This variation in sex ratios among sample areas suggests a gender-specific distribution pattern that can help characterize the relative value of winter flounder spawning areas. Stoner et al. (1999) also noted a gender-specific distribution pattern among winter flounder in the Navesink River estuary, where females outnumbered males in the middle and upper reaches of the estuary, with males more abundant in the lower estuary. Mature males were found throughout the Navesink River estuary (Stoner et al. 1999), unlike the Biological Sampling Program findings, which report mature males only in the Upper and Lower Bays.

The majority of adults collected in the Upper and Lower Bays were found in the navigation channels. Previous Harbor studies have found that adult winter flounder use both navigation channel and shallow/shoal habitats (NMFS 1994; USACE 1999). Although many of the adult fish >250 mm collected in the 2001–2002 Aquatic Biological Sampling Program were in spawning condition, it is unclear if the navigation channel habitat was used for spawning or possibly as staging habitat prior to spawning. The literature supports the premise that winter flounder can spawn over depths ranging from 2 to 80 m (NMFS 1999), and therefore the potential for spawning in the Harbor's navigation channel habitat exists. In any event, the 2001–2002 data indicate that the navigation channels provide important habitat for adult winter flounder during the spawn.

The predominance of winter flounder eggs from February to March in the Lower Bay provides further support for the view that the Lower Bay provides important winter flounder spawning habitat. Winter flounder produce demersal eggs that adhere to the substrate. As a result, it can be assumed that the location in which the eggs are collected is primary spawning habitat. In the 2001–2002 Aquatic Biological Sampling Program, eggs were most common in shallow/shoal habitats, whereas in previous years they were more common in the navigation channels (USACE 1999; USACE 2002). Differences in the depth at which eggs were found across years suggests that other factors—e.g.,



possibly substrate (i.e., sediment type) or food availability—acting either alone or in combination, might have a greater influence on winter flounder spawning habitat than depth.

Results of the 2000–2001 Supplemental Sampling Program and 2001–2002 Aquatic Biological Sampling Program and the 1998–1999 NYNJHNS baseline program suggest that winter flounder spawning success in the Harbor could in fact be linked to the quality of the substrate (i.e., sand/gravel vs. silt/clay). Species that spawn demersal eggs can have reduced spawning success in areas of high deposition of fine material because eggs can suffocate without sufficient aeration (Wootton 1992). Areas with fine sediment substrate (silt/clay) are more characteristic of low-energy or low-velocity areas, whereas coarse substrates consisting of sand and gravel are indicative of higher energy areas. In the 2000–2001 Supplemental Sampling Program, the greatest densities of winter flounder eggs were collected at SB-6, a station characterized by coarse (gravel/sand) substrate (Figure 4-1). The highest winter flounder egg densities observed in the 2001–2002 Aquatic Biological Sampling Program were in areas dominated by coarse gravel/sand substrate in the Lower Bay. Fine silt and clay substrate are more common in the northern parts of the Upper Bay and throughout the Arthur Kill/Newark Bay. Based on collection data, winter flounder spawning in these areas was rare during the 2001–2002, 2000–2001, and 1998–1999 investigations. The data suggest that the Lower Bay, with its prevalence of areas of coarse substrate with low deposition, likely provides the best 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. This suggests that young winter flounder move from the primary spawning area in the Lower Bay to areas further into the Harbor estuary. Winter flounder have been recorded using tidal currents to move from spawning areas to settling habitat in coves and inlets (Chant et al. 2000), possibly because these areas have less



energetic cost than higher energy open-water areas. Another hypothesis is that nutrients are replenished in slack-water areas with each tidal cycle, thereby providing ongoing forage for developing winter flounder (Chant et al. 2000). The pattern of movement away from the spawning area and further into the estuary could 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).

The pattern of winter flounder early life-stage migration found in the 2001–2002 Aquatic Biological Sampling Program is similar to that described in the 2000–2001 Supplemental Sampling Program. Specifically in the biological program, winter flounder eggs were collected primarily in lower areas of the Upper Bay, and no eggs were collected in the Arthur Kill/Newark Bay. Winter flounder collected as yolk-sac larvae in the Arthur Kill/Newark Bay constituted a small percentage (8%) of the winter flounder yolk-sac larvae caught in the Harbor. Winter flounder post yolk-sac larvae were collected at all stations in the Harbor, and their occurrence and abundance extended further into the Harbor, with post yolk-sac larvae in the Arthur Kill/Newark Bay constituting 36% of the overall winter flounder catch.

The 2001–2002 Aquatic Biological Sampling Program provides additional support to the findings of the Supplemental Study (2000–2001), which indicated that winter flounder move or disperse further into the New York and New Jersey Harbor Estuary after hatching. The patterns observed in the Aquatic Biological Sampling Program suggest 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 further into the Harbor.

As noted earlier, the Harbor is part of the Hudson-Raritan Estuary, which supports a diverse fish community consisting of estuarine, marine, and anadromous fish species indicative of large coastal estuaries in the Middle Atlantic Bight. The Harbor's varied and dynamic habitats—ranging widely in depth, hydraulic conditions, sediment type, and



water quality conditions—serve as spawning grounds, migratory pathways, and nursery/foraging area to many estuarine species. The 2001–2002 Aquatic Biological Sampling Program, a complement to the 1998–1999 NYNJHN baseline program and the 2001–2001 Supplemental Sampling Program, has pinpointed the spatial and temporal occurrence of species, especially winter flounder, in the Harbor’s Arthur Kill/Newark Bay, Upper Bay, and Lower Bay areas. The program’s occurrence data sheds important light on the significance of habitat characteristics of the three Harbor areas examined.



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**Table 2-1** Description of stations sampled during the 2001–2002 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.

<b>Part</b>	<b>Specification</b>
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** Numbers of trawl and epibenthic sled tows conducted during the 2001-2002 Aquatic Biological Sampling Program.

Area	Arthur Kill	Newark Bay	Port Jersey	South Brooklyn	Lower Bay
Number of Trawls	39	50	50	60	56*
Number of Epibenthic Sled Tows	48	60	60	72	72

\*Four sites (LB-3, LB-4, LB-5 and LB-6) were not sampled during the week of 18 December because of weather conditions.



**Table 2-4** Specifications of epibenthic sled and plankton net used to collect early life stages of finfish during the 2001-2002 Aquatic Biological Sampling Program.

<b>Part</b>	<b>Specification</b>
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 2-5** Water quality and velocity measurements made during the 2001-2002 Aquatic Biological Sampling Program.

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



**Table 3-1 a.** Monthly average trawl CPUE by species for all navigation channel stations combined during the 2001-2002 NYNJHN Sampling Program.

Species	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02
Alewife	1.15	4.98	3.39	2.36	0.08	0.17	
American Eel		0.04				0.52	0.25
American Shad	0.65	0.38	0.58	0.17			
Atherinid unidentified		0.05					
Atlantic Herring		0.08	0.07	0.04	1.67	0.08	
Atlantic Menhaden	0.10	0.26		0.25		0.42	0.75
Atlantic Silverside			0.17				
Atlantic Tomcod						0.25	
Bay Anchovy	0.35	0.04		0.08	0.08	4.54	4.33
Black Sea Bass	0.30				0.17	0.08	
Blueback Herring	8.20	8.38	13.15	11.34	0.67	6.96	0.42
Bluefish							0.17
Butterfish						0.25	0.08
Clearnose Skate	1.00	6.00	0.96	0.58	0.83	1.10	0.25
Clupeid unidentified					0.20		0.17
Conger Eel		0.25		0.17			0.08
Cunner	0.20	0.25	2.21	0.29	0.42		
Fourspot Flounder	0.10	0.67	0.04			0.08	0.50
Gizzard Shad		0.17	0.08				
Grubby	0.10	0.48	0.13		0.24	0.08	0.25
Hogchocker						0.08	
Lined Seahorse				0.04			
Longhorn Sculpin		0.04					
Naked Goby	0.10			0.13			
Northern Pipefish	0.10	1.10	1.17	0.92	0.50	0.52	
Northern Puffer						0.10	
Northern Searobin	0.20		0.21	0.17	0.50	1.98	0.58
Oyster Toadfish						0.08	
Red Hake	0.30	1.02	2.00	0.79	1.25	1.94	
Rock Gunnel			0.04	0.04	0.12	0.17	
Scup						10.77	0.25
Silver Hake	0.10		0.88	0.46	0.08		
Smallmouth Flounder	1.40	7.36	5.88	0.71	0.75	1.42	0.17
Spot	0.20	1.01	0.04				
Spotted Hake	6.15	14.32	19.23	19.54	106.22	78.10	20.33
Striped Bass	2.10	14.12	12.49	1.67	0.63	0.08	0.08
Striped Cuskeel		0.17	0.04	0.25	0.25	0.17	0.08
Striped Searobin				0.08		9.23	3.83
Summer Flounder	0.10	0.13		0.08	0.25	1.02	1.17
Tautog		0.46		0.04	0.17		0.08
Unidentified	0.10						
Weakfish	1.60	4.75				0.25	0.17
White Perch	0.75	17.92	25.71	1.00			
Windowpane	2.20	4.93	2.52	0.96	3.36	3.25	3.33
Winter Flounder	2.75	7.35	6.05	2.04	6.57	4.96	2.25



**Table 3-1 b.** Monthly average trawl CPUE by species for all shallow/shoal stations combined during the 2001-2002 NYNJHN Sampling Program.

Species	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02
Alewife	0.69	7.68	1.96	3.25	0.64		
American Eel					0.24	0.36	
American Shad	1.42	1.27	1.46	1.57			
Atherinid unidentified		1.01					
Atlantic Herring		0.13	0.54	0.04	0.07	0.09	
Atlantic Menhaden		0.05		0.26	0.07	0.71	1.05
Atlantic Silverside		0.07	1.11	0.22			
Atlantic Tomcod				0.12		3.29	1.43
Bay Anchovy	0.09	0.16		0.05	0.15	20.37	6.42
Black Sea Bass					0.32	0.14	0.38
Blueback Herring	2.83	3.84	3.12	2.42	0.83	0.81	
Bluefish							0.21
Butterfish						0.18	
Clearnose Skate	0.50	1.28	0.23	0.11	0.85	0.07	0.07
Clupeid unidentified		0.10			0.46		
Conger Eel					0.12		
Cunner			0.12		0.18	0.25	0.48
Feather Blenny				0.04			
Gizzard Shad		0.16		0.06			
Grubby		0.68	0.15	0.04	0.07	0.07	0.33
Hickory Shad						0.07	
Lined Seahorse				0.04	0.07		
Naked Goby	0.17			0.07	0.16		0.12
Northern Pipefish		0.04		0.11	0.60	0.14	0.50
Northern Puffer						0.07	
Northern Searobin				0.14	0.81	0.24	1.00
Oyster Toadfish							0.14
Red Hake	0.70	0.12	0.04	0.04			
Rock Gunnel				0.04	0.18		
Scup						5.00	4.69
Seaboard Goby		0.18					
Smallmouth Flounder	1.97	3.72	1.15	0.79	0.75	1.31	0.81
Smooth Dogfish							0.29
Spot	10.00	3.95	0.36				
Spotted Hake	1.53	0.55	0.55	5.74	20.07	34.16	5.77
Striped Bass	1.36	9.90	12.16	4.90	14.09	6.24	2.60
Striped Cuskeel				0.04	0.65		
Striped Killifish		0.04					
Striped Searobin					0.07	0.29	
Summer Flounder					0.37	2.47	6.04
Tautog	0.17	0.12			0.18	0.14	
Weakfish	0.17					0.17	0.14
White Perch		11.93	2.12	1.25			
Windowpane		1.13	0.40	0.77	3.90	1.74	3.88
Winter Flounder	0.92	1.35	1.22	1.22	3.01	2.38	10.19



**Table 3-2 a.** Monthly average trawl CPUE by species for all navigation channel stations combined and all shallow/shoal stations combined in the Arthur Kill/Newark Bay during the 2001-2002 NYNJHN Sampling Program.

**Navigation Channel Stations**

Species	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02
Alewife	0.63	1.59	2.71	0.75	0.25		
American Eel		0.13				1.31	0.25
American Shad	0.63		0.50	0.13			
Atlantic Herring			0.21	0.13	4.75	0.25	
Atlantic Menhaden		0.13		0.13		0.25	2.00
Atlantic Silverside			0.13				
Bay Anchovy	0.63			0.25		5.38	10.75
Blueback Herring	12.00	2.05	8.63	6.25	0.50	20.38	0.25
Butterfish							0.25
Clupeid unidentified					0.61		0.50
Conger Eel							0.25
Cunner		0.13		0.25			
Fourspot Flounder			0.13				
Gizzard Shad		0.50	0.25				
Grubby		0.43	0.13		0.71	0.25	0.75
Hogchocker						0.25	
Naked Goby				0.13			
Northern Pipefish		0.13		0.13	0.25	0.31	
Northern Searobin						2.69	1.00
Oyster Toadfish						0.25	
Red Hake				0.13	0.25		
Rock Gummel					0.36		
Smallmouth Flounder		0.38	0.25	0.13	0.25		
Spotted Hake	3.63	1.80	5.33	6.88	233.91	85.38	29.25
Striped Bass	5.00	36.46	37.33	4.88	0.88	0.25	
Striped Cuskeel			0.13		0.50		0.25
Striped Searobin						0.31	1.25
Summer Flounder				0.13		0.50	0.75
Tautog					0.25		
Weakfish	1.25						0.50
White Perch	1.88	49.78	77.13	3.00			
Windowpane	0.50	1.89	2.58	0.38	3.59	1.13	1.00
Winter Flounder	2.13	5.22	4.04	2.38	5.46	1.06	2.25

**Shallow/Shoal Stations**

Species	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02
Alewife		2.57	1.30	1.00	1.20		
American Eel					0.67	0.50	
American Shad		0.60	0.30	2.81			
Atherinid unidentified		2.50					
Atlantic Herring						0.25	
Atlantic Menhaden				0.53			1.33
Atlantic Silverside			1.20	0.10			
Bay Anchovy		0.20		0.14	0.20	6.04	8.67
Black Sea Bass					0.50	0.20	0.67
Blueback Herring	1.00	0.30	2.48	4.22	1.50	1.27	
Bluefish							0.20
Clearnose Skate			0.33				
Clupeid unidentified					0.50		
Conger Eel					0.33		
Cunner			0.13				0.33
Gizzard Shad		0.44		0.17			
Grubby							0.53
Naked Goby							0.33
Northern Pipefish					0.50		1.20
Northern Searobin						0.49	2.00
Rock Gummel					0.50		
Scup							0.33
Smallmouth Flounder		0.30	0.10		1.50	0.57	1.67
Spot		0.10					
Spotted Hake		0.43	0.35	10.42	19.80	23.74	1.87
Striped Bass		14.63	33.04	10.19	32.17	11.29	7.27
Striped Killifish		0.10					
Striped Searobin						0.20	
Summer Flounder					0.83	2.61	3.40
Tautog					0.50	0.20	
Weakfish						0.29	0.20
White Perch		33.40	5.93	3.50			
Windowpane		0.54	0.30	0.30	7.97	0.29	0.87
Winter Flounder		0.31	1.58	1.33	6.83	2.37	19.13



**Table 3-2 b.** Monthly average trawl CPUE by species for all navigation channel stations combined and all shallow/shoal stations combined in the Upper Bay during the 2001-2002 NYNJHN Sampling Program.

Navigation Channel Stations							
Species	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02
Alewife	1.40	7.99	3.68	2.76		0.40	
American Eel						0.20	0.20
American Shad	0.80	0.72	1.00	0.30			
Atherinid unidentified		0.11					
Atlantic Herring					0.20		
Atlantic Menhaden	0.20	0.52		0.51		0.60	0.20
Atlantic Silverside			0.30				
Atlantic Tomcod						0.60	
Bay Anchovy	0.20	0.10			0.20	6.40	1.20
Black Sea Bass					0.20		
Blueback Herring	6.80	16.08	24.05	17.52	1.20	0.40	0.80
Bluefish							0.40
Butterfish						0.60	
Clearnose Skate	2.00	4.80	0.70	0.20	1.40	1.60	0.40
Conger Eel				0.10			
Cunner		0.10	4.80	0.40	0.40		
Fourspot Flounder						0.20	1.20
Lined Seahorse				0.10			
Naked Goby				0.20			
Northern Pipefish		2.04	1.80	1.40	0.60	0.80	
Northern Searobin				0.30	1.00	1.40	0.40
Red Hake	0.20	0.94	1.70	0.60	1.00	3.60	
Rock Gunnel						0.20	
Scup						0.40	0.60
Silver Hake	0.20		0.10	0.10	0.20		
Smallmouth Flounder	0.40	1.35	0.20	0.30	0.20	0.20	0.20
Spot	0.40	2.43	0.10				
Spotted Hake	7.60	12.83	11.28	22.30	49.80	69.20	23.60
Striped Bass	0.20	2.29	0.10	0.10	0.80	0.20	
Striped Cuskeel				0.20	0.20	0.40	
Striped Searobin				0.10		0.80	2.00
Summer Flounder		0.10			0.40	0.60	2.20
Tautog		1.00		0.10	0.20		0.20
Unidentified	0.20						
Weakfish	2.20	11.40				0.40	
Windowpane	4.00	8.03	3.28	1.30	2.80	5.00	6.20
Winter Flounder	2.40	9.09	7.38	1.40	4.40	1.60	2.80

Shallow/Shoal Stations							
Species	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02
Alewife	1.19	15.71	3.38	6.68	0.33		
American Eel						0.42	
American Shad	2.43	2.46	3.17	1.32			
Atherinid unidentified		0.28					
Atlantic Herring		0.21			0.17		
Atlantic Menhaden		0.12		0.18	0.17	1.67	1.17
Atlantic Silverside			0.83	0.44			
Atlantic Tomcod				0.28		7.67	3.33
Bay Anchovy	0.17	0.20			0.19	42.17	1.92
Black Sea Bass						0.17	0.33
Blueback Herring	4.29	8.55	5.21	2.06	0.52	0.83	
Bluefish							0.17
Butterfish						0.42	
Clearnose Skate	0.86	1.32	0.08	0.25	0.97		
Clupeid unidentified		0.24			0.67		
Cunner			0.18		0.42	0.42	0.83
Grubby		0.08	0.27	0.08	0.17		0.33
Hickory Shad						0.17	
Naked Goby	0.29			0.08	0.37		
Northern Pipefish					0.97	0.33	0.17
Northern Puffer						0.17	
Northern Searobin				0.25	1.89	0.17	0.67
Oyster Toadfish							0.33
Red Hake	1.28	0.28	0.08				
Rock Gunnel				0.08			
Scup						1.67	4.50
Seaboard Goby		0.42					
Smallmouth Flounder	3.61	2.09	0.52	0.42	0.17	2.42	0.50
Spot	18.33	9.13	0.83				
Spotted Hake	2.48		0.42	4.12	24.32	49.92	11.75
Striped Bass	2.33	10.91	0.84	2.95	6.06	5.00	
Striped Cuskeel					1.53		
Striped Searobin					0.17	0.17	
Summer Flounder					0.17	3.25	11.25
Tautog	0.29	0.20					
Weakfish	0.29					0.17	0.17
Windowpane		0.94	0.26	1.47	1.64	3.50	8.33
Winter Flounder	1.57	2.71	1.19	1.65	0.67	2.58	7.83



**Table 3-2 c.** Monthly average trawl CPUE by species for all navigation channel stations combined and all shallow/shoal stations combined in the Lower Bay during the 2001-2002 NYNJHN Sampling Program.

**Navigation Channel Stations**

Species	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02
Alewife	2.00	4.50	3.83	3.83			
American Eel							0.33
American Shad		0.33					
Atlantic Herring		0.33					
Atlantic Menhaden						0.33	
Bay Anchovy						0.33	1.00
Black Sea Bass	3.00				0.33	0.33	
Blueback Herring		4.00	1.00	7.83			
Clearnose Skate		16.00	2.67	2.00	1.00	1.75	0.33
Conger Eel		1.00		0.50			
Cunner	2.00	0.67	0.83	0.17	1.00		
Fourspot Flounder	1.00	2.67					
Grubby	1.00	1.33	0.33				
Longhorn Sculpin		0.17					
Naked Goby	1.00						
Northern Pipefish	1.00	0.83	1.67	1.17	0.67	0.33	
Northern Puffer						0.42	
Northern Searobin	2.00		0.83	0.17	0.33	2.00	0.33
Red Hake	2.00	2.50	5.17	2.00	3.00	1.75	
Rock Gunnel			0.17	0.17			0.33
Scup						42.42	
Silver Hake			3.33	1.67			
Smallmouth Flounder	12.00	26.67	22.83	2.17	2.33	5.33	0.33
Spotted Hake	9.00	33.50	51.00	31.83	30.00	83.25	3.00
Striped Bass		0.33					
Striped Cuskeel		0.67		0.67			
Striped Searobin				0.17		35.17	10.33
Summer Flounder	1.00	0.33		0.17	0.33	2.42	
Tautog		0.17					
Weakfish						0.33	
Windowpane		4.33	1.17	1.17	4.00	3.17	1.67
Winter Flounder	7.00	7.67	6.50	2.67	11.67	15.75	1.33

**Shallow/Shoal Stations**

Species	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02
Alewife		0.17	0.33	0.17	0.33		
Atlantic Herring		0.17	2.50	0.17			
Atlantic Menhaden							0.33
Atlantic Silverside		0.33	1.50				
Bay Anchovy						0.67	11.67
Black Sea Bass					0.67		
Blueback Herring		0.33		0.17	0.33		
Bluefish							0.33
Clearnose Skate		3.33	0.33		2.00	0.33	0.33
Cunner						0.33	
Feather Blenny				0.17			
Grubby		3.00	0.17			0.33	
Lined Seahorse				0.17	0.33		
Naked Goby				0.17			
Northern Pipefish		0.17		0.50			
Northern Searobin				0.17			
Red Hake				0.17			
Scup						20.00	12.33
Smallmouth Flounder		12.67	3.71	2.83	0.67	0.33	
Smooth Dogfish							1.33
Spotted Hake	1.00	1.83	1.17	1.17	12.00	20.00	0.33
Striped Bass						0.33	
Striped Cuskeel				0.17			
Striped Searobin						0.67	
Summer Flounder						0.67	
Tautog		0.17				0.33	
Windowpane		2.50	0.83	0.17	1.67	0.67	
Winter Flounder		0.33	0.67	0.17	1.33	2.00	

**Table 3-3 a** Monthly average ichthyoplankton density (No./1000m<sup>3</sup>) by species for all navigation channel stations in Arthur Kill/Newark Bay during the 2001-2002 Aquatic Biological Sampling Program.

**Egg**

Species	January	February	March	April	May	June	July
Atlantic menhaden			1.19		95.97	12.75	
Bay anchovy						2221.03	355.95
Four beard rockling			0.69	0.56			
Hogchocker						38.83	2.96
Labridae					41.88	252.98	48.66
Unidentified						2.04	
Weakfish				4.88	33.56	41.20	
Windowpane						998.05	

**Yolk-sac Larvae**

Species	January	February	March	April	May	June	July
Atlantic menhaden					0.97		
Atlantic silverside						0.64	
Grubby		13.54	14.70	6.00			
Winter flounder		1.85	12.80	2.67			

**Post-yolk sac Larvae**

Species	January	February	March	April	May	June	July
Atlantic menhaden	1.67			1.56	1.08		
Bay anchovy						114.33	66.31
Blennidae							1.38
Butterfish							1.48
Clupeid unidentified						59.95	20.29
Gobiid unidentified						45.72	1462.52
Grubby		18.85	36.96	16.48	1.14		
Northern pipefish						16.54	10.79
Northern puffer						0.83	
Rock gunnel	9.80	3.28	1.25				
Spot		1.73			0.85		
Summer flounder		0.67					
Unidentified						5.68	114.88
Weakfish						8.80	40.54
Windowpane					2.26	2.38	
Winter flounder		1.25	14.06	39.16	64.47	1.66	

**Juvenile**

Species	January	February	March	April	May	June	July
Northern pipefish						0.89	4.00
Windowpane						0.47	



**Table 3-3 b.** Monthly average ichthyoplankton density (No./1000m<sup>3</sup>) by species for all shallow/shoal stations in Arthur Kill/Newark Bay during the 2001-2002 Aquatic Biological Sampling Program.

**Egg**

Species	January	February	March	April	May	June	July
Atlantic menhaden					45.20	48.28	
Bay anchovy					7.61	3085.73	619.90
Hogchocker					0.60	4.16	1.35
Labridae					46.42	325.10	29.05
Unidentified						12.79	
Weakfish				4.06	10.59	5.12	0.97
Windowpane						456.25	
Winter flounder		0.52	3.04				

**Yolk-sac Larvae**

Species	January	February	March	April	May	June	July
Bay anchovy						5.01	
Cunner						1.74	
Grubby		4.58	11.77	2.54			
Winter flounder		3.34	2.12	8.14			

**Post-yolk sac Larvae**

Species	January	February	March	April	May	June	July
American sandlance			0.50				
Atlantic mackerel					0.60		
Atlantic menhaden				0.46		6.55	
Atlantic silverside					3.99		
Bay anchovy				0.48		438.86	204.26
Blennidae							3.50
Clupeid unidentified						168.58	9.73
Gobiid unidentified						290.00	2295.95
Goosefish						0.67	
Grubby		11.02	52.67	15.24	0.49		
Northern pipefish					0.43	59.90	16.02
Rock gunnel	2.64	3.59					
Spot			0.51				
Tautog						1.08	
Unidentified						18.67	101.23
Weakfish						44.10	2.71
Windowpane					1.76	0.90	
Winter flounder		2.24	41.92	73.14	13.39		

**Juvenile**

Species	January	February	March	April	May	June	July
Northern pipefish						2.46	

**Table 3-3 c.** Monthly average ichthyoplankton density (No./1000m<sup>3</sup>) by species for all navigation channel stations in Upper Bay during the 2001-2002 Aquatic Biological Sampling Program.

**Egg**

Species	January	February	March	April	May	June	July
Atlantic menhaden		0.98	9.82	5.68	308.79	136.63	
Bay anchovy					4.03	1791.62	16.79
Bothid unidentified				1.03			
Four beard rockling		0.49	1.26	0.41	1.16		
Gobiid unidentified						1.74	
Hogchocker					5.16	666.76	27.49
Labridae				10.40	305.57	1269.18	265.03
Unidentified	1.14						
Weakfish				185.77	308.68	515.16	54.73
Windowpane				2.80		1537.67	10.97
Winter flounder			0.44	0.33			

**Yolk-sac Larvae**

Species	January	February	March	April	May	June	July
Gobiid unidentified						0.39	
Goosefish						0.34	
Grubby		4.54	25.16	5.29			
Winter flounder		17.58	11.33	13.40	0.46		

**Post-yolk sac Larvae**

Species	January	February	March	April	May	June	July
American sandlance				0.41			
Atlantic mackerel					9.91		
Atlantic menhaden			0.38	0.34	0.76		
Atlantic tomcod			0.44				
Bay anchovy						162.14	228.07
Blennidae							2.48
Butterfish							8.06
Clupeid unidentified						211.36	14.86
Cunner							2.48
Gobiid unidentified						6.75	4152.15
Grubby		9.56	96.03	33.05			
Northern pipefish						8.01	31.51
Rock gunnel	22.68	3.07		0.41			
Spot		1.82					
Striped bass						0.45	
Summer flounder	1.32						
Tautog						0.39	1.44
Unidentified					0.58	35.32	
Weakfish						10.03	135.65
Windowpane					4.53	15.15	
Winter flounder		43.23	51.15	106.32	39.94	0.74	
Yellowtail flounder						0.74	

**Juvenile**

Species	January	February	March	April	May	June	July
Atlantic tomcod					6.04		
Prionotus sp.							2.48
Windowpane						1.24	



**Table 3-3 d.** Monthly average ichthyoplankton density (No./1000m<sup>3</sup>) by species for all shallow/shoal stations in Upper Bay during the 2001-2002 Aquatic Biological Sampling Program.

**Egg**

Species	January	February	March	April	May	June	July
Atlantic menhaden			1.46	1.41	10.92	413.10	
Bay anchovy						5704.45	19.59
Bothid unidentified		0.34					
Four beard rockling			0.56	1.20			
Grubby		0.58					
Hogchocker						36.59	27.77
Labridae				0.98	37.10	2134.39	427.48
Weakfish				40.69	69.51	186.14	19.71
Windowpane						1498.26	63.82
Winter flounder		0.68	7.99				

**Yolk-sac Larvae**

Species	January	February	March	April	May	June	July
Atlantic menhaden					1.58		
Clupeid unidentified						3.30	
Gobiid unidentified						0.96	
Goosefish						1.48	
Grubby		10.36	13.43	6.44			
Unidentified						0.96	
Weakfish						0.85	
Windowpane						0.72	
Winter flounder		6.82	0.65	3.17			

**Post-yolk sac Larvae**

Species	January	February	March	April	May	June	July
American sandlance			0.51				
Atlantic mackerel					2.67		
Atlantic menhaden					0.52		
Atlantic silverside						0.37	
Bay anchovy						113.87	74.42
Blennidae							1.99
Butterfish							9.81
Clupeid unidentified						215.06	
Cunner						0.51	6.44
Four beard rockling			0.82		1.15		
Gobiid unidentified						19.96	3537.27
Goosefish						0.58	
Grubby		26.04	61.20	15.86			
Northern pipefish						29.75	34.45
Rock gunnel	7.68	8.66	0.32				
Summer flounder			0.33				
Tautog						2.84	
Unidentified		0.89				50.90	
Weakfish						7.97	6.32
Windowpane					3.27	7.13	
Winter flounder		24.77	133.30	61.09	56.01		

**Juvenile**

Species	January	February	March	April	May	June	July
Northern pipefish						2.73	
Windowpane						0.72	



**Table 3-3 e.** Monthly average ichthyoplankton density (No./1000m<sup>3</sup>) by species for all navigation channel stations in Lower Bay during the 2001-2002 Aquatic Biological Sampling Program.

**Egg**

Species	January	February	March	April	May	June	July
Atlantic menhaden			11.65	5.01	3248.34	492.11	
Bay anchovy					323.21	6007.78	15.84
Four beard rockling			1.18				
Gadid unidentified				1.56			
Hogchocker					95.65	743.95	60.44
Labridae				28.51	262.53	542.93	34.70
Spotted hake				0.85			
Weakfish				408.86	729.00	256.81	29.23
White perch				0.46			
Windowpane				16.66		623.23	
Winter flounder			6.92	1.23			

**Yolk-sac Larvae**

Species	January	February	March	April	May	June	July
Atlantic menhaden				0.46	110.92		
Grubby		5.41	12.30	0.43			
White perch				1.37			
Winter flounder			26.56	9.47			

**Post-yolk sac Larvae**

Species	January	February	March	April	May	June	July
American sandlance			1.80	2.05			
Atlantic mackerel					14.83		
Atlantic menhaden				1.83			
Atlantic silverside					1.17		
Bay anchovy						513.14	6.93
Butterfish							6.78
Clupeid unidentified						168.52	
Cunner							4.65
Four beard rockling					2.39	1.86	
Gobiid unidentified						1.35	88.83
Grubby		5.56	106.29	16.21			
Northern pipefish						12.57	
Prionotus sp.							2.31
Rock gunnel	23.42	11.28	1.18	0.44			
Spot		1.09					
Striped cuskeel			1.24				
Tautog							6.93
Unidentified						46.89	10.65
Weakfish						26.43	50.31
White perch				15.56			
Windowpane				0.86	117.72	48.81	4.44
Winter flounder		3.02	186.71	716.06	12.01		

**Juvenile**

Species	January	February	March	April	May	June	July
Northern pipefish						1.35	4.62



**Table 3-3 f.** Monthly average ichthyoplankton density (No./1000m<sup>3</sup>) by species for all shallow/shoal stations in Lower Bay during the 2001-2002 Aquatic Biological Sampling Program.

**Egg**

Species	January	February	March	April	May	June	July
Atlantic menhaden			2.58	17.41	2957.45	2229.54	
Bay anchovy					255.18	6193.17	22.41
Four beard rockling				1.01			
Gadid unidentified				0.54			
Hogchocker				0.47	33.83	1303.73	55.07
Labridae				16.71	695.43	2125.22	5.76
Weakfish				233.86	507.46	460.12	
Windowpane				4.85		3102.73	
Winter flounder		42.57	14.29	3.81			

**Yolk-sac Larvae**

Species	January	February	March	April	May	June	July
Atlantic menhaden					231.07		
Goosefish						2.24	
Grubby		6.94	9.19	1.05			
Weakfish						3.40	
Winter flounder		14.22	6.65	37.23			

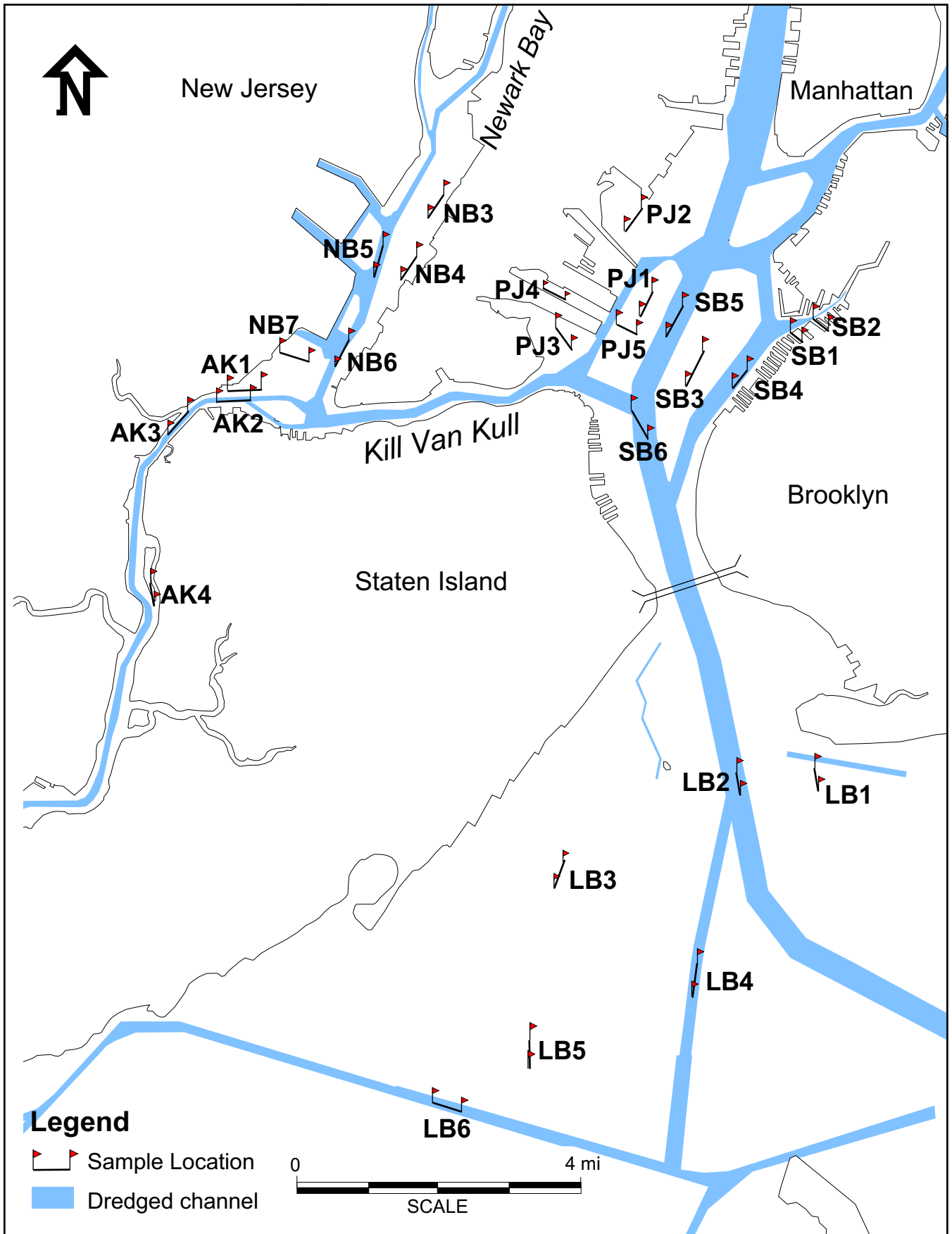
**Post-yolk sac Larvae**

Species	January	February	March	April	May	June	July
American sandlance		0.95	1.27	0.54			
Atlantic mackerel					41.01		
Atlantic menhaden					5.03		
Bay anchovy						4677.76	
Butterfish							5.76
Clupeid unidentified						987.23	
Four beard rockling					1.58		
Gobiid unidentified						413.36	51.75
Goosefish						0.70	
Grubby		13.20	70.25	3.01			
Northern pipefish						63.82	7.17
Rock gunnel	11.43	2.61	0.57				
Unidentified						602.15	
Weakfish						77.53	
Windowpane					112.04	6.44	
Winter flounder		5.50	87.71	259.11	4.35		

**Juvenile**

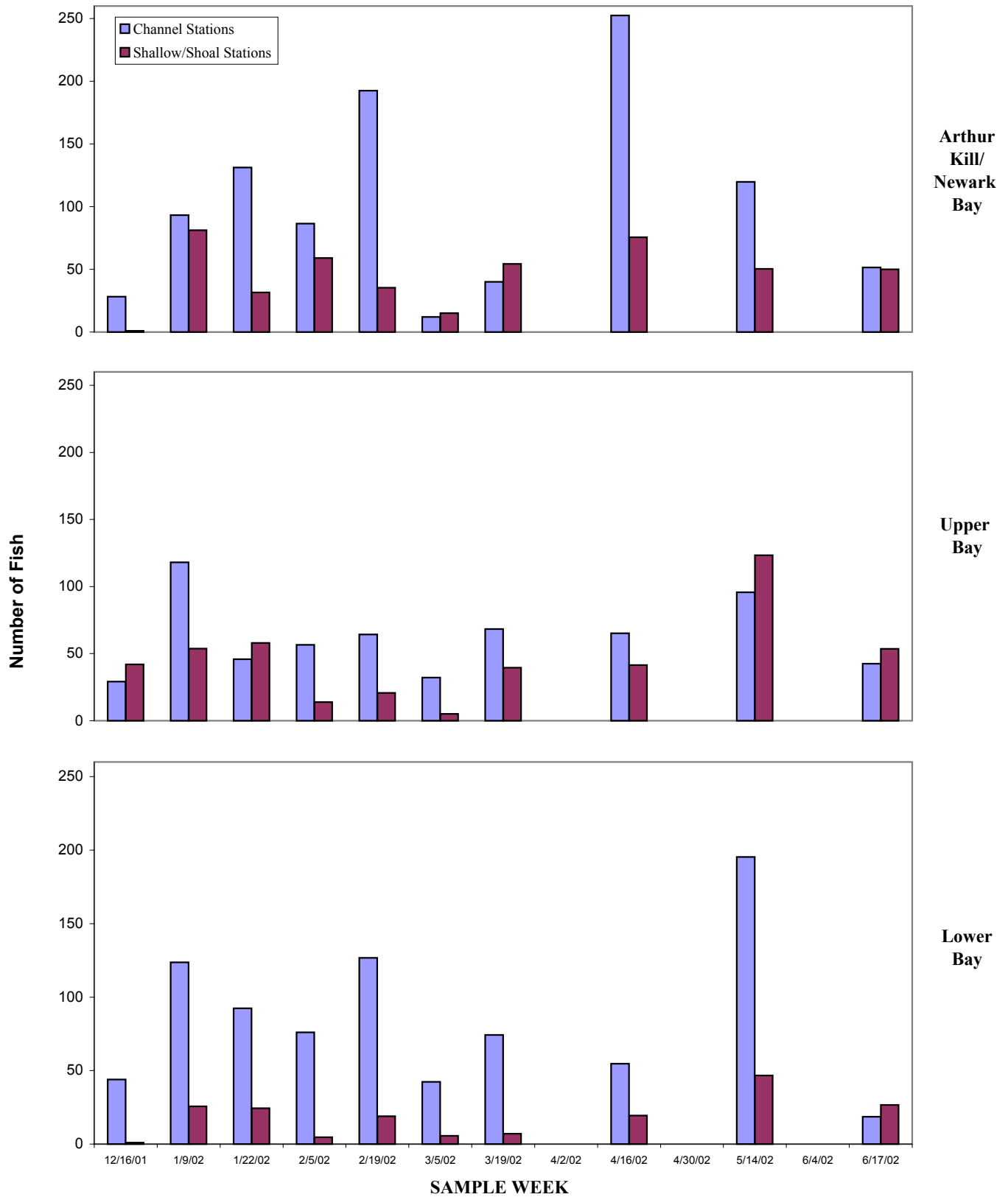
Species	January	February	March	April	May	June	July





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



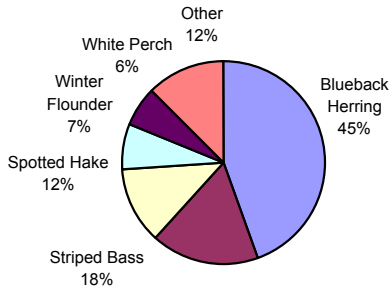


**Figure 3-1**

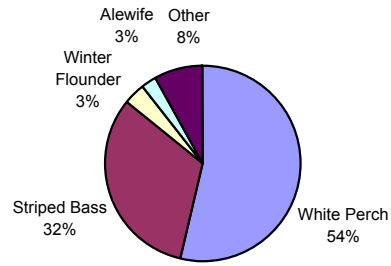
**Average weekly trawl CPUE for all species combined at navigation channel and shallow/shoal stations in three study areas during the 2001-2002 Aquatic Biological Sampling Program.**



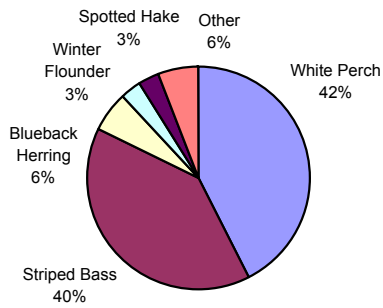
**2001-December (total collected=117)**



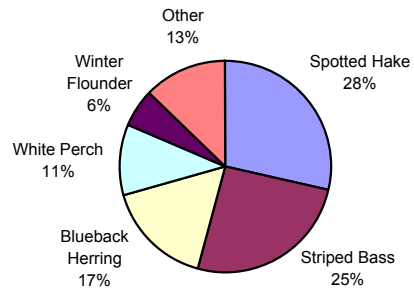
**2002-January (total collected=1462)**



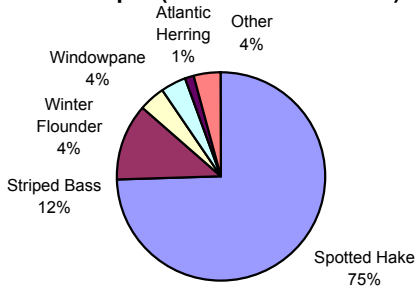
**2002-February (total collected=1587)**



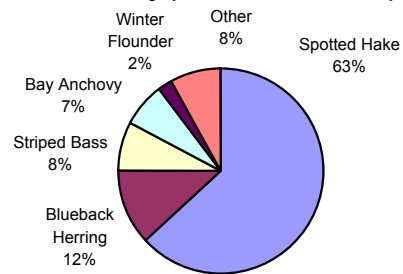
**2002-March (total collected=555)**



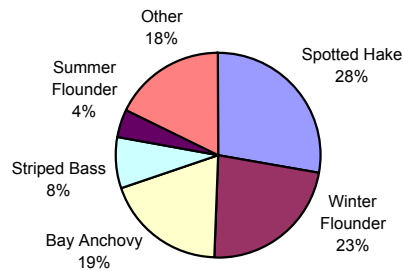
**2002-April (total collected=1388)**



**2002-May (total collected=730)**



**2002-June (total collected=456)**

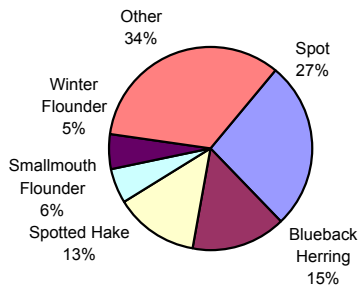


**Figure 3-2**

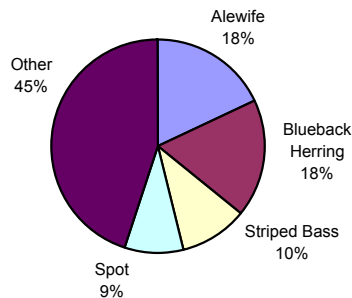
**Species composition of trawls conducted at the Arthur Kill/Newark Bay stations during the 2001-2002 Aquatic Biological Sampling Program.**



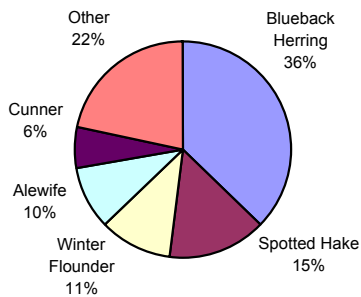
**2001-December (total collected=398)**



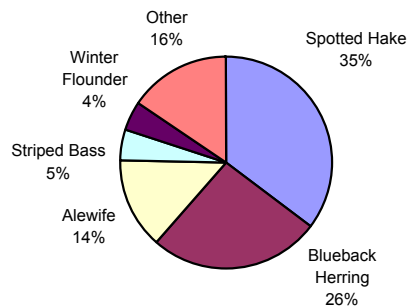
**2002-January (total collected=1489)**



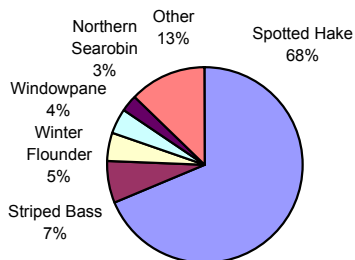
**2002-February (total collected=812)**



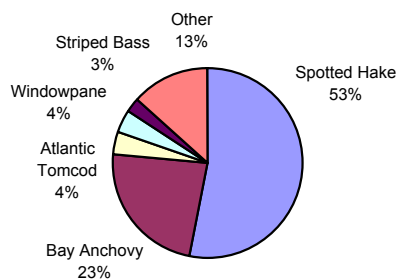
**2002-March (total collected=771)**



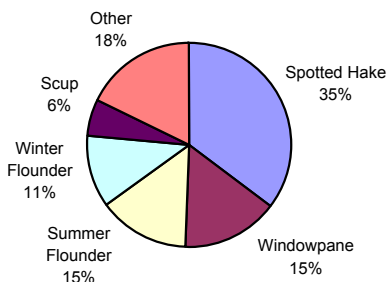
**2002-April (total collected=575)**



**2002-May (total collected=1219)**



**2002-June (total collected=535)**

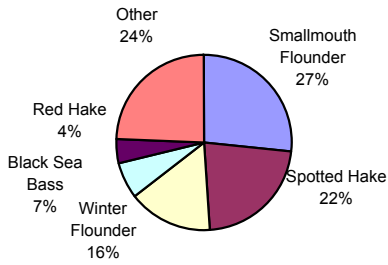


**Figure 3-3**

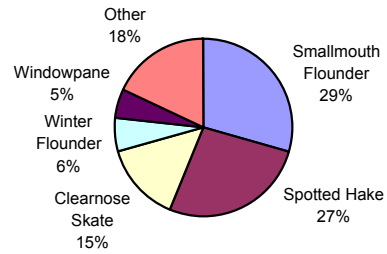
**Species composition of trawls conducted at the Upper Bay stations during the 2001-2002 Aquatic Biological Sampling Program.**



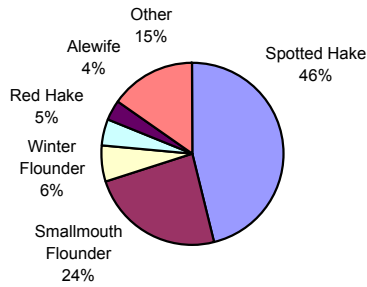
**2001-December (total collected=45)**



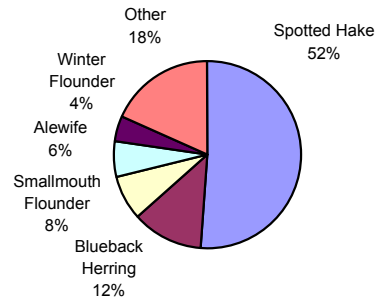
**2002-January (total collected=798)**



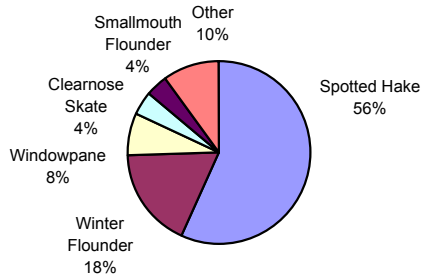
**2002-February (total collected=679)**



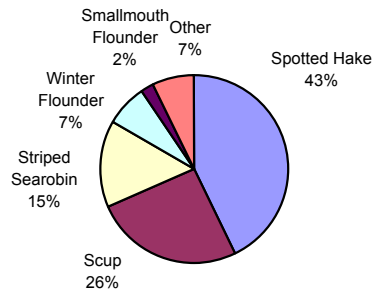
**2002-March (total collected=388)**



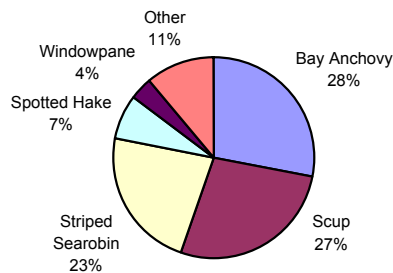
**2002-April (total collected=222)**



**2002-May (total collected=726)**



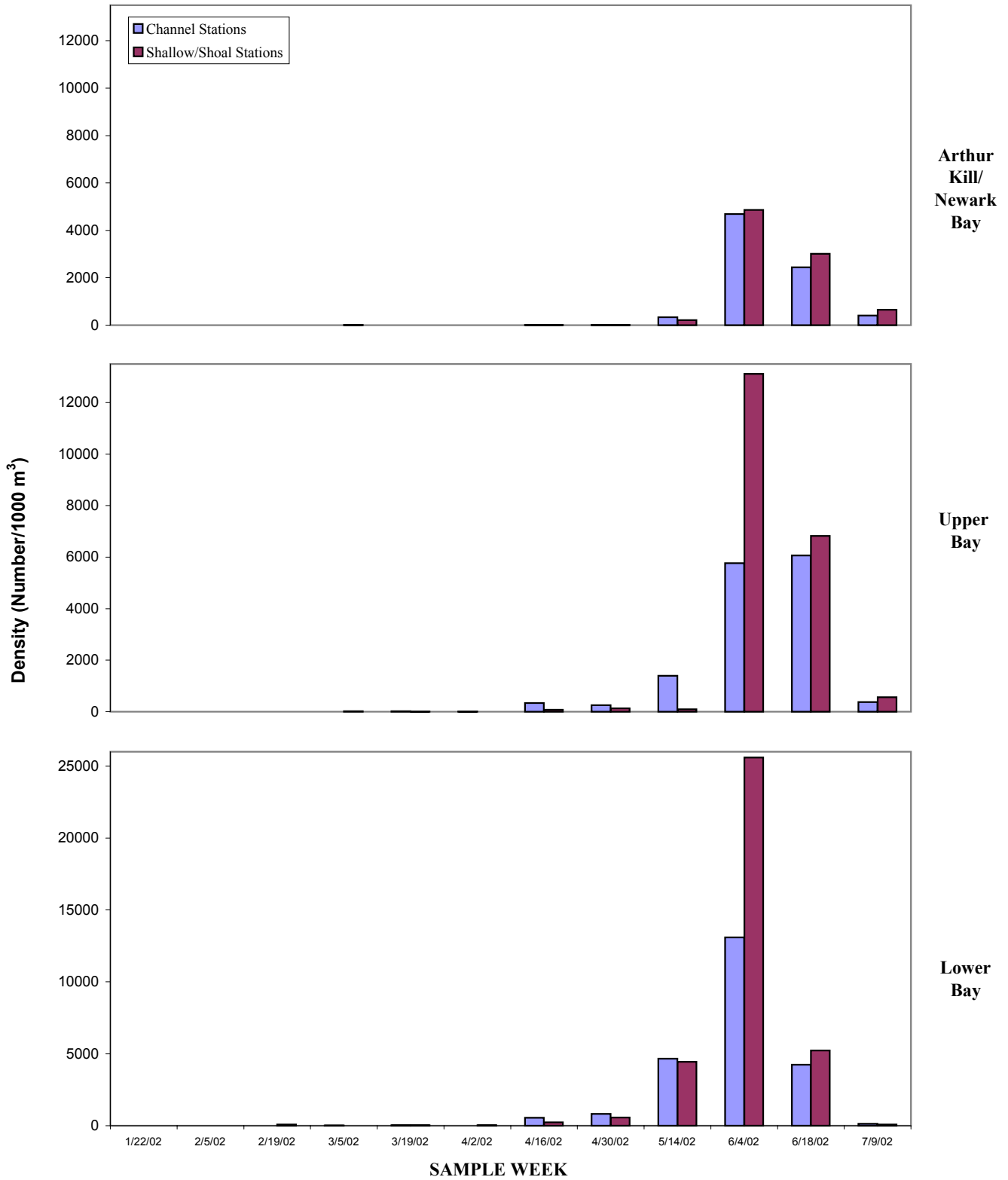
**2002-June (total collected=136)**



**Figure 3-4**

**Species composition of trawls conducted at the Lower Bay stations during the 2001-2002 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 during the 2001-2002 Aquatic Biological Sampling Program.**

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



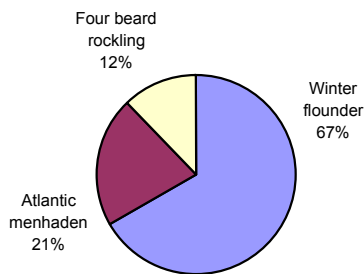
2002-January (total collected=0)

No Eggs Collected

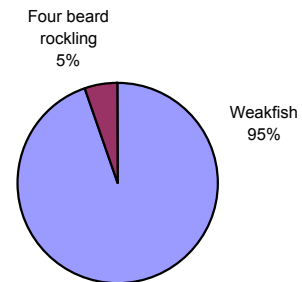
2002-February (total collected=1)



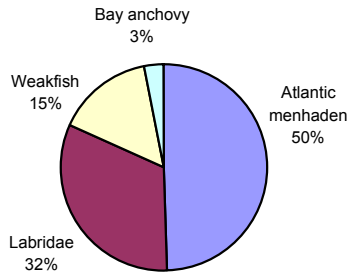
2002-March (total collected=8)



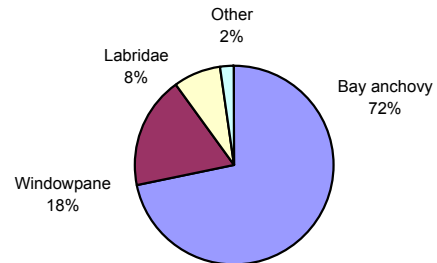
2002-April (total collected=18)



2002-May (total collected=463)



2002-June (total collected=15734)



2002-July (total collected=676)

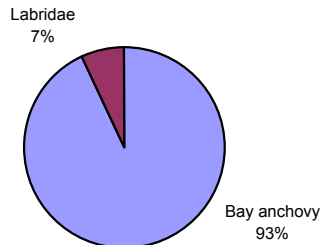
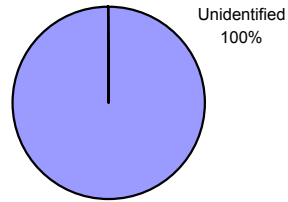


Figure 3-6

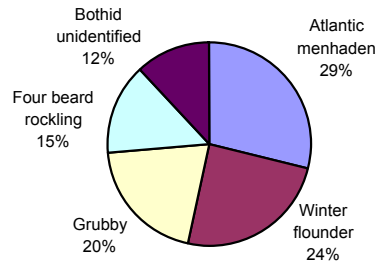
Species composition of eggs collected at the Arthur Kill/Newark Bay stations during the 2001-2002 Aquatic Biological Sampling Program. Density data were used to determine species composition.



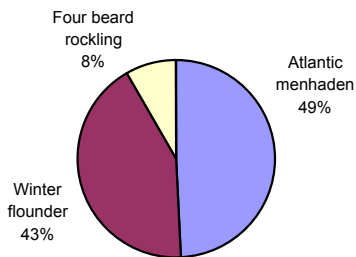
2002-January (total collected=1)



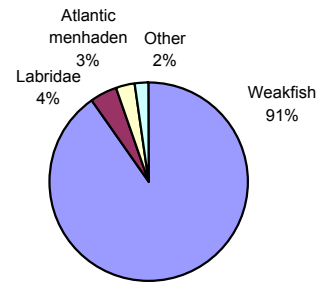
2002-February (total collected=6)



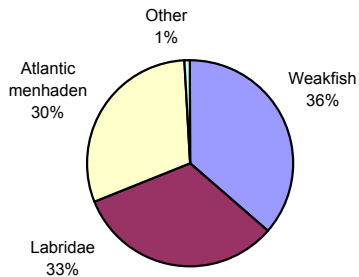
2002-March (total collected=52)



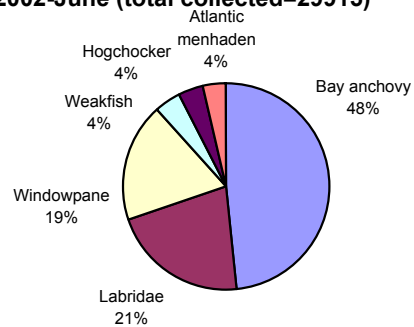
2002-April (total collected=648)



2002-May (total collected=1786)



2002-June (total collected=29915)



2002-July (total collected=489)

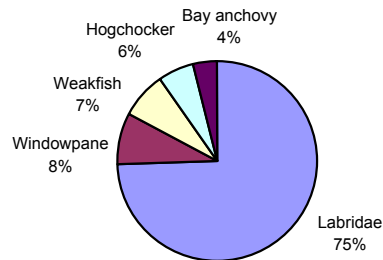


Figure 3-7

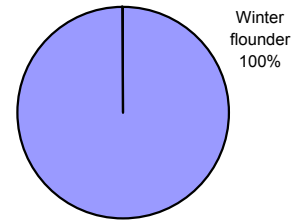
**Species composition of eggs collected at the Upper Bay stations during the 2001-2002 Aquatic Biological Sampling Program. Density data were used to determine species composition.**



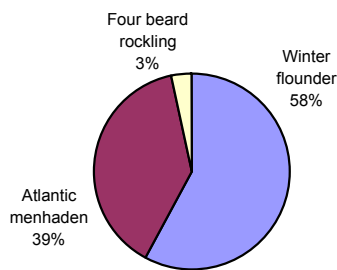
2002-January (total collected=0)

No Eggs Collected

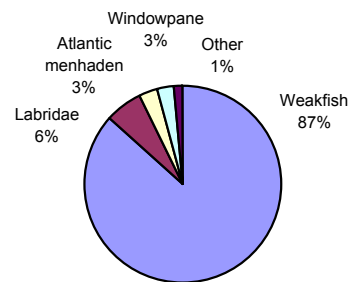
2002-February (total collected=45)



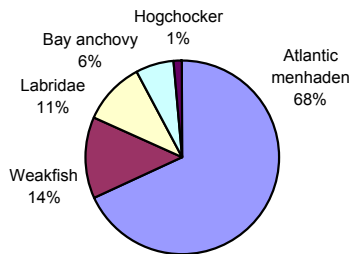
2002-March (total collected=54)



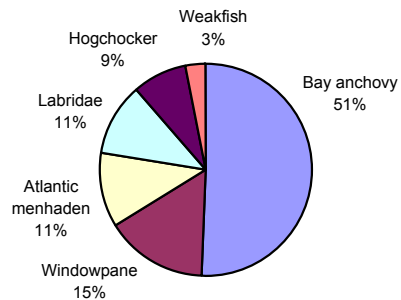
2002-April (total collected=1539)



2002-May (total collected=7020)



2002-June (total collected=28246)



2002-July (total collected=75)

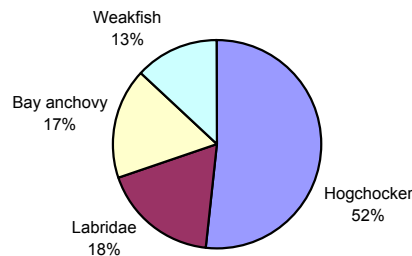
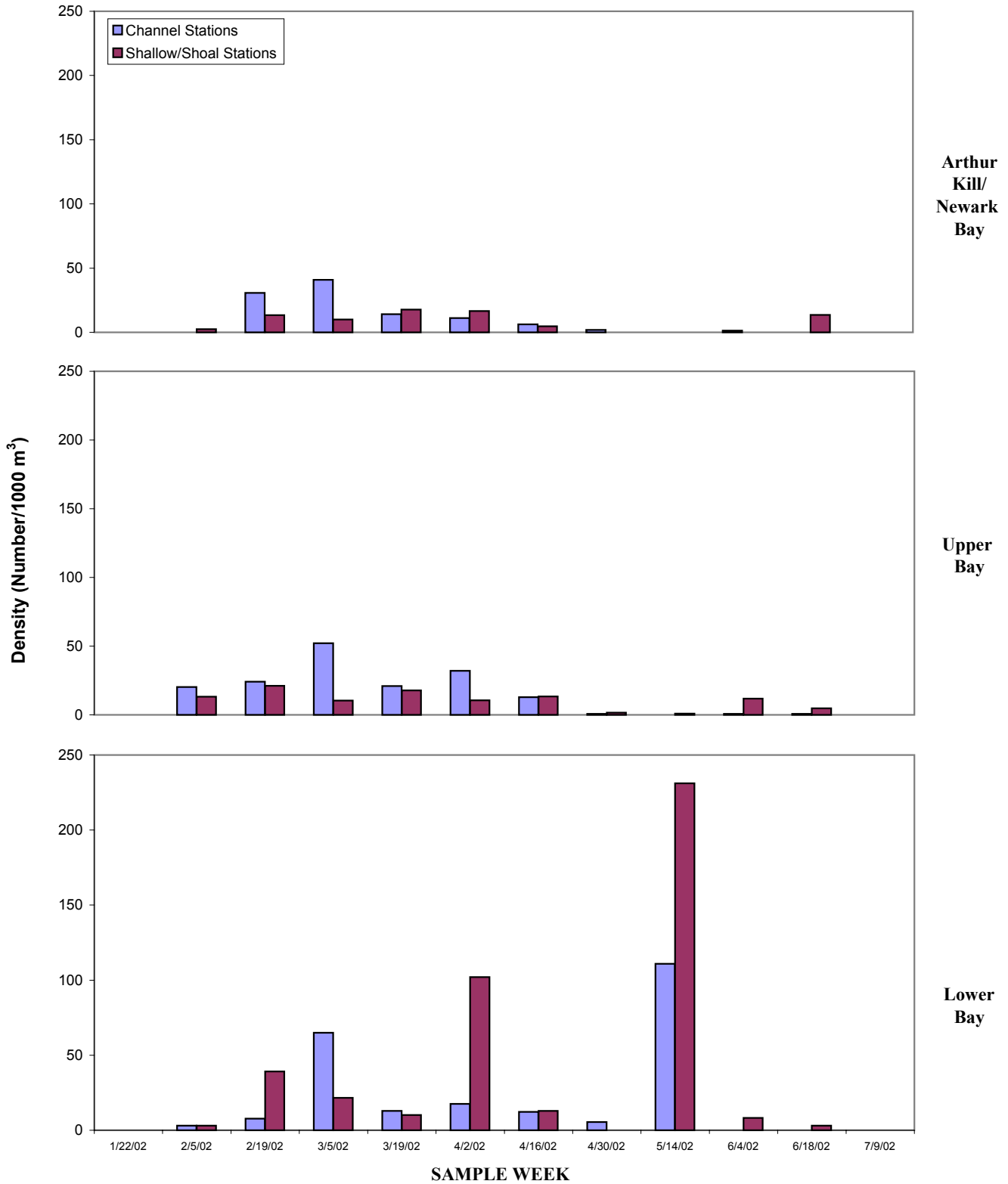


Figure 3-8

Species composition of eggs collected at the Lower Bay stations during the 2001-2002 Aquatic Biological Sampling Program. Density data were used to determine species composition.







**Figure 3-9 Average weekly yolk-sac larvae density of all species combined at navigation channel and shallow/shoal stations in the three study areas during the 2001-2002 Aquatic Biological Sampling Program.**

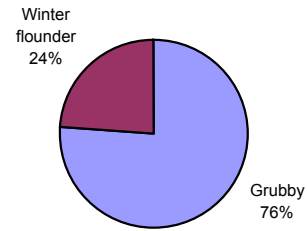
Note(s): Dates listed indicate the first day of each sample week.



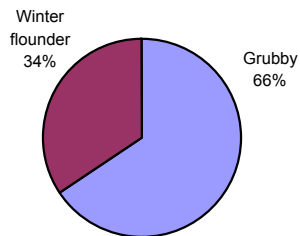
2002-January (total collected=0)

No Yolk-Sac Larvae Collected

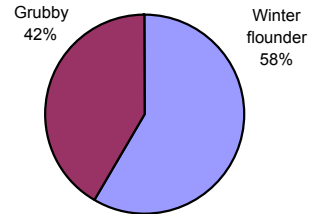
2002-February (total collected=37)



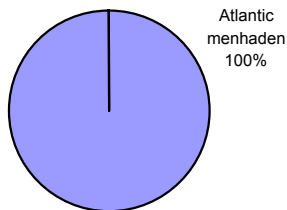
2002-March (total collected=68)



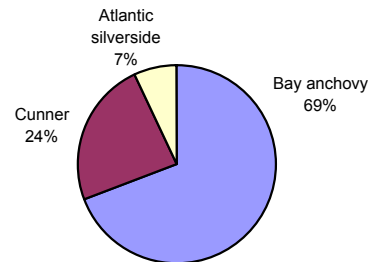
2002-April (total collected=38)



2002-May (total collected=2)



2002-June (total collected=16)



2002-July (total collected=0)

No Yolk-Sac Larvae Collected

Figure 3-10

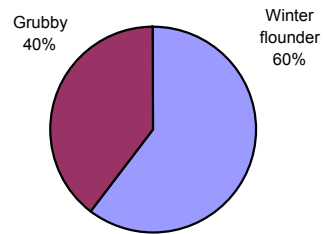
Species composition of yolk-sac larvae collected at the Arthur Kill/Newark Bay stations during the 2001-2002 Aquatic Biological Sampling Program. Density data were used to determine species composition.



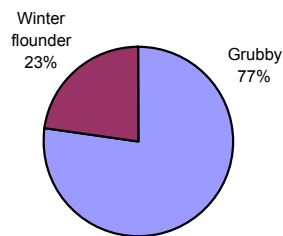
2002-January (total collected=0)

No Yolk-Sac Larvae  
Collected

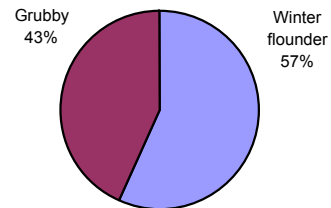
2002-February (total collected=68)



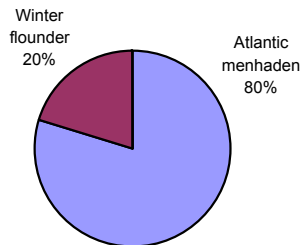
2002-March (total collected=90)



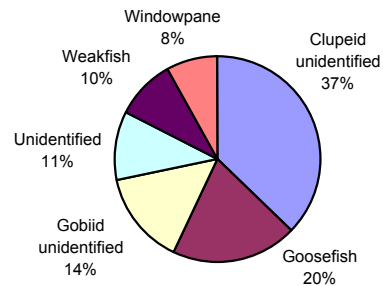
2002-April (total collected=71)



2002-May (total collected=3)



2002-June (total collected=20)



2002-July (total collected=0)

No Yolk-Sac Larvae  
Collected

Figure 3-11

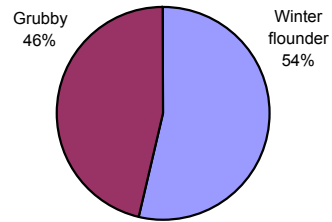
Species composition of yolk-sac larvae collected at the Upper Bay stations during the 2001-2002 Aquatic Biological Sampling Program. Density data were used to determine species composition.



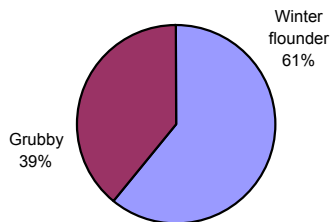
2002-January (total collected=0)

No Yolk-Sac Larvae Collected

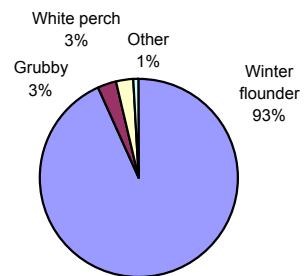
2002-February (total collected=27)



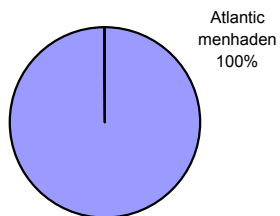
2002-March (total collected=49)



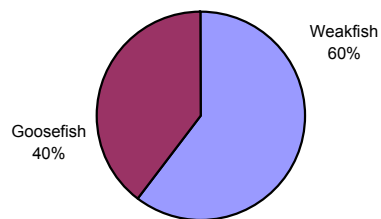
2002-April (total collected=102)



2002-May (total collected=253)



2002-June (total collected=7)



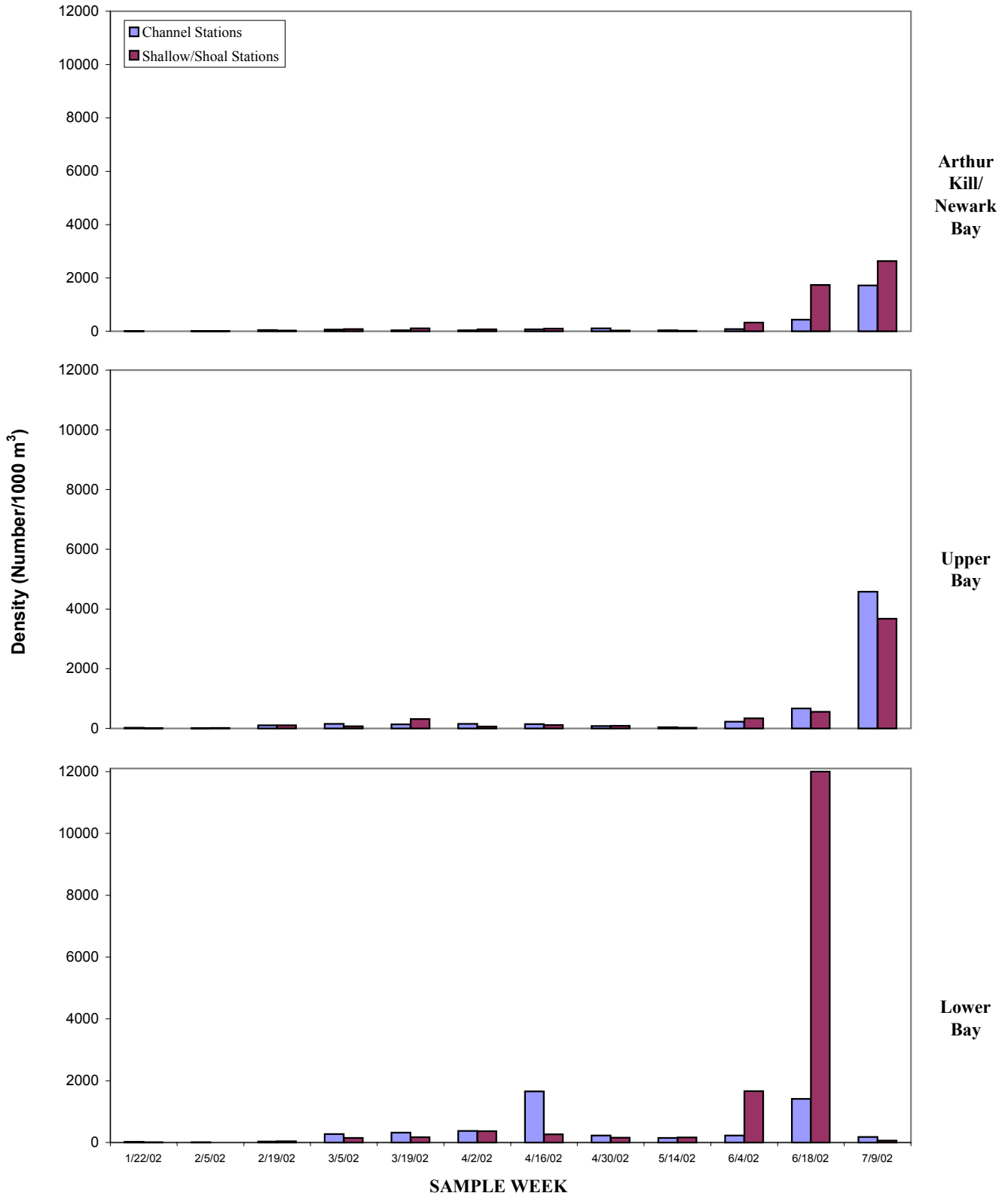
2002-July (total collected=0)

No Yolk-Sac Larvae Collected

Figure 3-12

Species composition of yolk-sac larvae collected at the Lower Bay stations during the 2001-2002 Aquatic Biological Sampling Program. Density data were used to determine species composition.



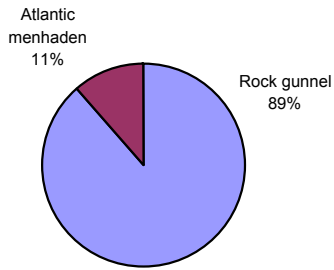


**Figure 3-13** Average weekly post yolk-sac larvae density of all species combined at navigation channel and shallow/shoal stations in the three study areas during the 2001-2002 Aquatic Biological Sampling Program.

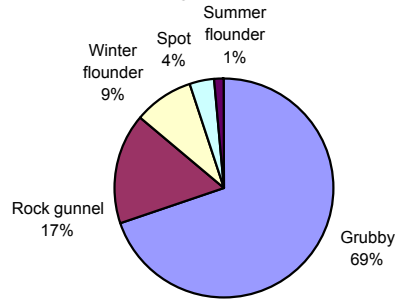
Note(s): Dates listed indicate the first day of each sample week.



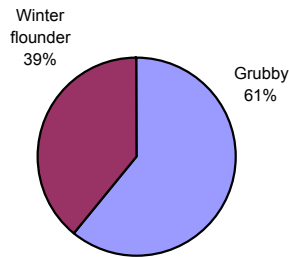
**2002-January (total collected=9)**



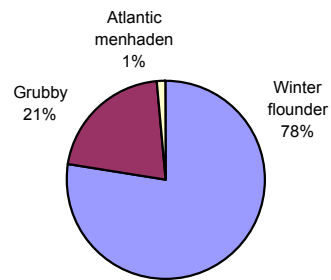
**2002-February (total collected=67)**



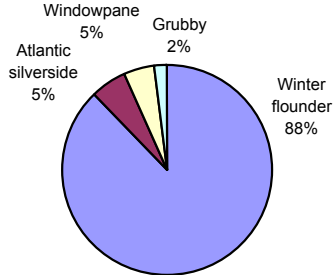
**2002-March (total collected=257)**



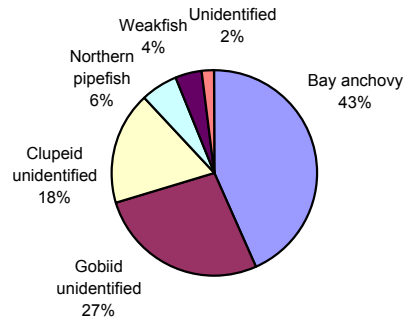
**2002-April (total collected=290)**



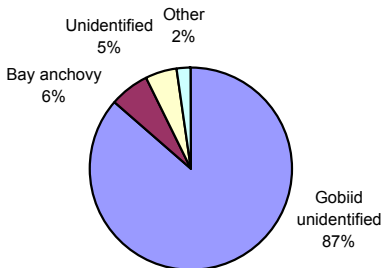
**2002-May (total collected=167)**



**2002-June (total collected=2666)**



**2002-July (total collected=2965)**

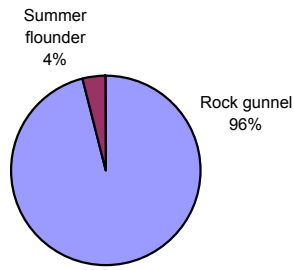


**Figure 3-14**

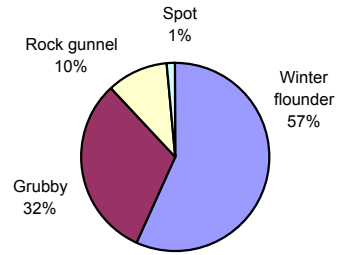
**Species composition of post yolk-sac larvae collected at the Arthur Kill/ Newark Bay stations during the 2001-2002 Aquatic Biological Sampling Program. Density data were used to determine species composition.**



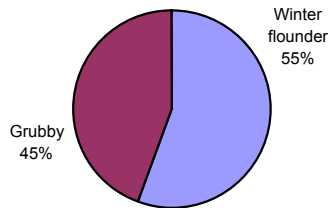
**2002-January (total collected=20)**



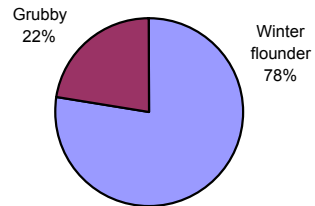
**2002-February (total collected=198)**



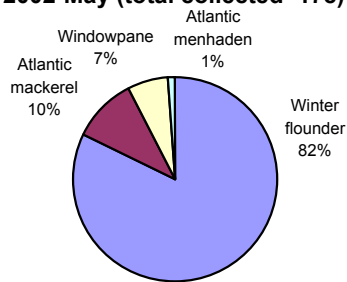
**2002-March (total collected=633)**



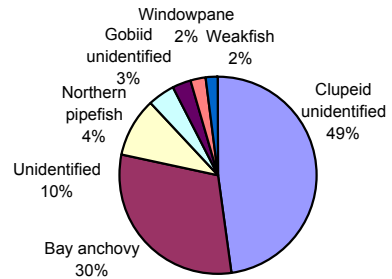
**2002-April (total collected=576)**



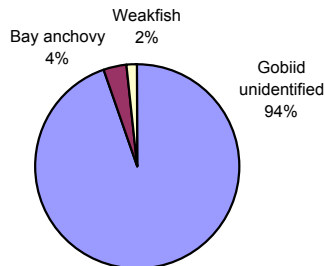
**2002-May (total collected=178)**



**2002-June (total collected=1883)**



**2002-July (total collected=4421)**

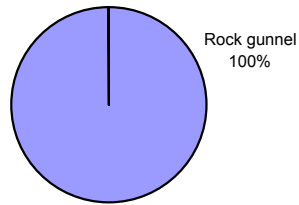


**Figure 3-15**

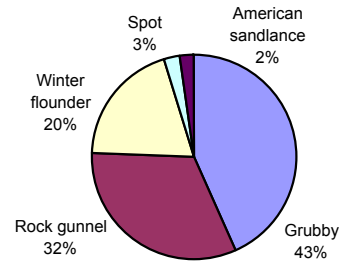
**Species composition of post yolk-sac larvae collected at the Upper Bay stations during the 2001-2002 Aquatic Biological Sampling Program. Density data were used to determine species composition.**



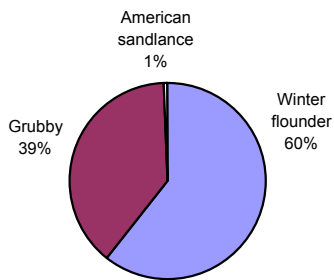
**2002-January (total collected=19)**



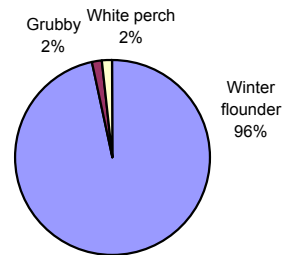
**2002-February (total collected=47)**



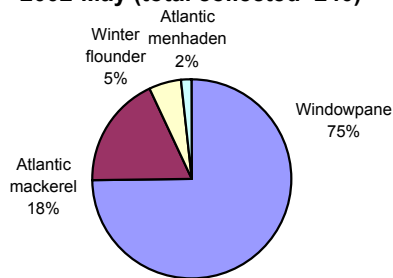
**2002-March (total collected=601)**



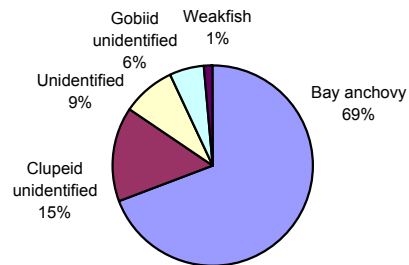
**2002-April (total collected=2049)**



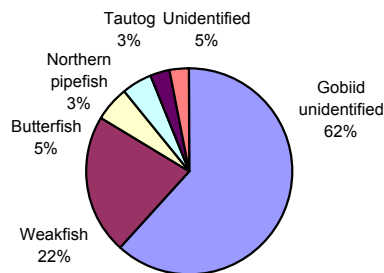
**2002-May (total collected=240)**



**2002-June (total collected=7621)**



**2002-July (total collected=100)**

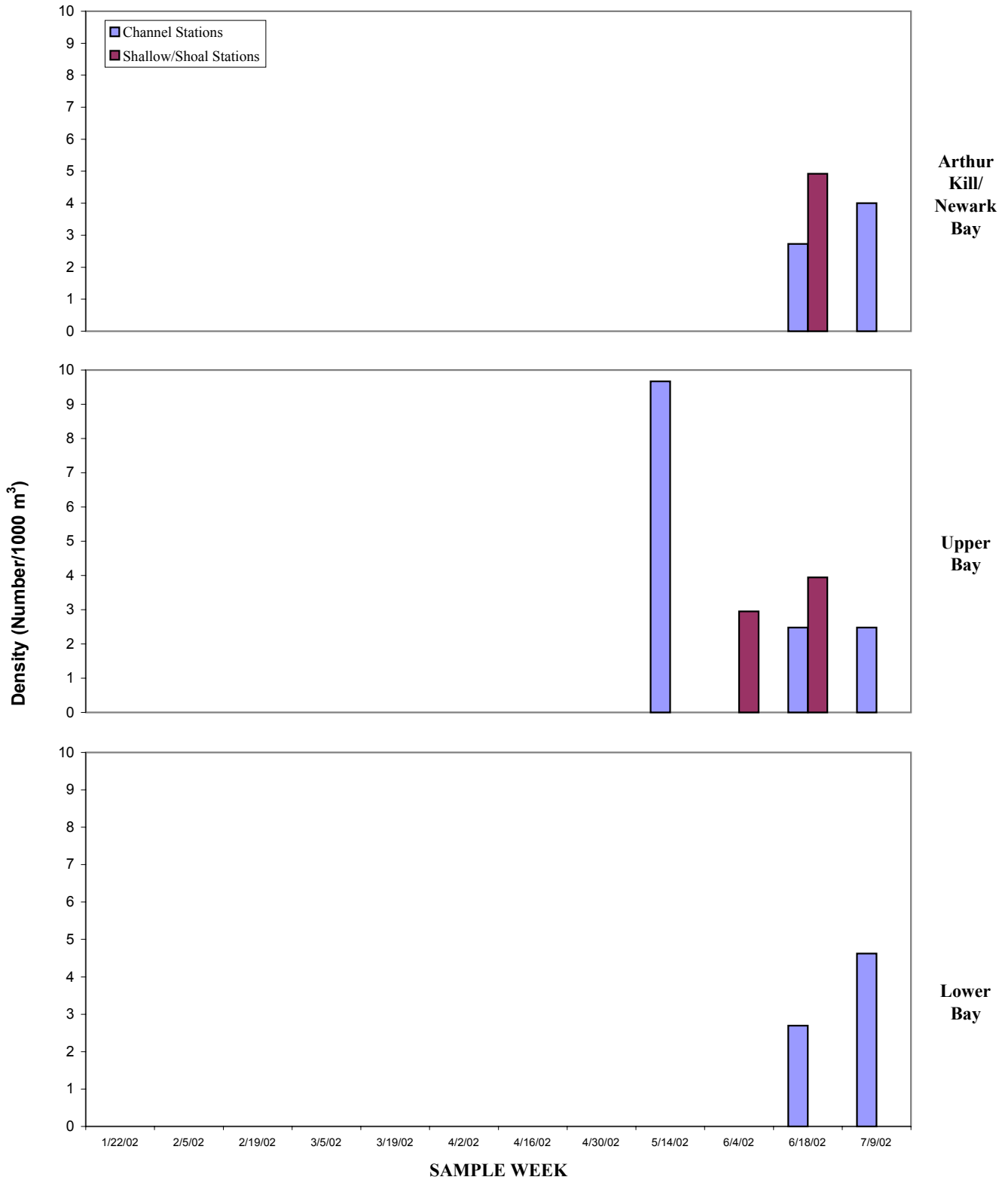


**Figure 3-16**

**Species composition of post yolk-sac larvae collected at the Lower Bay stations during the 2001-2002 Aquatic Biological Sampling Program. Density data were used to determine species composition.**







**Figure 3-17 Average weekly juvenile density of all species combined at navigation channel and shallow/shoal stations in the three study areas during the 2001-2002 Aquatic Biological Sampling Program.**

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



2002-January (total collected=0)

No Juveniles Collected

2002-February (total collected=0)

No Juveniles Collected

2002-March (total collected=0)

No Juveniles Collected

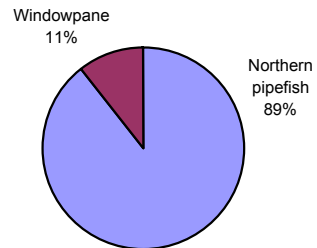
2002-April (total collected=0)

No Juveniles Collected

2002-May (total collected=0)

No Juveniles Collected

2002-June (total collected=8)



2002-July (total collected=2)

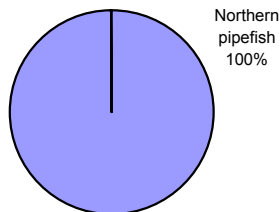


Figure 3-18

Species composition of juveniles collected at the Arthur Kill/Newark Bay stations during the 2001-2002 Aquatic Biological Sampling Program. Density data were used to determine species composition.



2002-January (total collected=0)

No Juveniles Collected

2002-February (total collected=0)

No Juveniles Collected

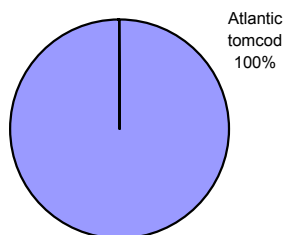
2002-March (total collected=0)

No Juveniles Collected

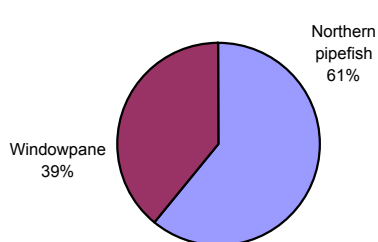
2002-April (total collected=0)

No Juveniles Collected

2002-May (total collected=8)



2002-June (total collected=8)



2002-July (total collected=1)

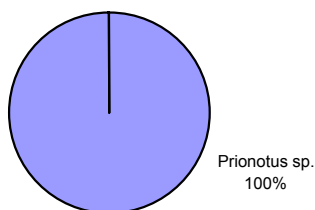


Figure 3-19

Species composition of juveniles collected at the Upper Bay stations during the 2001-2002 Aquatic Biological Sampling Program. Density data were used to determine species composition.



2002-January (total collected=0)

No Juveniles Collected

2002-February (total collected=0)

No Juveniles Collected

2002-March (total collected=0)

No Juveniles Collected

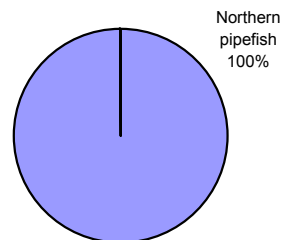
2002-April (total collected=0)

No Juveniles Collected

2002-May (total collected=0)

No Juveniles Collected

2002-June (total collected=1)



2002-July (total collected=2)

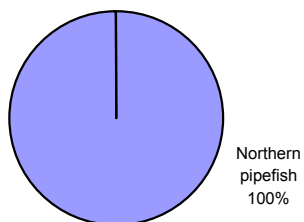
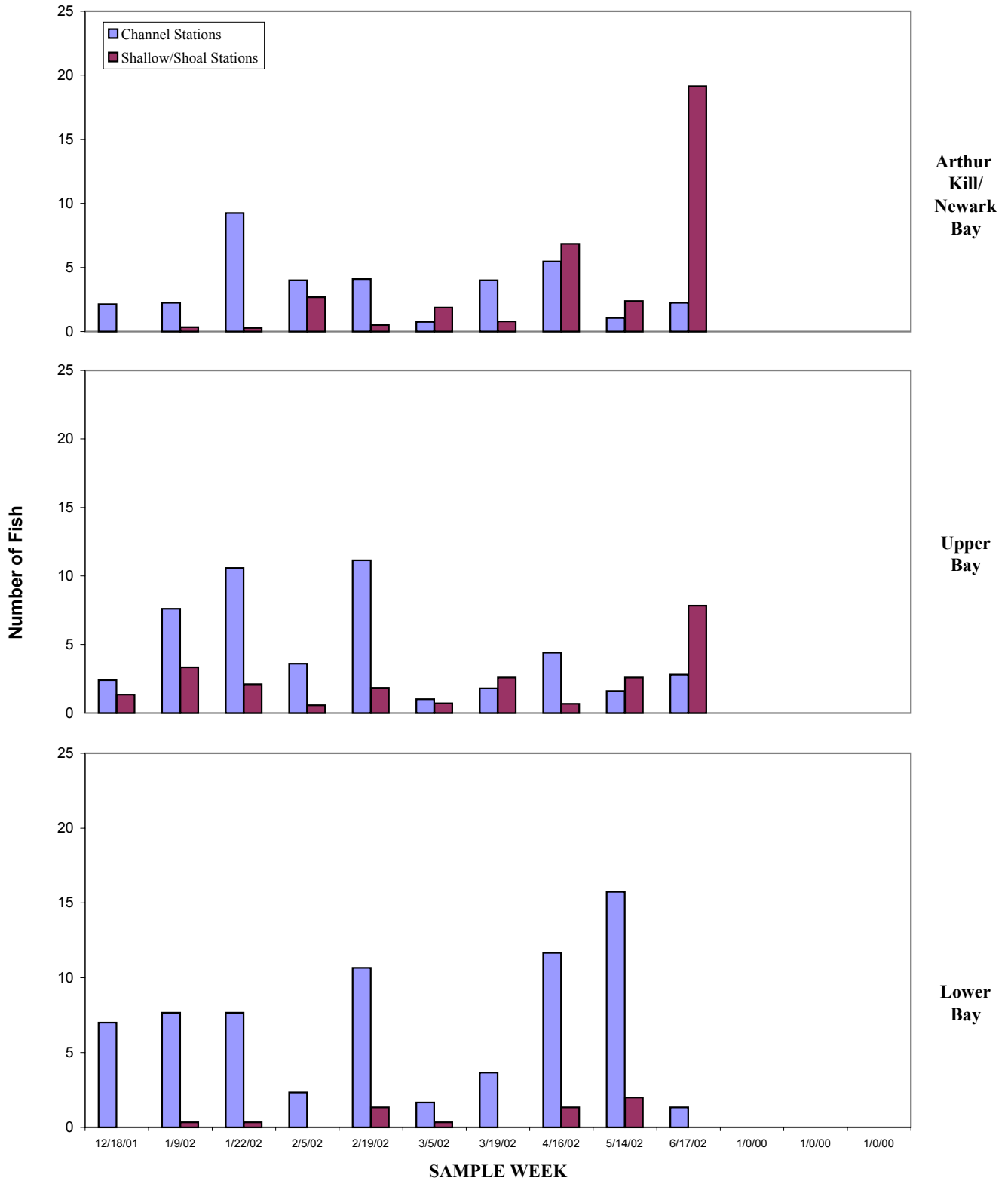


Figure 3-20

**Species composition of juveniles collected at the Lower Bay stations during the 2001-2002 Aquatic Biological Sampling Program. Density data were used to determine species composition.**





**Figure 3-21 Average weekly winter flounder trawl CPUE at navigation channel and shallow/shoal stations in the three study areas during the 2001-2002 Aquatic Biological Sampling Program.**

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



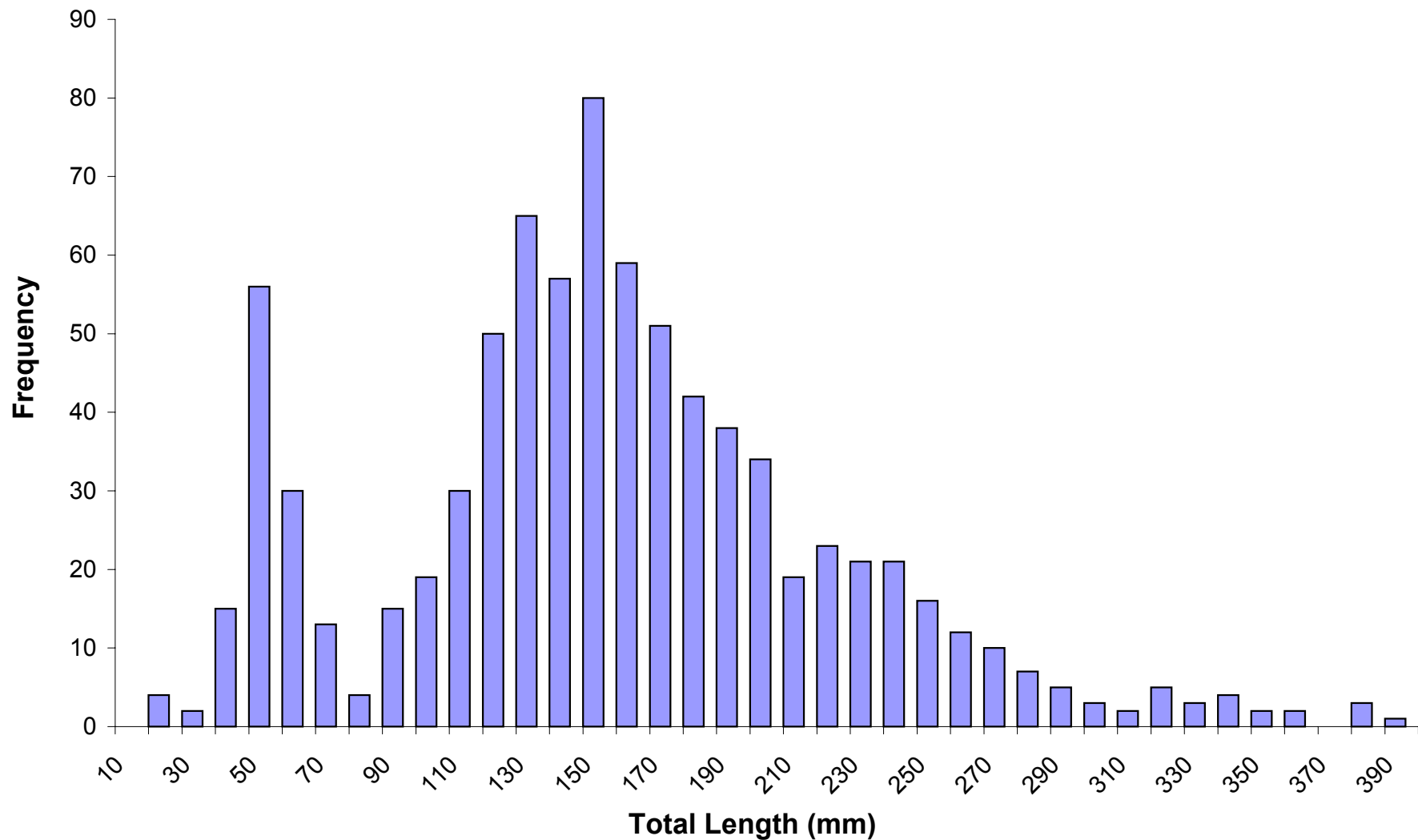
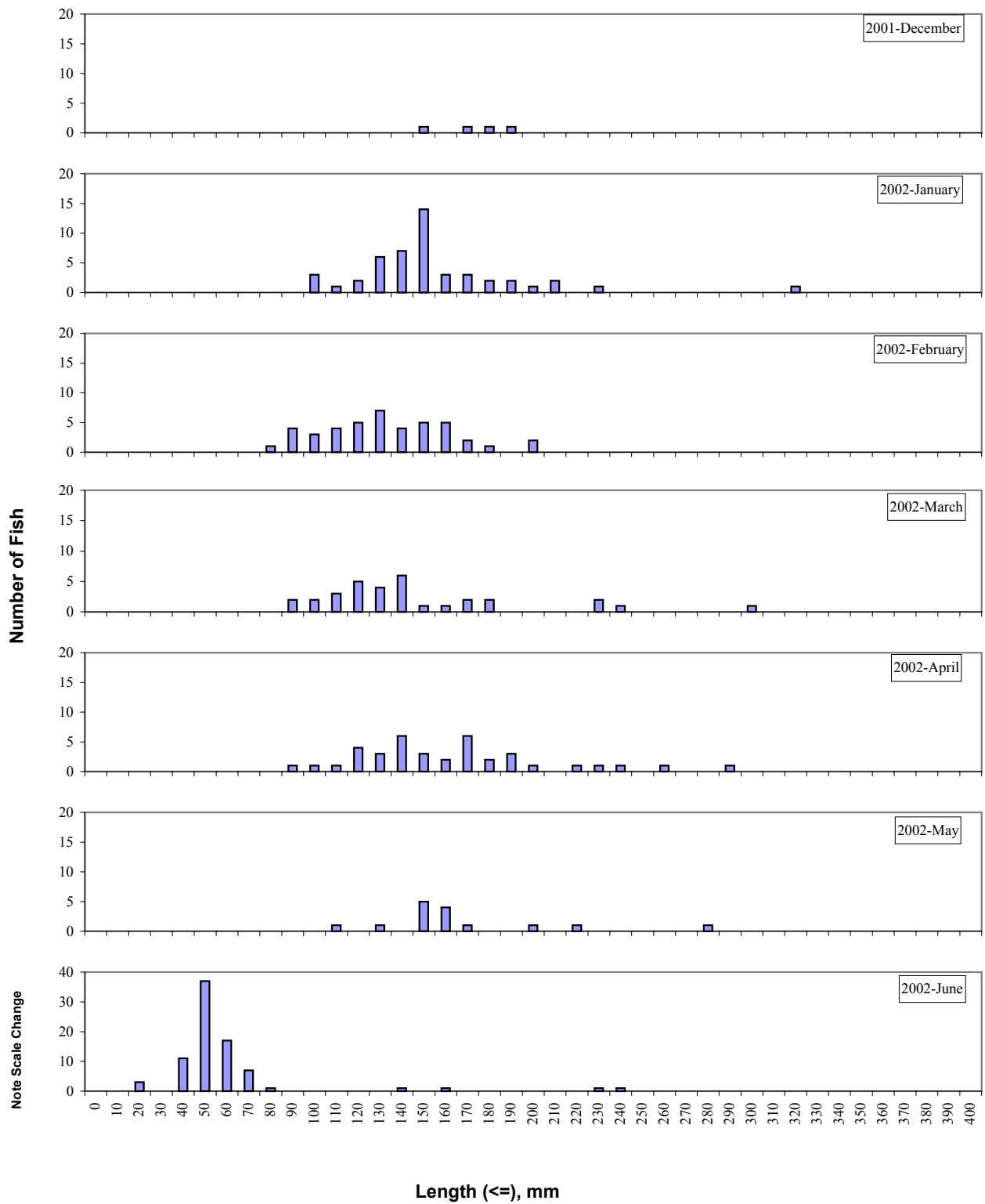


Figure 3-22

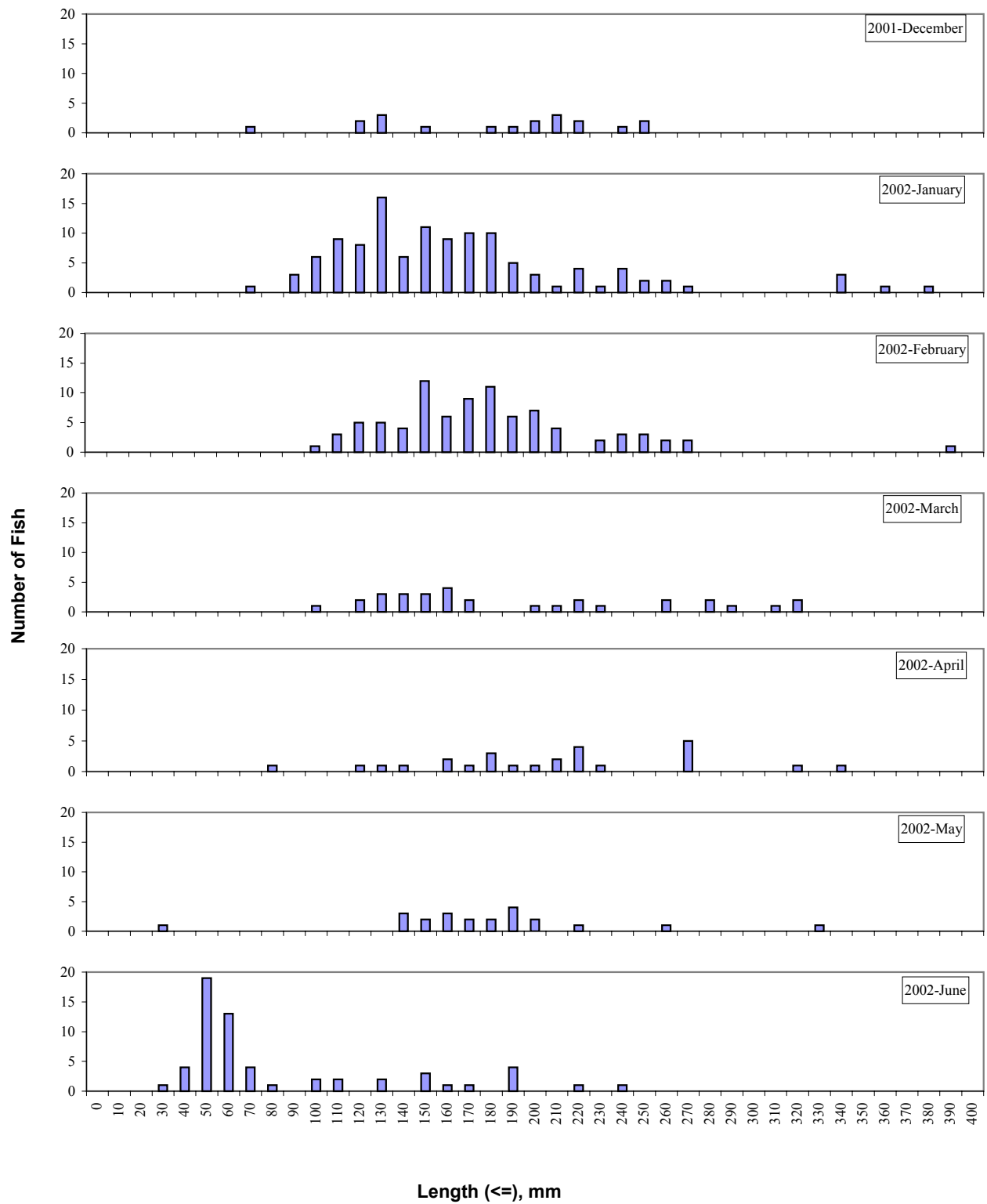
Length frequency distribution of all winter flounder collected by bottom trawl during the 2001-2002 Aquatic Biological Sampling Program.





**Figure 3-23** Length frequency distribution for winter flounder collected by bottom trawl at the Arthur Kill/Newark Bay stations during the 2001-2002 Aquatic Biological Sampling Program.

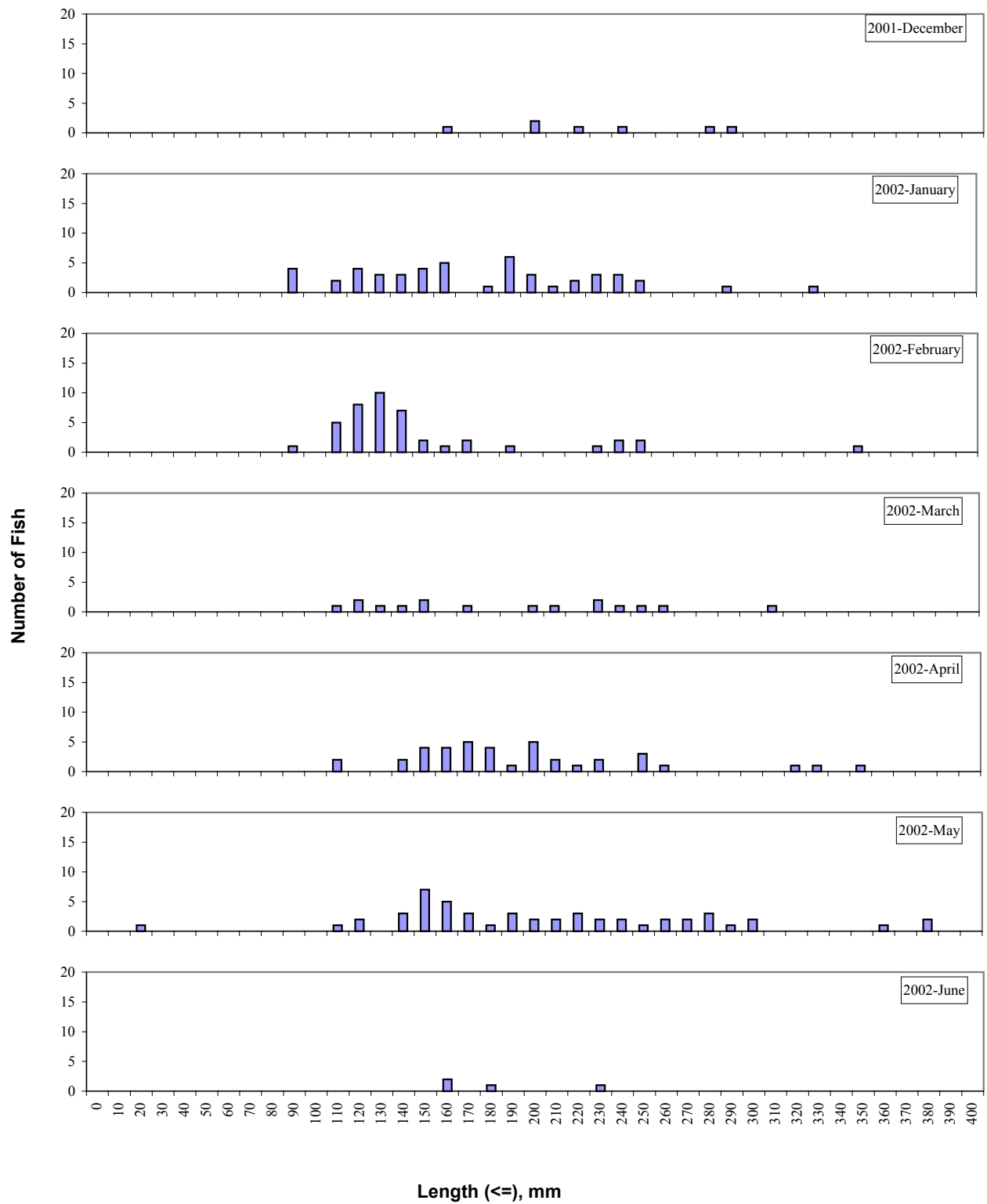




**Figure 3-24** Length frequency distribution for winter flounder collected by bottom trawl at the Upper Bay stations during the 2001-2002 Aquatic Biological Sampling Program.

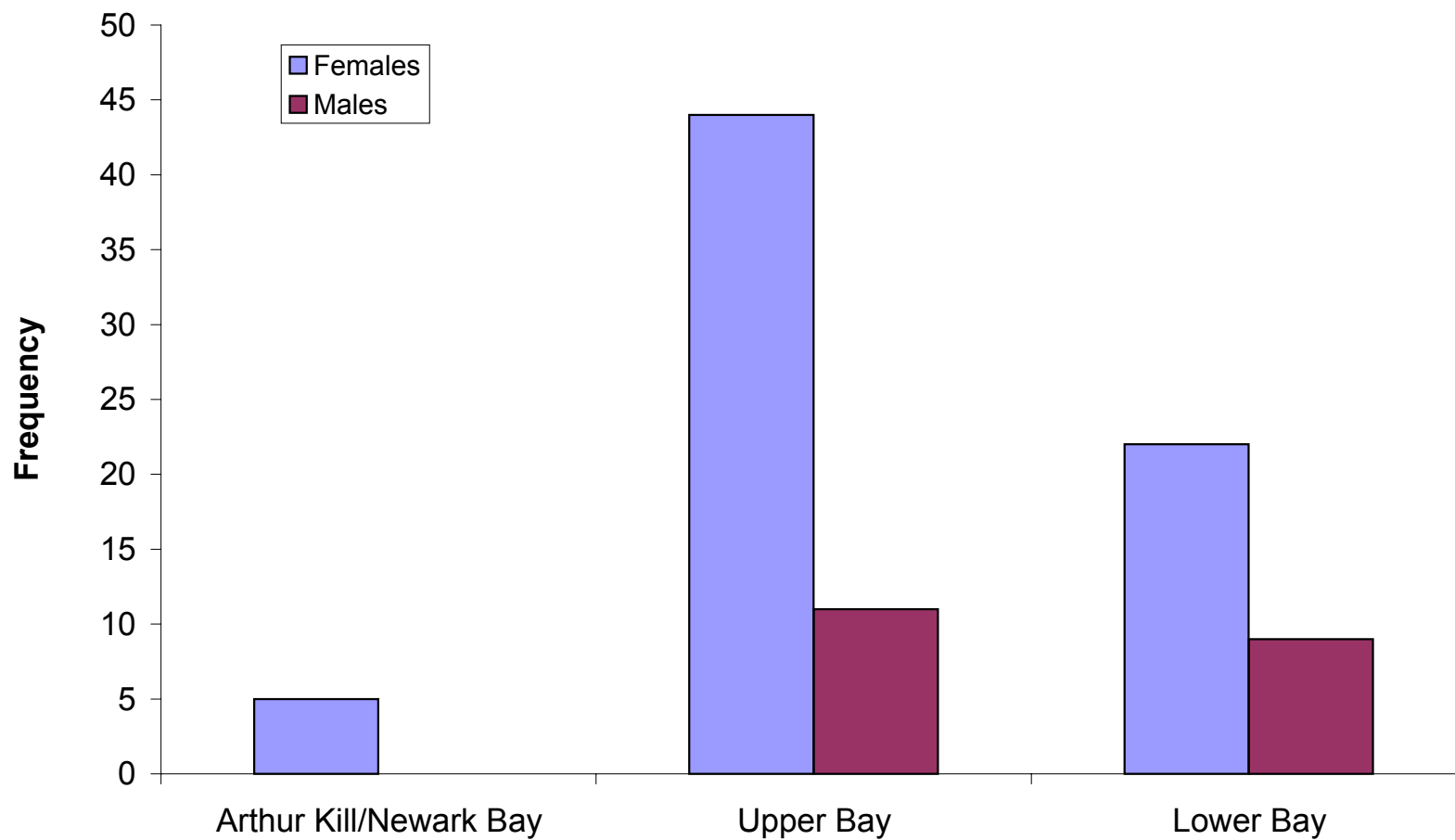






**Figure 3-25** Length frequency distribution for winter flounder collected by bottom trawl at the Lower Bay stations during the 2001-2002 Aquatic Biological Sampling Program.

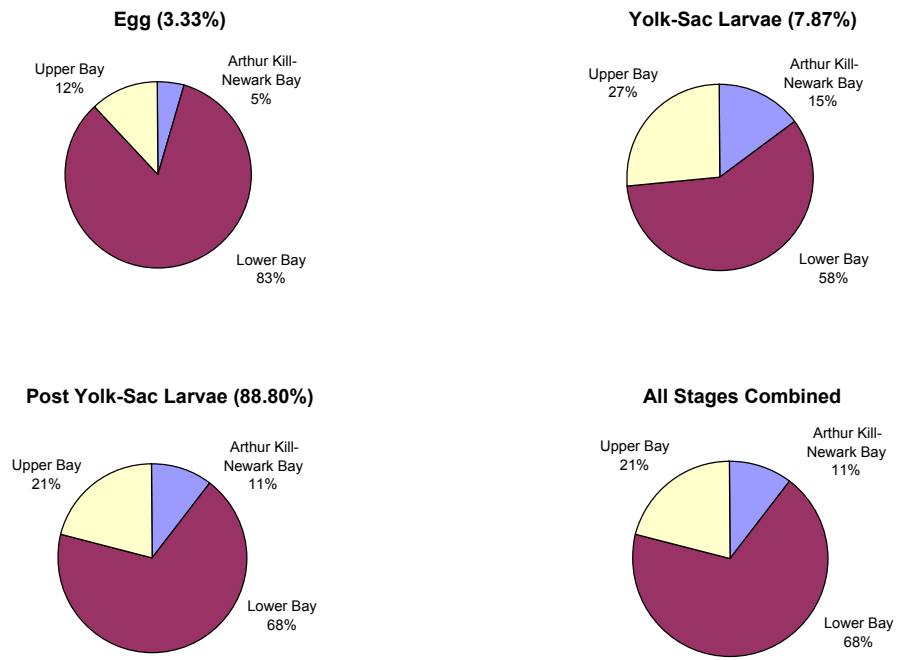




**Figure 3-26**

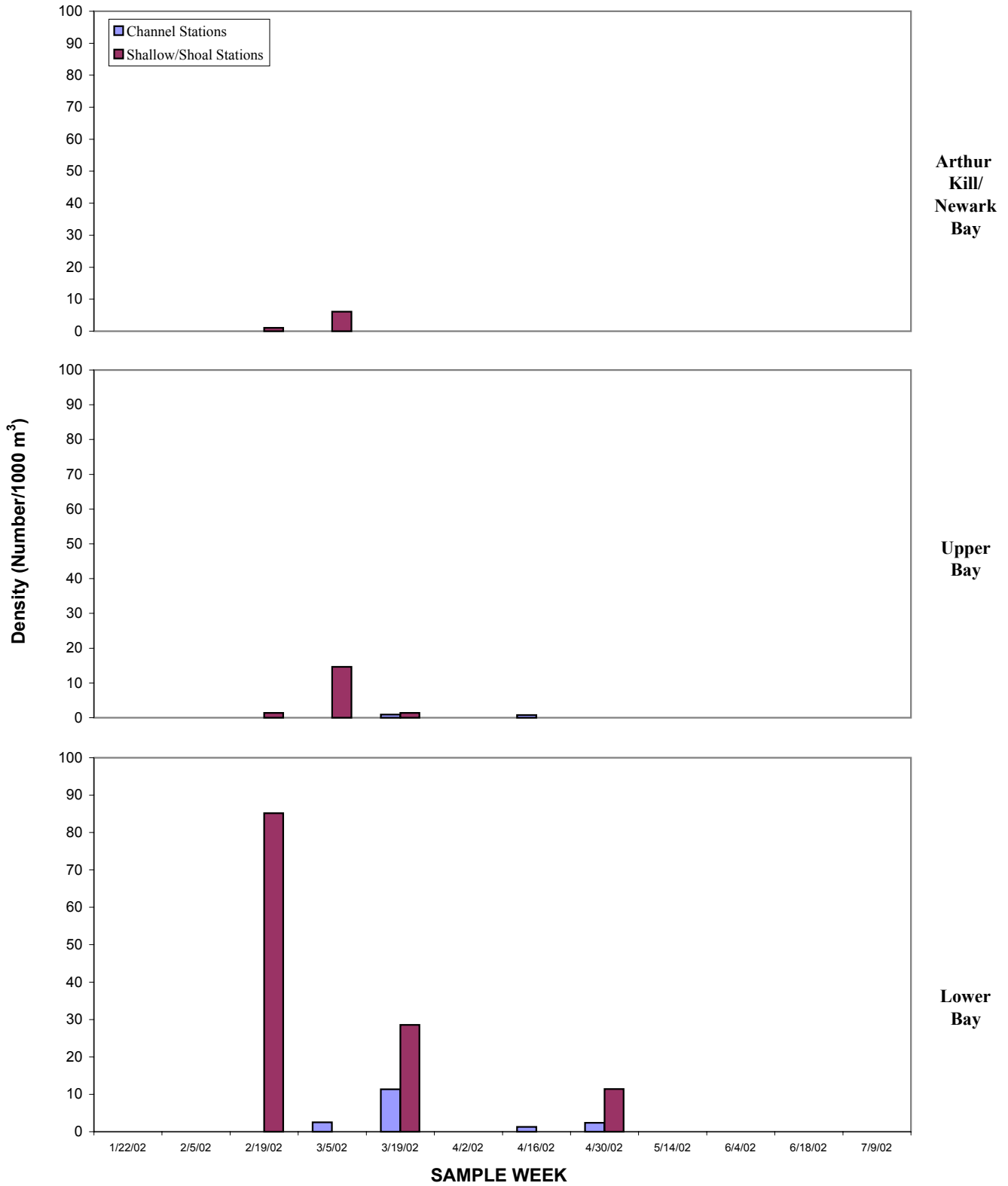
**Winter flounder sex frequency of adult fish collected in the three study areas during the 2001-2002 Aquatic Biological Sampling Program.**





**Figure 3-27** Percent composition of winter flounder early life stages in the three study areas during the 2001-2002 Aquatic Biological Sampling Program.

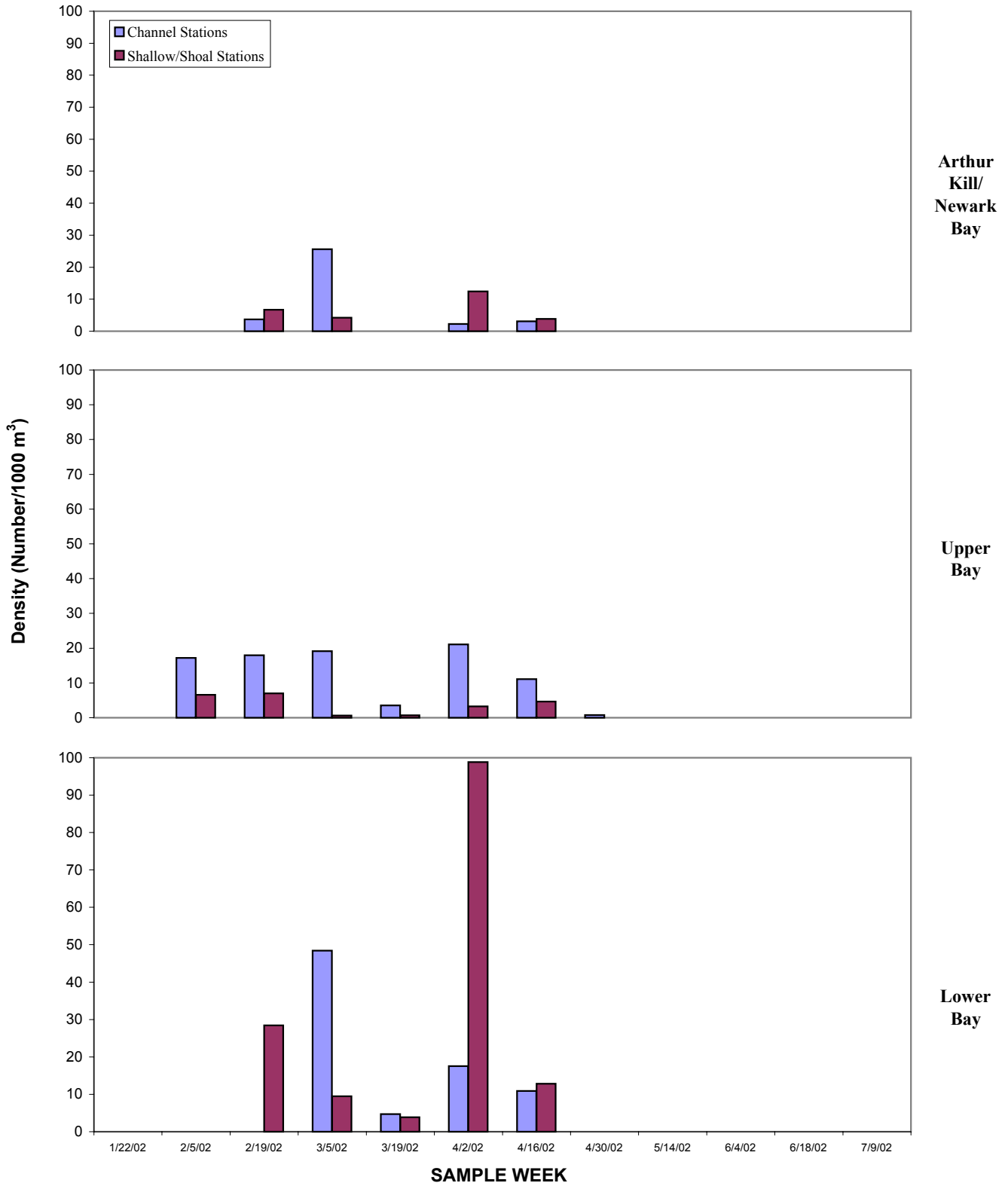




**Figure 3-28** Average weekly winter flounder egg density at navigation channel and shallow/shoal stations in the three study areas during the 2001-2002 Aquatic Biological Sampling Program.

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

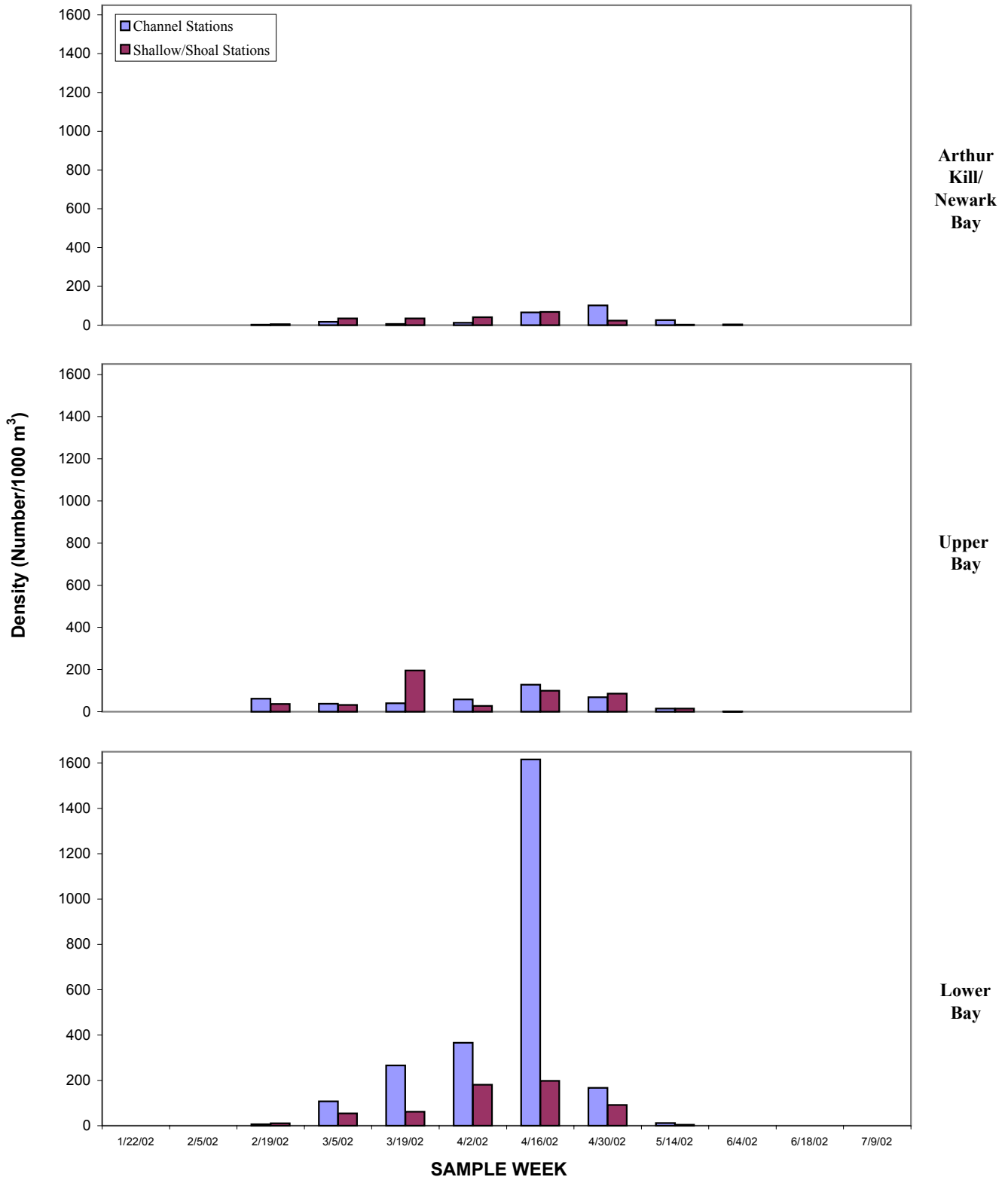




**Figure 3-29** Average weekly winter flounder yolk-sac density at navigation channel and shallow/shoal stations in the three study areas during the 2001-2002 Aquatic Biological Sampling Program.

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

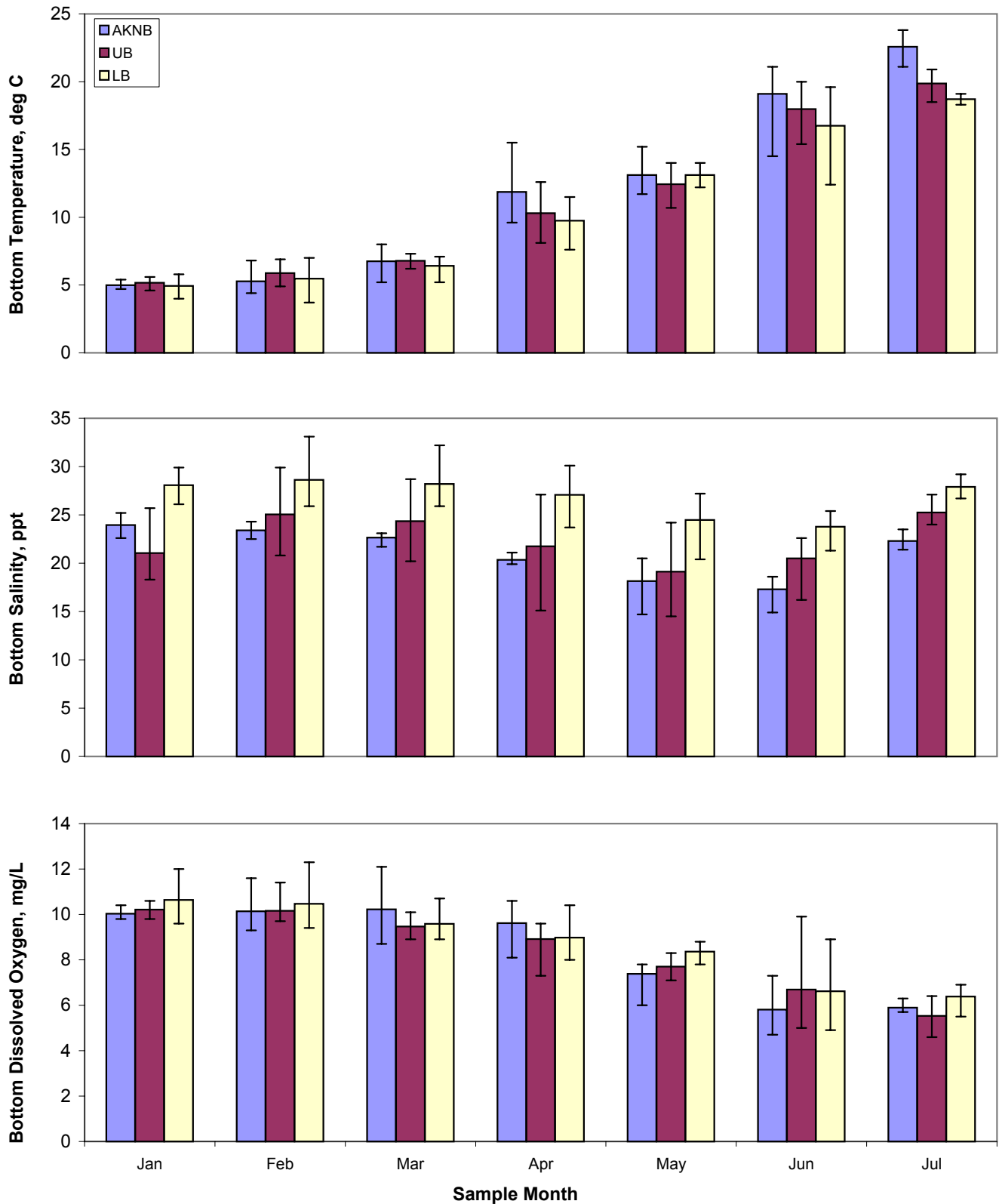




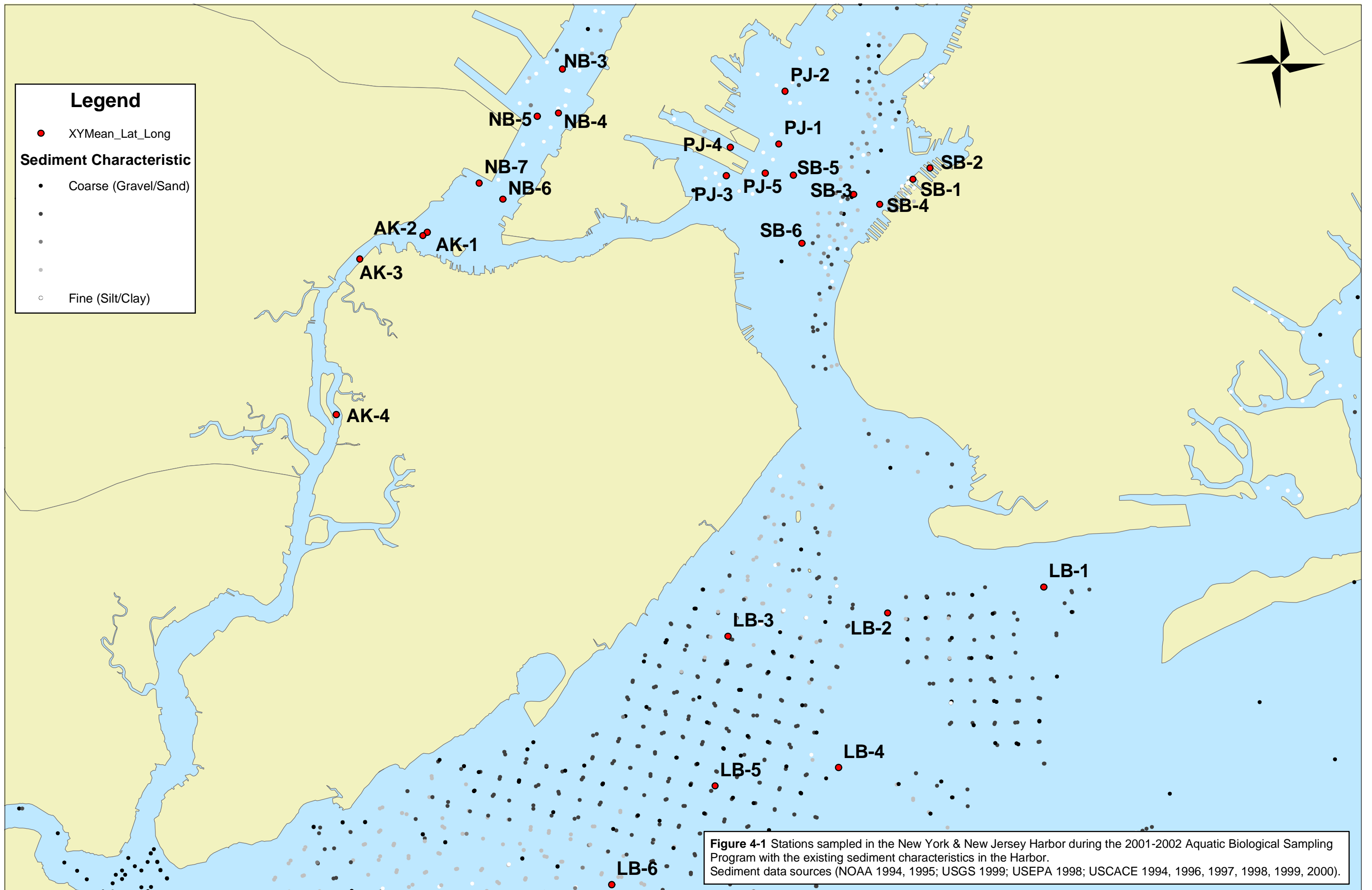
**Figure 3-30** Average weekly winter flounder post yolk-sac density at navigation channel and shallow/shoal stations in the three study areas during the 2001-2002 Aquatic Biological Sampling Program.

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





**Figure 3-31** Average monthly water quality measurements by area in the three sampling areas during the 2001-2002 Aquatic Biological Sampling Program.



**Figure 4-1** Stations sampled in the New York & New Jersey Harbor during the 2001-2002 Aquatic Biological Sampling Program with the existing sediment characteristics in the Harbor. Sediment data sources (NOAA 1994, 1995; USGS 1999; USEPA 1998; USCACE 1994, 1996, 1997, 1998, 1999, 2000).



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 2 of 31)

Date	Station	Common Name	CPUE
12/18/2001	SB-1	Striped Bass	1
12/18/2001	SB-2	Clearnose Skate	2
12/18/2001	SB-2	Smallmouth Flounder	1
12/18/2001	SB-2	Spot	30
12/18/2001	SB-2	Spotted Hake	5
12/18/2001	SB-2	Striped Bass	1
12/18/2001	SB-2	Winter Flounder	1
12/19/2001	AK-3	Alewife	1
12/19/2001	AK-3	American Shad	1
12/19/2001	AK-3	Bay Anchovy	1
12/19/2001	AK-3	Blueback Herring	18
12/19/2001	AK-3	Spotted Hake	5
12/19/2001	AK-3	Striped Bass	8
12/19/2001	AK-3	Weakfish	2
12/19/2001	AK-3	White Perch	3
12/19/2001	AK-3	Winter Flounder	3
12/19/2001	AK-4	Blueback Herring	4
12/19/2001	NB-5	Blueback Herring	3
12/19/2001	SB-3	Red Hake	1
12/19/2001	SB-3	Smallmouth Flounder	2
12/19/2001	SB-3	Spotted Hake	2
12/19/2001	SB-3	Striped Bass	3
12/19/2001	SB-3	Winter Flounder	3
12/19/2001	SB-4	American Shad	1
12/19/2001	SB-4	Blueback Herring	5
12/19/2001	SB-4	Clearnose Skate	5
12/19/2001	SB-4	Silver Hake	1
12/19/2001	SB-4	Spot	1
12/19/2001	SB-4	Spotted Hake	27
12/19/2001	SB-4	Weakfish	8
12/19/2001	SB-4	Windowpane	13
12/19/2001	SB-4	Winter Flounder	4
12/19/2001	SB-5	Blueback Herring	1
12/19/2001	SB-5	Spotted Hake	2
12/19/2001	SB-5	Windowpane	1
12/19/2001	SB-5	Winter Flounder	6
12/19/2001	SB-6	Red Hake	1
12/20/2001	AK-2	Spotted Hake	2
12/20/2001	AK-2	Windowpane	2
12/20/2001	AK-2	Winter Flounder	1
12/21/2001	LB-1	Spotted Hake	1
12/21/2001	LB-2	Alewife	2
12/21/2001	LB-2	Black Sea Bass	3
12/21/2001	LB-2	Cunner	2
12/21/2001	LB-2	Fourspot Flounder	1
12/21/2001	LB-2	Grubby	1
12/21/2001	LB-2	Naked Goby	1
12/21/2001	LB-2	Northern Pipefish	1
12/21/2001	LB-2	Northern Searobin	2
12/21/2001	LB-2	Red Hake	2



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 3 of 31)

<b>Date</b>	<b>Station</b>	<b>Common Name</b>	<b>CPUE</b>
12/21/2001	LB-2	Smallmouth Flounder	12
12/21/2001	LB-2	Spotted Hake	9
12/21/2001	LB-2	Summer Flounder	1
12/21/2001	LB-2	Winter Flounder	7
1/9/2002	LB-1	Alewife	1
1/9/2002	LB-1	Atlantic Silverside	2
1/9/2002	LB-1	Blueback Herring	1
1/9/2002	LB-1	Clearnose Skate	5
1/9/2002	LB-1	Grubby	2
1/9/2002	LB-1	Smallmouth Flounder	19
1/9/2002	LB-1	Spotted Hake	2
1/9/2002	LB-1	Windowpane	4
1/9/2002	LB-2	Blueback Herring	1
1/9/2002	LB-2	Clearnose Skate	15
1/9/2002	LB-2	Conger Eel	5
1/9/2002	LB-2	Fourspot Flounder	11
1/9/2002	LB-2	Grubby	2
1/9/2002	LB-2	Red Hake	4
1/9/2002	LB-2	Smallmouth Flounder	57
1/9/2002	LB-2	Spotted Hake	119
1/9/2002	LB-2	Striped Cuskeel	4
1/9/2002	LB-2	Summer Flounder	1
1/9/2002	LB-2	Windowpane	10
1/9/2002	LB-2	Winter Flounder	8
1/9/2002	LB-3	Clearnose Skate	1
1/9/2002	LB-3	Grubby	6
1/9/2002	LB-3	Smallmouth Flounder	19
1/9/2002	LB-4	Alewife	13
1/9/2002	LB-4	American Shad	2
1/9/2002	LB-4	Blueback Herring	5
1/9/2002	LB-4	Clearnose Skate	4
1/9/2002	LB-4	Grubby	2
1/9/2002	LB-4	Smallmouth Flounder	12
1/9/2002	LB-4	Spotted Hake	1
1/9/2002	LB-5	Clearnose Skate	2
1/9/2002	LB-5	Smallmouth Flounder	11
1/9/2002	LB-5	Windowpane	1
1/9/2002	LB-5	Winter Flounder	1
1/9/2002	LB-6	Alewife	1
1/9/2002	LB-6	Clearnose Skate	53
1/9/2002	LB-6	Smallmouth Flounder	7
1/9/2002	LB-6	Spotted Hake	4
1/9/2002	LB-6	Striped Bass	1
1/9/2002	LB-6	Tautog	1
1/9/2002	LB-6	Windowpane	13
1/9/2002	LB-6	Winter Flounder	15
1/10/2002	NB-3	Smallmouth Flounder	1
1/10/2002	NB-3	White Perch	2
1/10/2002	NB-4	Alewife	17
1/10/2002	NB-4	American Shad	3



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 4 of 31)

Date	Station	Common Name	CPUE
1/10/2002	NB-4	Atherinid unidentified	17
1/10/2002	NB-4	Bay Anchovy	2
1/10/2002	NB-4	Blueback Herring	1
1/10/2002	NB-4	Striped Bass	22
1/10/2002	NB-4	White Perch	167
1/10/2002	NB-4	Windowpane	1
1/10/2002	NB-5	Blueback Herring	6
1/10/2002	NB-5	Cunner	1
1/10/2002	NB-5	Gizzard Shad	1
1/10/2002	NB-5	Smallmouth Flounder	2
1/10/2002	NB-5	Spotted Hake	6
1/10/2002	NB-5	Striped Bass	85
1/10/2002	NB-5	White Perch	143
1/10/2002	NB-5	Windowpane	3
1/10/2002	NB-5	Winter Flounder	1
1/10/2002	PJ-1	Alewife	6
1/10/2002	PJ-1	American Shad	1
1/10/2002	PJ-1	Blueback Herring	1
1/10/2002	PJ-1	Clearnose Skate	8
1/10/2002	PJ-1	Smallmouth Flounder	4
1/10/2002	PJ-1	Striped Bass	6
1/10/2002	PJ-1	Tautog	1
1/10/2002	PJ-1	Windowpane	4
1/10/2002	PJ-1	Winter Flounder	11
1/10/2002	PJ-4	Alewife	19
1/10/2002	PJ-4	American Shad	1
1/10/2002	PJ-4	Atlantic Menhaden	1
1/10/2002	PJ-4	Blueback Herring	14
1/10/2002	PJ-4	Northern Pipefish	1
1/10/2002	PJ-4	Smallmouth Flounder	1
1/10/2002	PJ-4	Spot	4
1/10/2002	PJ-4	Spotted Hake	12
1/10/2002	PJ-4	Striped Bass	6
1/10/2002	PJ-4	Summer Flounder	1
1/10/2002	PJ-4	Windowpane	3
1/10/2002	PJ-4	Winter Flounder	5
1/10/2002	SB-1	Alewife	7
1/10/2002	SB-1	American Shad	1
1/10/2002	SB-1	Atherinid unidentified	1
1/10/2002	SB-1	Blueback Herring	3
1/10/2002	SB-1	Red Hake	1
1/10/2002	SB-1	Smallmouth Flounder	1
1/10/2002	SB-1	Spot	6
1/10/2002	SB-1	Striped Bass	24
1/10/2002	SB-2	Blueback Herring	9
1/10/2002	SB-2	Spot	16
1/10/2002	SB-2	Striped Bass	3
1/10/2002	SB-3	Alewife	10
1/10/2002	SB-3	American Shad	1
1/10/2002	SB-3	Bay Anchovy	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 5 of 31)

Date	Station	Common Name	CPUE
1/10/2002	SB-3	Blueback Herring	4
1/10/2002	SB-3	Clearnose Skate	4
1/10/2002	SB-3	Grubby	1
1/10/2002	SB-3	Smallmouth Flounder	11
1/10/2002	SB-3	Striped Bass	29
1/10/2002	SB-3	Windowpane	3
1/10/2002	SB-3	Winter Flounder	9
1/10/2002	SB-4	Alewife	1
1/10/2002	SB-4	American Shad	3
1/10/2002	SB-4	Atlantic Menhaden	2
1/10/2002	SB-4	Blueback Herring	11
1/10/2002	SB-4	Clearnose Skate	8
1/10/2002	SB-4	Spot	4
1/10/2002	SB-4	Spotted Hake	5
1/10/2002	SB-4	Striped Bass	5
1/10/2002	SB-4	Windowpane	3
1/10/2002	SB-4	Winter Flounder	3
1/10/2002	SB-5	Alewife	21
1/10/2002	SB-5	Bay Anchovy	1
1/10/2002	SB-5	Blueback Herring	65
1/10/2002	SB-5	Clearnose Skate	12
1/10/2002	SB-5	Cunner	1
1/10/2002	SB-5	Northern Pipefish	4
1/10/2002	SB-5	Red Hake	4
1/10/2002	SB-5	Smallmouth Flounder	2
1/10/2002	SB-5	Spot	12
1/10/2002	SB-5	Spotted Hake	58
1/10/2002	SB-5	Striped Bass	1
1/10/2002	SB-5	Weakfish	114
1/10/2002	SB-5	Windowpane	5
1/10/2002	SB-6	Alewife	2
1/10/2002	SB-6	Blueback Herring	9
1/10/2002	SB-6	Clearnose Skate	16
1/10/2002	SB-6	Northern Pipefish	4
1/10/2002	SB-6	Smallmouth Flounder	6
1/10/2002	SB-6	Spot	1
1/10/2002	SB-6	Spotted Hake	36
1/10/2002	SB-6	Striped Bass	1
1/10/2002	SB-6	Windowpane	45
1/10/2002	SB-6	Winter Flounder	6
1/11/2002	AK-1	Alewife	5
1/11/2002	AK-1	Blueback Herring	1
1/11/2002	AK-1	Striped Bass	10
1/11/2002	AK-1	White Perch	60
1/11/2002	AK-2	Alewife	5
1/11/2002	AK-2	Atlantic Menhaden	1
1/11/2002	AK-2	Blueback Herring	1
1/11/2002	AK-2	Striped Bass	1
1/11/2002	AK-2	White Perch	1
1/11/2002	AK-3	Blueback Herring	2



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 6 of 31)

Date	Station	Common Name	CPUE
1/11/2002	AK-3	Smallmouth Flounder	1
1/11/2002	AK-3	Spotted Hake	5
1/11/2002	AK-3	Striped Bass	12
1/11/2002	AK-3	White Perch	1
1/11/2002	AK-3	Windowpane	2
1/11/2002	AK-3	Winter Flounder	1
1/11/2002	AK-4	American Shad	1
1/11/2002	AK-4	Atherinid unidentified	1
1/11/2002	AK-4	Blueback Herring	1
1/11/2002	AK-4	Smallmouth Flounder	1
1/11/2002	AK-4	Spot	1
1/11/2002	AK-4	Spotted Hake	1
1/11/2002	AK-4	Striped Bass	3
1/11/2002	AK-4	Striped Killifish	1
1/11/2002	AK-4	White Perch	1
1/11/2002	AK-4	Windowpane	1
1/11/2002	NB-6	Alewife	2
1/11/2002	NB-6	American Eel	1
1/11/2002	NB-6	Blueback Herring	4
1/11/2002	NB-6	Northern Pipefish	1
1/11/2002	NB-6	Striped Bass	28
1/11/2002	NB-6	White Perch	47
1/11/2002	NB-6	Windowpane	2
1/11/2002	NB-6	Winter Flounder	7
1/11/2002	NB-7	Alewife	1
1/11/2002	NB-7	Spotted Hake	2
1/11/2002	NB-7	Striped Bass	23
1/11/2002	NB-7	White Perch	24
1/11/2002	NB-7	Winter Flounder	1
1/11/2002	PJ-2	Alewife	1
1/11/2002	PJ-2	American Shad	1
1/11/2002	PJ-2	Blueback Herring	2
1/11/2002	PJ-2	Striped Bass	1
1/11/2002	PJ-5	Blueback Herring	1
1/11/2002	PJ-5	Clearnose Skate	7
1/11/2002	PJ-5	Northern Pipefish	2
1/11/2002	PJ-5	Smallmouth Flounder	2
1/11/2002	PJ-5	Spotted Hake	5
1/11/2002	PJ-5	Striped Bass	2
1/11/2002	PJ-5	Windowpane	8
1/11/2002	PJ-5	Winter Flounder	24
1/22/2002	AK-2	Striped Bass	11
1/22/2002	AK-2	Striped Bass	11
1/22/2002	AK-2	White Perch	43
1/22/2002	AK-2	White Perch	43
1/22/2002	AK-2	Windowpane	1
1/22/2002	AK-2	Windowpane	1
1/22/2002	AK-2	Winter Flounder	1
1/22/2002	AK-2	Winter Flounder	1
1/22/2002	NB-3	Atherinid unidentified	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 7 of 31)

Date	Station	Common Name	CPUE
1/22/2002	NB-3	Striped Bass	1
1/22/2002	NB-3	White Perch	1
1/22/2002	NB-4	Alewife	2
1/22/2002	NB-4	American Shad	2
1/22/2002	NB-4	Atherinid unidentified	6
1/22/2002	NB-4	Gizzard Shad	1
1/22/2002	NB-4	Smallmouth Flounder	1
1/22/2002	NB-4	Striped Bass	14
1/22/2002	NB-4	White Perch	21
1/22/2002	NB-5	Blueback Herring	2
1/22/2002	NB-5	Spotted Hake	1
1/22/2002	NB-5	Striped Bass	18
1/22/2002	NB-5	White Perch	59
1/22/2002	NB-6	Gizzard Shad	3
1/22/2002	NB-6	Grubby	2
1/22/2002	NB-6	Spotted Hake	1
1/22/2002	NB-6	Striped Bass	145
1/22/2002	NB-6	White Perch	111
1/22/2002	NB-6	Windowpane	8
1/22/2002	NB-6	Winter Flounder	36
1/22/2002	NB-7	Gizzard Shad	1
1/22/2002	NB-7	Striped Bass	19
1/22/2002	NB-7	White Perch	16
1/22/2002	NB-7	Windowpane	1
1/23/2002	AK-1	Gizzard Shad	1
1/23/2002	AK-1	Striped Bass	14
1/23/2002	AK-1	White Perch	7
1/23/2002	AK-1	Windowpane	1
1/23/2002	AK-1	Winter Flounder	1
1/23/2002	LB-1	Blueback Herring	1
1/23/2002	LB-1	Clearnose Skate	10
1/23/2002	LB-1	Grubby	8
1/23/2002	LB-1	Northern Pipefish	1
1/23/2002	LB-1	Smallmouth Flounder	25
1/23/2002	LB-1	Spotted Hake	9
1/23/2002	LB-1	Tautog	1
1/23/2002	LB-1	Windowpane	10
1/23/2002	LB-2	Clearnose Skate	18
1/23/2002	LB-2	Cunner	4
1/23/2002	LB-2	Fourspot Flounder	5
1/23/2002	LB-2	Grubby	4
1/23/2002	LB-2	Longhorn Sculpin	1
1/23/2002	LB-2	Northern Pipefish	5
1/23/2002	LB-2	Red Hake	6
1/23/2002	LB-2	Smallmouth Flounder	81
1/23/2002	LB-2	Spotted Hake	61
1/23/2002	LB-2	Summer Flounder	1
1/23/2002	LB-2	Windowpane	1
1/23/2002	LB-2	Winter Flounder	20
1/23/2002	LB-3	Grubby	2



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 8 of 31)

Date	Station	Common Name	CPUE
1/23/2002	LB-3	Smallmouth Flounder	1
1/23/2002	LB-4	Atlantic Herring	2
1/23/2002	LB-4	Clearnose Skate	2
1/23/2002	LB-4	Conger Eel	1
1/23/2002	LB-4	Red Hake	5
1/23/2002	LB-4	Smallmouth Flounder	1
1/23/2002	LB-4	Spotted Hake	15
1/23/2002	LB-5	Atlantic Herring	1
1/23/2002	LB-5	Clearnose Skate	2
1/23/2002	LB-5	Smallmouth Flounder	1
1/23/2002	LB-5	Winter Flounder	1
1/23/2002	LB-6	Alewife	13
1/23/2002	LB-6	Blueback Herring	18
1/23/2002	LB-6	Clearnose Skate	4
1/23/2002	LB-6	Smallmouth Flounder	2
1/23/2002	LB-6	Spotted Hake	1
1/23/2002	LB-6	Striped Bass	1
1/23/2002	LB-6	Windowpane	2
1/23/2002	LB-6	Winter Flounder	3
1/24/2002	AK-3	Alewife	4
1/24/2002	AK-3	Blueback Herring	1
1/24/2002	AK-3	Grubby	1
1/24/2002	AK-3	Spotted Hake	1
1/24/2002	AK-3	Striped Bass	12
1/24/2002	PJ-1	Alewife	47
1/24/2002	PJ-1	American Shad	4
1/24/2002	PJ-1	Atlantic Menhaden	1
1/24/2002	PJ-1	Bay Anchovy	1
1/24/2002	PJ-1	Blueback Herring	20
1/24/2002	PJ-1	Clearnose Skate	2
1/24/2002	PJ-1	Smallmouth Flounder	4
1/24/2002	PJ-1	Striped Bass	1
1/24/2002	PJ-1	Tautog	1
1/24/2002	PJ-1	Windowpane	3
1/24/2002	PJ-1	Winter Flounder	6
1/24/2002	PJ-2	Alewife	6
1/24/2002	PJ-2	American Shad	1
1/24/2002	PJ-2	Blueback Herring	6
1/24/2002	PJ-3	Clupeid unidentified	2
1/24/2002	PJ-4	Alewife	31
1/24/2002	PJ-4	American Shad	2
1/24/2002	PJ-4	Atherinid unidentified	1
1/24/2002	PJ-4	Atlantic Menhaden	2
1/24/2002	PJ-4	Blueback Herring	48
1/24/2002	PJ-4	Smallmouth Flounder	1
1/24/2002	PJ-4	Spot	3
1/24/2002	PJ-4	Striped Bass	2
1/24/2002	PJ-4	Winter Flounder	4
1/24/2002	PJ-5	Alewife	1
1/24/2002	PJ-5	Blueback Herring	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 9 of 31)

<b>Date</b>	<b>Station</b>	<b>Common Name</b>	<b>CPUE</b>
1/24/2002	PJ-5	Northern Pipefish	1
1/24/2002	PJ-5	Red Hake	1
1/24/2002	PJ-5	Smallmouth Flounder	1
1/24/2002	PJ-5	Spotted Hake	3
1/24/2002	PJ-5	Striped Bass	4
1/24/2002	PJ-5	Windowpane	3
1/24/2002	PJ-5	Winter Flounder	8
1/24/2002	SB-1	Alewife	1
1/24/2002	SB-1	American Shad	1
1/24/2002	SB-1	Seaboard Goby	1
1/24/2002	SB-1	Spot	5
1/24/2002	SB-1	Striped Bass	1
1/24/2002	SB-2	Alewife	18
1/24/2002	SB-2	American Shad	3
1/24/2002	SB-2	Atlantic Herring	1
1/24/2002	SB-2	Blueback Herring	2
1/24/2002	SB-2	Spot	13
1/24/2002	SB-2	Striped Bass	1
1/24/2002	SB-3	Alewife	1
1/24/2002	SB-3	Blueback Herring	4
1/24/2002	SB-3	Clearnose Skate	1
1/24/2002	SB-3	Smallmouth Flounder	1
1/24/2002	SB-3	Winter Flounder	4
1/24/2002	SB-4	Alewife	1
1/24/2002	SB-4	American Shad	1
1/24/2002	SB-4	Blueback Herring	2
1/24/2002	SB-6	Blueback Herring	2
1/24/2002	SB-6	Clearnose Skate	1
1/24/2002	SB-6	Windowpane	2
1/24/2002	SB-6	Winter Flounder	4
1/25/2002	SB-5	Blueback Herring	2
1/25/2002	SB-5	Clearnose Skate	4
1/25/2002	SB-5	Northern Pipefish	8
1/25/2002	SB-5	Red Hake	4
1/25/2002	SB-5	Spotted Hake	8
1/25/2002	SB-5	Tautog	10
1/25/2002	SB-5	Windowpane	10
1/25/2002	SB-5	Winter Flounder	33
2/5/2002	AK-2	Alewife	4
2/5/2002	AK-2	Blueback Herring	15
2/5/2002	AK-2	Gizzard Shad	1
2/5/2002	AK-2	Grubby	1
2/5/2002	AK-2	Spotted Hake	1
2/5/2002	AK-2	Striped Bass	28
2/5/2002	AK-2	White Perch	22
2/5/2002	AK-2	Windowpane	2
2/5/2002	AK-2	Winter Flounder	2
2/5/2002	AK-3	Alewife	2
2/5/2002	AK-3	American Shad	1
2/5/2002	AK-3	Atlantic Silverside	1





**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 10 of 31)

Date	Station	Common Name	CPUE
2/5/2002	AK-3	Blueback Herring	7
2/5/2002	AK-3	Smallmouth Flounder	1
2/5/2002	AK-3	Spotted Hake	4
2/5/2002	AK-3	Striped Bass	28
2/5/2002	AK-3	White Perch	11
2/5/2002	AK-3	Windowpane	1
2/5/2002	AK-3	Winter Flounder	1
2/5/2002	NB-3	Alewife	1
2/5/2002	NB-3	American Shad	1
2/5/2002	NB-3	Atlantic Silverside	2
2/5/2002	NB-3	Spotted Hake	1
2/5/2002	NB-3	Striped Bass	7
2/5/2002	NB-3	White Perch	4
2/5/2002	NB-3	Windowpane	2
2/5/2002	NB-3	Winter Flounder	8
2/5/2002	NB-4	Alewife	5
2/5/2002	NB-4	American Shad	1
2/5/2002	NB-4	Atlantic Silverside	10
2/5/2002	NB-4	Striped Bass	18
2/5/2002	NB-4	White Perch	28
2/5/2002	NB-4	Winter Flounder	2
2/5/2002	NB-5	Alewife	3
2/5/2002	NB-5	American Shad	2
2/5/2002	NB-5	Blueback Herring	3
2/5/2002	NB-5	Spotted Hake	9
2/5/2002	NB-5	Striped Bass	8
2/5/2002	NB-5	White Perch	73
2/5/2002	NB-5	Windowpane	3
2/5/2002	NB-5	Winter Flounder	10
2/5/2002	NB-6	Alewife	5
2/5/2002	NB-6	Blueback Herring	18
2/5/2002	NB-6	Gizzard Shad	1
2/5/2002	NB-6	Spotted Hake	2
2/5/2002	NB-6	Striped Bass	14
2/5/2002	NB-6	Striped Cuskeel	1
2/5/2002	NB-6	White Perch	58
2/5/2002	NB-6	Winter Flounder	3
2/6/2002	AK-4	Alewife	1
2/6/2002	AK-4	Smallmouth Flounder	1
2/6/2002	AK-4	Striped Bass	2
2/6/2002	AK-4	Windowpane	1
2/6/2002	LB-1	Alewife	1
2/6/2002	LB-1	Atlantic Silverside	4
2/6/2002	LB-1	Clearnose Skate	1
2/6/2002	LB-1	Smallmouth Flounder	1
2/6/2002	LB-1	Spotted Hake	1
2/6/2002	LB-2	Alewife	2
2/6/2002	LB-2	Clearnose Skate	3
2/6/2002	LB-2	Red Hake	2
2/6/2002	LB-2	Silver Hake	12

**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 11 of 31)

<b>Date</b>	<b>Station</b>	<b>Common Name</b>	<b>CPUE</b>
2/6/2002	LB-2	Smallmouth Flounder	24
2/6/2002	LB-2	Spotted Hake	109
2/6/2002	LB-2	Windowpane	4
2/6/2002	LB-2	Winter Flounder	6
2/6/2002	LB-3	Atlantic Silverside	2
2/6/2002	LB-3	Spotted Hake	1
2/6/2002	LB-4	Alewife	10
2/6/2002	LB-4	Clearnose Skate	3
2/6/2002	LB-4	Smallmouth Flounder	8
2/6/2002	LB-4	Spotted Hake	13
2/6/2002	LB-4	Winter Flounder	1
2/6/2002	LB-5	Atlantic Silverside	1
2/6/2002	LB-5	Smallmouth Flounder	2
2/6/2002	LB-6	Alewife	5
2/6/2002	LB-6	Blueback Herring	5
2/6/2002	LB-6	Red Hake	3
2/6/2002	LB-6	Spotted Hake	16
2/6/2002	LB-6	Windowpane	2
2/6/2002	NB-7	Blueback Herring	6
2/6/2002	NB-7	Clearnose Skate	1
2/6/2002	NB-7	Striped Bass	47
2/6/2002	NB-7	White Perch	4
2/6/2002	NB-7	Winter Flounder	1
2/6/2002	SB-2	Alewife	2
2/6/2002	SB-2	American Shad	4
2/6/2002	SB-2	Blueback Herring	1
2/6/2002	SB-2	Spot	4
2/7/2002	AK-1	Alewife	1
2/7/2002	AK-1	Striped Bass	2
2/7/2002	PJ-1	Alewife	2
2/7/2002	PJ-1	Blueback Herring	6
2/7/2002	PJ-1	Grubby	2
2/7/2002	PJ-1	Smallmouth Flounder	2
2/7/2002	PJ-1	Windowpane	1
2/7/2002	PJ-1	Winter Flounder	2
2/7/2002	PJ-2	Alewife	4
2/7/2002	PJ-2	American Shad	1
2/7/2002	PJ-2	Blueback Herring	12
2/7/2002	PJ-2	Cunner	1
2/7/2002	PJ-2	Striped Bass	4
2/7/2002	PJ-3	Alewife	6
2/7/2002	PJ-3	Blueback Herring	2
2/7/2002	PJ-3	Striped Bass	1
2/7/2002	PJ-3	Winter Flounder	1
2/7/2002	PJ-4	Alewife	8
2/7/2002	PJ-4	American Shad	3
2/7/2002	PJ-4	Atlantic Silverside	3
2/7/2002	PJ-4	Blueback Herring	43
2/7/2002	PJ-4	Northern Pipefish	1
2/7/2002	PJ-4	Spotted Hake	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 12 of 31)

<b>Date</b>	<b>Station</b>	<b>Common Name</b>	<b>CPUE</b>
2/7/2002	PJ-4	Windowpane	2
2/7/2002	PJ-4	Winter Flounder	4
2/7/2002	PJ-5	Alewife	17
2/7/2002	PJ-5	American Shad	4
2/7/2002	PJ-5	Blueback Herring	53
2/7/2002	PJ-5	Clearnose Skate	1
2/7/2002	PJ-5	Spotted Hake	1
2/7/2002	PJ-5	Windowpane	2
2/7/2002	PJ-5	Winter Flounder	7
2/7/2002	SB-3	Blueback Herring	2
2/7/2002	SB-3	Spotted Hake	1
2/7/2002	SB-3	Striped Bass	3
2/7/2002	SB-4	Alewife	1
2/7/2002	SB-4	Blueback Herring	3
2/7/2002	SB-4	Spot	1
2/7/2002	SB-4	Spotted Hake	4
2/7/2002	SB-4	Striped Bass	1
2/7/2002	SB-4	Winter Flounder	1
2/7/2002	SB-5	Alewife	1
2/7/2002	SB-5	Blueback Herring	80
2/7/2002	SB-5	Clearnose Skate	1
2/7/2002	SB-5	Spotted Hake	16
2/7/2002	SB-5	Windowpane	3
2/7/2002	SB-5	Winter Flounder	4
2/7/2002	SB-6	Alewife	2
2/7/2002	SB-6	Blueback Herring	7
2/7/2002	SB-6	Clearnose Skate	1
2/7/2002	SB-6	Spotted Hake	3
2/7/2002	SB-6	Windowpane	2
2/7/2002	SB-6	Winter Flounder	2
2/19/2002	LB-1	Atlantic Herring	8
2/19/2002	LB-1	Clearnose Skate	1
2/19/2002	LB-1	Grubby	1
2/19/2002	LB-1	Smallmouth Flounder	6
2/19/2002	LB-1	Smallmouth Flounder	10
2/19/2002	LB-1	Spotted Hake	5
2/19/2002	LB-1	Windowpane	1
2/19/2002	LB-1	Winter Flounder	3
2/19/2002	LB-2	Alewife	3
2/19/2002	LB-2	Clearnose Skate	6
2/19/2002	LB-2	Cunner	5
2/19/2002	LB-2	Grubby	2
2/19/2002	LB-2	Northern Pipefish	9
2/19/2002	LB-2	Northern Searobin	5
2/19/2002	LB-2	Red Hake	23
2/19/2002	LB-2	Rock Gunnel	1
2/19/2002	LB-2	Silver Hake	8
2/19/2002	LB-2	Smallmouth Flounder	104
2/19/2002	LB-2	Spotted Hake	119
2/19/2002	LB-2	Winter Flounder	30



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 13 of 31)

Date	Station	Common Name	CPUE
2/19/2002	LB-3	Alewife	1
2/19/2002	LB-3	Atlantic Herring	5
2/19/2002	LB-3	Atlantic Silverside	1
2/19/2002	LB-3	Smallmouth Flounder	4
2/19/2002	LB-3	Windowpane	1
2/19/2002	LB-4	Alewife	3
2/19/2002	LB-4	Blueback Herring	1
2/19/2002	LB-4	Clearnose Skate	3
2/19/2002	LB-4	Northern Pipefish	1
2/19/2002	LB-4	Red Hake	3
2/19/2002	LB-4	Smallmouth Flounder	1
2/19/2002	LB-4	Spotted Hake	49
2/19/2002	LB-4	Windowpane	1
2/19/2002	LB-4	Winter Flounder	1
2/19/2002	LB-5	Atlantic Herring	2
2/19/2002	LB-5	Atlantic Silverside	1
2/19/2002	LB-5	Smallmouth Flounder	3
2/19/2002	LB-5	Windowpane	3
2/19/2002	LB-5	Winter Flounder	1
2/19/2002	LB-6	Clearnose Skate	1
2/19/2002	LB-6	Winter Flounder	1
2/20/2002	NB-3	Blueback Herring	1
2/20/2002	NB-3	White Perch	1
2/20/2002	NB-4	Alewife	1
2/20/2002	NB-4	American Shad	1
2/20/2002	NB-4	Striped Bass	3
2/20/2002	NB-4	White Perch	13
2/20/2002	NB-5	Alewife	2
2/20/2002	NB-5	American Shad	1
2/20/2002	NB-5	Blueback Herring	7
2/20/2002	NB-5	Spotted Hake	16
2/20/2002	NB-5	Striped Bass	30
2/20/2002	NB-5	White Perch	214
2/20/2002	NB-5	Windowpane	7
2/20/2002	NB-5	Winter Flounder	6
2/20/2002	NB-6	Alewife	3
2/20/2002	NB-6	Blueback Herring	8
2/20/2002	NB-6	Fourspot Flounder	1
2/20/2002	NB-6	Smallmouth Flounder	1
2/20/2002	NB-6	Spotted Hake	4
2/20/2002	NB-6	Striped Bass	179
2/20/2002	NB-6	White Perch	239
2/20/2002	NB-6	Windowpane	6
2/20/2002	NB-6	Winter Flounder	7
2/20/2002	NB-7	Alewife	1
2/20/2002	NB-7	Alewife	1
2/20/2002	NB-7	Blueback Herring	1
2/20/2002	NB-7	Spotted Hake	1
2/20/2002	NB-7	Striped Bass	56
2/20/2002	NB-7	Winter Flounder	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 14 of 31)

Date	Station	Common Name	CPUE
2/21/2002	AK-1	Blueback Herring	1
2/21/2002	AK-1	Cunner	1
2/21/2002	AK-1	Striped Bass	1
2/21/2002	AK-2	Alewife	1
2/21/2002	AK-2	Blueback Herring	6
2/21/2002	AK-3	Alewife	1
2/21/2002	AK-3	Atlantic Herring	1
2/21/2002	AK-3	Blueback Herring	3
2/21/2002	AK-3	Spotted Hake	4
2/21/2002	AK-3	Striped Bass	7
2/21/2002	AK-3	Windowpane	1
2/21/2002	AK-3	Winter Flounder	2
2/21/2002	PJ-1	Alewife	17
2/21/2002	PJ-1	American Shad	2
2/21/2002	PJ-1	Blueback Herring	26
2/21/2002	PJ-1	Clearnose Skate	1
2/21/2002	PJ-1	Grubby	1
2/21/2002	PJ-1	Red Hake	1
2/21/2002	PJ-1	Smallmouth Flounder	4
2/21/2002	PJ-1	Spotted Hake	4
2/21/2002	PJ-1	Striped Bass	2
2/21/2002	PJ-1	Windowpane	1
2/21/2002	PJ-1	Winter Flounder	7
2/21/2002	PJ-4	Alewife	3
2/21/2002	PJ-4	American Shad	2
2/21/2002	PJ-4	Blueback Herring	3
2/21/2002	PJ-4	Windowpane	1
2/21/2002	PJ-5	Alewife	3
2/21/2002	PJ-5	Blueback Herring	26
2/21/2002	PJ-5	Spotted Hake	11
2/21/2002	PJ-5	Windowpane	3
2/21/2002	PJ-5	Winter Flounder	3
2/21/2002	SB-5	Blueback Herring	3
2/21/2002	SB-5	Clearnose Skate	4
2/21/2002	SB-5	Northern Pipefish	17
2/21/2002	SB-5	Red Hake	14
2/21/2002	SB-5	Silver Hake	1
2/21/2002	SB-5	Smallmouth Flounder	2
2/21/2002	SB-5	Spotted Hake	63
2/21/2002	SB-5	Windowpane	12
2/21/2002	SB-5	Winter Flounder	45
2/22/2002	PJ-2	Alewife	1
2/22/2002	PJ-2	Blueback Herring	1
2/22/2002	PJ-2	Cunner	1
2/22/2002	PJ-3	Alewife	1
2/22/2002	SB-1	American Shad	1
2/22/2002	SB-1	Atlantic Silverside	2
2/22/2002	SB-2	Alewife	1
2/22/2002	SB-2	American Shad	6
2/22/2002	SB-2	Blueback Herring	3

**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 15 of 31)

Date	Station	Common Name	CPUE
2/22/2002	SB-3	Windowpane	1
2/22/2002	SB-3	Winter Flounder	4
2/22/2002	SB-4	Alewife	1
2/22/2002	SB-4	American Shad	1
2/22/2002	SB-4	Blueback Herring	12
2/22/2002	SB-4	Spotted Hake	1
2/22/2002	SB-6	Blueback Herring	4
2/22/2002	SB-6	Cunner	48
2/22/2002	SB-6	Red Hake	3
2/22/2002	SB-6	Spotted Hake	10
2/22/2002	SB-6	Windowpane	7
2/22/2002	SB-6	Winter Flounder	7
3/5/2002	AK-1	Blueback Herring	5
3/5/2002	AK-1	Striped Bass	8
3/5/2002	AK-1	White Perch	6
3/5/2002	AK-1	Winter Flounder	3
3/5/2002	AK-2	Alewife	1
3/5/2002	AK-2	Blueback Herring	3
3/5/2002	AK-2	Smallmouth Flounder	1
3/5/2002	AK-3	Blueback Herring	5
3/5/2002	AK-3	Spotted Hake	2
3/5/2002	AK-3	Striped Bass	3
3/5/2002	AK-3	Windowpane	1
3/5/2002	AK-3	Winter Flounder	3
3/5/2002	AK-4	Alewife	2
3/5/2002	AK-4	Atlantic Silverside	1
3/5/2002	AK-4	Blueback Herring	3
3/5/2002	AK-4	Striped Bass	1
3/5/2002	AK-4	Winter Flounder	2
3/5/2002	NB-3	Atlantic Menhaden	1
3/5/2002	NB-3	Spotted Hake	3
3/5/2002	NB-3	Striped Bass	3
3/5/2002	NB-3	White Perch	2
3/5/2002	NB-3	Windowpane	1
3/5/2002	NB-3	Winter Flounder	4
3/5/2002	NB-4	Alewife	1
3/5/2002	NB-4	Striped Bass	2
3/5/2002	NB-5	Alewife	1
3/5/2002	NB-5	Atlantic Herring	1
3/5/2002	NB-5	Bay Anchovy	1
3/5/2002	NB-5	Blueback Herring	9
3/5/2002	NB-5	Spotted Hake	1
3/5/2002	NB-5	Striped Bass	1
3/5/2002	NB-5	White Perch	5
3/5/2002	NB-6	Alewife	1
3/5/2002	NB-6	Blueback Herring	7
3/5/2002	NB-6	Naked Goby	1
3/5/2002	NB-6	Spotted Hake	1
3/6/2002	PJ-1	Alewife	1
3/6/2002	PJ-1	Atlantic Silverside	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 16 of 31)

Date	Station	Common Name	CPUE
3/6/2002	PJ-1	Blueback Herring	1
3/6/2002	PJ-4	Alewife	2
3/6/2002	PJ-4	American Shad	1
3/6/2002	PJ-4	Atlantic Menhaden	1
3/6/2002	PJ-4	Blueback Herring	14
3/6/2002	PJ-4	Clearnose Skate	1
3/6/2002	PJ-4	Conger Eel	1
3/6/2002	PJ-4	Red Hake	1
3/6/2002	PJ-4	Spotted Hake	25
3/6/2002	PJ-4	Windowpane	2
3/6/2002	PJ-4	Winter Flounder	1
3/6/2002	PJ-5	Alewife	4
3/6/2002	PJ-5	American Shad	2
3/6/2002	PJ-5	Atlantic Menhaden	1
3/6/2002	PJ-5	Blueback Herring	20
3/6/2002	PJ-5	Cunner	1
3/6/2002	PJ-5	Northern Pipefish	1
3/6/2002	PJ-5	Smallmouth Flounder	1
3/6/2002	PJ-5	Spotted Hake	1
3/6/2002	PJ-5	Striped Cuskeel	1
3/6/2002	PJ-5	Striped Searobin	1
3/6/2002	SB-1	American Shad	1
3/6/2002	SB-1	Striped Bass	1
3/6/2002	SB-2	Alewife	1
3/6/2002	SB-2	American Shad	3
3/6/2002	SB-2	Striped Bass	1
3/6/2002	SB-3	Alewife	1
3/6/2002	SB-3	Smallmouth Flounder	3
3/6/2002	SB-3	Spotted Hake	1
3/6/2002	SB-3	Windowpane	2
3/6/2002	SB-3	Winter Flounder	3
3/6/2002	SB-4	Blueback Herring	2
3/6/2002	SB-4	Cunner	1
3/6/2002	SB-4	Silver Hake	1
3/6/2002	SB-4	Spotted Hake	4
3/6/2002	SB-4	Striped Bass	1
3/6/2002	SB-5	Blueback Herring	29
3/6/2002	SB-5	Naked Goby	1
3/6/2002	SB-5	Northern Pipefish	1
3/6/2002	SB-6	Alewife	6
3/6/2002	SB-6	Blueback Herring	23
3/6/2002	SB-6	Cunner	1
3/6/2002	SB-6	Northern Pipefish	1
3/6/2002	SB-6	Red Hake	1
3/6/2002	SB-6	Spotted Hake	2
3/6/2002	SB-6	Tautog	1
3/6/2002	SB-6	Winter Flounder	4
3/7/2002	LB-1	Smallmouth Flounder	4
3/7/2002	LB-1	Spotted Hake	5
3/7/2002	LB-1	Striped Cuskeel	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 17 of 31)

Date	Station	Common Name	CPUE
3/7/2002	LB-1	Windowpane	1
3/7/2002	LB-2	Alewife	22
3/7/2002	LB-2	Blueback Herring	10
3/7/2002	LB-2	Clearnose Skate	1
3/7/2002	LB-2	Northern Pipefish	1
3/7/2002	LB-2	Silver Hake	7
3/7/2002	LB-2	Smallmouth Flounder	4
3/7/2002	LB-2	Spotted Hake	39
3/7/2002	LB-2	Striped Cuskeel	2
3/7/2002	LB-2	Windowpane	1
3/7/2002	LB-2	Winter Flounder	1
3/7/2002	LB-3	Feather Blenny	1
3/7/2002	LB-4	Conger Eel	2
3/7/2002	LB-4	Northern Pipefish	1
3/7/2002	LB-4	Red Hake	5
3/7/2002	LB-4	Spotted Hake	14
3/7/2002	LB-4	Winter Flounder	1
3/7/2002	LB-5	Smallmouth Flounder	3
3/7/2002	LB-5	Spotted Hake	1
3/7/2002	LB-5	Winter Flounder	1
3/7/2002	LB-6	Blueback Herring	1
3/7/2002	LB-6	Cunner	1
3/7/2002	LB-6	Northern Pipefish	1
3/7/2002	LB-6	Spotted Hake	10
3/7/2002	LB-6	Winter Flounder	3
3/19/2002	AK-4	Alewife	2
3/19/2002	AK-4	American Shad	19
3/19/2002	AK-4	Atlantic Menhaden	3
3/19/2002	AK-4	Bay Anchovy	1
3/19/2002	AK-4	Blueback Herring	1
3/19/2002	AK-4	Spotted Hake	20
3/19/2002	AK-4	Striped Bass	21
3/19/2002	AK-4	White Perch	7
3/19/2002	LB-1	Atlantic Herring	1
3/19/2002	LB-1	Lined Seahorse	1
3/19/2002	LB-1	Northern Pipefish	2
3/19/2002	LB-1	Northern Searobin	1
3/19/2002	LB-1	Red Hake	1
3/19/2002	LB-1	Smallmouth Flounder	10
3/19/2002	LB-1	Spotted Hake	1
3/19/2002	LB-2	Blueback Herring	19
3/19/2002	LB-2	Clearnose Skate	3
3/19/2002	LB-2	Northern Searobin	1
3/19/2002	LB-2	Silver Hake	2
3/19/2002	LB-2	Spotted Hake	12
3/19/2002	LB-2	Striped Cuskeel	1
3/19/2002	LB-2	Windowpane	2
3/19/2002	LB-2	Winter Flounder	1
3/19/2002	LB-4	Blueback Herring	5
3/19/2002	LB-4	Clearnose Skate	8





**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 18 of 31)

Date	Station	Common Name	CPUE
3/19/2002	LB-4	Conger Eel	1
3/19/2002	LB-4	Northern Pipefish	4
3/19/2002	LB-4	Red Hake	7
3/19/2002	LB-4	Rock Gunnel	1
3/19/2002	LB-4	Silver Hake	1
3/19/2002	LB-4	Smallmouth Flounder	9
3/19/2002	LB-4	Spotted Hake	100
3/19/2002	LB-4	Striped Searobin	1
3/19/2002	LB-4	Summer Flounder	1
3/19/2002	LB-4	Windowpane	4
3/19/2002	LB-4	Winter Flounder	10
3/19/2002	LB-5	Alewife	1
3/19/2002	LB-5	Blueback Herring	1
3/19/2002	LB-5	Naked Goby	1
3/19/2002	LB-5	Northern Pipefish	1
3/19/2002	LB-6	Alewife	1
3/19/2002	LB-6	Blueback Herring	12
3/19/2002	LB-6	Spotted Hake	16
3/19/2002	LB-6	Striped Cuskeel	1
3/20/2002	AK-1	American Shad	1
3/20/2002	AK-1	Blueback Herring	18
3/20/2002	AK-1	Spotted Hake	70
3/20/2002	AK-1	Striped Bass	19
3/20/2002	AK-1	White Perch	4
3/20/2002	AK-1	Windowpane	1
3/20/2002	AK-1	Winter Flounder	1
3/20/2002	AK-2	Alewife	1
3/20/2002	AK-2	Atlantic Menhaden	1
3/20/2002	AK-2	Bay Anchovy	1
3/20/2002	AK-2	Blueback Herring	11
3/20/2002	AK-2	Spotted Hake	10
3/20/2002	AK-2	Striped Bass	27
3/20/2002	AK-2	White Perch	6
3/20/2002	AK-3	American Shad	1
3/20/2002	AK-3	Blueback Herring	6
3/20/2002	AK-3	Spotted Hake	14
3/20/2002	AK-3	Striped Bass	7
3/20/2002	AK-3	Summer Flounder	1
3/20/2002	AK-3	White Perch	4
3/20/2002	AK-3	Windowpane	1
3/20/2002	AK-3	Winter Flounder	1
3/20/2002	NB-3	Spotted Hake	1
3/20/2002	NB-3	Striped Bass	3
3/20/2002	NB-3	White Perch	3
3/20/2002	NB-3	Windowpane	1
3/20/2002	NB-3	Winter Flounder	3
3/20/2002	NB-4	White Perch	1
3/20/2002	NB-5	Blueback Herring	2
3/20/2002	NB-5	Spotted Hake	6
3/20/2002	NB-5	White Perch	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 19 of 31)

<b>Date</b>	<b>Station</b>	<b>Common Name</b>	<b>CPUE</b>
3/20/2002	NB-6	Alewife	2
3/20/2002	NB-6	Blueback Herring	7
3/20/2002	NB-6	Cunner	2
3/20/2002	NB-6	Northern Pipefish	1
3/20/2002	NB-6	Red Hake	1
3/20/2002	NB-6	Spotted Hake	21
3/20/2002	NB-6	Striped Bass	1
3/20/2002	NB-6	White Perch	8
3/20/2002	NB-6	Windowpane	1
3/20/2002	NB-6	Winter Flounder	15
3/20/2002	NB-7	Alewife	1
3/20/2002	NB-7	Blueback Herring	5
3/20/2002	NB-7	Striped Bass	8
3/20/2002	NB-7	White Perch	2
3/20/2002	PJ-1	Naked Goby	1
3/20/2002	PJ-1	Northern Searobin	1
3/20/2002	PJ-1	Rock Gunnel	1
3/20/2002	PJ-1	Smallmouth Flounder	1
3/20/2002	PJ-1	Spotted Hake	7
3/20/2002	PJ-1	Windowpane	4
3/20/2002	PJ-1	Winter Flounder	6
3/20/2002	PJ-5	Alewife	2
3/20/2002	PJ-5	Atlantic Menhaden	1
3/20/2002	PJ-5	Blueback Herring	4
3/20/2002	PJ-5	Lined Seahorse	1
3/20/2002	PJ-5	Spotted Hake	4
3/20/2002	SB-5	Alewife	1
3/20/2002	SB-5	Atlantic Menhaden	1
3/20/2002	SB-5	Blueback Herring	27
3/20/2002	SB-5	Clearnose Skate	1
3/20/2002	SB-5	Naked Goby	1
3/20/2002	SB-5	Northern Pipefish	8
3/20/2002	SB-5	Northern Searobin	2
3/20/2002	SB-5	Red Hake	3
3/20/2002	SB-5	Smallmouth Flounder	1
3/20/2002	SB-5	Spotted Hake	82
3/20/2002	SB-5	Striped Cuskeel	1
3/20/2002	SB-5	Windowpane	6
3/20/2002	SB-5	Winter Flounder	5
3/21/2002	PJ-2	Alewife	5
3/21/2002	PJ-2	American Shad	1
3/21/2002	PJ-2	Atlantic Menhaden	1
3/21/2002	PJ-2	Atlantic Silverside	2
3/21/2002	PJ-2	Blueback Herring	7
3/21/2002	PJ-2	Spotted Hake	3
3/21/2002	PJ-2	Striped Bass	4
3/21/2002	PJ-2	Windowpane	3
3/21/2002	PJ-2	Winter Flounder	2
3/21/2002	PJ-3	Alewife	19
3/21/2002	PJ-3	American Shad	2



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 20 of 31)

Date	Station	Common Name	CPUE
3/21/2002	PJ-3	Atlantic Menhaden	1
3/21/2002	PJ-3	Atlantic Silverside	2
3/21/2002	PJ-3	Blueback Herring	15
3/21/2002	PJ-3	Spotted Hake	7
3/21/2002	PJ-3	Striped Bass	1
3/21/2002	PJ-3	Winter Flounder	2
3/21/2002	PJ-4	Alewife	5
3/21/2002	PJ-4	Atlantic Menhaden	1
3/21/2002	PJ-4	Blueback Herring	11
3/21/2002	SB-1	Alewife	2
3/21/2002	SB-1	American Shad	1
3/21/2002	SB-1	Spotted Hake	4
3/21/2002	SB-1	Striped Bass	6
3/21/2002	SB-1	Windowpane	2
3/21/2002	SB-1	Winter Flounder	1
3/21/2002	SB-2	Alewife	13
3/21/2002	SB-2	Atlantic Tomcod	1
3/21/2002	SB-2	Spotted Hake	1
3/21/2002	SB-3	Clearnose Skate	3
3/21/2002	SB-3	Grubby	1
3/21/2002	SB-3	Northern Searobin	2
3/21/2002	SB-3	Smallmouth Flounder	1
3/21/2002	SB-3	Spotted Hake	14
3/21/2002	SB-3	Striped Bass	5
3/21/2002	SB-3	Windowpane	2
3/21/2002	SB-3	Winter Flounder	2
3/21/2002	SB-4	Alewife	3
3/21/2002	SB-4	Blueback Herring	20
3/21/2002	SB-4	Cunner	1
3/21/2002	SB-4	Northern Pipefish	3
3/21/2002	SB-4	Northern Searobin	1
3/21/2002	SB-4	Red Hake	1
3/21/2002	SB-4	Smallmouth Flounder	1
3/21/2002	SB-4	Spotted Hake	105
3/21/2002	SB-4	Windowpane	5
3/21/2002	SB-4	Winter Flounder	4
3/21/2002	SB-6	Alewife	4
3/21/2002	SB-6	Blueback Herring	24
4/16/2002	PJ-1	Alewife	1
4/16/2002	PJ-1	Atlantic Herring	1
4/16/2002	PJ-1	Blueback Herring	1
4/16/2002	PJ-1	Clupeid unidentified	4
4/16/2002	PJ-1	Striped Bass	3
4/16/2002	PJ-2	Alewife	1
4/16/2002	PJ-2	Atlantic Menhaden	1
4/16/2002	PJ-2	Blueback Herring	1
4/16/2002	PJ-2	Spotted Hake	2
4/16/2002	PJ-2	Striped Bass	1
4/16/2002	PJ-3	Bay Anchovy	1
4/16/2002	PJ-3	Blueback Herring	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 21 of 31)

Date	Station	Common Name	CPUE
4/16/2002	PJ-3	Naked Goby	2
4/16/2002	PJ-3	Spotted Hake	1
4/16/2002	PJ-3	Striped Bass	5
4/16/2002	PJ-4	Blueback Herring	1
4/16/2002	PJ-4	Northern Pipefish	1
4/16/2002	PJ-4	Red Hake	1
4/16/2002	PJ-4	Smallmouth Flounder	1
4/16/2002	PJ-4	Spotted Hake	25
4/16/2002	PJ-4	Windowpane	2
4/16/2002	PJ-4	Winter Flounder	1
4/17/2002	AK-1	American Eel	2
4/17/2002	AK-1	Conger Eel	1
4/17/2002	AK-1	Spotted Hake	3
4/17/2002	AK-1	Striped Bass	8
4/17/2002	AK-1	Summer Flounder	1
4/17/2002	AK-1	Windowpane	14
4/17/2002	AK-1	Winter Flounder	1
4/17/2002	AK-2	Alewife	1
4/17/2002	AK-2	Blueback Herring	2
4/17/2002	AK-2	Clupeid unidentified	1
4/17/2002	AK-2	Northern Pipefish	1
4/17/2002	AK-2	Red Hake	1
4/17/2002	AK-2	Smallmouth Flounder	1
4/17/2002	AK-2	Spotted Hake	557
4/17/2002	AK-2	Striped Cuskeel	2
4/17/2002	AK-2	Tautog	1
4/17/2002	AK-2	Windowpane	8
4/17/2002	AK-2	Winter Flounder	9
4/17/2002	AK-3	Spotted Hake	69
4/17/2002	AK-3	Striped Bass	1
4/17/2002	AK-3	Windowpane	1
4/17/2002	LB-1	Black Sea Bass	1
4/17/2002	LB-1	Clearnose Skate	6
4/17/2002	LB-1	Smallmouth Flounder	1
4/17/2002	LB-1	Spotted Hake	4
4/17/2002	LB-1	Windowpane	1
4/17/2002	LB-1	Winter Flounder	3
4/17/2002	LB-2	Black Sea Bass	1
4/17/2002	LB-2	Clearnose Skate	2
4/17/2002	LB-2	Cunner	3
4/17/2002	LB-2	Northern Pipefish	1
4/17/2002	LB-2	Red Hake	8
4/17/2002	LB-2	Smallmouth Flounder	7
4/17/2002	LB-2	Spotted Hake	30
4/17/2002	LB-2	Windowpane	7
4/17/2002	LB-2	Winter Flounder	25
4/17/2002	LB-3	Alewife	1
4/17/2002	LB-3	Lined Seahorse	1
4/17/2002	LB-3	Smallmouth Flounder	1
4/17/2002	LB-3	Spotted Hake	22



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 22 of 31)

<b>Date</b>	<b>Station</b>	<b>Common Name</b>	<b>CPUE</b>
4/17/2002	LB-3	Winter Flounder	1
4/17/2002	LB-4	Spotted Hake	1
4/17/2002	LB-5	Black Sea Bass	1
4/17/2002	LB-5	Blueback Herring	1
4/17/2002	LB-5	Spotted Hake	10
4/17/2002	LB-5	Windowpane	4
4/17/2002	LB-6	Clearnose Skate	1
4/17/2002	LB-6	Northern Pipefish	1
4/17/2002	LB-6	Northern Searobin	1
4/17/2002	LB-6	Red Hake	1
4/17/2002	LB-6	Spotted Hake	59
4/17/2002	LB-6	Summer Flounder	1
4/17/2002	LB-6	Windowpane	5
4/17/2002	LB-6	Winter Flounder	10
4/18/2002	AK-4	Spotted Hake	3
4/18/2002	AK-4	Striped Bass	24
4/18/2002	AK-4	Windowpane	3
4/18/2002	AK-4	Winter Flounder	1
4/18/2002	NB-3	Alewife	1
4/18/2002	NB-3	Bay Anchovy	1
4/18/2002	NB-3	Spotted Hake	5
4/18/2002	NB-3	Striped Bass	11
4/18/2002	NB-3	Winter Flounder	5
4/18/2002	NB-4	Spotted Hake	16
4/18/2002	NB-4	Striped Bass	10
4/18/2002	NB-4	Windowpane	1
4/18/2002	NB-4	Winter Flounder	4
4/18/2002	NB-5	Atlantic Herring	19
4/18/2002	NB-5	Spotted Hake	59
4/18/2002	NB-5	Striped Bass	1
4/18/2002	NB-5	Windowpane	1
4/18/2002	NB-6	Clupeid unidentified	1
4/18/2002	NB-6	Grubby	2
4/18/2002	NB-6	Rock Gunnel	1
4/18/2002	NB-6	Spotted Hake	103
4/18/2002	NB-6	Windowpane	2
4/18/2002	NB-6	Winter Flounder	9
4/18/2002	NB-7	Alewife	2
4/18/2002	NB-7	Black Sea Bass	1
4/18/2002	NB-7	Blueback Herring	3
4/18/2002	NB-7	Clupeid unidentified	1
4/18/2002	NB-7	Northern Pipefish	1
4/18/2002	NB-7	Rock Gunnel	1
4/18/2002	NB-7	Smallmouth Flounder	3
4/18/2002	NB-7	Spotted Hake	28
4/18/2002	NB-7	Striped Bass	41
4/18/2002	NB-7	Summer Flounder	1
4/18/2002	NB-7	Tautog	1
4/18/2002	NB-7	Windowpane	5
4/18/2002	NB-7	Winter Flounder	9



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 23 of 31)

<b>Date</b>	<b>Station</b>	<b>Common Name</b>	<b>CPUE</b>
4/18/2002	PJ-5	Clearnose Skate	3
4/18/2002	PJ-5	Northern Pipefish	1
4/18/2002	PJ-5	Northern Searobin	2
4/18/2002	PJ-5	Spotted Hake	149
4/18/2002	PJ-5	Summer Flounder	1
4/18/2002	PJ-5	Tautog	1
4/18/2002	PJ-5	Windowpane	4
4/18/2002	PJ-5	Winter Flounder	7
4/18/2002	SB-1	Clearnose Skate	1
4/18/2002	SB-1	Northern Pipefish	1
4/18/2002	SB-1	Northern Searobin	1
4/18/2002	SB-1	Spotted Hake	16
4/18/2002	SB-1	Striped Bass	4
4/18/2002	SB-1	Striped Cuskeel	2
4/18/2002	SB-1	Windowpane	1
4/18/2002	SB-2	Clearnose Skate	1
4/18/2002	SB-2	Cunner	1
4/18/2002	SB-2	Northern Pipefish	1
4/18/2002	SB-2	Spotted Hake	11
4/18/2002	SB-2	Striped Bass	5
4/18/2002	SB-2	Striped Cuskeel	1
4/18/2002	SB-2	Windowpane	1
4/18/2002	SB-3	Grubby	1
4/18/2002	SB-3	Northern Searobin	8
4/18/2002	SB-3	Smallmouth Flounder	1
4/18/2002	SB-3	Spotted Hake	62
4/18/2002	SB-3	Striped Bass	1
4/18/2002	SB-3	Striped Searobin	1
4/18/2002	SB-3	Summer Flounder	1
4/18/2002	SB-3	Windowpane	4
4/18/2002	SB-3	Winter Flounder	4
4/18/2002	SB-4	Atlantic Herring	1
4/18/2002	SB-4	Bay Anchovy	1
4/18/2002	SB-4	Blueback Herring	1
4/18/2002	SB-4	Clearnose Skate	1
4/18/2002	SB-4	Northern Pipefish	1
4/18/2002	SB-4	Northern Searobin	2
4/18/2002	SB-4	Spotted Hake	45
4/18/2002	SB-4	Striped Bass	4
4/18/2002	SB-4	Windowpane	1
4/18/2002	SB-4	Winter Flounder	2
4/18/2002	SB-5	Blueback Herring	3
4/18/2002	SB-5	Clearnose Skate	2
4/18/2002	SB-5	Northern Searobin	1
4/18/2002	SB-5	Red Hake	3
4/18/2002	SB-5	Spotted Hake	15
4/18/2002	SB-5	Summer Flounder	1
4/18/2002	SB-5	Windowpane	2
4/18/2002	SB-5	Winter Flounder	9
4/18/2002	SB-6	Black Sea Bass	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 24 of 31)

Date	Station	Common Name	CPUE
4/18/2002	SB-6	Blueback Herring	1
4/18/2002	SB-6	Clearnose Skate	1
4/18/2002	SB-6	Cunner	2
4/18/2002	SB-6	Red Hake	1
4/18/2002	SB-6	Silver Hake	1
4/18/2002	SB-6	Spotted Hake	15
4/18/2002	SB-6	Striped Cuskeel	1
4/18/2002	SB-6	Windowpane	5
4/18/2002	SB-6	Winter Flounder	3
5/14/2002	AK-3	American Eel	3
5/14/2002	AK-3	Bay Anchovy	1
5/14/2002	AK-3	Blueback Herring	5
5/14/2002	AK-3	Grubby	1
5/14/2002	AK-3	Northern Searobin	1
5/14/2002	AK-3	Spotted Hake	157
5/14/2002	AK-3	Windowpane	2
5/14/2002	AK-3	Winter Flounder	1
5/14/2002	AK-4	American Eel	1
5/14/2002	AK-4	Bay Anchovy	5
5/14/2002	AK-4	Spotted Hake	2
5/14/2002	AK-4	Striped Bass	16
5/14/2002	AK-4	Summer Flounder	1
5/14/2002	NB-3	Bay Anchovy	5
5/14/2002	NB-3	Northern Searobin	1
5/14/2002	NB-3	Spotted Hake	16
5/14/2002	NB-3	Striped Bass	3
5/14/2002	NB-3	Striped Searobin	1
5/14/2002	NB-3	Summer Flounder	1
5/14/2002	NB-3	Tautog	1
5/14/2002	NB-3	Winter Flounder	8
5/14/2002	NB-4	Bay Anchovy	10
5/14/2002	NB-4	Black Sea Bass	1
5/14/2002	NB-4	Blueback Herring	1
5/14/2002	NB-4	Spotted Hake	25
5/14/2002	NB-4	Striped Bass	2
5/14/2002	NB-4	Summer Flounder	1
5/14/2002	NB-4	Winter Flounder	1
5/14/2002	NB-5	Bay Anchovy	10
5/14/2002	NB-5	Blueback Herring	23
5/14/2002	NB-5	Northern Searobin	2
5/14/2002	NB-5	Spotted Hake	24
5/14/2002	NB-5	Summer Flounder	1
5/15/2002	AK-1	Atlantic Herring	1
5/15/2002	AK-1	Bay Anchovy	1
5/15/2002	AK-1	Blueback Herring	2
5/15/2002	AK-1	Spotted Hake	1
5/15/2002	AK-2	American Eel	1
5/15/2002	AK-2	Bay Anchovy	2
5/15/2002	AK-2	Blueback Herring	6
5/15/2002	AK-2	Northern Pipefish	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 25 of 31)

Date	Station	Common Name	CPUE
5/15/2002	AK-2	Northern Searobin	3
5/15/2002	AK-2	Spotted Hake	106
5/15/2002	AK-2	Striped Searobin	1
5/15/2002	AK-2	Windowpane	2
5/15/2002	AK-2	Winter Flounder	1
5/15/2002	LB-1	Bay Anchovy	1
5/15/2002	LB-1	Clearnose Skate	1
5/15/2002	LB-1	Cunner	1
5/15/2002	LB-1	Grubby	1
5/15/2002	LB-1	Scup	54
5/15/2002	LB-1	Spotted Hake	15
5/15/2002	LB-1	Striped Bass	1
5/15/2002	LB-1	Tautog	1
5/15/2002	LB-1	Winter Flounder	2
5/15/2002	LB-3	Scup	6
5/15/2002	LB-3	Smallmouth Flounder	1
5/15/2002	LB-3	Spotted Hake	42
5/15/2002	LB-3	Striped Searobin	2
5/15/2002	LB-3	Summer Flounder	2
5/15/2002	LB-3	Windowpane	2
5/15/2002	LB-3	Winter Flounder	4
5/15/2002	LB-4	Clearnose Skate	1
5/15/2002	LB-4	Northern Puffer	1
5/15/2002	LB-4	Red Hake	1
5/15/2002	LB-4	Scup	1
5/15/2002	LB-4	Spotted Hake	31
5/15/2002	LB-4	Striped Searobin	2
5/15/2002	LB-4	Summer Flounder	1
5/15/2002	LB-4	Windowpane	2
5/15/2002	LB-4	Winter Flounder	9
5/15/2002	LB-5	Bay Anchovy	1
5/15/2002	LB-5	Spotted Hake	3
5/15/2002	LB-6	Bay Anchovy	1
5/15/2002	LB-6	Scup	4
5/15/2002	LB-6	Smallmouth Flounder	1
5/15/2002	LB-6	Spotted Hake	29
5/15/2002	LB-6	Striped Searobin	99
5/15/2002	LB-6	Summer Flounder	1
5/15/2002	LB-6	Weakfish	1
5/15/2002	LB-6	Windowpane	4
5/15/2002	LB-6	Winter Flounder	6
5/15/2002	NB-6	American Eel	1
5/15/2002	NB-6	Atlantic Herring	1
5/15/2002	NB-6	Atlantic Menhaden	1
5/15/2002	NB-6	Bay Anchovy	8
5/15/2002	NB-6	Blueback Herring	46
5/15/2002	NB-6	Hogchocker	1
5/15/2002	NB-6	Northern Searobin	4
5/15/2002	NB-6	Oyster Toadfish	1
5/15/2002	NB-6	Spotted Hake	28





**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 26 of 31)

<b>Date</b>	<b>Station</b>	<b>Common Name</b>	<b>CPUE</b>
5/15/2002	NB-6	Summer Flounder	1
5/15/2002	NB-6	Winter Flounder	2
5/15/2002	NB-7	Bay Anchovy	1
5/15/2002	NB-7	Blueback Herring	2
5/15/2002	NB-7	Northern Searobin	1
5/15/2002	NB-7	Smallmouth Flounder	2
5/15/2002	NB-7	Spotted Hake	50
5/15/2002	NB-7	Striped Bass	8
5/15/2002	NB-7	Summer Flounder	6
5/15/2002	NB-7	Weakfish	1
5/15/2002	NB-7	Windowpane	1
5/15/2002	NB-7	Winter Flounder	2
5/15/2002	PJ-4	Atlantic Menhaden	1
5/15/2002	PJ-4	Atlantic Tomcod	3
5/15/2002	PJ-4	Bay Anchovy	4
5/15/2002	PJ-4	Butterfish	3
5/15/2002	PJ-4	Northern Pipefish	1
5/15/2002	PJ-4	Rock Gunnel	1
5/15/2002	PJ-4	Spotted Hake	98
5/15/2002	PJ-4	Striped Cuskeel	1
5/15/2002	PJ-5	Alewife	2
5/15/2002	PJ-5	Atlantic Menhaden	2
5/15/2002	PJ-5	Bay Anchovy	26
5/15/2002	PJ-5	Blueback Herring	1
5/15/2002	PJ-5	Spotted Hake	31
5/15/2002	PJ-5	Winter Flounder	2
5/16/2002	LB-2	Atlantic Menhaden	1
5/16/2002	LB-2	Black Sea Bass	1
5/16/2002	LB-2	Clearnose Skate	4
5/16/2002	LB-2	Northern Pipefish	1
5/16/2002	LB-2	Northern Searobin	6
5/16/2002	LB-2	Red Hake	4
5/16/2002	LB-2	Rock Gunnel	1
5/16/2002	LB-2	Scup	122
5/16/2002	LB-2	Smallmouth Flounder	15
5/16/2002	LB-2	Spotted Hake	182
5/16/2002	LB-2	Striped Searobin	4
5/16/2002	LB-2	Summer Flounder	5
5/16/2002	LB-2	Windowpane	3
5/16/2002	LB-2	Winter Flounder	30
5/16/2002	PJ-1	Atlantic Menhaden	5
5/16/2002	PJ-1	Atlantic Tomcod	4
5/16/2002	PJ-1	Bay Anchovy	3
5/16/2002	PJ-1	Northern Pipefish	2
5/16/2002	PJ-1	Northern Puffer	1
5/16/2002	PJ-1	Scup	2
5/16/2002	PJ-1	Smallmouth Flounder	6
5/16/2002	PJ-1	Spotted Hake	148
5/16/2002	PJ-1	Summer Flounder	2
5/16/2002	PJ-1	Windowpane	6



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 27 of 31)

Date	Station	Common Name	CPUE
5/16/2002	PJ-1	Winter Flounder	8
5/16/2002	PJ-2	Atlantic Menhaden	1
5/16/2002	PJ-2	Atlantic Tomcod	7
5/16/2002	PJ-2	Bay Anchovy	28
5/16/2002	PJ-2	Spotted Hake	19
5/16/2002	PJ-2	Summer Flounder	8
5/16/2002	PJ-2	Windowpane	3
5/16/2002	PJ-2	Winter Flounder	2
5/16/2002	PJ-3	Atlantic Menhaden	3
5/16/2002	PJ-3	Bay Anchovy	217
5/16/2002	PJ-3	Hickory Shad	1
5/16/2002	PJ-3	Scup	1
5/16/2002	PJ-3	Smallmouth Flounder	4
5/16/2002	PJ-3	Spotted Hake	12
5/16/2002	PJ-3	Striped Bass	4
5/16/2002	PJ-3	Summer Flounder	2
5/16/2002	PJ-3	Windowpane	1
5/16/2002	SB-1	Atlantic Tomcod	7
5/16/2002	SB-1	Bay Anchovy	1
5/16/2002	SB-1	Spotted Hake	12
5/16/2002	SB-1	Striped Bass	5
5/16/2002	SB-2	American Eel	1
5/16/2002	SB-2	Blueback Herring	2
5/16/2002	SB-2	Butterfish	1
5/16/2002	SB-2	Cunner	1
5/16/2002	SB-2	Smallmouth Flounder	1
5/16/2002	SB-2	Spotted Hake	17
5/16/2002	SB-2	Summer Flounder	1
5/16/2002	SB-2	Windowpane	2
5/16/2002	SB-2	Winter Flounder	1
5/16/2002	SB-3	Atlantic Menhaden	1
5/16/2002	SB-3	Black Sea Bass	1
5/16/2002	SB-3	Northern Searobin	1
5/16/2002	SB-3	Scup	7
5/16/2002	SB-3	Smallmouth Flounder	2
5/16/2002	SB-3	Spotted Hake	18
5/16/2002	SB-3	Striped Bass	1
5/16/2002	SB-3	Striped Searobin	1
5/16/2002	SB-3	Summer Flounder	5
5/16/2002	SB-3	Weakfish	1
5/16/2002	SB-3	Windowpane	6
5/16/2002	SB-3	Winter Flounder	3
5/16/2002	SB-4	American Eel	1
5/16/2002	SB-4	Bay Anchovy	1
5/16/2002	SB-4	Blueback Herring	1
5/16/2002	SB-4	Clearnose Skate	2
5/16/2002	SB-4	Northern Pipefish	3
5/16/2002	SB-4	Red Hake	2
5/16/2002	SB-4	Spotted Hake	46
5/16/2002	SB-4	Striped Bass	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 28 of 31)

<b>Date</b>	<b>Station</b>	<b>Common Name</b>	<b>CPUE</b>
5/16/2002	SB-4	Striped Searobin	2
5/16/2002	SB-4	Summer Flounder	1
5/16/2002	SB-4	Windowpane	6
5/16/2002	SB-4	Winter Flounder	3
5/16/2002	SB-5	Clearnose Skate	3
5/16/2002	SB-5	Northern Searobin	4
5/16/2002	SB-5	Red Hake	14
5/16/2002	SB-5	Spotted Hake	95
5/16/2002	SB-5	Weakfish	1
5/16/2002	SB-5	Windowpane	6
5/16/2002	SB-6	Bay Anchovy	1
5/16/2002	SB-6	Clearnose Skate	3
5/16/2002	SB-6	Fourspot Flounder	1
5/16/2002	SB-6	Northern Searobin	3
5/16/2002	SB-6	Red Hake	2
5/16/2002	SB-6	Scup	2
5/16/2002	SB-6	Smallmouth Flounder	1
5/16/2002	SB-6	Spotted Hake	76
5/16/2002	SB-6	Striped Cuskeel	1
5/16/2002	SB-6	Striped Searobin	2
5/16/2002	SB-6	Summer Flounder	2
5/16/2002	SB-6	Weakfish	1
5/16/2002	SB-6	Windowpane	13
5/16/2002	SB-6	Winter Flounder	3
6/17/2002	LB-3	Atlantic Menhaden	1
6/17/2002	LB-3	Bay Anchovy	32
6/17/2002	LB-3	Bluefish	1
6/17/2002	LB-4	American Eel	1
6/17/2002	LB-4	Clearnose Skate	1
6/17/2002	LB-4	Smallmouth Flounder	1
6/17/2002	LB-4	Spotted Hake	6
6/17/2002	LB-4	Striped Searobin	26
6/17/2002	LB-4	Windowpane	5
6/17/2002	LB-4	Winter Flounder	4
6/17/2002	LB-5	Bay Anchovy	2
6/17/2002	LB-6	Bay Anchovy	3
6/17/2002	LB-6	Spotted Hake	3
6/17/2002	LB-6	Striped Searobin	5
6/18/2002	AK-1	Atlantic Menhaden	1
6/18/2002	AK-1	Bay Anchovy	11
6/18/2002	AK-1	Smallmouth Flounder	1
6/18/2002	AK-1	Winter Flounder	1
6/18/2002	AK-2	Atlantic Menhaden	3
6/18/2002	AK-2	Bay Anchovy	22
6/18/2002	AK-2	Spotted Hake	3
6/18/2002	AK-2	Striped Bass	1
6/18/2002	AK-2	Striped Cuskeel	1
6/18/2002	AK-2	Summer Flounder	1
6/18/2002	AK-2	Winter Flounder	3
6/18/2002	AK-3	Atlantic Menhaden	2



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 29 of 31)

Date	Station	Common Name	CPUE
6/18/2002	AK-3	Bay Anchovy	5
6/18/2002	AK-3	Butterfish	1
6/18/2002	AK-3	Conger Eel	1
6/18/2002	AK-3	Grubby	3
6/18/2002	AK-3	Spotted Hake	65
6/18/2002	AK-3	Striped Searobin	2
6/18/2002	AK-3	Weakfish	2
6/18/2002	AK-3	Windowpane	4
6/18/2002	AK-3	Winter Flounder	5
6/18/2002	LB-1	Bay Anchovy	1
6/18/2002	LB-1	Clearnose Skate	1
6/18/2002	LB-1	Scup	37
6/18/2002	LB-1	Smooth Dogfish	4
6/18/2002	LB-1	Spotted Hake	1
6/18/2002	LB-2	Northern Searobin	1
6/18/2002	NB-5	Bay Anchovy	9
6/18/2002	NB-5	Blueback Herring	1
6/18/2002	NB-5	Clupeid unidentified	2
6/18/2002	NB-5	Spotted Hake	6
6/18/2002	PJ-1	Atlantic Tomcod	13
6/18/2002	PJ-1	Black Sea Bass	2
6/18/2002	PJ-1	Grubby	2
6/18/2002	PJ-1	Northern Searobin	1
6/18/2002	PJ-1	Scup	17
6/18/2002	PJ-1	Smallmouth Flounder	1
6/18/2002	PJ-1	Spotted Hake	25
6/18/2002	PJ-1	Summer Flounder	9
6/18/2002	PJ-1	Windowpane	1
6/18/2002	PJ-1	Winter Flounder	38
6/18/2002	PJ-2	Atlantic Tomcod	3
6/18/2002	PJ-2	Cunner	1
6/18/2002	PJ-2	Northern Searobin	1
6/18/2002	PJ-2	Smallmouth Flounder	1
6/18/2002	PJ-2	Spotted Hake	15
6/18/2002	PJ-2	Summer Flounder	35
6/18/2002	PJ-2	Weakfish	1
6/18/2002	PJ-2	Windowpane	1
6/18/2002	PJ-2	Winter Flounder	2
6/18/2002	PJ-3	Atlantic Menhaden	7
6/18/2002	PJ-3	Bay Anchovy	5
6/18/2002	PJ-3	Bluefish	1
6/18/2002	PJ-3	Northern Pipefish	1
6/18/2002	PJ-3	Smallmouth Flounder	1
6/18/2002	PJ-3	Spotted Hake	2
6/18/2002	PJ-3	Summer Flounder	10
6/18/2002	PJ-3	Windowpane	1
6/18/2002	PJ-3	Winter Flounder	1
6/18/2002	PJ-4	Bay Anchovy	2
6/18/2002	PJ-4	Blueback Herring	1
6/18/2002	PJ-4	Scup	1



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 30 of 31)

<b>Date</b>	<b>Station</b>	<b>Common Name</b>	<b>CPUE</b>
6/18/2002	PJ-4	Spotted Hake	22
6/18/2002	PJ-4	Windowpane	5
6/18/2002	PJ-4	Winter Flounder	4
6/18/2002	PJ-5	American Eel	1
6/18/2002	PJ-5	Smallmouth Flounder	1
6/18/2002	PJ-5	Spotted Hake	6
6/18/2002	PJ-5	Striped Searobin	1
6/18/2002	PJ-5	Summer Flounder	3
6/18/2002	PJ-5	Windowpane	11
6/18/2002	PJ-5	Winter Flounder	4
6/19/2002	AK-4	Northern Pipefish	1
6/19/2002	AK-4	Striped Bass	18
6/19/2002	AK-4	Summer Flounder	5
6/19/2002	AK-4	Winter Flounder	21
6/19/2002	NB-3	Bay Anchovy	11
6/19/2002	NB-3	Grubby	1
6/19/2002	NB-3	Striped Bass	11
6/19/2002	NB-3	Summer Flounder	5
6/19/2002	NB-3	Windowpane	1
6/19/2002	NB-3	Winter Flounder	2
6/19/2002	NB-4	Bay Anchovy	9
6/19/2002	NB-4	Bluefish	1
6/19/2002	NB-4	Spotted Hake	1
6/19/2002	NB-4	Striped Bass	4
6/19/2002	NB-4	Summer Flounder	2
6/19/2002	NB-4	Weakfish	1
6/19/2002	NB-4	Winter Flounder	11
6/19/2002	NB-6	American Eel	1
6/19/2002	NB-6	Atlantic Menhaden	3
6/19/2002	NB-6	Bay Anchovy	7
6/19/2002	NB-6	Northern Searobin	4
6/19/2002	NB-6	Spotted Hake	43
6/19/2002	NB-6	Striped Searobin	3
6/19/2002	NB-6	Summer Flounder	2
6/19/2002	NB-6	Winter Flounder	1
6/19/2002	NB-7	Atlantic Menhaden	3
6/19/2002	NB-7	Bay Anchovy	3
6/19/2002	NB-7	Black Sea Bass	2
6/19/2002	NB-7	Cunner	1
6/19/2002	NB-7	Grubby	1
6/19/2002	NB-7	Naked Goby	1
6/19/2002	NB-7	Northern Pipefish	3
6/19/2002	NB-7	Northern Searobin	6
6/19/2002	NB-7	Scup	1
6/19/2002	NB-7	Smallmouth Flounder	4
6/19/2002	NB-7	Spotted Hake	5
6/19/2002	NB-7	Striped Bass	2
6/19/2002	NB-7	Summer Flounder	3
6/19/2002	NB-7	Windowpane	2
6/19/2002	NB-7	Winter Flounder	36



**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 1 of 31)

Date	Station	Common Name	CPUE
12/18/2001	PJ-1	Alewife	1
12/18/2001	PJ-1	Bay Anchovy	1
12/18/2001	PJ-1	Blueback Herring	13
12/18/2001	PJ-2	Alewife	2
12/18/2001	PJ-2	American Shad	5
12/18/2001	PJ-2	Blueback Herring	1
12/18/2001	PJ-2	Smallmouth Flounder	1
12/18/2001	PJ-3	Alewife	1
12/18/2001	PJ-3	Alewife	1
12/18/2001	PJ-3	American Shad	6
12/18/2001	PJ-3	American Shad	6
12/18/2001	PJ-3	Blueback Herring	8
12/18/2001	PJ-3	Blueback Herring	8
12/18/2001	PJ-3	Clearnose Skate	1
12/18/2001	PJ-3	Clearnose Skate	1
12/18/2001	PJ-3	Naked Goby	1
12/18/2001	PJ-3	Naked Goby	1
12/18/2001	PJ-3	Spotted Hake	1
12/18/2001	PJ-3	Spotted Hake	1
12/18/2001	PJ-3	Striped Bass	4
12/18/2001	PJ-3	Striped Bass	4
12/18/2001	PJ-3	Tautog	1
12/18/2001	PJ-3	Tautog	1
12/18/2001	PJ-3	Weakfish	1
12/18/2001	PJ-3	Weakfish	1
12/18/2001	PJ-3	Winter Flounder	3
12/18/2001	PJ-3	Winter Flounder	3
12/18/2001	PJ-4	Alewife	1
12/18/2001	PJ-4	American Shad	1
12/18/2001	PJ-4	Bay Anchovy	1
12/18/2001	PJ-4	Blueback Herring	5
12/18/2001	PJ-4	Clearnose Skate	1
12/18/2001	PJ-4	Unidentified	1
12/18/2001	PJ-5	Alewife	6
12/18/2001	PJ-5	American Shad	2
12/18/2001	PJ-5	Atlantic Menhaden	1
12/18/2001	PJ-5	Blueback Herring	23
12/18/2001	PJ-5	Clearnose Skate	4
12/18/2001	PJ-5	Smallmouth Flounder	2
12/18/2001	PJ-5	Spot	1
12/18/2001	PJ-5	Spotted Hake	9
12/18/2001	PJ-5	Striped Bass	1
12/18/2001	PJ-5	Weakfish	3
12/18/2001	PJ-5	Windowpane	6
12/18/2001	PJ-5	Winter Flounder	2
12/18/2001	SB-1	Alewife	1
12/18/2001	SB-1	Red Hake	2
12/18/2001	SB-1	Smallmouth Flounder	5
12/18/2001	SB-1	Spot	15
12/18/2001	SB-1	Spotted Hake	1

**Appendix A.** Adult finfish (trawl) CPUE by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 31 of 31)

<b>Date</b>	<b>Station</b>	<b>Common Name</b>	<b>CPUE</b>
6/19/2002	SB-1	Bay Anchovy	1
6/19/2002	SB-1	Spotted Hake	9
6/19/2002	SB-1	Summer Flounder	5
6/19/2002	SB-1	Windowpane	18
6/19/2002	SB-1	Winter Flounder	2
6/19/2002	SB-2	Atlantic Tomcod	2
6/19/2002	SB-2	Bay Anchovy	1
6/19/2002	SB-2	Cunner	2
6/19/2002	SB-2	Oyster Toadfish	1
6/19/2002	SB-2	Spotted Hake	2
6/19/2002	SB-2	Windowpane	1
6/19/2002	SB-3	Bay Anchovy	2
6/19/2002	SB-3	Northern Searobin	2
6/19/2002	SB-3	Scup	10
6/19/2002	SB-3	Spotted Hake	2
6/19/2002	SB-3	Summer Flounder	1
6/19/2002	SB-3	Winter Flounder	1
6/19/2002	SB-4	Atlantic Menhaden	1
6/19/2002	SB-4	Bay Anchovy	3
6/19/2002	SB-4	Blueback Herring	3
6/19/2002	SB-4	Spotted Hake	3
6/19/2002	SB-4	Windowpane	1
6/19/2002	SB-6	Bay Anchovy	1
6/19/2002	SB-6	Bluefish	1
6/19/2002	SB-6	Scup	2
6/19/2002	SB-6	Spotted Hake	12
6/19/2002	SB-6	Striped Searobin	3
6/19/2002	SB-6	Summer Flounder	1
6/19/2002	SB-6	Tautog	1
6/19/2002	SB-6	Windowpane	3
6/19/2002	SB-6	Winter Flounder	1
6/20/2002	SB-5	Bluefish	1
6/20/2002	SB-5	Clearnose Skate	2
6/20/2002	SB-5	Fourspot Flounder	6
6/20/2002	SB-5	Northern Searobin	2
6/20/2002	SB-5	Spotted Hake	75
6/20/2002	SB-5	Striped Searobin	6
6/20/2002	SB-5	Summer Flounder	7
6/20/2002	SB-5	Windowpane	11
6/20/2002	SB-5	Winter Flounder	5



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 1 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
1/22/2002	LB-1	Rock gunnel	PYS	3	16.7
1/22/2002	PJ-5	Rock gunnel	PYS	3	19.9
1/22/2002	PJ-5	Summer flounder	PYS	1	6.6
1/22/2002	SB-1	Rock gunnel	PYS	2	23.3
1/22/2002	SB-2	Rock gunnel	PYS	1	9.5
1/22/2002	SB-3	Rock gunnel	PYS	1	13.3
1/22/2002	SB-4	Rock gunnel	PYS	10	57.0
1/22/2002	SB-4	Unidentified	Egg	1	5.7
1/22/2002	SB-5	Rock gunnel	PYS	1	13.0
1/22/2002	SB-6	Rock gunnel	PYS	1	23.5
1/23/2002	AK-1	Rock gunnel	PYS	2	13.2
1/23/2002	AK-2	Rock gunnel	PYS	1	5.9
1/23/2002	AK-3	Rock gunnel	PYS	1	8.4
1/23/2002	LB-3	Rock gunnel	PYS	3	17.6
1/23/2002	LB-4	Rock gunnel	PYS	4	17.6
1/23/2002	LB-6	Rock gunnel	PYS	9	52.6
1/24/2002	NB-5	Atlantic menhaden	PYS	1	6.7
1/24/2002	NB-6	Rock gunnel	PYS	4	24.9
2/5/2002	AK-1	Grubby	YS	1	5.7
2/5/2002	AK-1	Rock gunnel	PYS	1	5.7
2/5/2002	AK-2	Rock gunnel	PYS	1	4.1
2/5/2002	AK-2	Spot	PYS	1	4.1
2/5/2002	NB-3	Rock gunnel	PYS	2	11.9
2/5/2002	NB-5	Rock gunnel	PYS	2	10.8
2/5/2002	NB-5	Summer flounder	PYS	1	5.4
2/5/2002	NB-7	Grubby	YS	1	6.4
2/5/2002	NB-7	Rock gunnel	PYS	2	12.8
2/6/2002	LB-2	Rock gunnel	PYS	1	6.6
2/6/2002	LB-3	Grubby	YS	1	9.3
2/6/2002	LB-4	Grubby	YS	1	9.2
2/6/2002	LB-4	Rock gunnel	PYS	3	27.7
2/6/2002	LB-5	Rock gunnel	PYS	1	5.9
2/6/2002	SB-1	Grubby	PYS	1	10.7
2/6/2002	SB-1	Grubby	YS	3	32.1
2/6/2002	SB-1	Rock gunnel	PYS	1	10.7
2/6/2002	SB-1	Unidentified	PYS	1	10.7
2/6/2002	SB-2	Grubby	YS	1	7.9
2/6/2002	SB-2	Rock gunnel	PYS	2	15.9
2/6/2002	SB-2	Winter flounder	YS	5	39.7
2/6/2002	SB-4	Grubby	YS	1	4.8
2/6/2002	SB-4	Rock gunnel	PYS	1	4.8
2/6/2002	SB-4	Winter flounder	YS	18	86.2
2/7/2002	PJ-1	Rock gunnel	PYS	1	6.1
2/7/2002	PJ-2	Rock gunnel	PYS	1	8.4
2/7/2002	PJ-3	Rock gunnel	PYS	3	16.9
2/7/2002	PJ-4	Grubby	YS	1	5.4
2/7/2002	PJ-4	Spot	PYS	1	5.4
2/7/2002	PJ-5	Grubby	YS	1	4.7
2/7/2002	SB-5	Spot	PYS	1	12.9
2/7/2002	SB-6	Grubby	PYS	2	10.3





**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 2 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
2/7/2002	SB-6	Rock gunnel	PYS	3	15.4
2/19/2002	LB-1	Grubby	PYS	2	11.1
2/19/2002	LB-1	Grubby	YS	1	5.5
2/19/2002	LB-1	Winter flounder	Egg	4	22.2
2/19/2002	LB-1	Winter flounder	PYS	2	11.1
2/19/2002	LB-2	Grubby	PYS	2	7.2
2/19/2002	LB-2	Grubby	YS	1	3.6
2/19/2002	LB-2	Rock gunnel	PYS	2	7.2
2/19/2002	LB-2	Winter flounder	PYS	5	18.1
2/19/2002	LB-3	Grubby	PYS	7	34.0
2/19/2002	LB-3	Grubby	YS	2	9.7
2/19/2002	LB-3	Rock gunnel	PYS	2	9.7
2/19/2002	LB-3	Winter flounder	PYS	1	4.9
2/19/2002	LB-4	Grubby	PYS	4	26.1
2/19/2002	LB-4	Grubby	YS	3	19.6
2/19/2002	LB-4	Rock gunnel	PYS	4	26.1
2/19/2002	LB-4	Spot	PYS	1	6.5
2/19/2002	LB-5	American sandlance	PYS	1	5.7
2/19/2002	LB-5	Grubby	PYS	6	34.1
2/19/2002	LB-5	Grubby	YS	3	17.1
2/19/2002	LB-5	Winter flounder	Egg	41	233.2
2/19/2002	LB-5	Winter flounder	PYS	3	17.1
2/19/2002	LB-5	Winter flounder	YS	15	85.3
2/19/2002	PJ-1	Grubby	Egg	1	6.9
2/19/2002	PJ-1	Grubby	PYS	1	6.9
2/19/2002	PJ-1	Grubby	YS	1	6.9
2/19/2002	PJ-2	Rock gunnel	PYS	1	6.5
2/19/2002	PJ-2	Winter flounder	PYS	1	6.5
2/19/2002	PJ-3	Grubby	PYS	1	8.2
2/19/2002	PJ-3	Winter flounder	Egg	1	8.2
2/19/2002	PJ-3	Winter flounder	PYS	4	32.9
2/19/2002	PJ-3	Winter flounder	YS	1	8.2
2/19/2002	SB-5	Grubby	PYS	5	26.4
2/19/2002	SB-5	Grubby	YS	1	5.3
2/19/2002	SB-5	Rock gunnel	PYS	2	10.6
2/19/2002	SB-5	Winter flounder	PYS	1	5.3
2/20/2002	AK-1	Grubby	PYS	12	66.0
2/20/2002	AK-1	Grubby	YS	4	22.0
2/20/2002	AK-1	Rock gunnel	PYS	1	5.5
2/20/2002	AK-1	Winter flounder	PYS	1	5.5
2/20/2002	AK-2	Grubby	PYS	6	30.4
2/20/2002	AK-2	Grubby	YS	4	20.3
2/20/2002	AK-2	Rock gunnel	PYS	1	5.1
2/20/2002	AK-2	Winter flounder	PYS	1	5.1
2/20/2002	AK-3	Grubby	PYS	9	56.7
2/20/2002	AK-3	Grubby	YS	7	44.1
2/20/2002	AK-3	Rock gunnel	PYS	1	6.3
2/20/2002	AK-4	Grubby	YS	2	11.7
2/20/2002	AK-4	Winter flounder	PYS	2	11.7
2/20/2002	AK-4	Winter flounder	YS	3	17.5



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 3 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
2/20/2002	NB-3	Grubby	PYS	1	5.2
2/20/2002	NB-3	Winter flounder	Egg	1	5.2
2/20/2002	NB-3	Winter flounder	PYS	1	5.2
2/20/2002	NB-3	Winter flounder	YS	2	10.4
2/20/2002	NB-4	Winter flounder	YS	1	5.5
2/20/2002	NB-5	Grubby	PYS	4	19.3
2/20/2002	NB-5	Grubby	YS	4	19.3
2/20/2002	NB-5	Spot	PYS	1	4.8
2/20/2002	NB-6	Grubby	PYS	9	44.4
2/20/2002	NB-6	Grubby	YS	5	24.7
2/20/2002	NB-6	Spot	PYS	1	4.9
2/20/2002	NB-6	Winter flounder	PYS	1	4.9
2/20/2002	NB-6	Winter flounder	YS	3	14.8
2/20/2002	NB-7	Grubby	PYS	5	39.1
2/20/2002	PJ-4	Grubby	PYS	5	25.3
2/20/2002	PJ-4	Grubby	YS	2	10.1
2/20/2002	PJ-4	Winter flounder	PYS	5	25.3
2/20/2002	PJ-4	Winter flounder	YS	4	20.3
2/20/2002	PJ-5	Grubby	PYS	5	25.3
2/20/2002	PJ-5	Grubby	YS	3	15.2
2/20/2002	PJ-5	Winter flounder	PYS	1	5.1
2/20/2002	PJ-5	Winter flounder	YS	2	10.1
2/21/2002	SB-1	Grubby	PYS	18	203.4
2/21/2002	SB-1	Grubby	YS	5	56.5
2/21/2002	SB-1	Rock gunnel	PYS	2	22.6
2/21/2002	SB-1	Winter flounder	PYS	21	237.3
2/21/2002	SB-1	Winter flounder	YS	3	33.9
2/21/2002	SB-2	Grubby	PYS	7	59.0
2/21/2002	SB-2	Grubby	YS	2	16.9
2/21/2002	SB-2	Rock gunnel	PYS	2	16.9
2/21/2002	SB-2	Winter flounder	PYS	1	8.4
2/21/2002	SB-3	Bothid unidentified	Egg	1	4.0
2/21/2002	SB-3	Grubby	PYS	6	24.2
2/21/2002	SB-3	Grubby	YS	1	4.0
2/21/2002	SB-3	Winter flounder	PYS	3	12.1
2/21/2002	SB-4	Atlantic menhaden	Egg	2	9.8
2/21/2002	SB-4	Four beard rockling	Egg	1	4.9
2/21/2002	SB-4	Grubby	PYS	1	4.9
2/21/2002	SB-4	Winter flounder	PYS	69	339.7
2/21/2002	SB-4	Winter flounder	YS	10	49.2
2/21/2002	SB-6	Grubby	PYS	1	3.3
2/21/2002	SB-6	Winter flounder	PYS	17	56.9
2/21/2002	SB-6	Winter flounder	YS	3	10.0
3/5/2002	AK-1	Grubby	PYS	16	74.2
3/5/2002	AK-1	Grubby	YS	3	13.9
3/5/2002	AK-1	Winter flounder	PYS	4	18.5
3/5/2002	AK-2	Grubby	PYS	9	46.2
3/5/2002	AK-2	Grubby	YS	3	15.4
3/5/2002	AK-2	Winter flounder	PYS	6	30.8
3/5/2002	AK-2	Winter flounder	YS	13	66.8



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 4 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
3/5/2002	AK-3	Grubby	PYS	15	74.4
3/5/2002	AK-3	Grubby	YS	7	34.7
3/5/2002	AK-3	Rock gunnel	PYS	1	5.0
3/5/2002	AK-3	Winter flounder	PYS	4	19.8
3/5/2002	AK-3	Winter flounder	YS	4	19.8
3/5/2002	AK-4	Grubby	PYS	6	30.5
3/5/2002	AK-4	Grubby	YS	3	15.3
3/5/2002	AK-4	Spot	PYS	1	5.1
3/5/2002	NB-3	Grubby	PYS	2	8.9
3/5/2002	NB-3	Winter flounder	PYS	12	53.1
3/5/2002	NB-4	American sandlance	PYS	1	5.0
3/5/2002	NB-4	Grubby	PYS	5	25.2
3/5/2002	NB-4	Winter flounder	PYS	24	120.7
3/5/2002	NB-4	Winter flounder	YS	3	15.1
3/5/2002	NB-5	Grubby	PYS	4	23.0
3/5/2002	NB-5	Grubby	YS	1	5.7
3/5/2002	NB-5	Winter flounder	PYS	1	5.7
3/5/2002	NB-5	Winter flounder	YS	1	5.7
3/5/2002	NB-6	Grubby	PYS	5	25.1
3/5/2002	NB-6	Grubby	YS	1	5.0
3/5/2002	NB-6	Rock gunnel	PYS	1	5.0
3/5/2002	NB-6	Winter flounder	PYS	6	30.1
3/5/2002	NB-6	Winter flounder	YS	2	10.0
3/5/2002	NB-7	Grubby	PYS	1	6.1
3/5/2002	NB-7	Winter flounder	Egg	5	30.4
3/5/2002	NB-7	Winter flounder	PYS	9	54.6
3/5/2002	NB-7	Winter flounder	YS	1	6.1
3/6/2002	LB-1	American sandlance	PYS	1	4.2
3/6/2002	LB-1	Grubby	PYS	8	33.5
3/6/2002	LB-1	Grubby	YS	2	8.4
3/6/2002	LB-1	Winter flounder	PYS	18	75.4
3/6/2002	LB-1	Winter flounder	YS	3	12.6
3/6/2002	LB-2	Atlantic menhaden	Egg	3	22.5
3/6/2002	LB-2	Grubby	PYS	7	52.5
3/6/2002	LB-2	Grubby	YS	2	15.0
3/6/2002	LB-2	Winter flounder	Egg	1	7.5
3/6/2002	LB-2	Winter flounder	PYS	3	22.5
3/6/2002	LB-3	Grubby	PYS	4	17.6
3/6/2002	LB-3	Winter flounder	PYS	16	70.5
3/6/2002	LB-3	Winter flounder	YS	2	8.8
3/6/2002	LB-4	American sandlance	PYS	1	7.1
3/6/2002	LB-4	Four beard rockling	Egg	1	7.1
3/6/2002	LB-4	Grubby	PYS	55	390.7
3/6/2002	LB-4	Grubby	YS	3	21.3
3/6/2002	LB-4	Rock gunnel	PYS	1	7.1
3/6/2002	LB-4	Winter flounder	PYS	35	248.6
3/6/2002	LB-4	Winter flounder	YS	2	14.2
3/6/2002	LB-5	Grubby	PYS	25	174.4
3/6/2002	LB-5	Grubby	YS	4	27.9
3/6/2002	LB-5	Winter flounder	PYS	10	69.7



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 5 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
3/6/2002	LB-5	Winter flounder	YS	1	7.0
3/6/2002	LB-6	Grubby	PYS	3	39.3
3/6/2002	LB-6	Grubby	YS	1	13.1
3/6/2002	LB-6	Winter flounder	PYS	4	52.4
3/6/2002	LB-6	Winter flounder	YS	10	131.1
3/6/2002	PJ-2	Grubby	PYS	3	11.4
3/6/2002	PJ-2	Grubby	YS	1	3.8
3/6/2002	PJ-2	Rock gunnel	PYS	1	3.8
3/6/2002	PJ-2	Winter flounder	Egg	23	87.8
3/6/2002	PJ-2	Winter flounder	PYS	14	53.4
3/6/2002	PJ-2	Winter flounder	YS	1	3.8
3/6/2002	PJ-3	Four beard rockling	PYS	2	9.8
3/6/2002	PJ-3	Grubby	PYS	2	9.8
3/6/2002	PJ-4	Grubby	PYS	4	17.8
3/6/2002	PJ-4	Winter flounder	PYS	14	62.3
3/6/2002	PJ-4	Winter flounder	YS	3	13.3
3/6/2002	PJ-5	Atlantic menhaden	PYS	1	3.8
3/6/2002	PJ-5	Four beard rockling	Egg	1	3.8
3/6/2002	PJ-5	Grubby	PYS	6	22.7
3/6/2002	PJ-5	Winter flounder	PYS	19	71.8
3/6/2002	PJ-5	Winter flounder	YS	2	7.6
3/6/2002	SB-6	Grubby	PYS	39	224.3
3/6/2002	SB-6	Grubby	YS	10	57.5
3/6/2002	SB-6	Winter flounder	PYS	18	103.5
3/6/2002	SB-6	Winter flounder	YS	13	74.8
3/7/2002	PJ-1	American sandlance	PYS	1	6.1
3/7/2002	PJ-1	Grubby	PYS	2	12.2
3/7/2002	PJ-1	Grubby	YS	1	6.1
3/7/2002	PJ-1	Winter flounder	PYS	10	60.9
3/7/2002	SB-1	Grubby	PYS	12	115.8
3/7/2002	SB-1	Grubby	YS	2	19.3
3/7/2002	SB-1	Winter flounder	PYS	11	106.1
3/7/2002	SB-2	Grubby	PYS	9	65.9
3/7/2002	SB-2	Grubby	YS	4	29.3
3/7/2002	SB-3	Grubby	PYS	1	6.2
3/7/2002	SB-3	Winter flounder	PYS	1	6.2
3/7/2002	SB-4	Grubby	PYS	12	40.5
3/7/2002	SB-4	Grubby	YS	3	10.1
3/7/2002	SB-4	Winter flounder	PYS	9	30.3
3/7/2002	SB-6	Grubby	PYS	32	207.0
3/7/2002	SB-6	Grubby	YS	15	97.0
3/19/2002	LB-1	Atlantic menhaden	Egg	4	15.5
3/19/2002	LB-1	Grubby	PYS	35	135.5
3/19/2002	LB-1	Grubby	YS	4	15.5
3/19/2002	LB-1	Winter flounder	Egg	19	73.6
3/19/2002	LB-1	Winter flounder	PYS	19	73.6
3/19/2002	LB-2	Grubby	PYS	2	6.0
3/19/2002	LB-2	Winter flounder	Egg	1	3.0
3/19/2002	LB-2	Winter flounder	PYS	39	116.3
3/19/2002	LB-3	American sandlance	PYS	1	3.4



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 6 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
3/19/2002	LB-3	Grubby	PYS	13	44.2
3/19/2002	LB-3	Grubby	YS	1	3.4
3/19/2002	LB-3	Rock gunnel	PYS	1	3.4
3/19/2002	LB-3	Winter flounder	PYS	35	119.0
3/19/2002	LB-3	Winter flounder	YS	1	3.4
3/19/2002	LB-4	Atlantic menhaden	Egg	3	10.3
3/19/2002	LB-4	Grubby	PYS	39	134.5
3/19/2002	LB-4	Grubby	YS	6	20.7
3/19/2002	LB-4	Winter flounder	Egg	9	31.0
3/19/2002	LB-4	Winter flounder	PYS	36	124.1
3/19/2002	LB-4	Winter flounder	YS	3	10.3
3/19/2002	LB-5	Grubby	PYS	4	16.3
3/19/2002	LB-5	Winter flounder	Egg	3	12.2
3/19/2002	LB-5	Winter flounder	PYS	29	118.0
3/19/2002	LB-5	Winter flounder	YS	2	8.1
3/19/2002	LB-6	American sandlance	PYS	1	3.7
3/19/2002	LB-6	Atlantic menhaden	Egg	10	37.1
3/19/2002	LB-6	Grubby	PYS	4	14.8
3/19/2002	LB-6	Grubby	YS	1	3.7
3/19/2002	LB-6	Striped cuskeel	PYS	2	7.4
3/19/2002	LB-6	Winter flounder	PYS	150	556.3
3/19/2002	LB-6	Winter flounder	YS	1	3.7
3/19/2002	PJ-1	Grubby	PYS	15	76.7
3/19/2002	PJ-1	Grubby	YS	5	25.6
3/19/2002	PJ-1	Winter flounder	PYS	23	117.5
3/19/2002	PJ-2	Grubby	PYS	2	8.3
3/19/2002	PJ-2	Winter flounder	Egg	1	4.1
3/19/2002	PJ-2	Winter flounder	PYS	1	4.1
3/19/2002	PJ-3	Atlantic menhaden	Egg	1	4.0
3/19/2002	PJ-3	Grubby	PYS	22	88.1
3/19/2002	PJ-3	Grubby	YS	1	4.0
3/19/2002	PJ-3	Summer flounder	PYS	1	4.0
3/19/2002	PJ-3	Winter flounder	Egg	1	4.0
3/19/2002	PJ-3	Winter flounder	PYS	25	100.1
3/19/2002	PJ-3	Winter flounder	YS	1	4.0
3/19/2002	PJ-4	Grubby	PYS	18	69.0
3/19/2002	PJ-4	Grubby	YS	3	11.5
3/19/2002	PJ-4	Winter flounder	PYS	18	69.0
3/19/2002	PJ-5	Atlantic menhaden	Egg	3	10.8
3/19/2002	PJ-5	Grubby	PYS	24	86.4
3/19/2002	PJ-5	Grubby	YS	3	10.8
3/19/2002	PJ-5	Winter flounder	PYS	11	39.6
3/20/2002	AK-1	Grubby	PYS	34	201.0
3/20/2002	AK-1	Grubby	YS	8	47.3
3/20/2002	AK-2	Atlantic menhaden	Egg	1	5.3
3/20/2002	AK-2	Grubby	PYS	9	47.3
3/20/2002	AK-2	Grubby	YS	2	10.5
3/20/2002	AK-3	Atlantic menhaden	Egg	1	4.3
3/20/2002	AK-3	Grubby	PYS	3	12.9
3/20/2002	AK-3	Grubby	YS	1	4.3



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 7 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
3/20/2002	AK-3	Winter flounder	PYS	2	8.6
3/20/2002	AK-4	Grubby	PYS	2	12.3
3/20/2002	AK-4	Winter flounder	PYS	4	24.7
3/20/2002	NB-3	Grubby	PYS	3	16.4
3/20/2002	NB-3	Winter flounder	PYS	10	54.6
3/20/2002	NB-4	Grubby	PYS	16	82.5
3/20/2002	NB-4	Grubby	YS	5	25.8
3/20/2002	NB-4	Winter flounder	PYS	6	30.9
3/20/2002	NB-5	Grubby	PYS	9	39.1
3/20/2002	NB-5	Grubby	YS	2	8.7
3/20/2002	NB-5	Winter flounder	PYS	4	17.4
3/20/2002	NB-6	Four beard rockling	Egg	1	5.5
3/20/2002	NB-6	Grubby	PYS	5	27.6
3/20/2002	NB-6	Grubby	YS	6	33.2
3/20/2002	NB-7	Grubby	PYS	9	69.7
3/20/2002	NB-7	Grubby	YS	2	15.5
3/20/2002	NB-7	Winter flounder	PYS	8	62.0
3/21/2002	SB-1	Grubby	PYS	20	226.6
3/21/2002	SB-1	Grubby	YS	4	45.3
3/21/2002	SB-1	Winter flounder	PYS	28	317.2
3/21/2002	SB-2	Grubby	PYS	7	52.7
3/21/2002	SB-2	Grubby	YS	1	7.5
3/21/2002	SB-2	Winter flounder	PYS	73	549.5
3/21/2002	SB-3	Atlantic menhaden	Egg	2	13.5
3/21/2002	SB-3	Four beard rockling	Egg	1	6.8
3/21/2002	SB-3	Grubby	PYS	9	61.0
3/21/2002	SB-3	Grubby	YS	3	20.3
3/21/2002	SB-3	Winter flounder	PYS	42	284.5
3/21/2002	SB-4	Atlantic menhaden	Egg	11	48.4
3/21/2002	SB-4	Atlantic tomcod	PYS	1	4.4
3/21/2002	SB-4	Four beard rockling	Egg	2	8.8
3/21/2002	SB-4	Grubby	PYS	19	83.7
3/21/2002	SB-4	Grubby	YS	4	17.6
3/21/2002	SB-4	Winter flounder	Egg	1	4.4
3/21/2002	SB-4	Winter flounder	PYS	15	66.0
3/21/2002	SB-4	Winter flounder	YS	4	17.6
3/21/2002	SB-5	Atlantic menhaden	Egg	2	16.1
3/21/2002	SB-5	Grubby	PYS	8	64.4
3/21/2002	SB-5	Grubby	YS	3	24.2
3/21/2002	SB-5	Winter flounder	PYS	1	8.1
3/21/2002	SB-6	Atlantic menhaden	Egg	3	22.8
3/21/2002	SB-6	Grubby	PYS	19	144.6
3/21/2002	SB-6	Grubby	YS	3	22.8
3/21/2002	SB-6	Winter flounder	PYS	8	60.9
4/2/2002	LB-1	Atlantic menhaden	Egg	1	3.4
4/2/2002	LB-1	Grubby	PYS	1	3.4
4/2/2002	LB-1	Winter flounder	PYS	92	317.1
4/2/2002	LB-1	Winter flounder	YS	9	31.0
4/2/2002	LB-2	Grubby	PYS	2	4.8
4/2/2002	LB-2	Winter flounder	PYS	20	47.8



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 8 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
4/2/2002	LB-3	Atlantic menhaden	Egg	2	8.7
4/2/2002	LB-3	Four beard rockling	Egg	1	4.3
4/2/2002	LB-3	Grubby	PYS	1	4.3
4/2/2002	LB-3	Winter flounder	PYS	69	299.1
4/2/2002	LB-3	Winter flounder	YS	10	43.3
4/2/2002	LB-4	Atlantic menhaden	Egg	1	3.5
4/2/2002	LB-4	Winter flounder	PYS	54	189.2
4/2/2002	LB-4	Winter flounder	YS	7	24.5
4/2/2002	LB-5	Atlantic menhaden	Egg	13	61.5
4/2/2002	LB-5	Four beard rockling	Egg	1	4.7
4/2/2002	LB-5	Grubby	PYS	1	4.7
4/2/2002	LB-5	Grubby	YS	2	9.5
4/2/2002	LB-5	Winter flounder	PYS	99	468.1
4/2/2002	LB-5	Winter flounder	YS	47	222.2
4/2/2002	LB-6	Grubby	PYS	3	12.0
4/2/2002	LB-6	Rock gunnel	PYS	1	4.0
4/2/2002	LB-6	Weakfish	Egg	5	20.0
4/2/2002	LB-6	Winter flounder	PYS	215	860.4
4/2/2002	LB-6	Winter flounder	YS	7	28.0
4/2/2002	PJ-1	Grubby	PYS	8	52.3
4/2/2002	PJ-1	Grubby	YS	4	26.1
4/2/2002	PJ-1	Winter flounder	PYS	17	111.0
4/2/2002	PJ-1	Winter flounder	YS	3	19.6
4/2/2002	PJ-2	Grubby	PYS	3	15.2
4/2/2002	PJ-2	Winter flounder	PYS	5	25.3
4/2/2002	PJ-4	Grubby	PYS	12	49.1
4/2/2002	PJ-4	Grubby	YS	2	8.2
4/2/2002	PJ-4	Winter flounder	PYS	38	155.6
4/2/2002	PJ-4	Winter flounder	YS	1	4.1
4/2/2002	PJ-5	American sandlance	PYS	1	4.9
4/2/2002	PJ-5	Four beard rockling	Egg	1	4.9
4/2/2002	PJ-5	Grubby	PYS	16	78.2
4/2/2002	PJ-5	Grubby	YS	1	4.9
4/2/2002	PJ-5	Rock gunnel	PYS	1	4.9
4/2/2002	PJ-5	Winter flounder	PYS	10	48.9
4/2/2002	PJ-5	Winter flounder	YS	3	14.7
4/3/2002	AK-1	Bay anchovy	PYS	1	4.8
4/3/2002	AK-1	Grubby	PYS	7	33.6
4/3/2002	AK-1	Grubby	YS	2	9.6
4/3/2002	AK-1	Winter flounder	PYS	7	33.6
4/3/2002	AK-1	Winter flounder	YS	11	52.9
4/3/2002	AK-2	Four beard rockling	Egg	1	4.4
4/3/2002	AK-2	Grubby	PYS	4	17.8
4/3/2002	AK-2	Grubby	YS	2	8.9
4/3/2002	AK-2	Winter flounder	PYS	2	8.9
4/3/2002	AK-2	Winter flounder	YS	1	4.4
4/3/2002	AK-3	Atlantic menhaden	PYS	3	12.5
4/3/2002	AK-3	Grubby	PYS	1	4.2
4/3/2002	AK-3	Grubby	YS	1	4.2
4/3/2002	AK-3	Winter flounder	PYS	4	16.6



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 9 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
4/3/2002	AK-4	Atlantic menhaden	PYS	1	4.6
4/3/2002	AK-4	Grubby	PYS	3	13.7
4/3/2002	AK-4	Winter flounder	PYS	23	105.1
4/3/2002	AK-4	Winter flounder	YS	2	9.1
4/3/2002	NB-3	Grubby	PYS	2	10.8
4/3/2002	NB-4	Grubby	YS	1	4.5
4/3/2002	NB-4	Winter flounder	PYS	23	103.7
4/3/2002	NB-5	Grubby	PYS	3	14.0
4/3/2002	NB-5	Grubby	YS	1	4.7
4/3/2002	NB-6	Grubby	PYS	12	53.8
4/3/2002	NB-6	Grubby	YS	4	17.9
4/3/2002	NB-6	Winter flounder	PYS	5	22.4
4/3/2002	NB-6	Winter flounder	YS	1	4.5
4/3/2002	NB-7	Grubby	PYS	9	63.4
4/3/2002	NB-7	Grubby	YS	1	7.0
4/3/2002	NB-7	Winter flounder	PYS	1	7.0
4/4/2002	SB-1	Grubby	PYS	4	29.2
4/4/2002	SB-1	Grubby	YS	2	14.6
4/4/2002	SB-1	Winter flounder	PYS	6	43.7
4/4/2002	SB-2	Grubby	PYS	5	46.1
4/4/2002	SB-2	Winter flounder	PYS	3	27.7
4/4/2002	SB-3	Grubby	PYS	3	10.4
4/4/2002	SB-3	Grubby	YS	1	3.5
4/4/2002	SB-3	Winter flounder	PYS	4	13.9
4/4/2002	SB-4	Atlantic menhaden	Egg	2	8.2
4/4/2002	SB-4	Atlantic menhaden	PYS	1	4.1
4/4/2002	SB-4	Bothid unidentified	Egg	3	12.3
4/4/2002	SB-4	Grubby	PYS	24	98.4
4/4/2002	SB-4	Grubby	YS	7	28.7
4/4/2002	SB-4	Winter flounder	PYS	21	86.1
4/4/2002	SB-4	Winter flounder	YS	19	77.9
4/4/2002	SB-5	Atlantic menhaden	Egg	3	16.4
4/4/2002	SB-5	Grubby	PYS	2	11.0
4/4/2002	SB-5	Winter flounder	PYS	6	32.9
4/4/2002	SB-6	Atlantic menhaden	Egg	1	4.3
4/4/2002	SB-6	Grubby	PYS	13	56.0
4/4/2002	SB-6	Grubby	YS	3	12.9
4/4/2002	SB-6	Winter flounder	PYS	34	146.5
4/4/2002	SB-6	Winter flounder	YS	2	8.6
4/16/2002	LB-1	American sandlance	PYS	1	4.9
4/16/2002	LB-1	Gadid unidentified	Egg	1	4.9
4/16/2002	LB-1	Grubby	PYS	2	9.8
4/16/2002	LB-1	Weakfish	Egg	34	165.9
4/16/2002	LB-1	Winter flounder	PYS	19	92.7
4/16/2002	LB-2	Gadid unidentified	Egg	1	4.1
4/16/2002	LB-2	Grubby	PYS	18	73.3
4/16/2002	LB-2	Weakfish	Egg	95	387.0
4/16/2002	LB-2	Winter flounder	PYS	229	932.8
4/16/2002	LB-2	Winter flounder	YS	2	8.1
4/16/2002	LB-3	Weakfish	Egg	64	263.3





**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 10 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
4/16/2002	LB-3	Winter flounder	PYS	52	213.9
4/16/2002	LB-3	Winter flounder	YS	1	4.1
4/16/2002	LB-4	Gadid unidentified	Egg	1	3.8
4/16/2002	LB-4	Grubby	PYS	7	26.8
4/16/2002	LB-4	Grubby	YS	1	3.8
4/16/2002	LB-4	Spotted hake	Egg	2	7.7
4/16/2002	LB-4	Weakfish	Egg	63	241.2
4/16/2002	LB-4	Winter flounder	Egg	1	3.8
4/16/2002	LB-4	Winter flounder	PYS	379	1450.9
4/16/2002	LB-5	Weakfish	Egg	63	270.8
4/16/2002	LB-5	Winter flounder	PYS	113	485.8
4/16/2002	LB-5	Winter flounder	YS	8	34.4
4/16/2002	LB-6	American sandlance	PYS	3	18.4
4/16/2002	LB-6	Gadid unidentified	Egg	1	6.1
4/16/2002	LB-6	Grubby	PYS	1	6.1
4/16/2002	LB-6	Weakfish	Egg	165	1013.5
4/16/2002	LB-6	Winter flounder	PYS	401	2463.1
4/16/2002	LB-6	Winter flounder	YS	4	24.6
4/16/2002	PJ-2	Grubby	PYS	2	12.0
4/16/2002	PJ-2	Winter flounder	PYS	8	47.8
4/16/2002	PJ-3	Winter flounder	PYS	20	103.5
4/16/2002	SB-5	Grubby	PYS	1	3.0
4/16/2002	SB-5	Weakfish	Egg	22	66.0
4/16/2002	SB-5	Winter flounder	PYS	21	63.0
4/16/2002	SB-6	Grubby	PYS	2	6.5
4/16/2002	SB-6	Weakfish	Egg	42	136.7
4/16/2002	SB-6	Winter flounder	PYS	75	244.1
4/17/2002	AK-1	Grubby	YS	1	4.3
4/17/2002	AK-1	Weakfish	Egg	1	4.3
4/17/2002	AK-1	Winter flounder	PYS	40	170.6
4/17/2002	AK-2	Grubby	PYS	3	10.9
4/17/2002	AK-2	Grubby	YS	1	3.6
4/17/2002	AK-2	Weakfish	Egg	2	7.3
4/17/2002	AK-2	Winter flounder	PYS	16	58.1
4/17/2002	AK-3	Grubby	PYS	3	12.5
4/17/2002	AK-3	Weakfish	Egg	3	12.5
4/17/2002	AK-3	Winter flounder	PYS	20	83.1
4/17/2002	AK-3	Winter flounder	YS	3	12.5
4/17/2002	AK-4	Grubby	PYS	1	4.7
4/17/2002	AK-4	Weakfish	Egg	5	23.4
4/17/2002	AK-4	Winter flounder	PYS	23	107.7
4/17/2002	AK-4	Winter flounder	YS	3	14.0
4/17/2002	NB-3	Grubby	PYS	1	4.9
4/17/2002	NB-3	Winter flounder	PYS	11	53.8
4/17/2002	NB-4	Grubby	PYS	4	21.3
4/17/2002	NB-4	Weakfish	Egg	1	5.3
4/17/2002	NB-4	Winter flounder	PYS	21	112.0
4/17/2002	NB-4	Winter flounder	YS	1	5.3
4/17/2002	NB-5	Grubby	PYS	2	8.7
4/17/2002	NB-5	Grubby	YS	2	8.7



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 11 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
4/17/2002	NB-5	Weakfish	Egg	1	4.4
4/17/2002	NB-5	Winter flounder	PYS	17	74.3
4/17/2002	NB-6	Grubby	PYS	2	10.0
4/17/2002	NB-6	Weakfish	Egg	3	14.9
4/17/2002	NB-6	Winter flounder	PYS	10	49.8
4/17/2002	NB-7	Weakfish	Egg	1	7.6
4/17/2002	NB-7	Winter flounder	PYS	5	37.8
4/17/2002	PJ-4	Grubby	PYS	4	17.5
4/17/2002	PJ-4	Weakfish	Egg	49	214.7
4/17/2002	PJ-4	Winter flounder	PYS	27	118.3
4/17/2002	PJ-4	Winter flounder	YS	3	13.1
4/17/2002	PJ-5	Grubby	PYS	6	23.9
4/17/2002	PJ-5	Grubby	YS	1	4.0
4/17/2002	PJ-5	Weakfish	Egg	42	167.2
4/17/2002	PJ-5	Winter flounder	Egg	1	4.0
4/17/2002	PJ-5	Winter flounder	PYS	20	79.6
4/17/2002	PJ-5	Winter flounder	YS	1	4.0
4/18/2002	PJ-1	Grubby	PYS	1	8.2
4/18/2002	PJ-1	Grubby	YS	2	16.3
4/18/2002	PJ-1	Winter flounder	PYS	22	179.8
4/18/2002	PJ-1	Winter flounder	YS	2	16.3
4/18/2002	SB-1	Weakfish	Egg	4	46.6
4/18/2002	SB-1	Winter flounder	PYS	10	116.6
4/18/2002	SB-1	Winter flounder	YS	1	11.7
4/18/2002	SB-2	Weakfish	Egg	5	35.4
4/18/2002	SB-2	Winter flounder	PYS	7	49.6
4/18/2002	SB-3	Four beard rockling	Egg	2	18.0
4/18/2002	SB-3	Grubby	PYS	6	54.1
4/18/2002	SB-3	Grubby	YS	4	36.1
4/18/2002	SB-3	Weakfish	Egg	36	324.7
4/18/2002	SB-3	Winter flounder	PYS	11	99.2
4/18/2002	SB-4	Grubby	PYS	9	43.2
4/18/2002	SB-4	Grubby	YS	1	4.8
4/18/2002	SB-4	Labridae	Egg	1	4.8
4/18/2002	SB-4	Weakfish	Egg	220	1056.1
4/18/2002	SB-4	Windowpane	Egg	7	33.6
4/18/2002	SB-4	Winter flounder	PYS	28	134.4
4/18/2002	SB-4	Winter flounder	YS	8	38.4
4/30/2002	LB-1	Atlantic menhaden	Egg	10	48.5
4/30/2002	LB-1	Grubby	PYS	1	4.9
4/30/2002	LB-1	Labridae	Egg	31	150.4
4/30/2002	LB-1	Weakfish	Egg	101	490.1
4/30/2002	LB-1	Windowpane	Egg	9	43.7
4/30/2002	LB-1	Winter flounder	PYS	40	194.1
4/30/2002	LB-2	Atlantic menhaden	Egg	2	9.1
4/30/2002	LB-2	Grubby	PYS	5	22.9
4/30/2002	LB-2	Labridae	Egg	28	128.0
4/30/2002	LB-2	Weakfish	Egg	72	329.1
4/30/2002	LB-2	Windowpane	Egg	31	141.7
4/30/2002	LB-2	Winter flounder	PYS	74	338.2



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 12 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
4/30/2002	LB-3	Atlantic menhaden	Egg	5	21.9
4/30/2002	LB-3	Weakfish	Egg	41	179.8
4/30/2002	LB-3	Winter flounder	Egg	3	13.2
4/30/2002	LB-3	Winter flounder	PYS	22	96.5
4/30/2002	LB-4	Atlantic menhaden	Egg	7	28.8
4/30/2002	LB-4	Atlantic menhaden	PYS	4	16.5
4/30/2002	LB-4	Atlantic menhaden	YS	1	4.1
4/30/2002	LB-4	Labridae	Egg	12	49.4
4/30/2002	LB-4	Weakfish	Egg	56	230.6
4/30/2002	LB-4	White perch	Egg	1	4.1
4/30/2002	LB-4	White perch	PYS	34	140.0
4/30/2002	LB-4	White perch	YS	3	12.4
4/30/2002	LB-4	Windowpane	Egg	2	8.2
4/30/2002	LB-4	Windowpane	PYS	1	4.1
4/30/2002	LB-5	Atlantic menhaden	Egg	3	12.7
4/30/2002	LB-5	Hogchocker	Egg	1	4.2
4/30/2002	LB-5	Weakfish	Egg	174	734.7
4/30/2002	LB-5	Winter flounder	Egg	5	21.1
4/30/2002	LB-5	Winter flounder	PYS	39	164.7
4/30/2002	LB-6	Atlantic menhaden	Egg	1	3.6
4/30/2002	LB-6	Labridae	Egg	22	79.2
4/30/2002	LB-6	Weakfish	Egg	405	1458.3
4/30/2002	LB-6	Windowpane	PYS	1	3.6
4/30/2002	LB-6	Winter flounder	Egg	2	7.2
4/30/2002	LB-6	Winter flounder	PYS	45	162.0
4/30/2002	PJ-1	Atlantic menhaden	Egg	4	21.1
4/30/2002	PJ-1	Grubby	PYS	2	10.5
4/30/2002	PJ-1	Labridae	Egg	2	10.5
4/30/2002	PJ-1	Weakfish	Egg	35	184.5
4/30/2002	PJ-1	Winter flounder	PYS	10	52.7
4/30/2002	PJ-2	Weakfish	Egg	4	19.1
4/30/2002	PJ-2	Winter flounder	PYS	6	28.7
4/30/2002	PJ-3	Labridae	Egg	1	4.2
4/30/2002	PJ-3	Winter flounder	PYS	4	16.8
4/30/2002	PJ-4	Labridae	Egg	3	12.3
4/30/2002	PJ-4	Weakfish	Egg	47	192.1
4/30/2002	PJ-4	Winter flounder	PYS	6	24.5
4/30/2002	PJ-5	Atlantic menhaden	Egg	8	39.2
4/30/2002	PJ-5	Grubby	PYS	2	9.8
4/30/2002	PJ-5	Labridae	Egg	22	107.7
4/30/2002	PJ-5	Weakfish	Egg	81	396.5
4/30/2002	PJ-5	Winter flounder	PYS	29	142.0
5/1/2002	AK-1	Grubby	PYS	1	4.9
5/1/2002	AK-1	Weakfish	Egg	2	9.8
5/1/2002	AK-1	Winter flounder	PYS	13	63.8
5/1/2002	AK-2	Grubby	PYS	2	9.2
5/1/2002	AK-2	Weakfish	Egg	1	4.6
5/1/2002	AK-2	Winter flounder	PYS	36	164.9
5/1/2002	AK-3	Labridae	Egg	2	8.5
5/1/2002	AK-3	Weakfish	Egg	2	8.5



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 13 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
5/1/2002	AK-3	Winter flounder	PYS	24	101.9
5/1/2002	AK-4	Labridae	Egg	2	8.3
5/1/2002	NB-3	Weakfish	Egg	3	15.0
5/1/2002	NB-3	Winter flounder	PYS	8	40.1
5/1/2002	NB-4	Labridae	Egg	2	10.7
5/1/2002	NB-4	Windowpane	PYS	1	5.3
5/1/2002	NB-4	Winter flounder	PYS	3	16.0
5/1/2002	NB-5	Atlantic menhaden	YS	2	7.8
5/1/2002	NB-5	Winter flounder	PYS	23	89.6
5/1/2002	NB-6	Labridae	Egg	4	15.3
5/1/2002	NB-6	Weakfish	Egg	2	7.7
5/1/2002	NB-6	Winter flounder	PYS	14	53.6
5/2/2002	SB-1	Weakfish	Egg	7	76.3
5/2/2002	SB-1	Winter flounder	PYS	8	87.2
5/2/2002	SB-2	Atlantic menhaden	YS	1	9.3
5/2/2002	SB-2	Weakfish	Egg	37	344.8
5/2/2002	SB-2	Winter flounder	PYS	5	46.6
5/2/2002	SB-3	Labridae	Egg	2	15.7
5/2/2002	SB-3	Weakfish	Egg	11	86.4
5/2/2002	SB-3	Winter flounder	PYS	36	282.8
5/2/2002	SB-4	Weakfish	Egg	14	51.1
5/2/2002	SB-4	Winter flounder	PYS	13	47.4
5/2/2002	SB-4	Winter flounder	YS	1	3.6
5/2/2002	SB-5	Hogchocker	Egg	1	4.7
5/2/2002	SB-5	Labridae	Egg	2	9.3
5/2/2002	SB-5	Weakfish	Egg	49	228.6
5/2/2002	SB-5	Winter flounder	PYS	8	37.3
5/2/2002	SB-6	Labridae	Egg	5	23.3
5/2/2002	SB-6	Weakfish	Egg	39	181.6
5/2/2002	SB-6	Winter flounder	PYS	34	158.3
5/14/2002	AK-1	Atlantic mackerel	PYS	1	6.0
5/14/2002	AK-1	Atlantic menhaden	Egg	37	222.7
5/14/2002	AK-1	Atlantic silverside	PYS	1	6.0
5/14/2002	AK-1	Hogchocker	Egg	1	6.0
5/14/2002	AK-1	Labridae	Egg	25	150.5
5/14/2002	AK-1	Weakfish	Egg	6	36.1
5/14/2002	AK-1	Winter flounder	PYS	1	6.0
5/14/2002	AK-2	Atlantic menhaden	Egg	89	478.6
5/14/2002	AK-2	Labridae	Egg	13	69.9
5/14/2002	AK-2	Weakfish	Egg	17	91.4
5/14/2002	AK-2	Windowpane	PYS	1	5.4
5/14/2002	AK-2	Winter flounder	PYS	9	48.4
5/14/2002	AK-3	Atlantic menhaden	Egg	25	170.9
5/14/2002	AK-3	Labridae	Egg	14	95.7
5/14/2002	AK-3	Spot	PYS	1	6.8
5/14/2002	AK-3	Weakfish	Egg	9	61.5
5/14/2002	AK-3	Winter flounder	PYS	6	41.0
5/14/2002	AK-4	Atlantic silverside	PYS	7	29.6
5/14/2002	AK-4	Bay anchovy	Egg	18	76.1
5/14/2002	AK-4	Labridae	Egg	25	105.7



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 14 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
5/14/2002	AK-4	Weakfish	Egg	3	12.7
5/14/2002	AK-4	Windowpane	PYS	2	8.5
5/14/2002	NB-3	Atlantic menhaden	Egg	2	8.6
5/14/2002	NB-3	Atlantic silverside	PYS	1	4.3
5/14/2002	NB-3	Labridae	Egg	16	68.5
5/14/2002	NB-3	Northern pipefish	PYS	1	4.3
5/14/2002	NB-3	Weakfish	Egg	2	8.6
5/14/2002	NB-4	Atlantic menhaden	Egg	1	3.8
5/14/2002	NB-4	Labridae	Egg	19	72.4
5/14/2002	NB-4	Weakfish	Egg	2	7.6
5/14/2002	NB-4	Windowpane	PYS	1	3.8
5/14/2002	NB-5	Atlantic menhaden	Egg	10	40.2
5/14/2002	NB-5	Labridae	Egg	6	24.1
5/14/2002	NB-5	Weakfish	Egg	2	8.0
5/14/2002	NB-5	Windowpane	PYS	1	4.0
5/14/2002	NB-5	Winter flounder	PYS	3	12.1
5/14/2002	NB-6	Atlantic menhaden	Egg	18	78.1
5/14/2002	NB-6	Atlantic menhaden	PYS	2	8.7
5/14/2002	NB-6	Labridae	Egg	28	121.4
5/14/2002	NB-6	Weakfish	Egg	20	86.7
5/14/2002	NB-6	Windowpane	PYS	2	8.7
5/14/2002	NB-6	Winter flounder	PYS	1	4.3
5/14/2002	NB-7	Atlantic menhaden	Egg	27	217.0
5/14/2002	NB-7	Labridae	Egg	6	48.2
5/14/2002	NB-7	Weakfish	Egg	2	16.1
5/14/2002	NB-7	Winter flounder	PYS	1	8.0
5/14/2002	PJ-4	Atlantic menhaden	Egg	12	111.4
5/14/2002	PJ-4	Bay anchovy	Egg	3	27.8
5/14/2002	PJ-4	Four beard rockling	Egg	1	9.3
5/14/2002	PJ-4	Labridae	Egg	122	1132.2
5/14/2002	PJ-4	Unidentified	PYS	1	4.6
5/14/2002	PJ-4	Weakfish	Egg	93	863.1
5/14/2002	PJ-4	Windowpane	PYS	1	4.6
5/14/2002	PJ-5	Atlantic mackerel	PYS	7	28.6
5/14/2002	PJ-5	Atlantic menhaden	Egg	183	1495.6
5/14/2002	PJ-5	Hogchocker	Egg	3	24.5
5/14/2002	PJ-5	Labridae	Egg	59	482.2
5/14/2002	PJ-5	Weakfish	Egg	48	392.3
5/14/2002	PJ-5	Windowpane	PYS	1	4.1
5/14/2002	PJ-5	Winter flounder	PYS	2	8.2
5/15/2002	PJ-1	Atlantic mackerel	PYS	1	4.4
5/15/2002	PJ-1	Labridae	Egg	7	31.0
5/15/2002	PJ-1	Windowpane	PYS	1	4.4
5/15/2002	PJ-2	Labridae	Egg	23	111.1
5/15/2002	PJ-2	Windowpane	PYS	1	4.8
5/15/2002	PJ-2	Winter flounder	PYS	10	48.3
5/15/2002	PJ-3	Atlantic menhaden	PYS	1	4.7
5/15/2002	PJ-3	Labridae	Egg	6	27.9
5/15/2002	PJ-3	Weakfish	Egg	1	4.7
5/15/2002	SB-1	Four beard rockling	PYS	1	10.3



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 15 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
5/15/2002	SB-1	Labridae	Egg	2	20.7
5/15/2002	SB-1	Weakfish	Egg	1	10.3
5/15/2002	SB-1	Windowpane	PYS	1	10.3
5/15/2002	SB-2	Atlantic mackerel	PYS	2	19.6
5/15/2002	SB-2	Atlantic menhaden	Egg	3	29.4
5/15/2002	SB-2	Labridae	Egg	11	107.8
5/15/2002	SB-2	Weakfish	Egg	7	68.6
5/15/2002	SB-2	Windowpane	PYS	1	9.8
5/15/2002	SB-2	Winter flounder	PYS	4	39.2
5/15/2002	SB-3	Atlantic menhaden	Egg	14	68.9
5/15/2002	SB-3	Atlantic menhaden	YS	1	4.9
5/15/2002	SB-3	Labridae	Egg	4	19.7
5/15/2002	SB-3	Weakfish	Egg	7	34.5
5/15/2002	SB-4	Atlantic mackerel	PYS	4	17.6
5/15/2002	SB-4	Atlantic menhaden	Egg	102	449.6
5/15/2002	SB-4	Bay anchovy	Egg	1	4.4
5/15/2002	SB-4	Labridae	Egg	70	308.6
5/15/2002	SB-4	Weakfish	Egg	98	432.0
5/15/2002	SB-4	Windowpane	PYS	1	4.4
5/15/2002	SB-4	Winter flounder	PYS	14	61.7
5/15/2002	SB-5	Atlantic menhaden	Egg	63	380.7
5/15/2002	SB-5	Atlantic menhaden	PYS	1	6.0
5/15/2002	SB-5	Atlantic tomcod	JUV	8	48.3
5/15/2002	SB-5	Hogchocker	Egg	2	12.1
5/15/2002	SB-5	Labridae	Egg	76	459.3
5/15/2002	SB-5	Weakfish	Egg	52	314.3
5/15/2002	SB-6	Atlantic mackerel	PYS	10	33.0
5/15/2002	SB-6	Atlantic menhaden	Egg	10	33.0
5/15/2002	SB-6	Labridae	Egg	9	29.7
5/15/2002	SB-6	Weakfish	Egg	2	6.6
5/15/2002	SB-6	Windowpane	PYS	7	23.1
5/15/2002	SB-6	Winter flounder	PYS	2	6.6
5/16/2002	LB-1	Atlantic mackerel	PYS	32	114.3
5/16/2002	LB-1	Atlantic menhaden	Egg	47	167.8
5/16/2002	LB-1	Atlantic menhaden	PYS	3	10.7
5/16/2002	LB-1	Labridae	Egg	37	132.1
5/16/2002	LB-1	Weakfish	Egg	22	78.6
5/16/2002	LB-1	Windowpane	PYS	14	50.0
5/16/2002	LB-1	Winter flounder	PYS	1	3.6
5/16/2002	LB-2	Atlantic mackerel	PYS	3	9.5
5/16/2002	LB-2	Bay anchovy	Egg	2	6.3
5/16/2002	LB-2	Four beard rockling	PYS	1	3.2
5/16/2002	LB-2	Hogchocker	Egg	1	3.2
5/16/2002	LB-2	Labridae	Egg	81	255.7
5/16/2002	LB-2	Weakfish	Egg	47	148.3
5/16/2002	LB-2	Windowpane	PYS	48	151.5
5/16/2002	LB-3	Atlantic mackerel	PYS	2	8.8
5/16/2002	LB-3	Atlantic menhaden	Egg	248	8704.5
5/16/2002	LB-3	Atlantic menhaden	PYS	1	4.4
5/16/2002	LB-3	Atlantic menhaden	YS	158	693.2



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 16 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
5/16/2002	LB-3	Bay anchovy	Egg	11	386.1
5/16/2002	LB-3	Hogchocker	Egg	1	35.1
5/16/2002	LB-3	Labridae	Egg	30	1053.0
5/16/2002	LB-3	Weakfish	Egg	16	561.6
5/16/2002	LB-3	Windowpane	PYS	9	39.5
5/16/2002	LB-4	Atlantic mackerel	PYS	7	28.0
5/16/2002	LB-4	Atlantic menhaden	Egg	16	64.1
5/16/2002	LB-4	Atlantic menhaden	YS	1	4.0
5/16/2002	LB-4	Bay anchovy	Egg	3	12.0
5/16/2002	LB-4	Four beard rockling	PYS	1	4.0
5/16/2002	LB-4	Hogchocker	Egg	1	4.0
5/16/2002	LB-4	Labridae	Egg	49	196.2
5/16/2002	LB-4	Weakfish	Egg	20	80.1
5/16/2002	LB-4	Windowpane	PYS	46	184.2
5/16/2002	LB-4	Winter flounder	PYS	9	36.0
5/16/2002	LB-5	Bay anchovy	Egg	40	379.5
5/16/2002	LB-5	Four beard rockling	PYS	1	4.7
5/16/2002	LB-5	Hogchocker	Egg	7	66.4
5/16/2002	LB-5	Labridae	Egg	95	901.2
5/16/2002	LB-5	Weakfish	Egg	93	882.2
5/16/2002	LB-5	Windowpane	PYS	52	246.6
5/16/2002	LB-5	Winter flounder	PYS	2	9.5
5/16/2002	LB-6	Atlantic mackerel	PYS	2	7.0
5/16/2002	LB-6	Atlantic menhaden	Egg	173	9680.9
5/16/2002	LB-6	Atlantic menhaden	YS	94	328.8
5/16/2002	LB-6	Atlantic silverside	PYS	1	3.5
5/16/2002	LB-6	Bay anchovy	Egg	17	951.3
5/16/2002	LB-6	Hogchocker	Egg	5	279.8
5/16/2002	LB-6	Labridae	Egg	6	335.8
5/16/2002	LB-6	Weakfish	Egg	35	1958.6
5/16/2002	LB-6	Windowpane	PYS	5	17.5
6/4/2002	AK-1	Atlantic menhaden	Egg	10	163.8
6/4/2002	AK-1	Atlantic menhaden	PYS	16	65.5
6/4/2002	AK-1	Bay anchovy	Egg	152	2489.1
6/4/2002	AK-1	Hogchocker	Egg	1	16.4
6/4/2002	AK-1	Labridae	Egg	38	622.3
6/4/2002	AK-1	Windowpane	Egg	96	1572.0
6/4/2002	AK-1	Windowpane	PYS	1	4.1
6/4/2002	AK-2	Atlantic menhaden	Egg	3	44.8
6/4/2002	AK-2	Bay anchovy	Egg	154	2300.6
6/4/2002	AK-2	Hogchocker	Egg	3	44.8
6/4/2002	AK-2	Labridae	Egg	22	328.7
6/4/2002	AK-2	Weakfish	Egg	5	74.7
6/4/2002	AK-2	Windowpane	Egg	125	1867.4
6/4/2002	AK-2	Windowpane	PYS	3	11.2
6/4/2002	AK-3	Atlantic silverside	YS	1	5.1
6/4/2002	AK-3	Bay anchovy	Egg	121	2820.4
6/4/2002	AK-3	Clupeid unidentified	PYS	51	260.0
6/4/2002	AK-3	Hogchocker	Egg	1	23.3
6/4/2002	AK-3	Labridae	Egg	27	629.3



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 17 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
6/4/2002	AK-3	Northern pipefish	PYS	2	10.2
6/4/2002	AK-3	Windowpane	Egg	66	1538.4
6/4/2002	AK-3	Winter flounder	PYS	1	5.1
6/4/2002	AK-4	Bay anchovy	Egg	163	4168.8
6/4/2002	AK-4	Labridae	Egg	14	358.1
6/4/2002	AK-4	Northern pipefish	PYS	6	38.4
6/4/2002	AK-4	Unidentified	Egg	5	127.9
6/4/2002	AK-4	Unidentified	PYS	1	6.4
6/4/2002	AK-4	Weakfish	Egg	2	51.2
6/4/2002	AK-4	Weakfish	PYS	2	12.8
6/4/2002	AK-4	Windowpane	Egg	19	485.9
6/4/2002	NB-3	Atlantic menhaden	Egg	4	52.6
6/4/2002	NB-3	Bay anchovy	Egg	204	2681.8
6/4/2002	NB-3	Clupeid unidentified	PYS	108	532.4
6/4/2002	NB-3	Labridae	Egg	52	683.6
6/4/2002	NB-3	Northern pipefish	PYS	7	34.5
6/4/2002	NB-3	Weakfish	PYS	1	4.9
6/4/2002	NB-3	Windowpane	Egg	71	933.4
6/4/2002	NB-3	Windowpane	PYS	1	4.9
6/4/2002	NB-4	Atlantic menhaden	Egg	13	216.0
6/4/2002	NB-4	Bay anchovy	Egg	168	2791.0
6/4/2002	NB-4	Clupeid unidentified	PYS	124	515.0
6/4/2002	NB-4	Gobiid unidentified	PYS	1	4.2
6/4/2002	NB-4	Labridae	Egg	56	930.3
6/4/2002	NB-4	Northern pipefish	PYS	18	74.8
6/4/2002	NB-4	Weakfish	PYS	2	8.3
6/4/2002	NB-4	Windowpane	Egg	52	863.9
6/4/2002	NB-5	Atlantic menhaden	Egg	1	8.2
6/4/2002	NB-5	Bay anchovy	Egg	91	746.1
6/4/2002	NB-5	Clupeid unidentified	PYS	2	8.2
6/4/2002	NB-5	Hogchocker	Egg	14	114.8
6/4/2002	NB-5	Labridae	Egg	43	352.5
6/4/2002	NB-5	Weakfish	Egg	13	106.6
6/4/2002	NB-5	Windowpane	Egg	242	1984.0
6/4/2002	NB-5	Winter flounder	PYS	1	4.1
6/4/2002	NB-6	Atlantic menhaden	Egg	3	49.0
6/4/2002	NB-6	Bay anchovy	Egg	154	2514.0
6/4/2002	NB-6	Clupeid unidentified	PYS	2	8.2
6/4/2002	NB-6	Hogchocker	Egg	7	114.3
6/4/2002	NB-6	Labridae	Egg	34	555.0
6/4/2002	NB-6	Northern pipefish	PYS	2	8.2
6/4/2002	NB-6	Unidentified	Egg	1	16.3
6/4/2002	NB-6	Weakfish	Egg	4	65.3
6/4/2002	NB-6	Windowpane	Egg	152	2481.4
6/4/2002	NB-6	Windowpane	PYS	1	4.1
6/4/2002	NB-6	Winter flounder	PYS	1	4.1
6/4/2002	NB-7	Atlantic menhaden	Egg	2	50.5
6/4/2002	NB-7	Bay anchovy	Egg	145	3662.8
6/4/2002	NB-7	Clupeid unidentified	PYS	42	265.2
6/4/2002	NB-7	Hogchocker	Egg	1	25.3





**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 18 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
6/4/2002	NB-7	Labridae	Egg	26	656.8
6/4/2002	NB-7	Northern pipefish	PYS	5	31.6
6/4/2002	NB-7	Tautog	PYS	1	6.3
6/4/2002	NB-7	Weakfish	PYS	1	6.3
6/4/2002	NB-7	Windowpane	Egg	28	707.3
6/4/2002	PJ-2	Atlantic menhaden	Egg	1	37.7
6/4/2002	PJ-2	Bay anchovy	Egg	161	6073.5
6/4/2002	PJ-2	Clupeid unidentified	PYS	34	160.3
6/4/2002	PJ-2	Labridae	Egg	44	1659.8
6/4/2002	PJ-2	Northern pipefish	PYS	9	42.4
6/4/2002	PJ-2	Windowpane	Egg	7	264.1
6/4/2002	PJ-3	Atlantic silverside	PYS	1	4.4
6/4/2002	PJ-3	Bay anchovy	Egg	174	3088.7
6/4/2002	PJ-3	Clupeid unidentified	PYS	17	75.4
6/4/2002	PJ-3	Labridae	Egg	31	550.3
6/4/2002	PJ-3	Windowpane	Egg	7	124.3
6/5/2002	LB-1	Bay anchovy	Egg	77	1673.3
6/5/2002	LB-1	Clupeid unidentified	PYS	1	5.4
6/5/2002	LB-1	Hogchocker	Egg	32	695.4
6/5/2002	LB-1	Labridae	Egg	70	1521.2
6/5/2002	LB-1	Northern pipefish	PYS	6	32.6
6/5/2002	LB-1	Unidentified	PYS	1	5.4
6/5/2002	LB-1	Weakfish	Egg	11	239.0
6/5/2002	LB-1	Windowpane	Egg	51	1108.3
6/5/2002	LB-1	Windowpane	PYS	2	10.9
6/5/2002	LB-2	Atlantic menhaden	Egg	1	23.0
6/5/2002	LB-2	Bay anchovy	Egg	76	1746.7
6/5/2002	LB-2	Clupeid unidentified	PYS	2	17.2
6/5/2002	LB-2	Hogchocker	Egg	19	436.7
6/5/2002	LB-2	Labridae	Egg	36	827.4
6/5/2002	LB-2	Weakfish	Egg	5	114.9
6/5/2002	LB-2	Windowpane	Egg	66	1516.8
6/5/2002	LB-3	Atlantic menhaden	Egg	118	3491.8
6/5/2002	LB-3	Bay anchovy	Egg	610	18051.0
6/5/2002	LB-3	Clupeid unidentified	PYS	77	284.8
6/5/2002	LB-3	Hogchocker	Egg	102	3018.4
6/5/2002	LB-3	Labridae	Egg	116	3432.7
6/5/2002	LB-3	Northern pipefish	PYS	1	3.7
6/5/2002	LB-3	Weakfish	Egg	25	739.8
6/5/2002	LB-3	Weakfish	PYS	1	3.7
6/5/2002	LB-3	Weakfish	YS	1	3.7
6/5/2002	LB-3	Windowpane	Egg	292	8640.8
6/5/2002	LB-3	Windowpane	PYS	3	11.1
6/5/2002	LB-4	Bay anchovy	Egg	147	1242.0
6/5/2002	LB-4	Clupeid unidentified	PYS	1	4.2
6/5/2002	LB-4	Four beard rockling	PYS	1	4.2
6/5/2002	LB-4	Hogchocker	Egg	14	118.3
6/5/2002	LB-4	Labridae	Egg	46	388.7
6/5/2002	LB-4	Northern pipefish	PYS	4	16.9
6/5/2002	LB-4	Weakfish	Egg	5	42.2



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 19 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
6/5/2002	LB-4	Windowpane	Egg	34	287.3
6/5/2002	LB-4	Windowpane	PYS	28	118.3
6/5/2002	LB-5	Atlantic menhaden	Egg	74	9885.4
6/5/2002	LB-5	Bay anchovy	Egg	55	7347.3
6/5/2002	LB-5	Clupeid unidentified	PYS	959	4003.4
6/5/2002	LB-5	Goosefish	PYS	1	4.2
6/5/2002	LB-5	Goosefish	YS	1	4.2
6/5/2002	LB-5	Hogchocker	Egg	27	3606.8
6/5/2002	LB-5	Labridae	Egg	38	5076.3
6/5/2002	LB-5	Northern pipefish	PYS	3	12.5
6/5/2002	LB-5	Unidentified	PYS	142	592.8
6/5/2002	LB-5	Weakfish	Egg	8	1068.7
6/5/2002	LB-5	Weakfish	YS	4	16.7
6/5/2002	LB-5	Windowpane	Egg	54	7213.7
6/5/2002	LB-5	Windowpane	PYS	4	16.7
6/5/2002	LB-6	Atlantic menhaden	Egg	24	2665.9
6/5/2002	LB-6	Bay anchovy	Egg	253	28102.7
6/5/2002	LB-6	Clupeid unidentified	PYS	60	416.5
6/5/2002	LB-6	Four beard rockling	PYS	1	6.9
6/5/2002	LB-6	Hogchocker	Egg	9	999.7
6/5/2002	LB-6	Labridae	Egg	2	222.2
6/5/2002	LB-6	Windowpane	Egg	5	555.4
6/5/2002	LB-6	Windowpane	PYS	14	97.2
6/5/2002	PJ-5	Bay anchovy	Egg	52	1518.0
6/5/2002	PJ-5	Clupeid unidentified	PYS	1	3.6
6/5/2002	PJ-5	Hogchocker	Egg	17	496.3
6/5/2002	PJ-5	Labridae	Egg	61	1780.7
6/5/2002	PJ-5	Northern pipefish	PYS	1	3.6
6/5/2002	PJ-5	Weakfish	Egg	12	350.3
6/5/2002	PJ-5	Windowpane	Egg	64	1868.3
6/5/2002	SB-5	Bay anchovy	Egg	55	1092.2
6/5/2002	SB-5	Hogchocker	Egg	29	575.9
6/5/2002	SB-5	Labridae	Egg	58	1151.8
6/5/2002	SB-5	Weakfish	Egg	13	258.2
6/5/2002	SB-5	Windowpane	Egg	66	1310.7
6/5/2002	SB-5	Windowpane	PYS	7	52.1
6/5/2002	SB-5	Winter flounder	PYS	1	7.4
6/5/2002	SB-5	Yellowtail flounder	PYS	1	7.4
6/5/2002	SB-6	Atlantic menhaden	Egg	62	534.7
6/5/2002	SB-6	Bay anchovy	Egg	49	1690.2
6/5/2002	SB-6	Clupeid unidentified	PYS	60	517.4
6/5/2002	SB-6	Hogchocker	Egg	36	1241.8
6/5/2002	SB-6	Labridae	Egg	72	2483.5
6/5/2002	SB-6	Unidentified	PYS	1	8.6
6/5/2002	SB-6	Weakfish	Egg	22	758.9
6/5/2002	SB-6	Windowpane	Egg	46	1586.7
6/5/2002	SB-6	Windowpane	PYS	2	17.2
6/6/2002	PJ-1	Atlantic menhaden	Egg	26	915.2
6/6/2002	PJ-1	Bay anchovy	Egg	91	3203.0
6/6/2002	PJ-1	Clupeid unidentified	PYS	144	633.6



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 20 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
6/6/2002	PJ-1	Clupeid unidentified	YS	9	39.6
6/6/2002	PJ-1	Labridae	Egg	47	1654.3
6/6/2002	PJ-1	Northern pipefish	PYS	9	39.6
6/6/2002	PJ-1	Unidentified	PYS	23	101.2
6/6/2002	PJ-1	Weakfish	Egg	2	70.4
6/6/2002	PJ-1	Weakfish	PYS	1	4.4
6/6/2002	PJ-1	Weakfish	YS	1	4.4
6/6/2002	PJ-1	Windowpane	Egg	89	3132.6
6/6/2002	PJ-1	Windowpane	PYS	3	13.2
6/6/2002	PJ-4	Atlantic menhaden	Egg	181	621.7
6/6/2002	PJ-4	Bay anchovy	Egg	43	1181.7
6/6/2002	PJ-4	Clupeid unidentified	PYS	11	37.8
6/6/2002	PJ-4	Goosefish	YS	1	3.4
6/6/2002	PJ-4	Hogchocker	Egg	44	1209.1
6/6/2002	PJ-4	Labridae	Egg	80	2198.4
6/6/2002	PJ-4	Northern pipefish	PYS	2	6.9
6/6/2002	PJ-4	Weakfish	Egg	23	632.1
6/6/2002	PJ-4	Windowpane	Egg	43	1181.7
6/6/2002	PJ-4	Windowpane	PYS	2	6.9
6/6/2002	SB-1	Atlantic menhaden	Egg	24	1746.7
6/6/2002	SB-1	Bay anchovy	Egg	137	9970.9
6/6/2002	SB-1	Clupeid unidentified	PYS	48	436.7
6/6/2002	SB-1	Goosefish	YS	1	9.1
6/6/2002	SB-1	Labridae	Egg	43	3129.5
6/6/2002	SB-1	Northern pipefish	JUV	1	9.1
6/6/2002	SB-1	Northern pipefish	PYS	4	36.4
6/6/2002	SB-1	Weakfish	Egg	4	291.1
6/6/2002	SB-1	Windowpane	Egg	11	800.6
6/6/2002	SB-1	Windowpane	PYS	2	18.2
6/6/2002	SB-2	Atlantic menhaden	Egg	13	725.9
6/6/2002	SB-2	Bay anchovy	Egg	89	4969.5
6/6/2002	SB-2	Clupeid unidentified	PYS	9	62.8
6/6/2002	SB-2	Goosefish	PYS	1	7.0
6/6/2002	SB-2	Hogchocker	Egg	4	223.4
6/6/2002	SB-2	Labridae	Egg	62	3461.9
6/6/2002	SB-2	Northern pipefish	PYS	3	20.9
6/6/2002	SB-2	Weakfish	Egg	10	558.4
6/6/2002	SB-2	Windowpane	Egg	46	2568.5
6/6/2002	SB-2	Windowpane	PYS	2	14.0
6/6/2002	SB-3	Atlantic menhaden	Egg	178	1531.7
6/6/2002	SB-3	Bay anchovy	Egg	129	17760.7
6/6/2002	SB-3	Clupeid unidentified	PYS	41	352.8
6/6/2002	SB-3	Goosefish	YS	1	8.6
6/6/2002	SB-3	Labridae	Egg	24	3304.3
6/6/2002	SB-3	Northern pipefish	PYS	2	17.2
6/6/2002	SB-3	Weakfish	Egg	3	413.0
6/6/2002	SB-3	Windowpane	Egg	47	6471.0
6/6/2002	SB-3	Windowpane	JUV	1	8.6
6/6/2002	SB-3	Windowpane	YS	1	8.6
6/6/2002	SB-4	Atlantic menhaden	Egg	61	209.9



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 21 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
6/6/2002	SB-4	Bay anchovy	Egg	97	1335.3
6/6/2002	SB-4	Clupeid unidentified	PYS	132	454.3
6/6/2002	SB-4	Hogchocker	Egg	23	316.6
6/6/2002	SB-4	Labridae	Egg	39	536.9
6/6/2002	SB-4	Northern pipefish	PYS	5	17.2
6/6/2002	SB-4	Weakfish	Egg	16	220.3
6/6/2002	SB-4	Weakfish	PYS	1	3.4
6/6/2002	SB-4	Windowpane	Egg	37	509.4
6/18/2002	AK-1	Bay anchovy	Egg	218	5446.5
6/18/2002	AK-1	Bay anchovy	PYS	53	165.5
6/18/2002	AK-1	Clupeid unidentified	PYS	1	3.1
6/18/2002	AK-1	Gobiid unidentified	PYS	63	196.7
6/18/2002	AK-1	Northern pipefish	PYS	17	53.1
6/18/2002	AK-1	Unidentified	PYS	3	9.4
6/18/2002	AK-1	Weakfish	PYS	6	18.7
6/18/2002	AK-2	Bay anchovy	Egg	297	3993.6
6/18/2002	AK-2	Bay anchovy	PYS	31	104.2
6/18/2002	AK-2	Gobiid unidentified	PYS	9	30.3
6/18/2002	AK-2	Hogchocker	Egg	1	13.4
6/18/2002	AK-2	Northern pipefish	JUV	1	3.4
6/18/2002	AK-2	Northern pipefish	PYS	9	30.3
6/18/2002	AK-2	Northern puffer	PYS	1	3.4
6/18/2002	AK-2	Unidentified	PYS	1	3.4
6/18/2002	AK-2	Weakfish	PYS	6	20.2
6/18/2002	AK-3	Bay anchovy	Egg	251	3292.0
6/18/2002	AK-3	Bay anchovy	PYS	137	449.2
6/18/2002	AK-3	Clupeid unidentified	PYS	14	45.9
6/18/2002	AK-3	Gobiid unidentified	PYS	67	219.7
6/18/2002	AK-3	Northern pipefish	PYS	11	36.1
6/18/2002	AK-3	Northern puffer	PYS	1	3.3
6/18/2002	AK-3	Unidentified	PYS	2	6.6
6/18/2002	AK-3	Weakfish	PYS	6	19.7
6/18/2002	AK-3	Windowpane	Egg	5	65.6
6/18/2002	AK-4	Bay anchovy	Egg	168	1123.5
6/18/2002	AK-4	Bay anchovy	PYS	137	1221.6
6/18/2002	AK-4	Clupeid unidentified	PYS	10	89.2
6/18/2002	AK-4	Gobiid unidentified	PYS	68	606.3
6/18/2002	AK-4	Northern pipefish	PYS	10	89.2
6/18/2002	AK-4	Unidentified	PYS	3	26.8
6/18/2002	AK-4	Weakfish	PYS	4	35.7
6/18/2002	NB-3	Bay anchovy	Egg	241	2157.8
6/18/2002	NB-3	Bay anchovy	PYS	228	1020.7
6/18/2002	NB-3	Clupeid unidentified	PYS	19	85.1
6/18/2002	NB-3	Gobiid unidentified	PYS	94	420.8
6/18/2002	NB-3	Northern pipefish	JUV	4	17.9
6/18/2002	NB-3	Northern pipefish	PYS	8	35.8
6/18/2002	NB-3	Tautog	PYS	1	4.5
6/18/2002	NB-3	Unidentified	PYS	11	49.2
6/18/2002	NB-3	Weakfish	PYS	18	80.6
6/18/2002	NB-4	Bay anchovy	Egg	207	3591.6



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 22 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
6/18/2002	NB-4	Bay anchovy	PYS	172	1492.1
6/18/2002	NB-4	Bay anchovy	YS	5	43.4
6/18/2002	NB-4	Clupeid unidentified	PYS	11	95.4
6/18/2002	NB-4	Cunner	YS	2	17.4
6/18/2002	NB-4	Gobiid unidentified	PYS	158	1370.7
6/18/2002	NB-4	Northern pipefish	PYS	24	208.2
6/18/2002	NB-4	Unidentified	PYS	4	34.7
6/18/2002	NB-4	Weakfish	PYS	30	260.3
6/18/2002	NB-5	Bay anchovy	Egg	191	144.1
6/18/2002	NB-5	Bay anchovy	PYS	56	211.3
6/18/2002	NB-5	Clupeid unidentified	PYS	13	49.1
6/18/2002	NB-5	Gobiid unidentified	PYS	2	7.5
6/18/2002	NB-5	Northern pipefish	JUV	1	3.8
6/18/2002	NB-5	Northern pipefish	PYS	6	22.6
6/18/2002	NB-5	Unidentified	PYS	5	18.9
6/18/2002	NB-5	Weakfish	Egg	11	83.0
6/18/2002	NB-5	Weakfish	PYS	7	26.4
6/18/2002	NB-5	Windowpane	Egg	3	22.6
6/18/2002	NB-5	Windowpane	JUV	1	3.8
6/18/2002	NB-5	Windowpane	PYS	1	3.8
6/18/2002	NB-6	Bay anchovy	Egg	235	1957.4
6/18/2002	NB-6	Bay anchovy	PYS	36	149.9
6/18/2002	NB-6	Clupeid unidentified	PYS	26	108.3
6/18/2002	NB-6	Gobiid unidentified	PYS	26	108.3
6/18/2002	NB-6	Labridae	Egg	19	158.3
6/18/2002	NB-6	Northern pipefish	PYS	6	25.0
6/18/2002	NB-6	Unidentified	PYS	4	16.7
6/18/2002	NB-6	Weakfish	PYS	1	4.2
6/18/2002	NB-6	Windowpane	Egg	3	25.0
6/18/2002	NB-7	Bay anchovy	Egg	205	2744.4
6/18/2002	NB-7	Bay anchovy	PYS	73	488.6
6/18/2002	NB-7	Bay anchovy	YS	1	6.7
6/18/2002	NB-7	Clupeid unidentified	PYS	15	100.4
6/18/2002	NB-7	Gobiid unidentified	PYS	45	301.2
6/18/2002	NB-7	Goosefish	PYS	1	6.7
6/18/2002	NB-7	Northern pipefish	JUV	1	6.7
6/18/2002	NB-7	Northern pipefish	PYS	5	33.5
6/18/2002	NB-7	Unidentified	PYS	9	60.2
6/18/2002	NB-7	Weakfish	PYS	2	13.4
6/18/2002	PJ-2	Bay anchovy	Egg	139	854.3
6/18/2002	PJ-2	Bay anchovy	PYS	33	202.8
6/18/2002	PJ-2	Clupeid unidentified	PYS	7	43.0
6/18/2002	PJ-2	Cunner	PYS	1	6.1
6/18/2002	PJ-2	Gobiid unidentified	PYS	1	6.1
6/18/2002	PJ-2	Labridae	Egg	65	399.5
6/18/2002	PJ-2	Northern pipefish	PYS	2	12.3
6/18/2002	PJ-2	Weakfish	PYS	2	12.3
6/18/2002	PJ-2	Windowpane	Egg	4	24.6
6/18/2002	PJ-2	Windowpane	PYS	1	6.1
6/18/2002	PJ-3	Bay anchovy	Egg	213	3772.5



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 23 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
6/18/2002	PJ-3	Bay anchovy	PYS	71	314.4
6/18/2002	PJ-3	Clupeid unidentified	PYS	12	53.1
6/18/2002	PJ-3	Gobiid unidentified	PYS	1	4.4
6/18/2002	PJ-3	Labridae	Egg	9	159.4
6/18/2002	PJ-3	Northern pipefish	PYS	9	39.9
6/18/2002	PJ-3	Tautog	PYS	1	4.4
6/18/2002	PJ-3	Unidentified	PYS	3	13.3
6/18/2002	PJ-3	Weakfish	Egg	5	88.6
6/18/2002	PJ-3	Weakfish	PYS	2	8.9
6/19/2002	LB-1	Bay anchovy	Egg	121	4470.8
6/19/2002	LB-1	Bay anchovy	PYS	19	175.5
6/19/2002	LB-1	Clupeid unidentified	PYS	6	55.4
6/19/2002	LB-1	Gobiid unidentified	PYS	2	18.5
6/19/2002	LB-1	Goosefish	YS	1	9.2
6/19/2002	LB-1	Hogchocker	Egg	11	406.4
6/19/2002	LB-1	Labridae	Egg	40	1477.9
6/19/2002	LB-1	Northern pipefish	PYS	3	27.7
6/19/2002	LB-1	Weakfish	Egg	15	554.2
6/19/2002	LB-1	Windowpane	Egg	31	1145.4
6/19/2002	LB-2	Atlantic menhaden	Egg	11	263.8
6/19/2002	LB-2	Bay anchovy	Egg	57	1366.9
6/19/2002	LB-2	Bay anchovy	PYS	4	95.9
6/19/2002	LB-2	Clupeid unidentified	PYS	2	48.0
6/19/2002	LB-2	Hogchocker	Egg	61	1462.8
6/19/2002	LB-2	Labridae	Egg	53	1271.0
6/19/2002	LB-2	Northern pipefish	PYS	1	24.0
6/19/2002	LB-2	Weakfish	Egg	49	1175.0
6/19/2002	LB-2	Windowpane	Egg	37	887.3
6/19/2002	LB-2	Windowpane	PYS	2	48.0
6/19/2002	LB-3	Bay anchovy	Egg	159	1684.7
6/19/2002	LB-3	Bay anchovy	PYS	213	2256.9
6/19/2002	LB-3	Clupeid unidentified	PYS	4	42.4
6/19/2002	LB-3	Gobiid unidentified	PYS	1	10.6
6/19/2002	LB-3	Hogchocker	Egg	9	95.4
6/19/2002	LB-3	Labridae	Egg	33	349.7
6/19/2002	LB-3	Unidentified	PYS	5	53.0
6/19/2002	LB-3	Weakfish	Egg	15	158.9
6/19/2002	LB-3	Weakfish	PYS	5	53.0
6/19/2002	LB-3	Windowpane	Egg	7	74.2
6/19/2002	LB-4	Bay anchovy	Egg	96	1553.0
6/19/2002	LB-4	Bay anchovy	PYS	24	194.1
6/19/2002	LB-4	Clupeid unidentified	PYS	11	89.0
6/19/2002	LB-4	Gobiid unidentified	PYS	1	8.1
6/19/2002	LB-4	Hogchocker	Egg	51	825.1
6/19/2002	LB-4	Labridae	Egg	29	469.1
6/19/2002	LB-4	Northern pipefish	JUV	1	8.1
6/19/2002	LB-4	Northern pipefish	PYS	1	8.1
6/19/2002	LB-4	Unidentified	PYS	7	56.6
6/19/2002	LB-4	Weakfish	Egg	12	194.1
6/19/2002	LB-4	Windowpane	Egg	28	453.0



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 24 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
6/19/2002	LB-4	Windowpane	PYS	2	16.2
6/19/2002	LB-5	Bay anchovy	Egg	154	3931.9
6/19/2002	LB-5	Bay anchovy	PYS	251	25634.1
6/19/2002	LB-5	Clupeid unidentified	PYS	15	1531.9
6/19/2002	LB-5	Gobiid unidentified	PYS	24	2451.1
6/19/2002	LB-5	Labridae	Egg	35	893.6
6/19/2002	LB-5	Northern pipefish	PYS	3	306.4
6/19/2002	LB-5	Unidentified	PYS	29	2961.7
6/19/2002	LB-5	Weakfish	PYS	4	408.5
6/19/2002	LB-5	Windowpane	Egg	17	434.0
6/19/2002	LB-6	Bay anchovy	Egg	154	2035.4
6/19/2002	LB-6	Bay anchovy	PYS	211	2788.8
6/19/2002	LB-6	Clupeid unidentified	PYS	33	436.2
6/19/2002	LB-6	Hogchocker	Egg	47	621.2
6/19/2002	LB-6	Labridae	Egg	6	79.3
6/19/2002	LB-6	Northern pipefish	PYS	2	26.4
6/19/2002	LB-6	Unidentified	PYS	17	224.7
6/19/2002	LB-6	Weakfish	Egg	11	14.5
6/19/2002	LB-6	Weakfish	PYS	12	158.6
6/19/2002	LB-6	Windowpane	Egg	3	39.7
6/19/2002	LB-6	Windowpane	PYS	1	13.2
6/19/2002	PJ-1	Bay anchovy	Egg	103	4750.1
6/19/2002	PJ-1	Bay anchovy	PYS	31	178.7
6/19/2002	PJ-1	Clupeid unidentified	PYS	79	455.4
6/19/2002	PJ-1	Gobiid unidentified	PYS	23	132.6
6/19/2002	PJ-1	Gobiid unidentified	YS	2	11.5
6/19/2002	PJ-1	Hogchocker	Egg	1	46.1
6/19/2002	PJ-1	Labridae	Egg	52	2398.1
6/19/2002	PJ-1	Northern pipefish	JUV	2	11.5
6/19/2002	PJ-1	Northern pipefish	PYS	9	51.9
6/19/2002	PJ-1	Tautog	PYS	2	11.5
6/19/2002	PJ-1	Unidentified	PYS	29	167.2
6/19/2002	PJ-1	Unidentified	YS	2	11.5
6/19/2002	PJ-1	Weakfish	Egg	12	553.4
6/19/2002	PJ-1	Weakfish	PYS	7	40.4
6/19/2002	PJ-1	Weakfish	YS	1	5.8
6/19/2002	PJ-1	Windowpane	Egg	39	1798.6
6/19/2002	PJ-1	Windowpane	PYS	1	5.8
6/19/2002	SB-5	Bay anchovy	Egg	27	1338.8
6/19/2002	SB-5	Bay anchovy	PYS	10	62.0
6/19/2002	SB-5	Clupeid unidentified	PYS	13	80.6
6/19/2002	SB-5	Hogchocker	Egg	23	1140.5
6/19/2002	SB-5	Labridae	Egg	32	1586.8
6/19/2002	SB-5	Weakfish	Egg	37	1834.7
6/19/2002	SB-5	Weakfish	PYS	1	6.2
6/19/2002	SB-5	Windowpane	Egg	93	4611.5
6/19/2002	SB-5	Windowpane	JUV	2	12.4
6/19/2002	SB-5	Windowpane	PYS	4	24.8
6/19/2002	SB-6	Bay anchovy	Egg	73	2948.3
6/19/2002	SB-6	Bay anchovy	PYS	19	95.9



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 25 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
6/19/2002	SB-6	Clupeid unidentified	PYS	97	489.7
6/19/2002	SB-6	Hogchocker	Egg	33	1332.8
6/19/2002	SB-6	Labridae	Egg	32	1292.4
6/19/2002	SB-6	Northern pipefish	PYS	2	10.1
6/19/2002	SB-6	Unidentified	PYS	22	111.1
6/19/2002	SB-6	Weakfish	Egg	21	848.1
6/19/2002	SB-6	Weakfish	PYS	4	20.2
6/19/2002	SB-6	Windowpane	Egg	54	2181.0
6/19/2002	SB-6	Windowpane	PYS	10	50.5
6/20/2002	PJ-4	Bay anchovy	Egg	131	2342.5
6/20/2002	PJ-4	Bay anchovy	PYS	53	236.9
6/20/2002	PJ-4	Clupeid unidentified	PYS	5	22.4
6/20/2002	PJ-4	Gobiid unidentified	PYS	3	13.4
6/20/2002	PJ-4	Hogchocker	Egg	14	250.3
6/20/2002	PJ-4	Labridae	Egg	36	643.7
6/20/2002	PJ-4	Northern pipefish	PYS	2	8.9
6/20/2002	PJ-4	Striped bass	PYS	1	4.5
6/20/2002	PJ-4	Unidentified	PYS	7	31.3
6/20/2002	PJ-4	Weakfish	Egg	4	71.5
6/20/2002	PJ-4	Weakfish	PYS	4	17.9
6/20/2002	PJ-4	Windowpane	Egg	61	1090.8
6/20/2002	PJ-5	Bay anchovy	Egg	169	2609.6
6/20/2002	PJ-5	Bay anchovy	PYS	60	231.6
6/20/2002	PJ-5	Clupeid unidentified	PYS	28	108.1
6/20/2002	PJ-5	Gobiid unidentified	PYS	5	19.3
6/20/2002	PJ-5	Gobiid unidentified	YS	1	3.9
6/20/2002	PJ-5	Labridae	Egg	13	200.7
6/20/2002	PJ-5	Northern pipefish	PYS	3	11.6
6/20/2002	PJ-5	Tautog	PYS	1	3.9
6/20/2002	PJ-5	Unidentified	PYS	31	119.7
6/20/2002	PJ-5	Weakfish	Egg	7	108.1
6/20/2002	PJ-5	Weakfish	PYS	8	30.9
6/20/2002	PJ-5	Windowpane	Egg	21	324.3
6/20/2002	SB-1	Bay anchovy	Egg	107	4348.6
6/20/2002	SB-1	Bay anchovy	PYS	20	203.2
6/20/2002	SB-1	Clupeid unidentified	PYS	8	81.3
6/20/2002	SB-1	Gobiid unidentified	PYS	1	10.2
6/20/2002	SB-1	Labridae	Egg	69	2804.2
6/20/2002	SB-1	Northern pipefish	PYS	1	10.2
6/20/2002	SB-1	Unidentified	PYS	8	81.3
6/20/2002	SB-1	Weakfish	Egg	1	40.6
6/20/2002	SB-1	Weakfish	PYS	1	10.2
6/20/2002	SB-1	Windowpane	Egg	24	975.4
6/20/2002	SB-1	Windowpane	PYS	1	10.2
6/20/2002	SB-2	Bay anchovy	Egg	111	6583.4
6/20/2002	SB-2	Bay anchovy	PYS	14	103.8
6/20/2002	SB-2	Clupeid unidentified	PYS	6	44.5
6/20/2002	SB-2	Gobiid unidentified	PYS	1	7.4
6/20/2002	SB-2	Labridae	Egg	79	4685.5
6/20/2002	SB-2	Northern pipefish	PYS	1	7.4





**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 26 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
6/20/2002	SB-2	Unidentified	PYS	13	96.4
6/20/2002	SB-2	Weakfish	PYS	1	7.4
6/20/2002	SB-2	Windowpane	Egg	27	1601.4
6/20/2002	SB-3	Bay anchovy	Egg	127	3078.0
6/20/2002	SB-3	Bay anchovy	PYS	60	363.5
6/20/2002	SB-3	Clupeid unidentified	PYS	30	181.8
6/20/2002	SB-3	Gobiid unidentified	PYS	13	78.8
6/20/2002	SB-3	Hogchocker	Egg	7	169.7
6/20/2002	SB-3	Labridae	Egg	58	1405.7
6/20/2002	SB-3	Northern pipefish	JUV	2	12.1
6/20/2002	SB-3	Northern pipefish	PYS	13	78.8
6/20/2002	SB-3	Tautog	PYS	3	18.2
6/20/2002	SB-3	Unidentified	PYS	25	151.5
6/20/2002	SB-3	Weakfish	Egg	9	218.1
6/20/2002	SB-3	Weakfish	PYS	2	12.1
6/20/2002	SB-3	Windowpane	Egg	9	218.1
6/20/2002	SB-3	Windowpane	PYS	3	18.2
6/20/2002	SB-4	Bay anchovy	Egg	107	1859.5
6/20/2002	SB-4	Bay anchovy	PYS	229	994.9
6/20/2002	SB-4	Clupeid unidentified	PYS	92	399.7
6/20/2002	SB-4	Gobiid unidentified	Egg	1	17.4
6/20/2002	SB-4	Gobiid unidentified	PYS	8	34.8
6/20/2002	SB-4	Hogchocker	Egg	6	104.3
6/20/2002	SB-4	Labridae	Egg	47	816.8
6/20/2002	SB-4	Northern pipefish	PYS	5	21.7
6/20/2002	SB-4	Unidentified	PYS	19	82.5
6/20/2002	SB-4	Weakfish	Egg	4	69.5
6/20/2002	SB-4	Weakfish	PYS	5	21.7
6/20/2002	SB-4	Windowpane	Egg	41	712.5
7/9/2002	AK-1	Bay anchovy	Egg	9	60.9
7/9/2002	AK-1	Bay anchovy	PYS	2	13.5
7/9/2002	AK-1	Gobiid unidentified	PYS	414	2800.5
7/9/2002	AK-1	Hogchocker	Egg	1	6.8
7/9/2002	AK-1	Labridae	Egg	15	101.5
7/9/2002	AK-1	Weakfish	PYS	2	13.5
7/9/2002	AK-2	Bay anchovy	Egg	27	149.2
7/9/2002	AK-2	Bay anchovy	PYS	8	44.2
7/9/2002	AK-2	Blennidae	PYS	1	5.5
7/9/2002	AK-2	Clupeid unidentified	PYS	6	33.2
7/9/2002	AK-2	Gobiid unidentified	PYS	152	840.2
7/9/2002	AK-2	Labridae	Egg	11	60.8
7/9/2002	AK-2	Northern pipefish	PYS	2	11.1
7/9/2002	AK-2	Unidentified	PYS	5	27.6
7/9/2002	AK-2	Weakfish	PYS	2	11.1
7/9/2002	AK-3	Bay anchovy	Egg	17	136.0
7/9/2002	AK-3	Bay anchovy	PYS	2	32.0
7/9/2002	AK-3	Clupeid unidentified	PYS	3	48.0
7/9/2002	AK-3	Gobiid unidentified	PYS	209	3343.2
7/9/2002	AK-3	Labridae	Egg	2	16.0
7/9/2002	AK-3	Northern pipefish	JUV	1	16.0



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 27 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
7/9/2002	AK-3	Unidentified	PYS	27	431.9
7/9/2002	AK-3	Weakfish	PYS	6	96.0
7/9/2002	AK-4	Bay anchovy	Egg	2	9.7
7/9/2002	AK-4	Bay anchovy	PYS	6	29.2
7/9/2002	AK-4	Clupeid unidentified	PYS	10	48.7
7/9/2002	AK-4	Gobiid unidentified	PYS	693	3372.7
7/9/2002	AK-4	Northern pipefish	PYS	9	43.8
7/9/2002	AK-4	Unidentified	PYS	104	506.1
7/9/2002	AK-4	Weakfish	Egg	1	4.9
7/9/2002	NB-3	Bay anchovy	Egg	185	1496.4
7/9/2002	NB-3	Bay anchovy	PYS	74	598.6
7/9/2002	NB-3	Gobiid unidentified	PYS	83	671.4
7/9/2002	NB-4	Bay anchovy	Egg	84	771.1
7/9/2002	NB-4	Bay anchovy	PYS	29	266.2
7/9/2002	NB-4	Gobiid unidentified	PYS	381	3497.5
7/9/2002	NB-4	Northern pipefish	PYS	3	27.5
7/9/2002	NB-5	Bay anchovy	Egg	136	711.9
7/9/2002	NB-5	Bay anchovy	PYS	18	94.2
7/9/2002	NB-5	Gobiid unidentified	PYS	58	303.6
7/9/2002	NB-5	Labridae	Egg	1	5.2
7/9/2002	NB-5	Northern pipefish	PYS	5	26.2
7/9/2002	NB-5	Weakfish	PYS	6	31.4
7/9/2002	NB-6	Bay anchovy	Egg	72	426.7
7/9/2002	NB-6	Bay anchovy	PYS	16	94.8
7/9/2002	NB-6	Butterfish	PYS	1	5.9
7/9/2002	NB-6	Gobiid unidentified	PYS	230	1363.0
7/9/2002	NB-6	Hogchocker	Egg	2	11.9
7/9/2002	NB-6	Labridae	Egg	19	112.6
7/9/2002	NB-6	Northern pipefish	PYS	1	5.9
7/9/2002	NB-6	Weakfish	PYS	4	23.7
7/9/2002	NB-7	Bay anchovy	Egg	87	761.4
7/9/2002	NB-7	Bay anchovy	PYS	13	113.8
7/9/2002	NB-7	Blennidae	PYS	2	17.5
7/9/2002	NB-7	Gobiid unidentified	PYS	130	1137.7
7/9/2002	NB-7	Labridae	Egg	5	43.8
7/9/2002	NB-7	Northern pipefish	PYS	1	8.8
7/9/2002	PJ-4	Bay anchovy	Egg	7	45.0
7/9/2002	PJ-4	Bay anchovy	PYS	2	51.5
7/9/2002	PJ-4	Gobiid unidentified	PYS	325	8363.0
7/9/2002	PJ-4	Hogchocker	Egg	1	6.4
7/9/2002	PJ-4	Labridae	Egg	18	115.8
7/9/2002	PJ-4	Northern pipefish	PYS	2	51.5
7/9/2002	PJ-4	Weakfish	PYS	19	488.9
7/9/2002	PJ-4	Windowpane	Egg	2	12.9
7/10/2002	LB-2	Bay anchovy	Egg	1	13.9
7/10/2002	LB-2	Butterfish	PYS	1	13.9
7/10/2002	LB-2	Cunner	PYS	1	13.9
7/10/2002	LB-2	Hogchocker	Egg	1	13.9
7/10/2002	LB-2	Labridae	Egg	1	13.9
7/10/2002	LB-2	Weakfish	Egg	4	55.7



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 28 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
7/10/2002	LB-3	Bay anchovy	Egg	1	5.8
7/10/2002	LB-3	Butterfish	PYS	3	17.3
7/10/2002	LB-3	Hogchocker	Egg	2	11.5
7/10/2002	LB-3	Labridae	Egg	3	17.3
7/10/2002	LB-3	Northern pipefish	PYS	2	11.5
7/10/2002	LB-4	Bay anchovy	Egg	2	12.8
7/10/2002	LB-4	Butterfish	PYS	1	6.4
7/10/2002	LB-4	Gobiid unidentified	PYS	20	127.8
7/10/2002	LB-4	Hogchocker	Egg	11	70.3
7/10/2002	LB-4	Unidentified	PYS	5	31.9
7/10/2002	LB-4	Weakfish	Egg	5	31.9
7/10/2002	LB-4	Weakfish	PYS	3	19.2
7/10/2002	LB-4	Windowpane	PYS	1	6.4
7/10/2002	LB-5	Bay anchovy	Egg	4	61.5
7/10/2002	LB-5	Gobiid unidentified	PYS	14	139.9
7/10/2002	LB-5	Gobiid unidentified	PYS	1	15.4
7/10/2002	LB-5	Hogchocker	Egg	10	153.7
7/10/2002	LB-5	Northern pipefish	PYS	1	10.0
7/10/2002	LB-6	Bay anchovy	Egg	3	20.8
7/10/2002	LB-6	Bay anchovy	PYS	3	20.8
7/10/2002	LB-6	Gobiid unidentified	PYS	20	138.7
7/10/2002	LB-6	Hogchocker	Egg	14	97.1
7/10/2002	LB-6	Labridae	Egg	13	90.2
7/10/2002	LB-6	Northern pipefish	JUV	2	13.9
7/10/2002	LB-6	Prionotus sp.	PYS	1	6.9
7/10/2002	LB-6	Tautog	PYS	3	20.8
7/10/2002	LB-6	Weakfish	PYS	19	131.8
7/10/2002	LB-6	Windowpane	PYS	1	6.9
7/10/2002	PJ-1	Bay anchovy	PYS	10	108.1
7/10/2002	PJ-1	Cunner	PYS	1	10.8
7/10/2002	PJ-1	Gobiid unidentified	PYS	191	2064.6
7/10/2002	PJ-1	Hogchocker	Egg	1	10.8
7/10/2002	PJ-1	Labridae	Egg	24	259.4
7/10/2002	PJ-1	Northern pipefish	PYS	1	10.8
7/10/2002	PJ-1	Weakfish	Egg	8	86.5
7/10/2002	PJ-1	Weakfish	PYS	1	10.8
7/10/2002	PJ-5	Bay anchovy	Egg	1	7.2
7/10/2002	PJ-5	Bay anchovy	PYS	115	825.6
7/10/2002	PJ-5	Gobiid unidentified	PYS	304	2182.6
7/10/2002	PJ-5	Hogchocker	Egg	8	57.4
7/10/2002	PJ-5	Labridae	Egg	51	366.2
7/10/2002	PJ-5	Tautog	PYS	1	7.2
7/10/2002	PJ-5	Weakfish	Egg	13	93.3
7/10/2002	PJ-5	Weakfish	PYS	6	43.1
7/10/2002	SB-3	Bay anchovy	Egg	1	12.6
7/10/2002	SB-3	Bay anchovy	PYS	1	12.6
7/10/2002	SB-3	Gobiid unidentified	PYS	518	6542.6
7/10/2002	SB-3	Hogchocker	Egg	3	37.9
7/10/2002	SB-3	Labridae	Egg	8	101.0
7/10/2002	SB-3	Northern pipefish	PYS	1	12.6



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 29 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
7/10/2002	SB-3	Windowpane	Egg	5	63.2
7/10/2002	SB-5	Bay anchovy	PYS	3	21.0
7/10/2002	SB-5	Butterfish	PYS	2	14.0
7/10/2002	SB-5	Gobiid unidentified	PYS	53	371.1
7/10/2002	SB-5	Hogchocker	Egg	3	21.0
7/10/2002	SB-5	Labridae	Egg	19	133.0
7/10/2002	SB-5	Northern pipefish	PYS	1	7.0
7/10/2002	SB-5	Weakfish	PYS	1	7.0
7/10/2002	SB-5	Windowpane	Egg	6	42.0
7/10/2002	SB-6	Bay anchovy	Egg	1	7.0
7/10/2002	SB-6	Bay anchovy	PYS	1	7.0
7/10/2002	SB-6	Butterfish	PYS	2	13.9
7/10/2002	SB-6	Gobiid unidentified	PYS	32	222.4
7/10/2002	SB-6	Hogchocker	Egg	4	27.8
7/10/2002	SB-6	Labridae	Egg	22	152.9
7/10/2002	SB-6	Weakfish	Egg	1	7.0
7/10/2002	SB-6	Weakfish	PYS	4	27.8
7/11/2002	PJ-2	Bay anchovy	Egg	5	79.4
7/11/2002	PJ-2	Bay anchovy	PYS	7	111.2
7/11/2002	PJ-2	Butterfish	PYS	2	31.8
7/11/2002	PJ-2	Cunner	PYS	1	15.9
7/11/2002	PJ-2	Gobiid unidentified	PYS	180	2858.4
7/11/2002	PJ-2	Hogchocker	Egg	1	15.9
7/11/2002	PJ-2	Labridae	Egg	32	508.2
7/11/2002	PJ-2	Northern pipefish	PYS	5	79.4
7/11/2002	PJ-2	Weakfish	Egg	2	31.8
7/11/2002	PJ-2	Weakfish	PYS	1	15.9
7/11/2002	PJ-3	Bay anchovy	Egg	1	13.6
7/11/2002	PJ-3	Bay anchovy	PYS	15	203.4
7/11/2002	PJ-3	Butterfish	PYS	2	27.1
7/11/2002	PJ-3	Gobiid unidentified	PYS	644	8731.0
7/11/2002	PJ-3	Labridae	Egg	27	366.1
7/11/2002	PJ-3	Northern pipefish	PYS	6	81.3
7/11/2002	PJ-3	Windowpane	Egg	2	27.1
7/11/2002	SB-1	Bay anchovy	PYS	1	11.3
7/11/2002	SB-1	Gobiid unidentified	PYS	53	596.7
7/11/2002	SB-1	Hogchocker	Egg	8	90.1
7/11/2002	SB-1	Labridae	Egg	47	529.2
7/11/2002	SB-1	Northern pipefish	PYS	2	22.5
7/11/2002	SB-1	Weakfish	PYS	1	11.3
7/11/2002	SB-1	Windowpane	Egg	9	101.3
7/11/2002	SB-2	Bay anchovy	Egg	1	12.0
7/11/2002	SB-2	Blennidae	PYS	1	12.0
7/11/2002	SB-2	Cunner	PYS	1	12.0
7/11/2002	SB-2	Gobiid unidentified	PYS	36	430.4
7/11/2002	SB-2	Hogchocker	Egg	1	12.0
7/11/2002	SB-2	Labridae	Egg	67	801.0
7/11/2002	SB-2	Windowpane	Egg	16	191.3
7/11/2002	SB-4	Bay anchovy	Egg	2	24.8
7/11/2002	SB-4	Bay anchovy	PYS	19	235.3



**Appendix B.** Ichthyoplankton (epibenthic sled) life stage densities by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 30 of 30)

Date	Station	Common Name	Life Stage	Number Caught	Density (#/1000m <sup>3</sup> )
7/11/2002	SB-4	Blennidae	PYS	1	12.4
7/11/2002	SB-4	Butterfish	PYS	1	12.4
7/11/2002	SB-4	Clupeid unidentified	PYS	6	74.3
7/11/2002	SB-4	Cunner	PYS	1	12.4
7/11/2002	SB-4	Gobiid unidentified	PYS	777	9621.7
7/11/2002	SB-4	Hogchocker	Egg	2	24.8
7/11/2002	SB-4	Labridae	Egg	45	557.2
7/11/2002	SB-4	Northern pipefish	PYS	8	99.1
7/11/2002	SB-4	Prionotus sp.	JUV	1	12.4
7/11/2002	SB-4	Weakfish	Egg	14	173.4
7/11/2002	SB-4	Weakfish	PYS	9	111.4



**Appendix C.** Water quality data by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 1 of 9)

Date	Station	Temperature (°C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
1/22/2002	LB-1	4.9	10.0	41540	26.1
1/22/2002	LB-2	5.8	9.6	46200	29.9
1/22/2002	PJ-1	5.2	10.2	30680	18.8
1/22/2002	PJ-2	5.4	10.6	29970	18.3
1/22/2002	PJ-3	4.9	10.6	31320	19.2
1/22/2002	PJ-4	5.6	9.8	34530	21.4
1/22/2002	PJ-5	5.5	9.9	33190	20.5
1/22/2002	SB-1	4.8	10.4	34350	21.3
1/22/2002	SB-2	5.1	10.5	34920	21.7
1/22/2002	SB-3	5.0	10.2	34670	21.5
1/22/2002	SB-4	5.2	9.9	40500	25.7
1/22/2002	SB-5	5.5	9.9	35080	21.7
1/22/2002	SB-6	4.6	10.3	34780	21.5
1/23/2002	AK-1	5.0	10.0	39520	24.8
1/23/2002	AK-2	4.9	9.9	39400	24.6
1/23/2002	AK-3	5.4	9.8	37960	23.5
1/23/2002	AK-4	5.2	9.9	39030	24.4
1/23/2002	LB-3	4.7	11.2	41520	26.4
1/23/2002	LB-4	5.3	10.1	46200	29.9
1/23/2002	LB-5	4.9	10.9	43550	27.8
1/23/2002	LB-6	4.0	12.0	44510	28.4
1/24/2002	NB-3	4.7	10.1	36360	22.6
1/24/2002	NB-4	4.8	10.1	37070	23.0
1/24/2002	NB-5	4.8	10.1	38900	24.4
1/24/2002	NB-6	5.2	10.0	40150	25.2
1/24/2002	NB-7	4.9	10.4	36900	23.0
2/5/2002	AK-1	4.6	9.3	37940	23.6
2/5/2002	AK-2	4.6	9.3	37930	23.6
2/5/2002	AK-3	4.6	9.5	38520	24.0
2/5/2002	AK-4	4.4	9.7	37610	23.4
2/5/2002	NB-3	4.6	9.6	37110	23.1
2/5/2002	NB-4	4.4	9.7	36640	22.7
2/5/2002	NB-5	5.2	9.3	37830	23.6
2/5/2002	NB-6	5.1	9.3	38190	23.9
2/5/2002	NB-7	5.2	9.3	38810	24.3
2/6/2002	LB-1	5.6	10.1	41630	26.2
2/6/2002	LB-2	5.5	10.1	41060	25.9
2/6/2002	LB-3	5.5	10.3	43290	27.3
2/6/2002	LB-4	5.8	9.9	45820	29.2
2/6/2002	LB-5	3.7	12.3	43670	27.5
2/6/2002	LB-6	4.6	11.1	43910	27.8
2/6/2002	SB-1	5.7	9.9	39950	25.1
2/6/2002	SB-2	5.7	10.0	40650	25.6
2/6/2002	SB-4	5.8	10.0	41840	26.7
2/7/2002	PJ-1	5.1	10.1	35250	21.9
2/7/2002	PJ-2	5.2	10.0	35400	22.0
2/7/2002	PJ-3	4.9	9.9	38400	23.9
2/7/2002	PJ-4	5.5	9.7	41740	26.4
2/7/2002	PJ-5	5.3	9.8	39050	24.4
2/7/2002	SB-3	5.3	9.8	40510	25.5
2/7/2002	SB-5	5.5	9.7	40700	25.6



**Appendix C.** Water quality data by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 2 of 9)

Date	Station	Temperature (°C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
2/7/2002	SB-6	5.2	9.9	39500	24.7
2/19/2002	LB-1	6.5	9.6	49730	32.1
2/19/2002	LB-2	7.0	9.4	51000	33.1
2/19/2002	LB-3	5.1	11.6	42740	27.0
2/19/2002	LB-4	6.3	10.0	40400	31.2
2/19/2002	LB-5	4.7	11.0	43610	27.5
2/19/2002	LB-6	5.3	10.2	45410	28.8
2/19/2002	PJ-1	6.1	11.2	36420	22.7
2/19/2002	PJ-2	5.7	11.4	33930	20.8
2/19/2002	PJ-3	6.3	11.3	35200	21.9
2/19/2002	SB-5	6.3	10.2	44400	28.3
2/20/2002	AK-1	5.7	10.4	37890	23.5
2/20/2002	AK-2	5.9	10.4	37800	24.0
2/20/2002	AK-3	6.0	10.5	37480	23.3
2/20/2002	AK-4	6.8	11.6	36570	22.9
2/20/2002	NB-3	5.5	11.0	36220	22.5
2/20/2002	NB-4	5.4	11.5	36250	22.8
2/20/2002	NB-5	5.5	10.8	37050	23.1
2/20/2002	NB-6	5.9	10.4	37960	23.6
2/20/2002	NB-7	5.5	10.8	36940	23.3
2/20/2002	PJ-4	6.4	9.7	45100	28.8
2/20/2002	PJ-5	6.0	11.0	34440	21.4
2/21/2002	SB-1	6.7	10.3	41180	26.4
2/21/2002	SB-2	6.9	9.8	43230	27.1
2/21/2002	SB-3	6.3	10.0	41160	25.3
2/21/2002	SB-4	6.8	9.7	45510	29.9
2/21/2002	SB-6	6.5	10.1	42400	26.8
3/5/2002	AK-1	6.2	9.0	36750	22.9
3/5/2002	AK-2	6.1	8.9	36740	22.9
3/5/2002	AK-3	5.9	9.1	36620	22.8
3/5/2002	AK-4	5.2	9.0	36450	22.7
3/5/2002	NB-3	6.2	9.3	34940	21.7
3/5/2002	NB-4	6.0	9.4	35470	22.1
3/5/2002	NB-5	5.8	9.0	36800	22.9
3/5/2002	NB-5	5.8	9.0	36800	22.9
3/5/2002	NB-6	5.8	8.7	36940	23.1
3/5/2002	NB-6	5.8	8.7	36940	23.1
3/5/2002	NB-7	6.2	9.9	36290	22.6
3/5/2002	NB-7	6.2	9.9	36290	22.6
3/6/2002	LB-1	5.9	9.4	42070	26.5
3/6/2002	LB-1	5.9	9.4	42070	26.5
3/6/2002	LB-2	6.4	8.9	47200	30.3
3/6/2002	LB-2	6.4	8.9	47200	30.3
3/6/2002	LB-3	5.8	9.4	41800	26.4
3/6/2002	LB-3	5.8	9.4	41800	26.4
3/6/2002	LB-4	5.8	9.6	41070	25.9
3/6/2002	LB-4	5.8	9.6	41070	25.9
3/6/2002	LB-5	5.2	10.7	42690	26.9
3/6/2002	LB-5	5.2	10.7	42690	26.9
3/6/2002	LB-6	5.8	9.6	46360	29.6
3/6/2002	LB-6	5.8	9.6	46360	29.6



**Appendix C.** Water quality data by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 3 of 9)

Date	Station	Temperature (°C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
3/6/2002	PJ-2	6.4	9.7	33630	20.8
3/6/2002	PJ-2	6.4	9.7	33630	20.8
3/6/2002	PJ-3	6.6	9.9	35860	22.4
3/6/2002	PJ-3	6.6	9.9	35860	22.4
3/6/2002	PJ-4	6.6	9.1	41500	26.2
3/6/2002	PJ-4	6.6	9.1	41500	26.2
3/6/2002	PJ-5	6.6	9.2	40100	25.2
3/6/2002	PJ-5	6.6	9.2	40100	25.2
3/6/2002	SB-6	6.3	9.3	41610	26.4
3/6/2002	SB-6	6.3	9.3	41610	26.4
3/7/2002	PJ-1	6.9	9.8	34180	20.9
3/7/2002	PJ-1	6.9	9.8	34180	20.9
3/7/2002	SB-1	6.4	9.4	40040	25.4
3/7/2002	SB-2	6.4	9.3	41640	26.3
3/7/2002	SB-3	6.2	9.6	38590	24.2
3/7/2002	SB-3	6.2	9.6	38590	24.2
3/7/2002	SB-4	6.4	9.5	40540	25.6
3/7/2002	SB-4	6.4	9.5	40540	25.6
3/7/2002	SB-6	7.1	9.0	37550	23.5
3/7/2002	SB-6	7.1	9.0	37550	23.5
3/19/2002	LB-1	6.9	9.2	48329	31.1
3/19/2002	LB-1	6.9	9.2	48329	31.1
3/19/2002	LB-2	6.9	9.2	49910	32.2
3/19/2002	LB-2	6.9	9.2	49910	32.2
3/19/2002	LB-3	7.0	9.4	41700	26.4
3/19/2002	LB-3	7.0	9.4	41700	26.4
3/19/2002	LB-4	7.1	9.3	46530	29.8
3/19/2002	LB-4	7.1	9.3	46530	29.8
3/19/2002	LB-5	7.1	9.7	41900	26.5
3/19/2002	LB-5	7.1	9.7	41900	26.5
3/19/2002	LB-6	7.1	10.6	42090	26.7
3/19/2002	LB-6	7.1	10.6	42090	26.7
3/19/2002	PJ-1	7.0	9.9	35010	21.8
3/19/2002	PJ-1	7.0	9.9	35010	21.8
3/19/2002	PJ-2	6.9	10.1	32670	20.2
3/19/2002	PJ-2	6.9	10.1	32670	20.2
3/19/2002	PJ-3				
3/19/2002	PJ-3				
3/19/2002	PJ-4	7.3	9.1	44940	28.7
3/19/2002	PJ-4	7.3	9.1	44940	28.7
3/19/2002	PJ-5	7.3	9.2	43830	28.0
3/19/2002	PJ-5	7.3	9.2	43830	28.0
3/20/2002	AK-1	7.4	11.5	36150	22.6
3/20/2002	AK-2	7.4	11.2	36080	22.6
3/20/2002	AK-3	7.7	11.3	36130	22.6
3/20/2002	AK-4	8.0	12.1	36490	22.9
3/20/2002	NB-3	7.6	11.3	36050	22.6
3/20/2002	NB-3	7.6	11.3	36050	22.6
3/20/2002	NB-4	7.5	11.0	36230	22.7
3/20/2002	NB-4	7.5	11.0	36230	22.7
3/20/2002	NB-5	7.5	11.1	36500	22.9



**Appendix C.** Water quality data by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 4 of 9)

Date	Station	Temperature (°C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
3/20/2002	NB-5	7.5	11.1	36500	22.9
3/20/2002	NB-6	7.6	11.0	35940	22.5
3/20/2002	NB-7	7.2	10.9	35340	22.1
3/20/2002	NB-7	7.2	10.9	35340	22.1
3/21/2002	SB-1	6.9	9.8	37930	23.8
3/21/2002	SB-1	6.9	9.8	37930	23.8
3/21/2002	SB-2	7.1	9.3	39550	25.0
3/21/2002	SB-2	7.1	9.3	39550	25.0
3/21/2002	SB-3	7.0	9.4	38600	24.3
3/21/2002	SB-3	7.0	9.4	38600	24.3
3/21/2002	SB-4	7.0	9.5	39560	24.9
3/21/2002	SB-4	7.0	9.5	39560	24.9
3/21/2002	SB-5	6.9	9.7	39370	24.8
3/21/2002	SB-5	6.9	9.7	39370	24.8
3/21/2002	SB-6	6.8	8.9	38630	24.3
3/21/2002	SB-6	6.8	8.9	38630	24.3
4/2/2002	LB-1	7.7	8.6	42251	26.9
4/2/2002	LB-1	7.7	8.6	42251	26.9
4/2/2002	LB-2	7.8	8.8	43367	27.7
4/2/2002	LB-2	7.8	8.8	43367	27.7
4/2/2002	LB-3	7.6	10.4	42237	26.9
4/2/2002	LB-3	7.6	10.4	42237	26.9
4/2/2002	LB-4	7.9	8.7	46035	29.6
4/2/2002	LB-4	7.9	8.7	46035	29.6
4/2/2002	LB-5	8.8	9.9	40676	25.8
4/2/2002	LB-5	8.8	9.9	40676	25.8
4/2/2002	LB-6	9.0	10.2	41849	26.6
4/2/2002	LB-6	9.0	10.2	41849	26.6
4/2/2002	PJ-1	8.4	9.4	35440	22.1
4/2/2002	PJ-1	8.4	9.4	35440	22.1
4/2/2002	PJ-2	9.0	9.6	24942	15.1
4/2/2002	PJ-2	9.0	9.6	24942	15.1
4/2/2002	PJ-3	8.5	9.6	28035	17.2
4/2/2002	PJ-3	8.5	9.6	28035	17.2
4/2/2002	PJ-4	8.1	9.1	36237	22.5
4/2/2002	PJ-4	8.1	9.1	36237	22.5
4/2/2002	PJ-5	8.2	9.3	36459	22.8
4/2/2002	PJ-5	8.2	9.3	36459	22.8
4/3/2002	AK-1	9.6	10.2	31975	19.9
4/3/2002	AK-2	9.7	10.3	32850	20.3
4/3/2002	AK-3	9.6	10.2	32740	20.3
4/3/2002	AK-4	11.8	10.6	32144	20.0
4/3/2002	NB-3	10.1	10.3	32750	20.3
4/3/2002	NB-3	10.1	10.3	32750	20.3
4/3/2002	NB-4	10.1	10.3	32750	20.3
4/3/2002	NB-4	10.1	10.3	32750	20.3
4/3/2002	NB-5	9.7	10.3	32002	19.9
4/3/2002	NB-5	9.7	10.3	32002	19.9
4/3/2002	NB-6	9.7	10.3	32002	20.0
4/3/2002	NB-6	9.7	10.3	32002	20.0
4/3/2002	NB-7	9.6	9.9	32358	20.1



**Appendix C.** Water quality data by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 5 of 9)

Date	Station	Temperature (°C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
4/3/2002	NB-7	9.6	9.9	32358	20.1
4/4/2002	SB-1	8.5	9.3	34022	21.3
4/4/2002	SB-1	8.5	9.3	34022	21.3
4/4/2002	SB-2	9.0	9.3	32993	20.5
4/4/2002	SB-2	9.0	9.3	32993	20.5
4/4/2002	SB-3	8.5	9.5	30956	19.1
4/4/2002	SB-3	8.5	9.5	30956	19.1
4/4/2002	SB-4	8.3	9.5	33229	20.7
4/4/2002	SB-4	8.3	9.5	33229	20.7
4/4/2002	SB-5	8.2	9.6	34986	21.9
4/4/2002	SB-5	8.2	9.6	34986	21.9
4/4/2002	SB-6	8.5	9.6	34168	21.3
4/4/2002	SB-6	8.5	9.6	34168	21.3
4/16/2002	LB-1	11.1	9.1	44710	28.7
4/16/2002	LB-1	11.1	9.1	44710	28.7
4/16/2002	LB-2	10.0	9.2	46530	30.1
4/16/2002	LB-2	10.0	9.2	46530	30.1
4/16/2002	LB-3	11.3	8.8	42260	26.9
4/16/2002	LB-3	11.3	8.8	42260	26.9
4/16/2002	LB-4	10.7	9.3	43340	27.6
4/16/2002	LB-4	10.7	9.3	43340	27.6
4/16/2002	LB-5	11.5	9.6	40990	25.9
4/16/2002	LB-5	11.5	9.6	40990	25.9
4/16/2002	LB-6	11.1	9.1	41640	26.4
4/16/2002	LB-6	11.1	9.1	41640	26.4
4/16/2002	PJ-2	12.0	9.1	29630	18.4
4/16/2002	PJ-2	12.0	9.1	29630	18.4
4/16/2002	PJ-3	11.7	9.2	31340	19.6
4/16/2002	PJ-3	11.7	9.2	31340	19.6
4/16/2002	SB-5	11.3	9.1	39520	25.2
4/16/2002	SB-5	11.3	9.1	39520	25.2
4/16/2002	SB-6	11.2	9.0	42670	27.1
4/16/2002	SB-6	11.2	9.0	42670	27.1
4/17/2002	AK-1	13.0	9.1	33750	21.1
4/17/2002	AK-2	13.3	9.0	33420	20.8
4/17/2002	AK-3	13.7	8.8	33200	20.8
4/17/2002	AK-4	15.5	8.1	32980	20.5
4/17/2002	NB-3	14.1	9.0	32800	20.6
4/17/2002	NB-3	14.1	9.0	32800	20.6
4/17/2002	NB-4	14.0	9.0	32850	20.7
4/17/2002	NB-4	14.0	9.0	32850	20.7
4/17/2002	NB-5	13.5	9.1	32850	20.7
4/17/2002	NB-5	13.5	9.1	32850	20.7
4/17/2002	NB-6	13.3	9.0	32010	20.1
4/17/2002	NB-6	13.3	9.0	32010	20.1
4/17/2002	NB-7	14.0	9.3	32700	20.5
4/17/2002	NB-7	14.0	9.3	32700	20.5
4/17/2002	PJ-4	12.0	8.8	39070	24.7
4/17/2002	PJ-4	12.0	8.8	39070	24.7
4/17/2002	PJ-5	11.7	9.2	42040	26.5
4/17/2002	PJ-5	11.7	9.2	42040	26.5



**Appendix C.** Water quality data by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 6 of 9)

Date	Station	Temperature (°C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
4/18/2002	PJ-1	12.6	9.1	30295	18.6
4/18/2002	PJ-1	12.6	9.1	30295	18.6
4/18/2002	SB-1	11.7	8.9	33916	21.1
4/18/2002	SB-1	11.7	8.9	33916	21.1
4/18/2002	SB-2	11.5	9.0	30897	19.0
4/18/2002	SB-2	11.5	9.0	30897	19.0
4/18/2002	SB-3	12.5	8.7	31724	19.6
4/18/2002	SB-4	11.5	8.9	39278	24.9
4/18/2002	SB-4	11.5	8.9	39278	24.9
4/30/2002	LB-1	10.3	8.4	43680	28.0
4/30/2002	LB-1	10.3	8.4	43680	28.0
4/30/2002	LB-2				
4/30/2002	LB-2				
4/30/2002	LB-3	10.1	8.0	38180	23.7
4/30/2002	LB-3	10.1	8.0	38180	23.7
4/30/2002	LB-4	10.3	8.1	41720	26.7
4/30/2002	LB-4	10.3	8.1	41720	26.7
4/30/2002	LB-5	10.2	8.3	41620	26.4
4/30/2002	LB-5	10.2	8.3	41620	26.4
4/30/2002	LB-6	10.3	8.1	41020	26.2
4/30/2002	LB-6	10.3	8.1	41020	26.2
4/30/2002	PJ-1	11.0	7.6	39640	24.9
4/30/2002	PJ-1	11.0	7.6	39640	24.9
4/30/2002	PJ-2	11.3	7.5	33520	21.0
4/30/2002	PJ-2	11.3	7.5	33520	21.0
4/30/2002	PJ-3	12.1	7.8	33260	20.8
4/30/2002	PJ-3	12.1	7.8	33260	20.8
4/30/2002	PJ-4	11.0	7.3	39850	25.3
4/30/2002	PJ-4	11.0	7.3	39850	25.3
4/30/2002	PJ-5	11.0	7.7	39650	25.2
4/30/2002	PJ-5	11.0	7.7	39650	25.2
5/1/2002	AK-1	11.9	7.1	32400	20.2
5/1/2002	AK-2	11.7	7.0	32650	20.4
5/1/2002	AK-3	12.4	7.4	32740	20.5
5/1/2002	AK-4	13.5	7.8	31920	20.0
5/1/2002	NB-3	13.1	7.5	30700	19.1
5/1/2002	NB-3	13.1	7.5	30700	19.1
5/1/2002	NB-4	13.1	7.5	30700	19.1
5/1/2002	NB-4	13.1	7.5	30700	19.1
5/1/2002	NB-5	11.8	7.4	30820	19.2
5/1/2002	NB-5	11.8	7.4	30820	19.2
5/1/2002	NB-6	12.1	7.5	31570	19.7
5/1/2002	NB-6	12.1	7.5	31570	19.7
5/1/2002	NB-7	12.5	7.5	31230	19.4
5/1/2002	NB-7	12.5	7.5	31230	19.4
5/2/2002	SB-1	11.2	7.6	35610	22.4
5/2/2002	SB-1	11.2	7.6	35610	22.4
5/2/2002	SB-2	10.7	7.5	38240	24.2
5/2/2002	SB-2	10.7	7.5	38240	24.2
5/2/2002	SB-3	11.0	7.7	34930	21.9
5/2/2002	SB-3	11.0	7.7	34930	21.9

**Appendix C.** Water quality data by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 7 of 9)

Date	Station	Temperature (°C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
5/2/2002	SB-4	11.0	7.7	36420	23.0
5/2/2002	SB-4	11.0	7.7	36420	23.0
5/2/2002	SB-5	11.6	8.3	26740	16.4
5/2/2002	SB-5	11.6	8.3	26740	16.4
5/2/2002	SB-6	11.0	7.8	34670	21.9
5/2/2002	SB-6	11.0	7.8	34670	21.9
5/14/2002	AK-1	13.9	7.3	28910	17.8
5/14/2002	AK-2	13.8	7.4	28620	17.7
5/14/2002	AK-3	14.2	7.2	28600	17.7
5/14/2002	AK-4	15.2	6.0	24080	14.7
5/14/2002	NB-3	13.7	7.4	24080	14.8
5/14/2002	NB-3	13.7	7.4	24080	14.8
5/14/2002	NB-4	13.7	7.4	24800	14.8
5/14/2002	NB-4	13.7	7.4	24800	14.8
5/14/2002	NB-5	13.5	7.6	29220	18.1
5/14/2002	NB-5	13.5	7.6	29220	18.1
5/14/2002	NB-6	13.5	7.6	29220	18.1
5/14/2002	NB-7	14.0	7.6	26350	16.2
5/14/2002	PJ-4	12.2	7.1	33150	20.8
5/14/2002	PJ-4	12.2	7.1	33150	20.8
5/14/2002	PJ-5	13.4	8.1	33430	20.9
5/14/2002	PJ-5	13.4	8.1	33430	20.9
5/15/2002	PJ-1	14.0	7.8	23690	14.5
5/15/2002	PJ-1	14.0	7.8	23690	14.5
5/15/2002	PJ-2	13.6	8.0	26360	16.2
5/15/2002	PJ-2	13.6	8.0	26360	16.2
5/15/2002	PJ-3	13.7	8.1	26160	16.1
5/15/2002	PJ-3	13.7	8.1	26160	16.1
5/15/2002	SB-1	13.5	7.9	27810	17.0
5/15/2002	SB-1	13.5	7.9	27810	17.0
5/15/2002	SB-2	13.0	7.5	28240	17.3
5/15/2002	SB-2	13.0	7.5	28240	17.3
5/15/2002	SB-3	12.9	7.4	28270	17.4
5/15/2002	SB-3	12.9	7.4	28270	17.4
5/15/2002	SB-4	13.1	8.1	29520	18.3
5/15/2002	SB-5	12.9	7.2	29260	18.2
5/15/2002	SB-5	12.9	7.2	29260	18.2
5/15/2002	SB-6	13.0	7.4	29340	18.2
5/15/2002	SB-6	13.0	7.4	29340	18.2
5/16/2002	LB-1	13.2	7.8	41520	26.7
5/16/2002	LB-1	13.2	7.8	41520	26.7
5/16/2002	LB-2	12.2	8.2	42220	27.2
5/16/2002	LB-2	12.2	8.2	42220	27.2
5/16/2002	LB-3	14.0	8.8	32720	20.4
5/16/2002	LB-3	14.0	8.8	32720	20.4
5/16/2002	LB-4	13.2	8.1	39650	25.2
5/16/2002	LB-4	13.2	8.1	39650	25.2
5/16/2002	LB-5	13.0	8.6	36630	23.4
5/16/2002	LB-5	13.0	8.6	36630	23.4
5/16/2002	LB-6	13.1	8.7	37700	23.9
5/16/2002	LB-6	13.1	8.7	37700	23.9



**Appendix C.** Water quality data by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 8 of 9)

Date	Station	Temperature (°C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
6/4/2002	AK-1	17.6	6.8	32097	-999.0
6/4/2002	AK-2	18.4	7.0	29760	-999.0
6/4/2002	AK-3	18.2	6.9	30938	-999.0
6/4/2002	AK-4	19.1	6.2	29550	-999.0
6/4/2002	NB-3	19.2	6.2	27910	-999.0
6/4/2002	NB-4	19.2	6.2	27910	-999.0
6/4/2002	NB-5	17.5	6.4	33010	-999.0
6/4/2002	NB-6	17.6	6.9	32450	-999.0
6/4/2002	NB-7	14.5	7.3	28890	-999.0
6/4/2002	PJ-2	17.6	7.6	28010	-999.0
6/4/2002	PJ-3	19.0	8.7	22640	-999.0
6/5/2002	LB-1	15.8	8.7	38270	-999.0
6/5/2002	LB-2	12.4	7.3	45500	-999.0
6/5/2002	LB-3	15.8	6.4	38850	-999.0
6/5/2002	LB-4	13.8	7.0	43260	-999.0
6/5/2002	LB-5	15.9	8.9	39070	-999.0
6/5/2002	LB-6	13.9	6.0	43480	-999.0
6/5/2002	PJ-5	16.4	7.2	35930	-999.0
6/5/2002	SB-5	16.4	7.2	35870	-999.0
6/5/2002	SB-6	15.5	7.7	39590	-999.0
6/6/2002	PJ-1	16.2	7.5	35740	-999.0
6/6/2002	PJ-4	18.6	9.9	29370	-999.0
6/6/2002	SB-1	16.0	7.8	37120	-999.0
6/6/2002	SB-2	15.5	7.4	38220	-999.0
6/6/2002	SB-3	15.4	8.7	40000	-999.0
6/6/2002	SB-4	17.1	8.4	32950	-999.0
6/18/2002	AK-1	19.8	5.1	28280	17.5
6/18/2002	AK-2	19.7	4.9	29630	18.4
6/18/2002	AK-3	19.8	5.1	29690	18.4
6/18/2002	AK-4	20.6	4.9	29120	18.1
6/18/2002	NB-3	21.1	4.7	24500	14.9
6/18/2002	NB-4	21.1	4.7	24500	14.9
6/18/2002	NB-5	20.0	5.0	28930	17.9
6/18/2002	NB-6	19.6	5.1	29970	18.6
6/18/2002	NB-7	20.8	5.2	27600	17.0
6/18/2002	PJ-2	19.5	5.5	26860	16.5
6/18/2002	PJ-3	19.3	5.5	28870	18.0
6/19/2002	LB-1	19.0	5.7	33890	21.3
6/19/2002	LB-2	18.6	6.0	39090	24.9
6/19/2002	LB-3	19.6	6.9	35940	22.8
6/19/2002	LB-4	18.6	6.1	39700	25.4
6/19/2002	LB-5	18.7	5.5	37000	23.5
6/19/2002	LB-6	18.8	4.9	38800	24.7
6/19/2002	PJ-1	20.0	5.5	26470	16.2
6/19/2002	SB-5	19.4	5.4	32080	20.1
6/19/2002	SB-6	19.0	5.4	35650	22.5
6/20/2002	PJ-4	18.9	5.5	35300	22.3
6/20/2002	PJ-5	19.0	5.6	35620	22.6
6/20/2002	SB-1	19.0	5.2	35250	22.3
6/20/2002	SB-2	19.0	5.0	35680	22.5
6/20/2002	SB-3	19.4	5.4	32510	20.4



**Appendix C.** Water quality data by date and station sampled collected during the 2001-2002 Aquatic Biological Sampling Program. (page 9 of 9)

Date	Station	Temperature (°C)	DO (mg/L)	Conductivity (SPC@25)	Salinity (ppt)
6/20/2002	SB-4	19.2	5.2	35020	22.1
7/9/2002	AK-1	21.9	5.7	35770	22.6
7/9/2002	AK-2	22.2	5.9	35470	22.4
7/9/2002	AK-3	22.5	5.8	35930	22.3
7/9/2002	AK-4	23.4	5.7	34700	21.8
7/9/2002	NB-3	23.7	6.0	34070	21.7
7/9/2002	NB-4	23.8	6.0	33990	21.4
7/9/2002	NB-5	21.9	5.7	35690	22.5
7/9/2002	NB-6	21.1	5.9	36970	23.5
7/9/2002	NB-7	22.7	6.3	25690	22.5
7/9/2002	PJ-4	18.5	4.6	42100	27.1
7/10/2002	LB-2	18.5	6.9	43900	28.4
7/10/2002	LB-3	18.9	6.2	42720	27.5
7/10/2002	LB-4	18.3	6.8	43950	28.4
7/10/2002	LB-5	19.1	6.3	42220	27.2
7/10/2002	LB-5	18.4	6.6	44950	29.2
7/10/2002	LB-6	19.1	5.5	42020	26.7
7/10/2002	PJ-1	20.8	5.6	37730	24.0
7/10/2002	PJ-5	19.4	5.6	39880	25.5
7/10/2002	SB-3	20.9	5.8	38460	24.5
7/10/2002	SB-5	19.3	6.3	40690	26.1
7/10/2002	SB-6	20.8	6.4	37910	24.1
7/11/2002	PJ-2	19.9	5.5	38040	24.3
7/11/2002	PJ-3	20.2	5.5	37840	24.1
7/11/2002	SB-1	19.7	5.1	40270	25.8
7/11/2002	SB-2	19.6	5.0	40810	26.2
7/11/2002	SB-4	19.5	5.4	40610	26.0

