

**ENTRAINMENT AND IMPINGEMENT STUDIES PERFORMED
AT SCHILLER GENERATING STATION FROM SEPTEMBER
2006 THROUGH SEPTEMBER 2007**

**Prepared for
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1.0 INTRODUCTION

The New England Regional office of the United States Environmental Protection Agency ("EPA") sent an information request letter ("308 Letter") to Public Service Company of New Hampshire ("PSNH") on 31 October 2007. In this 308 Letter, EPA requested certain information regarding Schiller Station's cooling water intake structures ("CWIS's") in connection with PSNH's application for re-issuance of the Station's National Pollutant Discharge Elimination System ("NPDES") Permit No. NH0001473 ("the NPDES Permit").

PSNH owns and operates Schiller Station in Portsmouth, New Hampshire. The Station, which has three generating units ("Unit 4", "Unit 5", and "Unit 6") currently in service, is located on the southwestern (New Hampshire) bank of the Piscataqua River (Figure 1-1), which forms the boundary between coastal New Hampshire and Maine. Unit 3 was removed from service in 1991. PSNH recently completed the Northern Wood Power Project at Schiller Station by replacing the existing 50 MWe coal-burning Unit 5 boiler with a high efficiency fluidized bed wood-fired boiler that came into full scale operation during December 2006.

The primary activity of Schiller Station is the generation of electric power. The Station generates at a rated combined capacity of 150 MWe among its three active generating units and withdraws once-through cooling water from two separate cooling water intake structures ("CWISs"), which are located in separate bulkheads at the shoreline of the Piscataqua River. The Unit 3 and Unit 4 CWIS is located in an intake tunnel approximately 30 ft offshore from the north bulkhead referred to as Screen House #1, and the Unit 5 and Unit 6 CWIS is located within the south bulkhead (Screen House #2). The two CWISs at Schiller Station have a combined total design intake flow in excess of 50 million gallons per day ("MGD") and use at least 25-percent of the water withdrawn exclusively for cooling purposes. The current expected operating mode for Schiller Station over the next ten years is as a base-loaded facility at a capacity utilization rate in excess of 15-percent.

The final regulations implementing §316(b) of the CWA at existing electricity-generating stations cooling water intake structures (the "Phase II Regulations"), among other things, established a working definition of baseline conditions and performance standards for the reduction of impingement mortality by 80 to 95 percent and, under certain circumstances, for the reduction of entrainment by 60 to 90 percent (See 69 Fed. Reg. 41576 dated July 9, 2004). The applicability of these performance standards was to be determined by several factors, including the type of water body from which a plant withdraws cooling water and the plant's capacity utilization factor. Under the Phase II Regulations, applicable performance standards could be met by design and construction technologies, operational measures, restoration measures, or some combination of these compliance alternatives. In a ruling issued January 25, 2007, the U.S. Court of Appeals for the Second Circuit remanded several key provisions of the Phase II Regulations. A memorandum from Benjamin Grumbles of EPA dated March 20, 2007 directed EPA to prepare NPDES permits for Phase II Facilities like Schiller Station based on Best Professional Judgment (BPJ) as a result of this ruling.

The now suspended Phase II Regulations required submission of a Proposal for Information Collection ("PIC") in certain circumstances. In a December 30, 2004 letter to PSNH, the EPA requested submission of the PIC for Schiller Station "as expeditiously as practicable and prior to the start of biological and/or information collection activities, but no later than October 7, 2006." PSNH complied with EPA's request, and submitted a PIC for Schiller Station in October 2006 (Normandeau

2006a). Seasonal impingement and entrainment studies at Schiller Station began in late August 2006 and continued for 57 weeks through late-September 2007.

This report describes the results of the recent entrainment and impingement sampling programs conducted as specified in the PIC for Schiller Station. Attachment B of the 308 Letter for Schiller Station made the following requests (shown in quotes) for impingement and entrainment data analysis from the studies described in the PIC (note that **bold** text following each request from EPA specifies where the information can be found in this report):

"2. Impingement Data Analysis

Impingement data collected at Schiller Station shall undergo the following analysis and include the identified supporting information:

- a. The estimated number of fish (juveniles and adults) of each species impinged per calendar month, and an annual equivalent total for each species, based on Schiller Station's typical recent water withdrawal rate and operations for each calendar month. (**Appendix C, Table 3; Section 4.4; Tables 4-6 & 4-7**)
- b. The estimated number of "adult equivalent" fish of each species lost to impingement for each calendar month, and an annual adult equivalent total for each species, based on Schiller Station's typical recent water withdrawal rate and operations for each calendar month. (**Appendix C, Table 5; Section 4.5; Tables 4-16, 4-17, 4-18, & 4-19**)
- c. All assumptions, methods, and calculations for each of the above estimates of impingement effects. (**Sections 2.3.5, 2.3.6, & 2.3.7**)
- d. A justification that collection of one year of impingement data reflects an appropriated characterization of overall impingement at the Schiller Station CWIS, including seasonal and year-to-year variation in impingement." (**Section 6.3**)

"2. Entrainment Data Summary

Entrainment data collected at Schiller Station shall be summarized in the following manner:

- a. Number of eggs of each fish species collected at each sampling location for each sampling event. (**Appendix B, Table 2**)
- b. Number of larvae of each fish species collected at each sampling location for each sampling event. (**Appendix B, Table 2**)
- c. Duration of each sampling event (in hours). (**Appendix B, Table 1**)
- d. The location and sampling method. (**Section 2.1**)
- e. The in-stream temperature(s) measured during the sampling event." (**Appendix B, Table 1**)

"3. Entrainment Data Analysis

Entrainment data collected at Schiller Station shall undergo the following analysis and include the identified supporting information:

- a. The estimated average number of eggs entrained per calendar month for each species, and the estimated annual total number of eggs entrained for each species, based on

Schiller Station's typical recent water withdrawal rate for each calendar month;
(Appendix B, Table 4; Section 3.4; Tables 3-8 & 3-9)

- b. The estimated average number of larvae entrained per calendar month for each species, and the estimated annual total number of larvae entrained for each species, based on Schiller Station's typical recent water withdrawal rate for each calendar month;
(Appendix B, Table 4; Section 3.4; Tables 3-8 & 3-9)
- c. The estimated number of "adult equivalent" fish of each species lost to entrainment for each calendar month, and an annual adult equivalent total for each species, based on Schiller Station's recent water withdrawal rate and operations for each calendar month;
(Appendix B, Table 6; Section 3.5; Tables 3-12 & 3-13)
- d. An estimate of the percentage of eggs and larvae lost to entrainment compared to the density of eggs and larvae in the Piscataqua River for each week of sampling; (Section 6.1)
- e. A justification that collection of one year of entrainment data reflects an appropriate characterization of overall entrainment at Schiller Station CWIS, including seasonal and year-to-year variation; and (Section 6.2)
- f. All assumptions, methods, and calculations for each of these estimates of entrainment effects." (Sections 2.3.3, 2.3.4, & 2.3.7)

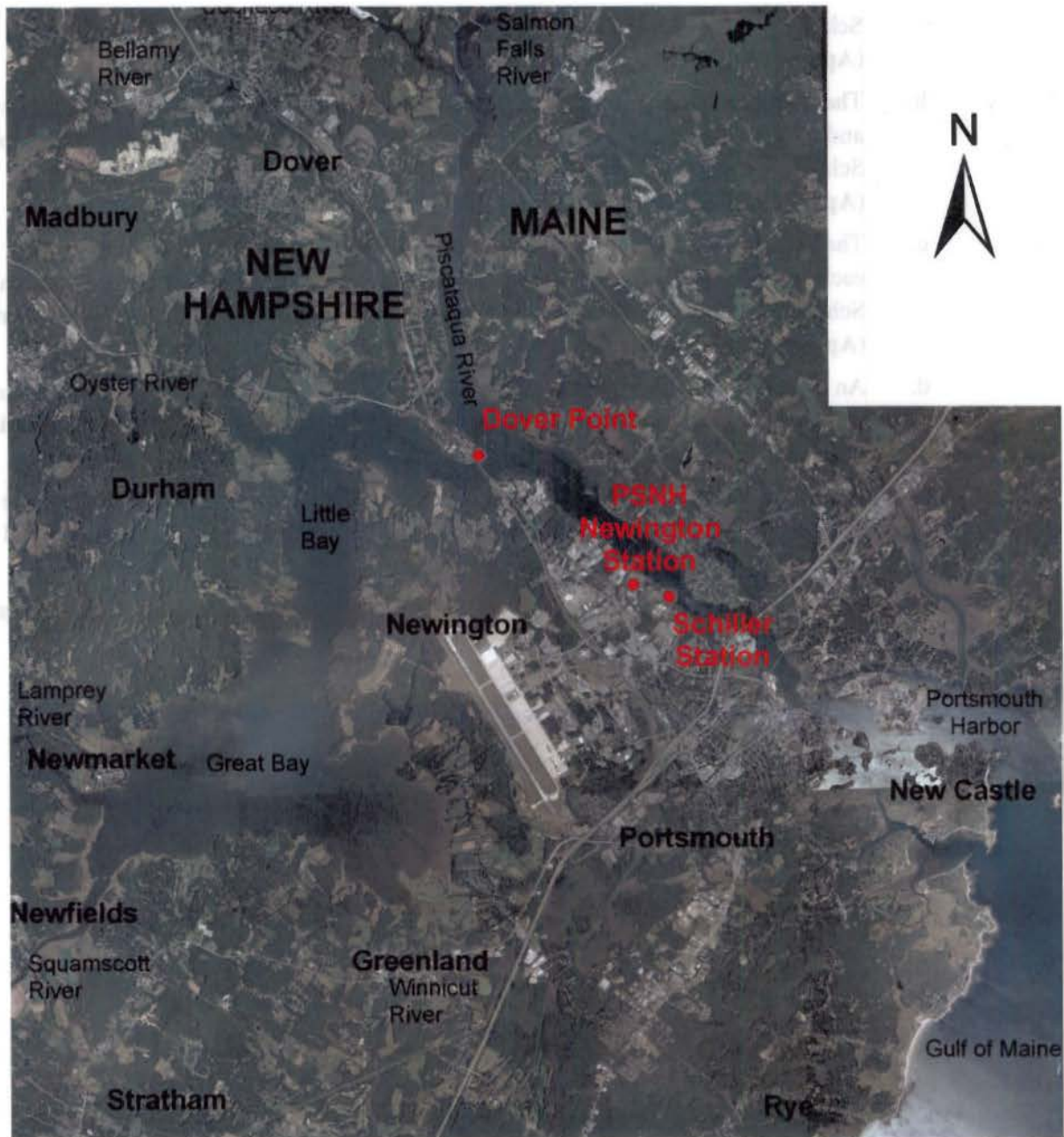


Figure 1-1. Aerial view of the Great Bay Estuary showing major tributaries, surrounding towns and the relative locations of PSNH's Newington and Schiller Stations.

2.0 METHODS

The Schiller Station entrainment and impingement studies were conducted following the policies and procedures specified in the Quality Assurance Plan and Standard Operating Procedures for Entrainment (Entrainment SOP, Normandeau 2006b) and Impingement (Impingement SOP, Normandeau 2006c) as summarized below.

2.1 Entrainment Sampling

Entrainment sampling was conducted at Screen House #2 (Unit 5 and Unit 6, Figure 2-1) of Schiller Station from late-August, 2006 through September, 2007. Screen House # 1 (Unit 4, Figure 2-1) was not sampled for entrainment at Schiller Station due to the absence of access for sampling. Entrainment data obtained from sampling at Screen House # 2 (Unit 5 and Unit 6) was applied to Screen House # 1 (Unit 4) because the Phase II Regulations allowed such use of data from a comparable facility for estimating the calculation baseline. See 69 Fed. Reg. 41684 ("The calculation baseline may be estimated using: ... historical impingement mortality and entrainment data from your facility or from another facility with comparable design, operational, and environmental conditions"). Entrainment sampling at Schiller Station began during the week of 26 August 2006 on days when at least one circulating water pump was operating at the Screen House #2 CWIS for cooling associated with power generation or other plant operations, as specified in the entrainment SOP (Normandeau 2006b).

The entrainment sampling protocol for Schiller Station was a seasonally-stratified fixed date design, which is consistent with numerous entrainment programs both completed or on-going at CWISs located in estuaries throughout the United States (EPRI 2005a). Entrainment sampling was performed on one sampling day per week when the plant was operating for 13 consecutive weeks during June 2007 through August 2007, and again for 13 consecutive weeks during January 2007 through March 2007 to coincide with the primary and secondary seasonal peaks ichthyoplankton abundance (eggs and larvae) in the Piscataqua River nearfield area (NAI 1979, MRI 2004). Entrainment sampling was conducted on one day every two weeks when the plant was operating during the 26 remaining weeks of lower seasonal abundance in April 2007 through May 2007 and September 2006 through December 2006. The resulting seasonally stratified entrainment sampling design collected entrainment samples from 41 total weeks (26 weekly plus 15 biweekly samples) during 13 consecutive months. Operation was defined as having at least one circulating water pump at the Schiller Station Screen House #2 CWIS running for part or all of one collection interval. Table 2-1 describes the achieved sampling design for entrainment sampling at Screen House #2 at Schiller Station.

Entrainment samples were collected through a 0.300 mm mesh plankton net suspended in a barrel sampler located outside of the Schiller Station Screen House #2 (Figure 2-2). Entrainment samples were collected from a 4-inch raw-water tap drawing un-chlorinated ambient cooling water at low pressure (about 15 psi) from a common service water feed line that taps into both the Unit 5 and Unit 6 circulating water pumps on the condenser side of the pumps. Sampling the condenser feed in this manner allowed for entrainment samples to be taken if either the Unit 5 circulating water pump or the Unit 6 circulating water pump were in operation, or if both were operating. No attempt was made to separate ichthyoplankton or macrocrustacean larvae samples between Unit 5 and Unit 6, and the resulting density data were applied to Unit 4 (Screen House #1), Unit 5, and Unit 6 (both in Screen

House #2) of Schiller Station during data analysis. Weekly or biweekly entrainment sampling consisted of collecting four separate 100 m³ entrainment samples taken at approximately six-hour intervals to represent one consecutive 24-hour period. Each 100 m³ entrainment sample required about 148 minutes to complete. Entrainment sampling was scheduled to occur from approximately 0800 on day 1 through 0759 on the next day (day 2). The same 24-hour period was sampled during each scheduled week, and the four entrainment samples were taken at approximately the same beginning and ending times ($\pm$ one hour) during each 24-hour period. This design provided 162 valid entrainment samples for the year.

An in-line flowmeter (Model: Blue-White Industries F-2000) was used to record and measure water flow through the entrainment tank until a sample volume of 100m³ was obtained. For 25 out of the 162 valid entrainment samples where the flowmeter had malfunctioned, flow was calculated for each sample using a timed volumetric method to insure that a known sample volume of at least 100m³ was filtered. These 25 samples are identified in Table 3 of Appendix D of this report.

Samples were labeled with a unique number, date and time of collection, preserved in 10% buffered-formalin and stored until processing in the laboratory. Water temperature ($^{\circ}$ C), salinity (ppt) and dissolved oxygen (mg/L) were recorded from inside the entrainment tank at the beginning and end of each entrainment sample.

2.1.1 Laboratory Processing of Entrainment Samples

Preserved entrainment samples (10% buffered formalin) were processed in Normandeau's biological laboratory in Bedford, New Hampshire. The ichthyoplankton and macrocrustaceans (crabs and lobster) in each entrainment abundance sample were processed to identify individuals to the lowest distinguishable taxon, generally species and enumerated by life stage as specified in the Entrainment SOP (Normandeau 2006b). Each sample with high abundances was subsampled in the laboratory using a plankton splitter such that a minimum of 200 fish eggs and larvae were analyzed. If numbers of eggs and larvae were low but the amount of detritus in the sample was high (more than 400 ml settled volume) then a maximum of one-half of the sample was sorted. Ichthyoplankton (except winter flounder) were enumerated into the following life stages: eggs, yolk-sac larvae, post-yolk-sac larvae, and juveniles. Winter flounder were identified and enumerated into five life stages (1-5) using the criteria developed for Millstone Station in Long Island Sound (Dominion Resources Services, Inc. 2007). Lobster larvae were identified and enumerated into four life stages (1-4) according to the criteria of Herrick (1895). Crab larvae were identified and enumerated into three life stages (zoea, megalops, and juvenile). The total length to the nearest 0.1 mm was measured for up to 30 individuals of each ichthyoplankton life stage (except eggs) per sample. If more than 30 ichthyoplankton larvae were present in a sample, a random selection of 30 specimens was measured.

The sorted contents of all entrainment samples will be retained in storage for one year after this report has been delivered to the resource agencies.

Quality control (QC) inspections were performed for sorting, identification, life-stage determination and enumeration as specified in the Entrainment SOP (Normandeau 2006b). Items were inspected using a QC procedure derived from MIL-STD (military-standard) 1235B (single and multiple level continuous sampling procedures and tables for inspection by attributes) to achieve a 10 percent or better AOQL (Average Outgoing Quality Limit). The QC procedure used was the CSP-1 continuous sampling plan, which was conducted in two modes as follows:

Mode 1. Reinspect one hundred percent of the samples until “i” consecutive samples passed.

- **Mode 2.** After “i” consecutive samples have passed QC reinspection, randomly choose (using a random numbers table) the fraction “f” of the samples for reinspection. If any QC sample fails then return to Mode 1.

For this application of CSP-1, $i=8$ and $f=1/7$, because the total number of samples analyzed by an individual was less than 500.

Within the sort QC process, a sample was considered defective if the sorter failed to remove 10 percent of the total organisms in the sample (or subsample). Percent error was calculated as follows (where “QC count” denotes the number missed by the sorter):

$$\% \text{ error} = 100\% \times \text{QC count} / (\text{sorter's count} + \text{QC count})$$

When the total count (sorter's plus QC) was ≤ 20 , then the sample was considered defective only if the sorter missed more than two organisms.

Within the species identification, life stage determination and counting QC processes, a sample was considered defective if an error of 10 percent or more was made in identifying, assigning a life stage, or counting any species. In determining whether a sample was defective, analyzer and QC results were compared within each taxon/life stage combination.

For each taxon (or for a life stage within a taxon) the percent error was calculated as follows (except where the QC count is ≤ 20 , the percent error was considered to be zero if analyzer and QC counts differ by no more than two organisms):

$$\% \text{ error} = 100\% \times | \text{analyzer count} - \text{QC count} | / \text{QC count}$$

A sample with a percent error of greater than or equal to 10% for any life stage for any taxon was considered defective.

For each defective sample, a resolution was determined in which a third person reanalyzed the sample (resolution value). The error for each species and life stage was then calculated using the resolution counts as the divisor. This was done for both identification and QC counts:

$$\% \text{ error} = 100\% \times | \text{identifier count} - \text{resolution count} | / \text{resolution count}$$

$$\% \text{ error} = 100\% \times | \text{QC count} - \text{resolution count} | / \text{resolution count}$$

If the resolution vs. identifier error was < 10 percent, the sample passed. If they were not, the sample failed and identifier counts were replaced by QC counts for all cases, provided the QC vs. resolution error was < 10 percent. If the resolution vs. identifier and the resolution vs. QC errors were both 10 percent or more, the sample was thoroughly reviewed by all three people and the identifier's sample processing did not continue until agreement was reached on the identification of the sample. Subsequent samples were reanalyzed by the QC person until eight consecutive samples passed.

A summary of this laboratory QC process and the results for entrainment sampling can be found in Appendix D of this report.

2.1.2 Entrainment Survival Studies

Entrainment survival studies were performed monthly at Schiller Station Screen House #2 to determine the survival of entrained ichthyoplankton and macrocrustacean larvae that had passed into the condenser cooling system through the CWIS as specified in the Entrainment SOP (Normandeau 2006b). Test dates for test and control collections of fish and macrocrustacean larvae for the evaluation of latent survival are presented in Table 2-2. Entrainment survival samples were collected using a barrel-type reverse flow entrainment sampler (modified from EA 1982). The entrainment survival sampler consisted of two nested cylindrical tanks and was fitted at the bottom with a funnel that tapered and protruded through the floor of the outer tank (Figure 2-3). Each entrainment survival sample was collected after one hour of sampling by drawing the concentrated sample through the section of tubing passing out of the bottom of the outer tank. The walls of the inner tank were covered with 0.300 mm mesh Nitex plankton netting. The supply water outlet was oriented at a tangential angle to the inner tank so that the incoming water would swirl slowly to disperse the incoming energy throughout the tank. In addition, the swirling motion caused solids (i.e. eggs and larvae) to concentrate towards the center of the tank so that they were not subjected to abrasion against the netting covering the walls of the inner tank. The water level in the barrel was maintained by an overflow system so that the water velocity of the supply line was dispersed over the entire inner tank, minimizing the possibility of net abrasion of ichthyoplankton. Supply water was terminated and the stand pipe was removed, allowing the tank to drain while the sample was passively drained down within the Nitex netting and concentrated within the bottom funnel. The sample was then drained from the bottom funnel through a ball valve and into sorting trays for processing.

In addition to the entrainment survival sampling tank at Screen House #2 of Schiller Station, on entrainment survival test dates, a smaller version of the tank (same net and inner tank dimensions but without the legs and platform required for the tank to stand freely on land) was suspended from a boom off of the north end of the CWIS at nearby Newington Station (Figure 2-4). Water was drawn into this control tank by pumping in a reverse-flow direction to provide an equipment control so that the effects of being drawn into the tank and swirled through the survival collection process could be quantified to allow adjustment (removal) of the sampling mortality from the total entrainment mortality (sampler plus CWIS) observed from the samples collected concurrently in the water from the condenser supply line at Screen House #2 of Schiller Station.

The entrainment survival studies were staffed continuously during the collection and observation periods, and sufficient volume of water was filtered through the entrainment collection device to insure that at least 200 fish eggs, fish larvae, and macro-crustacean larvae (in aggregate) were collected and available for the initial (0-hour) survival observations, and at least 100 of these were available for latent (24-hour) survival observations, or 8 hours of sampling has occurred. These entrainment survival samples were sorted in the field into six categories (initial alive, initial stunned, initial dead, latent alive, latent stunned and latent dead) and observed in the field for entrainment.

2.2 Impingement Sampling

Impingement sampling was conducted at Schiller Station Units 4, 5 and 6 from 31 August 2006 through 27 September 2007. The impingement sampling protocol for Schiller Station was based on a fixed-date design with uniform sampling intensity throughout the year, which is consistent with numerous impingement programs both completed or on-going at CWIS's located on estuaries throughout the United States. Separate impingement samples were collected from the traveling

screens servicing each of Schiller Stations three generating units (Unit 4, Unit 5, and Unit 6). Impingement sampling was conducted during one 24-hour period each week at Units 4, 5, and 6 of Schiller Station for 57 consecutive weeks as specified in the Impingement SOP (Normandeau 2006c). Impingement samples were only collected when the CWIS for the generating unit was operating. On the selected impingement sampling day, four consecutive six-hour impingement samples were collected to represent one 24-hour period from 0800 on day 1 through 0759 on the next day (day 2) for each generating unit. The four six-hour impingement collections were taken at approximately the same beginning and ending times ($\pm$ one hour) during each 24-hour period. Operation of the CWIS was defined as having at least one circulating water pump at each unit of Schiller Station CWIS running for one or more hours during the six-hour collection interval. This design provided 205 valid six-hour impingement samples at Unit 4, 217 valid six-hour impingement samples at Unit 5 and 205 valid six-hour impingement samples at Unit 6, which were then combined into 24-hour samples by unit.

Tables 2-3, 2-4, and 2-5 describe the achieved sampling design for impingement sampling at Units 4, 5 and 6. In addition, the dates of collection efficiency tests are noted along with the associated weeks to which their results were applied.

2.2.1 Impingement Sampling Procedures

Impingement sampling for Schiller Station was conducted by placing an aluminum basket made from stainless steel wire mesh that was the same as the traveling screens (3/8 inch square mesh) into the common fish and debris return sluice to catch all of the fish and debris washed off of the operating traveling screens in each six-hour collection interval before this material flowed back into the Piscataqua River as specified in the Impingement SOP (Normandeau 2006c). The sampling point for Screen House #1 (Unit 4) was located just prior to where the fish and debris return sluice exits the screen house sluice near the south side of the screen house. The sampling point for Screen House #2 (Unit 5 and Unit 6) was located just prior to where the fish and debris return sluice exits the screen house sluice near the north side of the screen house. The baskets were placed in sampling position and removed using a davit and chainfall installed specifically for impingement sampling.

Quality control for impingement sample processing was conducted as specified in the Impingement SOP (Normandeau 2006b). Items were chosen for inspection using a "CSP-1" QC procedure derived from MIL-STD (military-standard) 1235 (Single and Multiple Level Continuous Sampling Procedures and Tables for Inspection by Attributes) to achieve a 10% Average Outgoing Quality Limit (i.e., $\geq 90\%$ of samples were within specified quality control tolerance limits). Separate QC inspection plans were applied for each individual processor within three categories of data: (1) sorting of fish from debris in a sample; (2) identification, counts, and weights by species; and (3) length and condition of individual fish. For sorting, a QC sample consisted of one complete 6-hour sample at one unit. For the count/weight data and the length/condition data, the term "sample" for the purposes of QC inspections meant QC sample and was not the same as an entire 6-hour impingement sample. For identification/count data, one QC sample consisted of one line of data on the Impingement Count Data Sheet, including the taxon, total weight, and total count recorded on that line. All data appearing on a line selected as a QC sample for inspection needed to be within tolerance. If any of the values on the line failed, then that QC sample (data line) failed. For species subsampled for counting, 100% of the subsample weights and subsample counts were checked. For

length/condition data, a QC sample consisted of the length and associated condition for one fish (both needed to agree with the QC inspection for that line of data to pass).

The QC sampling plan was conducted in two modes as described below.

Mode 1. Reinspected one hundred percent of the QC samples until “i” consecutive samples passed. (The value of the parameter “i” depended on the anticipated size of the data set, differing among the three types of data, shown in the table following the description of Mode 2).

Mode 2. After “i” consecutive samples passed QC reinspection, the fraction “f” of QC samples for reinspection were randomly chosen (using a random numbers table). (The value of the parameter “f” depended on the anticipated size of the data set, differing among the three types of data, as shown in the table below.) If any QC sample failed during a Mode 2 inspection, then the employee returned to Mode 1.

QC inspection plan parameters for Schiller Station impingement

QC Plan	i	f
Sorting	6	1/4
count/weight	7	1/5
length/condition	8	1/7

A qualified person other than the original processor conducted quality control reinspections. All QC reinspections were performed “blindly,” i.e., the individual doing the QC reinspection had no knowledge of the original processor’s results. The tolerance for each task was

- 10% of the total fish count for sorting
- ±10% for count when the QC count ≥20
- ±2 for count when the QC count <20
- ±3% for weight when the QC weight >33 g
- ±1 g for weight when the QC weight ≤33 g
- ±3% for length when the QC length >33 mm
- ±1 g for length when the QC length ≤33 mm
- no difference for condition (must agree)

The percent error was calculated as

$$\% \text{ error} = 100\% \times (\text{original value} - \text{QC value}) / \text{QC value}$$

For the sorting task, the QC value for this calculation was the total of the number of fish found by the original processor plus any additional fish found by the QC inspector. A resolution value may be determined for any QC sample found to exceed tolerance. If any discrepancies between the original value and the QC value exceeded the acceptance criteria, the data sheet reflected the corrected value. A summary of the results of the laboratory QC process for impingement sampling can be found in Appendix D of this report.

Each fish taxon collected during the Schiller Station impingement program was represented in the general reference collection at Normandeau's Bedford office. That reference collection was supplemented as needed by removing specimens from Schiller Station impingement samples and preserving them in formalin. Each jar was labeled with external and internal labels containing the scientific name, date of capture, and capture location. A list of species collected through impingement at Schiller Station and held in the Normandeau reference collection is provided in Table 1 of Appendix D of this report. These specimens are available for viewing upon request.

Water quality parameters were recorded from the Piscataqua River from the downstream catwalk adjacent to the intake screens at Screen House #2 at the start of each impingement sample. Temperature (°C), dissolved oxygen (mg/L), and salinity (ppt) were measured using calibrated electronic meters at the water's surface. Water quality measurements were recorded at the beginning and end of each 6 hour impingement collection period.

2.2.2 Impingement Collection Efficiency Studies

Impingement collection efficiency was determined during one randomly selected 6-hour sampling period in each month for each Unit to adjust each 6-hour sample for fish that were lost between the time they were impinged on the operating intake screens and their collection in the sampling device as specified in the Impingement SOP (Normandeau 2006c). A lot of 100 marked (color stained) dead fish were introduced immediately in front of randomly selected intake screens servicing active circulating water pumps at Units 4, 5, and 6. The collection efficiency tests were performed on the same date separately for each Unit (Table 2-6). The Unit 5 and Unit 6 collection efficiency tests used different color stains to distinguish the two lots of fish. Each lot of marked fish was introduced in a stream of water through a 4-in. PVC pipe or other release device with the outlet held in front of the ascending face of the operating traveling screen through an access port within the screenhouse. The collection efficiency fish were introduced near the midpoint (± 1 hour) of the 6-hour sample. The number of marked fish subsequently recovered in the collection device at the end of the sampling period, divided by the number released, represented the impingement collection efficiency for that period. Carry over of the collection efficiency fish into adjacent but subsequent 6-hour samples (or between units at Screen House #2) were also observed and recorded. These impingement collection efficiency factors were applied to other 6-hour impingement collections from each one-month period centered on the date of the collection efficiency test (Tables 2-3 through 2-5). Monthly collection efficiency rates applied to fish impingement abundance estimates in Section 4.4.1 of this report are provided in Table 2-6.

2.2.3 Impingement Survival Studies

Impingement survival was determined by the collection of wild fish and macrocrustaceans off of rotated and washed screens during the 1400 and 2000 screen-washes on days scheduled for regular impingement sampling at Schiller Station as specified in the Impingement SOP (Normandeau 2006c). All survival test fish and macrocrustaceans collected were separated from the debris, gently removed and placed into holding tanks set up inside of the Screen House #2. Their initial (time 0) survival status was determined as alive, stunned, or dead. All alive or stunned fish and macrocrustaceans from time 0 were held to determine a 12-hour latent survival rate. Latent status was recorded between 12 to 18 hours following initial survival observations.

2.2.4 Impingement Laboratory Procedures

Impinged fish and debris were processed on-site at Schiller Station and released back into the Piscataqua River, as specified in the Impingement SOP (Normandeau 2006c). All fish were identified to species and enumerated. A maximum of 50 individuals per species per sample were measured to the nearest millimeter total length and weighed to the nearest gram. Any individual fish that could not be identified to species in the field was taken to the laboratory in Bedford, NH for taxonomic identification by microscopic examination.

The amount (number of gallons) and general characterization of debris (aquatic, terrestrial, etc.) collected in each impingement sample were also determined as part of the sample processing protocol.

2.3 Analytical Procedures

Most data analyses were conducted using the Statistical Analysis System (SAS) software (SAS 1989). No rounding of data was done prior to the final step in each analysis. This prevented introduction of rounding error in the final result, and may present the appearance in a table that a column of data does not sum exactly to the total shown in the last row.

2.3.1 Designation of weeks and months

The beginning date for each sampling week at Schiller Station was designated by the Monday date listed in Table 2-7. Weeks were combined to represent months following the allocation in Table 2-7. The months of January, April, July and October are represented by five weeks while February, March, May, June, August, September, November and December are represented by four weeks. The results of impingement and entrainment sampling during weeks 35 through 39 of August and September 2006 were used to describe the seasonal occurrence of fish species and life stages, but were not used to calculate monthly or annual total abundance. Monthly and annual total abundance was estimate based on the 52 consecutive week period from 2 October 2006 through 30 September 2007.

2.3.2 CWIS Flows

Data records describing the quantity of water withdrawn into the Schiller Station Unit 4 CWIS and Units 5&6 CWIS require recognition of two different types of CWIS flows to address the impingement and entrainment analysis requested by EPA in the 308 Letter:

1. operating flow, and
2. historical operating flow.

Each type of Schiller Station CWIS flow is described below, along with a statement about it's analytical use in this report.

1. Operating flow is the volume of water drawn into Schiller Station through the traveling water screens at the CWIS as part of the normal operations associated with power generation or plant maintenance. The operating flow data set for Schiller Station represents the CWIS flows necessary for the operation of the Station, and is the same data set used by the Station to compile each monthly Discharge Monitoring Report (DMR). Daily operating flow was provided by Schiller Station for

each month when impingement or entrainment sampling occurred, beginning in August 2006 and continuing through September 2007. Operating flow is expressed as gallons per day (i.e., "gpd"), or as millions of gallons per day (i.e., "mgd") for Units 4, 5, and 6 of Schiller Station, as provided by the station. Operating flow for Unit 4 is derived from the sum of the daily rated flow for each of the two circulating water pumps (@14,100 gpm each) if one or both of those pumps operated for one minute or more between 0001 and 2400 on that day plus the sum of the daily flow for the service water pumps (one pump @140 gpm and the other pump at 950 gpm) if those pumps operated for one minute or more between 0001 and 2400. Operating flow for Units 5 and 6 is derived from the sum of the daily rated flow for each of the two circulating water pumps at each Unit (@14,500 gpm each) if one or both of those pumps operated for one minute or more between 0001 and 2400 on that day plus the sum of the daily flow for the service water pumps (two pumps @280 gpm each) if those pumps operated for one minute or more between 0001 and 2400. The flow from either the Unit 4 service water pumps or the Unit 5 and Unit 6 services water pumps can be exchanged between Screen House #1 and Screen House #2, so we relied on the plant operating records to define the operating flow for each Unit.

Daily operating flows were used to calculate impingement densities (number of fish impinged per unit volume of CWIS flow) for each sampling event completed during the August 2006 through September 2007 sampling period. The monthly and annual total numbers of fish impinged or entrained at Schiller Station during the 52 week "sampling year" from 2 October 2006 through 30 September 2007, and their adult equivalents, were calculated by volumetric extrapolation of entrainment or impingement densities (i.e., fish per unit volume sampled) and the corresponding monthly or annual operating flows actually observed during the sampling year.

2. Historical operating flow is the monthly mean operating flow among the six most recent years of CWIS operation at Schiller Station, beginning 1 January 2002 and continuing through 31 December 2007, expressed as the monthly average daily operating flow (mgd). Historical operating flow data were supplied by Schiller Station for each calendar month in the period January 1998 through December 2007 (Table 2-8). The monthly values for each year of historical operating flow data account for both service water and circulating pump flow as described for operating flow (#1 above) and as reported in Schiller Station's DMRs. Historical operating flow data from 2002 through 2007 are used throughout this report to represent the "typical recent water withdrawal rate and operations for each calendar month" at Schiller Units 4, 5, and 6 (Table 2-8), as requested by EPA in their 308 Letter. The 2002 through 2007 monthly and annual historical operating flows (shown in gray shading in Table 2-8) were used in Section 5 of this report for the purpose of volumetric extrapolation of entrainment or impingement densities (i.e., fish per unit volume sampled) obtained from the 2006-2007 sampling program to monthly or annual total abundance (i.e., total number of fish), and their adult equivalents, representative of the "typical recent water withdrawal rate and operations".

Table 2-9 presents a comparison of the weekly operating flows, and the comparable weekly 2002-2007 average historical operating flows.

2.3.3 Entrainment Density and Abundance

Each entrainment sample collected at Schiller Station was assigned a Use Code (1, 2, or 5) that defined its status at the time of collection and subsequent use in analytical tasks, as specified in the Entrainment SOP (Normandeau 2006b). Use Code 1 samples were entrainment collections from which valid data were collected and no sampling problems were encountered. A Use Code 1

entrainment sample had no loss of any ichthyoplankton from the sample, and no interruption of circulating water flow during the collection interval. Use Code 1 entrainment samples were used for all analytical tasks. Use Code 2 samples were entrainment collections in which there were sampling problems encountered relating to either the accurate measurement of sample duration or volume, but ichthyoplankton were caught. For example, if an unknown part of the sample was spilled when transferring it from the collection cup into a sample jar, or the sample volume was unknown, this sample would be classified as Use Code = 2. Use Code 2 samples were excluded from calculations involving density estimates (number of organisms per unit volume) but retained for determination of species richness. Use Code 5 samples were void samples where the entire contents of the sample was lost. Use Code 5 samples were excluded from all analysis.

Entrainment samples from Schiller Station were collected over a 57 week period from week 35 (week of Monday August 28) in 2006 through week 39 (week of Monday September 24) in 2007 (Table 2-1, Table 2-7). Sampling occurred on a weekly basis during the peak entrainment months of January, February, March, June, July, and August and bi-weekly during the remainder of the year. Counts of eggs and larvae in entrainment samples were converted to densities for each taxon based on actual sample duration and the flow filtered through the sampling net for each sample. Equation 1 was used to calculate the entrainment density (D_e) per sample:

$$D_e = C_x / (M_x * G_x) \quad (\text{Eq. 1})$$

where: D_e = density of entrained eggs or larvae per 100 m³ of operating flow,

C_x – number of entrained eggs or larvae in entrainment sample x ,

M_x = duration (as recorded in minutes) of sample x , and

G_x = sampling flow rate for water filtered through the sampling net in gallons per minute for sample x .

Entrainment densities were scaled to #/100m³ for presentation in tables and figures in Section 3 of this report. Entrainment densities were used primarily to describe the seasonal timing and relative abundance of ichthyoplankton and macrocrustacean larvae exposed to entrainment at Schiller Station during the sampling period. When weekly samples were not collected, linear interpolation of densities across adjacent weeks was used so that weekly estimates of entrainment abundance could be calculated. This interpolation involved averaging the entrainment densities for the week before and the week after a week when sampling did not occur. Weekly densities (#/100m³) were calculated by taking the average of the four 6-hour density estimates for the samples from that week.

Weekly entrainment abundance estimates (E_w , Equation 2) were calculated from the product of each observed weekly densities (Equation 1) and the operating flow (Table 2-9) for that same week.

$$E_w = D_w * F_w \quad (\text{Eq. 2})$$

where: E_w = estimated abundance (total number) of entrained organisms in week w ,

D_w = mean sampling density (#/100m³) in week w (from Equation 1) of entrained eggs or larvae, and

F_w = total operating flow (m³) in week w .

Weekly entrainment abundance estimates were summed to obtain monthly entrainment estimates based on the number of weeks in each month, and the occurrence of each week in each month according to the Monday start date for the week as specified in Table 2-7.

2.3.4 Entrainment Survival

Control adjusted entrainment survival rates were calculated for Schiller Station using Abbot's formula (EPRI 2003, 2005b; Equation 3).

$$P_{sL} = P_{tL} / P_{cL} \quad (\text{Eq. 3})$$

where: P_{sL} = the latent survival rate,

P_{cL} = the fraction of control organisms alive at the latent observation, and

P_{tL} = the fraction of test organisms alive at the latent observation.

For an example of this calculation, consider a scenario where a total of 100 fish of species and life stage A were collected in the test barrel-type reverse flow entrainment sampler during a particular sample date. Of those 100 fish, 70 are alive, show no sign of injury, and therefore satisfy the criteria for alive fish as specified in the Entrainment SOP (Normandeau 2006b), 15 are physically injured and 15 are dead at the initial observation (t_0). An additional 100 fish (species and life stage A) are collected in the control barrel-type reverse flow entrainment sampler. These 100 individuals serve as a control to remove the effects of the barrel-type reverse flow entrainment sampler and initial handling so that only the stresses encountered during the entrainment through the traveling screen and passage through the circulation pumps are being examined. Of the 100 control fish, 90 are alive, show no sign of injury, and therefore satisfy the criteria for alive fish as specified in the Entrainment SOP (Normandeau 2006b), 5 are dead, and the remaining 5 are physically injured at t_0 . The live fish (85 test fish and 95 controls) are held for latent observation and are then re-examined. At the latent check (t_{latent}) of test fish, 60 show no sign of injury, 10 are injured and an additional 10 have died. At the 24-hour check of control fish, 90 show no sign of injury, 2 are injured and an additional 3 have died.

To calculate P_{tL} , in this example, the total number of test fish which were alive with no injury at t_{latent} (60) was divided by the number of them which were alive with no injury at t_0 (100). For this study, it was assumed that an injured fish would die upon reintroduction to the Piscataqua River to provide a conservative estimate of survival. In this scenario, P_{tL} would equal 60/100 or 0.60. To calculate P_{cL} , in this example, the total number of control fish which were alive with no injury at t_{latent} (90) was divided by the number of them which were alive with no injury at t_0 (100). In this scenario, P_{cL} would equal 90/100 or 0.90.

The entrainment survival rate (P_{sL}) of fish in this example is calculated by dividing P_{cL} by P_{tL} .

$$P_{sL} = P_{tL} / P_{cL}$$

$$= 0.60/0.90$$

$$= 0.67 \text{ or } 67\%$$

Therefore, the control adjusted entrainment survival rate for species and life stage A is 67 %.

Control adjusted latent survival rates were calculated for larvae of six species of fish and two macrocrustacean entrained at Schiller Station during 2007; American sand lance, Atlantic herring,

cunner, grubby, longhorn sculpin, rock gunnel, green crab, *Cancer* crab species. Holding time between initial and latent observations for entrained larval survival was about 24 hours (mean = 23.4 hours, range = 18.6 to 28.0 hours). Control adjusted latent entrainment survival rates were applied to entrainment abundance estimates to identify the fraction and number of entrained organisms surviving mechanical damage due to passage through the traveling screens and cooling water intake pumps.

2.3.5 Impingement Density and Abundance

Each impingement sample collected at Schiller Station was assigned a Use Code (1, 2, or 5) that defined its use in analytical tasks, as specified in the impingement SOP (Normandeau 2006c). Use Code 1 samples were impingement collections from which valid data were collected and no sampling problems were encountered. Use Code 1 impingement samples were used for all analytical tasks. Use Code 2 samples were collections in which fish were captured, but sampling problems were encountered. Use Code 2 samples were excluded from calculations involving catch per unit of effort and length-frequency distribution. Use Code 5 samples were Use Code 2 samples where no fish were caught. Use Code 5 samples were void and excluded from all analysis.

Impingement sampling relies on the traveling screen as the sampling device (e.g., "net") to collect impinged organisms that are screened from the circulating water flow passing through it. Calculation of the density of organisms impinged on the traveling screens (e.g., number of fish per unit volume) therefore requires both an accurate count of the number of fish or macrocrustaceans collected and an accurate measure of the volume of water filtered to collect each sample. The impingement sampling procedures specified in the Impingement SOP for Schiller Station insure an accurate impingement count. Daily CWIS flow data was provided by PSNH for each Unit at Schiller Station during the 57 weeks of sampling from 31 August 2006 through 27 September 2007 and used to determine the sampling flow for each impingement sample. For each Unit, the Schiller Station daily operating flow data was apportioned to the actual impingement collection sampling times on those days based on the total daily operating flow and the percent of time (minutes) in each day that each six-hour impingement sample occurred. Each impingement sample flow was then calculated as the product of the daily flow rate (mgd) and the proportion of time the impingement sample represented of that daily flow rate. For example, if the daily operating flow at Unit 4 of Schiller Station was 40.8 mgd on 24 May 2007, and the first six-hour impingement sample on that day began at 0830 and terminated at 1434. Accordingly, the first six-hour impingement sample from Unit 4 on 24 May represented 364 minutes out of 1,440 minutes of operating flow for that day, or 25.3% (364 min./1440 min.) of the total daily flow reported by Schiller Station. Therefore, the sampling flow for the first six-hour impingement sample from Unit 4 of Schiller Station on 24 May 2007 (G_x in Equation 4 below) was calculated as $0.253 * 40.8 \text{ mg} = 10.31 \text{ mg}$.

The sampling flow data corresponding to each six-hour impingement collection at each Unit of Schiller Station was used to calculate impingement sample density, where density (D_i) of taxon A is defined as the total count or number, collected during a sampling period, based on actual sample duration and the sampling flow for each sample (Equation 4).

$$D_i = C_x / G_x \quad (\text{Eq. 4})$$

where: D_i = density of taxon A per million gallons of sampling flow,

C_x – count of the number of taxon A in sample x , and

G_x = sampling flow in million gallons for sample x .

Impingement densities were adjusted to represent the number of organisms per million gallons for presentation in tables and figures in Section 4 of this report. Impingement densities were used primarily to describe the seasonal timing and relative abundance of fish and macrocrustaceans exposed to impingement at Schiller Station during the sampling period. Due to annual maintenance shutdowns at Unit 4 during weeks 46 through 49 of 2006 and at Unit 6 during weeks 10 through 14 of 2007, impingement samples were not collected during those weeks. In addition, the plant schedule did not allow for pumps to be run during one 24-hour impingement sample period in March (week 13) at Unit 4 and one 24-hour impingement sample periods in April at Unit 5 and impingement sampling on those dates was not conducted. For the purpose of describing the seasonal timing of impingement density, the average density of the two weeks surrounding the missed sample periods was used for linear interpolation of densities to be applied to the missed weeks.

Operating flows (Table 2-9) were obtained for each of the 52 weeks of continuous sampling at Schiller Station between 2 October 2006 and 30 September 2007 and used to calculate impingement abundance (I_w , Equation 5) as the product of the weekly density (Equation 4) and the weekly operating flow.

$$I_w = D_w * F_w \quad (\text{Eq. 5})$$

where: I_w = estimated abundance (number) impinged in week w ,

D_w = mean density in week w (from Equation 1) of impinged Taxon A per mg, and

F_w = total operating flow in week w .

To insure the most accurate impingement abundance data was available for Schiller Station, collection efficiency coefficients were determined from monthly tests (Tables 2-3 through 2-5) and applied to the weekly impingement abundance estimates to calculate impingement abundance estimates adjusted for collection efficiency using Equation 6.

$$\text{Adj-I} = I_w / c \quad (\text{Eq. 6})$$

where: Adj-I = collection efficiency adjusted impingement abundance,

I_w = estimated abundance (number) impinged in week w from Equation 5, and

c = specified collection efficiency coefficient as a proportion.

2.3.6 Impingement Survival

An impingement survival rate was calculated for Schiller Station using an Extended Survival Formula (EPRI 2003; Equation 7). Extended impingement survival rates were calculated for fish and macrocrustaceans on a monthly basis due to limitations of sample size when data was assessed on a weekly basis.

$$P_e = A_{(t/2)} / N_{T0} \quad (\text{Eq. 7})$$

where: P_e = extended fish survival proportion,

$A_{(t_{12})}$ = Number of fish initially collected that are still alive at time (t_{12}), and

N_{T0} = Total number of fish initially collected at time t_0 .

For an example of this calculation, consider that a total of 100 impinged fish were recovered in the screen wash of Unit 4 at the end of the first six-hour impingement collections on 6, 13, 20, and 26 July 2006 at Schiller Station. Of those 100 fish, 70 were alive, showed no sign of injury, and therefore satisfy the criteria for alive fish as specified in the Impingement SOP (Normandeau 2006c), 15 fish are physically injured (i.e. stunned) and the remaining 15 fish were observed to be dead at the time of initial collection (t_0). The 70 alive and 15 stunned fish were held for 12 hours and are then re-examined at time t_{12} . At the 12-hour check (t_{12}) of the survival status of the 85 fish held for extended survival observations, 60 were alive and show no sign of injury, 10 fish were alive but injured (stunned) and the remaining 15 were dead.

To calculate $A_{(t_{12})}$, sum the total number of live fish at t_{12} (in this example = 60 live fish at the 12 hour observation period). To calculate N_T , sum the total number of fish at t_0 (in this example = 70 alive + 15 stun + 15 dead = 100 fish). The extended impingement survival rate (P_e) of fish at time t_{12} in this example was calculated by dividing $A_{(t_{12})}$ by N_{T0} .

$$P_e = A_{(t_{12})} / N_{T0}$$

$$= 60 / 100$$

$$= 0.6 \text{ or } 60\%$$

The extended survival rate from this example was used to estimate the total number of fish surviving impingement and successfully being returned to the Piscataqua River from the Schiller Station CWIS, based on the following formula (Equation 8):

$$SAdj-I = Adj-I * P_e \quad (Eq. 8)$$

where: SAdj-I = impingement abundance adjusted for extended survival,

Adj-I = collection efficiency adjusted impingement abundance (from Equation 6), and

P_e = extended fish survival proportion (from Equation 7).

Note that estimated impingement abundance adjusted for mortality (MAdj-I) would be calculated using the inverse of survival, $Adj-I * (1 - P_e)$.

For example, assume that the estimated impingement abundance (adjusted for collection efficiency) for Unit 4 of Schiller Station during the month of July was 200 fish. Based on the survival rate obtained from the above example of 0.6, 120 of those fish would survive the impingement process and be returned to the river alive.

Application of this impingement survival formula to the collection efficiency adjusted impingement abundance data is based on three conservative assumptions that may result in underestimating impingement survival at Schiller Station. First, it was assumed that all test subjects were alive and uninjured prior to their impingement on the traveling screens. In fact, a certain percentage of impinged fish are injured or dead at the time they first encounter the traveling screens (EPRI 2003, 2005b). Second, all injured fish were considered dead or would die upon reintroduction to the Piscataqua River, when in fact some may survive. Finally, control mortality was not estimated (i.e.,

the mortality due to collecting and handling the impinged fish for survival observations) and removed using Abbot's formula, resulting in an overestimate of mortality (i.e., underestimate of survival).

2.3.7 Equivalent Adult Abundance

The impingement and entrainment abundance of fish and macrocrustaceans at Schiller Station was evaluated at a common life stage (i.e., at the adult age of first reaching sexual maturity) by equivalent adult loss analysis (Saila et al. 1997, EPRI 1999). Adult age at sexual maturity was determined through literature review and varies by species. Entrainment abundance (primarily eggs and larvae) and impingement abundance (mainly juveniles) are not directly comparable because of the very high natural mortality that is typical of early life stages of fish. Thus, the entrainment of relatively few juveniles or adults is the equivalent of losing much higher abundance (typically order of magnitude higher) numbers of eggs or larvae, in terms of the effect on the population, because eggs and larvae naturally experience high mortality before they reach juvenile or adult age. By expressing all entrainment and impingement losses in terms of a common life stage (i.e., adult equivalents), the overall impact of the CWIS can be presented as a single and comparable number for each species or taxon. Lifestage-specific estimates of mortality rates were used to estimate the number of sexually mature adults that would have survived if they had not been entrained or impinged during a different life stage.

Adult equivalents abundance for entrainment at Schiller Station was estimated for 16 fish taxa where the 57 week total (31 August 2006 through 27 September 2007) of at least 50 individuals (raw count from sample processing, all life stages pooled) were entrained, and for one selected additional fish taxon observed in lower abundance but considered to be of commercial interest (winter flounder). Adult equivalent abundance for entrainment at Schiller Station was estimated for the following 17 fish taxa: American plaice, American sand lance, Atlantic cod, Atlantic herring, Atlantic mackerel, Atlantic menhaden, cunner, fourbeard rockling, grubby, longhorn sculpin, Northern pipefish, pollock, rainbow smelt, rock gunnel, *Urophycis* species, windowpane, winter flounder. These 17 taxa comprised 99.0 % of the raw entrainment for fish at Schiller Station during the 52 week annual period represented by 2 October 2006 through 30 September 2007. In addition, adult equivalent abundance was also calculated for three macrocrustacean taxa (Atlantic lobster, *Cancer* sp. crabs, and green crab). These three macrocrustacean taxa comprised 99.4% of the raw entrainment counts for macrocrustaceans at Schiller Station during the 52 week annual period of October 2006 through September 2007.

Adult equivalent abundance for impingement at Schiller Station was estimated for ten fish taxa where the 57 week total (31 August 2006 through 27 September 2007) of at least 20 individuals (raw count) were impinged and for four selected additional fish species observed in lower abundance but considered to be of commercial interest (Atlantic cod, pollock, silver hake, and windowpane). The 14 fish taxa comprised 89.0% of the raw impingement counts for fish at Schiller Station during the 52 week annual period from October 2006 through September 2007. Adult equivalent losses due to impingement at Schiller Station were estimated for; Atlantic cod, Atlantic herring, Atlantic menhaden, cunner, grubby, lumpfish, Northern pipefish, pollock, rainbow smelt, silver hake, white hake, white perch, windowpane, and winter flounder. Adult equivalent abundance for impingement was not calculated for macrocrustaceans.

Life stage-specific mortality rates were obtained from the literature for each taxon selected for adult equivalent abundance calculations. These mortality rates are typically obtained from a variety of data

for the various life stages of development from egg to through the completed adult lifespan. The mortality rates can represent life stages, length classes, or age classes, depending on the information available. For each life stage of each fish species or taxon, the number of adult equivalents was calculated from the total instantaneous mortality rates for the developmental intervals between the age at entrainment or impingement and sexual maturity:

$$N_a = N_j \exp[-\sum_{i=j,a-1} (Z_i)] \quad (\text{Eq. 9})$$

where N_a = the number that would have survived to stage a (i.e. age at first maturity), if they had not been entrained or impinged during life stage j ,

N_j = the number entrained or impinged during life stage j , and

Z_i = total instantaneous mortality during life stage i .

Most impinged fish were young-of-the-year (YOY), but adults (equal to or older than age at first reproduction) of some species were also impinged in low numbers. Total adult equivalent abundance for impingement was estimated as the sum of the number of mature fish impinged and the number of immature fish equivalent to age of first maturity for each species. Numbers of impinged fish equal to or older than age of first maturity were not back-calculated to the number at age of first maturity because the estimate represents actual age distribution of mature fish in the impingement samples (Saila et al. 1997). Ages of larger impinged fish were estimated based on the size frequency distribution of measured specimens and species specific literature reported length-at-age data.

Ages of larger impinged crustaceans were not estimated due to the lack of published length-at-age data. Age determination for macrocrustaceans is difficult, due in part to the absence of age determining structures comparable to those found in fish, such as otoliths or scales. Macrocrustacean age is typically estimated based on carapace measurements (length or width, depending on the taxon), and the carapace is lost with each molt as the individual grows, therefore a carapace measurement does not provide a chronological record of age of the individual. Consequently, ecological questions dealing with mortality and age-fecundity relationships in macrocrustaceans become more difficult to resolve and the accuracy of estimating age on the basis of length decreases with increasing age.

Each life stage or age cohort of each taxon of entrained or impinged of a fish species or taxon typically includes individuals from the full spectrum of development from the beginning to the end of the stage. Entrained larvae, for example, often include not only recently hatched larvae, but also late-stage post yolk-sac larvae that are nearly juveniles. The survival potential of a newly-hatched larva is far lower than the survival potential of a larva ready to transform into a juvenile. To adequately represent the wide range of survival potential within each entrained or impinged life stage, the mortality rate for that stage was adjusted by a formula adapted from EPRI (2004):

$$Z_{adj} = Z + \ln(1 + e^{-Z}) - \ln 2 \quad (\text{Eq. 10})$$

where Z_{adj} = adjusted instantaneous mortality for the entrained life stage (stage j in the previous equation), corresponding to the interval between the time of entrainment and the end of that life stage, and

Z = instantaneous mortality from the beginning to the end of that life stage.

The adjusted mortality was only used for the entrained or impinged life stage; unadjusted Z values were applied to all stages between that stage and the age at first maturity.

The life history parameters used in this report to estimate adult equivalent abundances for entrainment and impingement of each species at Schiller Station are provided in Tables 1 through 23 of Appendix A. These tables present the life stage specific natural mortality rate (M_i), fishing mortality rate (F_i), instantaneous mortality rate (Z_i), survival rates at life stage i (S_i) and the adjusted survival rate at life stage i (adjusted S_i). Much of these data were obtained from EPA's own documents evaluating regional aspects of the 316(b) Phase II Rule (EPA 2004).

Mortalities for entrained American plaice are those provided by the EPA (EPA 2004; Appendix A, Table 1). Age at sexual maturity for American plaice was conservatively estimated as three years (Klein-MacPhee 2002).

Mortalities for entrained American sand lance are those provided by the EPA (EPA 2004; Appendix A, Table 2). Age at sexual maturity for American sand lance was estimated as two years (Nizinski 2002).

Mortalities for entrained and impinged Atlantic cod are those provided by the EPA (EPA 2004; Appendix A, Table 3). Length at age data is reported by NMFS and was taken from Gulf of Maine population (Pentilla et al. 1989). Age at sexual maturity for Atlantic cod was two years (Klein-MacPhee 2002).

Mortalities for entrained and impinged Atlantic herring are those provided by the EPA (EPA 2004; Appendix A, Table 4). Length at age data is reported by NMFS and was taken from the western portion of the Gulf of Maine (Pentilla et al. 1989). Age at sexual maturity for Atlantic herring was conservatively estimated as three years (Munroe 2002).

Mortalities for entrained Atlantic mackerel are those provided by the EPA (EPA 2004; Appendix A, Table 5). Age at sexual maturity for Atlantic mackerel was estimated as two years (Collette 2002).

Mortalities for entrained and impinged Atlantic menhaden are from Barnhouse (2005; Appendix A, Table 6). Length at age data used to partition the length frequency distribution of impinged Atlantic menhaden into age classes was obtained from coast wide port sample collected by NMFS (Munroe 2002). Age at sexual maturity for Atlantic menhaden as three years (Munroe 2002).

Mortalities for entrained and impinged cunner are those provided by the EPA (EPA 2004; Appendix A, Table 7). Length at age data used to partition the length frequency distribution of impinged cunner into age classes was based on age-length data from the Gulf of St. Lawrence (Munroe 2002). Age at sexual maturity for cunner was estimated as two years (Munroe 2002).

Mortalities for entrained fourbeard rockling are those provided by the EPA (EPA 2004; Appendix A, Table 8). Age at sexual maturity for fourbeard rockling was unavailable in the literature and was assumed to be Age 1+ as to provide a conservative estimate for this species.

Mortalities for entrained and impinged grubby are those provided by the EPA (EPA 2004; Appendix A, Table 9). Length at age data was based on population data from Niantic Bay, New York (Roseman et al. 2005). Age at sexual maturity for the grubby was conservatively estimated as one year (Roseman et al. 2005).

Mortalities for entrained longhorn sculpin are those provided by the EPA (EPA 2004; Appendix A, Table 10). A conservative age at sexual maturity for longhorn sculpin is three years (Klein-MacPhee 2002).

Mortalities for impinged lumpfish are those provided by the EPA (EPA 2004; Appendix A, Table 11). Length at age data was derived from weight at age data (EPA 2004) and converted to body length using an equation provided in the 2003 316b Case Study Analysis (EPA 2003). Age at sexual maturity for lumpfish is five years (Klein-MacPhee 2002).

Mortalities for entrained and impinged Northern pipefish are those provided by the EPA (EPA 2004; Appendix A, Table 12). Length at age data was derived from weight at age data (EPA 2004) and converted to body length using length-weight equation parameters ($a=0.0003$, $b=3.2122$) obtained on fishbase.org. Parameters represent the average values for species reported in the genus *Syngnathus*. As pipefish are assumed to live to approximately Age 2+ (Ripley and Foran 2006), any individuals greater than 103 mmTL will be assigned to the Age 2+ year class. Age at sexual maturity for Northern pipefish is one year (Klein-MacPhee 2002).

Mortalities for entrained and impinged pollock are those provided by the EPA (EPA 2004; Appendix A, Table 13). Length at age data is reported by NMFS and was taken from the Georges Bank population (Pentilla et al. 1989). Age at sexual maturity for pollock is two years (Klein-MacPhee 2002).

Mortalities for entrained and impinged rainbow smelt are based on Barnhouse (2005; Appendix A, Table 14). Length at age data was taken from data collected by the Massachusetts Division of Marine Fisheries in the Parker River Estuary, Massachusetts (2007). Age at sexual maturity for rainbow smelt is two years (Klein-MacPhee 2002).

Mortalities for entrained rock gunnel are those provided by the EPA (EPA 2004; Appendix A, Table 15). Reported value for age at first sexual maturity for rock gunnel is Age 3 (Vallis et al. 2007).

Mortalities for impinged silver hake are those provided by the EPA (EPA 2004; Appendix A, Table 16). Age at sexual maturity for silver hake is two years (Klein-MacPhee 2002).

Mortalities for entrained and impinged hake species (red hake, white hake, and unidentified hakes in the genus *Urophycis*) are those provided by the EPA (EPA 2004; Appendix A, Table 17). Length at age data was derived from weight at age data for red hake (EPA 2004) and converted to body length using an equation provided in the 2003 316b Case Study Analysis (EPA 2003). Age at sexual maturity for hake is two years (Klein-MacPhee 2002).

Mortalities for impinged white perch are from Barnhouse (2005; Appendix A, Table 18). Length at age data used to partition the length frequency distribution of impinged white perch into age classes was obtained from the lower Connecticut River (Marcy and Richards 1974). Age at sexual maturity for white perch is three years (Klein-MacPhee).

Mortalities for entrained and impinged windowpane are those provided by the EPA (EPA 2004; Appendix A, Table 19). Length at age data was derived from weight at age data (EPA 2004) and converted to body length using an adjusted formula; $\text{length in mm} = 10^{(\log(\text{weight in grams}/0.0000122)/3)}$. Length-weight formula (EPA 2003) for windowpane was adjusted using length-weight data from 21 windowpane flounder in Bridgeport Harbor to provide reasonable lengths for that species. Age at sexual maturity for windowpane is three years (Klein Mac-Phee 2002).

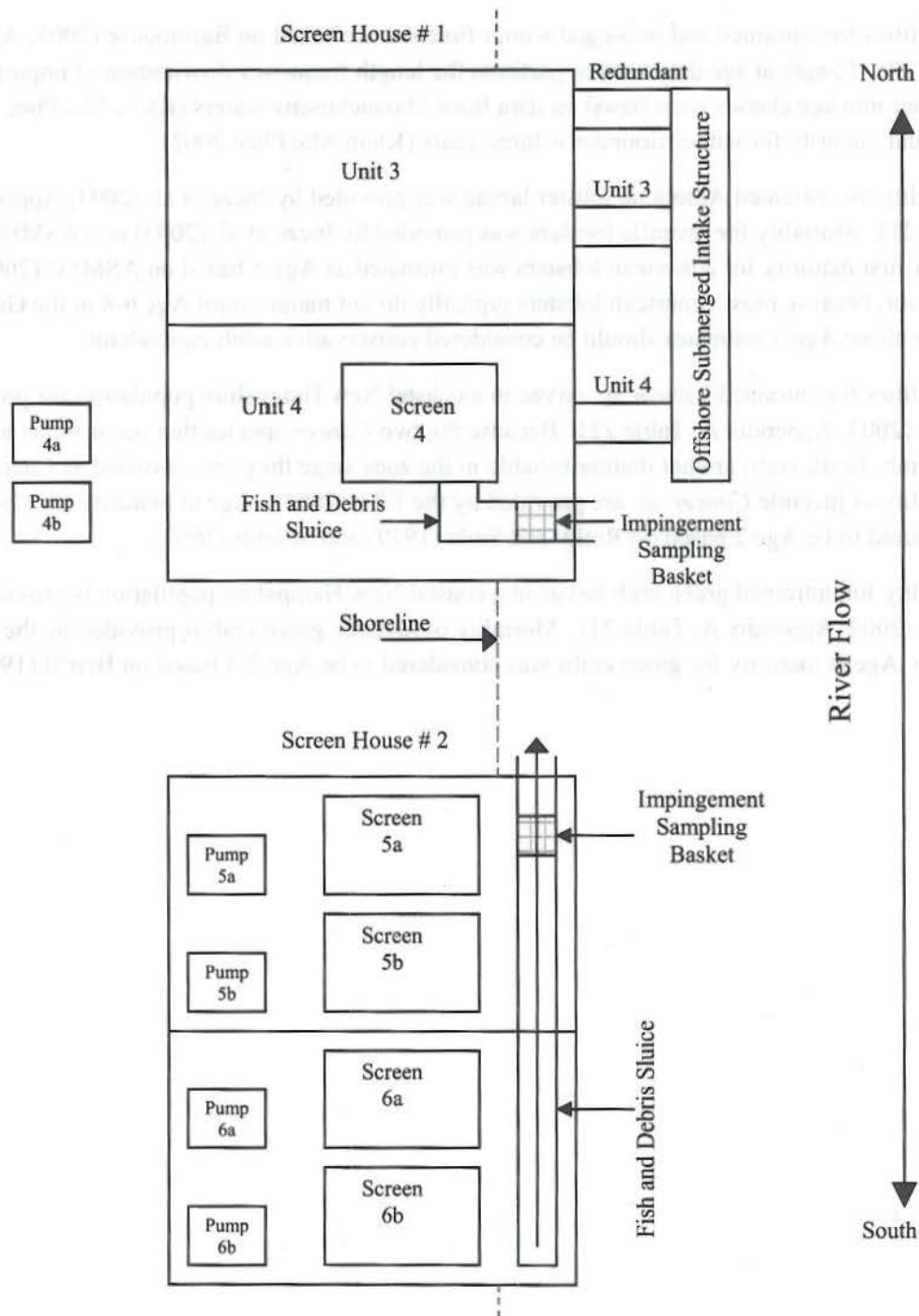


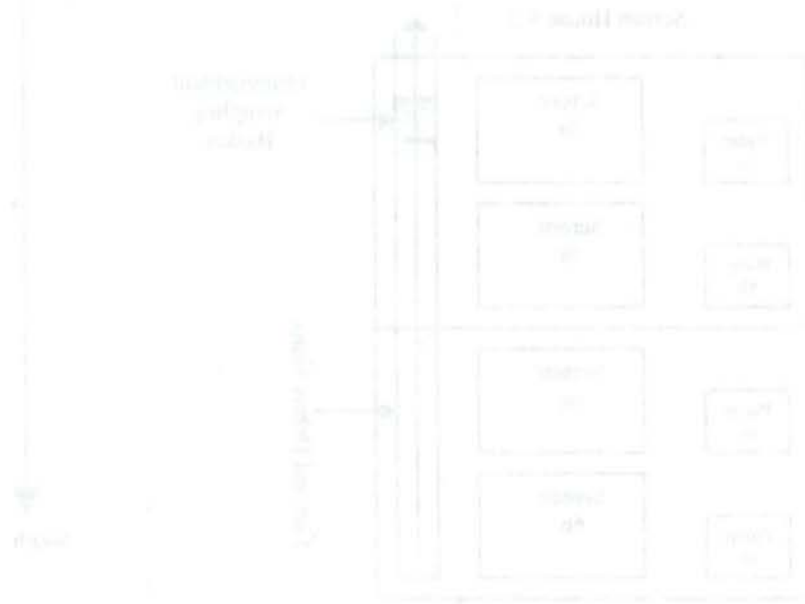
Figure 2-1. Schiller Station Screen House #1 (Unit 4) and Screen House #2 (Unit 5 and Unit 6) cooling water intake structures schematic showing the identification numbers for the circulating water pumps and traveling screens.

Mortalities for entrained and impinged winter flounder are based on Barnhouse (2005; Appendix A, Table 20). Length at age data used to partition the length frequency distribution of impinged winter flounder into age classes were based on data from Massachusetts waters (Klein-MacPhee 2002). Age at sexual maturity for winter flounder is three years (Klein-MacPhee 2002).

Mortality for entrained American lobster larvae was provided by Incze et al. (2003; Appendix A, Table 21). Mortality for juvenile lobsters was provided by Incze et al. (2003) and ASMFC (2006). Age at first maturity for American lobsters was estimated as Age 5 based on ASMFC (2006). However, because most American lobsters typically do not mature until Age 6-8 in the Gulf of Maine, these Age 5 estimates should be considered conservative adult equivalents.

Mortalities for entrained *Cancer* sp. larvae in a coastal New Hampshire population are provided by Grabe (2003; Appendix A, Table 22). Because the two *Cancer* species that occur in the area (Atlantic rock crab, Jonah crab) are not distinguishable in the zoea stage they are classified as *Cancer* sp. Mortality of juvenile *Cancer* sp. are provided by the EPA (2004). Age at maturity for *Cancer* sp. was considered to be Age 2 based on Reilly and Saila (1979) and Shields (1991).

Mortality for entrained green crab larvae in a coastal New Hampshire population is provided by Grabe (2003; Appendix A, Table 23). Mortality of juvenile green crab is provided by the EPA (2004). Age at maturity for green crabs was considered to be Age 2.5 based on Berrill (1982).



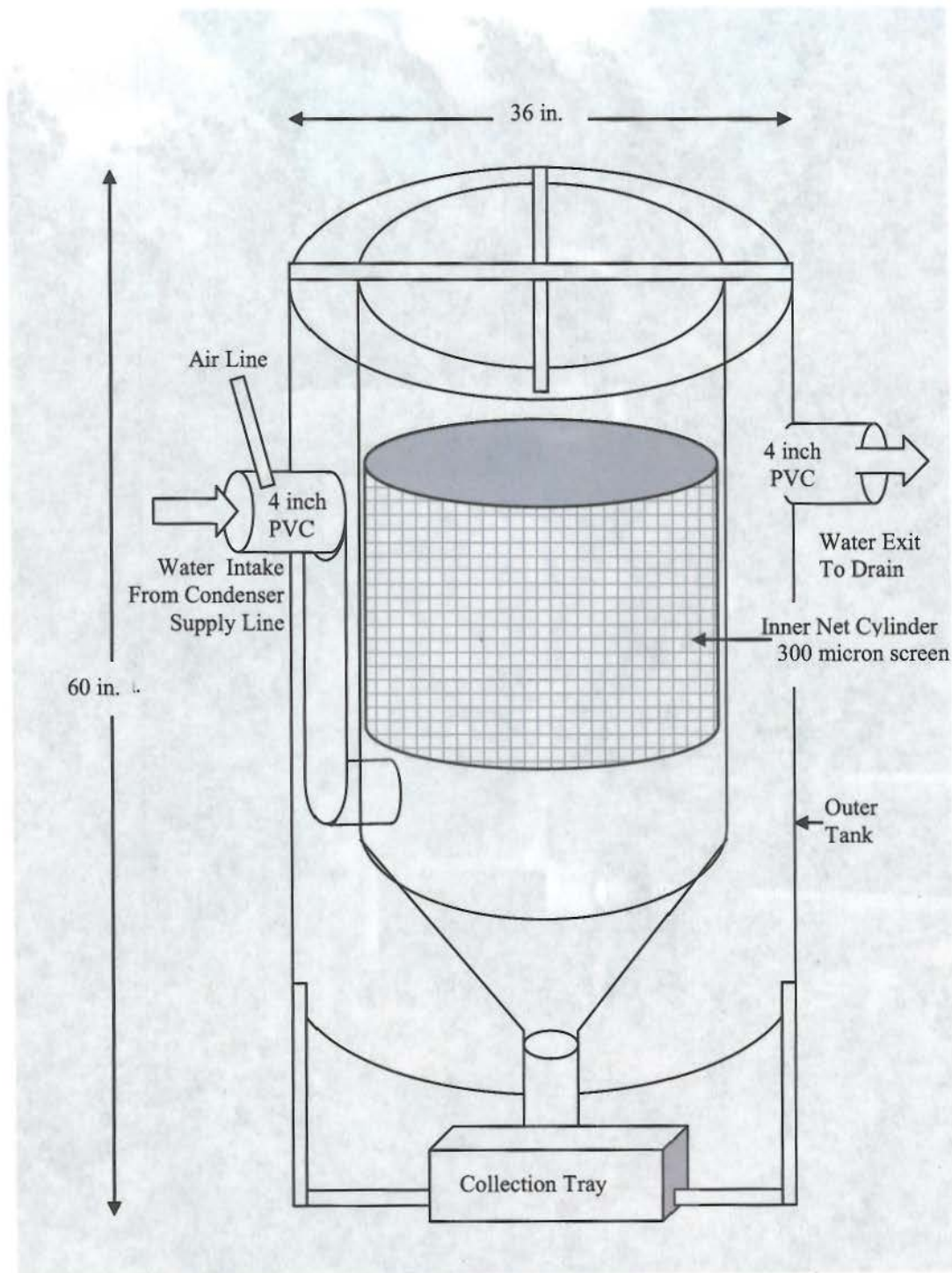


Figure 2-2. Schematic diagram of the entrainment sampling device (Barrel sampler).



Figure 2-3. Diagram of entrainment sampler showing flow patterns through tank. A: Intake flow to sampling tank. B: Flow path for water during entrainment survival test – bottom fill to swirl water around in cylindrical net. C: Flow path for water during regular entrainment sampling – top fill filters down through conical net and sample is collected in cod end. D: Drain line connected to tank stand pipe. E: Drain line for use during entrainment survival test which draws sample out of conical collection area at base of inner tank.

Table 2-1. (Continued)

Feb-07							May-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)	1	2 3			1	2	3	4	5
				(4)						(4)			
4	5	6	7	8	9	10	6	7	8	9	10	11	12
11	12	13	14	15	16	17	13	14	15	16	17	18	19
				(4)						(4)			
18	19	20	21	22	23	24	20	21	22	23	24	25	26
25	26	27	28				27	28	29	30	31		
Mar-07							Jun-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)	1	2 3						1	2
				(4)							(4)		
4	5	6	7	8	9	10	3	4	5	6	7	8	9
				(4)							(2)		
11	12	13	14	15	16	17	10	11	12	13	14	15	16
				(4)							(4)		
18	19	20	21	22	23	24	17	18	19	20	21	22	23
				(4)							(4)		
25	26	27	28	29	30	31	24	25	26	27	28	29	30
Apr-07							Jul-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7					(4)		
				(4)			1	2	3	4	5	6	7
8	9	10	11	12	13	14					(4)		
15	16	17	18	19	20	21	8	9	10	11	12	13	14
				(4)							(4)		
22	23	24	25	26	27	28	15	16	17	18	19	20	21
											(4)		
29	30						22	23	24	25	26	27	28
							29	30	31				

Table 2-1. (Continued)

Aug-07

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)		
			1	2	3	4
				(4)		
5	6	7	8	9	10	11
				(4)		
12	13	14	15	16	17	18
				(4)		
19	20	21	22	23	24	25
				(4)		
26	27	28	29	30	31	

Sep-07

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
				(4)		
9	10	11	12	13	14	15
16	17	18	19	20	21	22
				(4)		
23	24	25	26	27	28	29
30						

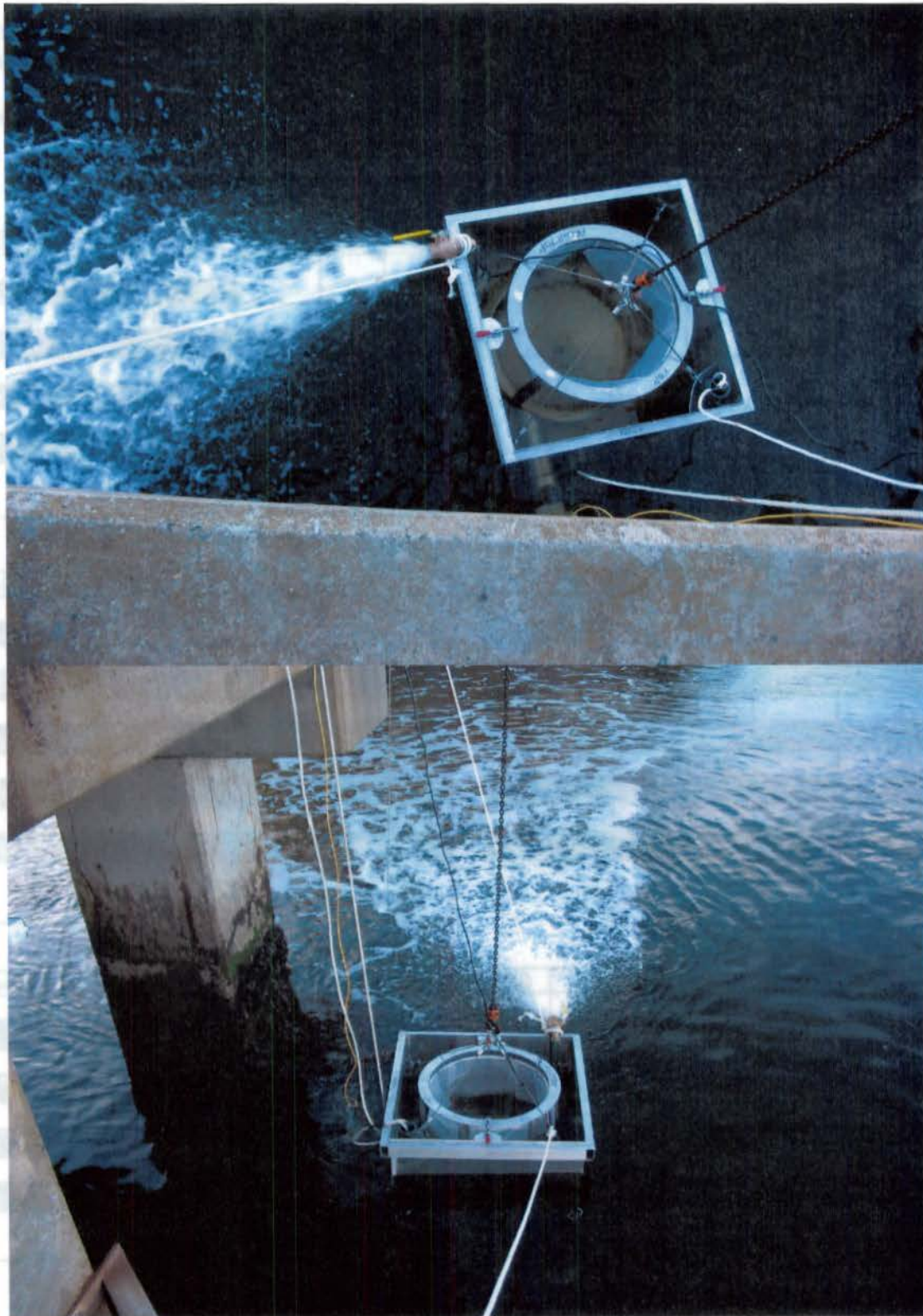


Figure 2-4. Control sampling tank for entrainment survival studies located on upstream side of the CWIS at Newington Station. Note: This location at Newington Station served as the control site for Schiller Station.

Table 2-1. Achieved sampling design for entrainment sampling at Schiller Station. Bold dates indicate when sampling occurred. The green and blue shaded weeks represent the corresponding periods of extrapolation for that sample. Weeks with alternating green and blue blocks are average of the two weeks on either side of that particular time period. (#) indicates the number of valid six-hour samples collected for each sampling date.

Aug-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Nov-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
			(4)			
5	6	7	8	9	10	11
12	13	14	15	16	17	18
	(4)					
19	20	21	22	23	24	25
26	27	28	29	30		

Sep-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
			(4)			
10	11	12	13	14	15	16
17	18	19	20	21	22	23
			(4)			
24	25	26	27	28	29	30

Dec-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
			(4)			
3	4	5	6	7	8	9
10	11	12	13	14	15	16
			(4)			
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Oct-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
			(4)			
8	9	10	11	12	13	14
15	16	17	18	19	20	21
			(4)			
22	23	24	25	26	27	28
29	30	31				

Jan-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			(4)			
1	2	3	4	5	6	
			(4)			
7	8	9	10	11	12	13
			(4)			
14	15	16	17	18	19	20
			(3)			
21	22	23	24	25	26	27
28	29	30	31			

Table 2-2. Entrainment survival sample dates at Schiller Station, September 2006 through September 2007.

Sample Date	Test Sample Collected	Control Sample Collected
21 September 2006	X	
19 October 2006	X	
16 November 2006	X	
30 November 2006	X	
28 December 2006	X	
10 January 2007	X	X
24 January 2007	X	X
21 February 2007	X	X
14 March 2007		X
28 March 2007	X	X
3 May 2007	X	X
20 June 2007	X	X
25 July 2007	X	X
29 August 2007	X	X
20 September 2007	X	X

Table 2-3. Achieved sampling design for impingement sampling at Schiller Station Unit 4. Bold dates indicate when sampling occurred. The green and blue shaded weeks represent the corresponding periods of extrapolation for that sample. Weeks with alternating green and blue blocks are the linear interpolation of the two weeks on either side of that particular time period. CE represents a collection efficiency test. The alternating gray and white areas represent the corresponding periods of extrapolation covered by that particular test result. (#) indicates the number of valid six-hour samples collected for each sampling date.

Aug-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	(4)	31	

Nov-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(0)		
				1	2	3
				(0)		
5	6	7	8	9	10	11
				(1)		
12	13	14	15	16	17	18
				(4)		
19	20	21	22	23	24	25
				(4) CE		
26	27	28	29	30		

Sep-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
				(4)		
3	4	5	6	7	8	9
				(4)		
10	11	12	13	14	15	16
				(4) CE		
17	18	19	20	21	22	23
				(4)		
24	25	26	27	28	29	30

Dec-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)		
3	4	5	6	7	8	9
				(4)		
10	11	12	13	14	15	16
				(4)		
17	18	19	20	21	22	23
				(4) CE		
24	25	26	27	28	29	30
31						

Oct-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)		
1	2	3	4	5	6	7
				(4)		
8	9	10	11	12	13	14
				(0)		
15	16	17	18	19	20	21
				(0)		
22	23	24	25	26	27	28
29	30	31				

Jan-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)		
	1	2	3	4	5	6
				(4)		
7	8	9	10	11	12	13
				(4) CE		
14	15	16	17	18	19	20
				(4)		
21	22	23	24	25	26	27
28	29	30	31			

Table 2-3. (Continued)

Feb-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)		
				1	2	3
				(4)		
4	5	6	7	8	9	10
				(4)		
11	12	13	14	15	16	17
				(4) CE		
18	19	20	21	22	23	24
25	26	27	28			

May-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)		
		1	2	3	4	5
				(4)		
6	7	8	9	10	11	12
				(4) CE		
13	14	15	16	17	18	19
				(4)		
20	21	22	23	24	25	26
				(4)		
27	28	29	30	31		

Mar-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)		
				1	2	3
				(4)		
4	5	6	7	8	9	10
				(4)		
11	12	13	14	15	16	17
				(4) CE		
18	19	20	21	22	23	24
				(0)		
25	26	27	28	29	30	31

Jun-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
				(4)		
3	4	5	6	7	8	9
				(4)		
10	11	12	13	14	15	16
				(4) CE		
17	18	19	20	21	22	23
				(4)		
24	25	26	27	28	29	30

Apr-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)		
1	2	3	4	5	6	7
				(4)		
8	9	10	11	12	13	14
				(4)		
15	16	17	18	19	20	21
				(4) CE		
22	23	24	25	26	27	28
29	30					

Jul-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)		
1	2	3	4	5	6	7
				(4)		
8	9	10	11	12	13	14
				(4) CE		
15	16	17	18	19	20	21
				(4)		
22	23	24	25	26	27	28
29	30	31				

Table 2-3. (Continued)

Aug-07

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			(4)			
			1	2	3	4
			(4)			
5	6	7	8	9	10	11
			(4) CE			
12	13	14	15	16	17	18
			(4)			
19	20	21	22	23	24	25
			(4)			
26	27	28	29	30	31	

Sep-07

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)		
2	3	4	5	6	7	8
			(4)			
9	10	11	12	13	14	15
			(4) CE			
16	17	18	19	20	21	22
			(4)			
23	24	25	26	27	28	29
30						

Table 2-4. Achieved sampling design for impingement sampling at Schiller Station Unit 5. Bold dates indicate when sampling occurred. The green and blue shaded weeks represent the corresponding periods of extrapolation for that sample. Weeks with alternating green and blue blocks are the linear interpolation of the two weeks on either side of that particular time period. CE represents a collection efficiency test. The alternating gray and white areas represent the corresponding periods of extrapolation covered by that particular test result. (#) indicates the number of valid six-hour samples collected for each sampling date.

Aug-06							Nov-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5					(4)		
										1	2	3	4
											(4)		
6	7	8	9	10	11	12	5	6	7	8	9	10	11
											(4)		
13	14	15	16	17	18	19	12	13	14	15	16	17	18
											(4)		
20	21	22	23	24	25	26	19	20	21	22	23	24	25
				(4)						(4) CE			
27	28	29	30	31			26	27	28	29	30		

Sep-06							Dec-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2						1	2
				(0)							(4)		
3	4	5	6	7	8	9	3	4	5	6	7	8	9
				(4)							(4)		
10	11	12	13	14	15	16	10	11	12	13	14	15	16
				(4) CE							(4)		
17	18	19	20	21	22	23	17	18	19	20	21	22	23
				(4)							(4) CE		
24	25	26	27	28	29	30	24	25	26	27	28	29	30
							31						

Oct-06							Jan-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)							(2)		
1	2	3	4	5	6	7		1	2	3	4	5	6
				(4)							(4)		
8	9	10	11	12	13	14	7	8	9	10	11	12	13
				(4) CE							(4) CE		
15	16	17	18	19	20	21	14	15	16	17	18	19	20
				(4)							(4)		
22	23	24	25	26	27	28	21	22	23	24	25	26	27
29	30	31					28	29	30	31			

Table 2-4. (Continued)

Feb-07							May-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)	1	2	3				(4)		
				(4)							(4)		
4	5	6	7	8	9	10	6	7	8	9	10	11	12
				(4)							(4) CE		
11	12	13	14	15	16	17	13	14	15	16	17	18	19
				(4) CE							(4)		
18	19	20	21	22	23	24	20	21	22	23	24	25	26
											(4)		
25	26	27	28				27	28	29	30	31		

Mar-07							Jun-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)	1	2						1	2
				(4)							(4)		
4	5	6	7	8	9	10	3	4	5	6	7	8	9
				(4)							(4)		
11	12	13	14	15	16	17	10	11	12	13	14	15	16
				(4) CE							(4) CE		
18	19	20	21	22	23	24	17	18	19	20	21	22	23
				(4)									
25	26	27	28	29	30	31	24	25	26	27	28	29	30

Apr-07							Jul-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)							(4)		
1	2	3	4	5	6	7	1	2	3	4	5	6	7
				(4)							(4)		
8	9	10	11	12	13	14	8	9	10	11	12	13	14
				(0)							(4) CE		
15	16	17	18	19	20	21	15	16	17	18	19	20	21
				(4) CE							(4)		
22	23	24	25	26	27	28	22	23	24	25	26	27	28
29	30						29	30	31				

Table 2-4. (Continued)

Aug-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			(4)			
			1	2	3	4
			(4)			
5	6	7	8	9	10	11
			(4) CE			
12	13	14	15	16	17	18
			(4)			
19	20	21	22	23	24	25
			(4)			
26	27	28	29	30	31	

Sep-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
			(4)			
2	3	4	5	6	7	8
			(4)			
9	10	11	12	13	14	15
			(4) CE			
16	17	18	19	20	21	22
			(4)			
23	24	25	26	27	28	29
30						

Table 2-5. Achieved sampling design for impingement sampling at Schiller Station Unit 6. Bold dates indicate when sampling occurred. The green and blue shaded weeks represent the corresponding periods of extrapolation for that sample. Weeks with alternating green and blue blocks are the linear interpolation of the two weeks on either side of that particular time period. CE represents a collection efficiency test. The alternating gray and white areas represent the corresponding periods of extrapolation covered by that particular test result. (#) indicates the number of valid six-hour samples collected for each sampling date.

Aug-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	(4) 31		

Nov-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)		
			1	2	3	4
				(4)		
5	6	7	8	9	10	11
				(4)		
12	13	14	15	16	17	18
				(4)		
19	20	21	22	23	24	25
				(4) CE		
26	27	28	29	30		

Sep-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	(4)	7	8
10	11	12	13	(4)	14	15
17	18	19	20	(4) CE	21	22
24	25	26	27	(4)	28	29
						30

Dec-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)		
3	4	5	6	7	8	9
				(4)		
10	11	12	13	14	15	16
				(4)		
17	18	19	20	21	22	23
				(4) CE		
24	25	26	27	28	29	30
31						

Oct-06						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	(4)	5	6
				(4)		
8	9	10	11	12	13	14
				(4) CE		
15	16	17	18	19	20	21
				(4)		
22	23	24	25	26	27	28
29	30	31				

Jan-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	(4)	4	5
				(4)		
7	8	9	10	11	12	13
				(4) CE		
14	15	16	17	18	19	20
				(4)		
21	22	23	24	25	26	27
28	29	30	31			

Table 2-5. (Continued)

Feb-07							May-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)	1	2 3			1	2	(4) 3	4	5
				(4)							(4)		
4	5	6	7	8	9	10	6	7	8	9	10	11	12
				(4)							(4) CE		
11	12	13	14	15	16	17	13	14	15	16	17	18	19
				(4) CE							(4)		
18	19	20	21	22	23	24	20	21	22	23	24	25	26
											(4)		
25	26	27	28				27	28	29	30	31		

Mar-07							Jun-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(0)	1	2 3						1	2
				(0)							(4)		
4	5	6	7	8	9	10	3	4	5	6	7	8	9
				(0)							(4)		
11	12	13	14	15	16	17	10	11	12	13	14	15	16
				(0)							(4) CE		
18	19	20	21	22	23	24	17	18	19	20	21	22	23
				(0)							(4)		
25	26	27	28	29	30	31	24	25	26	27	28	29	30

Apr-07							Jul-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)	5	6 7					(4)		
				(4)			1	2	3	4	(4)		
8	9	10	11	12	13	14					(4)		
				(4)			8	9	10	11	12	13	14
15	16	17	18	19	20	21					(4) CE		
				(1) CE			15	16	17	18	19	20	21
22	23	24	25	26	27	28					(4)		
							22	23	24	25	26	27	28
29	30												

Jul-07							Jul-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
				(4)							(4)		
1	2	3	4	5	6	7	1	2	3	4	5	6	7
				(4)							(4)		
8	9	10	11	12	13	14					(4) CE		
				(4)			8	9	10	11	12	13	14
15	16	17	18	19	20	21					(4)		
				(4)			15	16	17	18	19	20	21
22	23	24	25	26	27	28					(4)		
							22	23	24	25	26	27	28
29	30	31											

Table 2-5. (Continued)

Aug-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			(4)			
			1	2	3	4
			(4)			
5	6	7	8	9	10	11
			(4) CE			
12	13	14	15	16	17	18
			(4)			
19	20	21	22	23	24	25
			(4)			
26	27	28	29	30	31	

Sep-07						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
				(4)		
2	3	4	5	6	7	8
			(4)			
9	10	11	12	13	14	15
			(4) CE			
16	17	18	19	20	21	22
			(4)			
23	24	25	26	27	28	29
30						

Table 2-6. Impingement collection efficiency adjustment values obtained from Normandeau releases of 100 dead fish onto the traveling screens at Schiller Station, September 2006 through September 2007.

Sample Start Date	Unit 4 % Efficiency	Unit 5 % Efficiency	Unit 6 % Efficiency
9/21/2006	92%	82%	58%
10/19/2006	Void ^a	51%	80%
11/30/2006	92%	75%	37%
12/28/2006	86%	91%	44%
1/18/2007	88%	84%	5%
2/22/2007	91%	87%	71%
3/22/2007	93%	49%	Void ^a
4/26/2007	93%	25%	73%
5/17/2007	96%	43%	79%
6/21/2007	93%	20%	92%
7/19/2007	85%	90%	68%
8/16/2007	85%	10%	10%
9/20/2007	96%	6%	43%

^a Collection efficiency test not conducted due to Unit shutdown.

Table 2-7. Designation of sampling weeks for Schiller Station impingement and entrainment sampling programs, August 2006 through September 2007.

Month	Calendar Week	Week Date (Mon.)	Month	Calendar Week	Week Date (Mon.)
August	35	28-Aug-06	May	19	7-May-07
September	36	4-Sep-06		20	14-May-07
	37	11-Sep-06		21	21-May-07
	38	18-Sep-06		22	28-May-07
October	39	25-Sep-06	June	23	4-Jun-07
	40	2-Oct-06		24	11-Jun-07
	41	9-Oct-06		25	18-Jun-07
	42	16-Oct-06	July	26	25-Jun-07
	43	23-Oct-06		27	2-Jul-07
November	44	30-Oct-06		28	9-Jul-07
	45	6-Nov-06		29	16-Jul-07
	46	13-Nov-06		30	23-Jul-07
December	47	20-Nov-06	August	31	30-Jul-07
	48	27-Nov-06		32	6-Aug-07
	49	4-Dec-06		33	13-Aug-07
	50	11-Dec-06		34	20-Aug-07
	51	18-Dec-06	September	35	27-Aug-07
January	52	25-Dec-06		36	3-Sep-07
	1	1-Jan-07		37	10-Sep-07
	2	8-Jan-07		38	17-Sep-07
	3	15-Jan-07		39	24-Sep-07
	4	22-Jan-07			
February	5	29-Jan-07			
	6	5-Feb-07			
	7	12-Feb-07			
March	8	19-Feb-07			
	9	26-Feb-07			
	10	5-Mar-07			
	11	12-Mar-07			
April	12	19-Mar-07			
	13	26-Mar-07			
	14	2-Apr-07			
	15	9-Apr-07			
	16	16-Apr-07			
	17	23-Apr-07			
	18	30-Apr-07			

*Shaded weeks represent 52 week annual period assessed for Impingement and Entrainment at Schiller Station

Table 2-8. Schiller Station historical operating flow (average millions of gallons per day, i.e. mgd) of water withdrawn into the intake structure for each month in the period January 1998 through December 2007.

Unit	Month	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2002-2007
Unit 4	January	40.1	40.8	40.8	40.8	40.8	40.8	40.8	40.8	36.7	40.8	40.1
	February	38.6	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8
	March	37.3	40.8	37.2	40.8	37.1	9.2	40.8	40.8	40.8	38.1	34.5
	April	40.8	40.8	9.2	8.6	29.6	31.5	8.4	15.0	40.8	40.8	27.7
	May	40.8	26.3	40.1	40.8	40.8	40.8	23.9	38.5	39.5	40.8	37.4
	June	39.9	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8
	July	40.8	40.8	29.8	37.6	40.8	40.8	40.8	40.8	40.8	40.8	40.8
	August	40.4	40.8	40.8	39.4	40.8	38.2	40.8	40.8	40.8	40.8	40.4
	September	40.8	40.2	40.8	40.8	13.6	40.8	40.8	40.8	40.8	40.8	36.3
	October	40.8	39.7	40.8	40.8	27.6	40.8	40.8	40.8	19.7	40.8	35.1
	November	40.8	0.0	40.8	40.8	40.8	38.6	39.5	40.8	19.0	40.8	36.6
	December	40.0	39.6	40.8	40.8	40.8	40.8	40.8	33.2	40.8	40.8	39.5
	Yearly Average	40.1	36.0	36.9	37.7	36.2	37.0	36.6	37.8	36.8	40.6	37.5
Unit 5	January	40.9	41.4	41.0	40.7	41.8	41.8	41.8	41.8	39.0	41.8	41.3
	February	37.3	41.8	41.8	41.8	31.0	31.4	41.8	38.4	39.6	41.8	37.3
	March	40.8	41.4	32.3	0.0	17.8	32.4	40.0	40.3	41.8	41.8	35.7
	April	41.4	41.8	29.7	33.6	41.8	41.8	41.8	41.8	23.8	34.1	37.5
	May	41.8	35.7	39.1	41.8	37.5	31.0	40.6	41.8	0.0	41.8	32.1
	June	41.8	13.8	35.1	41.8	41.8	38.1	41.8	41.8	41.8	41.8	41.2
	July	41.8	41.8	36.3	41.8	41.8	41.8	41.8	41.8	36.6	41.8	40.9
	August	40.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8
	September	41.3	39.6	41.8	39.3	37.2	41.8	41.8	41.8	32.3	37.9	38.8
	October	41.4	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	28.8	39.6
	November	39.7	41.4	41.8	41.8	41.8	41.8	36.3	41.8	41.8	37.1	40.1
	December	41.8	41.8	40.1	39.1	40.1	41.8	39.4	41.8	41.8	41.8	41.1
	Yearly Average	40.9	38.7	38.6	37.1	38.0	38.9	40.9	41.4	35.2	39.4	39.0
Unit 6	January	40.9	41.8	40.8	39.9	41.8	41.8	41.8	41.8	41.8	41.8	41.8
	February	39.6	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8
	March	41.8	41.8	5.4	41.8	41.8	41.2	3.3	41.8	41.8	8.1	29.7
	April	41.8	41.8	21.9	41.8	22.3	16.7	38.1	29.9	35.3	29.8	28.7
	May	38.5	26.5	35.7	41.8	27.8	20.2	41.8	41.8	41.8	41.8	35.9
	June	41.8	41.8	38.7	33.4	39.1	41.8	41.8	41.8	41.8	41.8	41.4
	July	41.2	41.8	41.8	39.1	41.8	40.5	41.8	41.8	41.8	41.8	41.6
	August	39.6	36.1	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8
	September	41.8	41.8	41.8	41.8	39.1	41.8	41.8	41.8	41.8	41.8	41.4
	October	41.8	39.1	41.8	41.8	37.5	41.8	41.8	35.8	41.8	41.8	40.1
	November	40.1	40.5	41.8	40.2	41.8	41.8	41.8	41.8	41.8	41.8	41.8
	December	41.8	37.1	39.1	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8
	Yearly Average	40.9	39.3	36.0	40.6	38.2	37.8	38.3	40.3	41.3	38.0	39.0

(continued)

Table 2-8. (Continued)

Unit	Month	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2002-2007
All Units Combined	January	121.9	124.0	122.6	121.4	124.4	124.4	124.4	124.4	117.5	124.4	123.3
	February	115.5	124.4	124.4	124.4	113.6	114	124.4	121.0	122.2	124.4	119.9
	March	119.9	124.0	74.9	82.6	96.7	82.8	84.1	122.9	124.4	88.0	99.8
	April	124.0	124.4	60.8	84.0	93.7	90.0	88.3	86.7	99.9	104.7	93.9
	May	121.1	88.5	114.9	124.4	106.1	92.0	106.3	122.1	81.3	124.4	105.4
	June	123.5	96.4	114.6	116.0	121.7	120.7	124.4	124.4	124.4	124.4	123.3
	July	123.8	124.4	107.9	118.5	124.4	123.1	124.4	124.4	119.2	124.4	123.3
	August	120.8	118.7	124.4	123.0	124.4	121.8	124.4	124.4	124.4	124.4	124.0
	September	123.9	121.6	124.4	121.9	89.9	124.4	124.4	124.4	114.9	120.5	116.4
	October	124.0	120.6	124.4	124.4	106.9	124.4	124.4	118.4	103.3	111.4	114.8
	November	120.6	81.9	124.4	122.8	124.4	122.2	117.6	124.4	102.6	119.7	118.5
	December	123.6	118.5	120.0	121.7	122.7	124.4	122.0	116.8	124.4	124.4	122.5
	Yearly Average	121.9	114.0	111.5	115.4	112.4	113.7	115.8	119.5	113.2	117.9	115.4

Note: Flows for the years 2002 through 2007 are shaded to identify the years considered representative of Schiller Station's typical recent water withdrawal rate and operations.

Table 2-9. Comparison of Schiller Station's weekly, monthly and annual total operating flow and 2002-2007 average historical operating flow (both expressed as millions of gallons per week) calculated and used for Schiller Station to represent the 52 week sampling year from 2 October 2006 through 30 September 2007.

Year	Month	Week	Unit 4		Unit 5		Unit 6		All Units Combined	
			Operating	Historical	Operating	Historical	Operating	Historical	Operating	Historical
2006	October	40	285.6	245.6	292.6	277.4	292.6	280.6	870.8	803.6
		41	285.6	245.6	292.6	277.4	292.6	280.6	870.8	803.6
		42	40.8	245.6	292.6	277.4	292.6	280.6	626	803.6
		43	0	245.6	292.6	277.4	292.6	280.6	585.2	803.6
		44	0	245.6	292.6	277.4	292.6	280.6	585.2	803.6
	November	45	0	256.1	292.6	280.7	292.6	292.6	585.2	829.4
		46	79.9	256.1	292.6	280.7	292.6	292.6	665.1	829.4
		47	285.6	256.1	292.6	280.7	292.6	292.6	870.8	829.4
		48	285.6	256.1	292.6	280.7	292.6	292.6	870.8	829.4
	December	49	285.6	276.7	292.6	287.8	292.6	292.6	870.8	857.2
		50	285.6	276.7	292.6	287.8	292.6	292.6	870.8	857.2
		51	285.6	276.7	292.6	287.8	292.6	292.6	870.8	857.2
		52	285.6	276.7	292.6	287.8	292.6	292.6	870.8	857.2
2007	January	1	285.6	280.8	292.6	289.3	292.6	292.6	870.8	862.8
		2	285.6	280.8	292.6	289.3	292.6	292.6	870.8	862.8
		3	285.6	280.8	292.6	289.3	292.6	292.6	870.8	862.8
		4	285.6	280.8	292.6	289.3	292.6	292.6	870.8	862.8
		5	285.6	280.8	292.6	289.3	292.6	292.6	870.8	862.8
	February	6	285.6	285.6	292.6	261.3	292.6	292.6	870.8	839.5
		7	285.6	285.6	292.6	261.3	292.6	292.6	870.8	839.5
		8	285.6	285.6	292.6	261.3	292.6	292.6	870.8	839.5
		9	285.6	285.6	292.6	261.3	292.6	292.6	870.8	839.5
	March	10	285.6	241.3	292.6	249.8	125.4	207.7	703.6	698.7
		11	285.6	241.3	292.6	249.8	0	207.7	578.2	698.7
		12	285.6	241.3	292.6	249.8	0	207.7	578.2	698.7
		13	202.3	241.3	292.6	249.8	0	207.7	494.9	698.7
	April	14	285.6	193.8	292.6	262.6	0	200.8	578.2	657.2
		15	285.6	193.8	292.6	262.6	226.4	200.8	804.6	657.2
		16	285.6	193.8	61	262.6	292.6	200.8	639.2	657.2
		17	285.6	193.8	292.6	262.6	292.6	200.8	870.8	657.2
		18	285.6	193.8	292.6	262.6	292.6	200.8	870.8	657.2

(continued)

Table 2-9. (Continued)

Year	Month	Week	Unit 4		Unit 5		Unit 6		All Units Combined	
			Operating	Historical	Operating	Historical	Operating	Historical	Operating	Historical
	May	19	285.6	261.7	292.6	224.8	292.6	251.1	870.8	737.6
		20	285.6	261.7	292.6	224.8	292.6	251.1	870.8	737.6
		21	285.6	261.7	292.6	224.8	292.6	251.1	870.8	737.6
		22	285.6	261.7	292.6	224.8	292.6	251.1	870.8	737.6
	June	23	285.6	285.6	292.6	288.3	292.6	289.5	870.8	863.3
		24	285.6	285.6	292.6	288.3	292.6	289.5	870.8	863.3
		25	285.6	285.6	292.6	288.3	292.6	289.5	870.8	863.3
		26	285.6	285.6	292.6	288.3	292.6	289.5	870.8	863.3
	July	27	285.6	285.6	292.6	286.5	292.6	291.1	870.8	863.2
		28	285.6	285.6	292.6	286.5	292.6	291.1	870.8	863.2
		29	285.6	285.6	292.6	286.5	292.6	291.1	870.8	863.2
		30	285.6	285.6	292.6	286.5	292.6	291.1	870.8	863.2
		31	285.6	285.6	292.6	286.5	292.6	291.1	870.8	863.2
	August	32	285.6	282.6	292.6	292.6	292.6	292.6	870.8	867.8
		33	285.6	282.6	292.6	292.6	292.6	292.6	870.8	867.8
		34	285.6	282.6	292.6	292.6	292.6	292.6	870.8	867.8
		35	285.6	282.6	292.6	292.6	292.6	292.6	870.8	867.8
	September	36	285.6	253.9	174.2	271.6	292.6	289.5	752.4	814.9
		37	285.6	253.9	292.6	271.6	292.6	289.5	870.8	814.9
		38	285.6	253.9	292.6	271.6	292.6	289.5	870.8	814.9
		39	285.6	253.9	292.6	271.6	292.6	289.5	870.8	814.9
Annual Total Flow			13,460.6	13,602.5	14,865.2	14,207.3	13,811.4	14,157.4	42,137.2	41,967.2
Annual Percent of Design Flow			91.1%	92.0%	97.8%	93.5%	90.9%	93.1%	93.3%	92.9%

3.0 SCHILLER STATION ENTRAINMENT

A total of 162 valid entrainment samples were collected on 41 sampling dates from 31 August 2006 through 27 September 2007 (Table 2-1). All 162 entrainment samples were included in assessment of ichthyoplankton and macrocrustacean species composition (Section 3.1 below), ichthyoplankton length frequency (Section 3.2 below), and seasonal and year to year trends in entrainment density (Section 3.3 below). Estimated entrainment abundances calculated for ichthyoplankton and macrocrustaceans and used in Sections 3.4, 3.5, and 3.6 of this report were based on the "sampling year" represented by the 149 samples collected during the 52 week period from Monday 2 October 2006 through Sunday 30 September 2007 (Table 2-7). Therefore, the data and results found in Sections 3.1, 3.2 and 3.3 specifically provide the entrainment data summary requested in Attachment B Item 2 of the 308 Letter. Sections 3.4, 3.5, and 3.6 specifically provide the entrainment data analysis requested in Attachment B Item 3 of the 308 Letter. Table 1 of Appendix B presents the duration, volume and recorded water quality parameters for each entrainment sample as requested in Attachment B Item 2e of the 308 Letter.

3.1 Species Composition

Results in this Section (3.1) are presented for the raw total count of entrained ichthyoplankton and macrocrustacean larvae observed in the samples collected and processed from the period of 31 August 2006 through 27 September 2007 at Screen House #2 of Schiller Station. Each of the 162 samples collected and processed represent the ichthyoplankton and macrocrustacean larvae enumerated from about 100 m³ of entrained water filtered from each of four 6-hour periods on each day (400 m³ per day) from among 41 sampling dates. Therefore, the total or raw counts of entrained organisms examined in Section 3.1 represent the raw count of ichthyoplankton and macrocrustacean larvae from about 16,200 m³ of CWIS flow sampled.

3.1.1 Fish

Thirty-five fish taxa belonging to twenty-three families were identified from Schiller Station entrainment samples (Table 3-1). Additional taxonomic categories in Table 3-1 represented specimens that were either too badly damaged to identify (i.e. Unidentified) or were in a life stage or size range in which two or more locally occurring species cannot be reliably distinguished (i.e. eggs of fourbeard rockling and hake, or cunner and yellowtail flounder). Table 2 in Appendix B provides the total raw or numerical count for each fish taxon and life stage collected on a weekly and annual basis at Units 4, 5, and 6 of Schiller Station.

Among the total raw or numerical count of individual fish taxa enumerated in the entrainment samples from Schiller Station during 31 August 2006 through 27 September 2007 (including Stage 2-4 winter flounder), 44.1 % were post yolk-sac larvae (n = 6,908; PYSL). PYSL are defined as the transitional life stage of fish larval development occurring from the time when a complete functional digestive system has been fully developed to the time when the organism transforms into a fully formed juvenile fish. Yolk-sac larvae (YSL), defined as the transition stage from hatching through the development of a complete, functional digestive system, represented 3.3 % of the total raw or numerical count of individual fish species enumerated in Schiller Station entrainment samples from 31 August 2006 through 27 September 2007 (n = 517). A total of 8,206 fish eggs were entrained, representing 52.4% of the total fish life stages enumerated in the entrainment samples from Schiller

Station during 31 August 2006 through 27 September 2007. Young of year (YOY) fish, defined as the stage from completed transformation into a juvenile fish to Age 1 (12 months), represented 0.08% ($n = 12$) of the total fish enumerated in the entrainment samples collected from Schiller Station during 31 August 2006 through 27 September 2007 (Table 3-2). Individuals identified as yearling or older fish represented 0.04% ($n = 6$) of the total fish entrained (Table 3-2). The remaining 22 individuals or 0.1% of the total enumerated were unknown life stages of fish that could not be identified to family or could not be assigned a life stage due to the damaged condition of the individuals in the sample (Table 3-2).

Among the 8,206 fish eggs enumerated in the entrainment samples from Schiller Station collected during 31 August 2006 through 27 September 2007, the cunner/yellowtail flounder taxon accounted for 83.3% of all eggs (Table 3-2). These two taxa cannot usually be distinguished when in the egg stage due to overlapping egg diameters and the lack of an oil globule. Based on the absence of all other life stages of yellowtail flounder enumerated from entrainment samples at Schiller Station, and the high abundance of cunner in the lower Piscataqua River (Normandeau 1979, Short 1992, MRI 2004), for the purposes of this report it is assumed that these eggs were all cunner. It is possible that a small proportion of the early stage cunner/yellowtail flounder eggs may be tautog, which are typically not distinguishable from cunner eggs until they are further developed. However, based on the absence of tautog larvae in the entrainment samples and considerably higher cunner abundance relative to tautog in the Great Bay/Piscataqua River estuary, all cunner/yellowtail flounder eggs were considered cunner for purposes of this report and those eggs that were clearly distinguishable as tautog were classified as such for the purpose of abundance and adult equivalent calculations in this report (Table 3-2). Fourbeard rockling/hake accounted for an additional 5.2% of the total number of eggs enumerated in Schiller Station entrainment samples collected during 31 August 2006 through 27 September 2007 (Table 3-2). Again, separation of this suite of species is not always possible at the early stages of egg development prior to observation of taxonomic characters of melanophore pigmentation on the developing embryos. Because both fourbeard rockling and the hakes commonly occur in the Great Bay estuary and have overlapping spawning seasons, for the purposes of this report, this group of eggs will be classified as fourbeard rockling as this will provide the most conservative estimate of adult equivalent abundance (i.e. the taxon with the lower egg mortality value). Atlantic mackerel (4.5%) and *Urophycis* sp. (2.2%) eggs were the only other entrained fish taxa at Schiller Station representing 1.0% or more of the raw or numerical count enumerated in Schiller Station entrainment samples collected during 31 August 2006 through 27 September 2007 (Table 3-2); the remaining taxa present each accounted for less than 1% of the entrained eggs at Schiller Station.

Of the 517 YSL fish enumerated in all entrainment samples from Schiller Station during 31 August 2006 through 27 September 2007, American sand lance (48.9%), rock gunnel (30.0%), grubby (13.7%), and pollock (3.3%) collectively contributed 95.9% of the total (Table 3-2). The dominant taxa collected as YSL listed above are winter and early spring spawners that have relatively long YSL durations due to lower water temperature during their period of occurrence (compared to most summer spawners, which are typically only in the yolk sac stage for a week or less). Yolk sac larvae from ten other fish taxa individually contributed between 0.8% and 0.2% of the remaining 4.1% of the YSL fish enumerated at Schiller Station during August 2006 through September 2007. Overall, YSL were relatively rare and accounted for only about 3% of the total entrainment count at Schiller Station.

A total of 6,908 PYSL (including the 23 stage 2-4 winter flounder larvae) were observed among all entrainment samples enumerated from Schiller Station during the period 31 August 2006 through 27 September 2007 (Table 3-2). The four most abundant fish taxa enumerated were cunner (54.9%), American sand lance (20.3%), rock gunnel (11.4%), and grubby (4.3%), collectively contributing 90.9 % of all PYSL enumerated in entrainment samples from Schiller Station from 31 August 2006 through 27 September 2007. The remaining 21 taxa observed in the PYSL life stage, each accounted for 2.1% or less of the total enumerated from entrainment samples at Schiller Station from 31 August 2006 through 27 September 2007.

A total of four Atlantic tomcod and eight cunner accounted for the only YOY stage fish enumerated from Schiller Station entrainment samples from 31 August 2006 through 27 September 2007 (Table 3-2). Northern pipefish (n=5) and striped killifish (n=1) comprised the only yearling or older fish observed in Schiller Station entrainment samples from 31 August 2006 through 27 September 2007 (Table 3-2).

Winter flounder larvae were not abundant in the entrainment samples collected from Schiller Station during 31 August 2006 through 27 September 2007 (23 larvae; Table 3-2). Winter flounder larvae were classified as either Stage 1 (yolk-sac present or eyes not pigmented), Stage 2 (no yolk-sac present and eyes pigmented, but either no fin ray development or no flexion of the notochord), Stage 3 (fin rays present and notochord flexion has begun, but the left eye has not migrated to the midline of the head), or Stage 4 (left eye has reached the midline of the head, but full fin ray complement has not yet been attained). Of the 23 winter flounder larvae enumerated in the entrainment samples from Schiller Station during 31 August 2006 through 27 September 2007, 17.4% were Stage 2, 78.2% were Stage 3, and 4.3% were Stage 4, no stage 1 yolk sac larvae or juveniles were collected (Table 3-2).

Density averaged over the 57 week period from 31 August 2006 through 27 September 2007 (including the non sampled weeks where density was interpolated) is presented in Table 3-3. As would be expected, the most abundantly entrained species for each life stage had the highest mean annual densities ($\#/100\text{m}^3$; Table 3-3).

3.1.2 Macrocrustaceans

Seven macrocrustacean taxa belonging to five families were enumerated in the entrainment samples from Schiller Station during 31 August 2006 through 27 September 2007 (Table 3-1). Additional taxonomic categories in Table 3-1 represented specimens that were in a life stage or size range in which two or more locally occurring taxa cannot always be reliably distinguished (i.e. *Cancer* sp.). Table 3 in Appendix B provides the total raw or numerical count for each macrocrustacean taxon and life stage during each sample week.

Zoea stage larvae represented nearly all (99.1%) of the total raw or numerical count of individual macrocrustacean taxa enumerated in the entrainment samples from Schiller Station during the period 31 August 2006 through 27 September 2007 (Table 3-4). The zoea life stage was defined by the absence of non-setose pleopods and enlarged first and second maxillipeds. The megalops life stage, defined as resembling small adults but with an extended abdomen with setose pleopods, represented 0.8 % of the total macrocrustaceans enumerated in the entrainment samples from Schiller Station during the period 31 August 2006 through 27 September 2007 (Table 3-4). Individual macrocrustaceans identified as juveniles represented 0.03% of the total macrocrustaceans enumerated

in the entrainment samples (Table 3-4). Juvenile macrocrustaceans were defined as resembling adults but with the abdomen reflexed against the body.

Lobster larvae were assigned life stages using different criteria than the crab taxa. Stage 1 lobster larvae were those that lacked pleopods (swimmerets) on the abdomen and these Stage 1 lobsters accounted for 71% (5 of the 7 lobster larvae) enumerated in the entrainment samples at Schiller Station during the period 31 August 2006 through 27 September 2007 (Table 3-5). Stage 2 lobster larvae were those larvae with pleopods but lacking uropods beside the telson and accounted for 29% (2/7) of the lobster larvae enumerated in the entrainment samples at Schiller Station during the period 31 August 2006 through 27 September 2007. Stage 3 lobster larvae were defined as larvae having uropods and stage 4 lobster larvae were defined as larvae having enlarged claws and resembling small adult lobsters. There were no stage 3 or 4 lobsters enumerated in the entrainment samples collected from Schiller Station during the period 31 August 2006 through 27 September 2007.

Among crab larvae enumerated in the entrainment samples from Schiller Station during the period 31 August 2006 through 27 September 2007, the species composition within the zoea stage comprised mostly green crab (55.3%) and *Cancer* sp. (44.1 %, Table 3-4). *Cancer* sp. zoea stage larvae are either Atlantic rock crab or Jonah crab which are nearly impossible to distinguish in that life stage. Green crab accounted for the highest percent composition within the megalops (83.5%) and juvenile (77.8 %) life stages (Table 3-4).

As would be expected, the most abundant species for each life stage enumerated in the entrainment samples from Schiller Station for the 57 week period from 31 August 2006 through 27 September 2007 exhibited the highest mean annual densities (#/100m³; Table 3-6).

3.2 Sizes of Entrained Organisms

Results in this Section (3.2) are presented for the subsample of 30 fish larvae per taxon measured for length during laboratory processing of the Schiller Station entrainment samples collected from the period 31 August 2006 through 27 September 2007 (Entrainment SOP, Normandeau 2006b). Each of the 162 samples collected and processed represent the ichthyoplankton and macrocrustacean larvae enumerated from about 100 m³ of entrained water filtered from each of four 6-hour periods on each day (400 m³ per day) from among 41 sampling dates. Therefore, the total or raw counts of entrained organisms examined in Section 3.2 represent the raw count of ichthyoplankton and macrocrustacean larvae from about 16,200 m³ of entrained samples processed.

3.2.1 Fish

The mean, range, and monthly length frequency distribution of YSL, PYSL and YOY (in 1 mm length classes) for each fish taxon measured in the entrainment samples collected and processed from Schiller Station during the period 31 August 2006 through 27 September 2007 is presented in Table 3-7. The lengths of entrained fish ranged from 1.3 mm (fourbeard rockling) to 132.0 mm (northern pipefish). The majority of entrained larvae (86%) measured ranged in length from less than 4.0 mm to 12-12.9 mm and these were most common within the 5.0-5.9 and 11.0-11.9 mm length classes (Figure 3-1). Fish larvae within the 5.0-5.9 and 6.0 to 6.9 mm length classes were dominated by American sand lance (34%), grubby (34%), and cunner (25%). Most of the fish larvae measured for length within the 11.0 – 11.9 mm length class were rock gunnel (53 %) and American sand lance (25 %).

Larvae of three abundant fish taxa, American sand lance, grubby, and rock gunnel showed monthly shifts in length frequency distributions, reflecting their growth during the period they were present in the entrainment samples at Schiller Station (Table 3-7). American sand lance were present in Schiller Station entrainment catches during the months of January 2007 through April 2007 and showed growth in larval length frequency distribution towards larger body size in the later months compared to the earlier months (Table 2-7). Grubby larvae were present in large numbers between January 2007 and April 2007 and showed growth among successive samples collected and analyzed during this period (Table 2-7). Rock gunnel were present in entrainment catches from January 2007 through April 2007 and also showed growth as the larval length frequency distribution increased into larger length classes later in the season (Table 3-7).

3.2.2 Macrocrustaceans

Length and width data for entrained macrocrustaceans at Schiller Station were not recorded when the entrainment samples were processed in the laboratory (Entrainment SOP, Normandeau 2006b).

3.3 Seasonal Patterns in Entrainment Density

Results in this Section (3.3) are presented for the densities of entrained ichthyoplankton and macrocrustacean larvae based on the number of organisms per 100 m³ of CWIS flow sampled during the period 31 August 2006 through 27 September 2007 Schiller Station. Each of the 162 samples collected and processed represent the ichthyoplankton and macrocrustacean larvae enumerated from about 100 m³ of entrained water filtered from each of four 6-hour periods on each day (400 m³ per day) from among 41 sampling dates. Therefore, the total or raw counts of entrained organisms examined in Section 3.3 represent the raw count of ichthyoplankton and macrocrustacean larvae from about 16,200 m³ of entrained samples processed.

3.3.1 Fish

The density of entrained fish (all life stages and taxa combined) at Schiller Station varied seasonally with peaks in densities observed during late May through early July 2007, in late July through mid-August 2007, and a smaller peak was observed from mid-January through March 2007 (Figure 3-2). When examined by life stage for all taxa combined (Figure 3-3), the June 2007 peak comprised mostly eggs. Mean densities of eggs entrained during that peak were 476.60 per 100 m³ and were comprised mostly of cunner. The secondary peak in egg density occurred during late-July 2007 when cunner also accounted for the majority of eggs.

Post-yolk-sac larvae density (all taxa combined) exhibited a peak during early to mid-August 2007 with a peak mean density of 400.72 PYSL per 100m³ (Figure 3-3), the majority of which were cunner. Mean density of PYSL (all taxa pooled) declined sharply in late August 2007 and remained low until late January 2007. Secondary seasonal peaks in PYSL density occurred during early-February (131.37 PYSL per 100 m³) and early-March 2007 (111.38 PYSL per 100 m³). These late winter peaks were comprised mostly of PYSL of American sand lance and rock gunnel, which are winter spawners. Entrainment density of YSL (all taxa pooled) peaked during mid-January through early February 2007 and was comprised mostly of American sand lance and rock gunnel, taxa that both have relatively long YSL durations.

3.3.2 Macrocrustaceans

Similar to fish, the density of entrained macrocrustacean larvae (all life stages combined) at Schiller Station varied seasonally (Figure 3-4). Macrocrustacean larval density peaked between mid-May and the end of August 2007. The peak density of macrocrustaceans was 5,310 per 100 m³ during late July 2007. When examined by life stage, crab zoea comprised most of the combined macrocrustacean entrainment density and were responsible for the overall seasonal trend observed at Schiller Station during August 2006 through September 2007 (Figure 3-5). Mean densities of crab zoea were 5,183 per 100 m³ during the seasonal peak in late-July 2007. Green crab and the two *Cancer* species (Atlantic rock crab and Jonah crab) accounted for the majority of the zoea present in entrainment samples. Crab megalops (mean density of 126.7 per 100 m³) and juveniles (mean density of 2.5 per 100 m³) life stages peaked during late-July and late-August 2007, respectively. Green crab accounted for the majority of the megalops and juvenile life stages present during the seasonal peaks of those two life stages. The two *Cancer* crabs comprised a relatively low proportion of the megalops and juvenile totals compared to their zoea abundance which is consistent with high zoea mortality compared to green crab (Appendix Table A-22 and A-23). Stage 1 lobster larvae were present in low densities (0.25 to 0.50 per 1000 m³) in July 2007. Stage 2 lobster larvae were collected in low densities (0.47 per 1000 m³) in late June and were not observed in July 2007.

3.4 Estimated Entrainment Abundance

Results in this Section (3.4) present the abundance (total number) of entrained fish and macrocrustacean larvae (Section 2.3.3, Equation 2) calculated from the product of weekly entrainment densities (Section 2.3.3, Equation 1) and the corresponding weekly operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007 at Units 4, 5, and 6 of Schiller Station, and for all three Units combined (Table 2-9). Because the same weekly density data (Figure 3-2) was applied to all three units, differences in entrainment abundance estimates among these three active Units are directly attributable to differences in the weekly patterns of cooling water flow.

3.4.1 Fish

The estimated total abundance (number) of fish (eggs, YSL, PYSL, YOY, yearling and older, unknown, winter flounder stages 1, 2, 3, and 4 life stages combined) entrained at Units 4, 5, and 6 (combined) of Schiller Station based on operating flows during the 52 week sampling year from 2 October 2006 through 30 September 2007 was 145,554,178 (Table 3-8). The estimated total number of fish eggs entrained at Schiller Station (Units 4, 5, and 6 combined) based on operating flows during the 52 week sampling year from 2 October 2006 through 30 September 2007 was 84.9 million (Table 3-8). Cunner/yellowtail flounder (68.0 million) comprised the overwhelming majority (80%) of the estimated total number of eggs entrained (Table 3-9). Other abundant species entrained in the egg stage include, fourbeard rockling/hake (6.0 million), Atlantic mackerel (5.4 million), and *Urophycis* sp. (1.3 million, Table 3-9). An estimated total of 4.4 million YSL were entrained at Schiller Station (Units 4, 5, and 6 combined) based on operating flows during the 52 sampling year from 2 October 2006 through 30 September 2007 (Table 3-8). American sand lance (2.1 million), rock gunnel (1.4 million), and grubby (606 thousand) were the three dominant fish taxa entrained in the YSL life stage (Table 3-9) and comprised 92% of the total YSL entrainment estimates. The estimated total number of PYSL entrained at Schiller Station (Units 4, 5, and 6 combined) based on

operating flows during the 52 week sample year from 2 October 2006 through 30 September 2007 was 55.7 million (Table 3-8). Cunner (30.3 million), and American sand lance (10.7 million), and rock gunnel (5.8 million) were the dominant fish taxa entrained for the PYSL life stage (Table 3-9), comprising 84% of the total PYSL. An estimated total of 70,319 YOY were entrained at Schiller Station (Units 4, 5, and 6 combined) based on operating flows during the 52 week sampling year from 2 October 2006 through 30 September 2007. Atlantic tomcod and cunner were the only taxa collected in entrainment samples in the YOY lifestage at Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 3-9).

Winter flounder were classified as Stage 1, Stage 2, Stage 3, and Stage 4 (see Section 3.1.1 for definitions). An estimated total of 71,184 Stage 2, 134,252 Stage 3, and 7,225 Stage 4 winter flounder were entrained at Schiller Station (Units 4, 5, and 6 combined) based on operating flows during the 52 week sampling year from 2 October 2006 through 30 September 2007.

Table 4 in Appendix B of this report provides the weekly entrainment rate, operating flow, and estimated entrainment abundance for each fish taxon by life stage for the period from 31 August 2006 through 27 September 2007 at Schiller Station separately for Unit 4, Unit 5, and Unit 6, and for all three Units combined.

3.4.2 Macrocrustaceans

The estimated total number of macrocrustaceans (crab zoea, crab megalops, crab juvenile, lobster stage 1, 2, 3, and 4 larvae combined) entrained at Units 4, 5, and 6 of Schiller Station (combined) based on operating flows during the 52 week sampling year from 2 October 2006 through 30 September 2007 was 1.3 billion (Table 3-10).

Nearly all of the macrocrustaceans entrained at Schiller Station were crab zoea. The estimated total number of crab zoea entrained at Schiller Station (Units 4, 5, and 6 combined) based on operating flows during the 52 week sampling year from 2 October 2006 through 30 September 2007 was 1.3 billion and comprised 99% of the macrocrustacean entrainment (Table 3-10). Green crab (720 million) and *Cancer* crab species (573 million) were the dominant macrocrustacean taxa entrained during the zoea life stage (Table 3-11). An estimated total of 10.3 million megalops were entrained at Schiller Station (Units 4, 5, and 6 combined) based on operating flows during the 52 week sampling year from 2 October 2006 through 30 September 2007. Green crab (8.4 million) and Atlantic rock crab (1.5 million) were the dominant macrocrustacean taxa entrained during the megalops life stage. The estimated total number of juvenile crabs entrained at Schiller Station (Units 4, 5, and 6 combined) based on operating flows during the 52 week sampling year from 2 October 2006 through 30 September 2007 was 423,223 (Table 3-10), the majority (81%) of which were green crab (Table 3-11).

American lobster larvae were classified as Stage 1, Stage 2, Stage 3, and Stage 4 (see Section 3.1.2 for definitions). An estimated total of 41,112 stage 1 American lobster larvae and 15,360 stage 2 lobster larvae were entrained at Schiller Station (Units 4, 5, and 6 combined) based on operating flows during the 52 week sampling year from 2 October 2006 through 30 September 2007. There were no stage 3, or 4 lobsters collected in the entrainment samples at Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007.

Table 5 in Appendix B of this report provides the weekly entrainment rate, operating flow, and estimated entrainment abundance for each macrocrustacean taxon by life stage for the period from 31 August 2006 through 27 September 2007 at Schiller Station separately for Unit 4, Unit 5, and Unit 6, and for all three Units combined.

3.5 Adult Equivalent Abundance

Results in this Section (3.5) present the estimated adult equivalent entrainment abundance (total number) for fish and macrocrustaceans calculated by adjusting the weekly entrainment abundance (Section 3.4 above) for survival to age at first maturity using the methods described in Section 2.3.7 of this report. Adult equivalent entrainment abundance was determined for the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 2-7) at Units 4, 5, and 6 of Schiller Station, and for all Units combined.

3.5.1 Fish

Adult equivalent entrainment abundance was calculated for 16 fish taxa where at least 50 individuals (raw count, all life stages pooled) were observed in the entrainment samples processed in the laboratory, and for one additional fish taxon observed in lower abundance but selected because it was considered to be of commercial interest (winter flounder). Adult equivalent entrainment abundance at Schiller Station were estimated for the following 17 fish taxa; American plaice, American sand lance, Atlantic cod, Atlantic herring, Atlantic mackerel, Atlantic menhaden, cunner, fourbeard rockling, grubby, longhorn sculpin, Northern pipefish, pollock, rainbow smelt, rock gunnel, *Urophycis* sp., windowpane, and winter flounder. These 17 taxa comprised 99.0 % of the total entrainment abundance (at Units 4,5, and 6 combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 3-9). Table 6 in Appendix B of this report presents the monthly estimated entrainment abundance and adult equivalent abundance by fish taxon and life stage for each Units 4, 5, 6, and for all Units combined, of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007.

During the 52 week sampling year from 2 October 2006 through 30 September 2007, the estimated annual total entrainment abundance of 143.9 million individuals of the 17 examined fish taxa (Table 3-9) represents 673,725 adult equivalents entrained at Schiller Station (Units 4, 5, and 6 combined) (Table 3-12). An additional 13 fish taxa (along with unidentified larvae) also contributed to the annual estimated entrainment abundance, but adult equivalent abundance was not calculated for these taxa (1.1% of estimated total entrainment abundance of all life stages combined; Table 3-9). The adult equivalent entrainment abundance was highest during the combined months of January through March 2007 (377,326 fish), when 56% of the estimated annual adult equivalent abundance was entrained (Table 3-12). The monthly adult equivalent entrainment abundance was lowest during October 2006 (42 fish). Rock gunnel (85%) and grubby (10%) comprised most of the adult equivalent entrainment abundance during the January through March 2007 peak (Appendix B, Table 6).

Rock gunnel was the single fish species exhibiting the highest number of adult equivalents entrained at Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 3-13). An estimated total of 377,296 rock gunnel adult equivalents were entrained (Table 3-13), accounting for 56.0% of the total adult equivalent entrainment abundance at Schiller

Station (Units 4, 5, and 6 combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007. The YSL and PYSL life stages contributed all of the adult equivalent entrainment abundance for rock gunnel (Table 3-13). Northern pipefish (15.7%, $n = 105,641$), cunner (12.2%, $n = 82,005$) and grubby (8.3%, $n = 55,918$), were three other fish taxa exhibiting estimated adult equivalent entrainment abundance of more than 22,000 fish annually (Units 4, 5, and 6 combined) (Table 3-13). Estimated adult equivalent abundance for the remaining 13 fish taxa combined comprised less than 8% of the estimated annual total adult equivalents entrained at Schiller Station (Units 4, 5, and 6 combined) for the 52 week sampling year from 2 October 2006 through 30 September 2007.

3.5.2 Macrocrustaceans

Adult equivalent entrainment abundance was also estimated for three macrocrustacean taxa (Atlantic lobster, *Cancer* sp. crabs, green crab) during the 52 week sample year from 2 October 2006 through 30 September 2007, comprising 99.6 % of the estimated raw entrainment counts enumerated for macrocrustaceans at Schiller Station. The analysis in this section (Section 3.5.2) presents the estimated total adult equivalent entrainment abundance by life stage for all three macrocrustacean taxa combined (Table 3-14) and individually for these three macrocrustacean taxa by month and life stage (Table 3-15). Table 7 in Appendix B of this report presents the monthly estimated entrainment abundance and adult equivalent abundance by macrocrustacean taxa and life stage at Units 4, 5, 6, and for all Units combined, of Schiller Station for the 52 week sample year from 2 October 2006 through 30 September 2007.

During the 52 week sampling year from 2 October 2006 through 30 September 2007, the total entrainment abundance of 1.30 billion macrocrustacean larvae of the three most abundant macrocrustacean taxa (Table 3-11) represents the adult equivalent entrainment abundance of 145,685 individuals (all three Units combined) at Schiller Station (Table 3-14). Three other macrocrustacean taxa contributed to the estimated annual total entrainment abundance (all life stages combined) presented in Table 3-11, but these three macrocrustacean taxa comprised just 0.4% of the total estimated entrainment abundance (Table 3-11) and adult equivalent abundance values were not calculated for these less abundant taxa. It should be noted that the adult equivalent total presented in Tables 3-14 and 3-15 do not include these additional taxa. When examined on a seasonal basis, adult equivalent entrainment of macrocrustaceans was greatest during the summer months, as would be expected given the life history strategies of these taxa. Green crab exhibited the highest number of adult equivalents entrained at Schiller Station (Units 4, 5, and 6 combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007, with an estimated adult equivalent abundance of 130,130 individuals representing 89.3% of total adult equivalent macrocrustaceans (Table 3-15). *Cancer* crab taxa (Atlantic rock crab and Jonah crab) comprised 10.6% of the estimated annual macrocrustacean adult equivalent abundance at Schiller Station (Units 4, 5, and 6 combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 3-15). A total of 67 adult equivalent American lobsters were estimated to be entrained at Schiller Station (Units 4, 5, and 6 combined) for the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 3-15).

3.6 Entrainment Survival

Results in this Section (3.6) present the survival observations for entrained ichthyoplankton and macrocrustacean larvae observed during the 52 week sampling year from 2 October 2006 through 30 September 2007 at Units 4, 5, and 6 of Schiller Station, and for all three Units combined. Observed survival rates were applied to the taxon-specific entrainment abundance estimates based on operating flows (Section 3.4) and to the estimated adult equivalent entrainment abundance for selected fish taxa based on operating flows (Section 3.5).

Abundance of larvae in the survival entrainment samples for each of the above fish taxa were representative of their seasonal occurrence within the total estimated entrainment at Schiller Station (Figure 3-6). As a result, based on the fact that the number of entrained fish tested in survival samples followed the seasonal pattern that was directly proportional to the monthly abundance of each fish taxon, survival data was pooled across all months and applied to the annual total since the survival rates are self weighted for seasonal densities.

For fish and macrocrustacean taxa entrained at Schiller Station where an adequate sample size was not collected during entrainment survival testing, entrainment survival was assigned based upon similarities to tested taxa. Similarities in larval size, body morphology, and the robustness or hardiness of a species were the criteria used to assign an expected survival rate for mechanical mortality associated with entrainment at Schiller Station. Due to a poor sample size for egg and juvenile life stages in entrainment survival samples collected during the 52 week sampling year at Schiller Station, entrainment survival was conservatively assumed to be zero for the egg and juvenile life stages when applied to calculate the survival adjusted entrainment abundance or adult equivalent abundance values for those life stages.

3.6.1 Fish

Control adjusted latent survival rates associated with the mechanical operations of the Schiller Station CWIS were calculated (as determined by Abbott's formula; Section 2.3.4) for American sand lance, Atlantic herring, cunner, grubby, longhorn sculpin, and rock gunnel (Table 3-16). Survival data for grubby and longhorn sculpin were pooled due to their similarity in body morphology and hardiness and yielded a calculated latent survival rate of 70.1%. For taxa entrained where an adequate sample size was not collected during entrainment survival testing, a mortality rate was assigned based upon similarities to tested species. Similarities in larval size, body morphology, and the robustness or hardiness of a species were the criteria used to assign an expected survival rate for mechanical mortality associated with entrainment at Schiller Station. Footnotes in Table 3-17 describe how survival rates were applied from those taxa observed with adequate sample sizes to the remaining taxa.

Control adjusted latent survival rates associated with the mechanical effects of the Schiller Station CWIS were applied to the estimated annual entrainment abundance of YSL and PYSL for each taxon entrained at Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007. Estimated entrainment abundances for all other entrained life stages (i.e. egg, YOY, and juvenile) were assumed to experience 100% mortality. Table 3-17 presents the total estimated entrainment abundances by life stage, the assigned latent survival rates applied to each life stage, and the survival and mortality adjusted estimated abundances (for all life stages) for fish taxa entrained at the CWIS at each Unit of Schiller Station, and for Units 4, 5, and 6 combined, during the 52 week sampling year for the period 2 October 2006 through 30 September 2007. When adjusted for latent

entrainment survival, an estimated total of 50,799,120 of the 145,554,178 fish (all life stages combined) entrained during the 52 week sampling year from 2 October 2006 through 30 September 2007 (35%) survived entrainment at the Schiller Station CWIS (Table 3-17).

Egg survival at the Schiller CWIS's was not assessed during 2007 due to a lack of occurrence of this life stage in the survival samples. EPRI (2000) reports whole system egg survival of 57% for striped bass, 16% for clupeids, and 73% to 100% for fourbeard rockling from entrainment survival studies conducted at steam electric generating facilities. For entrainment survival calculations, we made the conservative assumption of 100% mortality (i.e. no survival) for eggs entrained at Schiller Station. It should be noted that this estimate is extremely conservative because whole system survival (including mechanical and thermal stresses) for eggs has been documented for other generating facilities at rates ranging from 16% to 100% depending on the species. This conservative assumption affects the estimated 84.9 million eggs (Table 3-9) representing 58.3% of the total entrainment abundance at the Schiller CWIS (Units 4, 5, and 6 combined) during the 52 week sample year from 2 October 2006 through 30 September 2007.

Table 3-18 presents the total estimated adult equivalent abundance for all life stages of the 17 fish taxa comprising 99.0% of the total enumerated in the entrainment samples from Schiller Station (Units 4, 5, and 6 combined) during the 52 week sample year from 2 October 2006 through 30 September 2007. When adjusted for site-specific latent survival for the YSL and PYSL life stages, and conservatively assuming zero survival for all other life stages, an estimated 297,848 of the 673,726 (44%) adult equivalents survived entrainment through the Schiller Station CWIS's (Units 4, 5, and 6 combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 3-18).

3.6.2 Macrocrustaceans

Control adjusted latent survival rates associated with the mechanical operations of the Schiller Station CWIS were calculated for *Cancer* sp. and green crab (as determined by the Extended Survival Formula; Section 2.3.6), the only two macrocrustacean taxa observed with a sufficient sample size to determine entrainment survival (Table 3-19). These two macrocrustaceans taxa comprised 99.6% of the total macrocrustacean entrainment abundance at Schiller Station (Units 4, 5, and 6 combined). Insufficient sample sizes of macrocrustacean larvae collected by the control sampling device during all test dates at Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007 prevented use of the control-adjusted Abbott's formula for calculating latent survival of macrocrustacean larvae. In addition, insufficient sample sizes were available for each life stage, and therefore the three life stages for each taxon were pooled and a total entrainment survival estimate associated with the mechanical forces at the Schiller Station CWIS was calculated based on the latent test survival (Table 3-19). However, since the zoea life stage comprised 99% of the total macrocrustacean entrainment at Schiller station (Section 3.4.2), pooling was justified. These survival estimates were applied to all macrocrustacean entrainment data in the following section. When adjusted for latent entrainment survival, an estimated 1,013,454,660 of the 1,309,472,567 (77%) larval macrocrustaceans survived entrainment through the Schiller Station CWIS's (Units 4, 5, and 6 combined) during the 52 week sample year from 2 October 2006 through 30 September 2007 (Table 3-20).

Table 3-21 presents the total estimated adult equivalent abundance for macrocrustacean larvae (all life stages combined) corrected for survival at the CWIS's for Units 4, 5, and 6 of Schiller Station, and

for all three Units combined, during the 52 weeks sampling year from 2 October 2006 through 30 September 2007. When adjusted for latent survival, an estimated 114,860 of the 145,685 (79%) macrocrustacean adult equivalents entrained during the 52 week period from 2 October 2006 through 30 September 2007 survived entrainment through the Schiller Station CWIS's (Units 4, 5, and 6 combined) (Table 3-21).

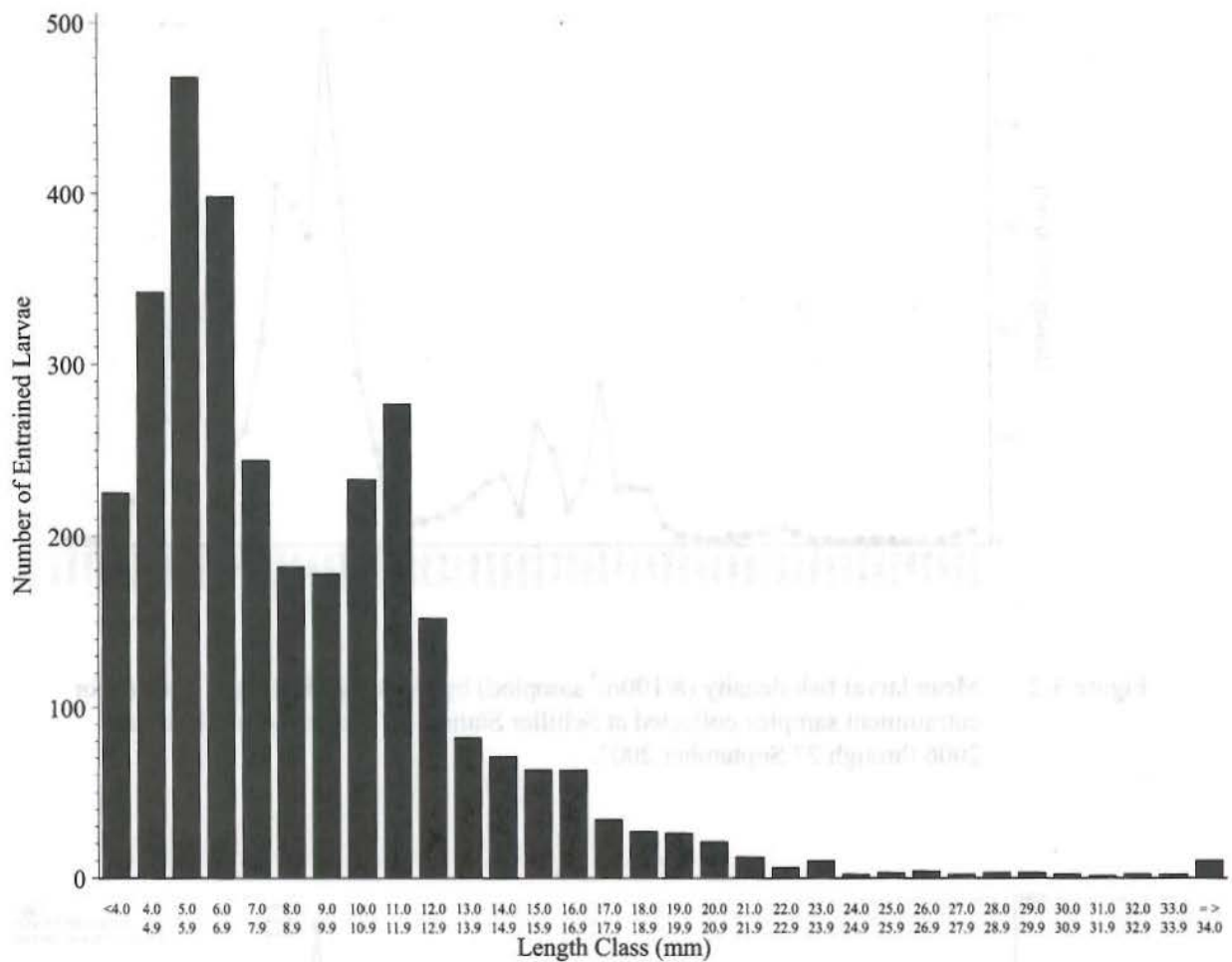


Figure 3-1. Length frequency distribution of larval fish (all taxa) enumerated in entrainment samples from Schiller Station for the period 31 August 2006 through 27 September 2007.

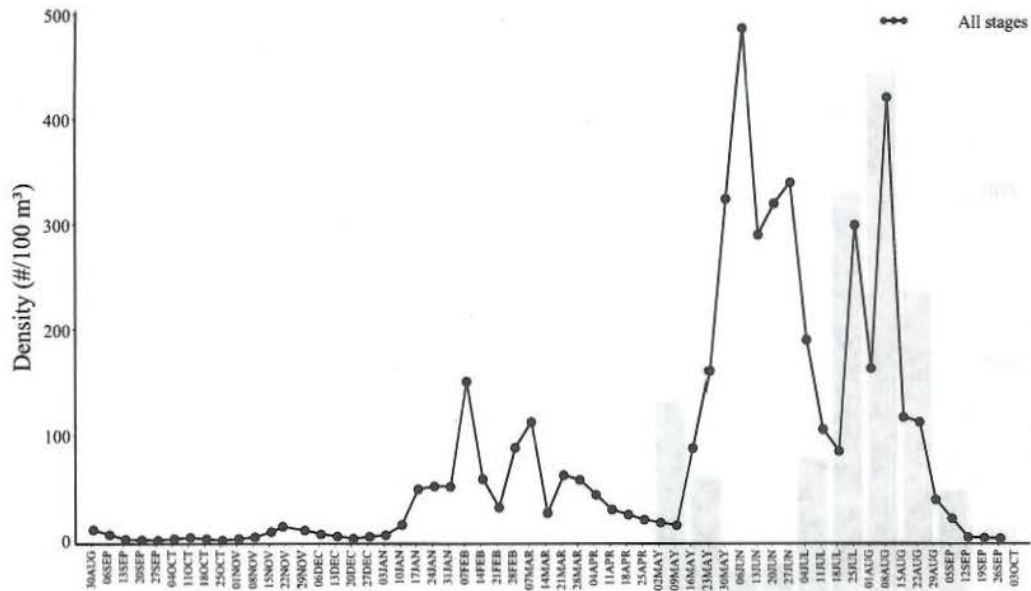


Figure 3-2. Mean larval fish density (#/100m³ sampled) by week (all life stages pooled) for entrainment samples collected at Schiller Station for the period of 31 August 2006 through 27 September 2007.

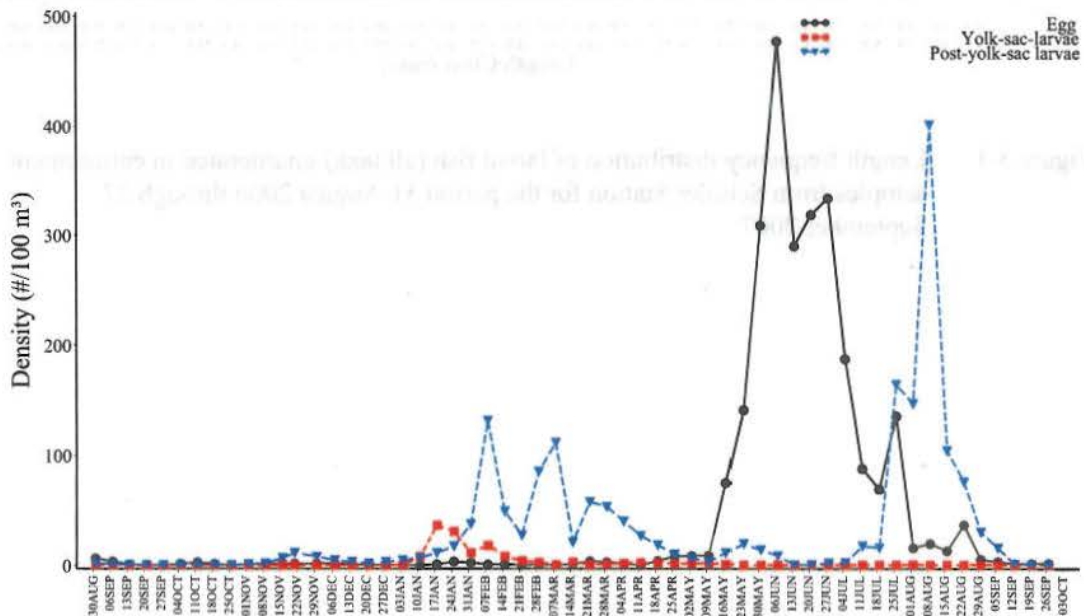


Figure 3-3. Mean larval fish density (#/100m³ sampled) by week and life stage for entrainment samples collected at Schiller Station for the period of 31 August 2006 through 27 September 2007.

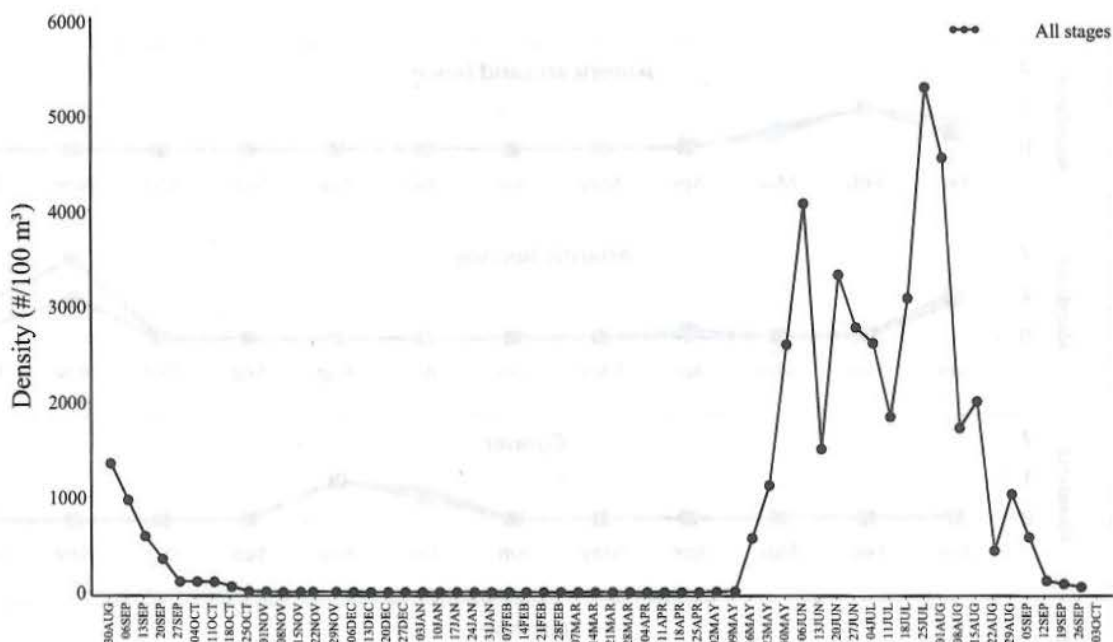


Figure 3-4. Mean macrocrustacean larval density (#/100m³ sampled) by week (all life stages pooled) for entrainment samples collected at Schiller Station for the period of 31 August 2006 through 27 September 2007.

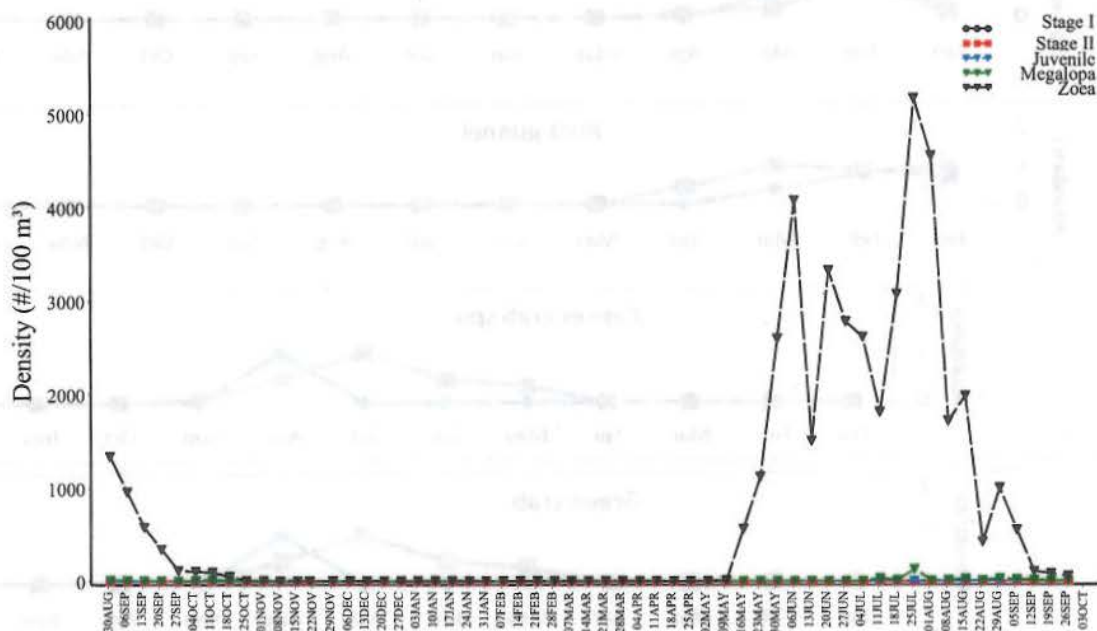


Figure 3-5. Mean macrocrustacean larval density (#/100m³ sampled) by week and life stage for entrainment samples collected at Schiller Station for the period of 31 August 2006 through 27 September 2007.

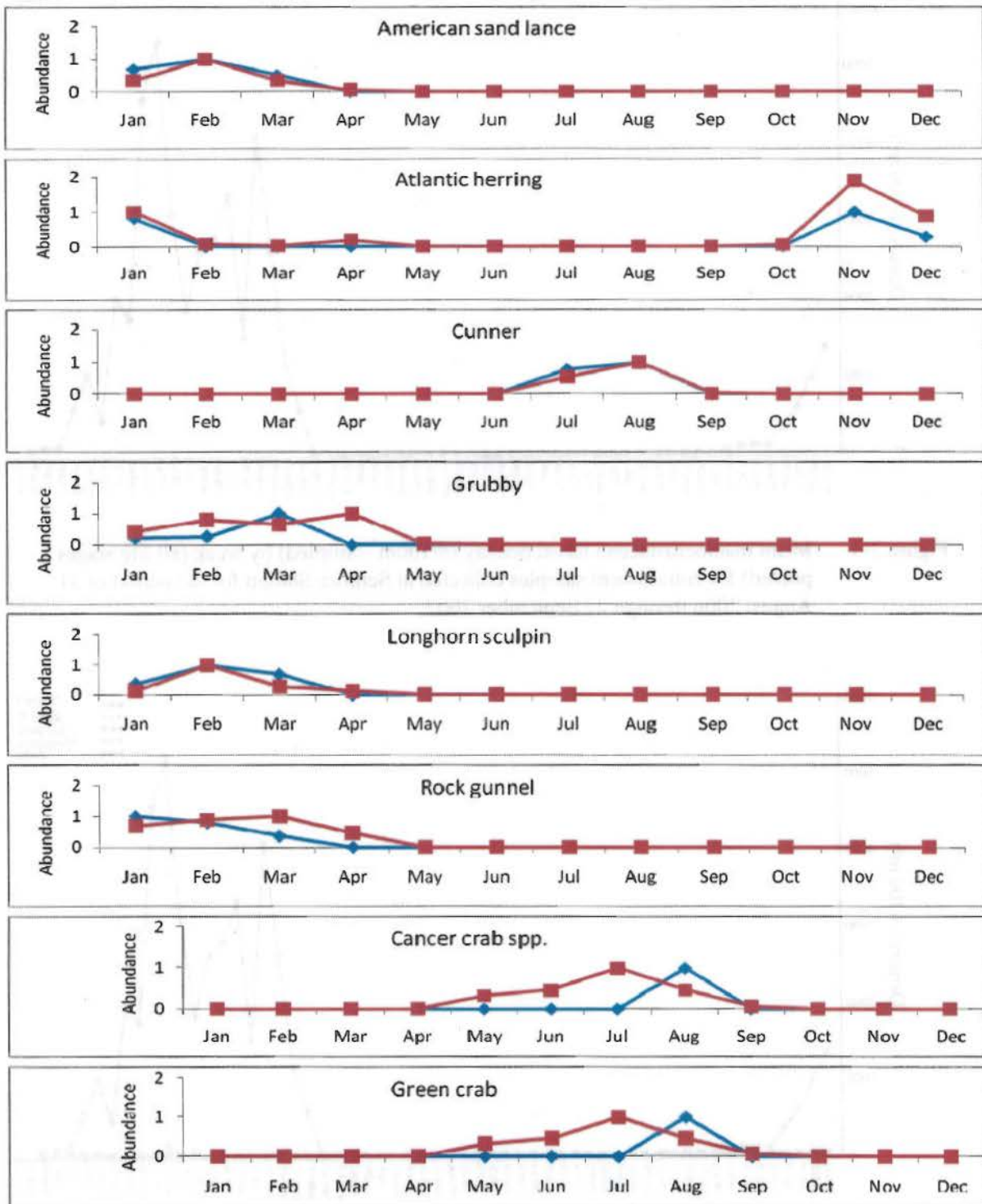


Figure 3-6. Normalized monthly abundance values observed in survival studies (red line) and entrainment samples (blue line) at Schiller Station during the period 31 August 2006 through 27 September 2007.

Table 3-1. Fish and macrocrustacean taxa enumerated in entrainment samples from Schiller Station for the period 31 August 2006 through 27 September 2007.

	Family	Common Name	Scientific Name
Fish	Agonidae	Alligatorfish	<i>Aspidophoroides monopterygius</i>
	Anguillidae	American eel	<i>Anguilla rostrata</i>
	Pleuronectidae	American plaice	<i>Hippoglossoides platessoides</i>
	Ammodytidae	American sand lance	<i>Ammodytes americanus</i>
	Gadidae	Atlantic cod	<i>Gadus morhua</i>
	Gadidae	Atlantic cod/haddock	<i>Gadus/Melanogrammus</i>
		Atlantic cod/haddock/witch flounder	<i>Gadidae/Glyptocephalus</i>
	Clupeidae	Atlantic herring	<i>Clupea harengus</i>
	Scombridae	Atlantic mackerel	<i>Scomber scombrus</i>
	Clupeidae	Atlantic menhaden	<i>Brevoortia tyrannus</i>
	Liparidae	Atlantic seasnail	<i>Liparis atlanticus</i>
	Gadidae	Atlantic tomcod	<i>Microgadus tomcod</i>
	Labridae	Cunner	<i>Tautoglabrus adspersus</i>
		Cunner/yellowtail flounder	<i>Labridae/Limanda</i>
	Phycidae	Fourbeard rockling	<i>Enchelyopus cimbrius</i>
	Phycidae	Fourbeard rockling/hake	<i>Enchelyopus/Urophycis</i>
	Lophiidae	Goosefish	<i>Lophius americanus</i>
	Cottidae	Grubby	<i>Myoxocephalus aeneus</i>
	Liparidae	Gulf snailfish	<i>Liparis coheni</i>
	Gadidae	Haddock	<i>Melanogrammus aeglefinus</i>
	Cottidae	Longhorn sculpin	<i>Myoxocephalus octodecemspinosus</i>
	Syngnathidae	Northern pipefish	<i>Syngnathus fuscus</i>
	Gadidae	Pollock	<i>Pollachius virens</i>
	Triglidae	Prionotus species	<i>Prionotus sp.</i>
	Stichaeidae	Radiated shanny	<i>Ulvaria subbifurcata</i>
	Osmeridae	Rainbow smelt	<i>Osmerus mordax</i>
	Pholidae	Rock gunnel	<i>Pholis gunnellus</i>
	Cottidae	Sculpin family	<i>Cottidae</i>
	Hemitriptidae	Sea raven	<i>Hemitripterus americanus</i>
	Cottidae	Shorthorn sculpin	<i>Myoxocephalus scorpius</i>
	Merlucciidae	Silver hake	<i>Merluccius bilinearis</i>
	Fundulidae	Striped killifish	<i>Fundulus majalis</i>
	Paralichthyidae	Summer flounder	<i>Paralichthys dentatus</i>
	Labridae	Tautog	<i>Tautoga onitis</i>
		Unidentified	
	Phycidae	Urophycis species	<i>Urophycis sp.</i>
	Scophthalmidae	Windowpane	<i>Scophthalmus aquosus</i>
	Pleuronectidae	Winter flounder	<i>Pseudopleuronectes americanus</i>
	Pleuronectidae	Witch flounder	<i>Glyptocephalus cynoglossus</i>
	Cryptacanthodidae	Wrymouth	<i>Cryptacanthodes maculatus</i>
Macrocrustaceans	Nephropidae	American lobster	<i>Homarus americanus</i>
	Majidae	Arctic lyre crab	<i>Hyas coarctatus</i>
	Majidae	Atlantic lyre crab	<i>Hyas araneus</i>
	Cancridae	Atlantic rock crab	<i>Cancer irroratus</i>
	Cancridae	Atlantic rock/Jonah crab	<i>Cancer sp.</i>
	Portunidae	Green crab	<i>Carcinus maenas</i>
	Grapsidae	Japanese shore crab	<i>Hemigrapsus sanguineus</i>
	Cancridae	Jonah crab	<i>Cancer borealis</i>

Table 3-2. Total count and percent composition of ichthyoplankton taxa enumerated in entrainment samples at Schiller Station for the period 31 August 2006 through 27 September 2007.

Common Name	Count (#) by lifestage										% Composition by lifestage										
	Unknown	Egg	Yolk-sac-larvae	Post-yolk-sac larvae	Young-of-the-year	Yearling or older	WF* Stage 2	WF Stage 3	WF Stage 4	Total	Unknown	Egg	Yolk-sac-larvae	Post-yolk-sac larvae	Young-of-the-year	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total	
Alligatorfish				1						1				0.0							0.0
American eel				1						1				0.0							0.0
American plaice		72		3						75		0.9		0.0							0.5
American sand lance			253	1,404						1,657			48.9	20.4							10.6
Atlantic cod		21		4						25		0.3		0.1							0.2
Atlantic cod/haddock		17								17		0.2									0.1
Atlantic cod/haddock/witch		30								30		0.4									0.2
Atlantic herring				148						148				2.1							0.9
Atlantic mackerel		367		1						368		4.5		0.0							2.3
Atlantic menhaden		62								62		0.8									0.4
Atlantic seasnail				22						22				0.3							0.1
Atlantic tomcod					4					4					33.3						0.0
Cunner		1		3,794	8					3,803		0.0		55.1	66.7						24.3
Cunner/yellowtail flounder		6,835								6,835		83.3									43.6
Fourbeard rockling		54	2	116						172		0.7	0.4	1.7							1.1
Fourbeard rockling/hake		427								427		5.2									2.7
Goosefish		13								13		0.2									0.1
Grubby			71	300						371			13.7	4.4							2.4
Gulf snailfish			1	2						3			0.2	0.0							0.0
Haddock		1								1		0.0									0.0
Longhorn sculpin			4	47						51			0.8	0.7							0.3
Northern pipefish			1	74		5				80			0.2	1.1		83.3					0.5
Pollock		13	17	44						74		0.2	3.3	0.6							0.5
Prionotus species		8								8		0.1									0.1
Radiated shanny			3	16						19			0.6	0.2							0.1
Rainbow smelt			4	95						99			0.8	1.4							0.6
Rock gunnel			155	787						942			30.0	11.4							6.0
Sculpin family		2	3	2						7		0.0	0.6	0.0							0.0
Sea raven				2						2				0.0							0.0

(continued)

Table 3-2. (Continued)

Common Name	Unknown	Egg	Yolk-sac-larvae	Post-yolk-sac larvae	Young-of-the-year	Yearling or older	WF* Stage 2	WF Stage 3	WF Stage 4	Total	Unknown	Egg	Yolk-sac-larvae	Post-yolk-sac larvae	Young-of-the-year	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total	
Shorthorn sculpin			1	12						13			0.2	0.2							0.1
Silver hake		27	2	2						31		0.3	0.4	0.0							0.2
Striped killifish						1				1						16.7					0.0
Summer flounder		1								1		0.0									0.0
Tautog		6								6		0.1									0.0
Unidentified	22									22	100.0										0.1
Urophycis species		183								183		2.2									1.2
Windowpane		45		5						50		0.5		0.1							0.3
Winter flounder		21					4	18	1	44		0.3					100.0	100.0	100.0		0.3
Witch flounder				2						2											0.0
Wrymouth				1						1				0.0							0.0
All taxa	22	8,206	517	6,885	12	6	4	18	1	15,671	100	100	100	100	100	100	100	100	100	100	100

* WF = winter flounder

Table 3-3. Overall mean density (#/100 m³) of ichthyoplankton entrained at Schiller Station for the period 31 August 2006 through 27 September 2007.

Common name	Unknown	Egg	Yolk-sac-larvae	Post-yolk-sac larvae	Young-of-the-year	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4
Alligatorfish	0.000	0.000	0.000	0.009	0.000	0.000			
American eel	0.000	0.000	0.000	0.004	0.000	0.000			
American plaice	0.000	0.528	0.000	0.013	0.000	0.000			
American sand lance	0.000	0.000	1.114	6.163	0.000	0.000			
Atlantic cod	0.000	0.163	0.000	0.017	0.000	0.000			
Atlantic cod/haddock	0.000	0.092	0.000	0.000	0.000	0.000			
Atlantic cod/haddock/witch	0.000	0.175	0.000	0.000	0.000	0.000			
Atlantic herring	0.000	0.000	0.000	1.003	0.000	0.000			
Atlantic mackerel	0.000	2.896	0.000	0.004	0.000	0.000			
Atlantic menhaden	0.000	0.320	0.000	0.000	0.000	0.000			
Atlantic seasnail	0.000	0.000	0.000	0.202	0.000	0.000			
Atlantic tomcod	0.000	0.000	0.000	0.000	0.026	0.000			
Cunner	0.000	0.004	0.000	16.208	0.052	0.000			
Cunner/yellowtail flounder	0.000	36.225	0.000	0.000	0.000	0.000			
Fourbeard rockling	0.000	0.379	0.011	0.509	0.000	0.000			
Fourbeard rockling/hake	0.000	3.195	0.000	0.000	0.000	0.000			
Goosefish	0.000	0.070	0.000	0.000	0.000	0.000			
Grubby	0.000	0.000	0.366	1.622	0.000	0.000			
Gulf snailfish	0.000	0.000	0.004	0.009	0.000	0.000			
Haddock	0.000	0.004	0.000	0.000	0.000	0.000			
Longhorn sculpin	0.000	0.000	0.022	0.208	0.000	0.000			
Northern pipefish	0.000	0.000	0.007	0.315	0.000	0.036			
Pollock	0.000	0.074	0.076	0.192	0.000	0.000			
Prionotus species	0.000	0.036	0.000	0.000	0.000	0.000			
Radiated shanny	0.000	0.000	0.026	0.075	0.000	0.000			
Rainbow smelt	0.000	0.000	0.034	0.835	0.000	0.000			
Rock gunnel	0.000	0.000	0.724	3.839	0.000	0.000			
Sculpin family	0.000	0.009	0.012	0.013	0.000	0.000			
Sea raven	0.000	0.000	0.000	0.011	0.000	0.000			
Shorthorn sculpin	0.000	0.000	0.004	0.054	0.000	0.000			
Silver hake	0.000	0.152	0.010	0.008	0.000	0.000			
Striped killifish	0.000	0.000	0.000	0.000	0.000	0.004			
Summer flounder	0.000	0.009	0.000	0.000	0.000	0.000			
Tautog	0.000	0.028	0.000	0.000	0.000	0.000			
Unidentifiable	0.138	0.000	0.000	0.000	0.000	0.000			
Urophycis species	0.000	0.786	0.000	0.000	0.000	0.000			
Windowpane	0.000	0.248	0.000	0.024	0.000	0.000			
Winter flounder	0.000	0.108			0.000	0.000	0.038	0.072	0.004
Witch flounder	0.000	0.000	0.000	0.009	0.000	0.000			
Wrymouth	0.000	0.000	0.000	0.004	0.000	0.000			

Table 3-4. Total count and percent composition for crab taxa enumerated in entrainment samples from Schiller Station for the period 31 August 2006 through 27 September 2007.

Common name	Count				% Composition			
	Juvenile	Megalops	Zoea	Total	Juvenile	Megalops	Zoea	Total
Atlantic lyre crab	0	0	6	6	0	0	0	0
Arctic lyre crab	0	0	23	23	0	0	0	0
Atlantic rock crab	8	165	0	173	17.8	13.5	0	0.1
<i>Cancer</i> sp.	0	8	64,728	64,736	0	0.7	44.1	43.7
Green crab	35	1,024	81,073	82,132	77.8	83.5	55.3	55.5
Japanese shore crab	0	0	874	874	0	0	0.6	0.6
Jonah crab	2	29	0	31	4.4	2.4	0	0
All taxa	45	1,226	146,705	147,976	100	100	100	100

Table 3-5. Total count and percent composition for American lobster enumerated in entrainment samples from Schiller Station for the period 31 August 2006 through 27 September 2007.

Common name	Count			% Composition		
	Stage I	Stage II	Total	Stage I	Stage II	Total
American lobster	5	2	7	100	100	100
All Taxa	5	2	7	100	100	100

Table 3-6. Overall mean density (#/100 m³ sampled) of crab taxa (top panel) and lobster larvae (bottom panel) entrained at Schiller Station for the period 31 August 2006 through 27 September 2007.

Common name	Density (#/100m ³)		
	Juvenile	Megalops	Zoea
Atlantic lyre crab	0.000	0.000	0.026
Arctic lyre crab	0.000	0.000	0.156
Atlantic rock crab	0.033	0.870	0.000
<i>Cancer</i> sp.	0.000	0.033	314.400
Green crab	0.203	4.964	432.127
Japanese shore crab	0.000	0.000	4.759
Jonah crab	0.011	0.171	0.000

Common name	Density (#/100m ³)	
	Stage I	Stage II
American lobster	0.022	0.008

Table 3-7. Monthly length frequency distributions (number of fish in each 1 mm size class) of larval and young of the year fish enumerated in entrainment samples from Schiller Station for the period 31 August 2006 through 27 September 2007.

			< 4.0	4.0 - 4.9	5.0 - 5.9	6.0 - 6.9	7.0 - 7.9	8.0 - 8.9	9.0 - 9.9	10.0 - 10.9	11.0 - 11.9	12.0 - 12.9	13.0 - 13.9	14.0 - 14.9	15.0 - 15.9	16.0 - 16.9	17.0 - 17.9	18.0 - 18.9	19.0 - 19.9	20.0 - 20.9	21.0 - 21.9	22.0 - 22.9	23.0 - 23.9	24.0 - 24.9	25.0 - 25.9	26.0 - 26.9	27.0 - 27.9	28.0 - 28.9	29.0 - 29.9	30.0 - 30.9	31.0 - 31.9	32.0 - 32.9	33.0 - 33.9	=> 34.0	N	Min	Mean	Max		
Alligatorfish	2007	Apr								1																										1	10.1	10.1	10.1	
	Total									1																										1	10.1	10.1	10.1	
American eel	2007	Feb																																	1	1	56.2	56.2	56.2	
	Total																																		1	1	56.2	56.2	56.2	
American plaice	2007	Jul	0			1			1																											2	6.1	7.7	9.2	
	Total		0			1			1																											2	6.1	7.7	9.2	
American sand lance	2007	Jan	8	73	40	9										2																				132	3.6	5	15.6	
		Feb	7	63	121	106	60	22	8																										387	3.7	6.1	9.6		
		Mar	0	2	4	14	45	50	50	74	64	8	4	4	3	5	2								1		1								331	4.1	9.9	27.1		
		Apr	0				2	2	1		6	4	2				1	1					1													20	7.5	12.1	21.2	
		May									1																									1	10.1	10.1	10.1	
	Total		15	138	165	129	107	74	59	75	70	12	6	4	5	6	3					1				1		1								871	3.6	7.5	27.1	
Atlantic cod	2007	Jan										1																								1	12	12	12	
		Feb			1							2																							3	5.7	9.5	11.8		
	Total				1						2	1																								4	5.7	10.2	12	
Atlantic herring	2006	Nov	0				1	1	2	1	2	7	10	7	3	5	3	3	2		2	1														50	7.7	14.7	22.5	
		Dec	0						1	2	1	2	1	1	3	1	1	5		1				1											20	9.3	15.6	24.2		
	2007	Jan	0								2	3	2	6	7	8	3		2	2	1	1	1	1		1	2			1					42	11.1	17.1	29.5		
		Feb	0																2	2	1	1		1										7	18.1	20	23.2			
		Mar																												1	2					3	29.5	30.2	30.6	
		Apr	0																					1			1							1	1	1	5	23.4	31.8	43.3
	Total		0				1	1	3	3	5	12	13	14	13	14	7	10	6	4	4	2	3	1	1	3			2	2			1	1	1	127	7.7	17	43.3	
Atlantic mackerel	2007	Jul		1																																1	4.5	4.5	4.5	
	Total			1																																1	4.5	4.5	4.5	
Atlantic seasnail	2007	Mar	1																																	1	3.9	3.9	3.9	
		Apr	3	4																															7	3	3.9	4.9		
		May	3	3	2																														8	3.5	4.4	5.8		
		Jun	1	3	1																														5	3	4.2	5.2		
	Total		8	10	3																															21	3	4.2	5.8	
Atlantic tomcod	2007	Jun																																		1	1	55	55	55
	Total																																			1	1	55	55	55
Cunner	2006	Aug					2	2	2	2	4																									12	7.9	9.8	11.7	
		Sep						1																												1	8.9	8.9	8.9	

(continued)

Table 3-7. (Continued)

			< 4.0	4.0 - 4.9	5.0 - 5.9	6.0 - 6.9	7.0 - 7.9	8.0 - 8.9	9.0 - 9.9	10.0 -10.9	11.0 -11.9	12.0 -12.9	13.0 -13.9	14.0 -14.9	15.0 -15.9	16.0 -16.9	17.0 -17.9	18.0 -18.9	19.0 -19.9	20.0 -20.9	21.0 -21.9	22.0 -22.9	23.0 -23.9	24.0 -24.9	25.0 -25.9	26.0 -26.9	27.0 -27.9	28.0 -28.9	29.0 -29.9	30.0 -30.9	31.0 -31.9	32.0 -32.9	33.0 -33.9	=> 34.0	N	Min	Mean	Max	
Cunner (cont'd)	2007	Mar																																1	1	45	45	45	
		Jul	50	50	50	15	9	11	6	3	8					1																		203	3.2	5.5	16.1		
		Aug	52	89	56	92	78	44	35	26	12	5	3																					492	3.1	6.6	13.4		
		Sep	0		1							1				1																		3	5.5	11.4	16.4		
	Total	102	139	107	107	89	58	43	31	24	6	3			2																			1	712	3.1	6.4	45	
Fourbeard rockling	2006	Aug	2																																2	2.2	2.5	2.8	
	2007	Jul	15	1	2																														18	2.3	3.6	5.4	
		Aug	58	10	2	2																												72	1.3	3.4	6.9		
		Sep	1																															1	3	3	3		
	Total	76	11	4	2																														93	1.3	3.4	6.9	
Grubby	2007	Jan	0	13	15	6																													34	4.2	5.3	6.8	
		Feb	0	5	45	37		1																										88	4.6	5.9	8.9		
		Mar	0	7	68	67	3	1	1	2	2					3																		154	4.5	6.3	15.8		
		Apr	0	2	35	20	3		1																										61	4.8	5.9	9.9	
		May			1	2																												3	5.1	6.2	6.8		
	Total	0	27	164	132	6	2	2	2	2					3																			340	4.2	6	15.8		
Gulf snailfish	2007	Feb			1																														1	5.4	5.4	5.4	
		Mar			1				1																									2	5.1	7.2	9.2		
	Total			2					1																										3	5.1	6.6	9.2	
Longhorn sculpin	2007	Jan				1	1																												2	6.9	7.4	7.8	
		Feb				7	10	9	1																									27	6.3	7.5	9.1		
		Mar				1	7	9	1		2																								20	6.8	8.4	11.6	
		Apr			1				1																										2	5.3	7.4	9.5	
	Total			1	9	18	18	3		2																									51	5.3	7.8	11.6	
Northern pipefish	2006	Nov																																	2	2	128	130	132
	2007	Jan																																	1	1	121	121	121
		Jun														1																			2	15.1	17.9	20.6	
		Jul	0		1					1	2	3	3	2	1	1	1	1		1	1														18	5.8	13.3	20.1	
		Aug	0						6	1	5	3	13	5	4	6	1		3												1	1	1	1	51	8.2	15.9	113	
		Sep																																	1	1	114	114	114
	Total	0		1				6	2	7	6	16	7	5	8	2	1	3	1	2											1	1	1	5	75	5.8	21.1	132	
Pollock	2007	Jan	16	6		1	1																												24	2.2	3.8	7.2	
		Feb	4	3	3	4	1	2			1																							18	3.1	5.9	11.8		
		Mar	0			1	1			1	1	1	1		1	1					1						1							10	6.2	14.2	27.3		
	Total	20	9	3	6	3	2			1	2	1	1		1	1					1						1							52	2.2	6.5	27.3		

(continued)

Table 3-7. (Continued)

			< 4.0	4.0 - 4.9	5.0 - 5.9	6.0 - 6.9	7.0 - 7.9	8.0 - 8.9	9.0 - 9.9	10.0 -10.9	11.0 -11.9	12.0 -12.9	13.0 -13.9	14.0 -14.9	15.0 -15.9	16.0 -16.9	17.0 -17.9	18.0 -18.9	19.0 -19.9	20.0 -20.9	21.0 -21.9	22.0 -22.9	23.0 -23.9	24.0 -24.9	25.0 -25.9	26.0 -26.9	27.0 -27.9	28.0 -28.9	29.0 -29.9	30.0 -30.9	31.0 -31.9	32.0 -32.9	33.0 -33.9	=> 34.0	N	Min	Mean	Max	
Radiated shanny	2007	Mar																		1															1	20.3	20.3	20.3	
		May				4	1																											5	6	6.4	7.3		
		Jun					1		1																									2	7.5	8.6	9.6		
		Jul	0				1	1					1		1	1	1																	6	7.6	13.2	17.8		
		Aug										2																						2	12.4	12.6	12.8		
	Total	0			4	3	1	1			2	1		1	1	1				1														16	6	10.9	20.3		
Rainbow smelt	2007	May	0		4				4	13	16	1																								38	5.2	10.2	12.3
		Jun	0	2	1	1					1				2	1	1																		9	4.1	10.1	16.3	
		Total	0	2	5	1				4	14	16	1		2	1	1																		47	4.1	10.2	16.3	
Rock gunnel	2007	Jan	0				9	9	25	41	35	5	1																							125	7.2	10.3	13.6
		Feb	0		1			3	29	37	87	47	16	10	3		1																		234	5.1	11.5	17.1	
		Mar	0				2	1	1	20	25	43	28	32	24	34	21	13	13	7	4	4	5	1	1	1		2							282	7.2	15	28.1	
		Apr	0					1		1	1		3	5	4	3	1		1	6	7	2		2					1	1					39	7.9	17.3	29.3	
		Total	0		1		12	13	56	99	147	98	50	46	30	35	22	14	19	14	6	4	7	1	1	1		3	1						680	5.1	13.1	29.3	
Sculpin family	2007	Jan			1																															1	5.3	5.3	5.3
		Feb	1																																1	3.1	3.1	3.1	
		Mar	0																																	0			
		Apr	0																																	0			
		Total	1		1																															2	3.1	4.2	5.3
Sea raven	2007	Mar											1		1																					2	13.9	14.7	15.5
		Total											1		1																				2	13.9	14.7	15.5	
Shorthorn sculpin	2007	Feb				1	1	1																												3	6.6	7.3	8.3
		Mar	0					3	3		1	2																								9	8.1	10.1	12.5
		Total	0			1	1	4	3		1	2																								12	6.6	9.4	12.5
Silver hake	2006	Aug	1																																	1	2.3	2.3	2.3
		2007	Aug	2																																2	2.7	2.8	2.8
		Total	3																																	3	2.3	2.6	2.8
Striped killifish	2007	Feb																																	1	1	56.5	56.5	56.5
		Total																																	1	1	56.5	56.5	56.5
Windowpane	2007	Jul			1		1																													2	5.8	6.6	7.3
		Aug			1																														1	5.7	5.7	5.7	
		Sep			1																														1	5.4	5.4	5.4	
		Total			3		1																													4	5.4	6.1	7.3
Winter flounder	2007	May		1			1																													2	4.7	5.9	7.1
		Jun		3	5	4	2	3																											17	4.5	6.3	8.4	
		Jul		1	1	1						1																							4	4.1	7.2	12.4	
		Total		5	6	5	3	3				1																							23	4.1	6.4	12.4	

(continued)

Table 3-7. (Continued)

	2007	Jul		< 4.0	4.0 - 4.9	5.0 - 5.9	6.0 - 6.9	7.0 - 7.9	8.0 - 8.9	9.0 - 9.9	10.0 - 10.9	11.0 - 11.9	12.0 - 12.9	13.0 - 13.9	14.0 - 14.9	15.0 - 15.9	16.0 - 16.9	17.0 - 17.9	18.0 - 18.9	19.0 - 19.9	20.0 - 20.9	21.0 - 21.9	22.0 - 22.9	23.0 - 23.9	24.0 - 24.9	25.0 - 25.9	26.0 - 26.9	27.0 - 27.9	28.0 - 28.9	29.0 - 29.9	30.0 - 30.9	31.0 - 31.9	32.0 - 32.9	33.0 - 33.9	> 34.0	N	Min	Mean	Max			
Witch flounder		1	1																																			2	5.9	6.2	6.4	
	Total	1	1																																			2	5.9	6.2	6.4	
Wrymouth																	1																						1	16.4	16.4	16.4
	Total																1																						1	16.4	16.4	16.4

Table 3-8. Estimated total entrainment abundance of ichthyoplankton (all taxa combined) entrained at Units 4, 5, 6 and all Units combined for Schiller Station by month and life stage based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Unit	Year	Month	Unknown	Egg	Yolk-sac-larvae	Post-yolk-sac-larvae	Young-of-the-year	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 4	2006	October	0	46,676	0	0	0	0	0	0	0	46,676
		November	0	39,713	0	223,939	0	8,324	0	0	0	271,976
		December	0	34,738	1,351	129,229	0	1,347	0	0	0	166,665
	2007	January	0	73,537	936,649	833,787	0	2,694	0	0	0	1,846,668
		February	0	24,595	353,527	3,160,338	0	2,574	0	0	0	3,541,033
		March	14,032	74,952	49,701	2,456,845	2,413	0	0	0	0	2,597,943
		April	8,912	238,143	95,322	1,094,727	0	0	1,326	0	0	1,438,432
		May	9,127	5,764,725	27,856	513,203	5,404	0	12,700	0	0	6,333,016
		June	0	15,335,050	0	114,049	10,809	0	6,633	36,118	2,370	15,505,027
		July	2,701	5,333,339	5,194	3,734,312	0	0	2,688	7,913	0	9,086,148
		August	32,489	804,871	2,702	6,594,228	0	2,702	0	0	0	7,436,993
		September	16,245	87,852	1,351	183,906	5,432	5,381	0	0	0	300,167
		TOTAL	83,506	27,858,192	1,473,655	19,038,563	24,059	23,023	23,347	44,031	2,370	48,570,744
Unit 5	2006	October	0	69,123	0	9,470	0	0	0	0	0	78,593
		November	0	69,489	0	299,800	0	10,401	0	0	0	379,689
		December	0	35,589	1,384	132,396	0	1,380	0	0	0	170,750
	2007	January	0	75,339	959,606	854,223	0	2,760	0	0	0	1,891,929
		February	0	25,198	362,192	3,237,797	0	2,637	0	0	0	3,627,823
		March	15,741	85,833	54,591	2,688,134	2,473	0	0	0	0	2,846,771
		April	8,060	208,604	81,462	960,905	0	0	1,359	0	0	1,260,391
		May	9,350	5,906,018	28,539	525,781	5,537	0	13,011	0	0	6,488,236
		June	0	15,710,909	0	116,844	11,074	0	6,795	37,003	2,428	15,885,052
		July	2,768	5,464,058	5,322	3,825,839	0	0	2,753	8,107	0	9,308,848
		August	33,286	824,598	2,768	6,755,852	0	2,769	0	0	0	7,619,272
		September	9,908	75,280	824	118,857	5,002	4,955	0	0	0	214,826
		TOTAL	79,114	28,550,038	1,496,688	19,525,898	24,085	24,902	23,919	45,110	2,428	49,772,182

(continued)

Table 3-8. (Continued)

Unit	Year	Month	Unknown	Egg	Yolk-sac-larvae	Post-yolk-sac-larvae	Young-of-the-year	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 6	2006	October	0	69,123	0	9,470	0	0	0	0	0	78,593
		November	0	69,489	0	299,800	0	10,401	0	0	0	379,689
		December	0	35,589	1,384	132,396	0	1,380	0	0	0	170,750
	2007	January	0	75,339	959,606	854,223	0	2,760	0	0	0	1,891,929
		February	0	25,198	362,192	3,237,797	0	2,637	0	0	0	3,627,823
		March	0	1,186	2,127	528,684	0	0	0	0	0	531,997
		April	4,825	228,476	73,687	613,191	0	0	1,359	0	0	921,538
		May	9,350	5,906,018	28,539	525,781	5,537	0	13,011	0	0	6,488,236
		June	0	15,710,909	0	116,844	11,074	0	6,795	37,003	2,428	15,885,052
		July	2,768	5,464,058	5,322	3,825,839	0	0	2,753	8,107	0	9,308,848
		August	33,286	824,598	2,768	6,755,852	0	2,769	0	0	0	7,619,272
		September	16,643	90,005	1,384	188,413	5,565	5,513	0	0	0	307,524
		TOTAL	66,871	28,499,988	1,437,010	17,088,291	22,176	25,460	23,919	45,110	2,428	47,211,253
Combined	2006	October	0	184,923	0	18,939	0	0	0	0	0	203,862
		November	0	178,691	0	823,539	0	29,125	0	0	0	1,031,355
		December	0	105,916	4,120	394,022	0	4,108	0	0	0	508,165
	2007	January	0	224,216	2,855,862	2,542,233	0	8,215	0	0	0	5,630,527
		February	0	74,990	1,077,910	9,635,933	0	7,847	0	0	0	10,796,680
		March	29,773	161,971	106,419	5,673,662	4,886	0	0	0	0	5,976,711
		April	21,798	675,224	250,471	2,668,824	0	0	4,045	0	0	3,620,361
		May	27,828	17,576,760	84,935	1,564,765	16,478	0	38,722	0	0	19,309,488
		June	0	46,756,867	0	347,737	32,956	0	20,223	110,123	7,225	47,275,132
		July	8,237	16,261,456	15,838	11,385,990	0	0	8,194	24,128	0	27,703,843
		August	99,060	2,454,068	8,239	20,105,931	0	8,240	0	0	0	22,675,538
		September	42,796	253,136	3,559	491,176	15,999	15,850	0	0	0	822,516
		TOTAL	229,491	84,908,218	4,407,352	55,652,751	70,319	73,385	71,184	134,252	7,225	145,554,178

Table 3-9. Estimated annual total ichthyoplankton abundance at Units 4, 5, 6, and all Units combined, of Schiller Station by taxon and life stage based on operating flows for the 52 week sampling year from 2 October 2006 to 30 September 2007.

Unit	Common name	Unknown	Egg	Yolk-sac-larvae	Post-yolk-sac-larvae	Young-of-the-year	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 4	Alligatorfish	0	0	0	5,388	0	0				5,388
	American eel	0	0	0	2,574	0	0				2,574
	American plaice	0	325,113	0	8,096	0	0				333,209
	American sand lance	0	0	686,173	3,773,781	0	0				4,459,954
	Atlantic cod	0	69,724	0	10,658	0	0				80,382
	Atlantic cod/haddock	0	54,952	0	0	0	0				54,952
	Atlantic cod/haddock/witch	0	108,001	0	0	0	0				108,001
	Atlantic herring	0	0	0	540,351	0	0				540,351
	Atlantic mackerel	0	1,784,313	0	2,700	0	0				1,787,013
	Atlantic menhaden	0	185,776	0	0	0	0				185,776
	Atlantic seasnail	0	0	0	123,915	0	0				123,915
	Atlantic tomcod	0	0	0	0	16,213	0				16,213
	Cunner	0	2,513	0	9,957,770	7,845	0				9,968,129
	Cunner/yellowtail flounder	0	22,305,267	0	0	0	0				22,305,267
	Fourbeard rockling	0	215,993	2,681	309,646	0	0				528,320
	Fourbeard rockling/hake	0	1,954,176	0	0	0	0				1,954,176
	Goosefish	0	42,300	0	0	0	0				42,300
	Grubby	0	0	222,175	976,608	0	0				1,198,783
	Gulf snailfish	0	0	2,701	5,368	0	0				8,069
	Haddock	0	2,162	0	0	0	0				2,162
	Longhorn sculpin	0	0	13,492	126,334	0	0				139,826
	Northern pipefish	0	0	4,053	193,928	0	20,449				218,431
	Pollock	0	44,571	47,079	117,411	0	0				209,062
	Prionotus species	0	22,034	0	0	0	0				22,034
	Radiated shanny	0	0	15,918	46,433	0	0				62,351
	Rainbow smelt	0	0	21,224	514,525	0	0				535,749
	Rock gunnel	0	0	445,830	2,250,323	0	0				2,696,153
	Sculpin family	0	5,340	7,560	7,966	0	0				20,866
	Sea raven	0	0	0	5,737	0	0				5,737
	Shorthorn sculpin	0	0	2,256	31,518	0	0				33,774
	Silver hake	0	77,255	2,513	4,593	0	0				84,362
	Striped killifish	0	0	0	0	0	2,574				2,574
	Summer flounder	0	366	0	0	0	0				366
	Tautog	0	17,351	0	0	0	0				17,351
	Unidentified	83,506	0	0	0	0	0				83,506

(continued)

Table 3-9. (Continued)

	Common name	Unknown	Egg	Yolk-sac-larvae	Post-yolk-sac-larvae	Young-of-the-year	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 4 cont'd	Urophycis species	0	427,175	0	0	0	0				427,175
	Windowpane	0	152,887	0	14,888	0	0				167,774
	Winter flounder	0	60,924			0	0	23,347	44,031	2,370	130,672
	Witch flounder	0	0	0	5,385	0	0				5,385
	Wrymouth	0	0	0	2,666	0	0				2,666
	All Taxa	83,506	27,858,192	1,473,655	19,038,563	24,059	23,023	23,347	44,031	2,370	48,570,744
Unit 5	Alligatorfish	0	0	0	4,428	0	0				4,428
	American eel	0	0	0	2,637	0	0				2,637
	American plaice	0	311,617	0	8,294	0	0				319,912
	American sand lance	0	0	702,991	3,862,895	0	0				4,565,885
	Atlantic cod	0	102,612	0	10,919	0	0				113,532
	Atlantic cod/haddock	0	53,675	0	0	0	0				53,675
	Atlantic cod/haddock/witch	0	105,174	0	0	0	0				105,174
	Atlantic herring	0	0	0	627,107	0	0				627,107
	Atlantic mackerel	0	1,828,046	0	2,766	0	0				1,830,812
	Atlantic menhaden	0	202,186	0	0	0	0				202,186
	Atlantic seasnail	0	0	0	119,120	0	0				119,120
	Atlantic tomcod	0	0	0	0	16,611	0				16,611
	Cunner	0	2,575	0	10,137,620	7,475	0				10,147,669
	Cunner/yellowtail flounder	0	22,838,178	0	0	0	0				22,838,178
	Fourbeard rockling	0	220,727	2,747	312,892	0	0				536,365
	Fourbeard rockling/hake	0	2,001,799	0	0	0	0				2,001,799
	Goosefish	0	44,144	0	0	0	0				44,144
	Grubby	0	0	218,377	960,288	0	0				1,178,666
	Gulf snailfish	0	0	2,767	5,499	0	0				8,266
	Haddock	0	2,215	0	0	0	0				2,215
	Longhorn sculpin	0	0	12,730	129,969	0	0				142,699
	Northern pipefish	0	0	3,592	198,120	0	22,266				223,978
	Pollock	0	46,559	48,233	121,023	0	0				215,815
	Prionotus species	0	22,022	0	0	0	0				22,022
	Radiated shanny	0	0	16,308	47,571	0	0				63,879
	Rainbow smelt	0	0	21,744	527,136	0	0				548,880
	Rock gunnel	0	0	454,566	2,372,165	0	0				2,826,731
	Sculpin family	0	5,471	7,745	7,091	0	0				20,307
	Sea raven	0	0	0	6,685	0	0				6,685

(continued)

Table 3-9. (Continued)

	Common name	Unknown	Egg	Yolk-sac-larvae	Post-yolk-sac-larvae	Young-of-the-year	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 5 cont'd	Shorthorn sculpin	0	0	2,311	33,905	0	0				36,216
	Silver hake	0	79,148	2,575	4,706	0	0				86,429
	Striped killifish	0	0	0	0	0	2,637				2,637
	Summer flounder	0	5,364	0	0	0	0				5,364
	Tautog	0	17,337	0	0	0	0				17,337
	Unidentified	79,114	0	0	0	0	0				79,114
	Urophycis species	0	437,291	0	0	0	0				437,291
	Windowpane	0	155,520	0	14,814	0	0				170,334
	Winter flounder	0	68,378			0	0	23,919	45,110	2,428	139,835
	Witch flounder	0	0	0	5,517	0	0				5,517
	Wrymouth	0	0	0	2,731	0	0				2,731
	All Taxa	79,114	28,550,038	1,496,688	19,525,898	24,085	24,902	23,919	45,110	2,428	49,772,182
Unit 6	Alligatorfish	0	0	0	3,516	0	0				3,516
	American eel	0	0	0	2,637	0	0				2,637
	American plaice	0	328,209	0	8,294	0	0				336,504
	American sand lance	0	0	697,491	3,023,337	0	0				3,720,828
	Atlantic cod	0	102,612	0	10,919	0	0				113,532
	Atlantic cod/haddock	0	41,584	0	0	0	0				41,584
	Atlantic cod/haddock/witch	0	107,886	0	0	0	0				107,886
	Atlantic herring	0	0	0	623,435	0	0				623,435
	Atlantic mackerel	0	1,828,046	0	2,766	0	0				1,830,812
	Atlantic menhaden	0	202,186	0	0	0	0				202,186
	Atlantic seasnail	0	0	0	120,131	0	0				120,131
	Atlantic tomcod	0	0	0	0	16,611	0				16,611
	Cunner	0	2,575	0	10,201,833	5,565	0				10,209,973
	Cunner/yellowtail flounder	0	22,848,923	0	0	0	0				22,848,923
	Fourbeard rockling	0	221,287	2,747	317,235	0	0				541,269
	Fourbeard rockling/hake	0	2,003,258	0	0	0	0				2,003,258
	Goosefish	0	39,991	0	0	0	0				39,991
	Grubby	0	0	165,198	619,732	0	0				784,930
	Gulf snailfish	0	0	1,186	2,769	0	0				3,954
	Haddock	0	2,215	0	0	0	0				2,215
	Longhorn sculpin	0	0	11,818	101,505	0	0				113,323
	Northern pipefish	0	0	4,152	198,682	0	22,823				225,657
	Pollock	0	46,559	48,233	96,616	0	0				191,408

(continued)

Table 3-9. (Continued)

	Common name	Unknown	Egg	Yolk-sac-larvae	Post-yolk-sac-larvae	Young-of-the-year	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 6 cont'd	Prionotus species	0	22,574	0	0	0	0				22,574
	Radiated shanny	0	0	16,308	45,038	0	0				61,346
	Rainbow smelt	0	0	21,744	527,136	0	0				548,880
	Rock gunnel	0	0	455,501	1,136,561	0	0				1,592,062
	Sculpin family	0	0	7,745	6,197	0	0				13,942
	Sea raven	0	0	0	0	0	0				0
	Shorthorn sculpin	0	0	2,311	14,476	0	0				16,787
	Silver hake	0	79,148	2,575	4,706	0	0				86,429
	Striped killifish	0	0	0	0	0	2,637				2,637
	Summer flounder	0	5,364	0	0	0	0				5,364
	Tautog	0	17,776	0	0	0	0				17,776
	Unidentified	66,871	0	0	0	0	0				66,871
	Urophycis species	0	437,645	0	0	0	0				437,645
	Windowpane	0	156,634	0	15,253	0	0				171,886
	Winter flounder	0	5,517	0	0	0	0	23,919	45,110	2,428	76,974
	Witch flounder	0	0	0	5,517	0	0				5,517
	Wrymouth	0	0	0	0	0	0				0
	All Taxa	66,871	28,499,988	1,437,010	17,088,291	22,176	25,460	23,919	45,110	2,428	47,211,253
Combined	Alligatorfish	0	0	0	13,332	0	0				13,332
	American eel	0	0	0	7,847	0	0				7,847
	American plaice	0	964,939	0	24,685	0	0				989,624
	American sand lance	0	0	2,086,654	10,660,013	0	0				12,746,667
	Atlantic cod	0	274,948	0	32,497	0	0				307,445
	Atlantic cod/haddock	0	150,212	0	0	0	0				150,212
	Atlantic cod/haddock/witch	0	321,061	0	0	0	0				321,061
	Atlantic herring	0	0	0	1,790,893	0	0				1,790,893
	Atlantic mackerel	0	5,440,405	0	8,233	0	0				5,448,638
	Atlantic menhaden	0	590,147	0	0	0	0				590,147
	Atlantic seasnail	0	0	0	363,166	0	0				363,166
	Atlantic tomcod	0	0	0	0	49,434	0				49,434
	Cunner	0	7,663	0	30,297,223	20,885	0				30,325,771
	Cunner/yellowtail flounder	0	67,992,369	0	0	0	0				67,992,369
	Fourbeard rockling	0	658,006	8,175	939,773	0	0				1,605,954
	Fourbeard rockling/hake	0	5,959,232	0	0	0	0				5,959,232
	Goosefish	0	126,435	0	0	0	0				126,435

(continued)

Table 3-9. (Continued)

	Common name	Unknown	Egg	Yolk-sac-larvae	Post-yolk-sac-larvae	Young-of-the-year	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Combined (cont'd)	Grubby	0	0	605,750	2,556,628	0	0				3,162,379
	Gulf snailfish	0	0	6,653	13,636	0	0				20,289
	Haddock	0	6,591	0	0	0	0				6,591
	Longhorn sculpin	0	0	38,040	357,808	0	0				395,848
	Northern pipefish	0	0	11,798	590,730	0	65,538				668,067
	Pollock	0	137,689	143,545	335,050	0	0				616,284
	Prionotus species	0	66,630	0	0	0	0				66,630
	Radiated shanny	0	0	48,534	139,042	0	0				187,576
	Rainbow smelt	0	0	64,712	1,568,797	0	0				1,633,509
	Rock gunnel	0	0	1,355,897	5,759,049	0	0				7,114,946
	Sculpin family	0	10,812	23,051	21,253	0	0				55,116
	Sea raven	0	0	0	12,422	0	0				12,422
	Shorthorn sculpin	0	0	6,878	79,899	0	0				86,778
	Silver hake	0	235,552	7,663	14,005	0	0				257,220
	Striped killifish	0	0	0	0	0	7,847				7,847
	Summer flounder	0	11,094	0	0	0	0				11,094
	Tautog	0	52,464	0	0	0	0				52,464
	Unidentified	229,491	0	0	0	0	0				229,491
	Urophycis species	0	1,302,112	0	0	0	0				1,302,112
	Windowpane	0	465,040	0	44,954	0	0				509,994
	Winter flounder	0	134,819	0	0	0	0	71,184	134,252	7,225	347,480
	Witch flounder	0	0	0	16,418	0	0				16,418
	Wrymouth	0	0	0	5,396	0	0				5,396
	All Taxa	229,491	84,908,218	4,407,352	55,652,751	70,319	73,385	71,184	134,252	7,225	145,554,178

Table 3-10. Estimated total entrainment abundance of macrocrustaceans (all taxa combined) at Units 4, 5, 6, and all Units combined of Schiller Station by month and life stage based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Unit	Year	Month	Crab life stages			Lobster Life Stages		Total
			Juvenile	Megalops	Zoea	Stage I	Stage II	
Unit 4	2006	October	4,750	255,801	2,246,192	0	0	2,506,743
		November	4,280	1,728	68,568	0	0	74,577
		December	0	4,053	57,913	0	0	61,966
	2007	January	0	0	15,933	0	0	15,933
		February	2,256	0	8,182	0	0	10,438
		March	0	0	0	0	0	0
		April	0	0	56,068	0	0	56,068
		May	2,217	0	46,533,459	0	0	46,535,676
		June	9,717	0	126,615,064	0	5,038	126,629,819
		July	4,120	1,887,256	186,635,642	13,484	0	188,540,501
		August	66,761	781,941	55,518,090	0	0	56,366,792
		September	32,171	406,363	8,579,831	0	0	9,018,365
		TOTAL	126,271	3,337,142	426,334,943	13,484	5,038	429,816,877
Unit 5	2006	October	21,431	341,572	2,931,577	0	0	3,294,579
		November	9,028	5,531	102,119	0	0	116,679
		December	0	4,152	59,332	0	0	63,485
	2007	January	0	0	16,323	0	0	16,323
		February	2,311	0	8,383	0	0	10,694
		March	0	0	0	0	0	0
		April	0	0	57,442	0	0	57,442
		May	2,271	0	47,673,985	0	0	47,676,256
		June	9,955	0	129,718,375	0	5,161	129,733,491
		July	4,221	1,933,512	191,210,045	13,814	0	193,161,592
		August	68,397	801,106	56,878,828	0	0	57,748,331
		September	28,763	327,302	6,302,479	0	0	6,658,544
		TOTAL	146,378	3,413,175	434,958,888	13,814	5,161	438,537,416
Unit 6	2006	October	21,431	341,572	2,931,577	0	0	3,294,579
		November	9,028	5,531	102,119	0	0	116,679
		December	0	4,152	59,332	0	0	63,485
	2007	January	0	0	16,323	0	0	16,323
		February	2,311	0	8,383	0	0	10,694
		March	0	0	0	0	0	0
		April	0	0	57,442	0	0	57,442
		May	2,271	0	47,673,985	0	0	47,676,256
		June	9,955	0	129,718,375	0	5,161	129,733,491
		July	4,221	1,933,512	191,210,045	13,814	0	193,161,592
		August	68,397	801,106	56,878,828	0	0	57,748,331
		September	32,959	416,323	8,790,121	0	0	9,239,403
		TOTAL	150,574	3,502,196	437,446,530	13,814	5,161	441,118,274
All Units Combined	2006	October	47,612	938,945	8,109,346	0	0	9,095,902
		November	22,337	12,791	272,807	0	0	307,935
		December	0	12,358	176,578	0	0	188,935
	2007	January	0	0	48,580	0	0	48,580
		February	6,878	0	24,949	0	0	31,827
		March	0	0	0	0	0	0
		April	0	0	170,951	0	0	170,951
		May	6,759	0	141,881,429	0	0	141,888,188
		June	29,626	0	386,051,814	0	15,360	386,096,800
		July	12,563	5,754,279	569,055,732	41,112	0	574,863,686
		August	203,555	2,384,153	169,275,745	0	0	171,863,453
		September	93,893	1,149,987	23,672,432	0	0	24,916,312
		TOTAL	423,223	10,252,513	1,298,740,361	41,112	15,360	1,309,472,567

Table 3-11. Estimated annual total entrainment abundance of macrocrustaceans at Units 4, 5, 6, and all Units combined of Schiller Station by taxon and life stage based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Unit	Taxon	Crab			Lobster		Total
		Juvenile	Megalops	Zoea	Stage I	Stage II	
Unit 4	American lobster				13,484	5,038	18,521
	Arctic lyre crab	0	0	91,234			91,234
	Atlantic lyre crab	0	0	15,810			15,810
	Atlantic rock crab	20,393	472,297	0			492,690
	Cancer sp.	0	20,550	188,559,834			188,580,383
	Green crab	103,186	2,765,309	236,077,915			238,946,410
	Japanese shore crab	0	0	1,590,150			1,590,150
	Jonah crab	2,693	78,986	0			81,679
	All Taxa	126,271	3,337,142	426,334,943	13,484	5,038	429,816,877
Unit 5	American lobster				13,814	5,161	18,975
	Arctic lyre crab	0	0	98,613			98,613
	Atlantic lyre crab	0	0	16,198			16,198
	Atlantic rock crab	20,892	515,718	0			536,611
	Cancer sp.	0	21,054	191,318,470			191,339,524
	Green crab	118,328	2,794,295	241,869,573			244,782,196
	Japanese shore crab	0	0	1,656,034			1,656,034
	Jonah crab	7,158	82,108	0			89,266
	All Taxa	146,378	3,413,175	434,958,888	13,814	5,161	438,537,416
Unit 6	American lobster				13,814	5,161	18,975
	Arctic lyre crab	0	0	98,613			98,613
	Atlantic lyre crab	0	0	16,198			16,198
	Atlantic rock crab	20,892	525,199	0			546,092
	Cancer sp.	0	21,054	193,312,093			193,333,147
	Green crab	122,524	2,871,440	242,352,663			245,346,627
	Japanese shore crab	0	0	1,666,963			1,666,963
	Jonah crab	7,158	84,502	0			91,660
	All Taxa	150,574	3,502,196	437,446,530	13,814	5,161	441,118,274
Combined	American lobster				41,112	15,360	56,471
	Arctic lyre crab	0	0	288,460			288,460
	Atlantic lyre crab	0	0	48,205			48,205
	Atlantic rock crab	62,178	1,513,215	0			1,575,392
	Cancer sp.	0	62,657	573,190,397			573,253,054
	Green crab	344,037	8,431,044	720,300,151			729,075,232
	Japanese shore crab	0	0	4,913,147			4,913,147
	Jonah crab	17,008	245,596	0			262,604
	All Taxa	423,223	10,252,513	1,298,740,361	41,112	15,360	1,309,472,567

Table 3-12. Monthly adult equivalent entrainment abundance (sorted by life stage) for 17 fish taxa representing 99.0% of the total enumerated at Schiller Station based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007.

	Month	Egg	YSL	PYSL	YOY	Yearling or Older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 4	October	5	0	0	0	0	0	0	0	5
	November	0	0	283	0	8,324	0	0	0	8,607
	December	0	0	158	0	1,347	0	0	0	1,505
	January	0	18,990	12,692	0	2,694	0	0	0	34,376
	February	0	6,542	36,768	0	0	0	0	0	43,310
	March	0	816	60,314	110	0	0	0	0	61,240
	April	14	1,895	30,339	0	0	0	0	0	32,248
	May	2,003	207	5,990	0	0	0	0	0	8,200
	June	1,291	0	1,818	0	0	0	1	0	3,110
	July	524	30	20,595	0	0	0	0	0	21,149
	August	160	180	19,163	0	2,702	0	0	0	22,205
	September	14	90	656	247	5,381	0	0	0	6,388
	Total	4,013	28,750	188,777	356	20,449	0	1	0	242,346
Unit 5	October	7	0	12	0	0	0	0	0	19
	November	1	0	378	0	10,401	0	0	0	10,780
	December	0	0	162	0	1,380	0	0	0	1,542
	January	0	19,455	13,004	0	2,760	0	0	0	35,219
	February	0	6,703	37,669	0	0	0	0	0	44,372
	March	0	901	68,480	112	0	0	0	0	69,493
	April	13	1,594	27,211	0	0	0	0	0	28,818
	May	2,053	212	6,137	0	0	0	0	0	8,402
	June	1,323	0	1,863	0	0	0	1	0	3,187
	July	537	31	21,099	0	0	0	0	0	21,667
	August	164	184	19,632	0	2,769	0	0	0	22,749
	September	12	55	425	227	4,955	0	0	0	5,674
	Total	4,110	29,134	196,073	340	22,266	0	1	0	251,924
Unit 6	October	7	0	12	0	0	0	0	0	19
	November	1	0	378	0	10,401	0	0	0	10,780
	December	0	0	162	0	1,380	0	0	0	1,542
	January	0	19,455	13,004	0	2,760	0	0	0	35,219
	February	0	6,703	37,669	0	0	0	0	0	44,372
	March	0	50	9,671	0	0	0	0	0	9,721
	April	14	1,547	13,692	0	0	0	0	0	15,253
	May	2,053	212	6,137	0	0	0	0	0	8,402
	June	1,323	0	1,863	0	0	0	1	0	3,187
	July	537	31	21,099	0	0	0	0	0	21,667
	August	164	184	19,632	0	2,769	0	0	0	22,749
	September	15	92	672	253	5,513	0	0	0	6,545
	Total	4,113	28,273	123,992	253	22,823	0	1	0	179,455

(continued)

Table 3-12. (Continued)

	Month	Egg	YSL	PYSL	YOY	Yearling or Older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Combined	October	18	0	24	0	0	0	0	0	42
	November	2	0	1,040	0	29,125	0	0	0	30,167
	December	1	0	482	0	4,108	0	0	0	4,591
	January	1	57,900	38,700	0	8,215	0	0	0	104,816
	February	0	19,947	112,107	0	0	0	0	0	132,054
	March	1	1,767	138,466	222	0	0	0	0	140,456
	April	41	5,036	71,242	0	0	0	0	0	76,319
	May	6,109	631	18,265	0	0	1	0	0	25,006
	June	3,936	0	5,544	0	0	0	2	0	9,482
	July	1,597	92	62,793	0	0	0	0	0	64,482
	August	489	548	58,428	0	8,240	0	0	0	67,705
	September	41	237	1,752	727	15,850	0	0	0	18,607
	Total	12,235	86,158	508,842	949	65,538	1	2	0	673,725

*Note: Adult equivalents due to entrainment were not calculated for any lifestage of alligatorfish, American eel, Atlantic seasnail, Atlantic tomcod, goosefish, gulf snailfish, haddock, *Prinotus* sp., radiated shanny, sculpin family, sea raven, shorthorn sculpin, silver hake, striped killifish, summer flounder, tautog, witch flounder and wrymouth and totals presented in this table do not include these species.

Table 3-13. Annual total adult equivalent entrainment abundance (sorted by life stage) for 17 fish taxa representing 99.0% of the total enumerated at Schiller Station based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007.

	Common Name	Egg	Yolk-sac-larvae	Post-yolk-sac larvae	Young-of-the-year	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 4	American plaice	4	0	1	0					5
	American sand lance	0	557	3,062	0					3,619
	Atlantic cod	1	0	17	0					18
	Atlantic herring	0	0	682	0					682
	Atlantic mackerel	4	0	0	0					4
	Atlantic menhaden	2	0	0						2
	Cunner	1,742	0	24,896	356					26,994
	Fourbeard rockling	2,257	30	3,485	0					5,772
	Grubby	0	3,929	17,269	0					21,198
	Hake species	1	0	0	0					1
	Longhorn sculpin	0	46	434	0					480
	Northern pipefish	0	270	12,907	0	20,449				33,626
	Pollock	0	1	3	0					4
	Rainbow smelt	0	276	6,690	0					6,966
	Rock gunnel	0	23,642	119,332	0					142,974
	Windowpane	1	0	1	0					2
	Winter flounder	0	0	0	0		0	1	0	1
	Total	4,013	28,750	188,777	356	20,449	0	1	0	242,346
Unit 5	American plaice	4	0	1	0					5
	American sand lance	0	570	3,134	0					3,704
	Atlantic cod	1	0	17	0					18
	Atlantic herring	0	0	792	0					792
	Atlantic mackerel	5	0	0	0					5
	Atlantic menhaden	3	0	0						3
	Cunner	1,783	0	25,345	340					27,468
	Fourbeard rockling	2,312	31	3,521	0					5,864
	Grubby	0	3,861	16,980	0					20,841
	Hake species	1	0	0	0					1
	Longhorn sculpin	0	44	446	0					490
	Northern pipefish	0	239	13,186	0	22,266				35,691
	Pollock	0	1	3	0					4
	Rainbow smelt	0	283	6,854	0					7,137
	Rock gunnel	0	24,105	125,793	0					149,898
	Windowpane	1	0	1	0					2
	Winter flounder	0	0	0	0		0	1	0	1
	Total	4,110	29,134	196,073	340	22,266	0	1	0	251,924

(continued)

Table 3-13. (Continued)

	Common Name	Egg	Yolk-sac-larvae	Post-yolk-sac larvae	Young-of-the-year	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 6	American plaice	4	0	1	0					5
	American sand lance	0	566	2,453	0					3,019
	Atlantic cod	1	0	17	0					18
	Atlantic herring	0	0	787	0					787
	Atlantic mackerel	5	0	0	0					5
	Atlantic menhaden	3	0	0						3
	Cunner	1,784	0	25,506	253					27,543
	Fourbeard rockling	2,314	31	3,570	0					5,915
	Grubby	0	2,921	10,958	0					13,879
	Hake species	1	0	0	0					1
	Longhorn sculpin	0	41	348	0					389
	Northern pipefish	0	276	13,224	0	22,823				36,323
	Pollock	0	1	3	0					4
	Rainbow smelt	0	283	6,854	0					7,137
	Rock gunnel	0	24,155	60,270	0					84,425
	Windowpane	1	0	1	0					2
	Winter flounder	0	0	0	0		0	1	0	1
	Total	4,113	28,273	123,992	253	22,823	0	1	0	179,455
Combined	American plaice	11	0	3	0					14
	American sand lance	0	1,693	8,648	0					10,341
	Atlantic cod	3	0	51	0					54
	Atlantic herring	0	0	2,261	0					2,261
	Atlantic mackerel	14	0	0	0					14
	Atlantic menhaden	8	0	0						8
	Cunner	5,309	0	75,747	949					82,005
	Fourbeard rockling	6,883	92	10,576	0					17,551
	Grubby	0	10,711	45,207	0					55,918
	Hake species	3	0	0	0					3
	Longhorn sculpin	0	131	1,228	0					1,359
	Northern pipefish	0	785	39,318	0	65,538				105,641
	Pollock	1	4	9	0					14
	Rainbow smelt	0	841	20,397	0					21,238
	Rock gunnel	0	71,901	305,395	0					377,296
	Windowpane	4	0	2	0					6
	Winter flounder	0	0	0	0		1	2	0	3
	Total	12,235	86,158	508,842	949	65,538	1	2	0	673,725

*Note: Adult equivalents due to entrainment were not calculated for any life stage of alligatorfish, American eel, Atlantic seasnail, Atlantic tomcod, goosfish, gulf snailfish, haddock, *Prinotus* sp., radiated shanny, sculpin family, sea raven, shorthorn sculpin, silver hake, striped killifish, summer flounder, tautog, witch flounder and wrymouth and totals presented in this table do not include these species.

Table 3-14. Annual total adult equivalent entrainment abundance (sorted by life stage) for three macrocrustacean taxa representing 99.6% of the total enumerated at Schiller Station based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Unit	Month	Crab life stages			Lobster life stages		Total
		Juvenile	Megalops	Zoea	Stage I	Stage II	
Unit 4	October	281	1,138	151	0	0	1,570
	November	248	6	4	0	0	257
	December	0	14	5	0	0	19
	January	0	0	1	0	0	1
	February	130	0	1	0	0	131
	March	0	0	0	0	0	0
	April	0	0	0	0	0	0
	May	128	0	1,930	0	0	2,058
	June	562	0	8,207	0	7	8,777
	July	238	9,688	9,763	15	0	19,704
	August	4,834	3,699	1,637	0	0	10,169
	September	1,861	2,051	234	0	0	4,146
	Total	8,283	16,596	21,932	15	7	46,832
Unit 5	October	1,433	1,511	198	0	0	3,142
	November	522	19	6	0	0	547
	December	0	14	5	0	0	19
	January	0	0	1	0	0	1
	February	134	0	1	0	0	134
	March	0	0	0	0	0	0
	April	0	0	0	0	0	0
	May	131	0	1,977	0	0	2,108
	June	576	0	8,408	0	8	8,992
	July	244	9,925	10,002	15	0	20,187
	August	4,952	3,789	1,677	0	0	10,419
	September	1,664	1,653	191	0	0	3,507
	Total	9,656	16,912	22,466	15	8	49,057
Unit 6	October	1,433	1,511	198	0	0	3,142
	November	522	19	6	0	0	547
	December	0	14	5	0	0	19
	January	0	0	1	0	0	1
	February	134	0	1	0	0	134
	March	0	0	0	0	0	0
	April	0	0	0	0	0	0
	May	131	0	1,977	0	0	2,108
	June	576	0	8,408	0	8	8,992
	July	244	9,925	10,002	15	0	20,187
	August	4,952	3,789	1,677	0	0	10,419
	September	1,906	2,102	239	0	0	4,247
	Total	9,899	17,361	22,514	15	8	49,796

(continued)

Table 3-14. (Continued)

Unit	Month	Crab life stages			Lobster life stages		Total
		Juvenile	Megalops	Zoea	Stage I	Stage II	
Combined	October	3,148	4,160	546	0	0	7,854
	November	1,292	44	15	0	0	1,351
	December	0	43	14	0	0	57
	January	0	0	3	0	0	3
	February	398	0	2	0	0	399
	March	0	0	0	0	0	0
	April	0	0	1	0	0	1
	May	391	0	5,883	0	0	6,274
	June	1,714	0	25,024	0	22	26,760
	July	727	29,539	29,767	45	0	60,077
	August	14,738	11,277	4,991	0	0	31,007
	September	5,431	5,806	664	0	0	11,901
	Total	27,838	50,869	66,911	45	22	145,685

*Note: Adult equivalents were not calculated for any life stage of the Arctic lyre crab, Atlantic lyre crab or Japanese shore crab and totals presented in this table do not include these species.

Table 3-15. Annual total adult equivalent entrainment abundance (sorted by life stage) for three macrocrustacean taxa representing 99.6% of the total enumerated at Schiller Station based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007.

		Crab life stages			Lobster life stages		Total
		Juvenile	Megalops	Zoea	Stage I	Stage II	
Unit 4	American lobster				15	7	22
	<i>Cancer</i> sp.	2,314	1,978	411			4,703
	Green crab	5,968	14,618	21,521			42,107
	All Taxa	8,283	16,596	21,932	15	7	46,832
Unit 5	American lobster				15	8	23
	<i>Cancer</i> sp.	2,812	2,141	417			5,370
	Green crab	6,844	14,771	22,049			43,664
	All Taxa	9,656	16,912	22,466	15	8	49,057
Unit 6	American lobster				15	8	23
	<i>Cancer</i> sp.	2,812	2,182	421			5,415
	Green crab	7,087	15,179	22,093			44,359
	All Taxa	9,899	17,361	22,514	15	8	49,796
Combined	American lobster				45	22	67
	<i>Cancer</i> sp.	7,939	6,302	1,248			15,488
	Green crab	19,899	44,568	65,663			130,130
	All Taxa	27,838	50,869	66,911	45	22	145,685

*Note: Adult equivalents were not calculated for Arctic lyre crab, Atlantic lyre crab or Japanese shore crab and totals presented in this table do not include these species.

Table 3-16. Number of fish tested and total survival (%) observed for all fish taxa and life stages (yolk sac and post yolk-sac larvae) entrained at the Schiller Station CWIS during 2006 and 2007. Initial and Latent survival rates were calculated for taxa with an adequate sample size (indicated by gray shading).

Taxon	Number of Larvae Observed in Test Samples								Number of larvae Observed in Control Samples								% Survival	
	Initial (T ₀)				Latent (T ₂₄)				Initial (T ₀)				Latent (T ₂₄)				Initial	Latent
	Alive	Dead	Stun	TOTAL	Alive	Dead	Stun	Total	Alive	Dead	Stun	TOTAL	Alive	Dead	Stun	Total		
Alligatorfish				0				0				0				0		
American eel				0				0				0				0		
American plaice				0				0				0				0		
American sand lance	33	57		90	28	5		33	22	18		40	15	7		22	66.7%	83.0%
Atlantic cod		2		2				0				0				0		
Atlantic herring	1	18		19		1		1	1	3		4	1			1	21.1%	0.0%
Atlantic mackerel				0				0				0				0		
Atlantic seasnail				0				0				0				0		
Cunner	30	15		45	23	7		30	15	18		33	15			15	100.0%	100.0%
Fourbeard rockling				0				0	2	1		3	2			2		
Grubby	24	12		36	22	2		24	19			19	17	2		19	66.7%	68.3%
Gulf snailfish				0				0	1			1		1		1		
Longhorn sculpin	14	6		20	5	8	1	14	12	1		13	5	5	2	12	75.8%	65.0%
Lumpfish	21			21	21			21				0				0		
Northern pipefish	2			2	2			2				0				0		
Pollock		1		1				0	1	5		6		1		1		
Radiated shanny		1		1				0				0				0		
Rainbow smelt				0				0				0				0		
Rock gunnel	61	55		116	40	19	2	61	87	23		110	70	16	1	87	66.5%	54.2%
Sculpin family				0				0				0				0		
Sea raven				0				0				0				0		
Shorthorn sculpin	1			1	1			1	1	1		2		1		1		
Silver hake				0				0				0				0		
Windowpane				0				0				0				0		
Winter flounder				0				0				0				0		
Witch flounder				0				0	1	4		5		1		1		
Wrymouth				0				0				0				0		

Table 3-17. (Continued)

Unit	Common Name	Estimated Entrainment Abundance			Applied Latent Survival Rates		Survival Adjusted Estimated Entrainment Abundance			Mortality Adjusted Estimated Entrainment Abundance		
		Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages
Unit 4 cont'd	Shorthorn sculpin ^d	0	33,774	33,774	0	0.701	0	23,676	23,676	0	10,098	10,098
	Silver hake ^d	77,255	7,107	84,362	0	0.701	0	4,982	4,982	77,255	2,125	79,380
	Striped killifish ^d	2,574	0	2,574	0	0.701	0	0	0	2,574	0	2,574
	Summer flounder ^c	366	0	366	0	1	0	0	0	366	0	366
	Tautog ^c	17,351	0	17,351	0	1	0	0	0	17,351	0	17,351
	Unidentifiable ^b	83,506	0	83,506	0	0	0	0	0	83,506	0	83,506
	Urophycis species ^d	427,175	0	427,175	0	0.701	0	0	0	427,175	0	427,175
	Windowpane ^c	152,887	14,888	167,774	0	1	0	14,888	14,888	152,887	0	152,887
	Winter flounder ^c	60,924	69,747	130,672	0	1	0	69,747	69,747	60,924	0	60,924
	Witch flounder ^a	0	5,385	5,385	0	0.83	0	4,469	4,469	0	915	915
	Wrymouth ^c	0	2,666	2,666	0	0.542	0	1,445	1,445	0	1,221	1,221
	Total	27,988,779	20,581,964	48,570,744	0	0.838	0	17,249,607	17,249,607	27,988,779	3,332,357	31,321,137
Unit 5	Alligatorfish ^c	0	4,428	4,428	0	0.542	0	2,400	2,400	0	2,028	2,028
	American eel ^c	0	2,637	2,637	0	1	0	2,637	2,637	0	0	0
	American plaice ^a	311,617	8,294	319,912	0	0.83	0	6,884	6,884	311,617	1,410	313,027
	American sand lance ^a	0	4,565,885	4,565,885	0	0.83	0	3,789,685	3,789,685	0	776,201	776,201
	Atlantic cod ^a	102,612	10,919	113,532	0	0.83	0	9,063	9,063	102,612	1,856	104,469
	Atlantic cod/haddock ^a	53,675	0	53,675	0	0.83	0	0	0	53,675	0	53,675
	Atlantic cod/haddock/witch ^a	105,174	0	105,174	0	0.83	0	0	0	105,174	0	105,174
	Atlantic herring ^b	0	627,107	627,107	0	0	0	0	0	0	627,107	627,107
	Atlantic mackerel ^c	1,828,046	2,766	1,830,812	0	0.542	0	1,499	1,499	1,828,046	1,267	1,829,313
	Atlantic menhaden ^b	202,186	0	202,186	0	0	0	0	0	202,186	0	202,186
	Atlantic seasnail ^d	0	119,120	119,120	0	0.701	0	83,503	83,503	0	35,617	35,617
	Atlantic tomcod ^d	16,611	0	16,611	0	0.701	0	0	0	16,611	0	16,611
	Cunner ^c	10,050	10,137,620	10,147,669	0	1	0	10,137,620	10,137,620	10,050	0	10,050
	Cunner/yellowtail flounder ^c	22,838,178	0	22,838,178	0	1	0	0	0	22,838,178	0	22,838,178
	Fourbeard rockling ^d	220,727	315,639	536,365	0	0.701	0	221,263	221,263	220,727	94,376	315,103
	Fourbeard rockling/hake ^d	2,001,799	0	2,001,799	0	0.701	0	0	0	2,001,799	0	2,001,799
	Goosefish ^d	44,144	0	44,144	0	0.701	0	0	0	44,144	0	44,144
	Grubby ^d	0	1,178,666	1,178,666	0	0.701	0	826,245	826,245	0	352,421	352,421
	Gulf snailfish ^d	0	8,266	8,266	0	0.701	0	5,795	5,795	0	2,472	2,472
	Haddock ^a	2,215	0	2,215	0	0.83	0	0	0	2,215	0	2,215

(continued)

Table 3-17. Estimated abundance and annual total survival for each taxon entrained at Units 4, 5, 6, and all Units combined of Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007. Latent survival rates for YSL and PYSL life stages were determined from testing at Schiller Station; survival rates for all other life stages (i.e., eggs and juveniles) were conservatively assumed to be zero.

Unit	Common Name	Estimated Entrainment Abundance			Applied Latent Survival Rates		Survival Adjusted Estimated Entrainment Abundance			Mortality Adjusted Estimated Entrainment Abundance		
		Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages
Unit 4	Alligatorfish ^c	0	5,388	5,388	0	0.542	0	2,920	2,920	0	2,468	2,468
	American eel ^c	0	2,574	2,574	0	1	0	2,574	2,574	0	0	0
	American plaice ^a	325,113	8,096	333,209	0	0.83	0	6,720	6,720	325,113	1,376	326,489
	American sand lance ^a	0	4,459,954	4,459,954	0	0.83	0	3,701,762	3,701,762	0	758,192	758,192
	Atlantic cod ^a	69,724	10,658	80,382	0	0.83	0	8,846	8,846	69,724	1,812	71,535
	Atlantic cod/haddock ^a	54,952	0	54,952	0	0.83	0	0	0	54,952	0	54,952
	Atlantic cod/haddock/witch ^a	108,001	0	108,001	0	0.83	0	0	0	108,001	0	108,001
	Atlantic herring ^b	0	540,351	540,351	0	0	0	0	0	0	540,351	540,351
	Atlantic mackerel ^c	1,784,313	2,700	1,787,013	0	0.542	0	1,464	1,464	1,784,313	1,237	1,785,550
	Atlantic menhaden ^b	185,776	0	185,776	0	0	0	0	0	185,776	0	185,776
	Atlantic seasnail ^d	0	123,915	123,915	0	0.701	0	86,864	86,864	0	37,051	37,051
	Atlantic tomcod ^d	16,213	0	16,213	0	0.701	0	0	0	16,213	0	16,213
	Cunner ^c	10,359	9,957,770	9,968,129	0	1	0	9,957,770	9,957,770	10,359	0	10,359
	Cunner/yellowtail flounder ^c	22,305,267	0	22,305,267	0	1	0	0	0	22,305,267	0	22,305,267
	Fourbeard rockling ^d	215,993	312,327	528,320	0	0.701	0	218,941	218,941	215,993	93,386	309,378
	Fourbeard rockling/hake ^d	1,954,176	0	1,954,176	0	0.701	0	0	0	1,954,176	0	1,954,176
	Goosefish ^d	42,300	0	42,300	0	0.701	0	0	0	42,300	0	42,300
	Grubby ^d	0	1,198,783	1,198,783	0	0.701	0	840,347	840,347	0	358,436	358,436
	Gulf snailfish ^d	0	8,069	8,069	0	0.701	0	5,656	5,656	0	2,412	2,412
	Haddock ^a	2,162	0	2,162	0	0.83	0	0	0	2,162	0	2,162
	Longhorn sculpin ^d	0	139,826	139,826	0	0.701	0	98,018	98,018	0	41,808	41,808
	Northern pipefish ^c	20,449	197,982	218,431	0	0.542	0	107,306	107,306	20,449	90,676	111,125
	Pollock ^a	44,571	164,490	209,062	0	0.83	0	136,527	136,527	44,571	27,963	72,535
	Prionotus species ^c	22,034	0	22,034	0	0.542	0	0	0	22,034	0	22,034
	Radiated shanny ^c	0	62,351	62,351	0	0.542	0	33,794	33,794	0	28,557	28,557
	Rainbow smelt ^a	0	535,749	535,749	0	0.83	0	444,672	444,672	0	91,077	91,077
	Rock gunnel ^c	0	2,696,153	2,696,153	0	0.542	0	1,461,315	1,461,315	0	1,234,838	1,234,838
	Sculpin family ^d	5,340	15,526	20,866	0	0.701	0	10,884	10,884	5,340	4,642	9,983
	Sea raven ^d	0	5,737	5,737	0	0.701	0	4,022	4,022	0	1,715	1,715

(continued)

Table 3-17. (Continued)

Unit	Common Name	Estimated Entrainment Abundance			Applied Latent Survival Rates		Survival Adjusted Estimated Entrainment Abundance			Mortality Adjusted Estimated Entrainment Abundance		
		Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages
Unit 5 cont'd	Longhorn sculpin ^d	0	142,699	142,699	0	0.701	0	100,032	100,032	0	42,667	42,667
	Northern pipefish ^c	22,266	201,713	223,978	0	0.542	0	109,328	109,328	22,266	92,384	114,650
	Pollock ^a	46,559	169,256	215,815	0	0.83	0	140,482	140,482	46,559	28,774	75,332
	Prionotus species ^c	22,022	0	22,022	0	0.542	0	0	0	22,022	0	22,022
	Radiated shanny ^c	0	63,879	63,879	0	0.542	0	34,623	34,623	0	29,257	29,257
	Rainbow smelt ^a	0	548,880	548,880	0	0.83	0	455,571	455,571	0	93,310	93,310
	Rock gunnel ^e	0	2,826,731	2,826,731	0	0.542	0	1,532,088	1,532,088	0	1,294,643	1,294,643
	Sculpin family ^d	5,471	14,836	20,307	0	0.701	0	10,400	10,400	5,471	4,436	9,907
	Sea raven ^d	0	6,685	6,685	0	0.701	0	4,686	4,686	0	1,999	1,999
	Shorthorn sculpin ^d	0	36,216	36,216	0	0.701	0	25,388	25,388	0	10,829	10,829
	Silver hake ^d	79,148	7,281	86,429	0	0.701	0	5,104	5,104	79,148	2,177	81,325
	Striped killifish ^d	2,637	0	2,637	0	0.701	0	0	0	2,637	0	2,637
	Summer flounder ^c	5,364	0	5,364	0	1	0	0	0	5,364	0	5,364
	Tautog ^c	17,337	0	17,337	0	1	0	0	0	17,337	0	17,337
	Unidentifiable ^b	79,114	0	79,114	0	0	0	0	0	79,114	0	79,114
	Urophycis species ^d	437,291	0	437,291	0	0.701	0	0	0	437,291	0	437,291
	Windowpane ^c	155,520	14,814	170,334	0	1	0	14,814	14,814	155,520	0	155,520
	Winter flounder ^c	68,378	71,457	139,835	0	1	0	71,457	71,457	68,378	0	68,378
	Witch flounder ^a	0	5,517	5,517	0	0.83	0	4,579	4,579	0	938	938
	Wrymouth ^c	0	2,731	2,731	0	0.542	0	1,480	1,480	0	1,251	1,251
	Total	28,678,139	21,094,042	49,772,182	0	0.834	0	17,596,625	17,596,625	28,678,139	3,497,417	32,175,557
Unit 6	Alligatorfish ^c	0	3,516	3,516	0	0.542	0	1,906	1,906	0	1,610	1,610
	American eel ^c	0	2,637	2,637	0	1	0	2,637	2,637	0	0	0
	American plaice ^a	328,209	8,294	336,504	0	0.83	0	6,884	6,884	328,209	1,410	329,620
	American sand lance ^a	0	3,720,828	3,720,828	0	0.83	0	3,088,287	3,088,287	0	632,541	632,541
	Atlantic cod ^a	102,612	10,919	113,532	0	0.83	0	9,063	9,063	102,612	1,856	104,469
	Atlantic cod/haddock ^a	41,584	0	41,584	0	0.83	0	0	0	41,584	0	41,584
	Atlantic cod/haddock/witch ^a	107,886	0	107,886	0	0.83	0	0	0	107,886	0	107,886
	Atlantic herring ^b	0	623,435	623,435	0	0	0	0	0	0	623,435	623,435
	Atlantic mackerel ^c	1,828,046	2,766	1,830,812	0	0.542	0	1,499	1,499	1,828,046	1,267	1,829,313
	Atlantic menhaden ^b	202,186	0	202,186	0	0	0	0	0	202,186	0	202,186
	Atlantic seasnail ^d	0	120,131	120,131	0	0.701	0	84,212	84,212	0	35,919	35,919

(continued)

Table 3-17. (Continued)

Unit	Common Name	Estimated Entrainment Abundance			Applied Latent Survival Rates		Survival Adjusted Estimated Entrainment Abundance			Mortality Adjusted Estimated Entrainment Abundance		
		Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages
Unit 6 cont'd	Atlantic tomcod ^d	16,611	0	16,611	0	0.701	0	0	0	16,611	0	16,611
	Cunner ^c	8,140	10,201,833	10,209,973	0	1	0	10,201,833	10,201,833	8,140	0	8,140
	Cunner/yellowtail flounder ^c	22,848,923	0	22,848,923	0	1	0	0	0	22,848,923	0	22,848,923
	Fourbeard rockling ^d	221,287	319,982	541,269	0	0.701	0	224,307	224,307	221,287	95,675	316,961
	Fourbeard rockling/hake ^d	2,003,258	0	2,003,258	0	0.701	0	0	0	2,003,258	0	2,003,258
	Goosefish ^d	39,991	0	39,991	0	0.701	0	0	0	39,991	0	39,991
	Grubby ^d	0	784,930	784,930	0	0.701	0	550,236	550,236	0	234,694	234,694
	Gulf snailfish ^d	0	3,954	3,954	0	0.701	0	2,772	2,772	0	1,182	1,182
	Haddock ^a	2,215	0	2,215	0	0.83	0	0	0	2,215	0	2,215
	Longhorn sculpin ^d	0	113,323	113,323	0	0.701	0	79,440	79,440	0	33,884	33,884
	Northern pipefish ^c	22,823	202,834	225,657	0	0.542	0	109,936	109,936	22,823	92,898	115,721
	Pollock ^a	46,559	144,849	191,408	0	0.83	0	120,225	120,225	46,559	24,624	71,183
	Prionotus species ^c	22,574	0	22,574	0	0.542	0	0	0	22,574	0	22,574
	Radiated shanny ^c	0	61,346	61,346	0	0.542	0	33,250	33,250	0	28,096	28,096
	Rainbow smelt ^a	0	548,880	548,880	0	0.83	0	455,571	455,571	0	93,310	93,310
	Rock gunnel ^c	0	1,592,062	1,592,062	0	0.542	0	862,898	862,898	0	729,164	729,164
	Sculpin family ^d	0	13,942	13,942	0	0.701	0	9,773	9,773	0	4,169	4,169
	Sea raven ^d	0	0	0	0	0.701	0	0	0	0	0	0
	Shorthorn sculpin ^d	0	16,787	16,787	0	0.701	0	11,768	11,768	0	5,019	5,019
	Silver hake ^d	79,148	7,281	86,429	0	0.701	0	5,104	5,104	79,148	2,177	81,325
	Striped killifish ^d	2,637	0	2,637	0	0.701	0	0	0	2,637	0	2,637
	Summer flounder ^c	5,364	0	5,364	0	1	0	0	0	5,364	0	5,364
	Tautog ^c	17,776	0	17,776	0	1	0	0	0	17,776	0	17,776
	Unidentifiable ^b	66,871	0	66,871	0	0	0	0	0	66,871	0	66,871
	Urophycis species ^d	437,645	0	437,645	0	0.701	0	0	0	437,645	0	437,645
	Windowpane ^c	156,634	15,253	171,886	0	1	0	15,253	15,253	156,634	0	156,634
	Winter flounder ^c	5,517	71,457	76,974	0	1	0	71,457	71,457	5,517	0	5,517
	Witch flounder ^a	0	5,517	5,517	0	0.83	0	4,579	4,579	0	938	938
	Wrymouth ^c	0	0	0	0	0.542	0	0	0	0	0	0
	Total	28,614,495	18,596,757	47,211,253	0	0.858	0	15,952,888	15,952,888	28,614,495	2,643,869	31,258,365

(continued)

Table 3-17. (Continued)

Unit	Common Name	Estimated Entrainment Abundance			Applied Latent Survival Rates		Survival Adjusted Estimated Entrainment Abundance			Mortality Adjusted Estimated Entrainment Abundance		
		Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages
All Units Combined	Alligatorfish ^c	0	13,332	13,332	0	0.542	0	7,226	7,226	0	6,106	6,106
	American eel ^c	0	7,847	7,847	0	1	0	7,847	7,847	0	0	0
	American plaice ^a	964,939	24,685	989,624	0	0.83	0	20,488	20,488	964,939	4,196	969,136
	American sand lance ^a	0	12,746,667	12,746,667	0	0.83	0	10,579,734	10,579,734	0	2,166,933	2,166,933
	Atlantic cod ^a	274,948	32,497	307,445	0	0.83	0	26,973	26,973	274,948	5,525	280,472
	Atlantic cod/haddock ^a	150,212	0	150,212	0	0.83	0	0	0	150,212	0	150,212
	Atlantic cod/haddock/witch ^a	321,061	0	321,061	0	0.83	0	0	0	321,061	0	321,061
	Atlantic herring ^b	0	1,790,893	1,790,893	0	0	0	0	0	0	1,790,893	1,790,893
	Atlantic mackerel ^c	5,440,405	8,233	5,448,638	0	0.542	0	4,462	4,462	5,440,405	3,771	5,444,176
	Atlantic menhaden ^b	590,147	0	590,147	0	0	0	0	0	590,147	0	590,147
	Atlantic seasnail ^d	0	363,166	363,166	0	0.701	0	254,579	254,579	0	108,587	108,587
	Atlantic tomcod ^d	49,434	0	49,434	0	0.701	0	0	0	49,434	0	49,434
	Cunner ^c	28,548	30,297,223	30,325,771	0	1	0	30,297,223	30,297,223	28,548	0	28,548
	Cunner/yellowtail flounder ^c	67,992,369	0	67,992,369	0	1	0	0	0	67,992,369	0	67,992,369
	Fourbeard rockling ^d	658,006	947,948	1,605,954	0	0.701	0	664,512	664,512	658,006	283,436	941,442
	Fourbeard rockling/hake ^d	5,959,232	0	5,959,232	0	0.701	0	0	0	5,959,232	0	5,959,232
	Goosefish ^d	126,435	0	126,435	0	0.701	0	0	0	126,435	0	126,435
	Grubby ^d	0	3,162,379	3,162,379	0	0.701	0	2,216,828	2,216,828	0	945,551	945,551
	Gulf snailfish ^d	0	20,289	20,289	0	0.701	0	14,223	14,223	0	6,066	6,066
	Haddock ^a	6,591	0	6,591	0	0.83	0	0	0	6,591	0	6,591
	Longhorn sculpin ^d	0	395,848	395,848	0	0.701	0	277,490	277,490	0	118,359	118,359
	Northern pipefish ^c	65,538	602,528	668,067	0	0.542	0	326,570	326,570	65,538	275,958	341,496
	Pollock ^a	137,689	478,595	616,284	0	0.83	0	397,234	397,234	137,689	81,361	219,050
	Prionotus species ^c	66,630	0	66,630	0	0.542	0	0	0	66,630	0	66,630
	Radiated shanny ^c	0	187,576	187,576	0	0.542	0	101,666	101,666	0	85,910	85,910
	Rainbow smelt ^a	0	1,633,509	1,633,509	0	0.83	0	1,355,813	1,355,813	0	277,697	277,697
	Rock gunnel ^c	0	7,114,946	7,114,946	0	0.542	0	3,856,301	3,856,301	0	3,258,645	3,258,645
	Sculpin family ^d	10,812	44,304	55,116	0	0.701	0	31,057	31,057	10,812	13,247	24,059
	Sea raven ^d	0	12,422	12,422	0	0.701	0	8,708	8,708	0	3,714	3,714
	Shorthorn sculpin ^d	0	86,778	86,778	0	0.701	0	60,831	60,831	0	25,946	25,946
	Silver hake ^d	235,552	21,668	257,220	0	0.701	0	15,189	15,189	235,552	6,479	242,031
	Striped killifish ^d	7,847	0	7,847	0	0.701	0	0	0	7,847	0	7,847

(continued)

Table 3-17. (Continued)

Unit	Common Name	Estimated Entrainment Abundance			Applied Latent Survival Rates		Survival Adjusted Estimated Entrainment Abundance			Mortality Adjusted Estimated Entrainment Abundance		
		Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages	Egg, YOY, Juvenile Life Stages	YSL and PYSL Life Stages	All Life Stages
All Units cont'd	Summer flounder ^c	11,094	0	11,094	0	1	0	0	0	11,094	0	11,094
	Tautog ^c	52,464	0	52,464	0	1	0	0	0	52,464	0	52,464
	Unidentifiable ^b	229,491	0	229,491	0	0	0	0	0	229,491	0	229,491
	<i>Urophycis</i> species ^d	1,302,112	0	1,302,112	0	0.701	0	0	0	1,302,112	0	1,302,112
	Windowpane ^c	465,040	44,954	509,994	0	1	0	44,954	44,954	465,040	0	465,040
	Winter flounder ^c	134,819	212,661	347,480	0	1	0	212,661	212,661	134,819	0	134,819
	Witch flounder ^a	0	16,418	16,418	0	0.83	0	13,627	13,627	0	2,791	2,791
	Wrymouth ^e	0	5,396	5,396	0	0.542	0	2,925	2,925	0	2,472	2,472
	Total	85,281,414	60,272,764	145,554,178	0	0.843	0	50,799,120	50,799,120	85,281,414	9,473,644	94,755,058

^a Assigned Latent survival rate calculated for American sand lance based on similar hardiness and morphological similarities (Table 3-16).

^b Assigned Latent survival rate calculated for Atlantic herring based on similar hardiness and morphological similarities (Table 3-16).

^c Assigned Latent survival rate calculated for cunner based on similar hardiness and morphological similarities (Table 3-16).

^d Assigned Latent survival rate calculated for grubby/longhorn sculpin based on similar hardiness and morphological similarities (Table 3-16).

^e Assigned Latent survival rate calculated for rock gunnel based on similar hardiness and morphological similarities (Table 3-16).

Table 3-18. Total adult equivalent survival for 17 fish taxa representing 99.0% of the total enumerated in the entrainment samples from Unit 4, 5, 6, and all Units combined of Schiller Station CWIS based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007. Total survival rates for YSL and PYSL life stages were determined from testing at Schiller Station; survival rates for all other life stages (i.e., eggs and juveniles) were conservatively assumed to be zero.

	Common Name	Adult Equivalent Abundance	Latent Survival Rate	Survival Adjusted Adult Equivalent Abundance	Mortality Adjusted Adult Equivalent Abundance
Unit 4	American plaice ^a	5	0.83	4	1
	American sand lance ^a	3,618	0.83	615	3,003
	Atlantic cod ^a	18	0.83	4	14
	Atlantic herring ^b	682	0	682	0
	Atlantic mackerel ^c	5	0.542	4	0
	Atlantic menhaden ^b	2	0	2	0
	Cunner ^c	26,994	1	2,098	24,896
	Fourbeard rockling ^d	5,772	0.701	3,308	2,464
	Grubby ^d	21,197	0.701	6,338	14,859
	Urophycis species ^d	1	0.701	1	0
	Longhorn sculpin ^d	480	0.701	144	337
	Northern pipefish ^e	33,626	0.542	26,484	7,142
	Pollock ^a	5	0.83	1	4
	Rainbow smelt ^a	6,966	0.83	1,184	5,781
	Rock gunnel ^e	142,973	0.542	65,482	77,492
	Windowpane ^c	2	1	1	1
	Winter flounder ^c	1	1	0	0
	Total	242,347	0.439	106,353	135,993
Unit 5	American plaice ^a	5	0.83	4	1
	American sand lance ^a	3,704	0.83	630	3,075
	Atlantic cod ^a	18	0.83	4	14
	Atlantic herring ^b	792	0	792	0
	Atlantic mackerel ^c	5	0.542	5	0
	Atlantic menhaden ^b	3	0	3	0
	Cunner ^c	27,468	1	2,123	25,345
	Fourbeard rockling ^d	5,864	0.701	3,374	2,490
	Grubby ^d	20,841	0.701	6,232	14,610
	Urophycis species ^d	1	0.701	1	0
	Longhorn sculpin ^d	490	0.701	146	343
	Northern pipefish ^e	35,691	0.542	28,414	7,277
	Pollock ^a	5	0.83	1	4
	Rainbow smelt ^a	7,136	0.83	1,213	5,923
	Rock gunnel ^e	149,898	0.542	68,653	81,245
	Windowpane ^c	2	1	1	1
	Winter flounder ^c	1	1	0	0
	Total	251,924	0.443	111,596	140,327
Unit 6	American plaice ^a	5	0.83	4	1
	American sand lance ^a	3,019	0.83	513	2,506
	Atlantic cod ^a	18	0.83	4	14
	Atlantic herring ^b	787	0	787	0
	Atlantic mackerel ^c	5	0.542	5	0
	Atlantic menhaden ^b	3	0	3	0
	Cunner ^c	27,543	1	2,037	25,506
	Fourbeard rockling ^d	5,915	0.701	3,391	2,524
	Grubby ^d	13,879	0.701	4,150	9,729
	Urophycis species ^d	1	0.701	1	0
	Longhorn sculpin ^d	389	0.701	116	273

(continued)

Table 3-18. (Continued)

	Common Name	Adult Equivalent Abundance	Latent Survival Rate	Survival Adjusted Adult Equivalent Abundance	Mortality Adjusted Adult Equivalent Abundance
Unit 6 cont'd	Northern pipefish ^e	36,323	0.542	29,006	7,317
	Pollock ^a	4	0.83	1	3
	Rainbow smelt ^a	7,136	0.83	1,213	5,923
	Rock gunnel ^e	84,425	0.542	38,667	45,758
	Windowpane ^c	2	1	1	1
	Winter flounder ^c	1	1	0	0
	Total	179,455	0.445	79,899	99,555
Combined	American plaice ^a	14	0.83	11	3
	American sand lance ^a	10,341	0.83	1,758	8,583
	Atlantic cod ^a	54	0.83	12	42
	Atlantic herring ^b	2,261	0	2,261	0
	Atlantic mackerel ^e	14	0.542	14	0
	Atlantic menhaden ^b	8	0	8	0
	Cunner ^c	82,005	1	6,258	75,747
	Fourbeard rockling ^d	17,551	0.701	10,073	7,479
	Grubby ^d	55,918	0.701	16,719	39,198
	<i>Urophycis</i> species ^d	3	0.701	3	0
	Longhorn sculpin ^d	1,359	0.701	406	953
	Northern pipefish ^e	105,641	0.542	83,905	21,736
	Pollock ^a	14	0.83	3	11
	Rainbow smelt ^a	21,238	0.83	3,611	17,628
	Rock gunnel ^e	377,296	0.542	172,802	204,494
	Windowpane ^c	6	1	4	2
	Winter flounder ^c	3	1	0	0
	Total	673,726	0.442	297,848	375,875

^a Assigned Latent survival rate calculated for American sand lance based on similar hardiness and morphological similarities (Table 3-16).

^b Assigned Latent survival rate calculated for Atlantic herring based on similar hardiness and morphological similarities (Table 3-16).

^c Assigned Latent survival rate calculated for cunner based on similar hardiness and morphological similarities (Table 3-16).

^d Assigned Latent survival rate calculated for grubby/longhorn sculpin based on similar hardiness and morphological similarities (Table 3-16).

^e Assigned Latent survival rate calculated for rock gunnel based on similar hardiness and morphological similarities (Table 3-16).

Table 3-19. Number of macrocrustacean larvae tested and total survival (%) observed for entrainment survival samples from the Schiller Station CWIS during 2006 and 2007. Initial and Latent survival rates were calculated for taxa with an adequate sample size (shaded).

Species	Number of Larvae Observed in Test Samples								Number of larvae Observed in Control Samples								% Survival Latent Extended
	Initial (T ₀)				Latent (T ₂₄)				Initial (T ₀)				Latent (T ₂₄)				
	Alive	Dead	Stun	TOTAL	Alive	Dead	Stun	TOTAL	Alive	Dead	Stun	TOTAL	Alive	Dead	Stun	TOTAL	
<i>Cancer</i> sp.	14	2		16	12	2		14	1			1	1			1	75.0%
<i>zoea</i>	12	2		14	11	1		12				0	1			1	
<i>megalopa</i>	1			1	1			1				0				0	
<i>juvenile</i>	1			1		1		1				0				0	
Green crab	27	2		29	23	4		27	1			1		1		1	79.3%
<i>zoea</i>	1			1	1			1	1			1				0	
<i>megalopa</i>	18	2		20	18			18	1			1		1		1	
<i>juvenile</i>	8			8	4	4		8				0				0	

Table 3-20. Estimated abundance and annual total survival of macrocrustacean larvae entrained at Units 4, 5, 6, and all Units combined of Schiller Station based on operating flows during the 52 week sampling year from 2 October 2006 through 30 September 2007.

Unit	Common Name	Estimated Entrainment Abundance	Latent Survival rate	Survival Adjusted Estimated Entrainment Abundance	Mortality Adjusted Estimated Entrainment Abundance
Unit 4	American lobster	18,521	0.75	13,891	4,630
	Arctic lyre crab	91,234	0.75	68,426	22,809
	Atlantic lyre crab	15,810	0.75	11,858	3,953
	Atlantic rock crab	492,690	0.75	369,517	123,172
	Cancer sp.	188,580,383	0.75	141,435,288	47,145,096
	Green crab	238,946,410	0.793	189,484,503	49,461,907
	Japanese shore crab	1,590,150	0.75	1,192,612	397,537
	Jonah crab	81,679	0.75	61,259	20,420
	Total	429,816,877	0.774	332,637,353	97,179,524
Unit 5	American lobster	18,975	0.75	14,231	4,744
	Arctic lyre crab	98,613	0.75	73,960	24,653
	Atlantic lyre crab	16,198	0.75	12,148	4,049
	Atlantic rock crab	536,611	0.75	402,458	134,153
	Cancer sp.	191,339,524	0.75	143,504,643	47,834,881
	Green crab	244,782,196	0.793	194,112,281	50,669,914
	Japanese shore crab	1,656,034	0.75	1,242,026	414,009
	Jonah crab	89,266	0.75	66,949	22,316
	Total	438,537,416	0.774	339,428,696	99,108,720
Unit 6	American lobster	18,975	0.75	14,231	4,744
	Arctic lyre crab	98,613	0.75	73,960	24,653
	Atlantic lyre crab	16,198	0.75	12,148	4,049
	Atlantic rock crab	546,092	0.75	409,569	136,523
	Cancer sp.	193,333,147	0.75	144,999,860	48,333,287
	Green crab	245,346,627	0.793	194,559,875	50,786,752
	Japanese shore crab	1,666,963	0.75	1,250,222	416,741
	Jonah crab	91,660	0.75	68,745	22,915
	Total	441,118,274	0.774	341,388,611	99,729,664
Combi ned	American lobster	56,471	0.75	42,354	14,118
	Arctic lyre crab	288,460	0.75	216,345	72,115
	Atlantic lyre crab	48,205	0.75	36,154	12,051
	Atlantic rock crab	1,575,392	0.75	1,181,544	393,848
	Cancer sp.	573,253,054	0.75	429,939,790	143,313,263
	Green crab	729,075,232	0.793	578,156,659	150,918,573
	Japanese shore crab	4,913,147	0.75	3,684,861	1,228,287
	Jonah crab	262,604	0.75	196,953	65,651
	Total	1,309,472,567	0.774	1,013,454,660	296,017,907

Table 3-21. Total adult equivalent survival of macrocrustacean larvae representing 99.6% of the total enumerated in the entrainment samples from Units 4, 5, 6, and all Units combined of Schiller Station CWIS based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Unit	Common Name	Adult Equivalent Abundance	Latent Survival Rate	Survival Adjusted Adult Equivalent Abundance	Mortality Adjusted Adult Equivalent Abundance
Unit 4	American lobster	22	0.75	16	5
	Cancer sp.	4,703	0.75	3,527	1,176
	Green crab	42,107	0.793	33,391	8,716
	Total	46,832	0.789	36,935	9,898
Unit 5	American lobster	23	0.75	17	6
	Cancer sp.	5,370	0.75	4,027	1,342
	Green crab	43,664	0.793	34,626	9,039
	Total	49,057	0.788	38,670	10,387
Unit 6	American lobster	23	0.75	17	6
	Cancer sp.	5,415	0.75	4,061	1,354
	Green crab	44,359	0.793	35,177	9,182
	Total	49,796	0.788	39,255	10,542
Combined	American lobster	67	0.75	50	17
	Cancer sp.	15,488	0.75	11,616	3,872
	Green crab	130,130	0.793	103,193	26,937
	Total	145,685	0.788	114,860	30,826

4.0 SCHILLER STATION IMPINGEMENT

A total of 627 valid six-hour impingement samples were collected at Schiller Station at Units 4, 5, and 6 from 31 August 2006 to 27 September 2007 among 57 total impingement sampling dates (Tables 2-3 through 2-5). When examined by Unit, a total of 205 valid six-hour samples were collected at Unit 4, a total of 217 valid six-hour samples were collected at Unit 5, and a total of 205 valid six-hour samples were collected at Unit 6 of Schiller Station during the time period of 31 August 2006 to 27 September 2007. A cumulative total volume of 6.4 billion gallons of operating flow was sampled for impingement effects during 57 sampling dates at Units 4, 5, and 6 of Schiller Station for the time period of 31 August 2006 through 27 September 2007. That water volume represents 14.2% of the total Schiller Station operating flow (Units 4, 5, and 6 combined) for the period 31 August 2006 through 27 September 2007. When examined by Unit, a total of 2.1 billion gallons were sampled for impingement at Unit 4 (14.3% of total operating flow for the period 31 August 2006 through 27 September 2007), 2.2 billion gallons were sampled for impingement at Unit 5 (14.2% of total operating flow for the period 31 August 2006 through 27 September 2007), and 2.1 billion gallons were sampled for impingement at Unit 6 (14.1% of total operating flow for the period 31 August 2006 through 27 September 2007). Impingement sampling was not conducted during weeks 46 to 49 (2006; Table 2-3) at Unit 4 and weeks 10 to 14 (2007; Table 2-5) at Unit 6 due to maintenance outages.

All 627 valid impingement samples (205 at Unit 4, 217 at Unit 5, and 205 at Unit 6) were included in assessment of fish and macrocrustacean species composition (Section 4.1 below), fish and macrocrustacean length frequency (Section 4.2 below), and seasonal and year to year trends in fish and macrocrustacean density (Section 4.3 below). Estimated impingement abundance was calculated for ichthyoplankton and macrocrustaceans and used in Sections 4.4, 4.5, and 4.6 of this report based on the "sampling year" represented by 185 samples at Unit 4, 201 samples at Unit 5, and 185 samples at Unit 6 collected during the 52 week period from Monday 2 October 2006 through Sunday 30 September 2007 (Table 2-7). Therefore, the data and results found in Sections 4.1, 4.2 and 4.3 specifically provide the impingement data summary requested in Attachment B Item 2 of the 308 Letter. Sections 3.4, 3.5, and 3.6 specifically provide the impingement data analysis requested in Attachment B Item 2 of the 308 Letter. Table 1 of Appendix C provides the water quality parameters (temperature, dissolved oxygen, salinity) recorded at the beginning and end of each 6-hour sample at Schiller Station (single value recorded to represent water quality conditions at Units 4, 5, and 6). Table 2 of Appendix C provides the volume of debris (gallons) and dominant debris type (terrestrial or aquatic) for each 6-hour sample at Units 4, 5, and 6 of Schiller Station.

4.1 Species Composition

Results in this Section (4.1) are presented for the raw total count of impinged organisms observed in the impingement samples collected and processed from the period 31 August 2006 through 27 September 2007 at Units 4, 5, and 6 combined of Schiller Station.

4.1.1 Fish

Thirty-three taxa of fish, representing twenty families were enumerated from the impingement samples from Units 4, 5, and 6 combined of Schiller Station from the period of 31 August 2006 through 27 September 2007 (Table 4-1). The total number of fish collected in weekly impingement

samples during this period was 582 fish (Table 4-2). White hake (14.3%, $n = 83$), rainbow smelt (12.2%, $n = 71$), cunner (11.9%, $n = 69$), winter flounder (10.1%, $n = 59$), and grubby (9.6%, $n = 56$) were the five most commonly impinged species, accounting for 58% ($n = 338$) of all individuals collected in impingement samples at Schiller Station (all Units combined) from 31 August 2006 through 27 September 2007.

Most of the fish taxa collected in this study were seasonally resident fish. Of the thirty-three taxa impinged at Units 4, 5, and 6 of Schiller Station (combined), seventeen of those taxa were impinged in low numbers, collected infrequently, and represented by three or fewer individuals (Table 4-2). The only fish taxon collected during each of the fourteen months of impingement sampling was winter flounder. Winter flounder impingement counts at Schiller Station peaked during February 2007 (13 individuals) and was at its lowest during August and December of 2006 (1 individual). Other taxa frequently found in the impingement collections at Schiller Station included cunner (11 months), grubby (10 months), white hake (10 months), rainbow smelt (8 months), and white perch (7 months). All other fish taxa were collected in six or fewer months. Two anadromous taxa were impinged at Schiller Station (Units 4, 5, and 6 combined), alewife (represented by 3 individuals) and blueback herring (represented by 8 individuals). No additional anadromous taxa (American shad, or Atlantic salmon) or catadromous species (American eel) were observed in any impingement samples at Schiller Station.

4.1.2 Macrocrustaceans

Five macrocrustacean taxa were enumerated from Schiller Station (Units 4, 5, and 6 combined) impingement samples during the period 31 August 2006 through 27 September 2007; Atlantic rock crab, Jonah crab, green crab, horseshoe crab, and American lobster (Table 4-1). The total number of impinged macrocrustaceans collected in weekly impingement samples during this period was 1,921 (Table 4-3). Green crab was the most commonly impinged taxon, comprising 68.9% ($n = 1,323$) of the total number of impinged macrocrustaceans in all of the six-hour samples. Green crab, along with Atlantic rock crab (27.7%, $n = 532$) and American lobster (2.4%, $n = 46$) comprised 99.0% of the total number of macrocrustaceans enumerated in the impingement samples. Horseshoe crab ($n = 10$) and Jonah crab ($n = 8$) were represented by small numbers of individuals.

Green crab and Atlantic rock crabs were collected during each month of impingement sampling at Schiller Station during the period 31 August 2006 through 27 September 2007 (Table 4-3). The largest monthly total count for green crab impinged at Schiller Station occurred during May 2007 ($n = 250$) and the lowest monthly total for green crab impinged at Schiller Station occurred during February 2007 ($n = 8$). Peak impingement counts of Atlantic rock crab occurred during December 2006 ($n = 87$) and was lowest during February and March of 2007 ($n = 17$). American lobsters were present in low numbers in impingement catches at Schiller Station during the months of May through September and were absent during the remaining months sampled.

4.2 Sizes of Impinged Organisms

Results in this Section (4.2) are presented based on the raw total count of impinged organisms observed during operating flows for the period 31 August 2006 through 27 September 2007 at Units 4, 5, and 6 combined of Schiller Station.

4.2.1 Fish

The mean, range and length-frequency distribution of fish are presented by taxon for each month during 31 August 2006 through 27 September 2007 when at least one individual of the taxon was present in the impingement samples collected from Units 4, 5, and 6 (combined) of Schiller Station (Table 4-4). The lengths of impinged fish ranged from 19 mmTL (Northern pipefish) to 407 mmTL (striped bass). The majority of impinged individuals (85%) were between 40 and 139 mmTL (Table 4-4). Of the 79 white hake for which length measurements were recorded, the majority (71%) were within the 100 to 119 mmTL and 120 to 139 mmTL length classes (Table 4-4). White hake in those length classes are representative of the young-of-year age class for that taxon (Appendix A, Table 17). Total length was recorded for 69 cunner at Schiller Station and total length for those fish ranged from 25 to 205 mmTL, with the majority (67%) within the 60 to 79 mmTL and 80-99 mmTL length classes (Table 4-4). Cunner impinged at Schiller Station were representative of the young-of-year, Age 1+, Age 2+, Age 3+, Age 4+, Age 5+, and Age 6+ as determined by known length at age data (Appendix A, Table 7). Rainbow smelt length was measured for 70 individuals, with the majority of those fish (71%) within the 80 to 99 and 100 to 199 mmTL length classes (Table 4-4). Rainbow smelt impinged at Schiller Station comprised young-of-year, Age 1+ and Age 2+ age classes as determined by known length at age data (Appendix A, Table 14). Total length was recorded for 45 winter flounder at Schiller Station, with individuals ranging in length from 36 to 317 mmTL; the majority (80%) were within the 40 to 59 mmTL, 60 to 79 mmTL, and 80-99 mmTL length classes (Table 4-4). Winter flounder impinged at Schiller Station were representative of the young-of-year, Age 1+ and Age 4+ as determined by known length at age data (Appendix A, Table 20).

4.2.2 Macrocrustaceans

The mean, range and length-frequency distribution of macrocrustacean carapace measurements are presented for the period of 31 August 2006 through 27 September 2007 when at least one individual of a taxon was present in the impingement samples collected from Units 4, 5, and 6 (combined) at Schiller Station (Table 4-5). Forty-six American lobsters observed in the Schiller Station impingement samples ranged from 36 to 89 mm in carapace length, with an average value of 57.4 mm. Average crab carapace width for the two most frequently observed taxa, green crab and Atlantic rock crab, was 48.6 mm (5 to 83 mm) and 45.2 mm (range 9 to 121 mm), respectively (Table 4-5).

4.3 Seasonal Patterns in Impingement Density

Results in this Section (4.3) are presented for the densities of impinged organisms observed during the period 31 August 2006 through 27 September 2007 at Units 4, 5, and 6 of Schiller Station.

4.3.1 Fish

The density of impinged fish (all taxa combined) at Units 4, 5, and 6 (combined) of Schiller Station varied seasonally for the period of 31 August 2006 through 27 September 2007, with a primary peak in density occurring during mid-April 2007, and secondary peaks in late November and early December 2006 (Figure 4-1). The mean density of fish impinged during the mid-April 2007 peak was 4.3 fish per million gallons of CWIS flow on 16 April 2007. On that sample date, 17 taxa were present in the impingement samples at Schiller Station (Units 4, 5, and 6 combined). White hake (1.5 fish/million gallons), Atlantic herring (0.72 fish/million gallons), and cunner (0.39 fish/million gallons) were the three taxa exhibiting the highest densities among impinged fish (Appendix C, Table

3). The mean density of fish impinged during the late-November 2006 peak was 1.4 fish per million gallons on 20 November 2006. On that sample date, 17 taxa were present in the impingement samples at Units 4, 5, and 6 (combined) of Schiller Station. Rainbow smelt (0.48 fish/million gallons), grubby (0.17 fish/million gallons), and Atlantic menhaden (0.15 fish/million gallons) were the three taxa exhibiting the highest densities among impinged fish on that date (Appendix C, Table 3). The mean density of fish impinged during the December peak was 1.5 fish per million gallons on 4 December 2006. On that sample date, 7 taxa were present in the impingement samples at Units 4, 5, and 6 (combined) of Schiller Station. Rainbow smelt (0.70 fish/million gallons) and Atlantic menhaden (0.37 fish/million gallons) were the two taxa exhibiting the highest density among impinged fish on that date (Appendix C, Table 3).

Unit 4 exhibited higher fish impingement densities than Unit 5 or Unit 6 at Schiller Station during the period 31 August 2006 through 27 September 2007, (Figure 4-2). The overall seasonal pattern of fish impingement density at Schiller Station for Units 4, 5, and 6 combined (Figure 4-1) followed the pattern at Unit 4 in both duration and magnitude (Figure 4-2). The mean density of impinged fish (all taxa combined) at Unit 4 for the period 31 August 2006 through 27 September 2007 was 0.22 fish per million gallons (Figure 4-2). The seasonal peak at Unit 4 occurred on 16 April 2007 with a mean density on that date of 3.98 fish per million gallons. On that sample date, twelve fish taxa were present in the impingement samples at Unit 4 of Schiller Station. White hake (1.4 fish/million gallons) exhibited the highest density on 16 April 2007 at Unit 4 of Schiller Station (Appendix C, Table 3). The mean density of impinged fish (all taxa combined) at Unit 5 for the period 31 August 2006 through 27 September 2007 was 0.03 fish per million gallons (Figure 4-2). The seasonal peak at Unit 5 occurred on 20 November 2006 with a mean density on that date of 0.22 fish per million gallons. On that sample date, six fish taxa were present in the impingement samples at Unit 5 of Schiller Station. Rainbow smelt (0.1 fish/million gallons) exhibited the highest density among fish taxa impinged on 20 November 2006 at Unit 5 of Schiller Station (Appendix C, Table 3). The mean density of impinged fish (all taxa combined) at Unit 6 for the period 31 August 2006 through 27 September 2007 was 0.03 fish per million gallons (Figure 4-2). The seasonal peak at Unit 6 occurred on 16 April 2006 with a mean density on that date of 0.36 fish per million gallons. On that sample date, five fish taxa were present in the impingement samples at Unit 6 of Schiller Station. Cunner (0.14 fish/million gallons) exhibited the highest density among fish taxa impinged on 16 April 2006 at Unit 6 of Schiller Station (Appendix C, Table 3).

4.3.2 Macrocrustaceans

The density of impinged macrocrustaceans (all taxa combined) at Units 4, 5, and 6 of Schiller Station combined varied seasonally during the period of 31 August 2006 through 27 September 2007, with primary peaks in density occurring during late November 2006 and late April 2007 (Figure 4-3). The mean density of macrocrustaceans impinged during the November 2006 seasonal peak was 3.2 macrocrustaceans per million gallons on 20 November 2006. Of the two macrocrustacean taxa present in the impingement samples at Schiller Station (Units 4, 5, and 6 combined) on 20 November 2006, green crab (2.4/million gallons) exhibited the highest density (Appendix C, Table 4). The mean density of macrocrustaceans impinged during the late April 2007 peak was 2.9 macrocrustaceans per million gallons on 30 April 2007. On that sample date, three macrocrustacean taxa were present in the impingement samples at Units 4, 5, and 6 (combined) of Schiller Station. Green crab (2.44/million gallons), and Atlantic rock crab (0.43/million gallons) were the two macrocrustaceans exhibiting the highest densities on that date (Appendix C, Table 4).

Unit 4 exhibited higher macrocrustacean impingement than Unit 5 or Unit 6 at Schiller Station during the period 31 August 2006 through 27 September 2007, (Figure 4-4). The overall seasonal pattern of macrocrustacean impingement density at Schiller Station for Units 4, 5, and 6 combined (Figure 4-3) followed the pattern at Unit 4 in both duration and magnitude (Figure 4-4). The mean density of impinged macrocrustaceans (all taxa combined) for Schiller Station Unit 4 peaked at 2.70 macrocrustaceans per million gallons on 20 November 2006 (Figure 4-4). On that sample date, two taxa were present in the impingement samples at Unit 4 of Schiller Station, with green crab (2.1/million gallons) exhibiting the highest density among taxa impinged on that date (Appendix C, Table 4). The mean density of impinged macrocrustaceans (all taxa combined) for Schiller Station Unit 5 peaked at 0.59 macrocrustaceans per million gallons on 16 October 2006 (Figure 4-4). On that sample date, two taxa were present in the impingement samples at Unit 5 of Schiller Station, with green crab (0.57/million gallons) the dominant macrocrustacean taxon impinged on that date (Appendix C, Table 4). The mean density of impinged macrocrustaceans (all taxa combined) for Schiller Station Unit 6 peaked at a rate of 0.36 macrocrustaceans per million gallons on 23 April 2007 (Figure 4-4). On that sample date, two macrocrustacean taxa were present in the impingement samples at Unit 6 of Schiller Station (green crab and Atlantic rock crab). Green crab (0.34/million gallons) exhibited the highest density among among these two taxa on that date (Appendix C, Table 4).

4.4 Estimated Impingement Abundance

Results in this Section (4.4) are presented for the collection efficiency adjusted total number of impinged organisms (Adj-I) calculated from the product of weekly impingement densities (Section 2.3.5, Equation 4), the corresponding weekly operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007 at Units 4, 5, and 6 of Schiller Station (Table 2-9), and the collection efficiency adjustments (Section 2.3.5, Equation 6).

Due to annual maintenance shutdowns at Unit 4 during weeks 46 through 49 of 2006 and at Unit 6 during weeks 10 through 14 of 2007, impingement samples were not collected during those weeks. In addition, the plant schedule did not allow for pumps to be run during one 24-hour impingement sample during week 13 in March 2007 at Unit 4 and one 24-hour impingement sample periods during week 16 in April 2007 at Unit 5 and impingement sampling was not conducted on those dates. There were no consistent or observable relationships between simultaneous impingement densities at each Unit to allow for an estimation of weekly impingement rates for a Unit in a multiple week shutdown from observed rates at the other two Units for the common time period (Figure 4-2; Figure 4-4). As a result, for the purpose of computing impingement abundance estimates, the density of the two weeks surrounding the missed sample periods (single weeks and multiple week maintenance shutdown periods) were linearly interpolated within the same Unit to provide an estimate of the density for the weeks with missed samples at Unit 4 and Unit 5 of Schiller Station.

A complete summary of the weekly count, sampling flow, impingement rate, operating flow, calculated abundance estimate, collection efficiency rate, and impingement abundance estimates corrected for collection efficiency is presented for each taxon impinged at Units 4, 5, and 6 of Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007 in Appendix C, Table 3 (fish) and Appendix C, Table 4 (macrocrustaceans).

4.4.1 Fish

Flow adjusted estimates of the numbers of fish impinged (I), scaled up from the raw impingement counts (Raw) in each sample and corrected for collection efficiency (Adj-I), were calculated for Schiller Station Units 4, 5, 6, and all Units combined based on operating flows for the 52 week sample year from 2 October 2006 through 30 September 2007 (Table 4-6). When adjusted for collection efficiency (Adj-I), an estimated 5,365 fish were impinged at Schiller Station (all Units combined) during the 12-month period from 2 October 2006 through 30 September 2007 (Table 4-6). Therefore, the collection efficiency adjustment expanded the estimated annual total impingement abundance at Schiller Station (all Units combined) by 1,435 total fish (27%) from 3,930 (I) to 5,365 (Adj-I; Table 4-6). Estimated impingement corrected for collection efficiency at Schiller Station (all Units combined) was highest during April 2007 (Adj-I = 1,773) and lowest during May 2007 (Adj-I = 122) for the 52 week sampling year from 2 October 2006 through 30 September 2007 at Units 4, 5, and 6 of Schiller Station (Table 4-6). When examined by Unit, the annual estimated impingement abundance corrected for collection efficiency (Adj-I) was 3,357 fish at Unit 4, 1,114 fish at Unit 5, and 894 fish at Unit 6 (Table 4-6) of Schiller Station for the 52 week sample year from 2 October 2006 through 30 September 2007. The collection efficiency adjustments expanded the estimated annual total impingement abundance (Adj-I) at Unit 4 by 268 fish (8%), at Unit 5 by 659 fish (59%) and at Unit 6 by 508 fish (57%; Table 4-6).

The monthly estimated impingement abundance for each fish taxon impinged at Schiller Station (all Units combined), corrected for collection efficiency (Adj-I), and based on the operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007 is presented in Table 4-7. When total catch (Raw; Table 4-6) was scaled up to adjusted estimates of the numbers of fish impinged (I; Table 4-6) and corrected for collection efficiency (Adj-I), white hake, cunner, Northern pipefish, rainbow smelt, and winter flounder were the five most abundant fish species impinged based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007 at Schiller Station, Units 4, 5, and 6 combined (Table 4-7). White hake comprised 12.8% (Adj-I = 686) of the total estimated impingement abundance for Schiller Station (Units 4, 5, and 6 combined) with the majority (67%) observed during the month of April 2007 (Table 4-7). An estimated total of 623 cunner were impinged from April 2007 through August 2007, accounting for 85% the estimated impingement abundance of that taxon during the 52 week sampling year from 2 October 2006 through 30 September 2007 at Units 4, 5, and 6 of Schiller Station (Table 4-7). An estimated impingement abundance (Adj-I) of 579 Northern pipefish were impinged at Schiller Station (Units 4, 5, and 6 combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007. Estimated abundance for Northern pipefish exhibited peaks in impingement abundance at Schiller Station during the months of October 2006, January 2007, April 2007 and November 2007, contributing 542 (94%) of the 579 individuals observed in Schiller Station impingement samples for the 52 week sampling period from 2 October 2006 through 27 September 2007 (Table 4-7). An estimated impingement abundance (Adj-I) of 580 rainbow smelt were impinged at Schiller Station (all Units combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007. The majority (90%) of rainbow smelt were impinged at Schiller Station (all Units combined) during the months from November 2006 through January 2007 (Table 4-7). An estimated impingement abundance (Adj-I) of 534 winter flounder were impinged at Schiller Station (all Units combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007. Estimated impingement abundance (Adj-I) for winter flounder peaked in Schiller Station (all Units combined) during the months of January 2007 through April 2007. Estimated impingement

abundance (Adj-I) during January 2007 through April 2007 accounted for 63% of the total abundance observed in Schiller Station impingement samples (all Units combined) for the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-7).

When examined by Unit, the monthly estimated impingement abundance for each fish taxon, corrected for collection efficiency (Adj-I), is presented in Tables 4-8 (Unit 4), 4-9 (Unit 5) and 4-10 (Unit 6). When total catch (Raw; Table 4-6) from Unit 4 was scaled up to adjusted estimates of the numbers of fish impinged (I; Table 4-6) and corrected for collection efficiency (Adj-I), white hake (Adj-I = 599, 17.8%), rainbow smelt (Adj-I = 461, 13.7%), and grubby (Adj-I = 316, 9.4%) were the three most abundant fish taxa impinged based on operating flows for 52 week sampling year from 2 October 2006 through 30 September 2007 at Unit 4 of Schiller Station (Table 4-8). When total catch (Raw; Table 4-6) from Unit 5 was scaled up to adjusted estimates of the numbers of fish impinged (I; Table 4-6) and corrected for collection efficiency (Adj-I), cunner (Adj-I = 266, 23.8%), winter flounder (Adj-I = 163, 14.6%), and grubby (Adj-I = 103, 9.2%) were the three most abundant fish taxa impinged based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007 at Unit 5 of Schiller Station (Table 4-9). When total catch (Raw; Table 4-6) from Unit 6 was scaled up to adjusted estimates of the numbers of fish impinged (I; Table 4-6) and corrected for collection efficiency (Adj-I), Northern pipefish (Adj-I = 237, 26.5%), ninespine stickleback (Adj-I = 139, 15.5%), and winter flounder (Adj-I = 109, 12.2%) were the three most abundant fish species impinged based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007 at Unit 6 of Schiller Station (Table 4-10).

4.4.2 Macrocrustaceans

Flow adjusted estimates of the numbers of macrocrustaceans impinged (I), scaled up from the raw impingement counts (Raw) in each sample were calculated for Schiller Station Units 4, 5, 6 and all Units combined for the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-11). Collection efficiency rates derived for fish in this study were not considered appropriate for macrocrustaceans in impingement samples because of behavioral differences attributed to these fundamentally different organisms with respect to rotating intake screens. An estimated 12,649 macrocrustaceans (I) were impinged at Schiller Station (all Units combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-11). Estimated impingement abundance of macrocrustaceans was highest during April 2007 (I = 2,203) and lowest during March 2007 (I = 140) at Schiller Station (all Units combined) for the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-11). When examined by Unit, the annual estimated impingement abundance (I) was 9,746 macrocrustaceans at Unit 4, 1,670 macrocrustaceans at Unit 5, and 1,233 macrocrustaceans at Unit 6 (Table 4-11) of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007.

The monthly estimated impingement abundance (I) for each taxon of macrocrustacean (I) impinged at Schiller Station (all Units combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007 is presented in Table 4-12. Green crab (70.6%, I = 8,924), Atlantic rock crab (26.3%, I = 3,324), and American lobster (2.4%, I = 302) comprised the majority (99.3%) of the macrocrustacean impingement abundance at Schiller Station (all Units combined) for the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-12). When examined by Unit, the monthly estimated impingement abundance for each taxon of macrocrustacean (I) is presented in Table 4-13 (Unit 4), Table 4-14 (Unit 5) and Table 4-15 (Unit 6). Green crab comprised

the majority of the estimated annual total impingement abundance of macrocrustaceans at each Unit of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007; $I = 6,787$ (69.5%) at Unit 4 (Table 4-13), $I = 1,240$ (74.3%) at Unit 5 (Table 4-14), and $I = 897$ (72.7%) at Unit 6 (Table 4-15). Atlantic rock crab were the second most abundant species at each Unit, comprising $I = 2,586$ (26.5%) of the annual total impingement abundance estimate at Unit 4 (Table 4-13), $I = 416$ (24.9%) of the impingement abundance estimate at Unit 5 (Table 4-14), and $I = 322$ (26.1%) of the impingement abundance estimate at Unit 6 (Table 4-15) of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007. The annual total impingement abundance estimates for American lobsters were 295 at Unit 4 (Table 4-13), seven at Unit 5 (Table 4-14), and zero at Unit 6 (Table 4-15) of Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007.

4.5 Adult Equivalent Impingement Abundance

Results in this Section (4.5) present the estimated adult equivalent impingement abundance (total number) for fish and macrocrustaceans calculated by adjusting the weekly impingement abundance (Section 4.4 above) for survival to age at first maturity using the methods described in Section 2.3.7 of this report. Adult equivalent impingement abundance was determined for the 52 week sampling year from 2 October 2006 through 30 September 2007 at Units 4, 5, and 6 of Schiller Station, and for all three Units combined (Table 2-7).

4.5.1 Fish

Adult equivalent impingement abundance at Schiller Station was estimated for 10 fish taxa where the 57 week total (31 August 2006 through 27 September 2007) of at least 20 individuals (raw count) were impinged, and for four selected additional fish taxa observed in lower abundance but considered to be of commercial interest (Atlantic cod, pollock, silver hake, windowpane). These 14 fish taxa comprised 89.0% of the raw impingement counts for fish at Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007. Adult equivalent impingement abundance Schiller Station was estimated for; Atlantic cod, Atlantic herring, Atlantic menhaden, cunner, grubby, lumpfish, Northern pipefish, pollock, rainbow smelt, silver hake, white hake, white perch, windowpane, and winter flounder. When expressed as the annual total impingement abundance adjusted for collection efficiency, these 14 fish taxa comprised 87.6% (Adj-I = 4,694 fish) of the total impingement abundance of fish at Schiller Station (all Units combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-7).

An additional 19 fish taxa contributed the remaining 11.0% of the raw impingement counts at Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-2). These nineteen fish taxa comprised 12.4% (Adj-I = 671) of the annual total estimated impingement abundance of fish at Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-7). Adult equivalent abundance was not calculated for these 19 less abundant taxa, and it should be noted that the totals presented in Tables 4-16 through 4-19 do not include these additional taxa. Table 5 of Appendix C in this report presents the monthly estimated impingement abundance and calculated adult equivalent abundance for each of these 14 taxa impinged at Units 4, 5, and 6 of Schiller Station by year class during the 52 week sampling year from 2 October 2006 through 30 September 2007.

Table 4-16 summarizes adult equivalent impingement abundance for fish taxa at Schiller Station, (Units 4, 5, and 6 combined) for the period of 2 October 2006 through 30 September 2007. The total fish impingement abundance of 4,694 (Adj-I) represents an estimated adult equivalent impingement abundance of 1,757 (AE) fish at Units 4, 5, and 6 combined of Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-16). Northern pipefish was the most abundant adult equivalent fish taxon impinged at Schiller Station (all Units combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007, contributing 32.6% (AE = 572) of the total adult fish, followed by grubby (26.8%, AE = 457), cunner (21.1%, AE = 370), and rainbow smelt (8.9%, AE = 156). Young-of-year and Age 2+ fish contributed most of the adult equivalent Northern pipefish impinged (Table 5, Appendix C). YOY and Age 1+ through Age 3+ contributed most of the adult equivalent grubby impinged at Units 4, 5, and 6 (combined) of Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 5, Appendix C). YOY and Age 1+ through Age 5+ fish contributed most of the adult equivalent cunner impinged at Units 4, 5, and 6 combined of Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 5, Appendix C). Adult equivalent abundance for individuals impinged at Schiller Station for seven of the fourteen species examined (Atlantic cod, Atlantic herring, Atlantic menhaden, pollock, silver hake, windowpane and winter flounder) were represented by thirty or fewer individuals during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-16).

Unit 4 accounted for 48.3% (AE = 848) of the annual total adult equivalent impingement abundance observed at Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-17). Grubby was the most abundant adult equivalent fish taxon impinged at Unit 4 of Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007, contributing 37.5% (AE = 318) of the total fish at Unit 4, followed by Northern pipefish (16.3%, AE = 138), rainbow smelt (15.2%, AE = 129), and cunner (14.4%, AE = 122) (Table 4-17). Unit 5 accounted for 30.5% (AE = 536) of the annual total adult equivalent impingement abundance observed at Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-18). Northern pipefish was the most abundant adult equivalent fish taxon impinged at Unit 5 of Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007, contributing 37.5% (AE = 201), followed by cunner (34.3%, AE = 184), grubby (18.7%, AE = 100), and rainbow smelt (3.5%, AE = 19) (Table 4-18). Impingement at Unit 6 during the 52 week sampling year from 2 October 2006 through 30 September 2007 accounted for 21.2% (AE = 372) of the annual total adult equivalent impingement abundance at Schiller Station (Table 4-19). Northern pipefish was the most abundant adult equivalent fish taxon impinged at Unit 6 of Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007, contributing 62.6% (AE = 233) (Table 4-19). Cunner, (16.9%, AE = 63), grubby (10.5%, AE = 39), and Atlantic cod (4.0%, AE = 15) were the next three most abundant adult equivalent fish taxon impinged at Unit 6 of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-19).

4.5.2 Macrocrustaceans

An estimated 12,649 macrocrustaceans (I) were impinged at Schiller Station (all Units combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-11). Adult equivalent abundance was not calculated for macrocrustaceans impinged, but the number of adult equivalents impinged would certainly be lower than their annual total abundance. Age

determination of macrocrustaceans is difficult, because age is typically estimated based on carapace measurements (length or width, depending on the taxon) of those individuals of a size subjected to impingement, and the carapace is lost with each molt as the individual grows. Therefore, a macrocrustacean carapace measurement does not provide a chronological record of age of the individual, and the accuracy of estimating age on the basis of length decreases with increasing age.

4.6 Impingement Survival

Results in this Section (4.6) present the survival data for impinged fish and macrocrustaceans observed during the 52 week sampling year from 2 October 2006 through 30 September 2007 at Units 4, 5, and 6 of Schiller Station. Observed survival rates were also applied to the taxon-specific estimated impingement abundance based on operating flows (Section 4.4) and to the estimated adult equivalent impingement abundance for selected fish taxa based on operating flows (Section 4.5).

4.6.1 Fish

Impingement survival was determined by the collection of 19 taxa of wild fish at the discharge end of the return sluice after they were subjected to the traveling screen collection and wash during either the 1400 or 2000 screenwashes at Units 4, 5, and 6 of Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007. The purpose of these tests was to estimate the survival rates of naturally impinged wild fish that were impinged on the existing traveling screens at Schiller Station under their current operating regime. Impingement survival tests for wild individuals captured on the intake screens at Schiller Station were not differentiated by Unit because Units 5 and 6 wash the screens into a common return sluice in Screen House #2, and because overall low numbers of impinged fish resulted in fewer than ten individuals being tested during all months other than January and April 2007. Accordingly, latent survival rates were calculated from pooled latent survival tests among all three Units at Schiller Station and then applied individually to Units 4, 5, and 6. Furthermore, due to these low numbers of wild impinged fish evaluated for latent survival on a monthly basis, monthly results were pooled by season to improve the sample size and reliability of the latent impingement survival estimates, resulting in four seasonal latent survival rates defined by the following month groups: winter (December, January, and February), spring (March, April, and May), summer (June, July, and August) and fall (September, October, and November). Total catch ($n = 2$) during the fall season was not adequate for calculation of a seasonal latent survival rate, therefore the Fall latent survival rate was linearly interpolated from the adjacent seasons (summer and winter).

Impingement survival rates were calculated for each season of sampling, and results were pooled to get a set of "self weighted" rates representative for all fish taxa in proportion to their impingement abundance (Table 4-20). Of the 135 individual fish initially collected and observed for survival from these samples (i.e., at time 0, T_0), Atlantic herring comprised 15.6% ($n = 21$), white hake comprised 14.1% ($n = 19$), cunner comprised 12.6% ($n = 17$), lumpfish comprised 10.4% ($n = 14$), and grubby comprised 8.9% ($n = 12$; Table 4-20). The remaining 14 fish taxa were represented by eight or fewer individuals among all impingement survival samples (Table 4-20). Monthly latent (observed 12 hours after collection at t_{12}) survival rates for wild fish impinged at Schiller Station ranged from a high value of 29.6% during the winter season (December 2006, January 2007 and February 2007) to a low value of 0.0% during the summer season (June, July, August 2007; Table 4-21). The traveling screen latent survival rate for fish impinged at Schiller Station was linearly interpolated for the fall

season and a value of 14.8% was assigned based on observed latent rates for the summer and winter seasons (Table 4-21).

The latent survival rates for fish in the impingement collections from Schiller Station (Table 4-21) were applied to the monthly estimated impingement abundance (Adj-I) for operating flows during 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-22). These seasonal survival adjusted abundance values (SAdj-I) make the conservative assumption that 100% of fish were initially alive when they became impinged on the Schiller Station traveling screens. When adjusted for latent impingement survival (SAdj-I), an estimated total of 978 of the 5,365 fish impinged during the 52 week sampling year from 2 October 2006 through 30 September 2007 (18%) survived impingement on the Schiller Station traveling screens (Table 4-22). When examined by Unit and adjusted for latent impingement survival, an estimated total of 640 of the 3,357 (19%) fish at Unit 4, 144 of the 1,114 (13%) fish at Unit 5, and 195 of the 894 fish (22%) at Unit 6 survived impingement on the Schiller Station travelling screens during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-22).

Table 4-23 presents the estimated annual total adult equivalent impingement abundance adjusted for survival for fourteen fish taxa in the impingement samples from Schiller Station (all Units combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007. When adjusted for latent impingement survival (S-AE), 312 of the 1,757 fish adult equivalents (18%) impinged during the 52 week sampling year from 2 October 2006 through 30 September 2007 survived impingement on the Schiller Station traveling screens at Units 4, 5, and 6 combined (Table 4-23). When examined by Unit and adjusted for latent impingement survival, an estimated total of 168 of the 848 (20%) fish adult equivalents at Unit 4, 64 of the 536 (12%) fish adult equivalents at Unit 5, and 80 of the 372 (22%) fish adult equivalents at Unit 6 survived impingement on the Schiller Station traveling screens during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-23).

4.6.2 Macrocrustaceans

Impingement survival was determined by the collection of four taxa of wild macrocrustaceans at the discharge end of the return sluice after they were subjected to the traveling screen wash during either the 1400 or 2000 screenwashes at Units 4, 5, and 6 of Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007. The purpose of these tests was to estimate the survival rates of naturally impinged wild macrocrustaceans that were impinged on the existing traveling screens at Schiller Station under their current operating regime. Impingement survival tests for wild macrocrustaceans captured on the intake screens at Schiller Station were not differentiated by Unit because Units 5 and 6 wash the screens into a common return sluice in Screen House #2, and because overall low numbers of impinged macrocrustaceans resulting in fewer than ten individuals being tested during the months of February, March, September, October and November 2007.

Accordingly, latent survival rates were from pooled latent survival tests among all three Units at Schiller Station and then applied individually to Units 4, 5, and 6. Furthermore, due to these low numbers of wild impinged macrocrustaceans evaluated for latent survival on a monthly basis, monthly results were pooled by season to improve the sample size and reliability of the latent impingement survival estimates, resulting in four seasonal latent survival rates defined by the following month groups: winter (December, January, and February), spring (March, April, May), summer (June, July, August) and fall (September, October, November). Total catch (n = 7) during

the fall season was not adequate for calculation of a seasonal latent survival rate, therefore the Fall latent survival rate was linearly interpolated from the adjacent seasons (summer and winter).

Impingement survival rates were calculated for each season of sampling, and results were pooled to get a set of "self weighted" rates representative for all macrocrustacean taxa in proportion to their impingement abundance (Table 4-24). Of the 328 individuals initially collected and observed from these samples (i.e. at time 0, T_0), green crab (69.8%, $n = 229$) and Atlantic rock crab (26.5%, $n = 87$) were the dominant species (Table 4-24). Monthly latent (observed 12 hours after collection at t_{12}) survival rates for wild fish impinged at Schiller Station ranged from a high value of 89.6% during the winter season (December 2006, January 2007 and February 2007) to a low value of 53.8% during the summer season (June, July, August 2007; Table 4-25). The traveling screen latent survival rate for macrocrustaceans impinged at Schiller Station was linearly interpolated for the fall season and a value of 71.7% was assigned based on observed latent rates for the summer and winter seasons (Table 4-25).

The macrocrustacean latent survival rates obtained through testing at Schiller Station (Table 4-25) were applied to the monthly estimated impingement abundance (I) for operating flows during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-26). These seasonal survival adjusted abundance values (S-I) make the conservative assumption that 100% of macrocrustaceans were initially alive when they became impinged on the Schiller Station traveling screens. When adjusted for latent impingement survival (S-I), an estimated total of 8,549 of the 12,649 macrocrustaceans impinged during the 52 week sampling year from 2 October 2006 through 30 September 2007 (68%) survived impingement on the Schiller Station traveling screens (Table 4-26). When examined by Unit and adjusted for latent impingement survival, an estimated total of 6,659 of the 9,746 (68%) macrocrustaceans at Unit 4, 1,099 of the 1,670 (66%) macrocrustaceans at Unit 5, and 792 of the 1,233 macrocrustaceans (64%) at Unit 6 survived impingement on the Schiller Station traveling screens during the 52 week sampling year from 2 October 2006 through 30 September 2007 (Table 4-26).

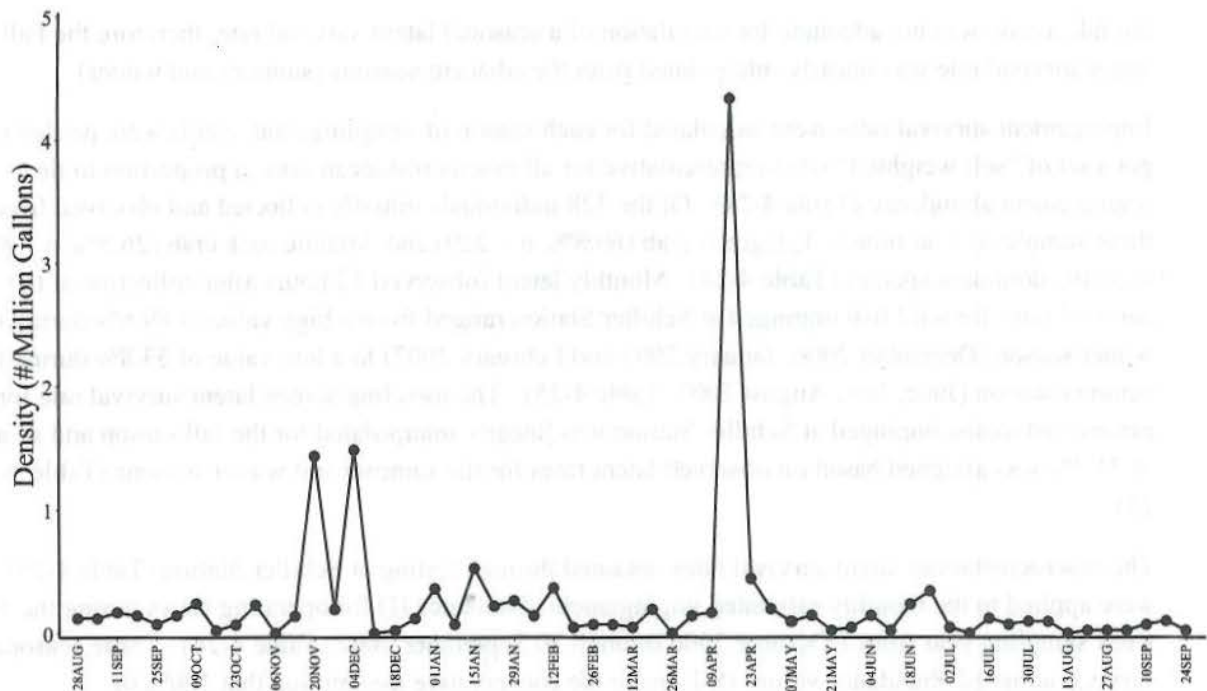


Figure 4-1. Mean fish density (#/million gallons) by week for impingement samples collected at Schiller Station (Units 4, 5, and 6 combined) for the period 31 August 2006 through 27 September 2007.

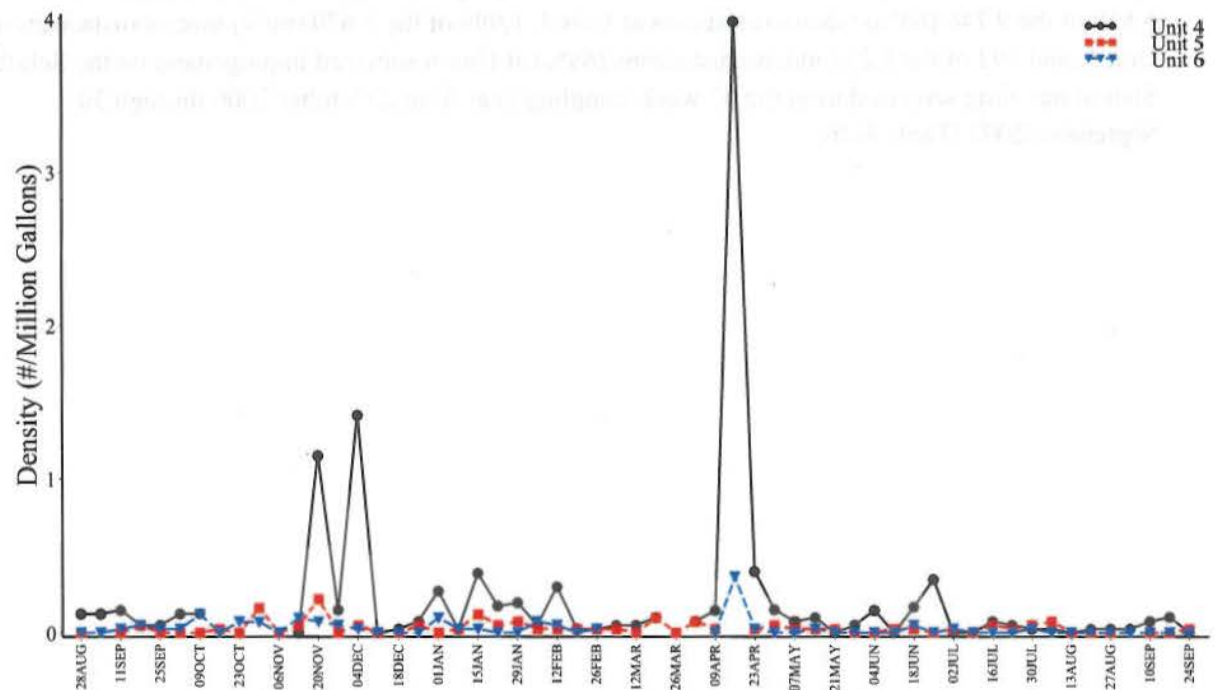


Figure 4-2. Mean fish density (#/million gallons) by week for impingement samples collected at Schiller Station Units 4, 5, and 6 for the period 31 August 2006 through 27 September 2007.

Table 4-2. Total count and percent composition by taxon for fish present in impingement samples at Schiller Station (Units 4, 5, and 6, combined) for the period 31 August 2006 through 27 September 2007.

Common name	2006					2007										Total	
	August	September	October	November	December	January	February	March	April	May	June	July	August	September	Count Total	% of Total	
Alewife									3						3	0.5	
American sand lance				1											1	0.2	
Atlantic cod				3											3	0.5	
Atlantic herring								1	32		1				34	5.8	
Atlantic menhaden				10	15	11								2	38	6.5	
Atlantic silverside				4	2				9						15	2.6	
Atlantic tomcod		1			1						3	1		1	7	1.2	
Blueback herring									8						8	1.4	
Bluegill				3					2						5	0.9	
Cunner	3	12	5	1		1		1	18		14	9	3	2	69	11.9	
Emerald shiner									1						1	0.2	
Grubby		2		9	14	12	7	1	7	1	2			1	56	9.6	
Herring family					1										1	0.2	
Inland silverside				2											2	0.3	
Lumpfish			1	2					25	6					34	5.8	
Ninespine stickleback						1									1	0.2	
Northern pipefish			16	2		2		1	13					1	35	6	
Pollock									1		2				3	0.5	
Pumpkinseed									1						1	0.2	
Rainbow smelt			1	23	29	12		2	2	1	1				71	12.2	
Red hake						1									1	0.2	
Rock gunnel			1							1					2	0.3	
Sea raven				1						1					2	0.3	
Shorthorn sculpin											1				1	0.2	
Silver hake				1											1	0.2	
Skate family						1									1	0.2	
Striped bass			2									1			3	0.5	
Tautog	1			1											2	0.3	
Threespine stickleback						1	1	1	3						6	1	
Unidentified		1													1	0.2	
White hake			1	5	3	6	3	1	60		3	1			83	14.3	
White perch				2	1	4		1	11	2	2				23	4	
Windowpane				1			2		6						9	1.5	
Winter flounder	1	5	3	2	1	8	13	4	12	1	2	2	3	2	59	10.1	
All taxa	5	21	30	73	67	60	26	13	214	13	31	14	6	9	582	100	
Number of Taxa	3	5	8	18	9	12	5	9	18	7	10	5	2	6	34		

Table 4-3. Total count and percent composition by taxon for macrocrustaceans present in impingement samples at Schiller Station (Units 4, 5, and 6 combined) for the period 31 August 2006 through 30 September 2007.

Common name	Monthly count and percent composition of impinged species at Schiller Station														Total	
	2006					2007									Count Total	% of Total
	August	September	October	November	December	January	February	March	April	May	June	July	August	September		
American lobster		3	1							2	6	9	17	8	46	2.4
Atlantic rock crab	5	55	24	63	87	31	17	17	35	75	60	22	20	21	532	27.7
<i>Cancer</i> sp.		2													2	0.1
Green crab	2	57	53	150	181	90	8	8	160	250	155	87	78	45	1,323	68.9
Horseshoe crab										5	5				10	0.5
Jonah crab	3	1	1	1				2							8	0.4
All taxa	10	118	79	214	268	121	25	27	195	332	226	118	115	74	1,921	100
Number of taxa	3	5	4	3	2	2	2	3	2	4	4	3	3	3	6	

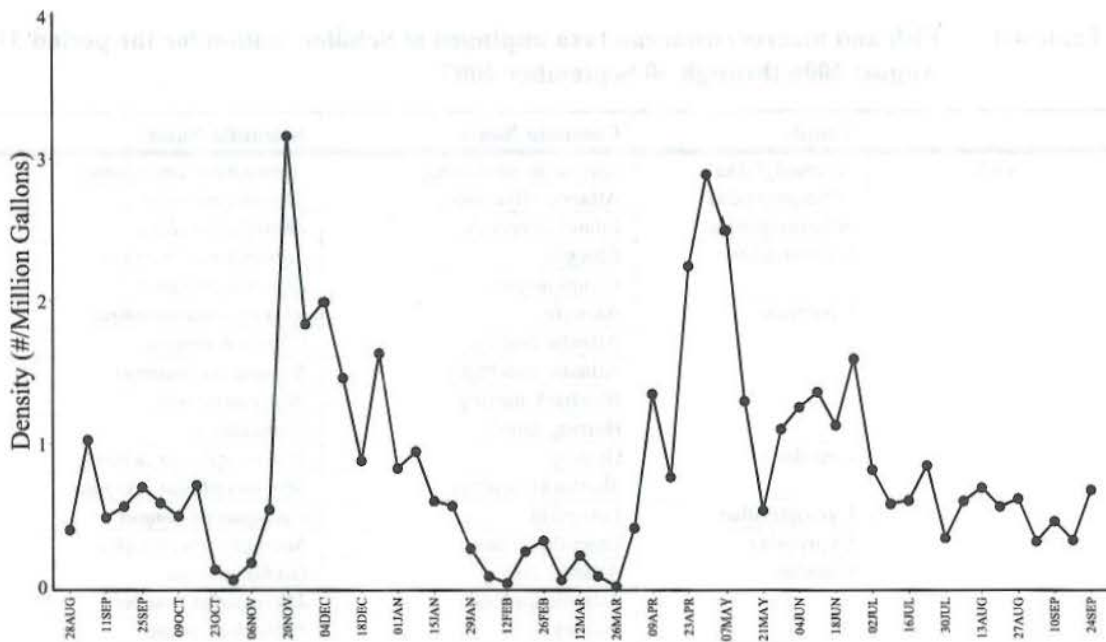


Figure 4-3. Mean macrocrustacean density (#/million gallons) by week for impingement samples collected at Schiller Station (Units 4, 5, and 6 combined) for the period 31 August 2006 through 27 September 2007.

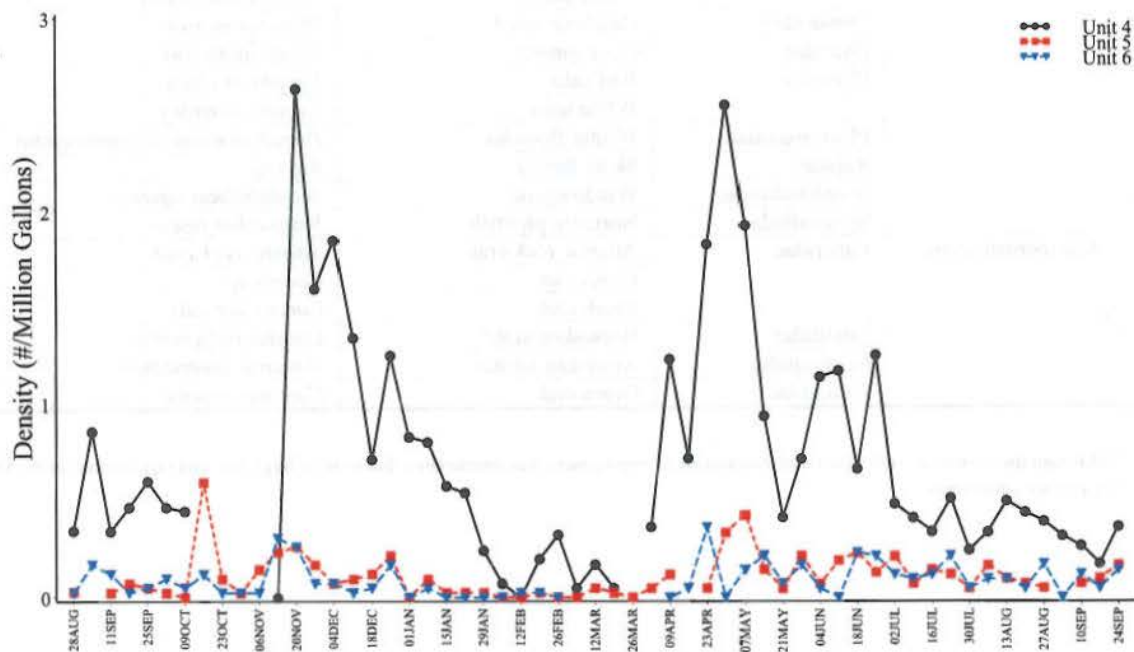


Figure 4-4. Mean macrocrustacean density (#/million gallons) by week for impingement samples collected at Schiller Station Units 4, 5, and 6 for the period 31 August 2006 through 27 September 2007.

Table 4-1. Fish and macrocrustacean taxa impinged at Schiller Station for the period 31 August 2006 through 30 September 2007.

	Family	Common Name	Scientific Name
Fish	Ammodytidae	American sand lance	<i>Ammodytes americanus</i>
	Atherinopsidae	Atlantic silverside	<i>Menidia menidia</i>
	Atherinopsidae	Inland silverside	<i>Menidia beryllina</i>
	Centrarchidae	Bluegill	<i>Lepomis macrochirus</i>
		Pumpkinseed	<i>Lepomis gibbosus</i>
	Clupeidae	Alewife	<i>Alosa pseudoharengus</i>
		Atlantic herring	<i>Clupea harengus</i>
		Atlantic menhaden	<i>Brevoortia tyrannus</i>
		Blueback herring	<i>Alosa aestivalis</i>
		Herring family	<i>Clupeidae</i> sp.
	Cottidae	Grubby	<i>Myoxocephalus aeneus</i>
		Shorthorn sculpin	<i>Myoxocephalus scorpius</i>
	Cyclopteridae	Lumpfish	<i>Cyclopterus lumpus</i>
	Cyprinidae	Emerald shiner	<i>Notropis atherinoides</i>
	Gadidae	Atlantic cod	<i>Gadus morhua</i>
		Atlantic tomcod	<i>Microgadus tomcod</i>
		Pollock	<i>Pollachius virens</i>
	Gasterosteidae	Ninespine stickleback	<i>Pungitius pungitius</i>
		Threespine stickleback	<i>Gasterosteus aculeatus</i>
	Hemirhamphidae	Sea raven	<i>Hemiramphus americanus</i>
	Labridae	Cunner	<i>Tautoglabrus adspersus</i>
		Tautog	<i>Tautoga onitis</i>
	Merlucciidae	Silver hake	<i>Merluccius bilinearis</i>
	Moronidae	Striped bass	<i>Morone saxatilis</i>
		White perch	<i>Morone americana</i>
	Osmeridae	Rainbow smelt	<i>Osmerus mordax</i>
	Pholidae	Rock gunnel	<i>Pholis gunnellus</i>
	Phycidae	Red hake	<i>Urophycis chuss</i>
		White hake	<i>Urophycis tenuis</i>
	Pleuronectidae	Winter flounder	<i>Pseudopleuronectes americanus</i>
	Rajidae	Skate family	<i>Raja</i> sp.
	Scophthalmidae	Windowpane	<i>Scophthalmus aquosus</i>
	Syngnathidae	Northern pipefish	<i>Syngnathus fuscus</i>
Macrocrustaceans	Cancridae	Atlantic rock crab	<i>Atlantic rock crab</i>
		Cancer sp.	<i>Cancer</i> sp.
		Jonah crab	<i>Cancer borealis</i>
	Limulidae	Horseshoe crab*	<i>Limulus polyphemus</i>
	Nephropidae	American lobster	<i>Homarus americanus</i>
	Portunidae	Green crab	<i>Carcinus maenas</i>

* Although the horseshoe crab is not a crustacean, their impingement was enumerated due to their large size and significance to the Great Bay estuary community.

Table 4-4. Monthly length frequency distributions (number of fish in each 20 mm size class) of fish from impingement collections at Schiller Station (Units 4, 5, and 6 combined) for the period 31 August 2006 through 30 September 2007.

			0 - 19	20 - 39	40 - 59	60 - 79	80 - 99	100 - 119	120 - 139	140 - 159	160 - 179	180 - 199	200 - 219	220 - 239	240 - 259	300 - 319	320 - 339	=>340	N	Min	Mean	Max
Alewife	2007	April					1	2											3	89	99.7	105
		Total					1	2											3	89	99.7	105
American sand lance	2006	November									1								1	175	175	175
		Total									1								1	175	175	175
Atlantic cod	2006	November							2	1									3	123	137	156
		Total							2	1									3	123	137	156
Atlantic herring	2007	March			1														1	42	42	42
		April		3	29														32	25	47.4	57
		June				1													1	73	73	73
		Total		3	30	1													34	25	48	73
Atlantic menhaden	2006	November			4	4	2												10	55	66.7	97
		December			6	4	5												15	53	69.6	90
	2007	January			3	2	4	1											10	55	76.3	101
		February					1												1	98	98	98
		September			2														2	45	52	59
		Total			15	10	12	1											38	45	70.4	101
Atlantic silverside	2006	November				1	2	1											4	78	92.3	117
		December					1	1											2	83	99.5	116
	2007	April					5	3	1										9	85	100.4	120
		Total				1	8	5	1										15	78	98.1	120
Atlantic tomcod	2006	September											1						1	216	216	216
		December									1								1	178	178	178
	2007	June			1	1	1												3	41	61.7	80
		July														1			1	305	305	305
		September								1									1	152	152	152
		Total			1	1	1			1	1		1			1			7	41	148	305
Blueback herring	2007	April					6	2											8	82	91.8	111
		Total					6	2											8	82	91.8	111
Bluegill	2006	November			1	1			1										3	48	83.3	127
	2007	April			1							1							2	51	115.5	180
		Total			2	1			1			1							5	48	96.2	180
Cunner	2006	August			2				1										3	48	78.7	129
		September			2	7	2		1										12	51	75.3	130
		October					1			1			1						3	83	147.7	205
		November				1	2												3	65	83	96

(continued)

Table 4-4. (Continued)

			0 - 19	20 - 39	40 - 59	60 - 79	80 - 99	100 - 119	120 - 139	140 - 159	160 - 179	180 - 199	200 - 219	220 - 239	240 - 259	300 - 319	320 - 339	=>340	N	Min	Mean	Max
	2007	January				1													1	73	73	73
		March					1												1	82	82	82
		April		1		8	8	1											18	25	78.6	105
		June			5	6		2	1										14	51	73.3	123
		July			1	2	2		1										6	56	81.3	121
		August				2	1	1	1			1							6	76	111.7	180
		September				1	1												2	74	81.5	89
		Total		1	10	28	18	4	5	1		1	1						69	25	83.3	205
Emerald shiner	2007	April			1														1	51	51	51
		Total			1														1	51	51	51
Grubby	2006	September				2													2	71	71.5	72
		November				1	6			1									8	76	92.4	141
		December				3	4	1	7										15	68	105.1	137
	2007	January					5	2											7	80	95.4	119
		February				2	3	2	2	1									10	62	100.5	147
		March			1	1	1												3	49	69.7	90
		April				6	1												7	60	74.1	91
		May				1													1	61	61	61
		June					2												2	91	92.5	94
		September				1													1	79	79	79
		Total			1	17	22	5	9	2									56	49	92.6	147
Herring family	2006	December					1												1	97	97	97
		Total					1												1	97	97	97
Inland silverside	2006	November						2											2	110	112	114
		Total						2											2	110	112	114
Lumpfish	2006	October		1															1	32	32	32
		November			1	1													2	59	63	67
	2007	April		4	15	2													21	35	48.8	69
		May		1	3	6													10	35	61.1	79
		Total		6	19	9													34	32	52.7	79
Ninespine stickleback	2007	January			1														1	47	47	47
		Total			1														1	47	47	47
Northern pipefish	2006	October	1						2	2	1	3	1						10	18	153	207
		November						1	5	2									8	114	130.3	140
	2007	January					1	1											2	93	105	117
		March									1								1	171	171	171
		April						1	5	4	2	1							13	113	145	190
		September								1									1	149	149	149
		Total	1				1	3	12	9	4	4	1						35	18	142.5	207

(continued)

Table 4-4. (Continued)

			0 - 19	20 - 39	40 - 59	60 - 79	80 - 99	100 - 119	120 - 139	140 - 159	160 - 179	180 - 199	200 - 219	220 - 239	240 - 259	300 - 319	320 - 339	=>340	N	Min	Mean	Max	
Pollock	2007	April		1															1	35	35	35	
		June				2													2	81	81.5	82	
	Total		1		2														3	35	66	82	
Pumpkinseed	2007	April						1											1	105	105	105	
		Total						1											1	105	105	105	
Rainbow smelt	2006	November					13	10											23	82	97	119	
		December					5	10	4		9	1							29	85	130.4	182	
	2007	January					1	7	1		1								10	99	115.8	160	
		February								2									2	157	157.5	158	
		March					2												2	97	98	99	
		April										1							1	183	183	183	
		May			1		1												2	57	75.5	94	
		June					1												1	96	96	96	
		Total			1		23	27	5	2	10	2							70	57	115.9	183	
Red hake	2007	January								1									1	151	151	151	
		Total									1								1	151	151	151	
Rock gunnel	2006	October								1									1	150	150	150	
		May							1										1	126	126	126	
	Total								1	1									2	126	138	150	
Sea raven	2006	November															1		1	333	333	333	
	2007	May																1	1	460	460	460	
	Total																1	1	2	333	396.5	460	
Shorthorn sculpin	2007	June																	1	1	490	490	490
		Total																	1	1	490	490	490
Silver hake	2006	November						1											1	100	100	100	
		Total						1											1	100	100	100	
Skate family	2007	January							1										1	130	130	130	
		Total							1										1	130	130	130	
Striped bass	2006	October																	2	2	389	407.5	426
		August																	1	1	456	456	456
	Total																		3	3	389	423.7	456
Tautog	2006	August									1								1	170	170	170	
		November											1						1	219	219	219	
	Total										1		1						2	170	194.5	219	
Threespine stickleback	2007	January			1														1	59	59	59	
		February				1													1	70	70	70	
		March			1														1	59	59	59	
		April			2	1													3	58	61.7	68	
		Total			4	2														6	58	62.2	70

(continued)

Table 4-4. (Continued)

			0 - 19	20 - 39	40 - 59	60 - 79	80 - 99	100 - 119	120 - 139	140 - 159	160 - 179	180 - 199	200 - 219	220 - 239	240 - 259	300 - 319	320 - 339	=>340	N	Min	Mean	Max
Unidentified	2006	September			1														1	59	59	59
		Total			1														1	59	59	59
White hake	2006	October					1												1	87	87	87
		November					2		1		1		1						5	97	140.2	209
		December							1			1		1					3	135	183	227
	2007	January					1	2		2									5	99	123.2	154
		February							4										4	121	131.3	138
		March							1										1	135	135	135
		April		2			5	23	23	4	1	1							59	31	116.7	180
		May						1											1	106	106	106
		June				2			1										3	61	84.7	130
		July					1												1	91	91	91
		Total			2		2	10	26	31	6	2	2	1	1				83	31	119.9	227
White perch	2006	November					1					1							2	90	135	180
		December				1													1	79	79	79
	2007	January				2		1	1										4	65	92.3	120
		March				1													1	79	79	79
		April			1	2	4	3											10	53	86.1	106
		May					2					1							3	82	121	195
		June													1	1			2	250	280	310
Total			1	6	7	4	1				2			1	1			23	53	112.2	310	
Windowpane	2006	November				1													1	60	60	60
	2007	February					2												2	81	82.5	84
		April					6												6	80	84	89
	Total					1	8												9	60	81	89
Winter flounder	2006	August			1														1	58	58	58
		September			2	3													5	50	60.8	67
		October			1	1													2	53	62.5	72
		November		1			1		1										3	36	83.3	130
		December					1												1	90	90	90
	2007	January			1	2		2	1										6	55	87.5	130
		February			5	2	6	1											14	43	73.4	118
		March			1	2	1			1									5	47	85.6	151
		April			4	6		1											11	51	67.1	106
		May					2												2	80	83	86
		June					1	1											2	75	87.5	100
		July					1										1		2	93	205	317
		August					3												3	62	66.7	70
		September					2												2	62	67.5	73
Total			1	15	22	12	5	2	1						1			59	36	78.5	317	

Table 4-5. Monthly carapace width (crabs) and length (lobsters) frequency distributions (number of crustaceans in each 20 mm size class) of crustaceans from impingement collections at Schiller Station (Units 4, 5, and 6 combined) for the period 31 August 2006 through 30 September 2007.

			0 - 19	20 - 39	40 - 59	60 - 79	80 - 99	100 - 119	120 - 139	140 - 159	160 - 179	180 - 199	200 - 219	220 - 239	240 - 259	300 - 319	320 - 339	=>340	N	Min	Mean	Max
Invertebrates	American lobster	2006	September			1	1	1											3	42	66.7	83
			October				1												1	63	63	63
		2007	May			1		1											2	42	61	80
			June			4	2												6	52	57	66
			July			5	4												9	45	57	73
			August		1	10	6												17	36	54.5	73
			September			5	2	1											8	40	59.1	89
			Total		1	26	16	3											46	36	57.4	89
	Atlantic rock crab	2006	August			2	1	1	1										5	24	51.4	80
			September	21	22	6	2	4											55	9	30	99
			October	5	10	5	2		1	1									24	11	39.7	121
			November	3	32	24	4												63	17	38.6	76
			December		44	34	8	1											87	21	41.3	85
		2007	January		6	15	9	1											31	24	52.2	86
			February		10	6	1												17	21	38.1	77
			March	1	11	3	1	1											17	17	37.2	82
			April		14	9	9	3											35	22	47.8	88
			May	4	14	28	26	3											75	13	52.2	92
			June		10	18	29	3											60	25	57.2	98
			July		2	10	10												22	22	56.6	74
			August		3	8	8	1											20	31	55.5	80
			September	2	6	12	1												21	17	42	60
			Total	36	186	179	111	18	1	1									532	9	45.2	121
	Cancer sp.	2006	September	1	1														2	17	18.5	20
			Total	1	1														2	17	18.5	20
	Green crab	2006	August	2															2	9	9.5	10
			September	27	12	17	1												57	6	27.5	67
			October	10	24	17	2												53	5	34.7	67
			November	8	28	87	27												150	10	46.9	75
			December	5	33	98	44	1											181	12	49.3	80
		2007	January	3	16	42	28	1											90	9	50.5	83
			February		2	4	2												8	27	48.8	74
			March	3	1	3	1												8	12	37.4	65
			April	2	23	90	45												160	16	51.2	79
			May	8	32	136	68	2											246	13	51.2	81
			June	7	23	88	37												155	7	49.1	78
			July	5	12	44	25	1											87	12	51.2	80
			August		3	39	36												78	27	58.1	76
			September	2	13	18	12												45	15	46.5	78
			Total	82	222	683	328	5											1320	5	48.6	83

(continued)

Table 4-5. (Continued)

			0 - 19	20 - 39	40 - 59	60 - 79	80 - 99	100 - 119	120 - 139	140 - 159	160 - 179	180 - 199	200 - 219	220 - 239	240 - 259	300 - 319	320 - 339	=>340	N	Min	Mean	Max
	Horseshoe crab	2007	May						2		1	1		1					5	125	168.8	239
			June							1	2	2							5	155	173.8	194
			Total						2	1	3	3		1					10	125	171.3	239
	Jonah crab	2006	August	1		2													3	12	34.7	49
			September					1											1	81	81	81
			October		1														1	34	34	34
			November		1														1	23	23	23
		2007	March				2												2	61	68.5	76
			Total	1	2	2	2	1											8	12	47.4	81

Schiller Station Entrainment and Impingement Studies

Table 4-6. Monthly and annual total impingement abundance of fish (all taxa combined) for Schiller Station Units 4, 5, and 6, and for all three Units combined, for the 52 week sampling year from 2 October 2006 through 30 September 2007. Impingement data is presented as raw counts (Raw) in collected samples, impingement abundance estimates (I) based on the product of the sample densities and Unit operating flows, and the adjusted impingement abundance estimates (Adj-I) representing the abundance values (I) expanded for screen collection efficiency.

Year	Month	Unit 4			Unit 5			Unit 6			All Units Combined		
		Raw	I	Adj - I	Raw	I	Adj - I	Raw	I	Adj - I	Raw	I	Adj - I
2006	October	10	74	78	8	54	106	12	84	104	30	212	288
	November	53	371	405	11	77	101	9	63	170	73	511	676
	December	62	432	472	4	28	34	1	7	19	67	467	525
2007	January	43	299	342	11	77	92	6	42	343	60	418	777
	February	16	113	124	4	28	32	6	42	60	26	183	216
	March	8	74	78	5	35	71	0	1	2	13	110	151
	April	191	1,355	1,458	7	51	160	16	112	155	214	1,518	1,773
	May	9	63	65	3	21	48	1	7	9	13	91	122
	June	27	188	202	2	14	69	2	14	14	31	216	285
	July	6	42	49	6	42	74	2	14	18	14	98	141
	August	3	21	24	3	21	210	0	0	0	6	42	234
	September	8	57	60	1	7	117	0	0	0	9	64	177
	Total	436	3,089	3,357	65	455	1,114	55	386	894	556	3,930	5,365

Table 4-7. Monthly estimates of impingement abundance for each fish taxon at Schiller Station (Units 4, 5, and 6 combined) corrected for screen collection efficiency (Adj-I) for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name	2006			2007									Total Adj-I	% of Total
	October	November	December	January	February	March	April	May	June	July	August	September		
	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I		
Alewife	0	0	0	0	0	0	23	0	0	0	0	0	23	0.4
American sand lance	0	8	0	0	0	0	0	0	0	0	0	0	8	0.1
Atlantic cod	0	36	0	0	0	0	0	0	0	0	0	0	36	0.7
Atlantic herring	0	0	0	0	0	10	260	0	7	0	0	0	277	5.2
Atlantic menhaden	0	90	113	88	0	0	0	0	0	0	0	15	306	5.7
Atlantic silverside	0	30	15	0	0	0	69	0	0	0	0	0	114	2.1
Atlantic tomcod	0	0	8	0	0	0	0	0	23	8	0	8	47	0.9
Blueback herring	0	0	0	0	0	0	63	0	0	0	0	0	63	1.2
Bluegill	0	45	0	0	0	0	15	0	0	0	0	0	60	1.1
Cunner	52	8	0	8	0	10	150	0	131	101	148	15	623	11.6
Emerald shiner	0	0	0	0	0	0	31	0	0	0	0	0	31	0.6
Grubby	0	70	121	96	59	14	60	16	15	0	0	7	458	8.5
Herring family	0	0	8	0	0	0	0	0	0	0	0	0	8	0.1
Inland silverside	0	15	0	0	0	0	0	0	0	0	0	0	15	0.3
Lumpfish	8	28	0	0	0	3	240	54	0	0	0	0	333	6.2
Ninespine stickleback	0	0	0	139	0	0	0	0	0	0	0	0	139	2.6
Northern pipefish	155	27	0	148	0	10	122	0	0	0	0	117	579	10.8
Pollock	0	0	0	0	0	0	8	0	15	0	0	0	23	0.4
Pumpkinseed	0	0	0	0	0	0	8	0	0	0	0	0	8	0.1
Rainbow smelt	13	195	221	105	0	17	15	7	7	0	0	0	580	10.8
Red hake	0	0	0	8	0	0	0	0	0	0	0	0	8	0.1
Rock gunnel	8	0	0	0	0	0	0	16	0	0	0	0	24	0.4
Sea raven	0	8	0	0	0	0	0	7	0	0	0	0	15	0.3
Shorthorn sculpin	0	0	0	0	0	0	0	0	7	0	0	0	7	0.1
Silver hake	0	8	0	0	0	0	0	0	0	0	0	0	8	0.1
Skate family	0	0	0	16	0	0	0	0	0	0	0	0	16	0.3
Striped bass	15	0	0	0	0	0	0	0	0	8	0	0	23	0.4
Tautog	0	8	0	0	0	0	0	0	0	0	0	0	8	0.1
Threespine stickleback	0	0	0	8	8	10	23	0	0	0	0	0	49	0.9
Unidentifiable	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
White hake	14	49	23	47	23	10	462	0	50	8	0	0	686	12.8
White perch	0	15	8	33	0	14	86	15	15	0	0	0	186	3.5
Windowpane	0	8	0	0	16	0	46	0	0	0	0	0	70	1.3
Winter flounder	23	28	8	81	110	53	92	7	15	16	86	15	534	10.0
All taxa	288	676	525	777	216	151	1,773	122	285	141	234	177	5,365	100.0

Table 4-8. Monthly estimates of impingement abundance for each fish taxon at Unit 4 of Schiller Station corrected for screen collection efficiency (Adj-I) for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name	2006			2007									Total Adj-I	% of Total
	October Adj-I	November Adj-I	December Adj-I	January Adj-I	February Adj-I	March Adj-I	April Adj-I	May Adj-I	June Adj-I	July Adj-I	August Adj-I	September Adj-I		
Alewife	0	0	0	0	0	0	23	0	0	0	0	0	23	0.7
American sand lance	0	8	0	0	0	0	0	0	0	0	0	0	8	0.2
Atlantic cod	0	8	0	0	0	0	0	0	0	0	0	0	8	0.2
Atlantic herring	0	0	0	0	0	10	198	0	7	0	0	0	215	6.4
Atlantic menhaden	0	53	113	63	0	0	0	0	0	0	0	15	244	7.3
Atlantic silverside	0	30	15	0	0	0	69	0	0	0	0	0	114	3.4
Atlantic tomcod	0	0	8	0	0	0	0	0	23	8	0	8	47	1.4
Blueback herring	0	0	0	0	0	0	53	0	0	0	0	0	53	1.6
Bluegill	0	8	0	0	0	0	15	0	0	0	0	0	23	0.7
Cunner	8	8	0	8	0	10	92	0	90	25	8	15	264	7.9
Emerald shiner	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Grubby	0	61	85	71	31	0	46	0	15	0	0	7	316	9.4
Herring family	0	0	8	0	0	0	0	0	0	0	0	0	8	0.2
Inland silverside	0	15	0	0	0	0	0	0	0	0	0	0	15	0.4
Lumpfish	8	0	0	0	0	3	160	29	0	0	0	0	200	6.0
Ninespine stickleback	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Northern pipefish	24	8	0	8	0	10	91	0	0	0	0	0	141	4.2
Pollock	0	0	0	0	0	0	8	0	15	0	0	0	23	0.7
Pumpkinseed	0	0	0	0	0	0	8	0	0	0	0	0	8	0.2
Rainbow smelt	0	129	212	81	0	17	15	7	0	0	0	0	461	13.7
Red hake	0	0	0	8	0	0	0	0	0	0	0	0	8	0.2
Rock gunnel	8	0	0	0	0	0	0	0	0	0	0	0	8	0.2
Sea raven	0	8	0	0	0	0	0	7	0	0	0	0	15	0.4
Shorthorn sculpin	0	0	0	0	0	0	0	0	7	0	0	0	7	0.2
Silver hake	0	8	0	0	0	0	0	0	0	0	0	0	8	0.2
Skate family	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Striped bass	15	0	0	0	0	0	0	0	0	0	0	0	15	0.4
Tautog	0	8	0	0	0	0	0	0	0	0	0	0	8	0.2
Threespine stickleback	0	0	0	8	0	10	23	0	0	0	0	0	41	1.2
Unidentifiable	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
White hake	0	30	23	47	23	10	443	0	15	8	0	0	599	17.8
White perch	0	15	8	16	0	0	76	15	15	0	0	0	145	4.3
Windowpane	0	8	0	0	16	0	46	0	0	0	0	0	70	2.1
Winter flounder	15	0	0	32	54	8	92	7	15	8	16	15	262	7.8
All taxa	78	405	472	342	124	78	1,458	65	202	49	24	60	3,357	100.0

Table 4-9. Monthly estimates of impingement abundance for each fish taxon at Unit 5 of Schiller Station corrected for screen collection efficiency (Adj-I) for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name	2006			2007									Total Adj-I	% of Total
	October Adj-I	November Adj-I	December Adj-I	January Adj-I	February Adj-I	March Adj-I	April Adj-I	May Adj-I	June Adj-I	July Adj-I	August Adj-I	September Adj-I		
Alewife	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
American sand lance	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Atlantic cod	0	9	0	0	0	0	0	0	0	0	0	0	9	0.8
Atlantic herring	0	0	0	0	0	0	14	0	0	0	0	0	14	1.3
Atlantic menhaden	0	18	0	25	0	0	0	0	0	0	0	0	43	3.9
Atlantic silverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Atlantic tomcod	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Blueback herring	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Bluegill	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Cunner	26	0	0	0	0	0	0	0	34	66	140	0	266	23.9
Emerald shiner	0	0	0	0	0	0	31	0	0	0	0	0	31	2.8
Grubby	0	9	17	25	8	14	14	16	0	0	0	0	103	9.2
Herring family	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Inland silverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Lumpfish	0	9	0	0	0	0	70	16	0	0	0	0	95	8.5
Ninespine stickleback	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Northern pipefish	53	0	0	0	0	0	31	0	0	0	0	117	201	18.0
Pollock	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Pumpkinseed	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Rainbow smelt	13	47	9	8	0	0	0	0	0	0	0	0	77	6.9
Red hake	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Rock gunnel	0	0	0	0	0	0	0	16	0	0	0	0	16	1.4
Sea raven	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Shorthorn sculpin	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Silver hake	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Skate family	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Striped bass	0	0	0	0	0	0	0	0	0	8	0	0	8	0.7
Tautog	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Threespine stickleback	0	0	0	0	8	0	0	0	0	0	0	0	8	0.7
Unidentifiable	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
White hake	14	0	0	0	0	0	0	0	35	0	0	0	49	4.4
White perch	0	0	0	17	0	14	0	0	0	0	0	0	31	2.8
Windowpane	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Winter flounder	0	9	8	17	16	43	0	0	0	0	70	0	163	14.6
All taxa	106	101	34	92	32	71	160	48	69	74	210	117	1,114	100.0

Table 4-10. Monthly estimates of impingement abundance for each fish taxon at Unit 6 of Schiller Station corrected for screen collection efficiency (Adj-I) for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name	2006			2007									Total Adj-I	% of Total
	October	November	December	January	February	March	April	May	June	July	August	September		
	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I		
Alewife	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
American sand lance	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Atlantic cod	0	19	0	0	0	0	0	0	0	0	0	0	19	2.1
Atlantic herring	0	0	0	0	0	0	48	0	0	0	0	0	48	5.4
Atlantic menhaden	0	19	0	0	0	0	0	0	0	0	0	0	19	2.1
Atlantic silverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Atlantic tomcod	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Blueback herring	0	0	0	0	0	0	10	0	0	0	0	0	10	1.1
Bluegill	0	37	0	0	0	0	0	0	0	0	0	0	37	4.1
Cunner	18	0	0	0	0	0	58	0	7	10	0	0	93	10.4
Emerald shiner	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Grubby	0	0	19	0	20	0	0	0	0	0	0	0	39	4.4
Herring family	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Inland silverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Lumpfish	0	19	0	0	0	0	10	9	0	0	0	0	38	4.3
Ninespine stickleback	0	0	0	139	0	0	0	0	0	0	0	0	139	15.5
Northern pipefish	78	19	0	140	0	0	0	0	0	0	0	0	237	26.5
Pollock	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Pumpkinseed	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Rainbow smelt	0	19	0	16	0	0	0	0	7	0	0	0	42	4.7
Red hake	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Rock gunnel	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Sea raven	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Shorthorn sculpin	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Silver hake	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Skate family	0	0	0	16	0	0	0	0	0	0	0	0	16	1.8
Striped bass	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Tautog	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Threespine stickleback	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Unidentifiable	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
White hake	0	19	0	0	0	0	19	0	0	0	0	0	38	4.3
White perch	0	0	0	0	0	0	10	0	0	0	0	0	10	1.1
Windowpane	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Winter flounder	8	19	0	32	40	2	0	0	0	8	0	0	109	12.2
All taxa	104	170	19	343	60	2	155	9	14	18	0	0	894	100.0

Table 4-11. Monthly raw sampling count (Raw) and estimated total impingement abundance (I) of macrocrustaceans for Schiller Station Units 4, 5, and 6, and for all three Units combined, for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Year	Month	Unit 4		Unit 5		Unit 6		All Units Combined	
		Raw	I	Raw	I	Raw	I	Raw	I
2006	October	37	269	31	216	13	91	81	576
	November	173	1,210	34	237	28	194	235	1,641
	December	211	1,474	21	147	13	91	245	1,712
2007	January	123	857	7	49	2	14	132	920
	February	24	170	1	7	2	14	27	191
	March	11	119	3	21	0	0	14	140
	April	271	1,916	23	167	17	120	311	2,203
	May	163	1,143	35	245	25	176	223	1,564
	June	174	1,210	25	183	20	145	219	1,538
	July	82	573	25	175	25	175	132	923
	August	68	480	16	113	17	121	101	714
	September	46	325	14	110	13	92	73	527
Total		1,383	9,746	235	1,670	175	1,233	1,793	12,649

Table 4-12. Monthly estimates of impingement abundance (I) for each macrocrustacean taxon at Schiller Station (Units 4, 5, and 6 combined) for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name	2006			2007									Total I	% of Total
	October I	November I	December I	January I	February I	March I	April I	May I	June I	July I	August I	September I		
American lobster	7	0	0	0	0	0	0	14	41	70	113	57	302	2.4
Atlantic rock crab	172	517	531	265	128	75	369	420	402	175	119	151	3,324	26.3
<i>Cancer</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Green crab	382	1,124	1,181	655	49	65	1,827	1,102	1,060	678	482	319	8,924	70.6
Horseshoe crab	0	0	0	0	0	0	7	28	35	0	0	0	70	0.6
Jonah crab	15	0	0	0	14	0	0	0	0	0	0	0	29	0.2
All taxa	576	1,641	1,712	920	191	140	2,203	1,564	1,538	923	714	527	12,649	100.0

Table 4-13. Monthly estimates of impingement abundance (I) for each macrocrustacean taxon at Unit 4 of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name	2006			2007									Total I	% of Total
	October	November	December	January	February	March	April	May	June	July	August	September		
	I	I	I	I	I	I	I	I	I	I	I	I		
American lobster	7	0	0	0	0	0	0	7	41	70	113	57	295	3.0
Atlantic rock crab	123	350	426	216	114	61	339	329	361	119	63	85	2,586	26.5
<i>Cancer</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Green crab	131	860	1,048	641	42	58	1,570	786	780	384	304	183	6,787	69.6
Horseshoe crab	0	0	0	0	0	0	7	21	28	0	0	0	56	0.6
Jonah crab	8	0	0	0	14	0	0	0	0	0	0	0	22	0.2
All taxa	269	1,210	1,474	857	170	119	1,916	1,143	1,210	573	480	325	9,746	100.0

Table 4-14. Monthly estimates of impingement abundance (I) for each macrocrustacean taxon at Unit 5 of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name	2006			2007									Total I	% of Total
	October	November	December	January	February	March	April	May	June	July	August	September		
	I	I	I	I	I	I	I	I	I	I	I	I	I	I
American lobster	0	0	0	0	0	0	0	7	0	0	0	0	7	0.4
Atlantic rock crab	14	91	70	42	0	14	23	63	34	21	28	16	416	24.9
<i>Cancer</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Green crab	202	146	77	7	7	7	144	168	149	154	85	94	1,240	74.3
Horseshoe crab	0	0	0	0	0	0	0	7	0	0	0	0	7	0.4
Jonah crab	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
All taxa	216	237	147	49	7	21	167	245	183	175	113	110	1,670	100.0

Table 4-15. Monthly estimates of impingement abundance (I) for each macrocrustacean taxon at Unit 6 of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name	2006			2007									Total I	% of Total
	October	November	December	January	February	March	April	May	June	July	August	September		
	I	I	I	I	I	I	I	I	I	I	I	I		
American lobster	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Atlantic rock crab	35	76	35	7	14	0	7	28	7	35	28	50	322	26.1
<i>Cancer</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Green crab	49	118	56	7	0	0	113	148	131	140	93	42	897	72.7
Horseshoe crab	0	0	0	0	0	0	0	0	7	0	0	0	7	0.6
Jonah crab	7	0	0	0	0	0	0	0	0	0	0	0	7	0.6
All taxa	91	194	91	14	14	0	120	176	145	175	121	92	1,233	100.0

Table 4-16. Monthly and annual total abundance (Adj-I) and the corresponding adult equivalent impingement abundance (AE) for 14 fish taxa representing 89.6% of the raw total enumerated at Schiller Station (Units 4, 5, 6 combined) for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name		October	November	December	January	February	March	April	May	June	July	August	September	Total
Atlantic cod	Adj-I	0	36	0	0	0	0	0	0	0	0	0	0	36
	AE	0	29	0	0	0	0	0	0	0	0	0	0	29
Atlantic herring	Adj-I	0	0	0	0	0	10	260	0	7	0	0	0	277
	AE	0	0	0	0	0	0	9	0	0	0	0	0	9
Atlantic menhaden	Adj-I	0	90	113	88	0	0	0	0	0	0	0	15	306
	AE	0	0	1	0	0	0	0	0	0	0	0	0	2
Cunner	Adj-I	52	8	0	8	0	10	150	0	131	101	148	15	623
	AE	31	5	0	5	0	6	80	0	69	76	90	9	370
Grubby	Adj-I	0	70	121	97	60	14	60	16	15	0	0	7	460
	AE	0	70	121	97	57	14	60	16	15	0	0	7	457
Lumpfish	Adj-I	8	28	0	0	0	3	239	54	0	0	0	0	332
	AE	1	6	0	0	0	0	41	12	0	0	0	0	60
Northern pipefish	Adj-I	155	27	0	148	0	10	122	0	0	0	0	117	579
	AE	151	27	0	145	0	10	122	0	0	0	0	117	572
Pollock	Adj-I	0	0	0	0	0	0	8	0	15	0	0	0	23
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
Rainbow smelt	Adj-I	13	187	221	105	0	18	16	7	7	0	0	0	574
	AE	3	39	71	30	0	5	6	1	1	0	0	0	156
Silver hake	Adj-I	0	8	0	0	0	0	0	0	0	0	0	0	8
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
White hake	Adj-I	14	50	23	47	23	10	462	0	50	8	0	0	687
	AE	0	6	6	0	0	0	4	0	0	0	0	0	17
White perch	Adj-I	0	16	8	33	0	14	86	14	14	0	0	0	185
	AE	0	8	3	8	0	5	26	10	14	0	0	0	73
Windowpane	Adj-I	0	8	0	0	16	0	46	0	0	0	0	0	70
	AE	0	0	0	0	1	0	2	0	0	0	0	0	3
Winter flounder	Adj-I	23	28	8	81	110	53	92	7	15	16	86	15	534
	AE	0	0	0	0	0	0	0	0	0	8	0	0	8
Total	Adj-I	265	556	494	607	209	142	1,541	98	254	125	234	169	4,694
	AE	186	191	202	285	57	41	349	39	100	84	90	133	1,757

Table 4-17. Monthly and annual total abundance (Adj-I) and the corresponding adult equivalent impingement abundance (AE) for 14 fish taxa representing 89.6% of the raw total enumerated at Unit 4 of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name		October	November	December	January	February	March	April	May	June	July	August	September	Total
Atlantic cod	Adj-I	0	8	0	0	0	0	0	0	0	0	0	0	8
	AE	0	6	0	0	0	0	0	0	0	0	0	0	6
Atlantic herring	Adj-I	0	0	0	0	0	10	198	0	7	0	0	0	215
	AE	0	0	0	0	0	0	7	0	0	0	0	0	7
Atlantic menhaden	Adj-I	0	53	113	63	0	0	0	0	0	0	0	15	244
	AE	0	0	1	0	0	0	0	0	0	0	0	0	1
Cunner	Adj-I	8	8	0	8	0	10	92	0	90	25	8	15	264
	AE	5	5	0	5	0	6	51	0	28	9	5	9	122
Grubby	Adj-I	0	61	85	72	32	0	46	0	15	0	0	7	318
	AE	0	61	85	72	32	0	46	0	15	0	0	7	318
Lumpfish	Adj-I	8	0	0	0	0	3	159	29	0	0	0	0	199
	AE	1	0	0	0	0	0	29	6	0	0	0	0	37
Northern pipefish	Adj-I	24	8	0	8	0	10	91	0	0	0	0	0	141
	AE	24	8	0	5	0	10	91	0	0	0	0	0	138
Pollock	Adj-I	0	0	0	0	0	0	8	0	15	0	0	0	23
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
Rainbow smelt	Adj-I	0	121	212	81	0	18	16	7	0	0	0	0	455
	AE	0	25	67	25	0	5	6	1	0	0	0	0	129
Silver hake	Adj-I	0	8	0	0	0	0	0	0	0	0	0	0	8
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
White hake	Adj-I	0	31	23	47	23	10	443	0	15	8	0	0	600
	AE	0	6	6	0	0	0	4	0	0	0	0	0	17
White perch	Adj-I	0	16	8	16	0	0	76	14	14	0	0	0	144
	AE	0	8	3	6	0	0	22	10	14	0	0	0	63
Windowpane	Adj-I	0	8	0	0	16	0	46	0	0	0	0	0	70
	AE	0	0	0	0	1	0	2	0	0	0	0	0	3
Winter flounder	Adj-I	15	0	0	32	54	8	92	7	15	8	16	15	262
	AE	0	0	0	0	0	0	0	0	0	8	0	0	8
Total	Adj-I	55	322	441	327	125	69	1,267	57	171	41	24	52	2,951
	AE	30	121	161	113	33	22	258	17	57	17	5	16	848

Table 4-18. Monthly and annual total abundance (Adj-I) and the corresponding adult equivalent impingement abundance (AE) for 14 fish taxa representing 89.6% of the raw total enumerated at Unit 5 of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name		October	November	December	January	February	March	April	May	June	July	August	September	Total
Atlantic cod	Adj-I	0	9	0	0	0	0	0	0	0	0	0	0	9
	AE	0	7	0	0	0	0	0	0	0	0	0	0	7
Atlantic herring	Adj-I	0	0	0	0	0	0	14	0	0	0	0	0	14
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
Atlantic menhaden	Adj-I	0	18	0	25	0	0	0	0	0	0	0	0	43
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
Cunner	Adj-I	26	0	0	0	0	0	0	0	34	66	140	0	266
	AE	8	0	0	0	0	0	0	0	34	57	85	0	184
Grubby	Adj-I	0	9	17	25	8	14	14	16	0	0	0	0	103
	AE	0	9	17	25	5	14	14	16	0	0	0	0	100
Lumpfish	Adj-I	0	9	0	0	0	0	70	16	0	0	0	0	95
	AE	0	2	0	0	0	0	11	4	0	0	0	0	16
Northern pipefish	Adj-I	53	0	0	0	0	0	31	0	0	0	0	117	201
	AE	53	0	0	0	0	0	31	0	0	0	0	117	201
Pollock	Adj-I	0	0	0	0	0	0	0	0	0	0	0	0	0
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
Rainbow smelt	Adj-I	13	47	9	8	0	0	0	0	0	0	0	0	77
	AE	3	10	5	2	0	0	0	0	0	0	0	0	19
Silver hake	Adj-I	0	0	0	0	0	0	0	0	0	0	0	0	0
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
White hake	Adj-I	14	0	0	0	0	0	0	0	35	0	0	0	49
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
White perch	Adj-I	0	0	0	17	0	14	0	0	0	0	0	0	31
	AE	0	0	0	2	0	5	0	0	0	0	0	0	7
Windowpane	Adj-I	0	0	0	0	0	0	0	0	0	0	0	0	0
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
Winter flounder	Adj-I	0	9	8	17	16	43	0	0	0	0	70	0	163
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	Adj-I	106	101	34	92	24	71	129	32	69	66	210	117	1,051
	AE	64	28	22	29	5	19	56	20	34	57	85	117	536

Table 4-19. Monthly and annual total abundance (Adj-I) and the corresponding adult equivalent impingement abundance (AE) for 14 fish taxa representing 89.6% of the raw total enumerated at Unit 6 of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name		October	November	December	January	February	March	April	May	June	July	August	September	Total
Atlantic cod	Adj-I	0	19	0	0	0	0	0	0	0	0	0	0	19
	AE	0	15	0	0	0	0	0	0	0	0	0	0	15
Atlantic herring	Adj-I	0	0	0	0	0	0	48	0	0	0	0	0	48
	AE	0	0	0	0	0	0	2	0	0	0	0	0	2
Atlantic menhaden	Adj-I	0	19	0	0	0	0	0	0	0	0	0	0	19
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
Cunner	Adj-I	18	0	0	0	0	0	58	0	7	10	0	0	93
	AE	18	0	0	0	0	0	28	0	7	10	0	0	63
Grubby	Adj-I	0	0	19	0	20	0	0	0	0	0	0	0	39
	AE	0	0	19	0	20	0	0	0	0	0	0	0	39
Lumpfish	Adj-I	0	19	0	0	0	0	10	9	0	0	0	0	38
	AE	0	4	0	0	0	0	1	2	0	0	0	0	7
Northern pipefish	Adj-I	78	19	0	140	0	0	0	0	0	0	0	0	237
	AE	74	19	0	140	0	0	0	0	0	0	0	0	233
Pollock	Adj-I	0	0	0	0	0	0	0	0	0	0	0	0	0
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
Rainbow smelt	Adj-I	0	19	0	16	0	0	0	0	7	0	0	0	42
	AE	0	4	0	3	0	0	0	0	1	0	0	0	9
Silver hake	Adj-I	0	0	0	0	0	0	0	0	0	0	0	0	0
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
White hake	Adj-I	0	19	0	0	0	0	19	0	0	0	0	0	38
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
White perch	Adj-I	0	0	0	0	0	0	10	0	0	0	0	0	10
	AE	0	0	0	0	0	0	4	0	0	0	0	0	4
Windowpane	Adj-I	0	0	0	0	0	0	0	0	0	0	0	0	0
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
Winter flounder	Adj-I	8	19	0	32	40	2	0	0	0	8	0	0	109
	AE	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	Adj-I	104	133	19	188	60	2	145	9	14	18	0	0	692
	AE	92	43	19	143	20	0	35	2	8	10	0	0	372

Table 4-20. Survival status (number alive, dead, stunned) and percent (%) composition of fish taxa collected and observed in impingement survival samples from Schiller Station (Units 4, 5, and 6 combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name	Alive at T ₀	Dead at T ₀	Stunned at T ₀	Total at T ₀	% Composition
Alewife	0	1	0	1	0.7%
Atlantic herring	0	21	0	21	15.6%
Atlantic menhaden	0	4	0	4	3.0%
Atlantic silverside	0	1	0	1	0.7%
Atlantic tomcod	0	3	0	3	2.2%
Blueback herring	1	3	0	4	3.0%
Cunner	4	12	1	17	12.6%
Emerald shiner	0	1	0	1	0.7%
Grubby	11	1	0	12	8.9%
Lumpfish	10	4	0	14	10.4%
Norther pipefish	5	2	0	7	5.2%
Pollock	0	1	0	1	0.7%
Rainbow smelt	0	8	0	8	5.9%
Rock gunnel	1	0	0	1	0.7%
Threespine stickleback	1	2	0	3	2.2%
White hake	6	13	0	19	14.1%
White perch	0	5	1	6	4.4%
Windowpane	1	0	0	1	0.7%
Winter flounder	7	3	1	11	8.1%
Total	47	85	3	135	100.0%

Table 4-21. Seasonal latent (12-hour) survival rate, standard error, and number of live fish collected and observed in impingement survival samples from Schiller Station (Units 4, 5, and 6 combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007.

Month	N	% Latent Survival	Standard Error (+/-)
Winter	27	29.6	8.8
Spring	91	17.6	4.0
Summer	15	0.0	0.0
Fall	2	14.8*	

* Value linearly interpolated from adjacent season due to small sample size.

Table 4-22. Monthly estimated impingement abundance corrected for collection efficiency (Adj-I), latent survival rate, estimated total impingement survival (SAdj-I) and estimated total impingement mortality (MAdj-I) at Schiller Station Units 4, 5, 6, and for all three Units combined, for all fish taxa collected and observed in impingement survival samples from Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007.

Month	Unit 4				Unit 5				Unit 6				All Units Combined			
	Adj-I	Latent Survival Rate	SAdj-I	MAdj-I	Adj-I	Latent Survival Rate	SAdj-I	MAdj-I	Adj-I	Latent Survival Rate	SAdj-I	MAdj-I	Adj-I	Latent Survival Rate	SAdj-I	MAdj-I
October	78	0.148	12	66	106	0.148	16	90	104	0.148	15	89	288	0.148	43	245
November	405	0.148	60	345	101	0.148	15	86	170	0.148	25	145	676	0.148	100	576
December	472	0.296	140	332	34	0.296	10	24	19	0.296	6	13	525	0.296	155	370
January	342	0.296	101	241	92	0.296	27	65	343	0.296	102	241	777	0.296	230	547
February	124	0.296	37	87	32	0.296	9	23	60	0.296	18	42	216	0.296	64	152
March	78	0.176	14	64	71	0.176	12	59	2	0.176	0	2	151	0.176	27	124
April	1,458	0.176	257	1,201	160	0.176	28	132	155	0.176	27	128	1,773	0.176	312	1,461
May	65	0.176	11	54	48	0.176	8	40	9	0.176	2	7	122	0.176	21	101
June	202	0	0	202	69	0	0	69	14	0	0	14	285	0	0	285
July	49	0	0	49	74	0	0	74	18	0	0	18	141	0	0	141
August	24	0	0	24	210	0	0	210	0	0	0	0	234	0	0	234
September	60	0.148	9	51	117	0.148	17	100	0	0.148	0	0	177	0.148	26	151
Total	3,357	0.191	640	2,717	1,114	0.129	144	970	894	0.218	195	699	5,365	0.182	978	4,387

Table 4-23. Monthly estimated impingement abundance corrected for collection efficiency (Adj-I), adult equivalent impingement abundance (AE), estimated total impingement survival of adult equivalents (S-AE) and estimated total impingement mortality of adult equivalents (M-AE) at Schiller Station Units 4, 5, 6, and for all three Units combined, for all fish taxa collected and observed in impingement survival samples from Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name	Unit 4				Unit 5				Unit 6				All Units Combined			
	Adj-I	AE	S-AE	M-AE	Adj-I	AE	S-AE	M-AE	Adj-I	AE	S-AE	M-AE	Adj-I	AE	S-AE	M-AE
Atlantic cod	8	6	1	5	9	7	1	6	19	15	2	13	36	29	4	25
Atlantic herring	215	7	1	6	14	0	0	0	48	2	0	1	277	9	2	8
Atlantic menhaden	244	1	0	1	43	0	0	0	19	0	0	0	306	2	0	1
Cunner	264	122	14	108	266	184	1	183	93	63	8	56	623	370	23	347
Grubby	318	318	74	244	103	100	23	77	39	39	12	27	460	457	109	348
Lumpfish	199	37	6	30	95	16	3	13	38	7	1	6	332	60	10	50
Northern pipefish	141	138	24	114	201	201	31	170	237	233	55	178	579	572	110	462
Pollock	23	0	0	0	0	0	0	0	0	0	0	0	23	0	0	0
Rainbow smelt	455	129	33	96	77	19	4	15	42	9	2	7	574	156	38	118
Silver hake	8	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0
White hake	600	17	4	13	49	0	0	0	38	0	0	0	687	17	4	14
White perch	144	63	9	53	31	7	2	6	10	4	1	3	185	73	12	62
Windowpane	70	3	1	2	0	0	0	0	0	0	0	0	70	3	1	2
Winter flounder	262	8	0	8	163	0	0	0	109	0	0	0	534	8	0	8
Total	2,951	848	168	681	1,051	536	64	472	692	372	80	292	4,694	1,757	312	1,445

Table 4-24. Survival status (number alive, dead, stunned) and percent (%) composition of macrocrustacean taxa collected and observed in impingement survival samples from Schiller Station (Units 4, 5, and 6 combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007.

Common Name	Alive at T0	Dead at T0	Stunned at T0	Total at T0	% Composition
American lobster	4	6	1	11	3.4%
Atlantic rock crab	70	4	13	87	26.5%
Green crab	181	10	38	229	69.8%
Horseshoe crab	1			1	0.3%
Total	256	20	52	328	100.0%

Table 4-25. Seasonal latent (12-hour) survival rate, standard error, and number of live macrocrustaceans collected and observed in impingement survival samples from Schiller Station (Units 4, 5, and 6 combined) during the 52 week sampling year from 2 October 2006 through 30 September 2007.

Month	N	% Survival	Standard Error (+/-)
Winter	96	89.6	3.1
Spring	145	60.0	4.1
Summer	80	53.8	5.6
Fall	7	71.7*	

* Value linearly interpolated from adjacent season due to small sample size.

Table 4-26. Monthly estimated impingement abundance (I), latent survival rate, estimated total impingement survival (S-I) and estimated total impingement mortality (M-I) at Schiller Station Unit 4, 5, 6, and for all three Units combined, for all macrocrustaceans collected and observed in impingement survival samples from Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007.

Month	Unit 4				Unit 5				Unit 6				All Units Combined			
	I	Latent Survival Rate	S-I	M-I	I	Latent Survival Rate	S-I	M-I	I	Latent Survival Rate	S-I	M-I	I	Latent Survival Rate	S-I	M-I
October	269	0.717	193	76	216	0.717	155	61	91	0.717	65	26	576	0.717	413	163
November	1,210	0.717	868	342	237	0.717	170	67	194	0.717	139	55	1,641	0.717	1,177	464
December	1,474	0.896	1,321	153	147	0.896	132	15	91	0.896	82	9	1,712	0.896	1,534	178
January	857	0.896	768	89	49	0.896	44	5	14	0.896	13	1	920	0.896	824	96
February	170	0.896	152	18	7	0.896	6	1	14	0.896	13	1	191	0.896	171	20
March	119	0.6	71	48	21	0.6	13	8	0	0.6	0	0	140	0.6	84	56
April	1,916	0.6	1,150	766	167	0.6	100	67	120	0.6	72	48	2,203	0.6	1,322	881
May	1,143	0.6	686	457	245	0.6	147	98	176	0.6	106	70	1,564	0.6	938	626
June	1,210	0.538	651	559	183	0.538	98	85	145	0.538	78	67	1,538	0.538	827	711
July	573	0.538	308	265	175	0.538	94	81	175	0.538	94	81	923	0.538	497	426
August	480	0.538	258	222	113	0.538	61	52	121	0.538	65	56	714	0.538	384	330
September	325	0.717	233	92	110	0.717	79	31	92	0.717	66	26	527	0.717	378	149
Total	9,746	0.683	6,659	3,087	1,670	0.658	1,099	571	1,233	0.642	792	441	12,649	0.676	8,549	4,100

5.0 HISTORICAL FLOWS

This section presents the monthly and annual estimated total entrainment and impingement abundance (number) and their adult equivalents, “based on Schiller Station’s typical recent water withdrawal rate and operations for each calendar month”, as requested by EPA in their 308 Letter. Historical operating flows (Section 2.3.2) for Units 4, 5 and 6 of Schiller Station, and for all three Units combined, were used to expand the densities of life stages of fish and macrocrustaceans observed during the 52 week sampling year from 02 October 2006 through 30 September 2007 up to total abundance or adult equivalents. Therefore, the abundance and adult equivalent values presented in Section 5 below represent the hypothetical impingement or entrainment for Schiller Station Units 4, 5, and 6, and for all three Units combined, that could have been observed if the Station’s CWISs water intake flows were the same as the historical average monthly flows (Table 2-8).

5.1 Estimated Entrainment Abundance

Results in this Section (5.1) present the abundance (total number) of entrained fish and macrocrustaceans (Section 2.3.3, Equation 2) calculated from the product of weekly entrainment densities (Section 2.3.3, Equation 1) observed during the 52 week sampling year from 02 October 2006 through 30 September 2007 and the corresponding weekly historical operating flows for the six year period from 2002 through 2007 at each of the three Units of Schiller Station (Table 2-9).

5.1.1 Fish

If Schiller Station operated its CWIS based on historical average monthly intake flows during the 52 week sampling year from 2 October 2006 through 30 September 2007, an estimated annual total of 142.0 million ichthyoplankton (all life stages pooled, all three Units combined) would have been entrained for the year (Table 5-1). The estimated annual total number of fish eggs entrained at Schiller Station based on historical operating flows (all three Units combined) was 81.6 million, representing 57.5% of the total entrainment (Table 5-1). Cunner (66.0 million, including cunner/yellowtail flounder eggs) was the most abundant fish taxon entrained during the egg stage, comprising 80.9% of the total number of eggs among all three Units combined (Table 5-2). Other fish taxa entrained in relatively high annual total abundance in the egg life stage included fourbeard rockling (5.8 million), Atlantic mackerel (5.1 million) and *Urophycis* sp. (1.3 million, Table 5-2, Units 4, 5, and 6 combined). An estimated annual total of 4.3 million yolk sac larvae (YSL) would have been entrained at Schiller Station (all three Units combined) based on historic operating flows (Table 5-2). American sand lance (2.1 million), rock gunnel (1.3 million) and grubby (0.6 million) were the three most abundant fish taxa entrained during the YSL life stage (Table 5-2) comprising 92.3% of the total YSL based on historic operating flows. The estimated annual total number of post yolk sac larvae (PYSL) entrained at Schiller Station (all three Units combined) based on historical operating flows was 55.6 million (Table 5-2). Cunner (30.2 million), American sand lance (10.5 million), and rock gunnel (6.1 million) were the most abundant fish taxa entrained in the PYSL life stage (Table 5-2), comprising 84.3% of the annual total number of PYSL entrained based on historical operating flow. An estimated annual total of 68,034 YOY would be entrained at Schiller Station (all three Units combined) based on historical operating flows (Table 5-2). Atlantic tomcod and cunner were the only two fish taxa entrained during the YOY life stage. An annual estimated total of 0 Stage 1; 64,023 Stage 2; 133,097 Stage 3; and 7,163 Stage 4 winter flounder would have

been entrained at Schiller Station (all three Units combined) based on historical operating flows (Table 5-2).

5.1.2 Macrocrustaceans

If Schiller Station operated its CWIS based on historical average monthly operating flows during the 52 week sampling year from 2 October 2006 through 30 September 2007, an estimated annual total of 1.3 billion macrocrustacean larvae (all life stages pooled, all three Units combined) would have been entrained for the year (Table 5-3). Nearly all (99.2%) of the estimated annual macrocrustacean entrainment at Schiller Station would be crab zoea. The estimated total number of crab zoea entrained at Schiller Station (all three units combined) based on historical operating flows would be 1.3 billion (Table 5-3). Green crab (705.4 million) and *Cancer* sp. crab (558.3 million) comprised most (99.6%) of the macrocrustacean taxa entrained during the zoea life stage (Table 5-4, all three Units combined). An estimated total of 10.2 million crab megalops would be entrained at Schiller Station based on historical operating flows averaged by month for the six year period from 2002 through 2007. Green crab (8.4 million) comprised the majority of the total abundance of megalops followed by Atlantic rock crab (1.5 million, Table 5-4). The estimated annual abundance of juvenile crabs that would be entrained at Schiller Station based on historical operating flows was 433,271; the majority (351,083 or 81.0%) of which were green crab (Table 5-4). An estimated annual total of 40,754 Stage 1 and 15,228 Stage 2 American lobster larvae would be entrained at Schiller Station based on historical operating flows (Table 5-4). There were no Stage 3, or 4 lobsters entrained at Schiller Station.

5.2 Adult Equivalent Entrainment Abundance

Results in this section (Section 5.2) present the estimated adult equivalent entrainment abundance (total number) for fish and macrocrustaceans calculated by adjusting the monthly entrainment abundance (Section 5.1 above) for survival to age at first maturity using the methods described in Section 2.3.7 of this report. Adult equivalent entrainment abundance was determined for the annual period based on historical operating flows at Schiller Station Units 4, 5, and 6, and for all three Units combined, averaged by month for the six year period from 2002 through 2007 (Table 2-8).

5.2.1 Fish

Adult equivalent entrainment abundance was calculated for 16 fish taxa where at least 50 individuals (raw count, all life stages combined) were observed in the entrainment samples processed in the laboratory, and for one additional fish taxa observed in lower abundance but considered to be of commercial interest (winter flounder). Adult equivalent entrainment abundance at Schiller Station Units 4, 5, and 6, and for all three Units combined, based on historical operating flows was estimated for the same 17 fish taxa as was determined for the 52 week sampling year from 2 October 2006 through 30 September 2007 at all three Units in Section 3.5.1 of this report. These 17 fish taxa comprised 98.9% of the estimated annual total entrainment abundance based on historical operating flows at Schiller Station (Table 5-2, all three Units combined), and were: American plaice, American sand lance, Atlantic cod, Atlantic herring, Atlantic mackerel, Atlantic menhaden, cunner, fourbeard rockling, grubby, longhorn sculpin, Northern pipefish, pollock, rainbow smelt, rock gunnel, *Urophycis* species, windowpane, and winter flounder.

The estimated annual total entrainment abundance of 140.5 million individuals of the 17 examined taxa based on historical operating flows for the 52 week sampling year from 02 October 2006 through 30 September 2007 (Table 5-2) represented an estimated adult equivalent abundance of 686,638 individuals based on historical operating flows at Schiller Station (Table 5-5, all three Units combined). An additional 18 fish taxa (along with unidentified larvae) also contributed to the annual estimated entrainment abundance, but adult equivalent abundance was not calculated for these taxa, which comprised just 1.1% of the annual total estimated entrainment abundance (all life stages combined; Table 5-2). The monthly adult equivalent abundance at Schiller Station for all three Units combined was highest during March (165,950) and lowest during October (51 fish Table 5-5).

Rock gunnel (YSL and PYSL) was the single fish taxon exhibiting the highest number of adult equivalents expected to be entrained at Schiller Station based on historical operating flows. An estimated annual total of 395,053 adult equivalent rock gunnel (57.5% of the total) would be entrained based on historical operating flows at Schiller Station for Units 4, 5, and 6 combined (Table 5-6). Northern pipefish ($n = 105,044$ or 15.3%), cunner ($n = 81,558$ or 11.9%), and grubby ($n = 55,967$ or 8.2%) were three other fish taxa exhibiting estimated adult entrainment abundance values of more than 20,000 fish annually based on historical operating flows. Of the 17 fish taxa examined, 11 fish taxa had estimated annual adult equivalent abundances of 10,000 individuals or less, and 8 fish taxa had less than 100 individuals entrained at Schiller Station (Units 4, 5, and 6 combined) based on historical operating flows averaged by month for the six year period from 2002 through 2007 (Table 5-6).

5.2.2 Macrocrustaceans

Adult equivalent entrainment abundance was also estimated for three macrocrustacean taxa (American lobster, *Cancer* sp. crabs (including those distinguished to Atlantic rock crab or Jonah crab), and green crab) for the annual period based on historical operating flows at Schiller Station Units 4, 5, and 6, and for all three Units combined, averaged by month for the six year period from 2002 through 2007. Adult equivalent entrainment abundances for historical operating flows were calculated for the same three macrocrustacean taxa as was determined for the 52 week sampling year from 02 October 2006 through 30 September 2007 at all three units of Schiller Station in Section 3.5.2 of this report. These three macrocrustacean taxa comprised 99.6% of the estimated annual total macrocrustacean entrainment abundance based on historical operating flows at Schiller Station (Table 5-4).

The estimated annual entrainment of 1.3 billion individuals of the three macrocrustacean taxa (Table 5-4, all three units combined) represents the adult equivalent abundance of 144,752 individuals based on historical operating flows at Schiller Station for all three Units combined (Table 5-7). Three other macrocrustacean taxa contributed to the estimated annual total entrainment abundance of 1.3 billion (all life stages combined among all three Units) presented in Table 5-4, but these three macrocrustacean taxa (Arctic lyre crab, Atlantic lyre crab Japanese shore crab) comprised just 0.4% of the annual total estimated entrainment abundance (Table 5-4), and adult equivalent abundance values were not calculated for these less abundant taxa. When examined on a seasonal basis, adult equivalent entrainment abundance of macrocrustaceans was greatest during June through September as would be expected given the life history strategies of these taxa (Table 5-7). Green crab exhibited the highest adult equivalent abundance for macrocrustaceans entrained at Schiller Station (Units 4, 5, and 6 combined) based on historical operating flows; an annual total of 128,926 adult equivalent

green crabs (all three units combined) were estimated to be entrained (Table 5-8) comprising 89.1% of the total adult equivalents. *Cancer* sp. crab taxa (Atlantic rock crab and Jonah crab) comprised 10.9% of the annual macrocrustacean adult equivalents based on historical operating flow at Schiller Station for all three Units combined (Table 5-8). A total of 66 adult equivalent American lobsters were estimated to be entrained at Schiller Station (Units 4, 5, and 6 combined) based on historical operating flows (Table 5-8).

5.3 Estimated Impingement Abundance

Results in this Section (5.3) are presented for the collection efficiency adjusted total number of impinged fish and macrocrustaceans (Adj-I) calculated from the product of weekly impingement densities (Section 2.3.5, Equation 4) observed during the 52 week period from 2 October 2006 through 30 September 2007 and applied to the corresponding historical monthly average operating flows for the six year period from 2002 through 2007 at Units 4, 5, 6, and all three Units combined, of Schiller Station (Table 2-8).

5.3.1 Fish

Adjusted monthly estimates of the numbers of fish impinged (I), scaled up from the raw impingement counts (Raw) in each sample and corrected for collection efficiency (Adj-I), were calculated for Schiller Station based on historical operating flows averaged by month for the six year period from 2002 through 2007 (Table 5-9). When adjusted for collection efficiency (Adj-I), an estimated 4,753 fish would be impinged annually (all three Units combined) at Schiller Station based historical operating flows (Table 5-9). Estimated annual total impingement abundance based on historical operating flow corrected for collection efficiency was highest at Unit 4 (Adj-I = 2,830), which comprised 59.5% of the total impingement among all three Units combined at Schiller Station, and was 22.6% (Adj-I = 1,075) at Unit 5 and 17.8% (Adj-I = 848) at Unit 6 (Table 5-9). Estimated impingement abundance based on historical operating flow corrected for collection efficiency summed for all three Units at Schiller Station was highest during April (Adj-I = 1259) and lowest during July (Adj-I = 140). When annual adjusted impingement abundance were combined among all three Units, cunner (n= 568, 12.0%), northern pipefish (n= 557, 11.7%), rainbow smelt (n= 550, 11.6%), white hake (n= 531, 11.2%), and winter flounder (n= 495, 10.4%) contributed the greatest proportion of the total estimated impingement abundance if Schiller Station operated under historical operating flow during the sampling year (Table 5-10).

5.3.2 Macrocrustaceans

Adjusted monthly estimates of the numbers of macrocrustaceans impinged (I), scaled up from the raw impingement counts (Raw) in each sample were calculated for Schiller Station based on historical operating flows averaged by month for the six year period from 2002 through 2007 (Table 5-11). Collection efficiency tests derived for fish in this study were not considered appropriate for macrocrustaceans in impingement samples because of morphological and behavioral differences attributed to these fundamentally different organisms with respect to rotating intake screens. An estimated annual total of 11,611 macrocrustaceans (all three Units combined) would be impinged if Schiller Station had operated under historical operating flows (Table 5-11). Impingement abundance was higher at Unit 4 where 76.4% (n= 8,871) of the combined annual total occurred compared to 13.6% (n= 1,576) at Unit 5 and 10.0% (n= 1,164) at Unit 6 of Schiller Station. Estimated

impingement abundance of macrocrustaceans was highest in the spring (April-June) and late fall (November-December), reduced from June through October, and lowest in February and March (Table 5-11). Green crab ($n = 8,108$ or 69.8%), and Atlantic rock crab ($n = 3,115$ or 26.8%) comprised the majority of the estimated macrocrustaceans impinged (all three Units combined) if Schiller Station operated under historical operating flows during the year (Table 5-12). Although the total numbers impinged at Unit 4 was considerably higher than at Unit 5 or 6, species composition among the three Units at Schiller Station was consistent (Table 5-12). A total of 290 American lobster adults were estimated to be impinged at Schiller Station (Units 4, 5, and 6 combined) based on annual historical operating flows, the majority ($n = 285$ or 98.3%) of which were impinged at Unit 4 (Table 5-12).

5.4 Adult Equivalent Impingement Abundance

Results in the Section (5.4) present the estimated adult equivalent impingement abundance (total number) for fish calculated by adjusting the weekly impingement abundance (Section 5.3 above) for survival to age at first maturity using the methods described in Section 2.3.7 of this report. Adult equivalent impingement abundance was determined for the annual period based on historical operating flows at Schiller Station Units 4, 5, and 6, and for all three Units combined, averaged by month for the six year period from 2002 through 2007 (Table 2-8).

5.4.1 Fish

Adult equivalent impingement abundance at Schiller Station was estimated for 10 fish taxa where at least 20 individuals (raw count) were impinged, and for four selected additional fish taxa observed in lower abundance but considered to be of commercial interest (Atlantic cod, pollock, silver hake, windowpane). These were the same 14 taxa as was determined for the 52 week sampling year from 2 October 2006 through 30 September 2007 at all three Units of Schiller Station in Section 4.5.1 of this report. These 14 fish taxa comprised 87.4% of the estimated annual total impingement abundance based on historical operating flows at Schiller Station (Table 5-10), and were: Atlantic cod, Atlantic herring, Atlantic menhaden, cunner, grubby, lumpfish, Northern pipefish, pollock, rainbow smelt, silver hake, white hake, white perch, windowpane, and winter flounder.

The estimated annual total fish impingement abundance of 4,155 of the 14 taxa identified above (Adj-I, Table 5-10, all three Units combined) represents an estimated annual total adult equivalent impingement abundance of 1,633 (AE) fish at Schiller Station (all three Units combined) based on historical operating flows for the six year period from 2002 through 2007 (Table 5-13). An additional 17 fish taxa contributed 12.6% (Adj-I=598) to the estimated impingement abundance that would be expected under historical operating flows (Table 5-10); adult equivalents were not calculated for these less abundant taxa. The estimated annual total adult equivalent impingement abundance based on historical flow at Schiller Station was greatest for Unit 4, where 46.4% (AE= 758) of the combined annual total occurred, compared to 31.7% (AE= 518) for Unit 5 and 21.9% (AE= 357) for Unit 6 (Table 5-13). Northern pipefish was the fish taxon exhibiting the highest annual adult equivalent abundance, comprising 33.7% (AE = 550) of the estimated annual total adult equivalent abundance (all three Units combined) based on historical operating flows at Schiller Station. Grubby (25.8%, AE = 422) exhibited the second highest annual adult equivalent abundance based on historical operating flows, followed by cunner (20.8%, AE = 339, Table 5-13). None of the other 11 fish species for which adult equivalent abundances were calculated comprised more than 10% of the total annual

adult equivalent abundance based on historical operating flow from Units 4, 5, and 6 of Schiller Station combined.

5.4.2 Macrocrustaceans

An estimated annual total of 11,611 macrocrustaceans (all three Units combined) would be impinged if Schiller Station had operated under historical operating flows (Table 5-11). Adult equivalent abundance was not calculated for macrocrustaceans impinged, but the number of adult equivalents impinged under historical operating flows would certainly be lower than their annual total abundance. Age determination of macrocrustaceans is difficult, because age is typically estimated based on carapace measurements (length or width, depending on the taxon) of those individuals of a size subjected to impingement, and the carapace is lost with each molt as the individual grows. Therefore, a macrocrustacean carapace measurement does not provide a chronological record of age of the individual, and the accuracy of estimating age on the basis of length decreases with increasing age.

Table 5-1. Estimated total abundance of ichthyoplankton (all taxa combined) entrained at Schiller Station by month and life stage based on historical operating flows averaged for the six-year period from 2002 through 2007. Abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

Unit	Month	Egg	YSL	PYSL	YOY	Yearling and Older	Unknown	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 4	January	72,305	920,962	819,823	0	2,649	0	0	0	0	1,815,739
	February	24,595	353,527	3,160,338	0	2,574	0	0	0	0	3,541,034
	March	70,775	45,013	2,216,531	2,039	0	12,980	0	0	0	2,347,338
	April	161,583	64,678	742,787	0	0	6,047	900	0	0	975,995
	May	5,281,977	25,524	470,226	4,952	0	8,363	11,636	0	0	5,802,678
	June	15,335,050	0	114,049	10,809	0	0	6,633	36,118	2,370	15,505,029
	July	5,333,339	5,194	3,734,312	0	0	2,701	2,688	7,913	0	9,086,147
	August	796,323	2,673	6,524,192	0	2,674	32,144	0	0	0	7,358,006
	September	78,091	1,201	163,472	4,828	4,783	14,440	0	0	0	266,815
	October	58,016	0	7,948	0	0	0	0	0	0	65,964
	November	60,816	0	262,385	0	9,103	0	0	0	0	332,304
	December	33,659	1,309	125,217	0	1,305	0	0	0	0	161,490
	TOTAL	27,306,529	1,420,081	18,341,279	22,628	23,088	76,675	21,857	44,031	2,370	47,258,538
Unit 5	January	74,498	948,893	844,686	0	2,730	0	0	0	0	1,870,807
	February	22,505	323,488	2,891,813	0	2,355	0	0	0	0	3,240,161
	March	73,273	46,602	2,294,774	2,111	0	13,438	0	0	0	2,430,198
	April	218,979	87,651	1,006,630	0	0	8,195	1,220	0	0	1,322,675
	May	4,537,837	21,928	403,979	4,254	0	7,184	9,997	0	0	4,985,179
	June	15,479,129	0	115,120	10,910	0	0	6,695	36,457	2,392	15,650,703
	July	5,350,769	5,211	3,746,515	0	0	2,710	2,696	7,939	0	9,115,840
	August	824,598	2,768	6,755,852	0	2,769	33,286	0	0	0	7,619,273
	September	83,545	1,285	174,891	5,166	5,118	15,448	0	0	0	285,453
	October	65,540	0	8,979	0	0	0	0	0	0	74,519
	November	66,663	0	287,607	0	9,978	0	0	0	0	364,248
	December	35,007	1,362	130,232	0	1,358	0	0	0	0	167,959
	TOTAL	26,832,344	1,439,189	18,661,079	22,441	24,306	80,262	20,608	44,396	2,392	47,127,017

(continued)

Table 5-1. (Continued)

Unit	Month	Egg	YSL	PYSL	YOY	Yearling and Older	Unknown	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 6	January	75,339	959,606	854,223	0	2,760	0	0	0	0	1,891,928
	February	25,198	362,192	3,237,797	0	2,637	0	0	0	0	3,627,824
	March	60,918	38,744	1,907,846	1,755	0	11,172	0	0	0	2,020,435
	April	167,420	67,014	769,618	0	0	6,266	933	0	0	1,011,251
	May	5,067,683	24,488	451,149	4,751	0	8,023	11,164	0	0	5,567,258
	June	15,541,772	0	115,586	10,954	0	0	6,722	36,605	2,402	15,714,041
	July	5,435,736	5,294	3,806,008	0	0	2,753	2,739	8,065	0	9,260,595
	August	824,598	2,768	6,755,852	0	2,769	33,286	0	0	0	7,619,273
	September	89,036	1,369	186,385	5,505	5,454	16,464	0	0	0	304,213
	October	66,285	0	9,081	0	0	0	0	0	0	75,366
	November	69,489	0	299,800	0	10,401	0	0	0	0	379,690
	December	35,589	1,384	132,396	0	1,380	0	0	0	0	170,749
	TOTAL	27,459,063	1,462,860	18,525,741	22,965	25,401	77,964	21,558	44,670	2,402	47,642,624
All Units Combined	January	222,143	2,829,462	2,518,732	0	8,139	0	0	0	0	5,578,476
	February	72,297	1,039,207	9,289,948	0	7,565	0	0	0	0	10,409,017
	March	204,966	130,360	6,419,152	5,905	0	37,590	0	0	0	6,797,973
	April	547,983	219,343	2,519,036	0	0	20,508	3,052	0	0	3,309,922
	May	14,887,497	71,940	1,325,354	13,957	0	23,570	32,798	0	0	16,355,116
	June	46,355,951	0	344,756	32,674	0	0	20,050	109,179	7,163	46,869,773
	July	16,119,844	15,700	11,286,836	0	0	8,165	8,123	23,918	0	27,462,586
	August	2,445,519	8,210	20,035,895	0	8,211	98,715	0	0	0	22,596,550
	September	250,672	3,855	524,747	15,499	15,355	46,352	0	0	0	856,480
	October	189,841	0	26,008	0	0	0	0	0	0	215,849
	November	196,968	0	849,791	0	29,481	0	0	0	0	1,076,240
	December	104,255	4,055	387,845	0	4,043	0	0	0	0	500,198
	TOTAL	81,597,936	4,322,130	55,528,099	68,034	72,795	234,900	64,023	133,097	7,163	142,028,177

Table 5-2. Estimated annual total ichthyoplankton abundance entrained at Schiller Station by taxon and life stage based on historical operating flows averaged for the six-year period from 2002 through 2007. Abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

Unit	Common Name	Egg	YSL	PYSL	YOY	Yearling or older	Unknown	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 4	Alligatorfish	0	0	3,656	0	0	0				3,656
	American eel	0	0	2,574	0	0	0				2,574
	American plaice	271,501	0	8,096	0	0	0				279,597
	American sand lance	0	677,140	3,566,098	0	0	0				4,243,238
	Atlantic cod	92,373	0	10,613	0	0	0				102,986
	Atlantic cod/haddock	46,644	0	0	0	0	0				46,644
	Atlantic cod/haddock/witch	94,875	0	0	0	0	0				94,875
	Atlantic herring	0	0	569,459	0	0	0				569,459
	Atlantic mackerel	1,723,149	0	2,700	0	0	0				1,725,850
	Atlantic menhaden	189,782	0	0	0	0	0				189,782
	Atlantic seasnail	0	0	103,446	0	0	0				103,446
	Atlantic tomcod	0	0	0	15,761	0	0				15,761
	Cunner	2,513	0	9,872,019	6,867	0	0				9,881,399
	Cunner/yellowtail flounder	22,028,956	0	0	0	0	0				22,028,956
	Fourbeard rockling	203,330	2,681	305,848	0	0	0				511,860
	Fourbeard rockling/hake	1,820,095	0	0	0	0	0				1,820,095
	Goosefish	41,812	0	0	0	0	0				41,812
	Grubby	0	195,339	835,248	0	0	0				1,030,587
	Gulf snailfish	0	2,281	4,909	0	0	0				7,190
	Haddock	2,101	0	0	0	0	0				2,101
	Longhorn sculpin	0	11,714	120,206	0	0	0				131,921
	Northern pipefish	0	3,874	193,640	0	20,515	0				218,028
	Pollock	43,927	46,362	112,690	0	0	0				202,978
	Prionotus species	21,800	0	0	0	0	0				21,800
	Radiated shanny	0	13,639	44,416	0	0	0				58,055
	Rainbow smelt	0	18,185	477,503	0	0	0				495,689
	Rock gunnel	0	436,581	2,040,466	0	0	0				2,477,047
	Sculpin family	4,511	7,515	6,268	0	0	0				18,295
	Sea raven	0	0	5,287	0	0	0				5,287
	Shorthorn sculpin	0	2,256	29,537	0	0	0				31,793
	Silver hake	72,244	2,513	4,545	0	0	0				79,302
	Striped killifish	0	0	0	0	2,574	0				2,574
	Summer flounder	4,646	0	0	0	0	0				4,646

(continued)

Table 5-2. (Continued)

Unit	Common Name	Egg	YSL	PYSL	YOY	Yearling or older	Unknown	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 4 (cont'd)	Tautog	16,768	0	0	0	0	0				16,768
	Unidentifiable	0	0	0	0	0	76,675				76,675
	Winter flounder	54,789	0	0	0	0	0	21,857	44,031	2,370	123,046
	Witch flounder	0	0	5,385	0	0	0				5,385
	Wrymouth	0	0	2,252	0	0	0				2,252
	All Taxa	27,306,529	1,420,081	18,341,279	22,628	23,088	76,675	21,857	44,031	2,370	47,258,536
Unit 5	Alligatorfish	0	0	4,955	0	0	0				4,955
	American eel	0	0	2,355	0	0	0				2,355
	American plaice	286,528	0	8,122	0	0	0				294,650
	American sand lance	0	675,651	3,464,107	0	0	0				4,139,758
	Atlantic cod	99,336	0	10,017	0	0	0				109,353
	Atlantic cod/haddock	51,974	0	0	0	0	0				51,974
	Atlantic cod/haddock/witch	99,736	0	0	0	0	0				99,736
	Atlantic herring	0	0	611,672	0	0	0				611,672
	Atlantic mackerel	1,638,507	0	2,709	0	0	0				1,641,216
	Atlantic menhaden	197,151	0	0	0	0	0				197,151
	Atlantic seasnail	0	0	110,581	0	0	0				110,581
	Atlantic tomcod	0	0	0	15,165	0	0				15,165
	Cunner	2,521	0	10,116,612	7,276	0	0				10,126,410
	Cunner/yellowtail flounder	21,796,629	0	0	0	0	0				21,796,629
	Fourbeard rockling	185,357	2,690	314,505	0	0	0				502,552
	Fourbeard rockling/hake	1,630,257	0	0	0	0	0				1,630,257
	Goosefish	41,796	0	0	0	0	0				41,796
	Grubby	0	212,639	909,313	0	0	0				1,121,951
	Gulf snailfish	0	2,362	5,069	0	0	0				7,431
	Haddock	2,022	0	0	0	0	0				2,022
	Longhorn sculpin	0	12,635	116,431	0	0	0				129,066
	Northern pipefish	0	4,053	194,849	0	21,951	0				220,853
	Pollock	45,772	47,158	113,814	0	0	0				206,745
	Prionotus species	22,208	0	0	0	0	0				22,208
	Radiated shanny	0	13,057	44,581	0	0	0				57,638
	Rainbow smelt	0	17,409	421,116	0	0	0				438,525
	Rock gunnel	0	439,767	2,140,440	0	0	0				2,580,207
	Sculpin family	4,671	7,183	7,313	0	0	0				19,166
	Sea raven	0	0	5,767	0	0	0				5,767

(continued)

Table 5-2. (Continued)

Unit	Common Name	Egg	YSL	PYSL	YOY	Yearling or older	Unknown	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 5 (cont'd)	Shorthorn sculpin	0	2,064	29,594	0	0	0				31,658
	Silver hake	70,629	2,521	4,706	0	0	0				77,856
	Striped killifish	0	0	0	0	2,355	0				2,355
	Summer flounder	5,131	0	0	0	0	0				5,131
	Tautog	17,411	0	0	0	0	0				17,411
	Unidentifiable	0	0	0	0	0	80,262				80,262
	Urophycis species	434,992	0	0	0	0	0				434,992
	Windowpane	141,189	0	14,715	0	0	0				155,904
	Winter flounder	58,528	0	0	0	0	0	20,608	44,396	2,392	125,924
	Witch flounder	0	0	5,402	0	0	0				5,402
	Wrymouth	0	0	2,331	0	0	0				2,331
	All Taxa	26,832,344	1,439,189	18,661,079	22,441	24,306	80,262	20,608	44,396	2,392	47,127,017
Unit 6	Alligatorfish	0	0	3,788	0	0	0				3,788
	American eel	0	0	2,637	0	0	0				2,637
	American plaice	270,016	0	8,251	0	0	0				278,267
	American sand lance	0	701,394	3,510,769	0	0	0				4,212,163
	Atlantic cod	102,328	0	10,919	0	0	0				113,247
	Atlantic cod/haddock	46,110	0	0	0	0	0				46,110
	Atlantic cod/haddock/witch	95,027	0	0	0	0	0				95,027
	Atlantic herring	0	0	621,175	0	0	0				621,175
	Atlantic mackerel	1,710,452	0	2,752	0	0	0				1,713,204
	Atlantic menhaden	198,332	0	0	0	0	0				198,332
	Atlantic seasnail	0	0	103,074	0	0	0				103,074
	Atlantic tomcod	0	0	0	15,705	0	0				15,705
	Cunner	2,561	0	10,181,739	7,260	0	0				10,191,560
	Cunner/yellowtail flounder	22,212,675	0	0	0	0	0				22,212,675
	Fourbeard rockling	199,471	2,733	316,653	0	0	0				518,857
	Fourbeard rockling/hake	1,773,026	0	0	0	0	0				1,773,026
	Goosefish	42,906	0	0	0	0	0				42,906
	Grubby	0	196,029	816,582	0	0	0				1,012,611
	Gulf snailfish	0	1,964	4,707	0	0	0				6,670
	Haddock	2,094	0	0	0	0	0				2,094
	Longhorn sculpin	0	12,090	118,810	0	0	0				130,900
	Northern pipefish	0	4,138	197,638	0	22,764	0				224,539
	Pollock	46,559	48,233	113,281	0	0	0				208,073

(continued)

Table 5-2. (Continued)

Unit	Common Name	Egg	YSL	PYSL	YOY	Yearling or older	Unknown	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 6 (cont'd)	Prionotus species	22,492	0	0	0	0	0				22,492
	Radiated shanny	0	13,293	44,678	0	0	0				57,971
	Rainbow smelt	0	17,723	462,046	0	0	0				479,769
	Rock gunnel	0	452,646	1,939,899	0	0	0				2,392,545
	Sculpin family	3,883	7,745	6,464	0	0	0				18,092
	Sea raven	0	0	4,712	0	0	0				4,712
	Shorthorn sculpin	0	2,311	27,887	0	0	0				30,198
	Silver hake	74,867	2,561	4,706	0	0	0				82,135
	Striped killifish	0	0	0	0	2,637	0				2,637
	Summer flounder	5,309	0	0	0	0	0				5,309
	Tautog	17,716	0	0	0	0	0				17,716
	Unidentifiable	0	0	0	0	0	77,964				77,964
	Urophycis species	436,819	0	0	0	0	0				436,819
	Windowpane	147,548	0	15,149	0	0	0				162,698
	Winter flounder	48,871	0	0	0	0	0	21,558	44,670	2,402	117,500
	Witch flounder	0	0	5,488	0	0	0				5,488
	Wrymouth	0	0	1,938	0	0	0				1,938
	All Taxa	27,459,063	1,462,860	18,525,741	22,965	25,401	77,964	21,558	44,670	2,402	47,642,624
Combined	Alligatorfish	0	0	12,399	0	0	0				12,399
	American eel	0	0	7,565	0	0	0				7,565
	American plaice	828,045	0	24,470	0	0	0				852,515
	American sand lance	0	2,054,185	10,540,974	0	0	0				12,595,159
	Atlantic cod	294,037	0	31,550	0	0	0				325,587
	Atlantic cod/haddock	144,729	0	0	0	0	0				144,729
	Atlantic cod/haddock/witch	289,637	0	0	0	0	0				289,637
	Atlantic herring	0	0	1,802,306	0	0	0				1,802,306
	Atlantic mackerel	5,072,108	0	8,161	0	0	0				5,080,270
	Atlantic menhaden	585,265	0	0	0	0	0				585,265
	Atlantic seasnail	0	0	317,101	0	0	0				317,101
	Atlantic tomcod	0	0	0	46,630	0	0				46,630
	Cunner	7,596	0	30,170,370	21,404	0	0				30,199,370
	Cunner/yellowtail flounder	66,038,260	0	0	0	0	0				66,038,260
	Fourbeard rockling	588,158	8,104	937,006	0	0	0				1,533,268
	Fourbeard rockling/hake	5,223,378	0	0	0	0	0				5,223,378
	Goosefish	126,514	0	0	0	0	0				126,514

(continued)

Table 5-2. (Continued)

Unit	Common Name	Egg	YSL	PYSL	YOY	Yearling or older	Unknown	WF Stage 2	WF Stage 3	WF Stage 4	Total
Combined (cont'd)	Grubby	0	604,007	2,561,144	0	0	0				3,165,150
	Gulf snailfish	0	6,607	14,684	0	0	0				21,292
	Haddock	6,217	0	0	0	0	0				6,217
	Longhorn sculpin	0	36,439	355,447	0	0	0				391,887
	Northern pipefish	0	12,065	586,126	0	65,230	0				663,421
	Pollock	136,257	141,753	339,785	0	0	0				617,796
	Prionotus species	66,501	0	0	0	0	0				66,501
	Radiated shanny	0	39,988	133,676	0	0	0				173,664
	Rainbow smelt	0	53,318	1,360,665	0	0	0				1,413,983
	Rock gunnel	0	1,328,994	6,120,806	0	0	0				7,449,800
	Sculpin family	13,065	22,443	20,045	0	0	0				55,553
	Sea raven	0	0	15,766	0	0	0				15,766
	Shorthorn sculpin	0	6,631	87,018	0	0	0				93,649
	Silver hake	217,741	7,596	13,957	0	0	0				239,293
	Striped killifish	0	0	0	0	7,565	0				7,565
	Summer flounder	15,086	0	0	0	0	0				15,086
	Tautog	51,895	0	0	0	0	0				51,895
	Unidentifiable	0	0	0	0	0	234,900				234,900
	Urophycis species	1,295,387	0	0	0	0	0				1,295,387
	Windowpane	435,872	0	44,281	0	0	0				480,153
	Winter flounder	162,187	0	0	0	0	0	64,023	133,097	7,163	366,471
	Witch flounder	0	0	16,275	0	0	0				16,275
	Wrymouth	0	0	6,521	0	0	0				6,521
	All Taxa	81,597,936	4,322,130	55,528,099	68,034	72,795	234,900	64,023	133,097	7,163	142,028,178

Table 5-3. Estimated total abundance of macrocrustacean larvae (all taxa combined) entrained at Schiller Station by month and life stage based on historical operating flows averaged for the six-year period from 2002 through 2007. Abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

	Month	Crab life stages			Lobster life stages		Total
		Juvenile	Megalops	Zoea	Stage I	Stage II	
Unit 4	January	0	0	15,666	0	0	15,666
	February	2,256	0	8,182	0	0	10,438
	March	0	0	0	0	0	0
	April	0	0	38,043	0	0	38,043
	May	2,031	0	42,636,662	0	0	42,638,693
	June	9,717	0	126,615,064	0	5,038	126,629,819
	July	4,120	1,887,256	186,635,642	13,484	0	188,540,501
	August	66,052	773,636	54,928,437	0	0	55,768,125
	September	28,596	361,211	7,626,517	0	0	8,016,324
	October	17,987	286,686	2,460,514	0	0	2,765,187
	November	7,901	4,841	89,375	0	0	102,117
	December	0	3,927	56,115	0	0	60,042
	TOTAL	138,661	3,317,557	421,110,217	13,484	5,038	424,584,955
Unit 5	January	0	0	16,141	0	0	16,141
	February	2,064	0	7,487	0	0	9,551
	March	0	0	0	0	0	0
	April	0	0	51,556	0	0	51,556
	May	1,745	0	36,629,892	0	0	36,631,637
	June	9,808	0	127,804,667	0	5,085	127,819,559
	July	4,134	1,893,423	187,245,562	13,528	0	189,156,647
	August	68,397	801,106	56,878,828	0	0	57,748,331
	September	30,594	386,443	8,159,251	0	0	8,576,288
	October	20,320	323,867	2,779,621	0	0	3,123,808
	November	8,661	5,306	97,966	0	0	111,934
	December	0	4,084	58,362	0	0	62,447
	TOTAL	145,723	3,414,229	419,729,333	13,528	5,085	423,307,898
Unit 6	January	0	0	16,323	0	0	16,323
	February	2,311	0	8,383	0	0	10,694
	March	0	0	0	0	0	0
	April	0	0	39,417	0	0	39,417
	May	1,949	0	40,906,864	0	0	40,908,813
	June	9,848	0	128,321,885	0	5,105	128,336,838
	July	4,199	1,923,490	190,218,924	13,742	0	192,160,356
	August	68,397	801,106	56,878,828	0	0	57,748,331
	September	32,604	411,841	8,695,491	0	0	9,139,936
	October	20,551	327,544	2,811,181	0	0	3,159,276
	November	9,028	5,531	102,119	0	0	116,679
	December	0	4,152	59,332	0	0	63,485
	TOTAL	148,887	3,473,664	428,058,748	13,742	5,105	431,700,147

(continued)

Table 5-3. (Continued)

	Month	Crab life stages			Lobster life stages		Total
		Juvenile	Megalops	Zoea	Stage I	Stage II	
Combined	January	0	0	48,131	0	0	48,131
	February	6,631	0	24,053	0	0	30,684
	March	0	0	0	0	0	0
	April	0	0	129,015	0	0	129,015
	May	5,725	0	120,173,418	0	0	120,179,143
	June	29,372	0	382,741,616	0	15,228	382,786,216
	July	12,454	5,704,168	564,100,128	40,754	0	569,857,504
	August	202,845	2,375,848	168,686,092	0	0	171,264,786
	September	91,794	1,159,495	24,481,259	0	0	25,732,548
	October	58,858	938,096	8,051,316	0	0	9,048,270
	November	25,591	15,679	289,460	0	0	330,730
	December	0	12,164	173,810	0	0	185,974
	TOTAL	433,271	10,205,450	1,268,898,297	40,754	15,228	1,279,593,000

Table 5-4. Estimated annual total macrocrustacean larval abundance entrained at Schiller Station by taxon and life stage based on historical operating flows averaged for the six-year period from 2002 through 2007. Abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

	Common Name	Crab life stages			Lobster life stages		Total
		Juvenile	Megalops	Zoea	Stage I	Stage II	
Unit 4	American lobster				13,484	5,038	18,521
	Arctic lyre crab	0	0	92,038			92,038
	Atlantic lyre crab	0	0	15,810			15,810
	Atlantic rock crab	20,176	486,841	0			507,017
	<i>Cancer</i> sp.	0	20,550	185,330,091			185,350,641
	Green crab	112,149	2,733,033	234,080,777			236,925,959
	Japanese shore crab	0	0	1,591,501			1,591,501
	Jonah crab	6,336	77,133	0			83,469
	All Taxa	138,661	3,317,557	421,110,217	13,484	5,038	424,584,955
Unit 5	American lobster				13,528	5,085	18,613
	Arctic lyre crab	0	0	89,516			89,516
	Atlantic lyre crab	0	0	15,911			15,911
	Atlantic rock crab	20,892	513,021	0			533,913
	<i>Cancer</i> sp.	0	20,617	184,390,857			184,411,474
	Green crab	117,909	2,799,370	233,600,817			236,518,095
	Japanese shore crab	0	0	1,632,233			1,632,233
	Jonah crab	6,921	81,222	0			88,143
	All Taxa	145,723	3,414,229	419,729,333	13,528	5,085	423,307,898
Unit 6	American lobster				13,742	5,105	18,848
	Arctic lyre crab	0	0	92,430			92,430
	Atlantic lyre crab	0	0	16,067			16,067
	Atlantic rock crab	20,892	518,364	0			539,256
	<i>Cancer</i> sp.	0	20,944	188,591,817			188,612,761
	Green crab	121,025	2,850,952	237,706,481			240,678,457
	Japanese shore crab	0	0	1,651,953			1,651,953
	Jonah crab	6,970	83,404	0			90,374
	All Taxa	148,887	3,473,664	428,058,748	13,742	5,105	431,700,147
Combined	American lobster				40,754	15,228	55,982
	Arctic lyre crab	0	0	273,984			273,984
	Atlantic lyre crab	0	0	47,789			47,789
	Atlantic rock crab	61,961	1,518,225	0			1,580,186
	<i>Cancer</i> sp.	0	62,111	558,312,765			558,374,876
	Green crab	351,083	8,383,355	705,388,074			714,122,511
	Japanese shore crab	0	0	4,875,686			4,875,686
	Jonah crab	20,227	241,759	0			261,986
	All Taxa	433,271	10,205,450	1,268,898,297	40,754	15,228	1,279,593,000

Table 5-5. Monthly adult equivalent entrainment abundance (by life stage) for 17 fish taxa at Schiller Station based on historical operating flows averaged for the six-year period from 2002 through 2007. Abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

	Month	Egg	YSL	PYSL	YOY	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 4	January	0	18,672	12,480	0	2,649	0	0	0	33,801
	February	0	6,542	36,768	0	0	0	0	0	43,310
	March	0	743	56,466	93	0	0	0	0	57,302
	April	9	1,286	20,586	0	0	0	0	0	21,881
	May	1,836	190	5,489	0	0	0	0	0	7,514
	June	1,291	0	1,818	0	0	0	1	0	3,110
	July	524	30	20,595	0	0	0	0	0	21,149
	August	159	178	18,959	0	2,674	0	0	0	21,970
	September	13	80	583	219	4,783	0	0	0	5,678
	October	6	0	10	0	0	0	0	0	16
	November	1	0	331	0	9,103	0	0	0	9,435
	December	0	0	153	0	1,305	0	0	0	1,459
	Total	3,838	27,721	174,238	312	20,515	0	1	0	226,625
Unit 5	January	0	19,238	12,858	0	2,730	0	0	0	34,826
	February	0	5,986	33,644	0	0	0	0	0	39,630
	March	0	769	58,460	96	0	0	0	0	59,325
	April	13	1,743	27,898	0	0	0	0	0	29,653
	May	1,577	163	4,716	0	0	0	0	0	6,456
	June	1,303	0	1,835	0	0	0	1	0	3,139
	July	526	30	20,662	0	0	0	0	0	21,218
	August	164	184	19,632	0	2,769	0	0	0	22,750
	September	14	86	623	235	5,118	0	0	0	6,075
	October	6	0	11	0	0	0	0	0	18
	November	1	0	363	0	9,978	0	0	0	10,342
	December	0	0	159	0	1,358	0	0	0	1,518
	Total	3,604	28,199	180,862	331	21,951	0	1	0	234,949
Unit 6	January	0	19,455	13,004	0	2,760	0	0	0	35,219
	February	0	6,703	37,669	0	0	0	0	0	44,372
	March	0	640	48,603	80	0	0	0	0	49,322
	April	10	1,333	21,329	0	0	0	0	0	22,671
	May	1,761	182	5,266	0	0	0	0	0	7,209
	June	1,308	0	1,843	0	0	0	1	0	3,152
	July	534	31	20,990	0	0	0	0	0	21,555
	August	164	184	19,632	0	2,769	0	0	0	22,750
	September	14	91	664	250	5,454	0	0	0	6,474
	October	6	0	11	0	0	0	0	0	18
	November	1	0	378	0	10,401	0	0	0	10,780
	December	0	0	162	0	1,380	0	0	0	1,543
	Total	3,800	28,618	169,552	330	22,764	0	1	0	225,065
Com- bined	January	1	57,364	38,342	0	8,139	0	0	0	103,847
	February	0	19,231	108,081	0	0	0	0	0	127,313
	March	1	2,152	163,529	268	0	0	0	0	165,950
	April	32	4,361	69,812	0	0	0	0	0	74,205
	May	5,174	534	15,470	0	0	0	0	0	21,179
	June	3,902	0	5,496	0	0	0	2	0	9,401
	July	1,583	91	62,247	0	0	0	0	0	63,921
	August	487	546	58,224	0	8,211	0	0	0	67,469
	September	41	257	1,871	704	15,355	0	0	0	18,227
	October	18	0	33	0	0	0	0	0	51
	November	2	0	1,073	0	29,481	0	0	0	30,556
	December	1	0	475	0	4,043	0	0	0	4,519
	Total	11,242	84,538	524,653	973	65,230	1	2	0	686,638

Table 5-6. Annual total adult equivalent entrainment abundance (sorted by life stage) for 17 fish taxa at Schiller Station based on historical operating flows averaged for the six-year period from 2002 through 2007. Abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

	Common Name	Egg	YSL	PYSL	YOY	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 4	American plaice	3	0	1	0					4
	American sand lance	0	549	2,893	0					3,443
	Atlantic cod	1	0	17	0					18
	Atlantic herring	0	0	719	0					719
	Atlantic mackerel	4	0	0	0					4
	Atlantic menhaden	2	0	0						2
	Cunner	1,720	0	24,681	312					26,713
	Fourbeard rockling	2,105	30	3,442	0					5,577
	Grubby	0	3,454	14,769	0					18,223
	Hake species	1	0	0	0					1
	Longhorn sculpin	0	40	413	0					453
	Northern pipefish	0	258	12,888	0	20,515				33,661
	Pollock	0	1	3	0					5
	Rainbow smelt	0	236	6,208	0					6,445
	Rock gunnel	0	23,151	108,203	0					131,354
	Windowpane	1	0	1	0					2
	Winter flounder	0	0	0	0		0	1	0	1
	Total	3,838	27,721	174,238	312	20,515	0	1	0	226,625
Unit 5	American plaice	3	0	1	0					4
	American sand lance	0	548	2,810	0					3,359
	Atlantic cod	1	0	16	0					17
	Atlantic herring	0	0	772	0					772
	Atlantic mackerel	4	0	0	0					4
	Atlantic menhaden	3	0	0						3
	Cunner	1,702	0	25,293	331					27,325
	Fourbeard rockling	1,888	30	3,539	0					5,458
	Grubby	0	3,760	16,079	0					19,839
	Hake species	1	0	0	0					1
	Longhorn sculpin	0	43	400	0					443
	Northern pipefish	0	270	12,969	0	21,951				35,190
	Pollock	0	1	3	0					5
	Rainbow smelt	0	226	5,475	0					5,702
	Rock gunnel	0	23,320	113,505	0					136,825
	Windowpane	1	0	1	0					2
	Winter flounder	0	0	0	0		0	1	0	1
	Total	3,604	28,199	180,862	331	21,951	0	1	0	234,949

(continued)

Table 5-6. (Continued)

	Common Name	Egg	YSL	PYSL	YOY	Yearling or older	WF Stage 2	WF Stage 3	WF Stage 4	Total
Unit 6	American plaice	3	0	1	0					4
	American sand lance	0	569	2,848	0					3,417
	Atlantic cod	1	0	17	0					18
	Atlantic herring	0	0	784	0					784
	Atlantic mackerel	4	0	0	0					4
	Atlantic menhaden	3	0	0						3
	Cunner	1,734	0	25,456	330					27,520
	Fourbeard rockling	2,052	31	3,564	0					5,646
	Grubby	0	3,466	14,439	0					17,905
	Hake species	1	0	0	0					1
	Longhorn sculpin	0	42	408	0					449
	Northern pipefish	0	275	13,154	0	22,764				36,194
	Pollock	0	1	3	0					5
	Rainbow smelt	0	230	6,007	0					6,238
	Rock gunnel	0	24,003	102,870	0					126,873
	Windowpane	1	0	1	0					2
	Winter flounder	0	0	0	0		0	1	0	1
	Total	3,800	28,618	169,552	330	22,764	0	1	0	225,065
Com- bined	American plaice	9	0	3	0					12
	American sand lance	0	1,667	8,552	0					10,218
	Atlantic cod	4	0	50	0					53
	Atlantic herring	0	0	2,275	0					2,275
	Atlantic mackerel	13	0	0	0					13
	Atlantic menhaden	8	0	0						8
	Cunner	5,156	0	75,430	973					81,558
	Fourbeard rockling	6,045	91	10,545	0					16,681
	Grubby	0	10,680	45,287	0					55,967
	Hake species	3	0	0	0					3
	Longhorn sculpin	0	125	1,220	0					1,345
	Northern pipefish	0	803	39,011	0	65,230				105,044
	Pollock	1	4	9	0					14
	Rainbow smelt	0	693	17,691	0					18,384
	Rock gunnel	0	70,475	324,578	0					395,053
	Windowpane	3	0	2	0					5
	Winter flounder	0	0	0	0		1	2	0	3
	Total	11,242	84,538	524,653	973	65,230	1	2	0	686,638

^a Adult equivalents include eggs classified as Atlantic cod, Atlantic cod/haddock, and Atlantic cod/haddock/witch flounder

^b Adult equivalents include eggs classified as cunner and cunner/yellowtail flounder

^c Adult equivalents include eggs classified as fourbeard rockling and fourbeard rockling/hake

Table 5-7. Annual total adult equivalent entrainment abundance (sorted by life stage) for three macrocrustacean taxa at Schiller Station based on historical operating flows averaged for the six-year period from 2002 through 2007. Abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

	Month	Crab life stages			Lobster life stages		Total
		Juvenile	Megalops	Zoea	Stage I	Stage II	
Unit 4	January	0	0	1	0	0	1
	February	130	0	1	0	0	131
	March	0	0	0	0	0	0
	April	0	0	0	0	0	0
	May	117	0	1,768	0	0	1,886
	June	562	0	8,207	0	7	8,777
	July	238	9,688	9,763	15	0	19,704
	August	4,782	3,659	1,619	0	0	10,061
	September	1,654	1,823	208	0	0	3,685
	October	1,203	1,268	166	0	0	2,637
	November	457	17	5	0	0	479
	December	0	14	5	0	0	18
	TOTAL	9,145	16,469	21,742	15	7	47,379
Unit 5	January	0	0	1	0	0	1
	February	119	0	0	0	0	120
	March	0	0	0	0	0	0
	April	0	0	0	0	0	0
	May	101	0	1,519	0	0	1,620
	June	567	0	8,284	0	7	8,859
	July	239	9,720	9,795	15	0	19,768
	August	4,952	3,789	1,677	0	0	10,419
	September	1,770	1,951	222	0	0	3,943
	October	1,359	1,433	187	0	0	2,979
	November	501	18	5	0	0	525
	December	0	14	5	0	0	19
	TOTAL	9,608	16,925	21,697	15	7	48,252
Unit 6	January	0	0	1	0	0	1
	February	134	0	1	0	0	134
	March	0	0	0	0	0	0
	April	0	0	0	0	0	0
	May	113	0	1,696	0	0	1,809
	June	570	0	8,318	0	7	8,895
	July	243	9,874	9,950	15	0	20,082
	August	4,952	3,789	1,677	0	0	10,419
	September	1,886	2,079	237	0	0	4,202
	October	1,374	1,449	189	0	0	3,013
	November	522	19	6	0	0	547
	December	0	14	5	0	0	19
	TOTAL	9,793	17,225	22,080	15	7	49,121
Combined	January	0	0	3	0	0	3
	February	384	0	1	0	0	385
	March	0	0	0	0	0	0
	April	0	0	1	0	0	1
	May	331	0	4,983	0	0	5,314
	June	1,699	0	24,810	0	22	26,531
	July	720	29,281	29,508	44	0	59,554
	August	14,687	11,238	4,973	0	0	30,899
	September	5,309	5,853	667	0	0	11,830
	October	3,936	4,150	543	0	0	8,628
	November	1,480	54	16	0	0	1,551
	December	0	42	14	0	0	56
	TOTAL	28,546	50,620	65,519	44	22	144,752

Table 5-8. Annual total adult equivalent entrainment abundance (sorted by taxon) for three macrocrustacean taxa at Schiller Station based on historical operating flows averaged for the six-year period from 2002 through 2007. Abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

	Common Name	Crab life stages			Lobster life stages		Total
		Juvenile	Megalops	Zoea	Stage I	Stage II	
Unit 4	American lobster				15	7	22
	<i>Cancer</i> sp. ^a	2,658	2,022	404			5,084
	Green crab	6,487	14,447	21,339			42,273
	All Taxa	9,145	16,469	21,742	15	7	47,379
Unit 5	American lobster				15	7	22
	<i>Cancer</i> sp. ^a	2,788	2,127	401			5,317
	Green crab	6,820	14,798	21,295			42,913
	All Taxa	9,608	16,925	21,697	15	7	48,252
Unit 6	American lobster				15	7	22
	<i>Cancer</i> sp. ^a	2,793	2,154	411			5,358
	Green crab	7,000	15,071	21,669			43,740
	All Taxa	9,793	17,225	22,080	15	7	49,121
Combined	American lobster				44	22	66
	<i>Cancer</i> sp. ^a	8,240	6,304	1,216			15,759
	Green crab	20,307	44,316	64,304			128,926
	All Taxa	28,546	50,620	65,519	44	22	144,752

^a Adult equivalents for megalops and juvenile stages include both Atlantic rock crab and Jonah crab. Zoea cannot be separated to species level.

Table 5-9. Monthly and annual total impingement abundance of fish (all taxa combined) at Schiller Station based on historical operating flows averaged for the six-year period from 2002 through 2007. Abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

Month	Unit 4			Unit 5			Unit 6			Combined		
	Raw	Impinged	Adj - I	Raw	Impinged	Adj - I	Raw	Impinged	Adj - I	Raw	Impinged	Adj - I
January	43	295	335	11	77	90	6	42	343	60	414	768
February	16	113	124	4	25	29	6	42	60	26	180	213
March	8	69	75	5	30	60	0	6	8	13	105	143
April	191	920	987	7	50	164	16	78	108	214	1,048	1,259
May	9	57	61	3	15	37	1	6	8	13	78	106
June	27	188	202	2	14	69	2	14	14	31	216	285
July	6	42	49	6	41	73	2	14	18	14	97	140
August	3	21	24	3	21	210	0	0	0	6	42	234
September	8	50	53	1	7	109	0	0	0	9	57	162
October	10	89	97	8	52	101	12	80	100	30	221	298
November	53	334	367	11	75	99	9	63	170	73	472	636
December	62	418	456	4	28	34	1	7	19	67	453	509
Total	436	2,596	2,830	65	435	1,075	55	352	848	556	3,383	4,753

Table 5-10. Monthly estimates of impingement abundance for each fish taxon at Schiller Station, corrected for screen collection efficiency (Adj-I), and based on historical operating flows averaged for the six-year period from 2002 through 2007. Abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

Common Name	Unit 4												Total	% of Total
	Jan Adj-I	Feb Adj-I	Mar Adj-I	Apr Adj-I	May Adj-I	Jun Adj-I	Jul Adj-I	Aug Adj-I	Sep Adj-I	Oct Adj-I	Nov Adj-I	Dec Adj-I		
Alewife	0	0	0	16	0	0	0	0	0	0	0	0	16	0.6
American sand lance	0	0	0	0	0	0	0	0	0	0	7	0	7	0.2
Atlantic cod	0	0	0	0	0	0	0	0	0	0	7	0	7	0.2
Atlantic herring	0	0	10	135	0	7	0	0	0	0	0	0	152	5.4
Atlantic menhaden	62	0	0	0	0	0	0	0	13	0	48	110	233	8.2
Atlantic silverside	0	0	0	47	0	0	0	0	0	0	27	15	89	3.1
Atlantic tomcod	0	0	0	0	0	23	8	0	7	0	0	7	45	1.6
Blueback herring	0	0	0	36	0	0	0	0	0	0	0	0	36	1.3
Bluegill	0	0	0	10	0	0	0	0	0	0	7	0	17	0.6
Cunner	8	0	10	62	0	90	25	8	13	7	7	0	230	8.1
Emerald shiner	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grubby	70	31	0	31	0	15	0	0	7	0	54	82	290	10.2
Herring family	0	0	0	0	0	0	0	0	0	0	0	7	7	0.2
Inland silverside	0	0	0	0	0	0	0	0	0	0	14	0	14	0.5
Lumpfish	0	0	3	108	27	0	0	0	0	13	1	0	152	5.4
Ninespine stickleback	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern pipefish	8	0	10	62	0	0	0	0	0	38	9	0	127	4.5
Pollock	0	0	0	5	0	15	0	0	0	0	0	0	20	0.7
Pumpkinseed	0	0	0	5	0	0	0	0	0	0	0	0	5	0.2
Rainbow smelt	79	0	16	10	7	0	0	0	0	0	116	205	433	15.3
Red hake	8	0	0	0	0	0	0	0	0	0	0	0	8	0.3
Rock gunnel	0	0	0	0	0	0	0	0	0	13	1	0	14	0.5
Sea raven	0	0	0	0	7	0	0	0	0	0	7	0	14	0.5
Shorthorn sculpin	0	0	0	0	0	7	0	0	0	0	0	0	7	0.2
Silver hake	0	0	0	0	0	0	0	0	0	0	7	0	7	0.2
Skate family	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped bass	0	0	0	0	0	0	0	0	0	13	0	0	13	0.5
Tautog	0	0	0	0	0	0	0	0	0	0	7	0	7	0.2
Threespine stickleback	8	0	10	16	0	0	0	0	0	0	0	0	34	1.2
Unidentifiable	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White hake	46	23	10	300	0	15	8	0	0	0	27	22	451	15.9
White perch	15	0	0	51	13	15	0	0	0	0	14	8	116	4.1
Windowpane	0	16	0	31	0	0	0	0	0	0	7	0	54	1.9
Winter flounder	31	54	6	62	7	15	8	16	13	13	0	0	225	8
All Taxa	335	124	75	987	61	202	49	24	53	97	367	456	2,830	100

(continued)

Table 5-10. (Continued)

Common Name	Unit 5												Total	% of Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I	Adj-I		
Alewife	0	0	0	0	0	0	0	0	0	0	0	0	0	0
American sand lance	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Atlantic cod	0	0	0	0	0	0	0	0	0	0	9	0	9	0.8
Atlantic herring	0	0	0	13	0	0	0	0	0	0	0	0	13	1.2
Atlantic menhaden	24	0	0	0	0	0	0	0	0	0	18	0	42	3.9
Atlantic silverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Atlantic tomcod	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Blueback herring	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bluegill	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cunner	0	0	0	0	0	34	65	140	0	25	0	0	264	24.6
Emerald shiner	0	0	0	38	0	0	0	0	0	0	0	0	38	3.5
Grubby	25	7	12	13	12	0	0	0	0	0	9	17	95	8.8
Herring family	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Inland silverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lumpfish	0	0	0	63	12	0	0	0	0	0	9	0	84	7.8
Ninespine stickleback	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern pipefish	0	0	0	37	0	0	0	0	109	50	0	0	196	18.2
Pollock	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pumpkinseed	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rainbow smelt	8	0	0	0	0	0	0	0	0	13	45	9	75	7
Red hake	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock gunnel	0	0	0	0	13	0	0	0	0	0	0	0	13	1.2
Sea raven	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shorthorn sculpin	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Silver hake	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Skate family	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Striped bass	0	0	0	0	0	0	8	0	0	0	0	0	8	0.7
Tautog	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Threespine stickleback	0	7	0	0	0	0	0	0	0	0	0	0	7	0.7
Unidentifiable	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White hake	0	0	0	0	0	35	0	0	0	13	0	0	48	4.5
White perch	17	0	12	0	0	0	0	0	0	0	0	0	29	2.7
Windowpane	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Winter flounder	16	15	36	0	0	0	0	70	0	0	9	8	154	14.3
All Taxa	90	29	60	164	37	69	73	210	109	101	99	34	1,075	100

(continued)

Table 5-10. (Continued)

Common Name	Unit 6												Total	% of Total
	Jan Adj-I	Feb Adj-I	Mar Adj-I	Apr Adj-I	May Adj-I	Jun Adj-I	Jul Adj-I	Aug Adj-I	Sep Adj-I	Oct Adj-I	Nov Adj-I	Dec Adj-I		
Alewife	0	0	0	0	0	0	0	0	0	0	0	0	0	0
American sand lance	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Atlantic cod	0	0	0	0	0	0	0	0	0	0	19	0	19	2.2
Atlantic herring	0	0	0	33	0	0	0	0	0	0	0	0	33	3.9
Atlantic menhaden	0	0	0	0	0	0	0	0	0	0	19	0	19	2.2
Atlantic silverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Atlantic tomcod	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Blueback herring	0	0	0	7	0	0	0	0	0	0	0	0	7	0.8
Bluegill	0	0	0	0	0	0	0	0	0	0	37	0	37	4.4
Cunner	0	0	0	40	0	7	10	0	0	17	0	0	74	8.7
Emerald shiner	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grubby	0	20	0	0	0	0	0	0	0	0	0	19	39	4.6
Herring family	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Inland silverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lumpfish	0	0	0	7	8	0	0	0	0	0	19	0	34	4
Ninespine stickleback	139	0	0	0	0	0	0	0	0	0	0	0	139	16.4
Northern pipefish	140	0	0	0	0	0	0	0	0	75	19	0	234	27.6
Pollock	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pumpkinseed	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rainbow smelt	16	0	0	0	0	7	0	0	0	0	19	0	42	5
Red hake	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock gunnel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sea raven	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shorthorn sculpin	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Silver hake	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Skate family	16	0	0	0	0	0	0	0	0	0	0	0	16	1.9
Striped bass	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tautog	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Threespine stickleback	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unidentifiable	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White hake	0	0	0	13	0	0	0	0	0	0	19	0	32	3.8
White perch	0	0	0	7	0	0	0	0	0	0	0	0	7	0.8
Windowpane	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Winter flounder	32	40	8	1	0	0	8	0	0	8	19	0	116	13.7
All Taxa	343	60	8	108	8	14	18	0	0	100	170	19	848	100

(continued)

Table 5-10. (Continued)

Common Name	Combined													% of Total
	Jan Adj-I	Feb Adj-I	Mar Adj-I	Apr Adj-I	May Adj-I	Jun Adj-I	Jul Adj-I	Aug Adj-I	Sep Adj-I	Oct Adj-I	Nov Adj-I	Dec Adj-I	Total Adj-I	
Alewife	0	0	0	16	0	0	0	0	0	0	0	0	16	0.3
American sand lance	0	0	0	0	0	0	0	0	0	0	7	0	7	0.1
Atlantic cod	0	0	0	0	0	0	0	0	0	0	35	0	35	0.7
Atlantic herring	0	0	10	181	0	7	0	0	0	0	0	0	198	4.2
Atlantic menhaden	86	0	0	0	0	0	0	0	13	0	85	110	294	6.2
Atlantic silverside	0	0	0	47	0	0	0	0	0	0	27	15	89	1.9
Atlantic tomcod	0	0	0	0	0	23	8	0	7	0	0	7	45	0.9
Blueback herring	0	0	0	43	0	0	0	0	0	0	0	0	43	0.9
Bluegill	0	0	0	10	0	0	0	0	0	0	44	0	54	1.1
Cunner	8	0	10	102	0	131	100	148	13	49	7	0	568	12
Emerald shiner	0	0	0	38	0	0	0	0	0	0	0	0	38	0.8
Grubby	95	58	12	44	12	15	0	0	7	0	63	118	424	8.9
Herring family	0	0	0	0	0	0	0	0	0	0	0	7	7	0.1
Inland silverside	0	0	0	0	0	0	0	0	0	0	14	0	14	0.3
Lumpfish	0	0	3	178	47	0	0	0	0	13	29	0	270	5.7
Ninespine stickleback	139	0	0	0	0	0	0	0	0	0	0	0	139	2.9
Northern pipefish	148	0	10	99	0	0	0	0	109	163	28	0	557	11.7
Pollock	0	0	0	5	0	15	0	0	0	0	0	0	20	0.4
Pumpkinseed	0	0	0	5	0	0	0	0	0	0	0	0	5	0.1
Rainbow smelt	103	0	16	10	7	7	0	0	0	13	180	214	550	11.6
Red hake	8	0	0	0	0	0	0	0	0	0	0	0	8	0.2
Rock gunnel	0	0	0	0	13	0	0	0	0	13	1	0	27	0.6
Sea raven	0	0	0	0	7	0	0	0	0	0	7	0	14	0.3
Shorthorn sculpin	0	0	0	0	0	7	0	0	0	0	0	0	7	0.1
Silver hake	0	0	0	0	0	0	0	0	0	0	7	0	7	0.1
Skate family	16	0	0	0	0	0	0	0	0	0	0	0	16	0.3
Striped bass	0	0	0	0	0	0	8	0	0	13	0	0	21	0.4
Tautog	0	0	0	0	0	0	0	0	0	0	7	0	7	0.1
Threespine stickleback	8	7	10	16	0	0	0	0	0	0	0	0	41	0.9
Unidentifiable	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White hake	46	23	10	313	0	50	8	0	0	13	46	22	531	11.2
White perch	32	0	12	58	13	15	0	0	0	0	14	8	152	3.2
Windowpane	0	16	0	31	0	0	0	0	0	0	7	0	54	1.1
Winter flounder	79	109	50	63	7	15	16	86	13	21	28	8	495	10.4
All Taxa	768	213	143	1,259	106	285	140	234	162	298	636	509	4,753	100

Table 5-11. Monthly raw sampling count (Raw) and estimated total historical impingement abundance (I) of macrocrustaceans at Schiller Station based on historical operating flows averaged for the six-year period from 2002 through 2007. Abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

Month	Unit 4		Unit 5		Unit 6		Combined	
	Raw Count	Abundance (I)	Raw Count	Abundance (I)	Raw Count	Abundance (I)	Raw Count	Abundance (I)
January	123	842	7	49	2	14	132	905
February	24	170	1	6	2	14	27	190
March	11	115	3	18	0	0	14	133
April	271	1,301	23	166	17	83	311	1,550
May	163	1,047	35	187	25	151	223	1,385
June	174	1,210	25	180	20	143	219	1,533
July	82	573	25	172	25	174	132	919
August	68	476	16	113	17	121	101	710
September	46	289	14	109	13	91	73	489
October	37	324	31	204	13	88	81	616
November	173	1,096	34	227	28	194	235	1,517
December	211	1,428	21	145	13	91	245	1,664
Total	1,383	8,871	235	1,576	175	1,164	1,793	11,611

Table 5-12. Monthly estimates of impingement abundance (I) for each macrocrustacean taxon at Schiller Station based on historical operating flows for the six year period from 2002 through 2007. Abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

Unit 4														
Common Name	Jan I	Feb I	Mar I	Apr I	May I	Jun I	Jul I	Aug I	Sep I	Oct I	Nov I	Dec I	Total I	% of Total
American lobster	0	0	0	0	6	41	70	112	50	6	0	0	285	3.2
Atlantic rock crab	212	114	56	230	302	361	119	63	76	142	318	413	2,406	27.1
<i>Cancer</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Green crab	630	42	59	1,066	720	780	384	301	163	164	777	1,015	6,101	68.8
Horseshoe crab	0	0	0	5	19	28	0	0	0	0	0	0	52	0.6
Jonah crab	0	14	0	0	0	0	0	0	0	12	1	0	27	0.3
All Taxa	842	170	115	1,301	1,047	1,210	573	476	289	324	1,096	1,428	8,871	100

Unit 5														
Common Name	Jan I	Feb I	Mar I	Apr I	May I	Jun I	Jul I	Aug I	Sep I	Oct I	Nov I	Dec I	Total I	% of Total
American lobster	0	0	0	0	5	0	0	0	0	0	0	0	5	0.3
Atlantic rock crab	42	0	12	25	48	34	21	28	16	13	87	69	395	25.1
<i>Cancer</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Green crab	7	6	6	141	129	146	151	85	93	191	140	76	1,171	74.3
Horseshoe crab	0	0	0	0	5	0	0	0	0	0	0	0	5	0.3
Jonah crab	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All Taxa	49	6	18	166	187	180	172	113	109	204	227	145	1,576	100

Unit 6														
Common Name	Jan I	Feb I	Mar I	Apr I	May I	Jun I	Jul I	Aug I	Sep I	Oct I	Nov I	Dec I	Total I	% of Total
American lobster	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Atlantic rock crab	7	14	0	5	24	7	35	28	49	34	76	35	314	27
<i>Cancer</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Green crab	7	0	0	78	127	129	139	93	42	47	118	56	836	71.8
Horseshoe crab	0	0	0	0	0	7	0	0	0	0	0	0	7	0.6
Jonah crab	0	0	0	0	0	0	0	0	0	7	0	0	7	0.6
All Taxa	14	14	0	83	151	143	174	121	91	88	194	91	1,164	100

(continued)

Table 5-12. (Continued)

Common Name	All Units Combined												Total I	% of Total
	Jan I	Feb I	Mar I	Apr I	May I	Jun I	Jul I	Aug I	Sep I	Oct I	Nov I	Dec I		
American lobster	0	0	0	0	11	41	70	112	50	6	0	0	290	2.5
Atlantic rock crab	261	128	68	260	374	402	175	119	141	189	481	517	3,115	26.8
<i>Cancer</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Green crab	644	48	65	1,285	976	1,055	674	479	298	402	1,035	1,147	8,108	69.8
Horseshoe crab	0	0	0	5	24	35	0	0	0	0	0	0	64	0.6
Jonah crab	0	14	0	0	0	0	0	0	0	19	1	0	34	0.3
All Taxa	905	190	133	1,550	1,385	1,533	919	710	489	616	1,517	1,664	11,611	100

Table 5-13. Monthly and annual adult equivalent impingement abundance (AE) for 14 fish taxa at Schiller Station based historical operating flows averaged over the six year period from 2002 through 2007. Adult equivalent abundance is presented separately for Units 4, 5 and 6 and for all three Units combined.

Unit	Common Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Unit 4	Atlantic cod	0	0	0	0	0	0	0	0	0	0	6	0	6
	Atlantic herring	0	0	0	4	0	0	0	0	0	0	0	0	5
	Atlantic menhaden	0	0	0	0	0	0	0	0	0	0	0	1	1
	Cunner	5	0	6	35	0	28	9	5	8	4	4	0	103
	Grubby	70	32	0	31	0	15	0	0	7	0	54	83	292
	Lumpfish	0	0	0	20	6	0	0	0	0	1	0	0	27
	Northern pipefish	5	0	10	62	0	0	0	0	0	38	9	0	124
	Pollock	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rainbow smelt	25	0	4	4	1	0	0	0	0	0	23	64	121
	Silver hake	0	0	0	0	0	0	0	0	0	0	0	0	0
	White hake	0	0	0	3	0	0	0	0	0	0	5	5	14
	White perch	5	0	0	15	10	14	0	0	0	0	7	3	54
	Windowpane	0	1	0	1	0	0	0	0	0	0	0	0	2
	Winter flounder	0	0	0	0	0	0	8	0	0	0	0	0	8
	All Taxa	110	33	21	175	17	57	17	5	15	44	109	156	758
Unit 5	Atlantic cod	0	0	0	0	0	0	0	0	0	0	7	0	7
	Atlantic herring	0	0	0	0	0	0	0	0	0	0	0	0	0
	Atlantic menhaden	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cunner	0	0	0	0	0	34	56	85	0	8	0	0	183
	Grubby	24	4	12	13	12	0	0	0	0	0	9	17	91
	Lumpfish	0	0	0	10	3	0	0	0	0	0	2	0	14
	Northern pipefish	0	0	0	37	0	0	0	0	109	50	0	0	196
	Pollock	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rainbow smelt	2	0	0	0	0	0	0	0	0	3	9	5	19
	Silver hake	0	0	0	0	0	0	0	0	0	0	0	0	0
	White hake	0	0	0	0	0	0	0	0	0	0	0	0	0
	White perch	2	0	4	0	0	0	0	0	0	0	0	0	6
	Windowpane	0	0	0	0	0	0	0	0	0	0	0	0	0
	Winter flounder	0	0	0	0	0	0	0	0	0	0	0	0	0
	All Taxa	28	4	16	60	15	34	56	85	109	61	28	22	518

(continued)

Table 5-13. (Continued)

Unit	Common Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Unit 6	Atlantic cod	0	0	0	0	0	0	0	0	0	0	15	0	15
	Atlantic herring	0	0	0	1	0	0	0	0	0	0	0	0	1
	Atlantic menhaden	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cunner	0	0	0	20	0	7	10	0	0	16	0	0	53
	Grubby	0	20	0	0	0	0	0	0	0	0	0	19	39
	Lumpfish	0	0	0	1	2	0	0	0	0	0	4	0	7
	Northern pipefish	140	0	0	0	0	0	0	0	0	72	19	0	231
	Pollock	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rainbow smelt	3	0	0	0	0	1	0	0	0	0	4	0	9
	Silver hake	0	0	0	0	0	0	0	0	0	0	0	0	0
	White hake	0	0	0	0	0	0	0	0	0	0	0	0	0
	White perch	0	0	0	3	0	0	0	0	0	0	0	0	3
	Windowpane	0	0	0	0	0	0	0	0	0	0	0	0	0
	Winter flounder	0	0	0	0	0	0	0	0	0	0	0	0	0
	All Taxa	143	20	0	24	2	8	10	0	0	88	43	19	357
All Units Combined	Atlantic cod	0	0	0	0	0	0	0	0	0	0	28	0	28
	Atlantic herring	0	0	0	6	0	0	0	0	0	0	0	0	7
	Atlantic menhaden	0	0	0	0	0	0	0	0	0	0	0	1	2
	Cunner	5	0	6	55	0	69	75	90	8	29	4	0	339
	Grubby	94	56	12	44	12	15	0	0	7	0	63	119	422
	Lumpfish	0	0	0	30	10	0	0	0	0	1	6	0	48
	Northern pipefish	145	0	10	99	0	0	0	0	109	160	28	0	550
	Pollock	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rainbow smelt	30	0	4	4	1	1	0	0	0	3	36	69	148
	Silver hake	0	0	0	0	0	0	0	0	0	0	0	0	0
	White hake	0	0	0	3	0	0	0	0	0	0	5	5	15
	White perch	8	0	4	17	10	14	0	0	0	0	7	3	63
	Windowpane	0	1	0	1	0	0	0	0	0	0	0	0	2
	Winter flounder	0	0	0	0	0	0	8	0	0	0	0	0	8
	All Taxa	281	57	37	259	33	100	83	90	124	193	179	197	1,633

6.0 SOURCE WATER BODY AND YEAR TO YEAR SEASONAL VARIATION

Attachment B of the 308 Letter for Schiller Station made the following three requests (shown in quotes) for impingement and entrainment data analysis:

1. "An estimate of the percentage of eggs and larvae lost to entrainment compared to the density of eggs and larvae in the Piscataqua River for each week of sampling."
2. "A justification that collection of one year of entrainment data reflects an appropriate characterization of overall entrainment at Schiller Station CWIS, including seasonal and year-to-year variation."
3. "A justification that collection of one year of impingement data reflects an appropriated characterization of overall impingement at the Schiller Station CWIS, including seasonal and year-to-year variation in impingement."

Section 6.0 of this report will address these three requests based on reasonably available data for the Schiller Station CWIS.

6.1 Comparison of Entrainment and Source Water Body Densities

PSNH proposed no source water body sampling for ichthyoplankton and macrocrustacean larvae that was concurrent with the entrainment sampling completed from August 2006 through September 2007 as described in the Schiller Station PIC (Normandeau 2006a). Accordingly, there are no temporally matched *in situ* sampling data that will allow the direct calculation of the percentage of eggs and larvae lost to entrainment compared to the density of eggs and larvae in the Piscataqua River for each week of sampling as requested in the 308 Letter. However the percentage of eggs and larvae withdrawn into Schiller Station in the CWIS flow can be estimated volumetrically based on the assumption (fundamental to the Phase II Regulations) that entrainment abundance is directly proportional to CWIS flow.

Nontidal circulation or flushing rates for the lower Piscataqua River in the vicinity of the Schiller Station CWIS have been estimated using several different analytical techniques (Normandeau 1979). Mean annual freshwater discharge was determined to be 1,570 cubic feet per second (i.e., "cfs"), and the minimum freshwater flow was 75 cfs (Normandeau 1979). Peak tidal discharge was calculated from a hydrodynamic model as 117,000 cfs (Normandeau 1979). The results of a dye study conducted during the summer when freshwater discharge was 110 cfs and near the minimum flow demonstrated that the water renewal rate was 9,100 cfs (Normandeau 1979).

Since the design intake flow for Schiller Station based on all six circulating water pumps associated with Units 4, 5, and 6, operating at their combined maximum flow rate of 86,200 gpm is 192.0 cfs, the maximum CWIS flow rate for Schiller Station is insignificant (0.2%) when compared to the peak tidal flow occurring twice per day, and is only 2.1% of the estimated renewal rate for source water body flow (Normandeau 1979). Therefore, 0.2% of the source water body population of ichthyoplankton (all life stages) and macrocrustacean larvae is estimated to be withdrawn into Schiller Station under baseline (maximum) intake flows compared to peak tidal flows, and about 2.1% of the source water body population is estimated to be withdrawn into Schiller Station under baseline intake flows compared to the twice daily water renewal rate. For the historical annual average CWIS flow for Schiller Station of 178.6 cfs during the period 2002 through 2007 (Table 2-8),

just 0.2% of the source water body population ichthyoplankton (all life stages) and macrocrustacean larvae is estimated to be withdrawn into Schiller Station under historical actual intake flows compared to peak tidal flows, and about 2.0% of the source water body population is estimated to be withdrawn into Schiller Station annually under historical (2002-2007) actual intake flows compared to the water renewal rate.

The results of entrainment survival studies conducted at Schiller Station during August 2006 through September 2007 demonstrate that the percentages of ichthyoplankton (all life stages) and macrocrustacean larvae estimated to be withdrawn into Schiller Station under baseline (maximum) or historical (2002-2007) actual intake flows are not all lost due to mechanical mortality at the CWIS. An overall average 34.9% of the ichthyoplankton (all life stages) and 77.4% of the macrocrustacean larvae were estimated to survive entrainment at Schiller Station (Table 3-17 and Table 3-20, respectively). Applying these overall survival percentages to ichthyoplankton and macrocrustacean baseline withdrawal rates for peak tidal flows, the resulting calculations demonstrate that just 0.11% of the ichthyoplankton and just 0.04% of the macrocrustacean larvae found in the source water body at peak tidal flows are estimated to be lost due to entrainment at Schiller Station. Applying these overall survival percentages to ichthyoplankton and macrocrustacean baseline withdrawal rates for the tidal renewal flow, the resulting calculations demonstrate that just 1.37% of the ichthyoplankton and just 0.48% of the macrocrustacean larvae found in the source water body at renewal flow rates are estimated to be lost due to entrainment at Schiller Station. Similarly, for historical actual CWIS flows, the resulting calculations demonstrate that just 0.10% of the ichthyoplankton and just 0.03% of the macrocrustacean larvae found in the source water body at peak tidal flows are estimated to be lost due to entrainment at Schiller Station. The resulting calculations for historical actual CWIS flows also demonstrate that just 1.28% of the ichthyoplankton and just 0.44% of the macrocrustacean larvae found in the source water body at renewal flow rates are estimated to be lost due to entrainment at Schiller Station.

Adult equivalent entrainment abundance was calculated for 17 fish taxa which comprised 99.0 % of the raw entrainment for fish at Schiller Station during the 52 week sampling year from 2 October 2006 through 30 September 2007. An overall average 44.2% of the ichthyoplankton adult equivalents and 78.8% of the macrocrustacean adult equivalents were estimated to survive entrainment at Schiller Station (Table 3-18 and Table 3-21, respectively). Applying the overall survival percentages to the ichthyoplankton and macrocrustacean adult equivalent baseline withdrawal rates for peak tidal flows, the resulting calculations demonstrate that just 0.09% of the ichthyoplankton adult equivalents and just 0.03% of the macrocrustacean adult equivalents found in the source water body at peak tidal flows are estimated to be lost due to entrainment at Schiller Station. Applying these overall survival percentages to ichthyoplankton and macrocrustacean adult equivalent baseline withdrawal rates for the tidal renewal flow, the resulting calculations demonstrate that just 1.18% of the ichthyoplankton adult equivalents and just 0.45% of the macrocrustacean adult equivalents found in the source water body at renewal flow rates are estimated to be lost due to entrainment at Schiller Station. Similarly, for historical actual CWIS flows, the resulting calculations demonstrate that just 0.09% of the ichthyoplankton and just 0.03% of the macrocrustacean adult equivalents found in the source water body at peak tidal flows are estimated to be lost due to entrainment at Schiller Station. The resulting calculations for historical actual CWIS flows also demonstrate that just 1.09% of the ichthyoplankton adult equivalents and just 0.42% of the macrocrustacean adult equivalents found in the source water body at renewal flow rates are estimated to be lost due to entrainment at Schiller Station.

6.2 Comparison of Year to Year Seasonal Variation in Entrainment Densities

Entrainment sampling conducted biweekly during the five consecutive weeks from 31 August through 28 September 2006 offered the opportunity to compare year to year variation in the timing, magnitude and composition of ichthyoplankton and macrocrustacean larvae densities with entrainment sampling performed during the corresponding five week period from 30 August through 27 September 2007 at Schiller Station. Entrainment density for all life stages of ichthyoplankton exhibited a seasonal peak during mid August of 2006 which declined during the latter part of the month (Figure 3-2). During the corresponding five week periods in 2006 and 2007, sampled entrainment densities (all taxa and life stages pooled) were highest during week 35 and lowest during week 39, reflecting consistency in seasonal timing from year to year in the appearance of ichthyoplankton life stages susceptible to entrainment (Figure 3-2; Table 6-1). The weeks of 28 August 2006 (Week 35) and 25 September 2006 (Week 39) exhibited ichthyoplankton entrainment densities of 10 per cubic meter (m^3) and $0/\text{m}^3$, respectively (Table 6-1). The weeks of 27 August 2007 (Week 35) and 24 September 2007 (Week 39) exhibited ichthyoplankton entrainment densities of 39 per cubic meter (m^3) and $2/\text{m}^3$, respectively (Table 6-1). Mean densities of fish eggs entrained during the corresponding five-week time periods peaked during week 35 in both years and were 6 eggs per 100 m^3 on 28 August 2006 and 5 eggs per 100 m^3 on 27 August 2007. Unidentified hakes (*Urophycis* sp.) accounted for the majority (>49% during 2006) of entrained eggs among four total ichthyoplankton taxa with eggs present during 2007 (Table 6-1). Cunner accounted for the majority (>71% during 2007) of entrained eggs among four total ichthyoplankton taxa with eggs present during 2006 (Table 6-1). Mean densities of post yolk sac larvae entrained during the corresponding 5-week time periods peaked during week 35 in both years and were 2 PYSL per 100 m^3 on 28 August 2006 and 30 PYSL per 100 m^3 on 27 August 2007 (Table 6-1). Cunner also accounted for the majority (>90%) of entrained post yolk sac larvae on both of those sample dates among two total ichthyoplankton taxa with PYSL present during 2006 and three total ichthyoplankton taxa with PYSL present during 2007 (Table 6-1).

Macrocrustacean larval density peaked during late-August and declined through September in both 2006 and 2007 reflecting consistency in seasonal timing from year to year in the appearance of macrocrustacean larval life stages susceptible to entrainment (Figure 3-4). The peak macrocrustacean entrainment density during the week of 28 August 2006 (Week 35) was 1,351 macrocrustaceans per 100 m^3 (all life stages pooled), comprised predominantly by crab zoea (Figure 3-5; Table 6-1). The peak entrainment density during the week of 27 August 2007 (Week 35) was 1,033 macrocrustaceans (all life stages pooled) per 100 m^3 , again comprised predominantly of crab zoea (Figure 3-5; Table 6-1). Green crab (2006) and the two *Cancer* taxa (2007) accounted for the majority of the zoea present in entrainment samples (Table 6-1).

These comparisons provide justification that collection and analysis of one year of entrainment data during the 52 week sampling year from 2 October 2006 through 30 September 2007 reflects an appropriate characterization of overall ichthyoplankton and macrocrustacean entrainment at Schiller Station CWIS, including seasonal and year-to-year variation, as requested in the 308 Letter.

6.3 Comparison of Year to Year Seasonal Variation in Impingement Densities

Impingement sampling conducted during the five consecutive weeks from 31 August through 28 September 2006 offered the opportunity to compare year to year variation in the timing, magnitude and composition of fish and macrocrustacean densities with sampling performed during the

corresponding five week period from 30 August through 27 September 2007 at Schiller Station. The density of impinged fish (all taxa combined) at Schiller Station (Units 4, 5, and 6 combined) was seasonally low during the five consecutive weeks of impingement sampling in August and September 2006, with impingement rates over these five weeks varying from a low of 0.074 fish per million gallons (mg) of CWIS flow to a high of 0.171 fish per mg (Figure 4-1; Table 6-2). The density of impinged fish (all taxa combined) at Schiller Station (Units 4, 5, and 6 combined) was similarly seasonally low during the comparable five consecutive weeks of impingement sampling in August and September 2007, with impingement rates over these five weeks varying from a low of 0.024 fish per mg of CWIS flow to a high of 0.102 fish per mg (Figure 4-1; Table 6-2), reflecting consistency in seasonal timing from year to year in the magnitude of fish impingement rates. During the five weeks of impingement sampling in August and September 2006, six fish taxa were present in the impingement samples at Schiller Station (Units 4, 5, and 6 combined). Cunner (0.073 fish/million gallons), winter flounder (0.029 fish/million gallons), and grubby (0.010 fish/million gallons) were the three taxa impinged that exhibited the highest densities at Schiller Station Units 4, 5, and 6 combined during the five week period of impingement sampling in August and September 2006 as evidenced by mean weekly density for that time period (Table 6-2). During the comparable five weeks of impingement sampling in August and September 2007, six fish taxa were present in the impingement samples at Schiller Station (Units 4, 5, 6 combined). Cunner (0.015 fish/million gallons), winter flounder (0.010 fish/million gallons), and Atlantic menhaden (0.010 fish/million gallons) were the three taxa impinged that exhibited the highest densities at Schiller Station Units 4, 5, and 6 combined during the five week period of impingement sampling in August and September 2007 as evidenced by mean weekly density for that time period (Table 6-2).

Unit 4 exhibited higher fish impingement densities than Unit 5 or Unit 6 at Schiller Station during the period 31 August 2006 through 27 September 2007, (Figure 4-2). The overall seasonal pattern of fish impingement density, including that observed during the five consecutive weeks of comparable sampling from August and September of 2006 and 2007 at Schiller Station for Units 4, 5, and 6 combined (Figure 4-1) followed the pattern at Unit 4 in both duration and magnitude (Figure 4-2). The mean weekly fish impingement densities observed at Unit 4 were higher than that for Units 5 and 6 during the August and September sampling of 2006 and 2007 (Table 6-2). The density of impinged fish (all taxa combined) at Units 4, 5, and 6 of Schiller Station was seasonally low during the five consecutive weeks of impingement sampling in August and September 2006, with mean weekly impingement rates over these five weeks ranging from a values of 0.098 fish per mg at Unit 4, 0.019 fish per mg at Unit 6, and 0.010 fish per mg at Unit 5 (Table 6-2). The density of impinged fish (all taxa combined) at Units 4, 5, and 6 of Schiller Station was similarly seasonally low during the comparable five consecutive weeks of impingement sampling in August and September 2007, with mean weekly impingement rates over these five weeks ranging from a values of 0.045 fish per mg at Unit 4, 0.005 fish per mg at Unit 5, and 0.0 fish per mg at Unit 6 (Table 6-2). During the five weeks of impingement sampling in August and September 2006, six fish taxa were present in the impingement samples at Unit 4, two fish taxa were present at Unit 5 and one fish taxon was present at Unit 6 of Schiller Station. Cunner was the taxon exhibiting the highest density of fish impinged at Units 4 (0.049 fish/mg), 5 (0.010 fish/mg), and 6 (0.014 fish/mg) during the five week period of impingement sampling in August and September 2006 as evidenced by mean weekly density for that time period (Table 6-2). During the comparable five weeks of impingement sampling in August and September 2007, five fish taxa were present in the impingement samples at Unit 4, one fish taxon was present at Unit 5, and zero fish taxon were present at Unit 6 of Schiller Station. Cunner was the taxon

exhibiting the highest density of fish impinged at Unit 4 (0.015 fish/mg) while Northern pipefish exhibited the highest density of fish at Unit 5 (0.005 fish/mg) during the five week period of impingement sampling in August and September 2007 as evidenced by mean weekly density for that time period (Table 6-2).

Macrocrustacean impingement density during the five consecutive weeks of impingement sampling from 31 August through 28 September 2006 was seasonally low, with impingement rates over these six weeks varying from a low of 0.398 macrocrustaceans per mg of CWIS flow to a high of 1.053 macrocrustaceans per mg (Figure 4-2; Table 6-2). This seasonal period during August and September of 2006 comprised primarily green crab and Atlantic rock crab impingement, with weekly mean taxon densities of 0.298 green crabs/million gallons and 0.297 rock crabs/million gallons (Table 6-2).

Macrocrustacean impingement density during the comparable five consecutive weeks of impingement sampling from 30 August through 27 September 2007 was also seasonally low, with impingement rates over these five weeks varying from a low of 0.328 macrocrustaceans per mg of CWIS flow to a high of 0.681 macrocrustaceans per mg (Figure 4-3; Table 6-2), reflecting consistency in seasonal timing from year to year in the magnitude of macrocrustacean impingement rates. This seasonal period of August and September 2007 comprised green crab and Atlantic rock crab impingement, with weekly mean taxon densities of 0.310 green crabs/million gallons and 0.115 rock crabs/million gallons (Table 6-2). Four macrocrustacean taxa were observed during the five weeks of impingement sampling in August and September 2006 at Schiller Station (Units 4, 5, and 6 combined): American lobster, Atlantic rock crab, green crab, and Jonah crab. Three macrocrustacean taxa were observed during the five weeks of impingement sampling in August and September 2007 at Schiller Station (Units 4, 5, and 6 combined): American lobster, Atlantic rock crab, and green crab.

Unit 4 exhibited higher macrocrustacean impingement densities than Unit 5 or Unit 6 at Schiller Station during the period 31 August 2006 through 27 September 2007 (Figure 4-4). The overall seasonal pattern of macrocrustacean impingement density, including that observed during the five consecutive weeks of comparable sampling from August and September of 2006 and 2007 at Schiller Station for Units 4, 5, and 6 combined (Figure 4-3) followed the pattern at Unit 4 in both duration and magnitude (Figure 4-4). The mean weekly macrocrustacean impingement densities observed at Unit 4 were higher than those for Units 5 and 6 during the August and September sampling of 2006 and 2007 (Table 6-2). The density of impinged macrocrustaceans (all taxa combined) at Units 4, 5, and 6 of Schiller Station was seasonally low during the five consecutive weeks of impingement sampling in August and September 2006, with mean weekly impingement rates over these five weeks ranging from a value of 0.523 macrocrustaceans per mg at Unit 4, 0.077 macrocrustaceans per mg at Unit 6, and 0.040 macrocrustaceans per mg at Unit 5 (Table 6-2). The density of impinged macrocrustaceans (all taxa combined) at Units 4, 5, and 6 of Schiller Station was similarly seasonally low during the comparable five consecutive weeks of impingement sampling in August and September 2007, with mean weekly impingement rates over these five weeks ranging from a value of 0.307 macrocrustaceans per mg at Unit 4, 0.098 macrocrustaceans per mg at Unit 6, and 0.090 macrocrustaceans per mg at Unit 5 (Table 6-2). During the five weeks of impingement sampling in August and September 2006, four macrocrustacean taxa were present in the impingement samples at Unit 4, two macrocrustacean taxa were present at Unit 5 and one macrocrustacean taxon was present at Unit 6 of Schiller Station. Green crab exhibited the highest density of macrocrustaceans at Unit 5 (0.033 macrocrustaceans/mg) and Unit 6 (0.048 macrocrustaceans/mg) while Atlantic rock crab exhibited the highest density of macrocrustaceans impinged at Unit 4 (0.262 macrocrustaceans/mg) during the five week period of impingement sampling in August and September 2006 as evidenced by

mean weekly density for that time period (Table 6-2). During the comparable five weeks of impingement sampling in August and September 2007, three macrocrustacean taxa were present in the impingement samples at Unit 4, two macrocrustacean taxa were present at Unit 5, and two macrocrustacean taxa were present at Unit 6 of Schiller Station. Green crab exhibited the highest density of macrocrustaceans impinged at Unit 4 (0.168 macrocrustaceans/mg), Unit 5 (0.078 macrocrustaceans/mg), and Unit 6 (0.064 macrocrustaceans/mg) during the five week period of impingement sampling in August and September 2007 as evidenced by mean weekly density for that time period (Table 6-2).

These comparisons provide justification that collection of one year of impingement data during the 52 week sampling year from 2 October 2006 through 30 September 2007 reflects an appropriate characterization of overall fish and macrocrustacean impingement at Schiller Station CWIS, including seasonal and year-to-year variation, as requested in the 308 Letter.

Table 6-1. Weekly density (#/100m³) of ichthyoplankton and macrocrustacean larvae entrained at Screen House #2 of Schiller Station during weeks 35 through 39 of 2006 and 2007.

	Common Name	Life stage	2006					2007				
			August	September				August	September			
			Week 35	Week 36*	Week 37	Week 38*	Week 39	Week 35	Week 36*	Week 37	Week 38*	Week 39
Fish	Cunner	Egg	0	0	0	0	0	0	0	0	0	0
		YSL	0	0	0	0	0	0	0	0	0	0
		PYSL	1.47	0.87	0.27	0.13	0	28.05	14.33	0.6	0.3	0
		Other life stages	1.48	0.74	0	0	0	0	0.13	0.25	0.13	0
	Cunner/yellowtail flounder	Egg	1	0.5	0	0	0	3.75	2.29	0.83	0.41	0
		YSL	0	0	0	0	0	0	0	0	0	0
		PYSL	0	0	0	0	0	0	0	0	0	0
		Other life stages	0	0	0	0	0	0	0	0	0	0
	Fourbeard rockling	Egg	0.75	0.5	0.25	0.12	0	0.25	0.12	0	0	0
		YSL	0.25	0.13	0	0	0	0	0	0	0	0
		PYSL	0.25	0.12	0	0	0	1.74	0.97	0.2	0.1	0
		Other life stages	0	0	0	0	0	0	0	0	0	0
	Fourbeard rockling/hake	Egg	0.5	0.37	0.25	0.12	0	0.49	0.33	0.16	0.18	0.21
		YSL	0	0	0	0	0	0	0	0	0	0
		PYSL	0	0	0	0	0	0	0	0	0	0
		Other life stages	0	0	0	0	0	0	0	0	0	0
	Northern pipefish	Egg	0	0	0	0	0	0	0	0	0	0
		YSL	0	0	0	0	0	0.25	0.12	0	0	0
		PYSL	0	0	0	0	0	0.25	0.13	0	0	0
		Other life stages	0	0	0	0	0	0	0.12	0.25	0.12	0
	Prionotus species	Egg	0	0	0	0	0	0.25	0.12	0	0	0
		YSL	0	0	0	0	0	0	0	0	0	0
		PYSL	0	0	0	0	0	0	0	0	0	0
		Other life stages	0	0	0	0	0	0	0	0	0	0
	Silver hake	Egg	1	0.5	0	0	0	0	0	0	0.73	1.47
		YSL	0.24	0.12	0	0	0	0	0	0	0	0
		PYSL	0	0	0	0	0	0	0	0	0	0
		Other life stages	0	0	0	0	0	0	0	0	0	0
	Tautog	Egg	0	0	0	0	0	0	0.1	0.2	0.1	0
		YSL	0	0	0	0	0	0	0	0	0	0
		PYSL	0	0	0	0	0	0	0	0	0	0
		Other life stages	0	0	0	0	0	0	0	0	0	0

(continued)

Table 6-1. (Continued)

	Common Name	Life stage	2006					2007				
			August	September				August	September			
			Week 35	Week 36*	Week 37	Week 38*	Week 39	Week 35	Week 36*	Week 37	Week 38*	Week 39
	Unidentifiable	Egg	0	0	0	0	0	0	0	0	0	0
		YSL	0	0	0	0	0	0	0	0	0	0
		PYSL	0	0	0	0	0	0	0	0	0	0
		Other life stages	0	0	0	0	0	3.01	1.5	0	0	0
	Urophycis species	Egg	3.18	1.71	0.25	0.12	0	0	0.08	0.16	0.08	0
		YSL	0	0	0	0	0	0	0	0	0	0
		PYSL	0	0	0	0	0	0	0	0	0	0
		Other life stages	0	0	0	0	0	0	0	0	0	0
	Windowpane	Egg	0	0	0	0	0	0.5	0.25	0	0.11	0.21
		YSL	0	0	0	0	0	0	0	0	0	0
		PYSL	0	0	0	0	0	0	0.1	0.2	0.1	0
		Other life stages	0	0	0	0	0	0	0	0	0	0
	All Taxa	Egg	6.42	3.58	0.75	0.37	0	5.23	3.29	1.34	1.61	1.89
		YSL	0.49	0.24	0	0	0	0.25	0.12	0	0	0
		PYSL	1.72	0.99	0.27	0.13	0	30.05	15.52	0.99	0.5	0
		Other life stages	1.48	0.74	0	0	0	3.01	1.75	0.5	0.25	0
Total all fish (all life stages pooled)			10.11	5.55	1.02	0.5	0	38.54	20.68	2.83	2.36	1.89
Crustaceans	Atlantic rock crab	Juvenile	0	0	0	0	0	0	0	0	0	0
		Megalopa	0.5	0.51	0.52	0.38	0.25	3.98	2.12	0.25	0.13	0
		Zoea	0	0	0	0	0	0	0	0	0	0
	Cancer sp.	Juvenile	0	0	0	0	0	0	0	0	0	0
		Megalopa	0	0	0	0	0	0	0	0	0	0
		Zoea	175	135.39	95.78	52.28	8.78	835.07	444.83	54.58	40.12	25.66
	Green crab	Juvenile	0	0.12	0.25	0.12	0	0.99	0.94	0.88	0.68	0.48
		Megalopa	11.81	7.31	2.81	1.53	0.25	24.11	17.21	10.32	5.16	0
		Zoea	1,120.02	793.15	466.28	278.92	91.55	165.5	107.79	50.08	38.59	27.1
	Japanese shore crab	Juvenile	0	0	0	0	0	0	0	0	0	0
		Megalopa	0	0	0	0	0	0	0	0	0	0
		Zoea	43.85	31.03	18.21	15.29	12.37	3.25	2.44	1.63	0.81	0
	Jonah crab	Juvenile	0	0	0	0	0	0	0	0	0	0
		Megalopa	0	0.53	1.05	0.53	0	0.25	0.53	0.82	0.62	0.43
		Zoea	0	0	0	0	0	0	0	0	0	0

(continued)

Table 6-1. (Continued)

	Common Name	Life stage	2006					2007				
			August	September				August	September			
			Week 35	Week 36*	Week 37	Week 38*	Week 39	Week 35	Week 36*	Week 37	Week 38*	Week 39
	All Taxa	Juvenile	0	0.12	0.25	0.12	0	0.99	0.94	0.88	0.68	0.48
		Megalopa	12.3	8.34	4.38	2.44	0.49	28.34	19.86	11.39	5.91	0.43
		Zoea	1,338.87	959.57	580.27	346.48	112.69	1,003.82	555.06	106.29	79.53	52.76
Total all macrocrustacean (all life stages pooled)			1351.17	968.03	584.9	349.04	113.18	1033.15	575.86	118.56	86.12	53.67

* Weeks were linearly interpolated from adjacent sampling dates.

Table 6-2. Weekly density (#/million gallons) of fish and macrocrustaceans impinged at Schiller Station (Units 4, 5, 6, and all Units combined) during weeks 35 through 39 of 2006 and 2007.

Unit	Organism	Common Name	2006						2007					
			August	September				2006 Five- Week Mean	August	September				2007 Five- Week Mean
			Week 35	Week 36	Week 37	Week 38	Week 39		Week 35	Week 36	Week 37	Week 38	Week 39	
Unit 4	Fish	Atlantic menhaden	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.010
		Atlantic tomcod	0.000	0.000	0.024	0.000	0.000	0.005	0.000	0.000	0.000	0.025	0.000	0.005
		Cunner	0.074	0.049	0.073	0.000	0.050	0.049	0.025	0.000	0.025	0.025	0.000	0.015
		Grubby	0.000	0.025	0.024	0.000	0.000	0.010	0.000	0.025	0.000	0.000	0.000	0.005
		Tautog	0.025	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000
		Unidentifiable	0.000	0.000	0.000	0.025	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000
		Winter flounder	0.025	0.049	0.024	0.025	0.000	0.025	0.000	0.000	0.000	0.051	0.000	0.010
	Unit 4 Fish Total		0.123	0.123	0.147	0.049	0.050	0.098	0.025	0.025	0.074	0.102	0.000	0.045
	Macrocrustaceans	American lobster	0.000	0.000	0.049	0.000	0.025	0.015	0.149	0.099	0.025	0.051	0.025	0.069
		Atlantic rock crab	0.247	0.147	0.245	0.344	0.325	0.262	0.050	0.049	0.049	0.076	0.123	0.069
		Cancer sp.	0.000	0.049	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000
		Green crab	0.025	0.662	0.049	0.098	0.250	0.217	0.198	0.173	0.196	0.051	0.221	0.168
		Jonah crab	0.074	0.000	0.000	0.025	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000
	Unit 4 Macrocrustacean Total		0.345	0.858	0.343	0.467	0.601	0.523	0.396	0.321	0.270	0.178	0.369	0.307
Unit 5	Fish	Cunner	0.000	0.000	0.000	0.048	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000
		Northern pipefish	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.024	0.005
	Unit 5 Fish Total		0.000	0.000	0.000	0.048	0.000	0.010	0.000	0.000	0.000	0.000	0.024	0.005
	Macrocrustaceans	Atlantic rock crab	0.000	0.012	0.023	0.000	0.000	0.007	0.000	0.012	0.024	0.000	0.024	0.012
		Green crab	0.029	0.014	0.000	0.071	0.049	0.033	0.049	0.049	0.048	0.100	0.144	0.078
	Unit 5 Macrocrustacean Total		0.029	0.026	0.023	0.071	0.049	0.040	0.049	0.061	0.072	0.100	0.168	0.090
Unit 6	Fish	Cunner	0.000	0.000	0.024	0.024	0.024	0.014	0.000	0.000	0.000	0.000	0.000	0.000
		Winter flounder	0.000	0.000	0.000	0.024	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000
	Unit 6 Fish Total		0.000	0.000	0.024	0.049	0.024	0.019	0.000	0.000	0.000	0.000	0.000	0.000
	Macrocrustaceans	Atlantic rock crab	0.024	0.024	0.071	0.000	0.024	0.029	0.000	0.000	0.096	0.025	0.048	0.034
		Green crab	0.000	0.145	0.047	0.024	0.024	0.048	0.174	0.000	0.024	0.025	0.096	0.064
	Unit 6 Macrocrustacean Total		0.024	0.169	0.119	0.024	0.048	0.077	0.174	0.000	0.120	0.050	0.144	0.098

(continued)

Table 6-2. (Continued)

Unit	Organism	Common Name	2006						2007					
			August	September				2006 Five- Week Mean	August	September			2007 Five- Week Mean	
			Week 35	Week 36	Week 37	Week 38	Week 39		Week 35	Week 36	Week 37	Week 38		Week 39
All Units Combined	Fish	Atlantic menhaden	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.010
		Atlantic tomcod	0.000	0.000	0.024	0.000	0.000	0.005	0.000	0.000	0.000	0.025	0.000	0.005
		Cunner	0.074	0.049	0.097	0.072	0.074	0.073	0.025	0.000	0.025	0.025	0.000	0.015
		Grubby	0.000	0.025	0.024	0.000	0.000	0.010	0.000	0.025	0.000	0.000	0.000	0.005
		Northern pipefish	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.024	0.005
		Tautog	0.025	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000
		Unidentifiable	0.000	0.000	0.000	0.025	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000
		Winter flounder	0.025	0.049	0.024	0.049	0.000	0.029	0.000	0.000	0.000	0.051	0.000	0.010
	All Units Combined Fish Total		0.123	0.123	0.171	0.145	0.074	0.127	0.025	0.025	0.074	0.102	0.024	0.050
	Macrocrustaceans	American lobster	0.000	0.000	0.049	0.000	0.025	0.015	0.149	0.099	0.025	0.051	0.025	0.069
		Atlantic rock crab	0.271	0.183	0.340	0.344	0.350	0.297	0.050	0.061	0.169	0.101	0.195	0.115
		Cancer sp.	0.000	0.049	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000
		Green crab	0.053	0.821	0.096	0.194	0.323	0.298	0.421	0.221	0.268	0.176	0.461	0.310
		Jonah crab	0.074	0.000	0.000	0.025	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000
	All Units Combined Macrocrustacean Total		0.398	1.053	0.485	0.563	0.698	0.639	0.619	0.382	0.462	0.328	0.681	0.494

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APPENDIX TABLES

APPENDIX A

Life History Parameters for Calculation of Adult Equivalents

Appendix Table A-1. Table of parameters for determination of adult equivalence losses for American plaice.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)
Egg	2.30	0.00	0.00	2.30	0.10026	0.18225
Larvae	8.22	0.00	0.00	8.22	0.00027	0.00054
YOY	0.92	0.00	0.00	0.92	0.40012	0.57155
Age 1+	0.20	0.00	0.00	0.20	0.81873	0.90033
Age 2+	0.20	0.32	0.50	0.35	0.70663	0.82810
Age 3+	0.20	0.32	1.00	0.52	0.59452	0.74570
Age 4+	0.20	0.32	1.00	0.52	0.59452	0.74570
Age 5+	0.20	0.32	1.00	0.52	0.59452	0.74570
Age 6+	0.20	0.32	1.00	0.52	0.59452	0.74570
Age 7+	0.20	0.32	1.00	0.52	0.59452	0.74570
Age 8+	0.20	0.32	1.00	0.52	0.59452	0.74570
Age 9+	0.20	0.32	1.00	0.52	0.59452	0.74570
Age 10+	0.20	0.32	1.00	0.52	0.59452	0.74570

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage $= e^{-Z}$

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for American plaice is 3 years (Klein-MacPhee 2002).

Appendix Table A-2. Table of parameters for determination of adult equivalence losses for American sand lance^a.

Stage	M_i^b	F_i^c	Fraction Vulnerable to Fishing ^d (v)	Z_i^e	S_i^f	Adjusted ^g S_i ($=2Se^{-\frac{1}{Ln(1+S)}}$)
Egg	1.41	0.00	0.00	1.41	0.24414	0.39247
Larvae	2.97	0.00	0.00	2.97	0.05130	0.09760
YOY	2.90	0.00	0.00	2.90	0.05502	0.10431
Age 1+	1.89	0.00	0.00	1.89	0.15107	0.26249
Age 2+	0.36	0.00	0.00	0.36	0.69489	0.81998
Age 3+	0.36	0.00	0.00	0.36	0.69489	0.81998
Age 4+	0.36	0.00	0.00	0.36	0.69489	0.81998
Age 5+	0.36	0.00	0.00	0.36	0.69489	0.81998
Age 6+	0.36	0.00	0.00	0.36	0.69489	0.81998
Age 7+	0.36	0.00	0.00	0.36	0.69489	0.81998
Age 8+	0.36	0.00	0.00	0.36	0.69489	0.81998
Age 9+	0.36	0.00	0.00	0.36	0.69489	0.81998
Age 10+	0.36	0.00	0.00	0.36	0.69489	0.81998

YOY= young of the year

^a Many aspects of the biology of *Ammodytes* spp. along the east coast of the United States are confounded by taxonomic problems differentiating the American or inshore sand lance (*A. americanus*) from the offshore sand lance *A. dubius* (Nizinski et al. 1990). Because most estuarine and nearshore collections of *Ammodytes* are *A. americanus* (Nizinski et al. 1990, Able and Fahay 1998), all *Ammodytes* were assumed to be *A. americanus*.

^b Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^e Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^f S_i = Probability of survival of stage i to the next stage = e^{-Z}

^g Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for American sand lance is 2 years (Nizinski 2002).

Appendix Table A-3. Table of parameters for determination of adult equivalence losses for Atlantic cod.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f $S_i (=2Se^{-\frac{1}{\ln(1+S_i)}})$	Length at Age (mmtl) ^g
Egg	4.87	0.00	0.00	4.87	0.00767	0.01523	
Larvae	5.83	0.00	0.00	5.83	0.00294	0.00586	
YOY	0.92	0.00	0.00	0.92	0.40012	0.57155	
Age 1+	0.40	0.00	0.00	0.40	0.67032	0.80262	117
Age 2+	0.20	0.29	0.50	0.33	0.71568	0.83428	264
Age 3+	0.20	0.29	1.00	0.49	0.61263	0.75979	396
Age 4+	0.20	0.29	1.00	0.49	0.61263	0.75979	513
Age 5+	0.20	0.29	1.00	0.49	0.61263	0.75979	617
Age 6+	0.20	0.29	1.00	0.49	0.61263	0.75979	710

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M+F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g Age at length values for Atlantic cod from the Gulf of Maine (Penttila et al. 1989).

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for Atlantic cod is 2 years (Klein-MacPhee 2002).

Appendix Table A-4. Table of parameters for determination of adult equivalence losses for Atlantic herring.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f $S_i (=2Se^{-\frac{Z_i}{\ln(1+S_i)}})$	Length at Age (mmtl) ^g
Egg	3.36	0.00	0.00	3.36	0.03474	0.06714	
Larvae	3.26	0.00	0.00	3.26	0.03839	0.07394	
YOY	3.26	0.00	0.00	3.26	0.03839	0.07394	
Age 1+	0.20	0.28	0.50	0.33	0.71876	0.83637	108
Age 2+	0.20	0.28	1.00	0.48	0.61878	0.76450	177
Age 3+	0.20	0.28	1.00	0.48	0.61878	0.76450	227
Age 4+	0.20	0.28	1.00	0.48	0.61878	0.76450	262
Age 5+	0.20	0.28	1.00	0.48	0.61878	0.76450	287
Age 6 +	0.20	0.28	1.00	0.48	0.61878	0.76450	305
Age 7 +	0.20	0.28	1.00	0.48	0.61878	0.76450	318
Age 8 +	0.20	0.28	1.00	0.48	0.61878	0.76450	328
Age 9+	0.20	0.28	1.00	0.48	0.61878	0.76450	
Age 10+	0.20	0.28	1.00	0.48	0.61878	0.76450	

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluated I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluated I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluated I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M+F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g Age at length values for Atlantic herring from western Maine waters (Penttilä et al. 1989).

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for Atlantic herring is 3 years (Munroe 2002).

Appendix Table A-5. Table of parameters for determination of adult equivalence losses for Atlantic mackerel.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)
Egg	2.39	0.00	0.00	2.39	0.09163	0.16788
Larvae	5.30	0.00	0.00	5.30	0.00499	0.00993
YOY	5.30	0.00	0.00	5.30	0.00499	0.00993
Age 1+	0.52	0.00	0.00	0.52	0.59452	0.74570
Age 2+	0.37	0.00	0.50	0.37	0.69073	0.81708
Age 3+	0.37	0.25	1.00	0.62	0.53794	0.69956
Age 4+	0.37	0.25	1.00	0.62	0.53794	0.69956
Age 5+	0.37	0.25	1.00	0.62	0.53794	0.69956
Age 6 +	0.37	0.25	1.00	0.62	0.53794	0.69956
Age 7 +	0.37	0.25	1.00	0.62	0.53794	0.69956
Age 8 +	0.37	0.25	1.00	0.62	0.53794	0.69956
Age 9+	0.37	0.25	1.00	0.62	0.53794	0.69956
Age 10+	0.37	0.25	1.00	0.62	0.53794	0.69956

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluated I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluated I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluated I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage $= e^{-Z}$

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for Atlantic mackerel is 2 years (Collette 2002).

Appendix Table A-6. Table of parameters for determination of adult equivalence losses for Atlantic menhaden.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)	Length at Age (mmtl) ^g
Egg	0.960	0.000	0.00	0.960	0.38289	0.55376	
YSL ^h	1.920	0.000	0.00	1.920	0.14661	0.25572	
PYSL ⁱ	2.808	0.000	0.00	2.808	0.06033	0.11379	
Early Juv.	1.196	0.202	0.00	1.196	0.30240	0.46438	
Late Juv.	2.340	0.396	0.10	2.373	0.09318	0.17047	
Age 1+	0.986	0.803	0.20	1.102	0.33204	0.49855	204
Age 2+	0.584	0.803	0.89	1.260	0.28369	0.44199	269
Age 3+	0.548	0.803	1.00	1.351	0.25911	0.41158	296
Age 4+	0.548	0.803	1.00	1.351	0.25911	0.41158	320
Age 5+	0.548	0.803	1.00	1.351	0.25911	0.41158	
Age 6+	0.548	0.803	0.92	1.256	0.28465	0.44316	
Age 7+	0.548	0.803	0.88	1.213	0.29742	0.45848	
Age 8+	0.548	0.803	0.88	1.213	0.29742	0.45848	

YSL = yolk-sac larvae, PYSL = post yolk-sac larvae, YOY = young of the year

^a Natural mortality based on Barnthouse 2005.

^b Age-specific fishing mortality was based on Barnthouse 2005.

^c Proportion vulnerable to fishing gear based on Barnthouse 2005.

^d Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g Based on coast wide port samples collected by NMFS (Bigelow and Schroeder 2002). Converted from fork length (TL = $1.14609 \cdot FL$).

^h Assumes YSL M_i and F_i is equivalent to Barnthouse 2005 values for "Early larvae".

ⁱ Assumes PYSL M_i and F_i is equivalent to Barnthouse 2005 values for "Late larvae".

^j Analysis assumes that the sum of the Barnthouse 2005 Z_i values for "Early juv" and "Late juv" represent YOY.

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for Atlantic menhaden is 3 years (Munroe 2002).

Appendix Table A-7. Table of parameters for determination of adult equivalence losses for cunner.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)	Length at Age (mmtl) ^g
Egg	3.49	0.00	0.00	3.49	0.03050	0.05920	
Larvae	2.90	0.00	0.00	2.90	0.05502	0.10431	
YOY	2.90	0.00	0.00	2.90	0.05502	0.10431	
Age 1+	0.83	0.00	0.00	0.83	0.43561	0.60687	67
Age 2+	0.83	0.10	0.50	0.88	0.41489	0.58646	101
Age 3+	0.29	0.10	1.00	0.39	0.67977	0.80936	140
Age 4+	0.34	0.10	1.00	0.44	0.64275	0.78253	175
Age 5+	0.65	0.10	1.00	0.75	0.47473	0.64382	203
Age 6+	1.26	0.10	1.00	1.36	0.25666	0.40848	225

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage $= e^{-Z}$

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g Based on average values for age-length determinations of cunner from the Gulf of St. Lawrence (Munroe 2002).

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for cunner is 2 years (Munroe 2002).

Appendix Table A-8. Table of parameters for determination of adult equivalence losses for fourbeard rockling.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)
Egg	2.30	0.00	0.00	2.30	0.10026	0.18225
Larvae	4.25	0.00	0.00	4.25	0.01426	0.02813
YOY	0.92	0.00	0.00	0.92	0.40012	0.57155
Age 1+	0.49	0.00	0.00	0.49	0.61263	0.75979
Age 2+	0.49	0.00	0.00	0.49	0.61263	0.75979
Age 3+	0.49	0.00	0.00	0.49	0.61263	0.75979
Age 4+	0.49	0.00	0.00	0.49	0.61263	0.75979
Age 5+	0.49	0.00	0.00	0.49	0.61263	0.75979
Age 6 +	0.49	0.00	0.00	0.49	0.61263	0.75979
Age 7 +	0.49	0.00	0.00	0.49	0.61263	0.75979
Age 8 +	0.49	0.00	0.00	0.49	0.61263	0.75979
Age 9+	0.49	0.00	0.00	0.49	0.61263	0.75979
Age 10+	0.49	0.00	0.00	0.49	0.61263	0.75979

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

* - shaded box denotes age at sexual maturity. Reported value for age at first spawn unavailable, assumed Age 1+ to provide conservative estimates of loss for species.

Appendix Table A-9. Table of parameters for determination of adult equivalence losses for grubby.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)	Length at Age (mmtl) ^g
Egg	2.30	0.00	0.00	2.30	0.10026	0.18225	
Larvae	3.79	0.00	0.00	3.79	0.02260	0.04419	
YOY	0.92	0.00	0.00	0.92	0.40012	0.57155	
Age 1+	0.46	0.00	0.00	0.46	0.63128	0.77397	57.8
Age 2+	0.46	0.00	0.00	0.46	0.63128	0.77397	86.5
Age 3+	0.46	0.00	0.00	0.46	0.63128	0.77397	123.5
Age 4+	0.46	0.00	0.00	0.46	0.63128	0.77397	
Age 5+	0.46	0.00	0.00	0.46	0.63128	0.77397	
Age 6+	0.46	0.00	0.00	0.46	0.63128	0.77397	
Age 7+	0.46	0.00	0.00	0.46	0.63128	0.77397	
Age 8+	0.46	0.00	0.00	0.46	0.63128	0.77397	
Age 9+	0.46	0.00	0.00	0.46	0.63128	0.77397	
Age 10+	0.46	0.00	0.00	0.46	0.63128	0.77397	

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M+F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage $= e^{-Z}$

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g Based on age-length determinations of grubby from Niantic Bay, New York (Roseman et al. 2005).

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for grubby is 1 year (Roseman et al. 2005).

Appendix Table A-10. Table of parameters for determination of adult equivalence losses for longhorn sculpin.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)
Egg	2.30	0.00	0.00	2.30	0.10026	0.18225
Larvae	3.79	0.00	0.00	3.79	0.02260	0.04419
YOY	0.92	0.00	0.00	0.92	0.40012	0.57155
Age 1+	0.46	0.50	0.50	0.68	0.50709	0.67294
Age 2+	0.46	0.50	1.00	0.96	0.38289	0.55376
Age 3+	0.46	0.50	1.00	0.96	0.38289	0.55376
Age 4+	0.46	0.50	1.00	0.96	0.38289	0.55376
Age 5+	0.46	0.50	1.00	0.96	0.38289	0.55376
Age 6+	0.46	0.50	1.00	0.96	0.38289	0.55376
Age 7+	0.46	0.50	1.00	0.96	0.38289	0.55376
Age 8+	0.46	0.50	1.00	0.96	0.38289	0.55376
Age 9+	0.46	0.50	1.00	0.96	0.38289	0.55376

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^M) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

* - shaded box denotes age at sexual maturity. Age at sexual maturity for longhorn sculpin is 3 years (Klein-MacPhee 2002).

Appendix Table A-11. Table of parameters for determination of adult equivalence losses for lumpfish.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)	Length at Age (mmtl) ^g
Egg	2.30	0.00	0.00	2.30	0.10026	0.18225	
Larvae	8.48	0.00	0.00	8.48	0.00021	0.00042	
YOY	0.92	0.00	0.00	0.92	0.40012	0.57155	
Age 1+	0.19	0.26	0.50	0.31	0.73229	0.84546	49
Age 2+	0.19	0.26	1.00	0.45	0.63763	0.77872	80
Age 3+	0.19	0.26	1.00	0.45	0.63763	0.77872	110
Age 4+	0.19	0.26	1.00	0.45	0.63763	0.77872	185
Age 5+	0.19	0.26	1.00	0.45	0.63763	0.77872	260

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M+F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g From EPA (2004) weight at age data converted to length by the equations in EPA (2003).

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for lumpfish is 5 years (Klein-MacPhee 2002).

Appendix Table A-12. Table of parameters for determination of adult equivalence losses for Northern pipefish.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)	Length at Age (mmtl) ^g
Egg	2.30	0.00	0.00	2.30	0.10026	0.18225	
Larvae	2.40	0.00	0.00	2.40	0.09072	0.16635	
YOY	0.92	0.00	0.00	0.92	0.40012	0.57155	
Age 1+	0.75	0.00	0.00	0.75	0.47237	0.64164	97
Age 2+ ^h	0.75	0.00	0.00	0.75	0.47237	0.64164	103
Age 3+	0.75	0.00	0.00	0.75	0.47237	0.64164	
Age 4+	0.75	0.00	0.00	0.75	0.47237	0.64164	
Age 5+	0.75	0.00	0.00	0.75	0.47237	0.64164	

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage $= e^{-Z}$

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g From EPA (2004) weight at age data converted to length by average values for L-W relationship of members of the genus Syngnathidae (as obtained from fishbase.org).

^h Thought that Northern pipefish will reach a maximum age of 2 years (Ripley and Foran 2006).

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for Northern pipefish is 1 year (Klein-MacPhee 2002).

Appendix Table A-13. Table of parameters for determination of adult equivalence losses for pollock.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f $S_i (=2Se^{-\frac{1}{Ln(1+S)}})$	Length at Age (mmtl) ^g
Egg	0.92	0.00	0.00	0.92	0.39772	0.56910	
Larvae	4.07	0.00	0.00	4.07	0.01708	0.03358	
YOY	6.93	0.00	0.00	6.93	0.00098	0.00195	
Age 1+	0.20	0.00	0.00	0.20	0.81873	0.90033	167
Age 2+	0.20	0.20	0.50	0.30	0.74453	0.85356	307
Age 3+	0.20	0.20	1.00	0.40	0.67032	0.80262	426
Age 4+	0.20	0.20	1.00	0.40	0.67032	0.80262	525
Age 5+	0.20	0.20	1.00	0.40	0.67032	0.80262	609
Age 6+	0.20	0.20	1.00	0.40	0.67032	0.80262	680
Age 7+	0.20	0.20	1.00	0.40	0.67032	0.80262	740
Age 8+	0.20	0.20	1.00	0.40	0.67032	0.80262	790
Age 9+	0.20	0.20	1.00	0.40	0.67032	0.80262	833
Age 10+	0.20	0.20	1.00	0.40	0.67032	0.80262	869

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M+F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g Age at length values for pollock from Georges Bank (Penttila et al. 1989).

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for pollock is 2 years (Klein-MacPhee 2002).

Appendix Table A-14. Table of parameters for determination of adult equivalence losses for rainbow smelt.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)	Length at Age (mmtl) ^g
Egg	4.60	0.00	0.00	4.60	0.01005	0.01990	
Larvae	3.06	0.00	0.00	3.06	0.04689	0.08958	
YOY	0.93	0.00	0.00	0.93	0.39455	0.56585	
Age 1+	1.00	0.00	0.00	1.00	0.36788	0.53788	142
Age 2+	1.00	0.00	0.00	1.00	0.36788	0.53788	193
Age 3+	1.00	0.00	0.00	1.00	0.36788	0.53788	213
Age 4+	1.00	0.00	0.00	1.00	0.36788	0.53788	240
Age 5+	1.00	0.00	0.00	1.00	0.36788	0.53788	245
Age 6+	1.00	0.00	0.00	1.00	0.36788	0.53788	

YOY= young of the year

^a Natural mortality based on mean values from Barnhouse 2005.

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M+F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g Data from Massachusetts Division of Marine Fisheries.

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for rainbow smelt is 2 years (Klein-MacPhee 2002).

Appendix Table A-15. Table of parameters for determination of adult equivalence losses for rock gunnel.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f $S_i (=2Se^{-\frac{Z_i}{\ln(1+S_i)}})$
Egg	2.30	0.00	0.00	2.30	0.10026	0.18225
Larvae	1.66	0.00	0.00	1.66	0.19014	0.31952
YOY	0.92	0.00	0.00	0.92	0.40012	0.57155
Age 1+	0.44	0.00	0.00	0.44	0.64404	0.78348
Age 2+	0.44	0.00	0.00	0.44	0.64404	0.78348
Age 3+	0.44	0.00	0.00	0.44	0.64404	0.78348
Age 4+	0.44	0.00	0.00	0.44	0.64404	0.78348
Age 5+	0.44	0.00	0.00	0.44	0.64404	0.78348

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\ln((1-v)e^{-M}) + (ve^{-(M+F)})$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

* - shaded box denotes age at sexual maturity. Reported value for age at first maturity for rock gunnel is Age 3 (Vallis et al. 2007).

Appendix Table A-16. Table of parameters for determination of adult equivalence losses for silver hake.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)
Egg	1.43	0.00	0.00	1.43	0.23931	0.38620
Larvae	6.62	0.00	0.00	6.62	0.00133	0.00266
YOY	4.58	0.00	0.00	4.58	0.01025	0.02030
Age 1+	0.40	0.00	0.00	0.40	0.67032	0.80262
Age 2+	0.40	0.00	0.00	0.40	0.67032	0.80262
Age 3+	0.40	0.40	1.00	0.80	0.44933	0.62005
Age 4+	0.40	0.40	1.00	0.80	0.44933	0.62005
Age 5+	0.40	0.40	1.00	0.80	0.44933	0.62005
Age 6+	0.40	0.40	1.00	0.80	0.44933	0.62005
Age 7+	0.40	0.40	1.00	0.80	0.44933	0.62005
Age 8+	0.40	0.40	1.00	0.80	0.44933	0.62005
Age 9+	0.40	0.40	1.00	0.80	0.44933	0.62005
Age 10+	0.40	0.40	1.00	0.80	0.44933	0.62005

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for silver hake is 2 years (Klein-MacPhee 2002).

Appendix Table A-17. Table of parameters for determination of adult equivalence losses for white hake.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-L_n(1+S)}$)	Length at Age (mmtl) ^g
Egg	1.22	0.00	0.00	1.22	0.29523	0.45587	
Larvae ^j	6.70	0.00	0.00	6.70	0.00123	0.00246	
YOY	4.83	0.00	0.00	4.83	0.00799	0.01585	
Age 1+	0.40	0.39	0.50	0.58	0.56208	0.71966	203
Age 2+	0.40	0.39	1.00	0.79	0.45384	0.62434	308
Age 3+	0.40	0.39	1.00	0.79	0.45384	0.62434	330
Age 4+	0.40	0.39	1.00	0.79	0.45384	0.62434	354
Age 5+	0.40	0.39	1.00	0.79	0.45384	0.62434	383
Age 6+	0.40	0.39	1.00	0.79	0.45384	0.62434	412
Age 7+	0.40	0.39	1.00	0.79	0.45384	0.62434	441
Age 8+	0.40	0.39	1.00	0.79	0.45384	0.62434	470
Age 9+	0.40	0.39	1.00	0.79	0.45384	0.62434	499
Age 10+	0.40	0.39	1.00	0.79	0.45384	0.62434	510

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluate I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M+F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage $= e^{-Z}$

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g From EPA (2004) weight at age data for red hake converted to length by the equations in EPA (2003).

^j Assumes that the sum of the EPA 2004 M_i and F_i values for Larvae 2mm, Larvae 2.5mm, Larvae 3.0mm, Larvae 3.5mm, Larvae 4.0mm and Larvae 4.5mm represent Larvae.

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for white hake is 2 years (Klein-MacPhee 2002).

Appendix Table A-18. Table of parameters for determination of adult equivalence losses for white perch.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f $S_i (=2Se^{-\frac{Z_i}{Ln(1+S_i)}})$	Length at Age (mmtl) ^g
Egg	2.54	0.00	0.00	2.54	0.07887	0.14620	
YSL	1.69	0.00	0.00	1.69	0.18452	0.31155	
PYSL	4.68	0.00	0.00	4.68	0.00928	0.01839	
YOY	1.27	0.00	0.00	1.27	0.28083	0.43851	
Age 1+	0.63	0.00	0.00	0.63	0.53259	0.69502	71.2
Age 2+	0.65	0.00	0.00	0.65	0.52205	0.68598	148.4
Age 3+	0.66	0.00	0.00	0.66	0.51685	0.68148	185.9
Age 4+	0.69	0.00	0.00	0.69	0.50158	0.66807	211.2
Age 5+	0.71	0.00	0.00	0.71	0.49164	0.65920	230.3
Age 6+	0.72	0.00	0.00	0.72	0.48675	0.65479	254.5
Age 7+	0.76	0.00	0.00	0.76	0.46767	0.63729	282.1
Age 8+	0.78	0.00	0.00	0.78	0.45841	0.62864	
Age 9+	0.78	0.00	0.00	0.78	0.45841	0.62864	
Age 10+	0.78	0.00	0.00	0.78	0.45841	0.62864	

YSL = yolk-sac larvae, PYSL = post yolk-sac larvae, YOY= young of the year

^a Natural mortality based on Barnhouse 2005.

^b Age-specific fishing mortality was based on Barnhouse 2005.

^c Proportion vulnerable to fishing gear based on Barnhouse 2005.

^d Total instantaneous mortality $Z = M+F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g Weighted mean length at age from seven year sample period in Lower Connecticut River (Marcy and Richards 1974).

* - shaded box denotes age at sexual maturity. c - Conservative value for age at sexual maturity for white perch is 3 years (Klein-MacPhee 2002).

Appendix Table A-19. Table of parameters for determination of adult equivalence losses for windowpane.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)	Length at Age (mmtl) ^g
Egg	1.41	0.00	0.00	1.41	0.24414	0.39247	
Larvae	6.99	0.00	0.00	6.99	0.00092	0.00184	
YOY	2.98	0.00	0.00	2.98	0.05079	0.09668	
Age 1+	0.42	0.00	0.00	0.42	0.65705	0.79303	107
Age 2+	0.42	0.00	0.00	0.42	0.65705	0.79303	166
Age 3+	0.42	0.00	0.00	0.42	0.65705	0.79303	214
Age 4+	0.42	0.00	0.00	0.42	0.65705	0.79303	253
Age 5+	0.42	0.00	0.00	0.42	0.65705	0.79303	282
Age 6 +	0.42	0.10	1.00	0.52	0.59452	0.74570	305
Age 7 +	0.42	0.10	1.00	0.52	0.59452	0.74570	322
Age 8 +	0.42	0.10	1.00	0.52	0.59452	0.74570	335
Age 9+	0.42	0.10	1.00	0.52	0.59452	0.74570	346
Age 10+	0.42	0.10	1.00	0.52	0.59452	0.74570	354

YOY= young of the year

^a Natural mortality based on Life History Parameter Values Used to Evaluated I&E in the North Atlantic Region (EPA 2004).

^b Age-specific fishing mortality was based on Life History Parameter Values Used to Evaluated I&E in the North Atlantic Region (EPA 2004).

^c Proportion vulnerable to fishing gear based on Life History Parameter Values Used to Evaluated I&E in the North Atlantic Region (EPA 2004).

^d Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage $= e^{-Z}$

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g From EPA (2004) weight at age data converted to length by the equations in EPA (2003). Windowpane was adjusted to give a realistic length-weight ratio using the formula: length in mm = $10^{(\log(\text{weight in grams}/0.0000122)/3)}$.

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for windowpane is 3 years (Klein-MacPhee 2002).

Appendix Table A-20. Table of parameters for determination of adult equivalence losses for winter flounder.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)	Length at Age (mmtl) ^g
Egg	1.65	0.00	0.00	1.65	0.19205	0.32222	
Larvae	2.95	0.00	0.00	2.95	0.05234	0.09947	
YOY	8.10	0.00	0.00	8.10	0.00030	0.00061	
Age 1+	0.50	0.40	0.00	0.50	0.60653	0.75508	155
Age 2+	0.20	0.40	0.19	0.26	0.76745	0.86842	190
Age 3+	0.20	0.40	0.70	0.46	0.62979	0.77285	268
Age 4+	0.20	0.40	1.00	0.60	0.54881	0.70869	320
Age 5+	0.20	0.40	0.94	0.57	0.56501	0.72205	361
Age 6 +	0.20	0.40	0.99	0.60	0.55151	0.71093	391
Age 7 +	0.20	0.40	0.99	0.60	0.55151	0.71093	414
Age 8 +	0.20	0.40	0.99	0.60	0.55151	0.71093	432
Age 9+	0.20	0.40	0.99	0.60	0.55151	0.71093	
Age 10+	0.20	0.40	0.99	0.60	0.55151	0.71093	

YOY= young of the year

^a Natural mortality based on Barnthouse 2005.

^b Age-specific fishing mortality was based on Barnthouse 2005.

^c Proportion vulnerable to fishing gear based on Barnthouse 2005.

^d Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{M_i}) + (ve^{(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

^g Based on age-length determinations of winter flounder from Massachusetts (Klein-MacPhee 2002).

* - shaded box denotes age at sexual maturity. Conservative value for age at sexual maturity for winter flounder is 3 years (Klein-MacPhee 2002).

Appendix Table A-21. Table of parameters for determination of adult equivalence losses for American lobster.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f $S_i (=2Se^{-\ln(1+S)})$
Egg	0.45	0.00	0.00	0.45	0.63763	0.77872
Larvae (Stage I)	0.27	0.00	0.00	0.27	0.76085	0.86419
Larvae (Stage II)	0.33	0.00	0.00	0.33	0.71672	0.83499
Larvae (Stage III)	0.46	0.00	0.00	0.46	0.62902	0.77227
Larvae (Stage IV)	0.67	0.00	0.00	0.67	0.51189	0.67716
Settlement	3.69	0.00	0.00	3.69	0.02500	0.04878
YOY	0.40	0.00	0.00	0.40	0.67032	0.80262
Age 1+	0.30	0.00	0.00	0.30	0.74082	0.85111
Age 2+	0.30	0.00	0.00	0.30	0.74082	0.85111
Age 3+	0.30	0.00	0.00	0.30	0.74082	0.85111
Age 4+	0.23	0.00	0.00	0.23	0.79852	0.88797
Age 5+	0.15	0.69	1.00	0.84	0.43171	0.60307
Age 6+	0.15	0.69	1.00	0.84	0.43171	0.60307
Age 7+	0.15	0.69	1.00	0.84	0.43171	0.60307
Age 8+	0.15	0.69	1.00	0.84	0.43171	0.60307
Age 9+	0.15	0.69	1.00	0.84	0.43171	0.60307
Age 10+	0.15	0.69	1.00	0.84	0.43171	0.60307

YOY= young of the year

^a Egg mortality between extrusion and hatching assumed to be 36% ($M = 0.45$) based on Perkins (1971). Incze et al. (2003) provide a daily average lobster larvae mortality rate of 0.07 per day. Larval duration per stage (I-IV) was based on ambient water temperature observed in the entrainment collections at Schiller Station during the period of lobster larvae occurrence (June 21-July 26) and the development rates provided by MacKenzie (1988). Mortality for Stage IV postlarvae was conservatively corrected to account for only 50% of the duration because Stage IV are competent to settle at this point in some cases (Cobb et al. 1989). Incze et al. (2003) estimated that only 2.5% of stage IV larvae settle from the plankton to benthic habitats successfully ($M = 3.69$). Juvenile and adult mortality provided by Incze et al. (2003) and ASMFC (2006).

^b Fishing mortality was based on ASMFC 2006.

^d Total instantaneous mortality $Z = M+F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\ln((1-v)e^{-M}) + (ve^{-M+F})$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

* - shaded box denotes age at sexual maturity. Conservative value for age at first sexual maturity for American lobster is 5 years (Incze 2003, ASMFC 2006).

Appendix Table A-22. Table of parameters for determination of adult equivalence losses for *Cancer* spp. crabs.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)
Egg	n/a		0.00			
Zoea	7.40		0.00	7.40	0.00061	0.00122
Megalops	3.50		0.00	3.50	0.03020	0.05862
YOY	1.73		0.00	1.73	0.17728	0.30118
Age 1+	1.10	0.48	0.00	1.10	0.33287	0.49948
Age 2+	1.10	0.48	0.00	1.10	0.33287	0.49948
Age 3+	1.10	0.48	0.00	1.10	0.33287	0.49948

YOY= young of the year

^a Grabe (2003) provides an average daily mortality estimate for *Cancer* spp. zoea off the coast of New Hampshire of 0.25. We assumed an estimated zoea stage duration of 30 days and a megalops duration of 14 days based on ambient water temperatures and the development rates provided by Sastry and McCarthy (1973) and Johns (1981). Mortality rates for *Cancer* megalops are not available and were assumed to be the same as for zoea following the convention used for bluecrab (*Callinectes sapidus*) by Barnhouse (2005). Mortality rates for juveniles was obtained from EPA (2004) and is consistent with those determined by Reilly and Sails (1978) and Palma et al. (1998).

^b Fishing mortality was based on EPA (2004) and is not applicable in this analysis because commercial size is not reached until ~ Age 6 (Robichaud and Lawton 1997).

^d Total instantaneous mortality $Z = M + F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^{-M}) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

* - shaded box denotes age at sexual maturity. Age at first sexual maturity for *Cancer* spp. is 2 years based on Reilly and Sails (1978) and Shields (1991).

Appendix Table A-23. Table of parameters for determination of adult equivalence losses for Green crab.

Stage	M_i^a	F_i^b	Fraction Vulnerable to Fishing ^c (v)	Z_i^d	S_i^e	Adjusted ^f S_i ($=2Se^{-Ln(1+S)}$)
Egg	n/a					
Zoea	4.13			4.13	0.01616	0.03181
Megalops	2.48			2.48	0.08416	0.15526
YOY	1.73			1.73	0.17728	0.30118
Age 1+	1.10			1.10	0.33287	0.49948
Age 2+	1.10			1.10	0.57695	0.73173
Age 3+	1.10			1.10	0.33287	0.49948

YOY= young of the year

^a Grabe (2003) provides an average daily mortality estimate for green crab zoea off the coast of New Hampshire of 0.17. We assumed an estimated zoea stage duration of 25 days and a megalops duration of 15 days based on ambient water temperatures and the development rates provided by Zawirs (1985). Mortality rates for green crab megalops are not available and were assumed to be the same as for zoea following the convention in Barnthouse (2005). Mortality rates for juveniles and adults was obtained from EPA (2004).

^{b,c} There is no fishery for green crabs.

^d Total instantaneous mortality $Z = M+F$ for stages with 100% vulnerability to fishing (v); otherwise $Z = -\text{natural log}(((1-v)e^M) + (ve^{-(M+F)}))$

^e S_i = Probability of survival of stage i to the next stage = e^{-Z}

^f Adjustment to the survival for the stage at which entrainment occurs to account for multiple ages within a stage, with the assumption of equal vulnerability throughout a stage (EPRI 2004).

* - shaded box denotes age at sexual maturity. Green crabs in northern New England typically mature between age 2-3 with the majority thought to do so just prior to age 3 (Berrill 1982). Age at first sexual maturity for green crabs was therefore assumed to be 2.5 and survival at age 2 was based on a natural mortality rate of 0.55 to account for half the duration in the full age 2 year class where $M = 1.10$.

APPENDIX B

Schiller Station Entrainment

Appendix Table B-1. Entrainment sample duration, sample volume, and associated water quality parameters as collected at Screen House #2 Schiller Station for the period 31 August 2006 through 27 September 2007.

Date	Diel 1(0800-1400)					Diel 2 (1400-2000)					Diel 3 (2000-0200)					Diel 4(0200-0800)				
	Duration (min)	Volume (gal.)	Temperature (°C)	Dissolved oxygen (mg/L)	Salinity (ppt)	Duration (min)	Volume (gal.)	Temperature (°C)	Dissolved oxygen (mg/L)	Salinity (ppt)	Duration (min)	Volume (gal.)	Temperature (°C)	Dissolved oxygen (mg/L)	Salinity (ppt)	Duration (min)	Volume (gal.)	Temperature (°C)	Dissolved oxygen (mg/L)	Salinity (ppt)
8/31/2006	158	26386	18.1	6.4	28.6	130	26494	17.8	6.9	29.4	145	26521	18.2	5.8	28.9	150	27750	17.9	6.1	28.5
9/14/2006	118	26597	17.9	6.5	30.2	108	26590	17.3	7.2	30.1	100	24620	17.6	6.4	30.1	115	26588	17.3	6.4	29.8
9/28/2006	100	29950	15.5	6.8	29.8	75	26806	13	7.6	31	80	30207	14.9	7.6	30.2	80	26689	13.5	7.6	30.9
10/12/2006	127	26439	15.2	6.7	30.3	81	26442	13.9	7.9	31.2	115	25777	15.1	7.3	30	92	27304	14	7.2	30.4
10/26/2006	290	26420	10.4	7.6	26.4	128	27142				360	18901				245	32072			
11/9/2006	154	26457	9.5	7.9	23.1	124	26426	9.3	10.1	26.9	330	27275	9.4	8.2	22.7	138	26899	9.4	7.2	25.2
11/21/2006	127	30004	9.1	6.9	20	155	29443	8.6	7.1	17.6	118	27641	8.7	7.3	19.3	133	26934	9	8.5	23.1
12/7/2006	139	26432	7.8	9.8	23.7	117	26425	9.6	7.6	29.9	150	25987	8.7	8.7	21.3	120	28539	8.9	7.6	30.1
12/21/2006	146	26444	7.5	9.3	24.5	148	26628	8.8	6.6	29.7	142	26366	7	8.9	25.1	160	28227	8.9	8	30
1/4/2007	108	26499	6.4	9.1	24.8	115	26423	8.4	7.5	30.4	150	26896	6	8.5	22	120	29258	7.9	7.7	29.8
1/11/2007	130	26426	7.2	7.3	24.1	151	26434	6.5	7.4	24.2	145	26510	7.6	7.2	27.8	151	26421	5.5	7.8	18.9
1/18/2007	114	26431	6.5	10.9	30.8	170	26425	6.4	11.5	28.2	232	38331	4.8	11.2	24	150	28517	6.1	9.1	28.3
1/25/2007	195	26420	5.7	10.9	27.6	128	26425	4.7	12.9	28.3	151	26718	6.9	11.1	30.8	165	26420	4.9	12.7	27.7
2/1/2007	118	26422	3.9	12.1	29.7	181	26416	5.4	11.8	30.1	195	33263	3.4	12	27.9	255	23464	4.8	11.7	30.3
2/8/2007	161	26455	2.6	12	29.4	125	26469	2.8	12	31.5	185	27743	3.3	11.2	30.1	235	31651	2.1	11.5	29.8
2/15/2007	113	26445	1.5	10.2	31.8	190	26432	1.3	10.3	30.7	165	25410	0.9	9.7	30.1	300	20319	1.4	9.5	30.2
2/22/2007	177	26429	2.8	10.9	30.9	133	31020	2.6	10.2	32.3	135	25665	3.8	10.6	32	150	33103	2.1	9.5	31.5
3/1/2007	113	26591	2.6	11.1	32.3	147	26445	4.2	10.3	32.2	131	26360	3	11	30.7	111	26422	3.4	10.4	32.7
3/8/2007	169	29000	2.2	11.1	28.8	116	26438	1.3	11.9	32	150	26386	1.5	12.4	30.1	175	33293	0.5	13.1	28.9
3/15/2007	129	26459	3.3	9.6	31.6	160	29584	4.7	11	26.6	140	26740	3.6	13.6	26.3	165	28875	3.1	15.4	29.1
3/22/2007	244	26786	3.7	9.4	25.6	116	26493	3.9	10.2	30.2	167	26465	4.3	9.1	29.2	270	34717	4.1	8.5	26.8
3/29/2007	123	31242	4.6	12.2	29	140	26431	6.4	10.9	20.2	116	26418	5.2	11.9	24.1	120	29057	3.6	11.5	27.3
4/12/2007	89	26502	5.1	10.8	30.6	111	27041	5.6	11.3	20.3	105	28866	5.1	11.6	27.3	120	27407	5.1	9.7	27.5
4/26/2007	126	26434	6.3	10.5	28.8	138	26480	9.9	9.8	15.9	145	27803	7.7	10.6	24.3	145	26484	8.5	9.4	23.8
5/10/2007	160	26519	8.3	10.2	29.2	206	26904	12.4	8.6	22.9	120	26364	7.3	10	29.6	170	26913	11.8	8.2	24.1
5/24/2007	140	28065	11.8	7	27.3	149	20547	13.9	7.7	19.6	122	27706				155	26424	13.9	7.8	22.1
6/7/2007	315	10765	14.7	9.2	21.2	111	26423	15	8.8	20.3	413	16104	14	6.9	22.5	358	49547	12.9	9	23.8
6/14/2007	125	27030	15.8	8	24.2	130	26663	15.5	8.1	27.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
6/21/2007	145	26421	16	8.4	28.1	140	27079	19.2	8.2	25.4	120	27437	14	8	29.9	153	28347	17.6	7.1	26.2
6/28/2007	140	26497	17.2	6.6	28.6	155	26445	15.2	8.1	28.1	180	26887	17.2	7.3	28.8	170	30130	12.9	7.4	30.8
7/5/2007	150	26430	17	6.7	29.5	154	26567	16.9	5.6	29.4	170	26424	15	8.3	30.7	135	28420	17.9	6.7	29.1

Date	Diel 1(0800-1400)					Diel 2 (1400-2000)					Diel 3 (2000-0200)					Diel 4(0200-0800)				
	Duration (min)	Volume (gal.)	Temperature (° C)	Dissolved oxygen (mg/L)	Salinity (ppt)	Duration (min)	Volume (gal.)	Temperature (° C)	Dissolved oxygen (mg/L)	Salinity (ppt)	Duration (min)	Volume (gal.)	Temperature (° C)	Dissolved oxygen (mg/L)	Salinity (ppt)	Duration (min)	Volume (gal.)	Temperature (° C)	Dissolved oxygen (mg/L)	Salinity (ppt)
7/12/2007	140	26420	17.7	5.8	29.8	188	26829	18.4	6.4	29.9	130	26453	18.7	5.2	29.8	103	26442	15.5	6.8	31.2
7/19/2007	151	26431	18	7.7	30.2	125	26598	17.1	8.6	30.1	138	26420	16.8	8.7	30.5	135	26500	18.7	6.9	29.1
7/26/2007	112	26699	18.9		29.8	157	26572	22		29.2	160	34657	25.8	4.5	23.9	115	26436	18.4	4.3	30.7
8/2/2007	180	26630	21.3	6.9	27.5	124	28410	19.3	6.7	28.2	157	27017	20.4	8	29.1	150	34822	20	5.7	28.2
8/9/2007	111	26906	16.3	7.8	29.2	141	26421	18.6	7.5	28.7	118	26801	17.6	6.3	28.9	105	26641	16.5	7.7	29.4
8/16/2007	136	26534	19.1	5.9	28.7	116	31088	16.9	6.8	29.1	131	28178	18.1	6.1	29.5	116	30065	15.9	7.4	29.2
8/23/2007	55	27098	18			175	26937	17.6			106	28346	18.3			120	30377	17.6		
8/30/2007	117	26372				95	26436	15.5			132	26424				87	26788			
9/13/2007	141	26536	17.5	6.8	30.4	170	41854	14.8	7.6	32	151	33718	16.2	6.9	31.8	115	26289	15.8	6.8	31.7
9/27/2007	135	33210	17.8	7.2	30.8	120	32004	13.7	6.6	32.1	120	25104	16.8	6.6	31.7	106	30835	13.3	7.9	32.1

Note: n/a indicates that samples were not collected on that date, blank cell indicates parameter was not collected.

Appendix Table B-2. Total count by sample date of all life stages for each fish taxa enumerated from entrainment samples from Screen House #2 of Schiller Station for the period 31 August 2006 through 27 September 2007.

Sample Date	Common Name	Count by Life stage								
		Unknown	Egg	YSL	PYSL	YOY	Yearling and older	WF Stage 2	WF Stage 3	WF Stage 4
8/31/2006	Cunner				6	6				
	Cunner/yellowtail flounder		4							
	Fourbeard rockling		3	1	1					
	Fourbeard rockling/hake		2							
	Silver hake		4	1						
	Urophycis species		13							
9/14/2006	Cunner				1					
	Fourbeard rockling		1							
	Fourbeard rockling/hake		1							
	Urophycis species		1							
10/12/2006	Atlantic menhaden		10							
	Fourbeard rockling/hake		1							
11/9/2006	Atlantic cod		5							
	Atlantic herring				7					
	Summer flounder		1							
11/21/2006	Atlantic cod		6							
	Atlantic herring				48					
	Northern pipefish						2			
	Pollock		1							
12/7/2006	Atlantic cod		5							
	Atlantic herring				17					
	Pollock		2							
12/21/2006	Atlantic cod		1							
	Atlantic herring				7					
1/4/2007	Atlantic cod		1							
	Atlantic herring				15					
	Northern pipefish						1			
	Pollock			1	3					
1/11/2007	American sand lance			3	2					
	Atlantic cod				1					
	Atlantic herring				23					
	Grubby			2						
	Longhorn sculpin			1						
	Pollock			2	1					
	Rock gunnel			24						

Sample Date	Common Name	Count by Life stage								
		Unknown	Egg	YSL	PYSL	YOY	Yearling and older	WF Stage 2	WF Stage 3	WF Stage 4
1/18/2007	American sand lance			101	3					
	Atlantic cod		2							
	Atlantic herring				12					
	Grubby			12	8					
	Longhorn sculpin				1					
	Pollock		2	9	13					
	Rock gunnel			39	14					
	Sculpin family			1						
1/25/2007	American sand lance			45	17					
	Atlantic cod		1							
	Atlantic herring				2					
	Goosefish		7							
	Grubby			5	8					
	Pollock		2		2					
	Rock gunnel			44	25					
2/1/2007	American sand lance			29	97					
	Atlantic cod/haddock		3							
	Atlantic herring				4					
	Grubby			9	10					
	Gulf snailfish				1					
	Longhorn sculpin				2					
	Pollock		6	3	6					
	Rock gunnel			3	35					
2/8/2007	American eel				1					
	American sand lance			47	426					
	Atlantic cod				2					
	Atlantic cod/haddock		3							
	Atlantic herring				4					
	Grubby			4	25					
	Longhorn sculpin				11					
	Pollock			1	2					
	Rock gunnel			25	72					
	Shorthorn sculpin			1	2					
	Striped killifish						1			
2/15/2007	American sand lance			14	79					
	Atlantic cod				1					
	Atlantic cod/haddock		1							
	Goosefish		3							

Sample Date	Common Name	Count by Life stage								
		Unknown	Egg	YSL	PYSL	YOY	Yearling and older	WF Stage 2	WF Stage 3	WF Stage 4
	Grubby			4	26					
	Longhorn sculpin			2	8					
	Pollock			1	4					
	Rock gunnel			9	68					
	Sculpin family			1						
2/22/2007	American sand lance			9	58					
	Grubby			3	14					
	Longhorn sculpin				4					
	Pollock				1					
	Rock gunnel			4	40					
3/1/2007	Sculpin family			1						
	American sand lance			3	266					
	Goosefish		2							
	Grubby			3	27					
	Longhorn sculpin				7					
	Pollock				2					
	Rock gunnel			4	34					
	Sculpin family				1					
3/8/2007	Shorthorn sculpin				3					
	American sand lance				297					
	Atlantic cod/haddock		1							
	Grubby				17					
	Gulf snailfish			1						
	Longhorn sculpin				8					
	Pollock				2					
	Rock gunnel			1	156					
3/15/2007	Shorthorn sculpin				1					
	American plaice		1							
	American sand lance			2	33					
	Atlantic cod/haddock		1							
	Cunner					1				
	Grubby			9	38					
	Longhorn sculpin				1					
	Pollock				3					
	Radiated shanny				1					
	Rock gunnel				9					
	Sculpin family		2							
	Sea raven				1					

Sample Date	Common Name	Count by Life stage								
		Unknown	Egg	YSL	PYSL	YOY	Yearling and older	WF Stage 2	WF Stage 3	WF Stage 4
3/22/2007	Shorthorn sculpin				2					
	Unidentified	4								
	American plaice		1							
	American sand lance				66					
	Atlantic cod/haddock		2							
	Atlantic cod/haddock/witch		1							
	Atlantic herring				3					
	Grubby			3	35					
	Gulf snailfish				1					
	Longhorn sculpin				2					
	Pollock				4					
	Rock gunnel				136					
	Shorthorn sculpin				2					
	Winter flounder		12							
	Wrymouth				1					
3/29/2007	American sand lance				32					
	Atlantic cod/haddock		2							
	Atlantic seasnail				1					
	Cunner/yellowtail flounder		1							
	Goosefish		1							
	Grubby			5	30					
	Longhorn sculpin				2					
	Pollock				1					
	Rock gunnel				148					
	Sea raven				1					
	Shorthorn sculpin				2					
	Unidentified	2								
	Winter flounder		8							
4/12/2007	Alligatorfish				1					
	American sand lance				24					
	Atlantic herring				2					
	Atlantic seasnail				2					
	Grubby			8	35					
	Longhorn sculpin			1	1					
	Rock gunnel				47					
	Sculpin family				1					
	Unidentified	1								
4/26/2007	American plaice		20							

Sample Date	Common Name	Count by Life stage								
		Unknown	Egg	YSL	PYSL	YOY	Yearling and older	WF Stage 2	WF Stage 3	WF Stage 4
	American sand lance				3					
	Atlantic cod/haddock		4							
	Atlantic cod/haddock/witch		5							
	Atlantic herring				4					
	Atlantic seasnail				6					
	Cunner/yellowtail flounder		4							
	Grubby			4	24					
	Rock gunnel			2	3					
5/10/2007	American plaice		18							
	American sand lance				1					
	Atlantic cod/haddock/witch		4							
	Atlantic seasnail				7					
	Cunner/yellowtail flounder		6							
	Fourbeard rockling/hake		7							
	Grubby				2					
	Radiated shanny			3	2					
	Rainbow smelt			4						
	Unidentified	1								
	Winter flounder		1					1		
5/24/2007	American plaice		7							
	Atlantic cod/haddock/witch		2							
	Atlantic mackerel		128							
	Atlantic seasnail				1					
	Cunner/yellowtail flounder		99							
	Fourbeard rockling		28							
	Fourbeard rockling/hake		283							
	Grubby				1					
	Rainbow smelt				74					
	Silver hake		5							
	Unidentified	1								
	Windowpane		9							
	Winter flounder							1		
6/7/2007	American plaice		19							
	Atlantic cod/haddock/witch		1							
	Atlantic mackerel		41							
	Atlantic seasnail				4					
	Atlantic tomcod					4				
	Cunner/yellowtail flounder		1773							

Sample Date	Common Name	Count by Life stage								
		Unknown	Egg	YSL	PYSL	YOY	Yearling and older	WF Stage 2	WF Stage 3	WF Stage 4
	Fourbeard rockling/hake		21							
	Haddock		1							
	Rainbow smelt				20					
	Windowpane		12							
	Winter flounder							1		
6/14/2007	Atlantic mackerel		164							
	Atlantic menhaden		3							
	Cunner/yellowtail flounder		399							
	Fourbeard rockling		4							
	Fourbeard rockling/hake		14							
	Windowpane		3							
6/21/2007	American plaice		5							
	Atlantic cod/haddock/witch		14							
	Atlantic mackerel		16							
	Atlantic menhaden		25							
	Cunner/yellowtail flounder		1244							
	Fourbeard rockling		1							
	Fourbeard rockling/hake		7							
	Rainbow smelt				1					
6/28/2007	Urophycis species		10							
	American plaice		1							
	Atlantic cod/haddock/witch		1							
	Atlantic mackerel		2							
	Atlantic menhaden		24							
	Atlantic seasnail				1					
	Cunner/yellowtail flounder		1312							
	Fourbeard rockling/hake		6							
	Northern pipefish				5					
	Radiated shanny				2					
7/5/2007	Winter flounder								15	1
	Atlantic cod/haddock/witch		1							
	Atlantic mackerel		8							
	Cunner				2					
	Cunner/yellowtail flounder		730							
	Fourbeard rockling				1					
	Fourbeard rockling/hake		6							
	Northern pipefish				4					
	Radiated shanny				2					

Sample Date	Common Name	Count by Life stage								
		Unknown	Egg	YSL	PYSL	YOY	Yearling and older	WF Stage 2	WF Stage 3	WF Stage 4
	Silver hake		1							
	Unidentified	1								
	Urophycis species		1							
	Windowpane		1							
	Winter flounder							1	1	
7/12/2007	American plaice				1					
	Atlantic mackerel		6		1					
	Cunner				58					
	Cunner/yellowtail flounder		312							
	Fourbeard rockling/hake		16							
	Northern pipefish				6					
	Radiated shanny				2					
	Urophycis species		18							
	Windowpane				1					
	Winter flounder								1	
	Witch flounder				1					
7/19/2007	American plaice				2					
	Atlantic mackerel		2							
	Cunner				52					
	Cunner/yellowtail flounder		269							
	Fourbeard rockling				3					
	Fourbeard rockling/hake		2							
	Northern pipefish				4					
	Radiated shanny				1					
	Windowpane		1							
	Witch flounder				1					
7/26/2007	Cunner				661					
	Cunner/yellowtail flounder		518							
	Fourbeard rockling		9		20					
	Fourbeard rockling/hake		9							
	Northern pipefish				5					
	Prionotus species		1							
	Radiated shanny				2					
	Urophycis species		8							
	Windowpane		6		2					
	Winter flounder								1	
8/2/2007	Cunner		1		562					
	Cunner/yellowtail flounder		37							

Sample Date	Common Name	Count by Life stage								
		Unknown	Egg	YSL	PYSL	YOY	Yearling and older	WF Stage 2	WF Stage 3	WF Stage 4
	Fourbeard rockling		1	1	7					
	Fourbeard rockling/hake		6							
	Northern pipefish				45					
	Prionotus species		4							
	Silver hake		6	1						
	Tautog		1							
	Urophycis species		10							
	Windowpane		4		1					
8/9/2007	Cunner				1580					
	Cunner/yellowtail flounder		66							
	Fourbeard rockling		2		34					
	Fourbeard rockling/hake		7							
	Northern pipefish				2		1			
	Prionotus species		2							
	Radiated shanny				4					
	Urophycis species		1							
8/16/2007	Windowpane		1							
	Atlantic cod/haddock/witch		1							
	Cunner				441					
	Cunner/yellowtail flounder		32							
	Fourbeard rockling		2		21					
	Fourbeard rockling/hake		6							
	Northern pipefish				1					
	Silver hake		4		2					
8/23/2007	Urophycis species		8							
	Windowpane		4							
	Cunner				315					
	Cunner/yellowtail flounder		9							
	Fourbeard rockling		2		21					
	Fourbeard rockling/hake		29							
	Northern pipefish				1					
	Tautog		4							
8/30/2007	Urophycis species		112							
	Windowpane		1							
	Cunner				113					
	Cunner/yellowtail flounder		15							
	Fourbeard rockling		1		7					
	Fourbeard rockling/hake		2							

Sample Date	Common Name	Count by Life stage								
		Unknown	Egg	YSL	PYSL	YOY	Yearling and older	WF Stage 2	WF Stage 3	WF Stage 4
9/13/2007	Northern pipefish			1	1					
	Prionotus species		1							
	Unidentified	12								
	Windowpane		2							
	Cunner				3	1				
	Cunner/yellowtail flounder		5							
	Fourbeard rockling				1					
	Fourbeard rockling/hake		1							
	Northern pipefish						1			
	Tautog		1							
9/27/2007	Urophycis species		1							
	Windowpane				1					
	Fourbeard rockling/hake		1							
	Silver hake		7							
	Windowpane		1							

Appendix Table B-3. Total count by sample date of all life stages for each macrocrustacean taxa enumerated from entrainment samples at Screen House #2 of Schiller Station for the period 31 August 2006 through 27 September 2007.

Sample Date	Common Name	Count by Life Stage				
		American lobster		Crabs		
		Stage I	Stage II	Juvenile	Megalops	Zoea
31-Aug-06	Atlantic rock crab			0	2	0
	<i>Cancer</i> sp.			0	0	715
	Green crab			0	49	4514
	Japanese shore crab			0	0	179
14-Sep-06	Atlantic rock crab			0	2	0
	<i>Cancer</i> sp.			0	0	378
	Green crab			1	11	1822
	Japanese shore crab			0	0	71
28-Sep-06	Jonah crab			0	4	0
	Atlantic rock crab			0	1	0
	<i>Cancer</i> sp.			0	0	38
	Green crab			0	1	394
12-Oct-06	Japanese shore crab			0	0	55
	Atlantic rock crab			0	24	0
	<i>Cancer</i> sp.			0	0	98
	Green crab			1	32	267
26-Oct-06	Japanese shore crab			0	0	16
	Jonah crab			0	3	0
	Atlantic rock crab			0	1	0
	<i>Cancer</i> sp.			0	0	1
9-Nov-06	Green crab			2	0	29
	Japanese shore crab			0	0	3
	Jonah crab			1	0	0
	Arctic lyre crab			0	0	1
21-Nov-06	Atlantic rock crab			0	1	0
	<i>Cancer</i> sp.			0	0	1
	Green crab			1	0	3
	<i>Cancer</i> sp.			0	0	3
7-Dec-06	Green crab			1	0	8
	Japanese shore crab			0	0	3
	Atlantic rock crab			0	1	0
	Green crab			0	0	6
21-Dec-06	Green crab			0	0	5
	Japanese shore crab			0	0	1
	Green crab			0	0	1
	Japanese shore crab			0	0	1
4-Jan-07	Green crab			0	0	1
	Japanese shore crab			0	0	1
	Green crab			0	0	1
	Japanese shore crab			0	0	2
8-Feb-07	Green crab			0	0	1
	<i>Cancer</i> sp.			0	0	1
	Green crab			1	0	0
	Green crab			0	0	2
22-Feb-07	Green crab			0	0	2
	Arctic lyre crab			0	0	2
	<i>Cancer</i> sp.			0	0	37
	Green crab			0	0	2

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Sample Date	Common Name	Count by Life Stage				
		American lobster		Crabs		
		Stage I	Stage II	Juvenile	Megalops	Zoea
24-May-07	Green crab			0	0	3
	Arctic lyre crab			0	0	4
	<i>Cancer</i> sp.			0	0	4151
	Green crab			0	0	86
7-Jun-07	Arctic lyre crab			0	0	2
	<i>Cancer</i> sp.			0	0	883
	Green crab			1	0	10166
	Japanese shore crab			0	0	1
14-Jun-07	Arctic lyre crab			0	0	6
	<i>Cancer</i> sp.			0	0	737
	Green crab			1	0	2325
21-Jun-07	American lobster	0	2			
	Arctic lyre crab			0	0	2
	<i>Cancer</i> sp.			0	0	8035
	Green crab			0	0	5744
	Japanese shore crab			0	0	32
28-Jun-07	Arctic lyre crab			0	0	2
	Atlantic lyre crab			0	0	3
	<i>Cancer</i> sp.			0	0	3268
	Green crab			0	0	8631
	Japanese shore crab			0	0	63
5-Jul-07	American lobster	1	0			
	Arctic lyre crab			0	0	1
	Atlantic lyre crab			0	0	3
	Atlantic rock crab			0	4	0
	<i>Cancer</i> sp.			0	0	2424
	Green crab			0	1	8158
	Japanese shore crab			0	0	43
12-Jul-07	American lobster	1	0			
	Arctic lyre crab			0	0	1
	Atlantic rock crab			0	6	0
	<i>Cancer</i> sp.			0	0	3283
	Green crab			0	121	3983
	Japanese shore crab			0	0	38
	Jonah crab			0	2	0
19-Jul-07	American lobster	2	0			
	Arctic lyre crab			0	0	1
	Atlantic rock crab			0	8	0
	<i>Cancer</i> sp.			0	0	3994
	Green crab			0	29	8302
	Japanese shore crab			0	0	56
	Jonah crab			0	2	0
26-Jul-07	American lobster	1	0			
	Atlantic rock crab			0	21	0
	<i>Cancer</i> sp.			0	0	10908
	Green crab			2	518.71	10942
	Japanese shore crab			0	0	95
2-Aug-07	Atlantic rock crab			0	4	0
	<i>Cancer</i> sp.			0	8	10535

Schiller Station Entrainment and Impingement Studies

Sample Date	Common Name	Count by Life Stage				
		American lobster		Crabs		
		Stage I	Stage II	Juvenile	Megalops	Zoea
	Green crab			0	3	8719
	Japanese shore crab			0	0	73
	Jonah crab			0	5	0
9-Aug-07	Arctic lyre crab			0	0	1
	Atlantic rock crab			2	13	0
	<i>Cancer</i> sp.			0	0	3914
	Green crab			4	34	2974
	Japanese shore crab			0	0	58
16-Aug-07	Atlantic rock crab			1	52	0
	<i>Cancer</i> sp.			0	0	6694
	Green crab			3	52	2020
	Japanese shore crab			0	0	31
	Jonah crab			1	6	0
23-Aug-07	Atlantic rock crab			5	8	0
	<i>Cancer</i> sp.			0	0	880
	Green crab			6	28	935
	Japanese shore crab			0	0	33
30-Aug-07	Atlantic rock crab			0	16	0
	<i>Cancer</i> sp.			0	0	3346
	Green crab			4	97	663
	Japanese shore crab			0	0	13
	Jonah crab			0	1	0
13-Sep-07	Atlantic rock crab			0	1	0
	<i>Cancer</i> sp.			0	0	286
	Green crab			5	47	244
	Japanese shore crab			0	0	8
	Jonah crab			0	4	0
27-Sep-07	<i>Cancer</i> sp.			0	0	120
	Green crab			2	0	126
	Jonah crab			0	2	0
	American lobster	5	2			
	Arctic lyre crab			0	0	23
Total	Atlantic lyre crab			0	0	6
	Atlantic rock crab			8	165	0
	<i>Cancer</i> sp.			0	8	64728
	Green crab			35	1024	81073
	Japanese shore crab			0	0	874
	Jonah crab			2	29	0

Appendix Table B-4. Weekly entrainment density^a, operating flow (million gallons / week), and estimated entrainment abundance by fish taxon and lifestage at Units 4, 5, 6 and all Units combined of Schiller Station for the period 31 August 2006 through 27 September 2007.

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
4	2006	August	27-Aug-06	Cunner	PYSL	1.4721	10,811	15,915
					YOY	1.4832	10,811	16,034
				Cunner/yellowtail flounder	Egg	0.9969	10,811	10,777
				Fourbeard rockling	Egg	0.7499	10,811	8,107
					YSL	0.2503	10,811	2,706
					PYSL	0.2493	10,811	2,695
				Fourbeard rockling/hake	Egg	0.4986	10,811	5,390
				Silver hake	Egg	0.9999	10,811	10,810
					YSL	0.238	10,811	2,573
				Urophycis species	Egg	3.1758	10,811	34,333
		September	3-Sep-06	Cunner	PYSL	0.8702	10,811	9,408
					YOY	0.7416	10,811	8,017
				Cunner/yellowtail flounder	Egg	0.4984	10,811	5,389
				Fourbeard rockling	Egg	0.4991	10,811	5,396
					YSL	0.1252	10,811	1,353
					PYSL	0.1246	10,811	1,347
				Fourbeard rockling/hake	Egg	0.3735	10,811	4,038
				Silver hake	Egg	0.5	10,811	5,405
					YSL	0.119	10,811	1,286
				Urophycis species	Egg	1.7121	10,811	18,509
			10-Sep-06	Cunner	PYSL	0.2683	10,811	2,900
				Fourbeard rockling	Egg	0.2484	10,811	2,685
				Fourbeard rockling/hake	Egg	0.2484	10,811	2,685
				Urophycis species	Egg	0.2483	10,811	2,684
			17-Sep-06	Cunner	PYSL	0.1341	10,811	1,450
				Fourbeard rockling	Egg	0.1242	10,811	1,343
				Fourbeard rockling/hake	Egg	0.1242	10,811	1,343
				Urophycis species	Egg	0.1242	10,811	1,342
		October	1-Oct-06	Atlantic menhaden	Egg	1.2489	10,811	13,501
				Fourbeard rockling/hake	Egg	0.1249	10,811	1,350
			8-Oct-06	Atlantic menhaden	Egg	2.4978	10,811	27,003
				Fourbeard rockling/hake	Egg	0.2498	10,811	2,700
			15-Oct-06	Atlantic menhaden	Egg	1.2489	1,544	1,929
				Fourbeard rockling/hake	Egg	0.1249	1,544	193
			29-Oct-06	Atlantic cod	Egg	0.6248	0	0
				Atlantic herring	PYSL	0.855	0	0
				Summer flounder	Egg	0.1211	0	0
		November	5-Nov-06	Atlantic cod	Egg	1.2496	0	0

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			12-Nov-06	Atlantic herring	PYSL	1.71	0	0
				Summer flounder	Egg	0.2421	0	0
				Atlantic cod	Egg	1.3061	3,024	3,950
				Atlantic herring	PYSL	6.4475	3,024	19,500
				Northern pipefish	Yearling or older	0.2348	3,024	710
				Pollock	Egg	0.1122	3,024	339
				Summer flounder	Egg	0.1211	3,024	366
			19-Nov-06	Atlantic cod	Egg	1.3626	10,811	14,730
				Atlantic herring	PYSL	11.1849	10,811	120,918
				Northern pipefish	Yearling or older	0.4695	10,811	5,076
				Pollock	Egg	0.2243	10,811	2,425
			26-Nov-06	Atlantic cod	Egg	1.3031	10,811	14,088
				Atlantic herring	PYSL	7.7257	10,811	83,521
				Northern pipefish	Yearling or older	0.2348	10,811	2,538
				Pollock	Egg	0.3528	10,811	3,814
		December	3-Dec-06	Atlantic cod	Egg	1.2437	10,811	13,446
				Atlantic herring	PYSL	4.2665	10,811	46,124
				Pollock	Egg	0.4814	10,811	5,204
			10-Dec-06	Atlantic cod	Egg	0.7471	10,811	8,077
				Atlantic herring	PYSL	2.9683	10,811	32,090
				Pollock	Egg	0.2407	10,811	2,602
			17-Dec-06	Atlantic cod	Egg	0.2505	10,811	2,708
				Atlantic herring	PYSL	1.6701	10,811	18,056
			24-Dec-06	Atlantic cod	Egg	0.2499	10,811	2,701
				Atlantic herring	PYSL	2.6804	10,811	28,978
				Northern pipefish	Yearling or older	0.1246	10,811	1,347
				Pollock	YSL	0.125	10,811	1,351
2007	January		31-Dec-06	Atlantic cod	Egg	0.3683	10,811	3,982
				Atlantic herring	PYSL	0.2492	10,811	2,694
				Northern pipefish	Yearling or older	0.2492	10,811	2,694
				Pollock	YSL	0.25	10,811	2,702
					PYSL	0.7367	10,811	7,964
					PYSL	0.7497	10,811	8,105
			7-Jan-07	American sand lance	PYSL	0.4998	10,811	5,404
				Atlantic cod	PYSL	0.2498	10,811	2,701
				Atlantic herring	PYSL	5.7485	10,811	62,146
				Grubby	YSL	0.499	10,811	5,394
				Longhorn sculpin	YSL	0.25	10,811	2,702

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			14-Jan-07	Pollock	YSL	0.4998	10,811	5,404
					PYSL	0.2499	10,811	2,702
				Rock gunnel	YSL	5.9968	10,811	64,830
				American sand lance	YSL	22.6453	10,811	244,814
					PYSL	0.6948	10,811	7,511
				Atlantic cod	Egg	0.3446	10,811	3,725
				Atlantic herring	PYSL	2.3598	10,811	25,512
				Grubby	YSL	2.6517	10,811	28,667
					PYSL	1.999	10,811	21,611
				Longhorn sculpin	PYSL	0.1723	10,811	1,863
				Pollock	Egg	0.4998	10,811	5,403
					YSL	2.2308	10,811	24,117
					PYSL	2.8878	10,811	31,220
				Rock gunnel	YSL	8.6137	10,811	93,121
					PYSL	3.2155	10,811	34,762
				Sculpin family	YSL	0.2499	10,811	2,702
			21-Jan-07	American sand lance	YSL	14.3314	10,811	154,934
					PYSL	5.6657	10,811	61,251
				Atlantic cod	Egg	0.3333	10,811	3,603
				Atlantic herring	PYSL	0.6666	10,811	7,207
				Goosefish	Egg	2.3328	10,811	25,219
				Grubby	YSL	1.6664	10,811	18,015
					PYSL	2.6665	10,811	28,827
				Pollock	Egg	0.6666	10,811	7,207
					PYSL	0.6665	10,811	7,205
				Rock gunnel	YSL	14.6649	10,811	158,539
					PYSL	7.6656	10,811	82,871
				American sand lance	YSL	7.5593	10,811	81,722
					PYSL	23.7897	10,811	257,186
			28-Jan-07	Atlantic cod/haddock	Egg	0.7499	10,811	8,107
				Atlantic herring	PYSL	0.7942	10,811	8,586
				Grubby	YSL	2.25	10,811	24,324
					PYSL	2.42	10,811	26,163
				Gulf snailfish	PYSL	0.25	10,811	2,702
				Longhorn sculpin	PYSL	0.5315	10,811	5,746
				Pollock	Egg	1.6259	10,811	17,577
					YSL	0.7499	10,811	8,107
					PYSL	1.4486	10,811	15,660
				Rock gunnel	YSL	0.7815	10,811	8,449
					PYSL	8.0557	10,811	87,089
			February	American eel	PYSL	0.2381	10,811	2,574
				American sand lance	YSL	11.0161	10,811	119,093
					PYSL	103.5238	10,811	1,119,176
				Atlantic cod	PYSL	0.4761	10,811	5,147

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Atlantic cod/haddock	Egg	0.7372	10,811	7,970
				Atlantic herring	PYSL	0.9638	10,811	10,420
				Grubby	YSL	0.9228	10,811	9,977
					PYSL	5.8085	10,811	62,795
				Longhorn sculpin	PYSL	2.6534	10,811	28,686
				Pollock	YSL	0.2495	10,811	2,697
					PYSL	0.4582	10,811	4,953
				Rock gunnel	YSL	5.7564	10,811	62,231
					PYSL	16.7942	10,811	181,559
				Shorthorn sculpin	YSL	0.2087	10,811	2,256
					PYSL	0.4583	10,811	4,955
				Striped killifish	Yearling or older	0.2381	10,811	2,574
			11-Feb-07	American sand lance	YSL	3.8085	10,811	41,173
					PYSL	20.4466	10,811	221,044
				Atlantic cod	PYSL	0.2599	10,811	2,810
				Atlantic cod/haddock	Egg	0.2599	10,811	2,810
				Goosefish	Egg	0.7798	10,811	8,430
				Grubby	YSL	0.999	10,811	10,800
					PYSL	6.9417	10,811	75,045
				Longhorn sculpin	YSL	0.4996	10,811	5,401
					PYSL	2.0736	10,811	22,418
				Pollock	YSL	0.2497	10,811	2,700
					PYSL	0.9991	10,811	10,801
				Rock gunnel	YSL	2.3332	10,811	25,223
					PYSL	18.2164	10,811	196,934
				Sculpin family	YSL	0.2499	10,811	2,701
			18-Feb-07	American sand lance	YSL	2.116	10,811	22,876
					PYSL	13.2806	10,811	143,574
				Grubby	YSL	0.6993	10,811	7,560
					PYSL	3.4337	10,811	37,121
				Longhorn sculpin	PYSL	0.9256	10,811	10,007
				Pollock	PYSL	0.2129	10,811	2,302
				Rock gunnel	YSL	0.8988	10,811	9,717
					PYSL	9.3564	10,811	101,150
			25-Feb-07	Sculpin family	YSL	0.1995	10,811	2,157
				American sand lance	YSL	0.7481	10,811	8,087
					PYSL	66.3402	10,811	717,192
				Goosefish	Egg	0.4981	10,811	5,385
				Grubby	YSL	0.7499	10,811	8,107
					PYSL	6.7441	10,811	72,909
				Longhorn sculpin	PYSL	1.7422	10,811	18,834
				Pollock	PYSL	0.4999	10,811	5,405
				Rock gunnel	YSL	0.9962	10,811	10,770

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
					PYSL	8.4845	10,811	91,724
				Sculpin family	PYSL	0.2484	10,811	2,685
				Shorthorn sculpin	PYSL	0.7511	10,811	8,120
		March	4-Mar-07	American sand lance	PYSL	69.0189	10,811	746,150
				Atlantic cod/haddock	Egg	0.2498	10,811	2,701
				Grubby	PYSL	3.9322	10,811	42,510
				Gulf snailfish	YSL	0.2498	10,811	2,701
				Longhorn sculpin	PYSL	1.8073	10,811	19,539
				Pollock	PYSL	0.4555	10,811	4,924
				Rock gunnel	YSL	0.1984	10,811	2,145
					PYSL	35.9362	10,811	388,499
				Shorthorn sculpin	PYSL	0.2277	10,811	2,462
			11-Mar-07	American plaice	Egg	0.2496	10,811	2,699
				American sand lance	YSL	0.4966	10,811	5,369
					PYSL	7.6999	10,811	83,242
				Atlantic cod/haddock	Egg	0.2287	10,811	2,473
				Cunner	YOY	0.2232	10,811	2,413
				Grubby	YSL	2.2175	10,811	23,973
					PYSL	9.2168	10,811	99,641
				Longhorn sculpin	PYSL	0.2496	10,811	2,699
				Pollock	PYSL	0.6697	10,811	7,240
				Radiated shanny	PYSL	0.2287	10,811	2,473
				Rock gunnel	PYSL	2.1413	10,811	23,149
				Sculpin family	Egg	0.494	10,811	5,340
				Sea raven	PYSL	0.2287	10,811	2,473
				Shorthorn sculpin	PYSL	0.494	10,811	5,340
				Unidentifiable	Unknown	0.9985	10,811	10,794
			18-Mar-07	American plaice	Egg	0.1902	10,811	2,057
				American sand lance	PYSL	15.7058	10,811	169,793
				Atlantic cod/haddock	Egg	0.3805	10,811	4,113
				Atlantic cod/haddock/witch	Egg	0.2493	10,811	2,695
				Atlantic herring	PYSL	0.5707	10,811	6,170
				Grubby	YSL	0.63	10,811	6,811
					PYSL	8.0445	10,811	86,968
				Gulf snailfish	PYSL	0.2466	10,811	2,666
				Longhorn sculpin	PYSL	0.4961	10,811	5,363
				Pollock	PYSL	0.9327	10,811	10,083
				Rock gunnel	PYSL	30.8173	10,811	333,160
				Shorthorn sculpin	PYSL	0.3805	10,811	4,113
				Winter flounder	Egg	2.9079	10,811	31,437
				Wrymouth	PYSL	0.2466	10,811	2,666
			25-Mar-07	American sand lance	PYSL	7.5963	7,658	58,170
				Atlantic cod/haddock	Egg	0.4772	7,658	3,654
				Atlantic seasnail	PYSL	0.2273	7,658	1,741

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Cunner/yellowtail flounder	Egg	0.2273	7,658	1,741
				Goosefish	Egg	0.25	7,658	1,914
				Grubby	YSL	1.1365	7,658	8,703
					PYSL	7.1804	7,658	54,985
				Longhorn sculpin	PYSL	0.4772	7,658	3,654
				Pollock	PYSL	0.2273	7,658	1,741
				Rock gunnel	PYSL	36.4984	7,658	279,492
				Sea raven	PYSL	0.2499	7,658	1,913
				Shorthorn sculpin	PYSL	0.4998	7,658	3,827
				Unidentifiable	Unknown	0.4228	7,658	3,238
				Winter flounder	Egg	1.8451	7,658	14,129
		April	1-Apr-07	Alligatorfish	PYSL	0.1246	10,811	1,347
				American sand lance	PYSL	6.6089	10,811	71,448
				Atlantic cod/haddock	Egg	0.2386	10,811	2,579
				Atlantic herring	PYSL	0.2288	10,811	2,473
				Atlantic seasnail	PYSL	0.3485	10,811	3,768
				Cunner/yellowtail flounder	Egg	0.1136	10,811	1,229
				Goosefish	Egg	0.125	10,811	1,351
				Grubby	YSL	1.5425	10,811	16,676
					PYSL	7.8572	10,811	84,943
				Longhorn sculpin	YSL	0.1246	10,811	1,347
					PYSL	0.353	10,811	3,816
				Pollock	PYSL	0.1136	10,811	1,229
				Rock gunnel	PYSL	23.7173	10,811	256,403
				Sculpin family	PYSL	0.1221	10,811	1,320
				Sea raven	PYSL	0.1249	10,811	1,351
				Shorthorn sculpin	PYSL	0.2499	10,811	2,701
				Unidentifiable	Unknown	0.3335	10,811	3,606
				Winter flounder	Egg	0.9226	10,811	9,974
			8-Apr-07	Alligatorfish	PYSL	0.2492	10,811	2,694
				American sand lance	PYSL	5.6215	10,811	60,773
				Atlantic herring	PYSL	0.4576	10,811	4,947
				Atlantic seasnail	PYSL	0.4698	10,811	5,079
				Grubby	YSL	1.9486	10,811	21,066
					PYSL	8.534	10,811	92,259
				Longhorn sculpin	YSL	0.2492	10,811	2,694
					PYSL	0.2288	10,811	2,473
				Rock gunnel	PYSL	10.9362	10,811	118,229
				Sculpin family	PYSL	0.2442	10,811	2,640
				Unidentifiable	Unknown	0.2442	10,811	2,640
			15-Apr-07	Alligatorfish	PYSL	0.1246	10,811	1,347
				American plaice	Egg	2.4483	10,811	26,468
				American sand lance	PYSL	3.1848	10,811	34,431
				Atlantic cod/haddock	Egg	0.4751	10,811	5,136

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Atlantic cod/haddock/witch	Egg	0.6244	10,811	6,750
				Atlantic herring	PYSL	0.7221	10,811	7,807
				Atlantic seasnail	PYSL	0.9771	10,811	10,564
				Cunner/yellowtail flounder	Egg	0.4874	10,811	5,269
				Grubby	YSL	1.4731	10,811	15,925
					PYSL	7.2377	10,811	78,246
				Longhorn sculpin	YSL	0.1246	10,811	1,347
					PYSL	0.1144	10,811	1,237
				Rock gunnel	YSL	0.2498	10,811	2,701
					PYSL	5.8424	10,811	63,161
				Sculpin family	PYSL	0.1221	10,811	1,320
				Unidentifiable	Unknown	0.1221	10,811	1,320
			22-Apr-07	American plaice	Egg	4.8967	10,811	52,937
				American sand lance	PYSL	0.7481	10,811	8,088
				Atlantic cod/haddock	Egg	0.9502	10,811	10,272
				Atlantic cod/haddock/witch	Egg	1.2488	10,811	13,500
				Atlantic herring	PYSL	0.9866	10,811	10,666
				Atlantic seasnail	PYSL	1.4845	10,811	16,049
				Cunner/yellowtail flounder	Egg	0.9748	10,811	10,538
				Grubby	YSL	0.9976	10,811	10,785
					PYSL	5.9415	10,811	64,232
				Rock gunnel	YSL	0.4997	10,811	5,402
					PYSL	0.7486	10,811	8,093
			29-Apr-07	American plaice	Egg	4.6905	10,811	50,708
				American sand lance	PYSL	0.4968	10,811	5,370
				Atlantic cod/haddock	Egg	0.4751	10,811	5,136
				Atlantic cod/haddock/witch	Egg	1.1225	10,811	12,135
				Atlantic herring	PYSL	0.4933	10,811	5,333
				Atlantic seasnail	PYSL	1.6063	10,811	17,365
				Cunner/yellowtail flounder	Egg	1.2375	10,811	13,378
				Fourbeard rockling/hake	Egg	0.8728	10,811	9,435
				Grubby	YSL	0.4988	10,811	5,393
					PYSL	3.2213	10,811	34,824
				Radiated shanny	YSL	0.3681	10,811	3,979
					PYSL	0.2454	10,811	2,653
				Rainbow smelt	YSL	0.4908	10,811	5,306
				Rock gunnel	YSL	0.2498	10,811	2,701
					PYSL	0.3743	10,811	4,047
				Unidentifiable	Unknown	0.1245	10,811	1,346
				Winter flounder	Egg	0.1245	10,811	1,346
					WF Stage 2	0.1227	10,811	1,326
		May	6-May-07	American plaice	Egg	4.4844	10,811	48,480
				American sand lance	PYSL	0.2454	10,811	2,653
				Atlantic cod/haddock/witch	Egg	0.9962	10,811	10,770

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Atlantic seasnail	PYSL	1.728	10,811	18,681
				Cunner/yellowtail flounder	Egg	1.5001	10,811	16,218
				Fourbeard rockling/hake	Egg	1.7455	10,811	18,871
				Grubby	PYSL	0.501	10,811	5,416
				Radiated shanny	YSL	0.7362	10,811	7,959
					PYSL	0.4908	10,811	5,306
				Rainbow smelt	YSL	0.9816	10,811	10,612
				Unidentifiable	Unknown	0.249	10,811	2,692
				Winter flounder	Egg	0.249	10,811	2,692
					WF Stage 2	0.2454	10,811	2,653
			13-May-07	American plaice	Egg	3.1135	10,811	33,659
				American sand lance	PYSL	0.1227	10,811	1,326
				Atlantic cod/haddock/witch	Egg	0.7349	10,811	7,945
				Atlantic mackerel	Egg	15.7969	10,811	170,778
				Atlantic seasnail	PYSL	1.0247	10,811	11,078
				Cunner/yellowtail flounder	Egg	14.8409	10,811	160,442
				Fourbeard rockling	Egg	3.4028	10,811	36,787
				Fourbeard rockling/hake	Egg	35.1346	10,811	379,834
				Grubby	PYSL	0.3755	10,811	4,059
				Radiated shanny	YSL	0.3681	10,811	3,979
					PYSL	0.2454	10,811	2,653
				Rainbow smelt	YSL	0.4908	10,811	5,306
					PYSL	9.4151	10,811	101,784
				Silver hake	Egg	0.6249	10,811	6,755
				Unidentifiable	Unknown	0.2422	10,811	2,618
			20-May-07	Windowpane	Egg	1.0827	10,811	11,705
				Winter flounder	Egg	0.1245	10,811	1,346
					WF Stage 2	0.2477	10,811	2,678
				American plaice	Egg	1.7426	10,811	18,838
				Atlantic cod/haddock/witch	Egg	0.4737	10,811	5,121
				Atlantic mackerel	Egg	31.5939	10,811	341,555
				Atlantic seasnail	PYSL	0.3214	10,811	3,475
				Cunner/yellowtail flounder	Egg	28.1817	10,811	304,667
			27-May-07	Fourbeard rockling	Egg	6.8057	10,811	73,575
				Fourbeard rockling/hake	Egg	68.5237	10,811	740,797
				Grubby	PYSL	0.2499	10,811	2,702
				Rainbow smelt	PYSL	18.8301	10,811	203,569
				Silver hake	Egg	1.2497	10,811	13,510
				Unidentifiable	Unknown	0.2353	10,811	2,544
				Windowpane	Egg	2.1655	10,811	23,411
				Winter flounder	WF Stage 2	0.2499	10,811	2,702
				American plaice	Egg	2.8579	10,811	30,897
				Atlantic cod/haddock/witch	Egg	0.3035	10,811	3,281
				Atlantic mackerel	Egg	20.1695	10,811	218,049

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Atlantic seasnail	PYSL	1.1476	10,811	12,407
				Atlantic tomcod	YOY	0.4999	10,811	5,404
				Cunner/yellowtail flounder	Egg	241.7998	10,811	2,614,051
				Fourbeard rockling	Egg	3.4028	10,811	36,787
				Fourbeard rockling/hake	Egg	37.3287	10,811	403,553
				Grubby	PYSL	0.125	10,811	1,351
				Haddock	Egg	0.0666	10,811	721
				Rainbow smelt	PYSL	12.6485	10,811	136,741
				Silver hake	Egg	0.6249	10,811	6,755
				Unidentifiable	Unknown	0.1177	10,811	1,272
				Windowpane	Egg	2.1158	10,811	22,874
				Winter flounder	WF Stage 2	0.4317	10,811	4,667
		June	3-Jun-07	American plaice	Egg	3.9733	10,811	42,955
				Atlantic cod/haddock/witch	Egg	0.1333	10,811	1,441
				Atlantic mackerel	Egg	8.7451	10,811	94,542
				Atlantic seasnail	PYSL	1.9738	10,811	21,339
				Atlantic tomcod	YOY	0.9998	10,811	10,809
				Cunner/yellowtail flounder	Egg	455.4178	10,811	4,923,436
				Fourbeard rockling/hake	Egg	6.1336	10,811	66,309
				Haddock	Egg	0.1333	10,811	1,441
				Rainbow smelt	PYSL	6.4669	10,811	69,912
				Windowpane	Egg	2.0662	10,811	22,337
				Winter flounder	WF Stage 2	0.6135	10,811	6,633
			10-Jun-07	Atlantic mackerel	Egg	80.4595	10,811	869,833
				Atlantic menhaden	Egg	1.4795	10,811	15,994
				Cunner/yellowtail flounder	Egg	197.4314	10,811	2,134,394
				Fourbeard rockling	Egg	1.9749	10,811	21,350
				Fourbeard rockling/hake	Egg	6.8819	10,811	74,399
				Windowpane	Egg	1.466	10,811	15,849
			17-Jun-07	American plaice	Egg	1.2068	10,811	13,046
				Atlantic cod/haddock/witch	Egg	3.4322	10,811	37,105
				Atlantic mackerel	Egg	3.8745	10,811	41,887
				Atlantic menhaden	Egg	5.912	10,811	63,913
				Cunner/yellowtail flounder	Egg	299.6306	10,811	3,239,249
				Fourbeard rockling	Egg	0.25	10,811	2,702
				Fourbeard rockling/hake	Egg	1.7316	10,811	18,720
				Rainbow smelt	PYSL	0.233	10,811	2,519
				Urophycis species	Egg	2.3917	10,811	25,856
			24-Jun-07	American plaice	Egg	0.2192	10,811	2,370
				Atlantic cod/haddock/witch	Egg	0.2192	10,811	2,370
				Atlantic mackerel	Egg	0.4384	10,811	4,739
				Atlantic menhaden	Egg	5.8678	10,811	63,435
				Atlantic seasnail	PYSL	0.2192	10,811	2,370
				Cunner/yellowtail flounder	Egg	325.6014	10,811	3,520,015

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
		July	1-Jul-07	Fourbeard rockling/hake	Egg	1.421	10,811	15,362
				Northern pipefish	PYSL	1.2182	10,811	13,170
				Radiated shanny	PYSL	0.4384	10,811	4,739
				Winter flounder	WF Stage 3	3.3409	10,811	36,118
					WF Stage 4	0.2192	10,811	2,370
				Atlantic cod/haddock/witch	Egg	0.2324	10,811	2,512
				Atlantic mackerel	Egg	1.9778	10,811	21,382
				Cunner	PYSL	0.4972	10,811	5,375
				Cunner/yellowtail flounder	Egg	182.369	10,811	1,971,557
				Fourbeard rockling	PYSL	0.2324	10,811	2,512
		July	1-Jul-07	Fourbeard rockling/hake	Egg	1.4955	10,811	16,167
				Northern pipefish	PYSL	0.9458	10,811	10,224
				Radiated shanny	PYSL	0.4648	10,811	5,025
				Silver hake	Egg	0.2486	10,811	2,688
				Unidentifiable	Unknown	0.2499	10,811	2,701
				Urophycis species	Egg	0.2486	10,811	2,688
				Windowpane	Egg	0.2324	10,811	2,512
				Winter flounder	WF Stage 2	0.2486	10,811	2,688
					WF Stage 3	0.2324	10,811	2,512
			8-Jul-07	American plaice	PYSL	0.2498	10,811	2,700
				Atlantic mackerel	Egg	1.4957	10,811	16,169
					PYSL	0.2498	10,811	2,700
				Cunner	PYSL	14.4466	10,811	156,179
				Cunner/yellowtail flounder	Egg	77.3937	10,811	836,689
				Fourbeard rockling/hake	Egg	3.9865	10,811	43,097
				Northern pipefish	PYSL	1.4913	10,811	16,122
				Radiated shanny	PYSL	0.4995	10,811	5,400
				Urophycis species	Egg	4.4944	10,811	48,588
				Windowpane	PYSL	0.2462	10,811	2,661
				Winter flounder	WF Stage 3	0.2498	10,811	2,700
				Witch flounder	PYSL	0.2498	10,811	2,700
			15-Jul-07	American plaice	PYSL	0.4991	10,811	5,396
				Atlantic mackerel	Egg	0.4975	10,811	5,379
				Cunner	PYSL	12.9772	10,811	140,294
				Cunner/yellowtail flounder	Egg	67.1686	10,811	726,147
				Fourbeard rockling	PYSL	0.7465	10,811	8,070
				Fourbeard rockling/hake	Egg	0.4982	10,811	5,386
				Northern pipefish	PYSL	0.9932	10,811	10,738
				Radiated shanny	PYSL	0.25	10,811	2,702
				Windowpane	Egg	0.2483	10,811	2,684
				Witch flounder	PYSL	0.2483	10,811	2,684
		July	22-Jul-07	Cunner	PYSL	156.7505	10,811	1,694,600
				Cunner/yellowtail flounder	Egg	127.1381	10,811	1,374,466
				Fourbeard rockling	Egg	2.1744	10,811	23,507

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
					PYSL	4.8682	10,811	52,629
				Fourbeard rockling/hake	Egg	2.1152	10,811	22,867
				Northern pipefish	PYSL	1.0688	10,811	11,555
				Prionotus species	Egg	0.1906	10,811	2,060
				Radiated shanny	PYSL	0.4404	10,811	4,761
				Urophycis species	Egg	1.8653	10,811	20,166
				Windowpane	Egg	1.4348	10,811	15,511
					PYSL	0.4947	10,811	5,349
				Winter flounder	WF Stage 3	0.2498	10,811	2,701
			29-Jul-07	Cunner	Egg	0.2325	10,811	2,513
					PYSL	133.7088	10,811	1,445,501
				Cunner/yellowtail flounder	Egg	8.4871	10,811	91,752
				Fourbeard rockling	Egg	0.1897	10,811	2,050
					YSL	0.248	10,811	2,681
					PYSL	1.6704	10,811	18,058
				Fourbeard rockling/hake	Egg	1.3332	10,811	14,413
				Northern pipefish	PYSL	10.8901	10,811	117,731
				Prionotus species	Egg	0.9778	10,811	10,571
				Silver hake	Egg	1.3024	10,811	14,080
					YSL	0.2325	10,811	2,513
				Tautog	Egg	0.2325	10,811	2,513
				Urophycis species	Egg	2.1502	10,811	23,245
				Windowpane	Egg	0.923	10,811	9,979
					PYSL	0.2445	10,811	2,643
		August	5-Aug-07	Cunner	PYSL	390.8602	10,811	4,225,516
				Cunner/yellowtail flounder	Egg	16.3733	10,811	177,009
				Fourbeard rockling	Egg	0.4919	10,811	5,318
					PYSL	8.3799	10,811	90,593
				Fourbeard rockling/hake	Egg	1.7345	10,811	18,751
				Northern pipefish	PYSL	0.4919	10,811	5,318
					Yearling or older	0.25	10,811	2,702
				Prionotus species	Egg	0.4999	10,811	5,405
				Radiated shanny	PYSL	0.9916	10,811	10,720
				Urophycis species	Egg	0.2464	10,811	2,664
				Windowpane	Egg	0.2455	10,811	2,654
			12-Aug-07	Atlantic cod/haddock/witch	Egg	0.2197	10,811	2,375
				Cunner	PYSL	98.385	10,811	1,063,622
				Cunner/yellowtail flounder	Egg	7.4701	10,811	80,758
				Fourbeard rockling	Egg	0.4249	10,811	4,593
					PYSL	4.6726	10,811	50,514
				Fourbeard rockling/hake	Egg	1.3183	10,811	14,252
				Northern pipefish	PYSL	0.2197	10,811	2,375
				Silver hake	Egg	0.8937	10,811	9,661

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			19-Aug-07		PYSL	0.4249	10,811	4,593
				Urophycis species	Egg	1.8603	10,811	20,111
				Windowpane	Egg	0.8498	10,811	9,187
				Cunner	PYSL	70.1843	10,811	758,749
				Cunner/yellowtail flounder	Egg	2.1857	10,811	23,629
				Fourbeard rockling	Egg	0.4875	10,811	5,270
					PYSL	5.067	10,811	54,779
				Fourbeard rockling/hake	Egg	6.7494	10,811	72,966
				Northern pipefish	PYSL	0.2437	10,811	2,635
				Tautog	Egg	0.9807	10,811	10,603
				Urophycis species	Egg	25.9412	10,811	280,445
				Windowpane	Egg	0.2452	10,811	2,651
			26-Aug-07	Cunner	PYSL	28.0526	10,811	303,271
				Cunner/yellowtail flounder	Egg	3.7463	10,811	40,500
				Fourbeard rockling	Egg	0.2498	10,811	2,701
					PYSL	1.7424	10,811	18,836
				Fourbeard rockling/hake	Egg	0.4931	10,811	5,331
				Northern pipefish	YSL	0.2499	10,811	2,702
					PYSL	0.2504	10,811	2,707
				Prionotus species	Egg	0.2465	10,811	2,665
				Unidentifiable	Unknown	3.0053	10,811	32,489
				Windowpane	Egg	0.497	10,811	5,373
		September	2-Sep-07	Cunner	PYSL	14.3276	10,811	154,892
					YOY	0.1256	10,811	1,358
				Cunner/yellowtail flounder	Egg	2.2867	10,811	24,721
				Fourbeard rockling	Egg	0.1249	10,811	1,350
					PYSL	0.9691	10,811	10,477
				Fourbeard rockling/hake	Egg	0.3254	10,811	3,518
				Northern pipefish	YSL	0.125	10,811	1,351
					PYSL	0.1252	10,811	1,354
					Yearling or older	0.1244	10,811	1,345
				Prionotus species	Egg	0.1233	10,811	1,333
				Tautog	Egg	0.0979	10,811	1,059
				Unidentifiable	Unknown	1.5026	10,811	16,245
			9-Sep-07	Urophycis species	Egg	0.0789	10,811	853
				Windowpane	Egg	0.2485	10,811	2,686
					PYSL	0.0979	10,811	1,059
				Cunner	PYSL	0.6026	10,811	6,514
					YOY	0.2512	10,811	2,716
				Cunner/yellowtail flounder	Egg	0.8271	10,811	8,941
				Fourbeard rockling	PYSL	0.1959	10,811	2,118
				Fourbeard rockling/hake	Egg	0.1578	10,811	1,706

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			16-Sep-07	Northern pipefish	Yearling or older	0.2489	10,811	2,691
				Tautog	Egg	0.1959	10,811	2,118
				Urophycis species	Egg	0.1578	10,811	1,706
				Windowpane	PYSL	0.1959	10,811	2,118
				Cunner	PYSL	0.3013	10,811	3,257
					YOY	0.1256	10,811	1,358
				Cunner/yellowtail flounder	Egg	0.4135	10,811	4,471
				Fourbeard rockling	PYSL	0.0979	10,811	1,059
				Fourbeard rockling/hake	Egg	0.1821	10,811	1,968
				Northern pipefish	Yearling or older	0.1244	10,811	1,345
				Silver hake	Egg	0.734	10,811	7,935
				Tautog	Egg	0.0979	10,811	1,059
				Urophycis species	Egg	0.0789	10,811	853
				Windowpane	Egg	0.1071	10,811	1,158
					PYSL	0.0979	10,811	1,059
			23-Sep-07	Fourbeard rockling/hake	Egg	0.2064	10,811	2,231
				Silver hake	Egg	1.468	10,811	15,870
				Windowpane	Egg	0.2142	10,811	2,316
5	2006	August	27-Aug-06	Cunner	PYSL	1.4721	9,494	13,976
					YOY	1.4832	9,494	14,081
				Cunner/yellowtail flounder	Egg	0.9969	9,494	9,464
				Fourbeard rockling	Egg	0.7499	9,494	7,119
					YSL	0.2503	9,494	2,376
					PYSL	0.2493	9,494	2,367
				Fourbeard rockling/hake	Egg	0.4986	9,494	4,733
				Silver hake	Egg	0.9999	9,494	9,493
					YSL	0.238	9,494	2,259
				Urophycis species	Egg	3.1758	9,494	30,149
		September	3-Sep-06	Cunner	PYSL	0.8702	5,538	4,819
					YOY	0.7416	5,538	4,107
				Cunner/yellowtail flounder	Egg	0.4984	5,538	2,760
				Fourbeard rockling	Egg	0.4991	5,538	2,764
					YSL	0.1252	5,538	693
					PYSL	0.1246	5,538	690
				Fourbeard rockling/hake	Egg	0.3735	5,538	2,068
				Silver hake	Egg	0.5	5,538	2,769
					YSL	0.119	5,538	659
				Urophycis species	Egg	1.7121	5,538	9,481
			10-Sep-06	Cunner	PYSL	0.2683	10,550	2,830
				Fourbeard rockling	Egg	0.2484	10,550	2,621
				Fourbeard rockling/hake	Egg	0.2484	10,550	2,621
				Urophycis species	Egg	0.2483	10,550	2,620

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			17-Sep-06	Cunner	PYSL	0.1341	11,076	1,486
				Fourbeard rockling	Egg	0.1242	11,076	1,376
				Fourbeard rockling/hake	Egg	0.1242	11,076	1,376
				Urophycis species	Egg	0.1242	11,076	1,375
		October	1-Oct-06	Atlantic menhaden	Egg	1.2489	11,076	13,832
				Fourbeard rockling/hake	Egg	0.1249	11,076	1,383
			8-Oct-06	Atlantic menhaden	Egg	2.4978	11,076	27,665
				Fourbeard rockling/hake	Egg	0.2498	11,076	2,766
			15-Oct-06	Atlantic menhaden	Egg	1.2489	11,076	13,832
				Fourbeard rockling/hake	Egg	0.1249	11,076	1,383
			29-Oct-06	Atlantic cod	Egg	0.6248	11,076	6,920
				Atlantic herring	PYSL	0.855	11,076	9,470
				Summer flounder	Egg	0.1211	11,076	1,341
		November	5-Nov-06	Atlantic cod	Egg	1.2496	11,076	13,841
				Atlantic herring	PYSL	1.71	11,076	18,939
				Summer flounder	Egg	0.2421	11,076	2,682
			12-Nov-06	Atlantic cod	Egg	1.3061	11,076	14,466
				Atlantic herring	PYSL	6.4475	11,076	71,411
				Northern pipefish	Yearling or older	0.2348	11,076	2,600
				Pollock	Egg	0.1122	11,076	1,242
				Summer flounder	Egg	0.1211	11,076	1,341
			19-Nov-06	Atlantic cod	Egg	1.3626	11,076	15,091
				Atlantic herring	PYSL	11.1849	11,076	123,882
				Northern pipefish	Yearling or older	0.4695	11,076	5,200
				Pollock	Egg	0.2243	11,076	2,484
			26-Nov-06	Atlantic cod	Egg	1.3031	11,076	14,433
				Atlantic herring	PYSL	7.7257	11,076	85,568
				Northern pipefish	Yearling or older	0.2348	11,076	2,600
				Pollock	Egg	0.3528	11,076	3,908
		December	3-Dec-06	Atlantic cod	Egg	1.2437	11,076	13,775
				Atlantic herring	PYSL	4.2665	11,076	47,255
				Pollock	Egg	0.4814	11,076	5,331
			10-Dec-06	Atlantic cod	Egg	0.7471	11,076	8,275
				Atlantic herring	PYSL	2.9683	11,076	32,876
				Pollock	Egg	0.2407	11,076	2,666
			17-Dec-06	Atlantic cod	Egg	0.2505	11,076	2,774
				Atlantic herring	PYSL	1.6701	11,076	18,498
			24-Dec-06	Atlantic cod	Egg	0.2499	11,076	2,767
				Atlantic herring	PYSL	2.6804	11,076	29,688
				Northern pipefish	Yearling or older	0.1246	11,076	1,380

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Pollock	YSL	0.125	11,076	1,384
					PYSL	0.3683	11,076	4,080
	2007	January	31-Dec-06	Atlantic cod	Egg	0.2492	11,076	2,760
				Atlantic herring	PYSL	3.6907	11,076	40,878
				Northern pipefish	Yearling or older	0.2492	11,076	2,760
				Pollock	YSL	0.25	11,076	2,768
					PYSL	0.7367	11,076	8,159
			7-Jan-07	American sand lance	YSL	0.7497	11,076	8,303
					PYSL	0.4998	11,076	5,536
				Atlantic cod	PYSL	0.2498	11,076	2,767
				Atlantic herring	PYSL	5.7485	11,076	63,669
				Grubby	YSL	0.499	11,076	5,527
				Longhorn sculpin	YSL	0.25	11,076	2,769
				Pollock	YSL	0.4998	11,076	5,536
					PYSL	0.2499	11,076	2,768
				Rock gunnel	YSL	5.9968	11,076	66,419
			14-Jan-07	American sand lance	YSL	22.6453	11,076	250,814
					PYSL	0.6948	11,076	7,695
				Atlantic cod	Egg	0.3446	11,076	3,817
				Atlantic herring	PYSL	2.3598	11,076	26,137
				Grubby	YSL	2.6517	11,076	29,369
					PYSL	1.999	11,076	22,141
				Longhorn sculpin	PYSL	0.1723	11,076	1,908
				Pollock	Egg	0.4998	11,076	5,536
					YSL	2.2308	11,076	24,708
					PYSL	2.8878	11,076	31,985
				Rock gunnel	YSL	8.6137	11,076	95,403
					PYSL	3.2155	11,076	35,614
				Sculpin family	YSL	0.2499	11,076	2,768
			21-Jan-07	American sand lance	YSL	14.3314	11,076	158,732
					PYSL	5.6657	11,076	62,752
				Atlantic cod	Egg	0.3333	11,076	3,692
				Atlantic herring	PYSL	0.6666	11,076	7,383
				Goosefish	Egg	2.3328	11,076	25,837
				Grubby	YSL	1.6664	11,076	18,456
					PYSL	2.6665	11,076	29,533
				Pollock	Egg	0.6666	11,076	7,383
					PYSL	0.6665	11,076	7,382
				Rock gunnel	YSL	14.6649	11,076	162,425
					PYSL	7.6656	11,076	84,902
			28-Jan-07	American sand lance	YSL	7.5593	11,076	83,725
					PYSL	23.7897	11,076	263,490
				Atlantic cod/haddock	Egg	0.7499	11,076	8,306

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Atlantic herring	PYSL	0.7942	11,076	8,797
				Grubby	YSL	2.25	11,076	24,921
					PYSL	2.42	11,076	26,804
				Gulf snailfish	PYSL	0.25	11,076	2,769
				Longhorn sculpin	PYSL	0.5315	11,076	5,887
				Pollock	Egg	1.6259	11,076	18,008
					YSL	0.7499	11,076	8,306
					PYSL	1.4486	11,076	16,044
				Rock gunnel	YSL	0.7815	11,076	8,656
					PYSL	8.0557	11,076	89,223
		February	4-Feb-07	American eel	PYSL	0.2381	11,076	2,637
				American sand lance	YSL	11.0161	11,076	122,012
					PYSL	103.5238	11,076	1,146,607
				Atlantic cod	PYSL	0.4761	11,076	5,273
				Atlantic cod/haddock	Egg	0.7372	11,076	8,165
				Atlantic herring	PYSL	0.9638	11,076	10,675
				Grubby	YSL	0.9228	11,076	10,221
					PYSL	5.8085	11,076	64,334
				Longhorn sculpin	PYSL	2.6534	11,076	29,389
				Pollock	YSL	0.2495	11,076	2,764
					PYSL	0.4582	11,076	5,075
				Rock gunnel	YSL	5.7564	11,076	63,756
					PYSL	16.7942	11,076	186,009
				Shorthorn sculpin	YSL	0.2087	11,076	2,311
					PYSL	0.4583	11,076	5,076
				Striped killifish	Yearling or older	0.2381	11,076	2,637
			11-Feb-07	American sand lance	YSL	3.8085	11,076	42,182
					PYSL	20.4466	11,076	226,462
				Atlantic cod	PYSL	0.2599	11,076	2,879
				Atlantic cod/haddock	Egg	0.2599	11,076	2,879
				Goosefish	Egg	0.7798	11,076	8,636
				Grubby	YSL	0.999	11,076	11,064
					PYSL	6.9417	11,076	76,884
				Longhorn sculpin	YSL	0.4996	11,076	5,534
					PYSL	2.0736	11,076	22,967
				Pollock	YSL	0.2497	11,076	2,766
					PYSL	0.9991	11,076	11,066
				Rock gunnel	YSL	2.3332	11,076	25,842
					PYSL	18.2164	11,076	201,761
				Sculpin family	YSL	0.2499	11,076	2,767
			18-Feb-07	American sand lance	YSL	2.116	11,076	23,436
					PYSL	13.2806	11,076	147,093
				Grubby	YSL	0.6993	11,076	7,745

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
					PYSL	3.4337	11,076	38,031
				Longhorn sculpin	PYSL	0.9256	11,076	10,252
				Pollock	PYSL	0.2129	11,076	2,358
				Rock gunnel	YSL	0.8988	11,076	9,955
					PYSL	9.3564	11,076	103,630
				Sculpin family	YSL	0.1995	11,076	2,210
			25-Feb-07	American sand lance	YSL	0.7481	11,076	8,286
					PYSL	66.3402	11,076	734,770
				Goosefish	Egg	0.4981	11,076	5,517
				Grubby	YSL	0.7499	11,076	8,306
					PYSL	6.7441	11,076	74,696
				Longhorn sculpin	PYSL	1.7422	11,076	19,296
				Pollock	PYSL	0.4999	11,076	5,537
				Rock gunnel	YSL	0.9962	11,076	11,034
					PYSL	8.4845	11,076	93,972
				Sculpin family	PYSL	0.2484	11,076	2,751
				Shorthorn sculpin	PYSL	0.7511	11,076	8,319
		March	4-Mar-07	American sand lance	PYSL	69.0189	11,076	764,438
				Atlantic cod/haddock	Egg	0.2498	11,076	2,767
				Grubby	PYSL	3.9322	11,076	43,552
				Gulf snailfish	YSL	0.2498	11,076	2,767
				Longhorn sculpin	PYSL	1.8073	11,076	20,018
				Pollock	PYSL	0.4555	11,076	5,045
				Rock gunnel	YSL	0.1984	11,076	2,197
					PYSL	35.9362	11,076	398,021
				Shorthorn sculpin	PYSL	0.2277	11,076	2,522
			11-Mar-07	American plaice	Egg	0.2496	11,076	2,765
				American sand lance	YSL	0.4966	11,076	5,500
					PYSL	7.6999	11,076	85,282
				Atlantic cod/haddock	Egg	0.2287	11,076	2,533
				Cunner	YOY	0.2232	11,076	2,473
				Grubby	YSL	2.2175	11,076	24,561
					PYSL	9.2168	11,076	102,084
				Longhorn sculpin	PYSL	0.2496	11,076	2,765
				Pollock	PYSL	0.6697	11,076	7,418
				Radiated shanny	PYSL	0.2287	11,076	2,533
				Rock gunnel	PYSL	2.1413	11,076	23,716
				Sculpin family	Egg	0.494	11,076	5,471
				Sea raven	PYSL	0.2287	11,076	2,533
				Shorthorn sculpin	PYSL	0.494	11,076	5,471
				Unidentifiable	Unknown	0.9985	11,076	11,059
			18-Mar-07	American plaice	Egg	0.1902	11,076	2,107
				American sand lance	PYSL	15.7058	11,076	173,955
				Atlantic cod/haddock	Egg	0.3805	11,076	4,214

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Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				American sand lance	PYSL	5.6215	11,076	62,263
				Atlantic herring	PYSL	0.4576	11,076	5,068
				Atlantic seasnail	PYSL	0.4698	11,076	5,203
				Grubby	YSL	1.9486	11,076	21,582
				Longhorn sculpin	PYSL	8.534	11,076	94,520
					YSL	0.2492	11,076	2,760
					PYSL	0.2288	11,076	2,534
				Rock gunnel	PYSL	10.9362	11,076	121,127
				Sculpin family	PYSL	0.2442	11,076	2,705
				Unidentifiable	Unknown	0.2442	11,076	2,705
			15-Apr-07	Alligatorfish	PYSL	0.1246	2,309	288
				American plaice	Egg	2.4483	2,309	5,653
				American sand lance	PYSL	3.1848	2,309	7,354
				Atlantic cod/haddock	Egg	0.4751	2,309	1,097
				Atlantic cod/haddock/witch	Egg	0.6244	2,309	1,442
				Atlantic herring	PYSL	0.7221	2,309	1,667
				Atlantic seasnail	PYSL	0.9771	2,309	2,256
				Cunner/yellowtail flounder	Egg	0.4874	2,309	1,125
				Grubby	YSL	1.4731	2,309	3,401
					PYSL	7.2377	2,309	16,712
				Longhorn sculpin	YSL	0.1246	2,309	288
					PYSL	0.1144	2,309	264
				Rock gunnel	YSL	0.2498	2,309	577
					PYSL	5.8424	2,309	13,490
				Sculpin family	PYSL	0.1221	2,309	282
				Unidentifiable	Unknown	0.1221	2,309	282
			22-Apr-07	American plaice	Egg	4.8967	11,076	54,234
				American sand lance	PYSL	0.7481	11,076	8,286
				Atlantic cod/haddock	Egg	0.9502	11,076	10,524
				Atlantic cod/haddock/witch	Egg	1.2488	11,076	13,831
				Atlantic herring	PYSL	0.9866	11,076	10,928
				Atlantic seasnail	PYSL	1.4845	11,076	16,442
				Cunner/yellowtail flounder	Egg	0.9748	11,076	10,797
				Grubby	YSL	0.9976	11,076	11,049
					PYSL	5.9415	11,076	65,807
				Rock gunnel	YSL	0.4997	11,076	5,535
					PYSL	0.7486	11,076	8,292
			29-Apr-07	American plaice	Egg	4.6905	11,076	51,951
				American sand lance	PYSL	0.4968	11,076	5,502
				Atlantic cod/haddock	Egg	0.4751	11,076	5,262
				Atlantic cod/haddock/witch	Egg	1.1225	11,076	12,432
				Atlantic herring	PYSL	0.4933	11,076	5,464
				Atlantic seasnail	PYSL	1.6063	11,076	17,791
				Cunner/yellowtail flounder	Egg	1.2375	11,076	13,706

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance	
				Fourbeard rockling/hake	Egg	0.8728	11,076	9,667	
				Grubby	YSL	0.4988	11,076	5,525	
PYSL	3.2213				11,076	35,678			
Radiated shanny	YSL			0.3681	11,076	4,077			
	PYSL			0.2454	11,076	2,718			
Rainbow smelt	YSL			0.4908	11,076	5,436			
Rock gunnel	YSL			0.2498	11,076	2,767			
	PYSL			0.3743	11,076	4,146			
Unidentifiable	Unknown			0.1245	11,076	1,379			
Winter flounder	Egg			0.1245	11,076	1,379			
	WF Stage 2			0.1227	11,076	1,359			
		May	6-May-07	American plaice	Egg	4.4844	11,076	49,668	
				American sand lance	PYSL	0.2454	11,076	2,718	
				Atlantic cod/haddock/witch	Egg	0.9962	11,076	11,034	
				Atlantic seasnail	PYSL	1.728	11,076	19,139	
				Cunner/yellowtail flounder	Egg	1.5001	11,076	16,615	
				Fourbeard rockling/hake	Egg	1.7455	11,076	19,333	
				Grubby	PYSL	0.501	11,076	5,549	
				Radiated shanny	YSL	0.7362	11,076	8,154	
					PYSL	0.4908	11,076	5,436	
				Rainbow smelt	YSL	0.9816	11,076	10,872	
				Unidentifiable	Unknown	0.249	11,076	2,758	
		Winter flounder	Egg	0.249	11,076	2,758			
			WF Stage 2	0.2454	11,076	2,718			
			13-May-07	American plaice	Egg	3.1135	11,076	34,484	
		American sand lance		PYSL	0.1227	11,076	1,359		
		Atlantic cod/haddock/witch		Egg	0.7349	11,076	8,140		
		Atlantic mackerel		Egg	15.7969	11,076	174,963		
		Atlantic seasnail		PYSL	1.0247	11,076	11,350		
		Cunner/yellowtail flounder		Egg	14.8409	11,076	164,375		
		Fourbeard rockling		Egg	3.4028	11,076	37,689		
		Fourbeard rockling/hake		Egg	35.1346	11,076	389,144		
		Grubby		PYSL	0.3755	11,076	4,159		
		Radiated shanny		YSL	0.3681	11,076	4,077		
				PYSL	0.2454	11,076	2,718		
		Rainbow smelt	YSL	0.4908	11,076	5,436			
			PYSL	9.4151	11,076	104,279			
		Silver hake	Egg	0.6249	11,076	6,921			
		Unidentifiable	Unknown	0.2422	11,076	2,682			
		Windowpane	Egg	1.0827	11,076	11,992			
		Winter flounder	Egg	0.1245	11,076	1,379			
			WF Stage 2	0.2477	11,076	2,743			
				20-May-07	American plaice	Egg	1.7426	11,076	19,300
					Atlantic cod/haddock/witch	Egg	0.4737	11,076	5,247

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Atlantic mackerel	Egg	31.5939	11,076	349,927
				Atlantic seasnail	PYSL	0.3214	11,076	3,560
				Cunner/yellowtail flounder	Egg	28.1817	11,076	312,134
				Fourbeard rockling	Egg	6.8057	11,076	75,378
				Fourbeard rockling/hake	Egg	68.5237	11,076	758,954
				Grubby	PYSL	0.2499	11,076	2,768
				Rainbow smelt	PYSL	18.8301	11,076	208,558
				Silver hake	Egg	1.2497	11,076	13,842
				Unidentifiable	Unknown	0.2353	11,076	2,606
				Windowpane	Egg	2.1655	11,076	23,984
				Winter flounder	WF Stage 2	0.2499	11,076	2,768
			27-May-07	American plaice	Egg	2.8579	11,076	31,654
				Atlantic cod/haddock/witch	Egg	0.3035	11,076	3,362
				Atlantic mackerel	Egg	20.1695	11,076	223,393
				Atlantic seasnail	PYSL	1.1476	11,076	12,711
				Atlantic tomcod	YOY	0.4999	11,076	5,537
				Cunner/yellowtail flounder	Egg	241.7998	11,076	2,678,121
				Fourbeard rockling	Egg	3.4028	11,076	37,689
				Fourbeard rockling/hake	Egg	37.3287	11,076	413,444
				Grubby	PYSL	0.125	11,076	1,384
				Haddock	Egg	0.0666	11,076	738
				Rainbow smelt	PYSL	12.6485	11,076	140,092
				Silver hake	Egg	0.6249	11,076	6,921
				Unidentifiable	Unknown	0.1177	11,076	1,303
				Windowpane	Egg	2.1158	11,076	23,435
				Winter flounder	WF Stage 2	0.4317	11,076	4,782
		June	3-Jun-07	American plaice	Egg	3.9733	11,076	44,008
				Atlantic cod/haddock/witch	Egg	0.1333	11,076	1,476
				Atlantic mackerel	Egg	8.7451	11,076	96,859
				Atlantic seasnail	PYSL	1.9738	11,076	21,862
				Atlantic tomcod	YOY	0.9998	11,076	11,074
				Cunner/yellowtail flounder	Egg	455.4178	11,076	5,044,108
				Fourbeard rockling/hake	Egg	6.1336	11,076	67,934
				Haddock	Egg	0.1333	11,076	1,476
				Rainbow smelt	PYSL	6.4669	11,076	71,626
				Windowpane	Egg	2.0662	11,076	22,885
				Winter flounder	WF Stage 2	0.6135	11,076	6,795
			10-Jun-07	Atlantic mackerel	Egg	80.4595	11,076	891,152
				Atlantic menhaden	Egg	1.4795	11,076	16,387
				Cunner/yellowtail flounder	Egg	197.4314	11,076	2,186,707
				Fourbeard rockling	Egg	1.9749	11,076	21,874
				Fourbeard rockling/hake	Egg	6.8819	11,076	76,222
			17-Jun-07	Windowpane	Egg	1.466	11,076	16,238
				American plaice	Egg	1.2068	11,076	13,366

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Atlantic cod/haddock/witch	Egg	3.4322	11,076	38,014
				Atlantic mackerel	Egg	3.8745	11,076	42,914
				Atlantic menhaden	Egg	5.912	11,076	65,480
				Cunner/yellowtail flounder	Egg	299.6306	11,076	3,318,643
				Fourbeard rockling	Egg	0.25	11,076	2,769
				Fourbeard rockling/hake	Egg	1.7316	11,076	19,179
				Rainbow smelt	PYSL	0.233	11,076	2,581
				Urophycis species	Egg	2.3917	11,076	26,490
			24-Jun-07	American plaice	Egg	0.2192	11,076	2,428
				Atlantic cod/haddock/witch	Egg	0.2192	11,076	2,428
				Atlantic mackerel	Egg	0.4384	11,076	4,856
				Atlantic menhaden	Egg	5.8678	11,076	64,990
				Atlantic seasnail	PYSL	0.2192	11,076	2,428
				Cunner/yellowtail flounder	Egg	325.6014	11,076	3,606,290
				Fourbeard rockling/hake	Egg	1.421	11,076	15,738
				Northern pipefish	PYSL	1.2182	11,076	13,492
				Radiated shanny	PYSL	0.4384	11,076	4,856
				Winter flounder	WF Stage 3	3.3409	11,076	37,003
					WF Stage 4	0.2192	11,076	2,428
		July	1-Jul-07	Atlantic cod/haddock/witch	Egg	0.2324	11,076	2,574
				Atlantic mackerel	Egg	1.9778	11,076	21,906
				Cunner	PYSL	0.4972	11,076	5,507
				Cunner/yellowtail flounder	Egg	182.369	11,076	2,019,879
				Fourbeard rockling	PYSL	0.2324	11,076	2,574
				Fourbeard rockling/hake	Egg	1.4955	11,076	16,563
				Northern pipefish	PYSL	0.9458	11,076	10,475
				Radiated shanny	PYSL	0.4648	11,076	5,148
				Silver hake	Egg	0.2486	11,076	2,753
				Unidentifiable	Unknown	0.2499	11,076	2,768
				Urophycis species	Egg	0.2486	11,076	2,753
				Windowpane	Egg	0.2324	11,076	2,574
				Winter flounder	WF Stage 2	0.2486	11,076	2,753
					WF Stage 3	0.2324	11,076	2,574
			8-Jul-07	American plaice	PYSL	0.2498	11,076	2,766
				Atlantic mackerel	Egg	1.4957	11,076	16,566
					PYSL	0.2498	11,076	2,766
				Cunner	PYSL	14.4466	11,076	160,007
				Cunner/yellowtail flounder	Egg	77.3937	11,076	857,196
				Fourbeard rockling/hake	Egg	3.9865	11,076	44,154
				Northern pipefish	PYSL	1.4913	11,076	16,518
				Radiated shanny	PYSL	0.4995	11,076	5,533
				Urophycis species	Egg	4.4944	11,076	49,779
				Windowpane	PYSL	0.2462	11,076	2,727
				Winter flounder	WF Stage 3	0.2498	11,076	2,766

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			15-Jul-07	Witch flounder	PYSL	0.2498	11,076	2,766
				American plaice	PYSL	0.4991	11,076	5,528
				Atlantic mackerel	Egg	0.4975	11,076	5,511
				Cunner	PYSL	12.9772	11,076	143,732
				Cunner/yellowtail flounder	Egg	67.1686	11,076	743,945
				Fourbeard rockling	PYSL	0.7465	11,076	8,268
				Fourbeard rockling/hake	Egg	0.4982	11,076	5,518
				Northern pipefish	PYSL	0.9932	11,076	11,001
				Radiated shanny	PYSL	0.25	11,076	2,769
				Windowpane	Egg	0.2483	11,076	2,750
				Witch flounder	PYSL	0.2483	11,076	2,750
			22-Jul-07	Cunner	PYSL	156.7505	11,076	1,736,135
				Cunner/yellowtail flounder	Egg	127.1381	11,076	1,408,154
				Fourbeard rockling	Egg	2.1744	11,076	24,084
					PYSL	4.8682	11,076	53,919
				Fourbeard rockling/hake	Egg	2.1152	11,076	23,427
				Northern pipefish	PYSL	1.0688	11,076	11,838
				Prionotus species	Egg	0.1906	11,076	2,111
				Radiated shanny	PYSL	0.4404	11,076	4,878
				Urophycis species	Egg	1.8653	11,076	20,660
				Windowpane	Egg	1.4348	11,076	15,891
					PYSL	0.4947	11,076	5,480
				Winter flounder	WF Stage 3	0.2498	11,076	2,767
			29-Jul-07	Cunner	Egg	0.2325	11,076	2,575
					PYSL	133.7088	11,076	1,480,930
				Cunner/yellowtail flounder	Egg	8.4871	11,076	94,001
				Fourbeard rockling	Egg	0.1897	11,076	2,101
					YSL	0.248	11,076	2,747
					PYSL	1.6704	11,076	18,501
				Fourbeard rockling/hake	Egg	1.3332	11,076	14,766
				Northern pipefish	PYSL	10.8901	11,076	120,617
				Prionotus species	Egg	0.9778	11,076	10,830
				Silver hake	Egg	1.3024	11,076	14,425
					YSL	0.2325	11,076	2,575
				Tautog	Egg	0.2325	11,076	2,575
				Urophycis species	Egg	2.1502	11,076	23,815
				Windowpane	Egg	0.923	11,076	10,223
					PYSL	0.2445	11,076	2,708
		August	5-Aug-07	Cunner	PYSL	390.8602	11,076	4,329,082
				Cunner/yellowtail flounder	Egg	16.3733	11,076	181,347
				Fourbeard rockling	Egg	0.4919	11,076	5,448
					PYSL	8.3799	11,076	92,814
				Fourbeard rockling/hake	Egg	1.7345	11,076	19,210
				Northern pipefish	PYSL	0.4919	11,076	5,448

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
					Yearling or older	0.25	11,076	2,769
				Prionotus species	Egg	0.4999	11,076	5,537
				Radiated shanny	PYSL	0.9916	11,076	10,983
				Urophycis species	Egg	0.2464	11,076	2,729
				Windowpane	Egg	0.2455	11,076	2,719
			12-Aug-07	Atlantic cod/haddock/witch	Egg	0.2197	11,076	2,433
				Cunner	PYSL	98.385	11,076	1,089,691
				Cunner/yellowtail flounder	Egg	7.4701	11,076	82,737
				Fourbeard rockling	Egg	0.4249	11,076	4,706
					PYSL	4.6726	11,076	51,752
				Fourbeard rockling/hake	Egg	1.3183	11,076	14,601
				Northern pipefish	PYSL	0.2197	11,076	2,433
				Silver hake	Egg	0.8937	11,076	9,898
					PYSL	0.4249	11,076	4,706
				Urophycis species	Egg	1.8603	11,076	20,604
				Windowpane	Egg	0.8498	11,076	9,412
			19-Aug-07	Cunner	PYSL	70.1843	11,076	777,345
				Cunner/yellowtail flounder	Egg	2.1857	11,076	24,209
				Fourbeard rockling	Egg	0.4875	11,076	5,399
					PYSL	5.067	11,076	56,121
				Fourbeard rockling/hake	Egg	6.7494	11,076	74,755
				Northern pipefish	PYSL	0.2437	11,076	2,699
				Tautog	Egg	0.9807	11,076	10,862
				Urophycis species	Egg	25.9412	11,076	287,319
				Windowpane	Egg	0.2452	11,076	2,716
			26-Aug-07	Cunner	PYSL	28.0526	11,076	310,704
				Cunner/yellowtail flounder	Egg	3.7463	11,076	41,493
				Fourbeard rockling	Egg	0.2498	11,076	2,767
					PYSL	1.7424	11,076	19,298
				Fourbeard rockling/hake	Egg	0.4931	11,076	5,461
				Northern pipefish	YSL	0.2499	11,076	2,768
					PYSL	0.2504	11,076	2,774
				Prionotus species	Egg	0.2465	11,076	2,731
				Unidentifiable	Unknown	3.0053	11,076	33,286
				Windowpane	Egg	0.497	11,076	5,504
		September	2-Sep-07	Cunner	PYSL	14.3276	6,594	94,476
					YOY	0.1256	6,594	828
				Cunner/yellowtail flounder	Egg	2.2867	6,594	15,078
				Fourbeard rockling	Egg	0.1249	6,594	824
					PYSL	0.9691	6,594	6,390
				Fourbeard rockling/hake	Egg	0.3254	6,594	2,146
				Northern pipefish	YSL	0.125	6,594	824
					PYSL	0.1252	6,594	826

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
5 Cont'd	2007 Cont'd				Yearling or older	0.1244	6,594	821
				Prionotus species	Egg	0.1233	6,594	813
				Tautog	Egg	0.0979	6,594	646
				Unidentifiable	Unknown	1.5026	6,594	9,908
				Urophycis species	Egg	0.0789	6,594	520
				Windowpane	Egg	0.2485	6,594	1,639
					PYSL	0.0979	6,594	646
			9-Sep-07	Cunner	PYSL	0.6026	11,076	6,674
					YOY	0.2512	11,076	2,783
				Cunner/yellowtail flounder	Egg	0.8271	11,076	9,160
				Fourbeard rockling	PYSL	0.1959	11,076	2,169
				Fourbeard rockling/hake	Egg	0.1578	11,076	1,748
				Northern pipefish	Yearling or older	0.2489	11,076	2,757
				Tautog	Egg	0.1959	11,076	2,169
				Urophycis species	Egg	0.1578	11,076	1,748
				Windowpane	PYSL	0.1959	11,076	2,169
			16-Sep-07	Cunner	PYSL	0.3013	11,076	3,337
					YOY	0.1256	11,076	1,391
				Cunner/yellowtail flounder	Egg	0.4135	11,076	4,580
				Fourbeard rockling	PYSL	0.0979	11,076	1,085
				Fourbeard rockling/hake	Egg	0.1821	11,076	2,017
				Northern pipefish	Yearling or older	0.1244	11,076	1,378
				Silver hake	Egg	0.734	11,076	8,130
				Tautog	Egg	0.0979	11,076	1,085
				Urophycis species	Egg	0.0789	11,076	874
				Windowpane	Egg	0.1071	11,076	1,186
					PYSL	0.0979	11,076	1,085
			23-Sep-07	Fourbeard rockling/hake	Egg	0.2064	11,076	2,286
				Silver hake	Egg	1.468	11,076	16,259
				Windowpane	Egg	0.2142	11,076	2,372
6	2006	August	27-Aug-06	Cunner	PYSL	1.4721	11,076	16,305
					YOY	1.4832	11,076	16,427
				Cunner/yellowtail flounder	Egg	0.9969	11,076	11,041
				Fourbeard rockling	Egg	0.7499	11,076	8,306
					YSL	0.2503	11,076	2,772
					PYSL	0.2493	11,076	2,761
				Fourbeard rockling/hake	Egg	0.4986	11,076	5,522
				Silver hake	Egg	0.9999	11,076	11,075
					YSL	0.238	11,076	2,636
				Urophycis species	Egg	3.1758	11,076	35,174
		September	3-Sep-06	Cunner	PYSL	0.8702	11,076	9,638

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
					YOY	0.7416	11,076	8,214
				Cunner/yellowtail flounder	Egg	0.4984	11,076	5,521
				Fourbeard rockling	Egg	0.4991	11,076	5,528
					YSL	0.1252	11,076	1,386
					PYSL	0.1246	11,076	1,381
				Fourbeard rockling/hake	Egg	0.3735	11,076	4,137
				Silver hake	Egg	0.5	11,076	5,538
					YSL	0.119	11,076	1,318
				Urophycis species	Egg	1.7121	11,076	18,962
			10-Sep-06	Cunner	PYSL	0.2683	11,076	2,971
				Fourbeard rockling	Egg	0.2484	11,076	2,751
				Fourbeard rockling/hake	Egg	0.2484	11,076	2,751
				Urophycis species	Egg	0.2483	11,076	2,750
			17-Sep-06	Cunner	PYSL	0.1341	11,076	1,486
				Fourbeard rockling	Egg	0.1242	11,076	1,376
				Fourbeard rockling/hake	Egg	0.1242	11,076	1,376
				Urophycis species	Egg	0.1242	11,076	1,375
		October	1-Oct-06	Atlantic menhaden	Egg	1.2489	11,076	13,832
				Fourbeard rockling/hake	Egg	0.1249	11,076	1,383
			8-Oct-06	Atlantic menhaden	Egg	2.4978	11,076	27,665
				Fourbeard rockling/hake	Egg	0.2498	11,076	2,766
			15-Oct-06	Atlantic menhaden	Egg	1.2489	11,076	13,832
				Fourbeard rockling/hake	Egg	0.1249	11,076	1,383
			29-Oct-06	Atlantic cod	Egg	0.6248	11,076	6,920
				Atlantic herring	PYSL	0.855	11,076	9,470
				Summer flounder	Egg	0.1211	11,076	1,341
		November	5-Nov-06	Atlantic cod	Egg	1.2496	11,076	13,841
				Atlantic herring	PYSL	1.71	11,076	18,939
				Summer flounder	Egg	0.2421	11,076	2,682
			12-Nov-06	Atlantic cod	Egg	1.3061	11,076	14,466
				Atlantic herring	PYSL	6.4475	11,076	71,411
				Northern pipefish	Yearling or older	0.2348	11,076	2,600
				Pollock	Egg	0.1122	11,076	1,242
				Summer flounder	Egg	0.1211	11,076	1,341
			19-Nov-06	Atlantic cod	Egg	1.3626	11,076	15,091
				Atlantic herring	PYSL	11.1849	11,076	123,882
				Northern pipefish	Yearling or older	0.4695	11,076	5,200
				Pollock	Egg	0.2243	11,076	2,484
			26-Nov-06	Atlantic cod	Egg	1.3031	11,076	14,433
				Atlantic herring	PYSL	7.7257	11,076	85,568
				Northern pipefish	Yearling or older	0.2348	11,076	2,600

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
	2007	December	3-Dec-06	Pollock	Egg	0.3528	11,076	3,908
				Atlantic cod	Egg	1.2437	11,076	13,775
				Atlantic herring	PYSL	4.2665	11,076	47,255
				Pollock	Egg	0.4814	11,076	5,331
			10-Dec-06	Atlantic cod	Egg	0.7471	11,076	8,275
				Atlantic herring	PYSL	2.9683	11,076	32,876
				Pollock	Egg	0.2407	11,076	2,666
				Atlantic cod	Egg	0.2505	11,076	2,774
			17-Dec-06	Atlantic herring	PYSL	1.6701	11,076	18,498
				Atlantic cod	Egg	0.2499	11,076	2,767
				Atlantic herring	PYSL	2.6804	11,076	29,688
				Northern pipefish	Yearling or older	0.1246	11,076	1,380
		January	31-Dec-06	Pollock	YSL	0.125	11,076	1,384
					PYSL	0.3683	11,076	4,080
				Atlantic cod	Egg	0.2492	11,076	2,760
				Atlantic herring	PYSL	3.6907	11,076	40,878
			7-Jan-07	Northern pipefish	Yearling or older	0.2492	11,076	2,760
				Pollock	YSL	0.25	11,076	2,768
					PYSL	0.7367	11,076	8,159
				American sand lance	YSL	0.7497	11,076	8,303
			14-Jan-07		PYSL	0.4998	11,076	5,536
				Atlantic cod	PYSL	0.2498	11,076	2,767
				Atlantic herring	PYSL	5.7485	11,076	63,669
				Grubby	YSL	0.499	11,076	5,527
				Longhorn sculpin	YSL	0.25	11,076	2,769
				Pollock	YSL	0.4998	11,076	5,536
					PYSL	0.2499	11,076	2,768
				Rock gunnel	YSL	5.9968	11,076	66,419
				American sand lance	YSL	22.6453	11,076	250,814
					PYSL	0.6948	11,076	7,695
				Atlantic cod	Egg	0.3446	11,076	3,817
				Atlantic herring	PYSL	2.3598	11,076	26,137
			21-Jan-07	Grubby	YSL	2.6517	11,076	29,369
					PYSL	1.999	11,076	22,141
				Longhorn sculpin	PYSL	0.1723	11,076	1,908
				Pollock	Egg	0.4998	11,076	5,536
					YSL	2.2308	11,076	24,708
					PYSL	2.8878	11,076	31,985
				Rock gunnel	YSL	8.6137	11,076	95,403
					PYSL	3.2155	11,076	35,614
				Sculpin family	YSL	0.2499	11,076	2,768
				American sand lance	YSL	14.3314	11,076	158,732

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			28-Jan-07		PYSL	5.6657	11,076	62,752
				Atlantic cod	Egg	0.3333	11,076	3,692
				Atlantic herring	PYSL	0.6666	11,076	7,383
				Goosefish	Egg	2.3328	11,076	25,837
				Grubby	YSL	1.6664	11,076	18,456
					PYSL	2.6665	11,076	29,533
				Pollock	Egg	0.6666	11,076	7,383
					PYSL	0.6665	11,076	7,382
				Rock gunnel	YSL	14.6649	11,076	162,425
					PYSL	7.6656	11,076	84,902
				American sand lance	YSL	7.5593	11,076	83,725
					PYSL	23.7897	11,076	263,490
				Atlantic cod/haddock	Egg	0.7499	11,076	8,306
				Atlantic herring	PYSL	0.7942	11,076	8,797
				Grubby	YSL	2.25	11,076	24,921
					PYSL	2.42	11,076	26,804
				Gulf snailfish	PYSL	0.25	11,076	2,769
				Longhorn sculpin	PYSL	0.5315	11,076	5,887
				Pollock	Egg	1.6259	11,076	18,008
					YSL	0.7499	11,076	8,306
				Rock gunnel	PYSL	1.4486	11,076	16,044
					YSL	0.7815	11,076	8,656
					PYSL	8.0557	11,076	89,223
		February	4-Feb-07	American eel	PYSL	0.2381	11,076	2,637
				American sand lance	YSL	11.0161	11,076	122,012
					PYSL	103.5238	11,076	1,146,607
				Atlantic cod	PYSL	0.4761	11,076	5,273
				Atlantic cod/haddock	Egg	0.7372	11,076	8,165
				Atlantic herring	PYSL	0.9638	11,076	10,675
				Grubby	YSL	0.9228	11,076	10,221
					PYSL	5.8085	11,076	64,334
				Longhorn sculpin	PYSL	2.6534	11,076	29,389
				Pollock	YSL	0.2495	11,076	2,764
					PYSL	0.4582	11,076	5,075
				Rock gunnel	YSL	5.7564	11,076	63,756
					PYSL	16.7942	11,076	186,009
				Shorthorn sculpin	YSL	0.2087	11,076	2,311
					PYSL	0.4583	11,076	5,076
				Striped killifish	Yearling or older	0.2381	11,076	2,637
			11-Feb-07	American sand lance	YSL	3.8085	11,076	42,182
					PYSL	20.4466	11,076	226,462
				Atlantic cod	PYSL	0.2599	11,076	2,879
				Atlantic cod/haddock	Egg	0.2599	11,076	2,879

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Goosefish	Egg	0.7798	11,076	8,636
				Grubby	YSL	0.999	11,076	11,064
				Longhorn sculpin	PYSL	6.9417	11,076	76,884
					YSL	0.4996	11,076	5,534
				Pollock	PYSL	2.0736	11,076	22,967
					YSL	0.2497	11,076	2,766
				Rock gunnel	PYSL	0.9991	11,076	11,066
					YSL	2.3332	11,076	25,842
				Sculpin family	PYSL	18.2164	11,076	201,761
					YSL	0.2499	11,076	2,767
			18-Feb-07	American sand lance	YSL	2.116	11,076	23,436
					PYSL	13.2806	11,076	147,093
				Grubby	YSL	0.6993	11,076	7,745
					PYSL	3.4337	11,076	38,031
				Longhorn sculpin	PYSL	0.9256	11,076	10,252
				Pollock	PYSL	0.2129	11,076	2,358
				Rock gunnel	YSL	0.8988	11,076	9,955
					PYSL	9.3564	11,076	103,630
				Sculpin family	YSL	0.1995	11,076	2,210
			25-Feb-07	American sand lance	YSL	0.7481	11,076	8,286
					PYSL	66.3402	11,076	734,770
				Goosefish	Egg	0.4981	11,076	5,517
				Grubby	YSL	0.7499	11,076	8,306
					PYSL	6.7441	11,076	74,696
				Longhorn sculpin	PYSL	1.7422	11,076	19,296
				Pollock	PYSL	0.4999	11,076	5,537
				Rock gunnel	YSL	0.9962	11,076	11,034
					PYSL	8.4845	11,076	93,972
				Sculpin family	PYSL	0.2484	11,076	2,751
				Shorthorn sculpin	PYSL	0.7511	11,076	8,319
		March	4-Mar-07	American sand lance	PYSL	69.0189	4,747	327,616
				Atlantic cod/haddock	Egg	0.2498	4,747	1,186
				Grubby	PYSL	3.9322	4,747	18,665
				Gulf snailfish	YSL	0.2498	4,747	1,186
				Longhorn sculpin	PYSL	1.8073	4,747	8,579
				Pollock	PYSL	0.4555	4,747	2,162
				Rock gunnel	YSL	0.1984	4,747	942
					PYSL	35.9362	4,747	170,581
				Shorthorn sculpin	PYSL	0.2277	4,747	1,081
			11-Mar-07	American plaice	Egg	0.2496	0	0
				American sand lance	YSL	0.4966	0	0
					PYSL	7.6999	0	0
				Atlantic cod/haddock	Egg	0.2287	0	0
				Cunner	YOY	0.2232	0	0

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Grubby	YSL	2.2175	0	0
					PYSL	9.2168	0	0
				Longhorn sculpin	PYSL	0.2496	0	0
				Pollock	PYSL	0.6697	0	0
				Radiated shanny	PYSL	0.2287	0	0
				Rock gunnel	PYSL	2.1413	0	0
				Sculpin family	Egg	0.494	0	0
				Sea raven	PYSL	0.2287	0	0
				Shorthorn sculpin	PYSL	0.494	0	0
				Unidentifiable	Unknown	0.9985	0	0
			18-Mar-07	American plaice	Egg	0.1902	0	0
				American sand lance	PYSL	15.7058	0	0
				Atlantic cod/haddock	Egg	0.3805	0	0
				Atlantic cod/haddock/witch	Egg	0.2493	0	0
				Atlantic herring	PYSL	0.5707	0	0
				Grubby	YSL	0.63	0	0
					PYSL	8.0445	0	0
				Gulf snailfish	PYSL	0.2466	0	0
				Longhorn sculpin	PYSL	0.4961	0	0
				Pollock	PYSL	0.9327	0	0
				Rock gunnel	PYSL	30.8173	0	0
				Shorthorn sculpin	PYSL	0.3805	0	0
				Winter flounder	Egg	2.9079	0	0
				Wrymouth	PYSL	0.2466	0	0
			25-Mar-07	American sand lance	PYSL	7.5963	0	0
				Atlantic cod/haddock	Egg	0.4772	0	0
				Atlantic seasnail	PYSL	0.2273	0	0
				Cunner/yellowtail flounder	Egg	0.2273	0	0
				Goosefish	Egg	0.25	0	0
				Grubby	YSL	1.1365	0	0
					PYSL	7.1804	0	0
				Longhorn sculpin	PYSL	0.4772	0	0
				Pollock	PYSL	0.2273	0	0
				Rock gunnel	PYSL	36.4984	0	0
				Sea raven	PYSL	0.2499	0	0
				Shorthorn sculpin	PYSL	0.4998	0	0
				Unidentifiable	Unknown	0.4228	0	0
				Winter flounder	Egg	1.8451	0	0
		April	1-Apr-07	Alligatorfish	PYSL	0.1246	0	0
				American sand lance	PYSL	6.6089	0	0
				Atlantic cod/haddock	Egg	0.2386	0	0
				Atlantic herring	PYSL	0.2288	0	0
				Atlantic seasnail	PYSL	0.3485	0	0
				Cunner/yellowtail flounder	Egg	0.1136	0	0

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Goosefish	Egg	0.125	0	0
				Grubby	YSL	1.5425	0	0
					PYSL	7.8572	0	0
				Longhorn sculpin	YSL	0.1246	0	0
					PYSL	0.353	0	0
				Pollock	PYSL	0.1136	0	0
				Rock gunnel	PYSL	23.7173	0	0
				Sculpin family	PYSL	0.1221	0	0
				Sea raven	PYSL	0.1249	0	0
				Shorthorn sculpin	PYSL	0.2499	0	0
				Unidentifiable	Unknown	0.3335	0	0
				Winter flounder	Egg	0.9226	0	0
			8-Apr-07	Alligatorfish	PYSL	0.2492	8,570	2,136
				American sand lance	PYSL	5.6215	8,570	48,176
				Atlantic herring	PYSL	0.4576	8,570	3,922
				Atlantic seasnail	PYSL	0.4698	8,570	4,026
				Grubby	YSL	1.9486	8,570	16,699
					PYSL	8.534	8,570	73,135
				Longhorn sculpin	YSL	0.2492	8,570	2,136
					PYSL	0.2288	8,570	1,961
				Rock gunnel	PYSL	10.9362	8,570	93,722
				Sculpin family	PYSL	0.2442	8,570	2,093
				Unidentifiable	Unknown	0.2442	8,570	2,093
			15-Apr-07	Alligatorfish	PYSL	0.1246	11,076	1,380
				American plaice	Egg	2.4483	11,076	27,117
				American sand lance	PYSL	3.1848	11,076	35,274
				Atlantic cod/haddock	Egg	0.4751	11,076	5,262
				Atlantic cod/haddock/witch	Egg	0.6244	11,076	6,916
				Atlantic herring	PYSL	0.7221	11,076	7,998
				Atlantic seasnail	PYSL	0.9771	11,076	10,823
				Cunner/yellowtail flounder	Egg	0.4874	11,076	5,398
				Grubby	YSL	1.4731	11,076	16,316
					PYSL	7.2377	11,076	80,164
				Longhorn sculpin	YSL	0.1246	11,076	1,380
					PYSL	0.1144	11,076	1,267
				Rock gunnel	YSL	0.2498	11,076	2,767
					PYSL	5.8424	11,076	64,709
				Sculpin family	PYSL	0.1221	11,076	1,353
				Unidentifiable	Unknown	0.1221	11,076	1,353
			22-Apr-07	American plaice	Egg	4.8967	11,076	54,234
				American sand lance	PYSL	0.7481	11,076	8,286
				Atlantic cod/haddock	Egg	0.9502	11,076	10,524
				Atlantic cod/haddock/witch	Egg	1.2488	11,076	13,831
				Atlantic herring	PYSL	0.9866	11,076	10,928

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			29-Apr-07	Atlantic seasnail	PYSL	1.4845	11,076	16,442
				Cunner/yellowtail flounder	Egg	0.9748	11,076	10,797
				Grubby	YSL	0.9976	11,076	11,049
					PYSL	5.9415	11,076	65,807
				Rock gunnel	YSL	0.4997	11,076	5,535
					PYSL	0.7486	11,076	8,292
				American plaice	Egg	4.6905	11,076	51,951
				American sand lance	PYSL	0.4968	11,076	5,502
				Atlantic cod/haddock	Egg	0.4751	11,076	5,262
				Atlantic cod/haddock/witch	Egg	1.1225	11,076	12,432
				Atlantic herring	PYSL	0.4933	11,076	5,464
				Atlantic seasnail	PYSL	1.6063	11,076	17,791
			6-May-07	Cunner/yellowtail flounder	Egg	1.2375	11,076	13,706
				Fourbeard rockling/hake	Egg	0.8728	11,076	9,667
				Grubby	YSL	0.4988	11,076	5,525
					PYSL	3.2213	11,076	35,678
				Radiated shanny	YSL	0.3681	11,076	4,077
					PYSL	0.2454	11,076	2,718
				Rainbow smelt	YSL	0.4908	11,076	5,436
				Rock gunnel	YSL	0.2498	11,076	2,767
					PYSL	0.3743	11,076	4,146
				Unidentifiable	Unknown	0.1245	11,076	1,379
				Winter flounder	Egg	0.1245	11,076	1,379
					WF Stage 2	0.1227	11,076	1,359
		May	13-May-07	American plaice	Egg	4.4844	11,076	49,668
				American sand lance	PYSL	0.2454	11,076	2,718
				Atlantic cod/haddock/witch	Egg	0.9962	11,076	11,034
				Atlantic seasnail	PYSL	1.728	11,076	19,139
				Cunner/yellowtail flounder	Egg	1.5001	11,076	16,615
				Fourbeard rockling/hake	Egg	1.7455	11,076	19,333
				Grubby	PYSL	0.501	11,076	5,549
					YSL	0.7362	11,076	8,154
				Radiated shanny	PYSL	0.4908	11,076	5,436
					YSL	0.9816	11,076	10,872
				Unidentifiable	Unknown	0.249	11,076	2,758
				Winter flounder	Egg	0.249	11,076	2,758
					WF Stage 2	0.2454	11,076	2,718
				American plaice	Egg	3.1135	11,076	34,484
				American sand lance	PYSL	0.1227	11,076	1,359
				Atlantic cod/haddock/witch	Egg	0.7349	11,076	8,140
				Atlantic mackerel	Egg	15.7969	11,076	174,963
				Atlantic seasnail	PYSL	1.0247	11,076	11,350
				Cunner/yellowtail flounder	Egg	14.8409	11,076	164,375
				Fourbeard rockling	Egg	3.4028	11,076	37,689

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Fourbeard rockling/hake	Egg	35.1346	11,076	389,144
				Grubby	PYSL	0.3755	11,076	4,159
				Radiated shanny	YSL	0.3681	11,076	4,077
					PYSL	0.2454	11,076	2,718
				Rainbow smelt	YSL	0.4908	11,076	5,436
					PYSL	9.4151	11,076	104,279
				Silver hake	Egg	0.6249	11,076	6,921
				Unidentifiable	Unknown	0.2422	11,076	2,682
				Windowpane	Egg	1.0827	11,076	11,992
				Winter flounder	Egg	0.1245	11,076	1,379
					WF Stage 2	0.2477	11,076	2,743
			20-May-07	American plaice	Egg	1.7426	11,076	19,300
				Atlantic cod/haddock/witch	Egg	0.4737	11,076	5,247
				Atlantic mackerel	Egg	31.5939	11,076	349,927
				Atlantic seasnail	PYSL	0.3214	11,076	3,560
				Cunner/yellowtail flounder	Egg	28.1817	11,076	312,134
				Fourbeard rockling	Egg	6.8057	11,076	75,378
				Fourbeard rockling/hake	Egg	68.5237	11,076	758,954
				Grubby	PYSL	0.2499	11,076	2,768
				Rainbow smelt	PYSL	18.8301	11,076	208,558
				Silver hake	Egg	1.2497	11,076	13,842
				Unidentifiable	Unknown	0.2353	11,076	2,606
				Windowpane	Egg	2.1655	11,076	23,984
				Winter flounder	WF Stage 2	0.2499	11,076	2,768
			27-May-07	American plaice	Egg	2.8579	11,076	31,654
				Atlantic cod/haddock/witch	Egg	0.3035	11,076	3,362
				Atlantic mackerel	Egg	20.1695	11,076	223,393
				Atlantic seasnail	PYSL	1.1476	11,076	12,711
				Atlantic tomcod	YOY	0.4999	11,076	5,537
				Cunner/yellowtail flounder	Egg	241.7998	11,076	2,678,121
				Fourbeard rockling	Egg	3.4028	11,076	37,689
				Fourbeard rockling/hake	Egg	37.3287	11,076	413,444
				Grubby	PYSL	0.125	11,076	1,384
				Haddock	Egg	0.0666	11,076	738
				Rainbow smelt	PYSL	12.6485	11,076	140,092
				Silver hake	Egg	0.6249	11,076	6,921
				Unidentifiable	Unknown	0.1177	11,076	1,303
				Windowpane	Egg	2.1158	11,076	23,435
				Winter flounder	WF Stage 2	0.4317	11,076	4,782
		June	3-Jun-07	American plaice	Egg	3.9733	11,076	44,008
				Atlantic cod/haddock/witch	Egg	0.1333	11,076	1,476
				Atlantic mackerel	Egg	8.7451	11,076	96,859
				Atlantic seasnail	PYSL	1.9738	11,076	21,862
				Atlantic tomcod	YOY	0.9998	11,076	11,074

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Cunner/yellowtail flounder	Egg	455.4178	11,076	5,044,108
				Fourbeard rockling/hake	Egg	6.1336	11,076	67,934
				Haddock	Egg	0.1333	11,076	1,476
				Rainbow smelt	PYSL	6.4669	11,076	71,626
				Windowpane	Egg	2.0662	11,076	22,885
				Winter flounder	WF Stage 2	0.6135	11,076	6,795
			10-Jun-07	Atlantic mackerel	Egg	80.4595	11,076	891,152
				Atlantic menhaden	Egg	1.4795	11,076	16,387
				Cunner/yellowtail flounder	Egg	197.4314	11,076	2,186,707
				Fourbeard rockling	Egg	1.9749	11,076	21,874
				Fourbeard rockling/hake	Egg	6.8819	11,076	76,222
				Windowpane	Egg	1.466	11,076	16,238
			17-Jun-07	American plaice	Egg	1.2068	11,076	13,366
				Atlantic cod/haddock/witch	Egg	3.4322	11,076	38,014
				Atlantic mackerel	Egg	3.8745	11,076	42,914
				Atlantic menhaden	Egg	5.912	11,076	65,480
				Cunner/yellowtail flounder	Egg	299.6306	11,076	3,318,643
				Fourbeard rockling	Egg	0.25	11,076	2,769
				Fourbeard rockling/hake	Egg	1.7316	11,076	19,179
				Rainbow smelt	PYSL	0.233	11,076	2,581
				Urophycis species	Egg	2.3917	11,076	26,490
			24-Jun-07	American plaice	Egg	0.2192	11,076	2,428
				Atlantic cod/haddock/witch	Egg	0.2192	11,076	2,428
				Atlantic mackerel	Egg	0.4384	11,076	4,856
				Atlantic menhaden	Egg	5.8678	11,076	64,990
				Atlantic seasnail	PYSL	0.2192	11,076	2,428
				Cunner/yellowtail flounder	Egg	325.6014	11,076	3,606,290
				Fourbeard rockling/hake	Egg	1.421	11,076	15,738
				Northern pipefish	PYSL	1.2182	11,076	13,492
				Radiated shanny	PYSL	0.4384	11,076	4,856
				Winter flounder	WF Stage 3	3.3409	11,076	37,003
					WF Stage 4	0.2192	11,076	2,428
		July	1-Jul-07	Atlantic cod/haddock/witch	Egg	0.2324	11,076	2,574
				Atlantic mackerel	Egg	1.9778	11,076	21,906
				Cunner	PYSL	0.4972	11,076	5,507
				Cunner/yellowtail flounder	Egg	182.369	11,076	2,019,879
				Fourbeard rockling	PYSL	0.2324	11,076	2,574
				Fourbeard rockling/hake	Egg	1.4955	11,076	16,563
				Northern pipefish	PYSL	0.9458	11,076	10,475
				Radiated shanny	PYSL	0.4648	11,076	5,148
				Silver hake	Egg	0.2486	11,076	2,753
				Unidentifiable	Unknown	0.2499	11,076	2,768
				Urophycis species	Egg	0.2486	11,076	2,753
				Windowpane	Egg	0.2324	11,076	2,574

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			8-Jul-07	Winter flounder	WF Stage 2	0.2486	11,076	2,753
				Winter flounder	WF Stage 3	0.2324	11,076	2,574
				American plaice	PYSL	0.2498	11,076	2,766
				Atlantic mackerel	Egg	1.4957	11,076	16,566
				Atlantic mackerel	PYSL	0.2498	11,076	2,766
				Cunner	PYSL	14.4466	11,076	160,007
				Cunner/yellowtail flounder	Egg	77.3937	11,076	857,196
				Fourbeard rockling/hake	Egg	3.9865	11,076	44,154
				Northern pipefish	PYSL	1.4913	11,076	16,518
				Radiated shanny	PYSL	0.4995	11,076	5,533
				Urophycis species	Egg	4.4944	11,076	49,779
				Windowpane	PYSL	0.2462	11,076	2,727
			15-Jul-07	Winter flounder	WF Stage 3	0.2498	11,076	2,766
				Witch flounder	PYSL	0.2498	11,076	2,766
				American plaice	PYSL	0.4991	11,076	5,528
				Atlantic mackerel	Egg	0.4975	11,076	5,511
				Cunner	PYSL	12.9772	11,076	143,732
				Cunner/yellowtail flounder	Egg	67.1686	11,076	743,945
				Fourbeard rockling	PYSL	0.7465	11,076	8,268
				Fourbeard rockling/hake	Egg	0.4982	11,076	5,518
				Northern pipefish	PYSL	0.9932	11,076	11,001
				Radiated shanny	PYSL	0.25	11,076	2,769
				Windowpane	Egg	0.2483	11,076	2,750
				Witch flounder	PYSL	0.2483	11,076	2,750
			22-Jul-07	Cunner	PYSL	156.7505	11,076	1,736,135
				Cunner/yellowtail flounder	Egg	127.1381	11,076	1,408,154
				Fourbeard rockling	Egg	2.1744	11,076	24,084
				Fourbeard rockling	PYSL	4.8682	11,076	53,919
				Fourbeard rockling/hake	Egg	2.1152	11,076	23,427
				Northern pipefish	PYSL	1.0688	11,076	11,838
				Prionotus species	Egg	0.1906	11,076	2,111
				Radiated shanny	PYSL	0.4404	11,076	4,878
				Urophycis species	Egg	1.8653	11,076	20,660
				Windowpane	Egg	1.4348	11,076	15,891
				Windowpane	PYSL	0.4947	11,076	5,480
				Winter flounder	WF Stage 3	0.2498	11,076	2,767
			29-Jul-07	Cunner	Egg	0.2325	11,076	2,575
				Cunner	PYSL	133.7088	11,076	1,480,930
				Cunner/yellowtail flounder	Egg	8.4871	11,076	94,001
				Fourbeard rockling	Egg	0.1897	11,076	2,101
				Fourbeard rockling	YSL	0.248	11,076	2,747
				Fourbeard rockling	PYSL	1.6704	11,076	18,501
				Fourbeard rockling/hake	Egg	1.3332	11,076	14,766
				Northern pipefish	PYSL	10.8901	11,076	120,617

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
		August	5-Aug-07	Prionotus species	Egg	0.9778	11,076	10,830
				Silver hake	Egg	1.3024	11,076	14,425
					YSL	0.2325	11,076	2,575
				Tautog	Egg	0.2325	11,076	2,575
				Urophycis species	Egg	2.1502	11,076	23,815
				Windowpane	Egg	0.923	11,076	10,223
					PYSL	0.2445	11,076	2,708
				Cunner	PYSL	390.8602	11,076	4,329,082
				Cunner/yellowtail flounder	Egg	16.3733	11,076	181,347
				Fourbeard rockling	Egg	0.4919	11,076	5,448
			12-Aug-07		PYSL	8.3799	11,076	92,814
				Fourbeard rockling/hake	Egg	1.7345	11,076	19,210
				Northern pipefish	PYSL	0.4919	11,076	5,448
					Yearling or older	0.25	11,076	2,769
				Prionotus species	Egg	0.4999	11,076	5,537
				Radiated shanny	PYSL	0.9916	11,076	10,983
				Urophycis species	Egg	0.2464	11,076	2,729
				Windowpane	Egg	0.2455	11,076	2,719
				Atlantic cod/haddock/witch	Egg	0.2197	11,076	2,433
				Cunner	PYSL	98.385	11,076	1,089,691
			19-Aug-07	Cunner/yellowtail flounder	Egg	7.4701	11,076	82,737
				Fourbeard rockling	Egg	0.4249	11,076	4,706
					PYSL	4.6726	11,076	51,752
				Fourbeard rockling/hake	Egg	1.3183	11,076	14,601
				Northern pipefish	PYSL	0.2197	11,076	2,433
				Silver hake	Egg	0.8937	11,076	9,898
					PYSL	0.4249	11,076	4,706
				Urophycis species	Egg	1.8603	11,076	20,604
				Windowpane	Egg	0.8498	11,076	9,412
				Cunner	PYSL	70.1843	11,076	777,345
			26-Aug-07	Cunner/yellowtail flounder	Egg	2.1857	11,076	24,209
				Fourbeard rockling	Egg	0.4875	11,076	5,399
					PYSL	5.067	11,076	56,121
				Fourbeard rockling/hake	Egg	6.7494	11,076	74,755
				Northern pipefish	PYSL	0.2437	11,076	2,699
				Tautog	Egg	0.9807	11,076	10,862
				Urophycis species	Egg	25.9412	11,076	287,319
				Windowpane	Egg	0.2452	11,076	2,716
				Cunner	PYSL	28.0526	11,076	310,704
				Cunner/yellowtail flounder	Egg	3.7463	11,076	41,493
				Fourbeard rockling	Egg	0.2498	11,076	2,767
					PYSL	1.7424	11,076	19,298
				Fourbeard rockling/hake	Egg	0.4931	11,076	5,461

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
		September	2-Sep-07	Northern pipefish	YSL	0.2499	11,076	2,768
					PYSL	0.2504	11,076	2,774
				Prionotus species	Egg	0.2465	11,076	2,731
				Unidentifiable	Unknown	3.0053	11,076	33,286
				Windowpane	Egg	0.497	11,076	5,504
				Cunner	PYSL	14.3276	11,076	158,689
					YOY	0.1256	11,076	1,391
				Cunner/yellowtail flounder	Egg	2.2867	11,076	25,327
				Fourbeard rockling	Egg	0.1249	11,076	1,384
					PYSL	0.9691	11,076	10,734
				Fourbeard rockling/hake	Egg	0.3254	11,076	3,605
				Northern pipefish	YSL	0.125	11,076	1,384
					PYSL	0.1252	11,076	1,387
					Yearling or older	0.1244	11,076	1,378
				Prionotus species	Egg	0.1233	11,076	1,365
				Tautog	Egg	0.0979	11,076	1,085
				Unidentifiable	Unknown	1.5026	11,076	16,643
				Urophycis species	Egg	0.0789	11,076	874
				Windowpane	Egg	0.2485	11,076	2,752
					PYSL	0.0979	11,076	1,085
			9-Sep-07	Cunner	PYSL	0.6026	11,076	6,674
					YOY	0.2512	11,076	2,783
				Cunner/yellowtail flounder	Egg	0.8271	11,076	9,160
				Fourbeard rockling	PYSL	0.1959	11,076	2,169
				Fourbeard rockling/hake	Egg	0.1578	11,076	1,748
				Northern pipefish	Yearling or older	0.2489	11,076	2,757
				Tautog	Egg	0.1959	11,076	2,169
				Urophycis species	Egg	0.1578	11,076	1,748
			16-Sep-07	Windowpane	PYSL	0.1959	11,076	2,169
				Cunner	PYSL	0.3013	11,076	3,337
					YOY	0.1256	11,076	1,391
				Cunner/yellowtail flounder	Egg	0.4135	11,076	4,580
				Fourbeard rockling	PYSL	0.0979	11,076	1,085
				Fourbeard rockling/hake	Egg	0.1821	11,076	2,017
				Northern pipefish	Yearling or older	0.1244	11,076	1,378
				Silver hake	Egg	0.734	11,076	8,130
				Tautog	Egg	0.0979	11,076	1,085
				Urophycis species	Egg	0.0789	11,076	874
			23-Sep-07	Windowpane	Egg	0.1071	11,076	1,186
					PYSL	0.0979	11,076	1,085
				Fourbeard rockling/hake	Egg	0.2064	11,076	2,286

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
Total	2006	August	27-Aug-06	Silver hake	Egg	1.468	11,076	16,259
				Windowpane	Egg	0.2142	11,076	2,372
				Cunner	PYSL	4.4164	31,380	46,196
					YOY	4.4495	31,380	46,542
				Cunner/yellowtail flounder	Egg	2.9906	31,380	31,282
				Fourbeard rockling	Egg	2.2497	31,380	23,532
					YSL	0.7509	31,380	7,855
					PYSL	0.7478	31,380	7,823
				Fourbeard rockling/hake	Egg	1.4957	31,380	15,645
				Silver hake	Egg	2.9998	31,380	31,378
					YSL	0.714	31,380	7,468
				Urophycis species	Egg	9.5274	31,380	99,657
		September	3-Sep-06	Cunner	PYSL	2.6106	27,424	23,865
					YOY	2.2248	27,424	20,338
				Cunner/yellowtail flounder	Egg	1.4953	27,424	13,669
				Fourbeard rockling	Egg	1.4974	27,424	13,689
					YSL	0.3755	27,424	3,432
					PYSL	0.3739	27,424	3,418
				Fourbeard rockling/hake	Egg	1.1205	27,424	10,243
				Silver hake	Egg	1.4999	27,424	13,711
					YSL	0.357	27,424	3,264
				Urophycis species	Egg	5.1362	27,424	46,952
			10-Sep-06	Cunner	PYSL	0.8048	32,436	8,701
				Fourbeard rockling	Egg	0.7452	32,436	8,057
				Fourbeard rockling/hake	Egg	0.7452	32,436	8,057
				Urophycis species	Egg	0.7449	32,436	8,054
			17-Sep-06	Cunner	PYSL	0.4024	32,962	4,421
				Fourbeard rockling	Egg	0.3726	32,962	4,094
				Fourbeard rockling/hake	Egg	0.3726	32,962	4,094
				Urophycis species	Egg	0.3725	32,962	4,093
		October	1-Oct-06	Atlantic menhaden	Egg	3.7466	32,962	41,166
				Fourbeard rockling/hake	Egg	0.3747	32,962	4,117
			8-Oct-06	Atlantic menhaden	Egg	7.4933	32,962	82,332
				Fourbeard rockling/hake	Egg	0.7493	32,962	8,233
			15-Oct-06	Atlantic menhaden	Egg	3.7466	23,696	29,593
				Fourbeard rockling/hake	Egg	0.3747	23,696	2,959
			29-Oct-06	Atlantic cod	Egg	1.8744	22,152	13,841
				Atlantic herring	PYSL	2.565	22,152	18,939
				Summer flounder	Egg	0.3632	22,152	2,682
		November	5-Nov-06	Atlantic cod	Egg	3.7489	22,152	27,681
				Atlantic herring	PYSL	5.13	22,152	37,879
			12-Nov-06	Summer flounder	Egg	0.7264	22,152	5,364
				Atlantic cod	Egg	3.9183	25,176	32,882
				Atlantic herring	PYSL	19.3424	25,176	162,321

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			19-Nov-06	Northern pipefish	Yearling or older	0.7043	25,176	5,910
				Pollock	Egg	0.3365	25,176	2,824
				Summer flounder	Egg	0.3632	25,176	3,048
				Atlantic cod	Egg	4.0877	32,962	44,913
				Atlantic herring	PYSL	33.5547	32,962	368,681
				Northern pipefish	Yearling or older	1.4086	32,962	15,477
				Pollock	Egg	0.6729	32,962	7,394
			26-Nov-06	Atlantic cod	Egg	3.9094	32,962	42,955
				Atlantic herring	PYSL	23.1771	32,962	254,657
				Northern pipefish	Yearling or older	0.7043	32,962	7,738
				Pollock	Egg	1.0585	32,962	11,630
		December	3-Dec-06	Atlantic cod	Egg	3.7312	32,962	40,996
				Atlantic herring	PYSL	12.7994	32,962	140,633
				Pollock	Egg	1.4441	32,962	15,867
			10-Dec-06	Atlantic cod	Egg	2.2413	32,962	24,627
				Atlantic herring	PYSL	8.9049	32,962	97,842
				Pollock	Egg	0.722	32,962	7,933
			17-Dec-06	Atlantic cod	Egg	0.7515	32,962	8,257
				Atlantic herring	PYSL	5.0104	32,962	55,052
			24-Dec-06	Atlantic cod	Egg	0.7496	32,962	8,236
				Atlantic herring	PYSL	8.0413	32,962	88,353
				Northern pipefish	Yearling or older	0.3739	32,962	4,108
				Pollock	YSL	0.3749	32,962	4,120
					PYSL	1.105	32,962	12,141
	2007	January	31-Dec-06	Atlantic cod	Egg	0.7477	32,962	8,215
				Atlantic herring	PYSL	11.0721	32,962	121,655
				Northern pipefish	Yearling or older	0.7477	32,962	8,215
				Pollock	YSL	0.7499	32,962	8,239
					PYSL	2.21	32,962	24,282
			7-Jan-07	American sand lance	YSL	2.2491	32,962	24,712
					PYSL	1.4995	32,962	16,476
				Atlantic cod	PYSL	0.7495	32,962	8,236
				Atlantic herring	PYSL	17.2454	32,962	189,483
				Grubby	YSL	1.4969	32,962	16,448
				Longhorn sculpin	YSL	0.7499	32,962	8,240
				Pollock	YSL	1.4995	32,962	16,476
					PYSL	0.7498	32,962	8,238
				Rock gunnel	YSL	17.9904	32,962	197,669
			14-Jan-07	American sand lance	YSL	67.9359	32,962	746,442

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
					PYSL	2.0844	32,962	22,902
				Atlantic cod	Egg	1.0338	32,962	11,359
				Atlantic herring	PYSL	7.0794	32,962	77,785
				Grubby	YSL	7.955	32,962	87,405
					PYSL	5.997	32,962	65,892
				Longhorn sculpin	PYSL	0.5169	32,962	5,679
				Pollock	Egg	1.4994	32,962	16,475
					YSL	6.6925	32,962	73,534
					PYSL	8.6635	32,962	95,190
				Rock gunnel	YSL	25.8411	32,962	283,928
					PYSL	9.6464	32,962	105,989
				Sculpin family	YSL	0.7498	32,962	8,238
			21-Jan-07	American sand lance	YSL	42.9943	32,962	472,398
					PYSL	16.9972	32,962	186,756
				Atlantic cod	Egg	0.9999	32,962	10,987
				Atlantic herring	PYSL	1.9998	32,962	21,973
				Goosefish	Egg	6.9983	32,962	76,894
				Grubby	YSL	4.9991	32,962	54,927
					PYSL	7.9994	32,962	87,893
				Pollock	Egg	1.9998	32,962	21,973
					PYSL	1.9995	32,962	21,969
				Rock gunnel	YSL	43.9946	32,962	483,389
					PYSL	22.9967	32,962	252,676
			28-Jan-07	American sand lance	YSL	22.6779	32,962	249,172
					PYSL	71.3692	32,962	784,166
				Atlantic cod/haddock	Egg	2.2498	32,962	24,720
				Atlantic herring	PYSL	2.3826	32,962	26,179
				Grubby	YSL	6.75	32,962	74,165
					PYSL	7.2601	32,962	79,770
				Gulf snailfish	PYSL	0.7499	32,962	8,239
				Longhorn sculpin	PYSL	1.5945	32,962	17,519
				Pollock	Egg	4.8776	32,962	53,593
					YSL	2.2498	32,962	24,720
					PYSL	4.3458	32,962	47,749
				Rock gunnel	YSL	2.3445	32,962	25,760
					PYSL	24.1671	32,962	265,535
		February	4-Feb-07	American eel	PYSL	0.7142	32,962	7,847
				American sand lance	YSL	33.0482	32,962	363,116
					PYSL	310.5713	32,962	3,412,389
				Atlantic cod	PYSL	1.4284	32,962	15,694
				Atlantic cod/haddock	Egg	2.2117	32,962	24,301
				Atlantic herring	PYSL	2.8915	32,962	31,770
				Grubby	YSL	2.7685	32,962	30,419
					PYSL	17.4256	32,962	191,463

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Longhorn sculpin	PYSL	7.9603	32,962	87,463
				Pollock	YSL	0.7486	32,962	8,225
					PYSL	1.3746	32,962	15,103
				Rock gunnel	YSL	17.2691	32,962	189,744
					PYSL	50.3827	32,962	553,577
				Shorthorn sculpin	YSL	0.626	32,962	6,878
					PYSL	1.375	32,962	15,107
				Striped killifish	Yearling or older	0.7142	32,962	7,847
			11-Feb-07	American sand lance	YSL	11.4256	32,962	125,538
					PYSL	61.3397	32,962	673,967
				Atlantic cod	PYSL	0.7798	32,962	8,567
				Atlantic cod/haddock	Egg	0.7798	32,962	8,567
				Goosefish	Egg	2.3393	32,962	25,702
				Grubby	YSL	2.9969	32,962	32,929
					PYSL	20.825	32,962	228,814
				Longhorn sculpin	YSL	1.4988	32,962	16,468
					PYSL	6.2209	32,962	68,352
				Pollock	YSL	0.7492	32,962	8,232
					PYSL	2.9973	32,962	32,933
				Rock gunnel	YSL	6.9995	32,962	76,907
					PYSL	54.6492	32,962	600,455
				Sculpin family	YSL	0.7496	32,962	8,236
			18-Feb-07	American sand lance	YSL	6.348	32,962	69,748
					PYSL	39.8419	32,962	437,761
				Grubby	YSL	2.0979	32,962	23,051
					PYSL	10.3011	32,962	113,183
				Longhorn sculpin	PYSL	2.7768	32,962	30,510
				Pollock	PYSL	0.6387	32,962	7,018
				Rock gunnel	YSL	2.6965	32,962	29,627
					PYSL	28.0692	32,962	308,410
			25-Feb-07	Sculpin family	YSL	0.5985	32,962	6,576
				American sand lance	YSL	2.2442	32,962	24,659
					PYSL	199.0207	32,962	2,186,731
				Goosefish	Egg	1.4944	32,962	16,419
				Grubby	YSL	2.2497	32,962	24,718
					PYSL	20.2322	32,962	222,300
				Longhorn sculpin	PYSL	5.2265	32,962	57,426
				Pollock	PYSL	1.4998	32,962	16,479
				Rock gunnel	YSL	2.9887	32,962	32,838
					PYSL	25.4535	32,962	279,669
				Sculpin family	PYSL	0.7451	32,962	8,187
				Shorthorn sculpin	PYSL	2.2532	32,962	24,757
				American sand lance	PYSL	207.0566	26,633	1,838,204
		March	4-Mar-07	American sand lance	PYSL	207.0566	26,633	1,838,204

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			11-Mar-07	Atlantic cod/haddock	Egg	0.7494	26,633	6,653
				Grubby	PYSL	11.7965	26,633	104,727
				Gulf snailfish	YSL	0.7494	26,633	6,653
				Longhorn sculpin	PYSL	5.422	26,633	48,135
				Pollock	PYSL	1.3664	26,633	12,131
				Rock gunnel	YSL	0.5951	26,633	5,283
					PYSL	107.8086	26,633	957,101
				Shorthorn sculpin	PYSL	0.6832	26,633	6,066
				American plaice	Egg	0.7488	21,887	5,463
				American sand lance	YSL	1.4898	21,887	10,869
					PYSL	23.0996	21,887	168,524
				Atlantic cod/haddock	Egg	0.6862	21,887	5,006
				Cunner	YOY	0.6697	21,887	4,886
				Grubby	YSL	6.6526	21,887	48,534
					PYSL	27.6505	21,887	201,725
				Longhorn sculpin	PYSL	0.7488	21,887	5,463
				Pollock	PYSL	2.0092	21,887	14,658
				Radiated shanny	PYSL	0.6862	21,887	5,006
				Rock gunnel	PYSL	6.4238	21,887	46,865
				Sculpin family	Egg	1.4819	21,887	10,812
				Sea raven	PYSL	0.6862	21,887	5,006
				Shorthorn sculpin	PYSL	1.4819	21,887	10,812
				Unidentifiable	Unknown	2.9954	21,887	21,853
			18-Mar-07	American plaice	Egg	0.5707	21,887	4,164
				American sand lance	PYSL	47.1175	21,887	343,747
				Atlantic cod/haddock	Egg	1.1414	21,887	8,327
				Atlantic cod/haddock/witch	Egg	0.7479	21,887	5,456
				Atlantic herring	PYSL	1.7121	21,887	12,491
					YSL	1.8901	21,887	13,789
				Grubby	PYSL	24.1335	21,887	176,067
					PYSL	0.7397	21,887	5,396
				Gulf snailfish	PYSL	1.4884	21,887	10,858
				Longhorn sculpin	PYSL	2.798	21,887	20,413
				Pollock	PYSL	92.452	21,887	674,487
				Shorthorn sculpin	PYSL	1.1414	21,887	8,327
				Winter flounder	Egg	8.7237	21,887	63,644
				Wrymouth	PYSL	0.7397	21,887	5,396
			25-Mar-07	American sand lance	PYSL	22.7888	18,733	142,304
				Atlantic cod/haddock	Egg	1.4315	18,733	8,939
				Atlantic seasnail	PYSL	0.6819	18,733	4,258
				Cunner/yellowtail flounder	Egg	0.6819	18,733	4,258
				Goosefish	Egg	0.75	18,733	4,683
				Grubby	YSL	3.4094	18,733	21,290
					PYSL	21.5412	18,733	134,514

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
		April	1-Apr-07	Longhorn sculpin	PYSL	1.4315	18,733	8,939
				Pollock	PYSL	0.6819	18,733	4,258
				Rock gunnel	PYSL	109.4951	18,733	683,740
				Sea raven	PYSL	0.7496	18,733	4,681
				Shorthorn sculpin	PYSL	1.4993	18,733	9,362
				Unidentifiable	Unknown	1.2684	18,733	7,920
				Winter flounder	Egg	5.5353	18,733	34,565
				Alligatorfish	PYSL	0.3738	21,887	2,727
				American sand lance	PYSL	19.8267	21,887	144,646
				Atlantic cod/haddock	Egg	0.7158	21,887	5,222
				Atlantic herring	PYSL	0.6864	21,887	5,008
				Atlantic seasnail	PYSL	1.0456	21,887	7,628
			8-Apr-07	Cunner/yellowtail flounder	Egg	0.3409	21,887	2,487
				Goosefish	Egg	0.375	21,887	2,736
				Grubby	YSL	4.6276	21,887	33,760
					PYSL	23.5716	21,887	171,967
				Longhorn sculpin	YSL	0.3738	21,887	2,727
					PYSL	1.059	21,887	7,726
				Pollock	PYSL	0.3409	21,887	2,487
				Rock gunnel	PYSL	71.1518	21,887	519,090
				Sculpin family	PYSL	0.3664	21,887	2,673
				Sea raven	PYSL	0.3748	21,887	2,734
				Shorthorn sculpin	PYSL	0.7496	21,887	5,469
				Unidentifiable	Unknown	1.0006	21,887	7,300
				Winter flounder	Egg	2.7677	21,887	20,191
				Alligatorfish	PYSL	0.7476	30,457	7,590
				American sand lance	PYSL	16.8646	30,457	171,212
				Atlantic herring	PYSL	1.3728	30,457	13,937
				Atlantic seasnail	PYSL	1.4093	30,457	14,308
				Grubby	YSL	5.8457	30,457	59,346
					PYSL	25.6019	30,457	259,915
				Longhorn sculpin	YSL	0.7476	30,457	7,590
					PYSL	0.6864	30,457	6,968
				Rock gunnel	PYSL	32.8086	30,457	333,078
				Sculpin family	PYSL	0.7327	30,457	7,439
				Unidentifiable	Unknown	0.7327	30,457	7,439
			15-Apr-07	Alligatorfish	PYSL	0.3738	24,196	3,015
				American plaice	Egg	7.345	24,196	59,239
				American sand lance	PYSL	9.5545	24,196	77,059
				Atlantic cod/haddock	Egg	1.4253	24,196	11,495
				Atlantic cod/haddock/witch	Egg	1.8732	24,196	15,107
				Atlantic herring	PYSL	2.1663	24,196	17,472
				Atlantic seasnail	PYSL	2.9314	24,196	23,643
				Cunner/yellowtail flounder	Egg	1.4622	24,196	11,793

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Grubby	YSL	4.4193	24,196	35,642
					PYSL	21.7132	24,196	175,122
				Longhorn sculpin	YSL	0.3738	24,196	3,015
					PYSL	0.3432	24,196	2,768
				Rock gunnel	YSL	0.7495	24,196	6,045
					PYSL	17.5273	24,196	141,361
				Sculpin family	PYSL	0.3664	24,196	2,955
				Unidentifiable	Unknown	0.3664	24,196	2,955
			22-Apr-07	American plaice	Egg	14.69	32,962	161,406
				American sand lance	PYSL	2.2444	32,962	24,660
				Atlantic cod/haddock	Egg	2.8506	32,962	31,320
				Atlantic cod/haddock/witch	Egg	3.7463	32,962	41,162
				Atlantic herring	PYSL	2.9599	32,962	32,521
				Atlantic seasnail	PYSL	4.4535	32,962	48,933
				Cunner/yellowtail flounder	Egg	2.9244	32,962	32,131
				Grubby	YSL	2.9929	32,962	32,884
					PYSL	17.8245	32,962	195,846
				Rock gunnel	YSL	1.4991	32,962	16,471
					PYSL	2.2459	32,962	24,677
			29-Apr-07	American plaice	Egg	14.0715	32,962	154,610
				American sand lance	PYSL	1.4903	32,962	16,375
				Atlantic cod/haddock	Egg	1.4253	32,962	15,660
				Atlantic cod/haddock/witch	Egg	3.3674	32,962	37,000
				Atlantic herring	PYSL	1.4799	32,962	16,261
				Atlantic seasnail	PYSL	4.8188	32,962	52,946
				Cunner/yellowtail flounder	Egg	3.7124	32,962	40,790
				Fourbeard rockling/hake	Egg	2.6183	32,962	28,769
				Grubby	YSL	1.4964	32,962	16,442
					PYSL	9.6638	32,962	106,180
				Radiated shanny	YSL	1.1043	32,962	12,134
					PYSL	0.7362	32,962	8,089
				Rainbow smelt	YSL	1.4724	32,962	16,178
				Rock gunnel	YSL	0.7495	32,962	8,236
					PYSL	1.123	32,962	12,338
				Unidentifiable	Unknown	0.3736	32,962	4,105
				Winter flounder	Egg	0.3736	32,962	4,105
					WF Stage 2	0.3681	32,962	4,045
		May	6-May-07	American plaice	Egg	13.4531	32,962	147,815
				American sand lance	PYSL	0.7362	32,962	8,089
				Atlantic cod/haddock/witch	Egg	2.9886	32,962	32,837
				Atlantic seasnail	PYSL	5.1841	32,962	56,960
				Cunner/yellowtail flounder	Egg	4.5004	32,962	49,448
				Fourbeard rockling/hake	Egg	5.2366	32,962	57,537
				Grubby	PYSL	1.5031	32,962	16,515

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Radiated shanny	YSL	2.2086	32,962	24,267
					PYSL	1.4724	32,962	16,178
				Rainbow smelt	YSL	2.9448	32,962	32,356
				Unidentifiable	Unknown	0.7471	32,962	8,209
				Winter flounder	Egg	0.7471	32,962	8,209
					WF Stage 2	0.7362	32,962	8,089
			13-May-07	American plaice	Egg	9.3404	32,962	102,627
				American sand lance	PYSL	0.3681	32,962	4,045
				Atlantic cod/haddock/witch	Egg	2.2048	32,962	24,226
				Atlantic mackerel	Egg	47.3908	32,962	520,704
				Atlantic seasnail	PYSL	3.0742	32,962	33,778
				Cunner/yellowtail flounder	Egg	44.5228	32,962	489,192
				Fourbeard rockling	Egg	10.2085	32,962	112,166
				Fourbeard rockling/hake	Egg	105.4039	32,962	1,158,121
				Grubby	PYSL	1.1265	32,962	12,377
				Radiated shanny	YSL	1.1043	32,962	12,134
					PYSL	0.7362	32,962	8,089
				Rainbow smelt	YSL	1.4724	32,962	16,178
					PYSL	28.2452	32,962	310,343
				Silver hake	Egg	1.8746	32,962	20,597
				Unidentifiable	Unknown	0.7266	32,962	7,983
				Windowpane	Egg	3.2482	32,962	35,690
				Winter flounder	Egg	0.3736	32,962	4,105
					WF Stage 2	0.743	32,962	8,164
			20-May-07	American plaice	Egg	5.2277	32,962	57,439
				Atlantic cod/haddock/witch	Egg	1.4211	32,962	15,614
				Atlantic mackerel	Egg	94.7816	32,962	1,041,408
				Atlantic seasnail	PYSL	0.9643	32,962	10,595
				Cunner/yellowtail flounder	Egg	84.5451	32,962	928,936
				Fourbeard rockling	Egg	20.4171	32,962	224,332
				Fourbeard rockling/hake	Egg	205.5712	32,962	2,258,705
				Grubby	PYSL	0.7498	32,962	8,239
				Rainbow smelt	PYSL	56.4903	32,962	620,685
				Silver hake	Egg	3.7491	32,962	41,194
				Unidentifiable	Unknown	0.706	32,962	7,757
				Windowpane	Egg	6.4964	32,962	71,379
			27-May-07	Winter flounder	WF Stage 2	0.7498	32,962	8,239
				American plaice	Egg	8.5738	32,962	94,204
				Atlantic cod/haddock/witch	Egg	0.9105	32,962	10,004
				Atlantic mackerel	Egg	60.5085	32,962	664,835
				Atlantic seasnail	PYSL	3.4429	32,962	37,829
				Atlantic tomcod	YOY	1.4997	32,962	16,478
				Cunner/yellowtail flounder	Egg	725.3993	32,962	7,970,294
				Fourbeard rockling	Egg	10.2085	32,962	112,166

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
		June		Fourbeard rockling/hake	Egg	111.986	32,962	1,230,441
				Grubby	PYSL	0.3749	32,962	4,119
				Haddock	Egg	0.1999	32,962	2,197
				Rainbow smelt	PYSL	37.9455	32,962	416,925
				Silver hake	Egg	1.8746	32,962	20,597
				Unidentifiable	Unknown	0.353	32,962	3,878
				Windowpane	Egg	6.3475	32,962	69,743
				Winter flounder	WF Stage 2	1.2952	32,962	14,231
			3-Jun-07	American plaice	Egg	11.9199	32,962	130,970
				Atlantic cod/haddock/witch	Egg	0.3999	32,962	4,394
				Atlantic mackerel	Egg	26.2354	32,962	288,261
				Atlantic seasnail	PYSL	5.9215	32,962	65,063
				Atlantic tomcod	YOY	2.9994	32,962	32,956
				Cunner/yellowtail flounder	Egg	1366.253	32,962	15,011,652
				Fourbeard rockling/hake	Egg	18.4007	32,962	202,177
				Haddock	Egg	0.3999	32,962	4,394
				Rainbow smelt	PYSL	19.4007	32,962	213,165
				Windowpane	Egg	6.1986	32,962	68,107
				Winter flounder	WF Stage 2	1.8405	32,962	20,223
			10-Jun-07	Atlantic mackerel	Egg	241.3786	32,962	2,652,137
				Atlantic menhaden	Egg	4.4385	32,962	48,768
				Cunner/yellowtail flounder	Egg	592.2943	32,962	6,507,808
				Fourbeard rockling	Egg	5.9247	32,962	65,097
				Fourbeard rockling/hake	Egg	20.6456	32,962	226,843
			17-Jun-07	Windowpane	Egg	4.3981	32,962	48,324
				American plaice	Egg	3.6203	32,962	39,778
				Atlantic cod/haddock/witch	Egg	10.2966	32,962	113,134
				Atlantic mackerel	Egg	11.6236	32,962	127,714
				Atlantic menhaden	Egg	17.7359	32,962	194,873
				Cunner/yellowtail flounder	Egg	898.8917	32,962	9,876,535
				Fourbeard rockling	Egg	0.7499	32,962	8,240
				Fourbeard rockling/hake	Egg	5.1947	32,962	57,077
			24-Jun-07	Rainbow smelt	PYSL	0.699	32,962	7,680
				Urophycis species	Egg	7.1751	32,962	78,836
				American plaice	Egg	0.6576	32,962	7,225
				Atlantic cod/haddock/witch	Egg	0.6576	32,962	7,225
				Atlantic mackerel	Egg	1.3152	32,962	14,451
				Atlantic menhaden	Egg	17.6033	32,962	193,416
				Atlantic seasnail	PYSL	0.6576	32,962	7,225
				Cunner/yellowtail flounder	Egg	976.8042	32,962	10,732,595
				Fourbeard rockling/hake	Egg	4.2629	32,962	46,838
				Northern pipefish	PYSL	3.6545	32,962	40,154
				Radiated shanny	PYSL	1.3152	32,962	14,451
				Winter flounder	WF Stage 3	10.0226	32,962	110,123

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
		July	1-Jul-07		WF Stage 4	0.6576	32,962	7,225
				Atlantic cod/haddock/witch	Egg	0.6972	32,962	7,660
				Atlantic mackerel	Egg	5.9335	32,962	65,194
				Cunner	PYSL	1.4916	32,962	16,389
				Cunner/yellowtail flounder	Egg	547.107	32,962	6,011,315
				Fourbeard rockling	PYSL	0.6972	32,962	7,660
				Fourbeard rockling/hake	Egg	4.4864	32,962	49,294
				Northern pipefish	PYSL	2.8373	32,962	31,175
				Radiated shanny	PYSL	1.3943	32,962	15,320
				Silver hake	Egg	0.7458	32,962	8,194
				Unidentifiable	Unknown	0.7497	32,962	8,237
				Urophycis species	Egg	0.7458	32,962	8,194
				Windowpane	Egg	0.6972	32,962	7,660
				Winter flounder	WF Stage 2	0.7458	32,962	8,194
					WF Stage 3	0.6972	32,962	7,660
			8-Jul-07	American plaice	PYSL	0.7493	32,962	8,233
				Atlantic mackerel	Egg	4.487	32,962	49,300
					PYSL	0.7493	32,962	8,233
				Cunner	PYSL	43.3398	32,962	476,194
				Cunner/yellowtail flounder	Egg	232.1811	32,962	2,551,080
				Fourbeard rockling/hake	Egg	11.9595	32,962	131,404
				Northern pipefish	PYSL	4.474	32,962	49,158
				Radiated shanny	PYSL	1.4986	32,962	16,466
				Urophycis species	Egg	13.4832	32,962	148,146
				Windowpane	PYSL	0.7385	32,962	8,114
				Winter flounder	WF Stage 3	0.7493	32,962	8,233
				Witch flounder	PYSL	0.7493	32,962	8,233
			15-Jul-07	American plaice	PYSL	1.4973	32,962	16,452
				Atlantic mackerel	Egg	1.4926	32,962	16,400
				Cunner	PYSL	38.9315	32,962	427,758
				Cunner/yellowtail flounder	Egg	201.5059	32,962	2,214,037
				Fourbeard rockling	PYSL	2.2395	32,962	24,606
				Fourbeard rockling/hake	Egg	1.4946	32,962	16,421
				Northern pipefish	PYSL	2.9797	32,962	32,739
				Radiated shanny	PYSL	0.7499	32,962	8,240
				Windowpane	Egg	0.7449	32,962	8,185
				Witch flounder	PYSL	0.7449	32,962	8,185
			22-Jul-07	Cunner	PYSL	470.2516	32,962	5,166,870
				Cunner/yellowtail flounder	Egg	381.4142	32,962	4,190,773
				Fourbeard rockling	Egg	6.5233	32,962	71,675
					PYSL	14.6047	32,962	160,468
				Fourbeard rockling/hake	Egg	6.3455	32,962	69,721
				Northern pipefish	PYSL	3.2064	32,962	35,230
				Prionotus species	Egg	0.5717	32,962	6,282

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			29-Jul-07	Radiated shanny	PYSL	1.3212	32,962	14,517
				Urophycis species	Egg	5.596	32,962	61,486
				Windowpane	Egg	4.3044	32,962	47,294
					PYSL	1.4842	32,962	16,308
				Winter flounder	WF Stage 3	0.7495	32,962	8,235
				Cunner	Egg	0.6974	32,962	7,663
					PYSL	401.1265	32,962	4,407,361
				Cunner/yellowtail flounder	Egg	25.4613	32,962	279,755
				Fourbeard rockling	Egg	0.569	32,962	6,252
					YSL	0.744	32,962	8,175
					PYSL	5.0111	32,962	55,059
				Fourbeard rockling/hake	Egg	3.9996	32,962	43,945
				Northern pipefish	PYSL	32.6704	32,962	358,964
				Prionotus species	Egg	2.9335	32,962	32,232
				Silver hake	Egg	3.9071	32,962	42,929
					YSL	0.6974	32,962	7,663
				Tautog	Egg	0.6974	32,962	7,663
				Urophycis species	Egg	6.4506	32,962	70,875
				Windowpane	Egg	2.7691	32,962	30,425
					PYSL	0.7334	32,962	8,058
		August	5-Aug-07	Cunner	PYSL	1172.581	32,962	12,883,680
				Cunner/yellowtail flounder	Egg	49.12	32,962	539,703
				Fourbeard rockling	Egg	1.4757	32,962	16,214
					PYSL	25.1396	32,962	276,221
				Fourbeard rockling/hake	Egg	5.2034	32,962	57,172
				Northern pipefish	PYSL	1.4757	32,962	16,214
					Yearling or older	0.7499	32,962	8,240
				Prionotus species	Egg	1.4998	32,962	16,479
				Radiated shanny	PYSL	2.9749	32,962	32,686
				Urophycis species	Egg	0.7393	32,962	8,123
				Windowpane	Egg	0.7364	32,962	8,091
			12-Aug-07	Atlantic cod/haddock/witch	Egg	0.659	32,962	7,241
				Cunner	PYSL	295.155	32,962	3,243,004
				Cunner/yellowtail flounder	Egg	22.4103	32,962	246,233
				Fourbeard rockling	Egg	1.2747	32,962	14,005
					PYSL	14.0177	32,962	154,019
				Fourbeard rockling/hake	Egg	3.9549	32,962	43,454
				Northern pipefish	PYSL	0.659	32,962	7,241
				Silver hake	Egg	2.681	32,962	29,457
					PYSL	1.2747	32,962	14,005
				Urophycis species	Egg	5.5808	32,962	61,318
				Windowpane	Egg	2.5493	32,962	28,011
			19-Aug-07	Cunner	PYSL	210.5528	32,962	2,313,440

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Cunner/yellowtail flounder	Egg	6.5572	32,962	72,047
				Fourbeard rockling	Egg	1.4624	32,962	16,068
					PYSL	15.2011	32,962	167,022
				Fourbeard rockling/hake	Egg	20.2482	32,962	222,476
				Northern pipefish	PYSL	0.7312	32,962	8,034
				Tautog	Egg	2.9422	32,962	32,327
				Urophycis species	Egg	77.8236	32,962	855,083
				Windowpane	Egg	0.7355	32,962	8,082
			26-Aug-07	Cunner	PYSL	84.1577	32,962	924,679
				Cunner/yellowtail flounder	Egg	11.2389	32,962	123,487
				Fourbeard rockling	Egg	0.7495	32,962	8,235
					PYSL	5.2271	32,962	57,432
				Fourbeard rockling/hake	Egg	1.4793	32,962	16,254
				Northern pipefish	YSL	0.7498	32,962	8,239
					PYSL	0.7513	32,962	8,255
				Prionotus species	Egg	0.7396	32,962	8,127
				Unidentifiable	Unknown	9.0158	32,962	99,060
				Windowpane	Egg	1.491	32,962	16,382
	September	2-Sep-07		Cunner	PYSL	42.9827	28,481	408,057
					YOY	0.3768	28,481	3,578
				Cunner/yellowtail flounder	Egg	6.86	28,481	65,126
				Fourbeard rockling	Egg	0.3747	28,481	3,558
					PYSL	2.9073	28,481	27,601
				Fourbeard rockling/hake	Egg	0.9763	28,481	9,269
				Northern pipefish	YSL	0.3749	28,481	3,559
					PYSL	0.3757	28,481	3,566
					Yearling or older	0.3733	28,481	3,544
				Prionotus species	Egg	0.3698	28,481	3,511
				Tautog	Egg	0.2938	28,481	2,789
				Unidentifiable	Unknown	4.5079	28,481	42,796
				Urophycis species	Egg	0.2367	28,481	2,247
				Windowpane	Egg	0.7455	28,481	7,077
					PYSL	0.2938	28,481	2,789
		9-Sep-07		Cunner	PYSL	1.8077	32,962	19,862
					YOY	0.7537	32,962	8,281
				Cunner/yellowtail flounder	Egg	2.4812	32,962	27,262
				Fourbeard rockling	PYSL	0.5876	32,962	6,456
				Fourbeard rockling/hake	Egg	0.4734	32,962	5,201
				Northern pipefish	Yearling or older	0.7467	32,962	8,204
				Tautog	Egg	0.5876	32,962	6,456
				Urophycis species	Egg	0.4734	32,962	5,201
				Windowpane	PYSL	0.5876	32,962	6,456

Unit	Year	Month	Sample Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			16-Sep-07	Cunner	PYSL	0.9038	32,962	9,931
					YOY	0.3768	32,962	4,141
				Cunner/yellowtail flounder	Egg	1.2406	32,962	13,631
				Fourbeard rockling	PYSL	0.2938	32,962	3,228
				Fourbeard rockling/hake	Egg	0.5462	32,962	6,002
				Northern pipefish	Yearling or older	0.3733	32,962	4,102
				Silver hake	Egg	2.202	32,962	24,195
				Tautog	Egg	0.2938	32,962	3,228
				Urophycis species	Egg	0.2367	32,962	2,601
				Windowpane	Egg	0.3213	32,962	3,530
					PYSL	0.2938	32,962	3,228
			23-Sep-07	Fourbeard rockling/hake	Egg	0.6191	32,962	6,802
				Silver hake	Egg	4.404	32,962	48,389
				Windowpane	Egg	0.6426	32,962	7,060

a – weekly densities based on entrainment samples collected at Screen House #2 of Schiller Station during the period 31 August 2006 through 27 September 2007.

Appendix Table B-5. Weekly entrainment density^a, operating flow (million gallons / week), and estimated entrainment abundance by macrocrustacean taxon and life stage at Units 4, 5, 6, and all Units combined of Schiller Station for the period 31 August 2006 through 27 September 2007.

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
4	2006	August	27-Aug-06	Atlantic rock crab	Megalops	0.4981	10,811	5,385
				<i>Cancer</i> sp.	Zoea	175.0013	10,811	1,891,906
				Green crab	Megalops	11.8067	10,811	127,640
					Zoea	1120.018	10,811	12,108,301
		September	3-Sep-06	Japanese shore crab	Zoea	43.8475	10,811	474,027
				Atlantic rock crab	Megalops	0.5074	10,811	5,485
				<i>Cancer</i> sp.	Zoea	135.3901	10,811	1,463,677
				Green crab	Juvenile	0.1242	10,811	1,343
			3-Sep-06		Megalops	7.3093	10,811	79,019
					Zoea	793.1507	10,811	8,574,602
				Japanese shore crab	Zoea	31.0297	10,811	335,456
				Jonah crab	Megalops	0.5266	10,811	5,693
			10-Sep-06	Atlantic rock crab	Megalops	0.5167	10,811	5,586
				<i>Cancer</i> sp.	Zoea	95.779	10,811	1,035,448
				Green crab	Juvenile	0.2484	10,811	2,685
					Megalops	2.8118	10,811	30,398
					Zoea	466.2835	10,811	5,040,903
				Japanese shore crab	Zoea	18.2119	10,811	196,885
				Jonah crab	Megalops	1.0532	10,811	11,386
			17-Sep-06	Atlantic rock crab	Megalops	0.3815	10,811	4,125
				<i>Cancer</i> sp.	Zoea	52.2785	10,811	565,173
				Green crab	Juvenile	0.1242	10,811	1,343
					Megalops	1.5291	10,811	16,531
					Zoea	278.9155	10,811	3,015,303
				Japanese shore crab	Zoea	15.2902	10,811	165,300
				Jonah crab	Megalops	0.5266	10,811	5,693
			24-Sep-06	Atlantic rock crab	Megalops	0.2464	10,811	2,664
				<i>Cancer</i> sp.	Zoea	8.778	10,811	94,898
				Green crab	Megalops	0.2464	10,811	2,664
					Zoea	91.5475	10,811	989,703
			October	Japanese shore crab	Zoea	12.3686	10,811	133,714
				Atlantic rock crab	Megalops	3.1484	10,811	34,036
				<i>Cancer</i> sp.	Zoea	16.7588	10,811	181,176
				Green crab	Juvenile	0.1249	10,811	1,350
					Megalops	4.1632	10,811	45,008
					Zoea	79.3942	10,811	858,316
				Japanese shore crab	Zoea	8.1965	10,811	88,611
				Jonah crab	Megalops	0.3772	10,811	4,077
			8-Oct-06	Atlantic rock crab	Megalops	6.0503	10,811	65,409

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance		
				Cancer sp.	Zoea	24.7395	10,811	267,454		
				Green crab	Juvenile	0.2498	10,811	2,701		
					Megalops	8.0801	10,811	87,352		
					Zoea	67.2409	10,811	726,929		
			15-Oct-06	Japanese shore crab	Zoea	4.0244	10,811	43,507		
				Jonah crab	Megalops	0.7543	10,811	8,155		
				Atlantic rock crab	Megalops	3.1999	1,544	4,942		
				Cancer sp.	Zoea	12.4948	1,544	19,297		
				Green crab	Juvenile	0.3495	1,544	540		
					Megalops	4.04	1,544	6,239		
					Zoea	37.0504	1,544	57,221		
				Japanese shore crab	Zoea	2.3838	1,544	3,682		
				Jonah crab	Juvenile	0.103	1,544	159		
					Megalops	0.3772	1,544	582		
				22-Oct-06	Atlantic rock crab	Megalops	0.3494	0	0	
					Cancer sp.	Zoea	0.25	0	0	
			Green crab		Juvenile	0.4493	0	0		
					Zoea	6.8598	0	0		
			Japanese shore crab		Zoea	0.7433	0	0		
			Jonah crab		Juvenile	0.2059	0	0		
			29-Oct-06		Arctic lyre crab	Zoea	0.1248	0	0	
				Atlantic rock crab	Megalops	0.2995	0	0		
				Cancer sp.	Zoea	0.2461	0	0		
				Green crab	Juvenile	0.3496	0	0		
					Zoea	3.8045	0	0		
				Japanese shore crab	Zoea	0.3716	0	0		
				Jonah crab	Juvenile	0.103	0	0		
				November	5-Nov-06	Arctic lyre crab	Zoea	0.2496	0	0
						Atlantic rock crab	Megalops	0.2496	0	0
			Cancer sp.			Zoea	0.2421	0	0	
			Green crab			Juvenile	0.2499	0	0	
						Zoea	0.7492	0	0	
			12-Nov-06		Arctic lyre crab	Zoea	0.1248	3,024	377	
					Atlantic rock crab	Megalops	0.1248	3,024	377	
					Cancer sp.	Zoea	0.4889	3,024	1,479	
					Green crab	Juvenile	0.235	3,024	711	
						Zoea	1.3001	3,024	3,932	
					Japanese shore crab	Zoea	0.3584	3,024	1,084	
			19-Nov-06		Cancer sp.	Zoea	0.7356	10,811	7,953	
					Green crab	Juvenile	0.2201	10,811	2,380	
						Zoea	1.8509	10,811	20,010	
					Japanese shore crab	Zoea	0.7168	10,811	7,749	
			26-Nov-06	Atlantic rock crab	Megalops	0.125	10,811	1,351		
				Cancer sp.	Zoea	0.3678	10,811	3,976		

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
		December	3-Dec-06	Green crab	Juvenile	0.1101	10,811	1,190
					Zoea	1.6773	10,811	18,133
				Japanese shore crab	Zoea	0.3584	10,811	3,875
				Atlantic rock crab	Megalops	0.2499	10,811	2,702
			10-Dec-06	Green crab	Zoea	1.5037	10,811	16,256
				Atlantic rock crab	Megalops	0.125	10,811	1,351
				Green crab	Zoea	1.3508	10,811	14,604
				Japanese shore crab	Zoea	0.117	10,811	1,265
			17-Dec-06	Green crab	Zoea	1.198	10,811	12,951
				Japanese shore crab	Zoea	0.234	10,811	2,529
			24-Dec-06	Green crab	Zoea	0.7119	10,811	7,696
				Japanese shore crab	Zoea	0.2416	10,811	2,612
2007		January	31-Dec-06	Green crab	Zoea	0.2257	10,811	2,440
				Japanese shore crab	Zoea	0.2492	10,811	2,694
			7-Jan-07	Green crab	Zoea	0.2491	10,811	2,693
			14-Jan-07	Green crab	Zoea	0.4998	10,811	5,403
				Japanese shore crab	Zoea	0.2499	10,811	2,701
		February	4-Feb-07	Cancer sp.	Zoea	0.2497	10,811	2,699
			18-Feb-07	Green crab	Juvenile	0.2087	10,811	2,256
				Green crab	Zoea	0.5072	10,811	5,484
		April	29-Apr-07	Arctic lyre crab	Zoea	0.2454	10,811	2,653
				Cancer sp.	Zoea	4.5691	10,811	49,396
				Green crab	Zoea	0.3717	10,811	4,019
		May	6-May-07	Arctic lyre crab	Zoea	0.4908	10,811	5,306
				Cancer sp.	Zoea	9.1382	10,811	98,791
				Green crab	Zoea	0.7435	10,811	8,038
			13-May-07	Arctic lyre crab	Zoea	0.781	10,811	8,444
				Cancer sp.	Zoea	554.7388	10,811	5,997,176
				Green crab	Zoea	11.0566	10,811	119,531
			20-May-07	Arctic lyre crab	Zoea	1.0713	10,811	11,581
				Cancer sp.	Zoea	1100.339	10,811	11,895,561
				Green crab	Zoea	21.3698	10,811	231,024
			27-May-07	Arctic lyre crab	Zoea	0.6689	10,811	7,232
				Cancer sp.	Zoea	736.1538	10,811	7,958,419
				Green crab	Juvenile	0.2051	10,811	2,217
					Zoea	1867.486	10,811	20,189,040
				Japanese shore crab	Zoea	0.3068	10,811	3,316
		June	3-Jun-07	Arctic lyre crab	Zoea	0.2666	10,811	2,882
				Cancer sp.	Zoea	371.9681	10,811	4,021,277
				Green crab	Juvenile	0.4101	10,811	4,434
					Zoea	3713.603	10,811	40,147,055
				Japanese shore crab	Zoea	0.6135	10,811	6,633
			10-Jun-07	Arctic lyre crab	Zoea	2.9455	10,811	31,844
				Cancer sp.	Zoea	361.7553	10,811	3,910,868

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				Green crab	Juvenile	0.4887	10,811	5,283
					Zoea	1142.906	10,811	12,355,736
			17-Jun-07	American lobster	Stage II	0.466	10,811	5,038
				Arctic lyre crab	Zoea	0.4999	10,811	5,405
				<i>Cancer</i> sp.	Zoea	1940.289	10,811	20,976,094
				Green crab	Zoea	1386.116	10,811	14,985,035
				Japanese shore crab	Zoea	7.6797	10,811	83,024
			24-Jun-07	Arctic lyre crab	Zoea	0.4384	10,811	4,739
				Atlantic lyre crab	Zoea	0.7478	10,811	8,084
				<i>Cancer</i> sp.	Zoea	765.0436	10,811	8,270,742
				Green crab	Zoea	2003.122	10,811	21,655,368
				Japanese shore crab	Zoea	13.9008	10,811	150,278
		July	1-Jul-07	American lobster	Stage I	0.2499	10,811	2,701
				Arctic lyre crab	Zoea	0.2499	10,811	2,702
				Atlantic lyre crab	Zoea	0.7147	10,811	7,726
				Atlantic rock crab	Megalops	0.9296	10,811	10,049
				<i>Cancer</i> sp.	Zoea	596.8221	10,811	6,452,131
				Green crab	Megalops	0.2499	10,811	2,701
					Zoea	2012.337	10,811	21,754,992
				Japanese shore crab	Zoea	10.4906	10,811	113,412
			8-Jul-07	American lobster	Stage I	0.25	10,811	2,702
				Arctic lyre crab	Zoea	0.25	10,811	2,702
				Atlantic rock crab	Megalops	1.4987	10,811	16,203
				<i>Cancer</i> sp.	Zoea	816.281	10,811	8,824,660
				Green crab	Megalops	30.2027	10,811	326,516
					Zoea	989.6996	10,811	10,699,455
				Japanese shore crab	Zoea	9.4776	10,811	102,460
				Jonah crab	Megalops	0.5	10,811	5,405
			15-Jul-07	American lobster	Stage I	0.4975	10,811	5,379
				Arctic lyre crab	Zoea	0.25	10,811	2,702
				Atlantic rock crab	Megalops	1.9961	10,811	21,579
				<i>Cancer</i> sp.	Zoea	995.2177	10,811	10,759,110
				Green crab	Megalops	7.2404	10,811	78,275
					Zoea	2071.225	10,811	22,391,618
				Japanese shore crab	Zoea	13.9799	10,811	151,134
				Jonah crab	Megalops	0.4985	10,811	5,389
			22-Jul-07	American lobster	Stage I	0.2498	10,811	2,701
				Atlantic rock crab	Megalops	5.1279	10,811	55,437
				<i>Cancer</i> sp.	Zoea	2562.228	10,811	27,699,764
				Green crab	Juvenile	0.3811	10,811	4,120
					Megalops	121.5936	10,811	1,314,526
					Zoea	2598.449	10,811	28,091,342
			29-Jul-07	Japanese shore crab	Zoea	22.4425	10,811	242,622
				Atlantic rock crab	Megalops	0.961	10,811	10,389

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
		August	5-Aug-07	<i>Cancer</i> sp.	Megalops	1.9009	10,811	20,550
					Zoea	2491.367	10,811	26,933,695
				Green crab	Megalops	0.6786	10,811	7,336
					Zoea	2056.423	10,811	22,231,595
				Japanese shore crab	Zoea	15.8933	10,811	171,819
				Jonah crab	Megalops	1.1934	10,811	12,902
				Arctic lyre crab	Zoea	0.2464	10,811	2,664
				Atlantic rock crab	Juvenile	0.4929	10,811	5,328
					Megalops	3.2209	10,811	34,821
				<i>Cancer</i> sp.	Zoea	968.689	10,811	10,472,313
				Green crab	Juvenile	0.9918	10,811	10,723
					Megalops	8.4234	10,811	91,064
				Japanese shore crab	Zoea	735.3508	10,811	7,949,738
					Zoea	14.3669	10,811	155,318
			12-Aug-07	Atlantic rock crab	Juvenile	0.2489	10,811	2,691
					Megalops	11.4525	10,811	123,811
				<i>Cancer</i> sp.	Zoea	1518.798	10,811	16,419,438
				Green crab	Juvenile	0.6737	10,811	7,284
					Megalops	11.5279	10,811	124,626
				Japanese shore crab	Zoea	461.9304	10,811	4,993,842
					Zoea	7.352	10,811	79,481
				Jonah crab	Juvenile	0.2344	10,811	2,534
					Megalops	1.2747	10,811	13,780
			19-Aug-07	Atlantic rock crab	Juvenile	1.1446	10,811	12,374
					Megalops	1.8382	10,811	19,873
				<i>Cancer</i> sp.	Zoea	203.3557	10,811	2,198,440
				Green crab	Juvenile	1.399	10,811	15,124
					Megalops	6.2552	10,811	67,624
				Japanese shore crab	Zoea	213.8866	10,811	2,312,287
					Zoea	7.6278	10,811	82,463
			26-Aug-07	Atlantic rock crab	Megalops	3.9797	10,811	43,024
					Zoea	835.0739	10,811	9,027,826
				Green crab	Juvenile	0.9901	10,811	10,704
					Megalops	24.1065	10,811	260,610
				Japanese shore crab	Zoea	165.4956	10,811	1,789,142
					Zoea	3.2503	10,811	35,138
				Jonah crab	Megalops	0.2504	10,811	2,707
					Megalops	2.1155	10,811	22,870
		September	2-Sep-07	<i>Cancer</i> sp.	Zoea	444.8272	10,811	4,808,943
				Green crab	Juvenile	0.9362	10,811	10,122
					Megalops	17.213	10,811	186,087
				Japanese shore crab	Zoea	107.7894	10,811	1,165,291
					Zoea	2.4385	10,811	26,362
				Jonah crab	Megalops	0.5342	10,811	5,776

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			9-Sep-07	Atlantic rock crab	Megalops	0.2512	10,811	2,716
				<i>Cancer</i> sp.	Zoea	54.5805	10,811	590,060
				Green crab	Juvenile	0.8824	10,811	9,540
					Megalops	10.3196	10,811	111,563
					Zoea	50.0832	10,811	541,440
				Japanese shore crab	Zoea	1.6267	10,811	17,586
				Jonah crab	Megalops	0.8181	10,811	8,844
			16-Sep-07	Atlantic rock crab	Megalops	0.1256	10,811	1,358
				<i>Cancer</i> sp.	Zoea	40.119	10,811	433,719
				Green crab	Juvenile	0.6798	10,811	7,350
					Megalops	5.1598	10,811	55,781
					Zoea	38.5941	10,811	417,233
				Japanese shore crab	Zoea	0.8134	10,811	8,793
			23-Sep-07	Jonah crab	Megalops	0.6232	10,811	6,737
				<i>Cancer</i> sp.	Zoea	25.6575	10,811	277,378
				Green crab	Juvenile	0.4773	10,811	5,160
					Zoea	27.1049	10,811	293,026
				Jonah crab	Megalops	0.4284	10,811	4,631
5	2006	August	27-Aug-06	Atlantic rock crab	Megalops	0.4981	9,494	4,728
				<i>Cancer</i> sp.	Zoea	175.0013	9,494	1,661,380
				Green crab	Megalops	11.8067	9,494	112,087
					Zoea	1120.018	9,494	10,632,920
				Japanese shore crab	Zoea	43.8475	9,494	416,268
		September	3-Sep-06	Atlantic rock crab	Megalops	0.5074	5,538	2,810
				<i>Cancer</i> sp.	Zoea	135.3901	5,538	749,776
				Green crab	Juvenile	0.1242	5,538	688
					Megalops	7.3093	5,538	40,478
					Zoea	793.1507	5,538	4,392,382
				Japanese shore crab	Zoea	31.0297	5,538	171,839
			10-Sep-06	Jonah crab	Megalops	0.5266	5,538	2,916
				Atlantic rock crab	Megalops	0.5167	10,550	5,451
				<i>Cancer</i> sp.	Zoea	95.779	10,550	1,010,432
				Green crab	Juvenile	0.2484	10,550	2,621
					Megalops	2.8118	10,550	29,664
					Zoea	466.2835	10,550	4,919,116
			17-Sep-06	Japanese shore crab	Zoea	18.2119	10,550	192,128
				Jonah crab	Megalops	1.0532	10,550	11,111
				Atlantic rock crab	Megalops	0.3815	11,076	4,226
				<i>Cancer</i> sp.	Zoea	52.2785	11,076	579,025
				Green crab	Juvenile	0.1242	11,076	1,376
					Megalops	1.5291	11,076	16,936
					Zoea	278.9155	11,076	3,089,207
				Japanese shore crab	Zoea	15.2902	11,076	169,351
				Jonah crab	Megalops	0.5266	11,076	5,832

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
		October	24-Sep-06	Atlantic rock crab	Megalops	0.2464	7,911	1,949
				<i>Cancer</i> sp.	Zoea	8.778	7,911	69,445
				Green crab	Megalops	0.2464	7,911	1,949
					Zoea	91.5475	7,911	724,257
				Japanese shore crab	Zoea	12.3686	7,911	97,851
			1-Oct-06	Atlantic rock crab	Megalops	3.1484	11,076	34,871
				<i>Cancer</i> sp.	Zoea	16.7588	11,076	185,616
				Green crab	Juvenile	0.1249	11,076	1,383
					Megalops	4.1632	11,076	46,111
					Zoea	79.3942	11,076	879,353
			8-Oct-06	Japanese shore crab	Zoea	8.1965	11,076	90,782
				Jonah crab	Megalops	0.3772	11,076	4,177
				Atlantic rock crab	Megalops	6.0503	11,076	67,012
				<i>Cancer</i> sp.	Zoea	24.7395	11,076	274,010
				Green crab	Juvenile	0.2498	11,076	2,767
			15-Oct-06		Megalops	8.0801	11,076	89,493
					Zoea	67.2409	11,076	744,746
				Japanese shore crab	Zoea	4.0244	11,076	44,573
				Jonah crab	Megalops	0.7543	11,076	8,355
				Atlantic rock crab	Megalops	3.1999	11,076	35,441
			22-Oct-06	<i>Cancer</i> sp.	Zoea	12.4948	11,076	138,389
				Green crab	Juvenile	0.3495	11,076	3,871
					Megalops	4.04	11,076	44,747
					Zoea	37.0504	11,076	410,362
				Japanese shore crab	Zoea	2.3838	11,076	26,403
			29-Oct-06	Jonah crab	Juvenile	0.103	11,076	1,140
					Megalops	0.3772	11,076	4,177
				Atlantic rock crab	Megalops	0.3494	11,076	3,870
				<i>Cancer</i> sp.	Zoea	0.25	11,076	2,769
				Green crab	Juvenile	0.4493	11,076	4,976
			November		Zoea	6.8598	11,076	75,978
				Japanese shore crab	Zoea	0.7433	11,076	8,233
				Jonah crab	Juvenile	0.2059	11,076	2,281
				Arctic lyre crab	Zoea	0.1248	11,076	1,382
				Atlantic rock crab	Megalops	0.2995	11,076	3,318
			5-Nov-06	<i>Cancer</i> sp.	Zoea	0.2461	11,076	2,725
				Green crab	Juvenile	0.3496	11,076	3,872
					Zoea	3.8045	11,076	42,138
				Japanese shore crab	Zoea	0.3716	11,076	4,116
				Jonah crab	Juvenile	0.103	11,076	1,140
			November	Arctic lyre crab	Zoea	0.2496	11,076	2,765
				Atlantic rock crab	Megalops	0.2496	11,076	2,765
				<i>Cancer</i> sp.	Zoea	0.2421	11,076	2,682
				Green crab	Juvenile	0.2499	11,076	2,768

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			12-Nov-06		Zoea	0.7492	11,076	8,298
				Arctic lyre crab	Zoea	0.1248	11,076	1,382
				Atlantic rock crab	Megalops	0.1248	11,076	1,382
				<i>Cancer</i> sp.	Zoea	0.4889	11,076	5,415
				Green crab	Juvenile	0.235	11,076	2,603
			19-Nov-06		Zoea	1.3001	11,076	14,399
				Japanese shore crab	Zoea	0.3584	11,076	3,970
				<i>Cancer</i> sp.	Zoea	0.7356	11,076	8,148
				Green crab	Juvenile	0.2201	11,076	2,438
					Zoea	1.8509	11,076	20,501
			26-Nov-06	Japanese shore crab	Zoea	0.7168	11,076	7,939
				Atlantic rock crab	Megalops	0.125	11,076	1,384
				<i>Cancer</i> sp.	Zoea	0.3678	11,076	4,074
				Green crab	Juvenile	0.1101	11,076	1,219
					Zoea	1.6773	11,076	18,577
		December	3-Dec-06	Japanese shore crab	Zoea	0.3584	11,076	3,970
				Atlantic rock crab	Megalops	0.2499	11,076	2,768
			10-Dec-06	Green crab	Zoea	1.5037	11,076	16,654
				Atlantic rock crab	Megalops	0.125	11,076	1,384
				Green crab	Zoea	1.3508	11,076	14,962
			17-Dec-06	Japanese shore crab	Zoea	0.117	11,076	1,296
				Green crab	Zoea	1.198	11,076	13,269
				Japanese shore crab	Zoea	0.234	11,076	2,591
			24-Dec-06	Green crab	Zoea	0.7119	11,076	7,884
				Japanese shore crab	Zoea	0.2416	11,076	2,676
	2007	January	31-Dec-06	Green crab	Zoea	0.2257	11,076	2,500
				Japanese shore crab	Zoea	0.2492	11,076	2,760
			7-Jan-07	Green crab	Zoea	0.2491	11,076	2,759
			14-Jan-07	Green crab	Zoea	0.4998	11,076	5,536
				Japanese shore crab	Zoea	0.2499	11,076	2,768
		February	4-Feb-07	<i>Cancer</i> sp.	Zoea	0.2497	11,076	2,765
				Green crab	Juvenile	0.2087	11,076	2,311
			18-Feb-07	Green crab	Zoea	0.5072	11,076	5,618
		April	29-Apr-07	Arctic lyre crab	Zoea	0.2454	11,076	2,718
				<i>Cancer</i> sp.	Zoea	4.5691	11,076	50,606
				Green crab	Zoea	0.3717	11,076	4,117
		May	6-May-07	Arctic lyre crab	Zoea	0.4908	11,076	5,436
				<i>Cancer</i> sp.	Zoea	9.1382	11,076	101,213
				Green crab	Zoea	0.7435	11,076	8,235
			13-May-07	Arctic lyre crab	Zoea	0.781	11,076	8,651
				<i>Cancer</i> sp.	Zoea	554.7388	11,076	6,144,166
				Green crab	Zoea	11.0566	11,076	122,461
			20-May-07	Arctic lyre crab	Zoea	1.0713	11,076	11,865
				<i>Cancer</i> sp.	Zoea	1100.339	11,076	12,187,119

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			27-May-07	Green crab	Zoea	21.3698	11,076	236,687
				Arctic lyre crab	Zoea	0.6689	11,076	7,409
				<i>Cancer</i> sp.	Zoea	736.1538	11,076	8,153,478
				Green crab	Juvenile	0.2051	11,076	2,271
					Zoea	1867.486	11,076	20,683,869
				Japanese shore crab	Zoea	0.3068	11,076	3,398
		June	3-Jun-07	Arctic lyre crab	Zoea	0.2666	11,076	2,953
				<i>Cancer</i> sp.	Zoea	371.9681	11,076	4,119,838
				Green crab	Juvenile	0.4101	11,076	4,542
					Zoea	3713.603	11,076	41,131,051
				Japanese shore crab	Zoea	0.6135	11,076	6,795
			10-Jun-07	Arctic lyre crab	Zoea	2.9455	11,076	32,624
				<i>Cancer</i> sp.	Zoea	361.7553	11,076	4,006,723
				Green crab	Juvenile	0.4887	11,076	5,413
					Zoea	1142.906	11,076	12,658,573
			17-Jun-07	American lobster	Stage II	0.466	11,076	5,161
				Arctic lyre crab	Zoea	0.4999	11,076	5,537
				<i>Cancer</i> sp.	Zoea	1940.289	11,076	21,490,214
				Green crab	Zoea	1386.116	11,076	15,352,315
				Japanese shore crab	Zoea	7.6797	11,076	85,059
			24-Jun-07	Arctic lyre crab	Zoea	0.4384	11,076	4,856
				Atlantic lyre crab	Zoea	0.7478	11,076	8,282
				<i>Cancer</i> sp.	Zoea	765.0436	11,076	8,473,456
				Green crab	Zoea	2003.122	11,076	22,186,137
				Japanese shore crab	Zoea	13.9008	11,076	153,962
		July	1-Jul-07	American lobster	Stage I	0.2499	11,076	2,768
				Arctic lyre crab	Zoea	0.2499	11,076	2,768
				Atlantic lyre crab	Zoea	0.7147	11,076	7,915
				Atlantic rock crab	Megalops	0.9296	11,076	10,296
				<i>Cancer</i> sp.	Zoea	596.8221	11,076	6,610,271
				Green crab	Megalops	0.2499	11,076	2,768
					Zoea	2012.337	11,076	22,288,202
				Japanese shore crab	Zoea	10.4906	11,076	116,192
			8-Jul-07	American lobster	Stage I	0.25	11,076	2,769
				Arctic lyre crab	Zoea	0.25	11,076	2,769
				Atlantic rock crab	Megalops	1.4987	11,076	16,600
				<i>Cancer</i> sp.	Zoea	816.281	11,076	9,040,950
				Green crab	Megalops	30.2027	11,076	334,518
					Zoea	989.6996	11,076	10,961,697
				Japanese shore crab	Zoea	9.4776	11,076	104,972
				Jonah crab	Megalops	0.5	11,076	5,537
			15-Jul-07	American lobster	Stage I	0.4975	11,076	5,511
				Arctic lyre crab	Zoea	0.25	11,076	2,769
				Atlantic rock crab	Megalops	1.9961	11,076	22,108

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				<i>Cancer</i> sp.	Zoea	995.2177	11,076	11,022,814
				Green crab	Megalops	7.2404	11,076	80,193
					Zoea	2071.225	11,076	22,940,432
				Japanese shore crab	Zoea	13.9799	11,076	154,838
				Jonah crab	Megalops	0.4985	11,076	5,521
			22-Jul-07	American lobster	Stage I	0.2498	11,076	2,767
				Atlantic rock crab	Megalops	5.1279	11,076	56,796
				<i>Cancer</i> sp.	Zoea	2562.228	11,076	28,378,679
				Green crab	Juvenile	0.3811	11,076	4,221
					Megalops	121.5936	11,076	1,346,744
			29-Jul-07		Zoea	2598.449	11,076	28,779,855
				Japanese shore crab	Zoea	22.4425	11,076	248,568
				Atlantic rock crab	Megalops	0.961	11,076	10,643
				<i>Cancer</i> sp.	Megalops	1.9009	11,076	21,054
					Zoea	2491.367	11,076	27,593,834
				Green crab	Megalops	0.6786	11,076	7,516
					Zoea	2056.423	11,076	22,776,487
				Japanese shore crab	Zoea	15.8933	11,076	176,031
				Jonah crab	Megalops	1.1934	11,076	13,218
		August	5-Aug-07	Arctic lyre crab	Zoea	0.2464	11,076	2,729
				Atlantic rock crab	Juvenile	0.4929	11,076	5,459
					Megalops	3.2209	11,076	35,674
				<i>Cancer</i> sp.	Zoea	968.689	11,076	10,728,987
				Green crab	Juvenile	0.9918	11,076	10,985
					Megalops	8.4234	11,076	93,296
					Zoea	735.3508	11,076	8,144,584
				Japanese shore crab	Zoea	14.3669	11,076	159,125
			12-Aug-07	Atlantic rock crab	Juvenile	0.2489	11,076	2,757
					Megalops	11.4525	11,076	126,845
				<i>Cancer</i> sp.	Zoea	1518.798	11,076	16,821,876
				Green crab	Juvenile	0.6737	11,076	7,462
					Megalops	11.5279	11,076	127,681
					Zoea	461.9304	11,076	5,116,240
				Japanese shore crab	Zoea	7.352	11,076	81,429
				Jonah crab	Juvenile	0.2344	11,076	2,596
			19-Aug-07		Megalops	1.2747	11,076	14,118
				Atlantic rock crab	Juvenile	1.1446	11,076	12,677
					Megalops	1.8382	11,076	20,360
				<i>Cancer</i> sp.	Zoea	203.3557	11,076	2,252,324
				Green crab	Juvenile	1.399	11,076	15,495
					Megalops	6.2552	11,076	69,282
					Zoea	213.8866	11,076	2,368,961
				Japanese shore crab	Zoea	7.6278	11,076	84,484
			26-Aug-07	Atlantic rock crab	Megalops	3.9797	11,076	44,078

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
		September	2-Sep-07	<i>Cancer</i> sp.	Zoea	835.0739	11,076	9,249,096
				Green crab	Juvenile	0.9901	11,076	10,966
					Megalops	24.1065	11,076	266,998
					Zoea	165.4956	11,076	1,832,994
				Japanese shore crab	Zoea	3.2503	11,076	36,000
				Jonah crab	Megalops	0.2504	11,076	2,774
				Atlantic rock crab	Megalops	2.1155	6,594	13,949
				<i>Cancer</i> sp.	Zoea	444.8272	6,594	2,933,186
				Green crab	Juvenile	0.9362	6,594	6,174
					Megalops	17.213	6,594	113,502
					Zoea	107.7894	6,594	710,762
				Japanese shore crab	Zoea	2.4385	6,594	16,080
			9-Sep-07	Jonah crab	Megalops	0.5342	6,594	3,523
				Atlantic rock crab	Megalops	0.2512	11,076	2,783
				<i>Cancer</i> sp.	Zoea	54.5805	11,076	604,522
				Green crab	Juvenile	0.8824	11,076	9,774
					Megalops	10.3196	11,076	114,297
					Zoea	50.0832	11,076	554,710
				Japanese shore crab	Zoea	1.6267	11,076	18,017
				Jonah crab	Megalops	0.8181	11,076	9,061
			16-Sep-07	Atlantic rock crab	Megalops	0.1256	11,076	1,391
				<i>Cancer</i> sp.	Zoea	40.119	11,076	444,349
				Green crab	Juvenile	0.6798	11,076	7,530
					Megalops	5.1598	11,076	57,149
					Zoea	38.5941	11,076	427,459
				Japanese shore crab	Zoea	0.8134	11,076	9,009
				Jonah crab	Megalops	0.6232	11,076	6,903
			23-Sep-07	<i>Cancer</i> sp.	Zoea	25.6575	11,076	284,177
				Green crab	Juvenile	0.4773	11,076	5,286
					Zoea	27.1049	11,076	300,208
				Jonah crab	Megalops	0.4284	11,076	4,745
6	2006	August	27-Aug-06	Atlantic rock crab	Megalops	0.4981	11,076	5,516
				<i>Cancer</i> sp.	Zoea	175.0013	11,076	1,938,276
				Green crab	Megalops	11.8067	11,076	130,769
					Zoea	1120.018	11,076	12,405,073
				Japanese shore crab	Zoea	43.8475	11,076	485,646
		September	3-Sep-06	Atlantic rock crab	Megalops	0.5074	11,076	5,619
				<i>Cancer</i> sp.	Zoea	135.3901	11,076	1,499,552
				Green crab	Juvenile	0.1242	11,076	1,376
					Megalops	7.3093	11,076	80,956
					Zoea	793.1507	11,076	8,784,764
				Japanese shore crab	Zoea	31.0297	11,076	343,678
				Jonah crab	Megalops	0.5266	11,076	5,832
			10-Sep-06	Atlantic rock crab	Megalops	0.5167	11,076	5,722

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
				<i>Cancer</i> sp.	Zoea	95.779	11,076	1,060,827
				Green crab	Juvenile	0.2484	11,076	2,751
					Megalops	2.8118	11,076	31,143
					Zoea	466.2835	11,076	5,164,455
				Japanese shore crab	Zoea	18.2119	11,076	201,711
				Jonah crab	Megalops	1.0532	11,076	11,665
			17-Sep-06	Atlantic rock crab	Megalops	0.3815	11,076	4,226
				<i>Cancer</i> sp.	Zoea	52.2785	11,076	579,025
				Green crab	Juvenile	0.1242	11,076	1,376
					Megalops	1.5291	11,076	16,936
					Zoea	278.9155	11,076	3,089,207
				Japanese shore crab	Zoea	15.2902	11,076	169,351
				Jonah crab	Megalops	0.5266	11,076	5,832
			24-Sep-06	Atlantic rock crab	Megalops	0.2464	11,076	2,729
				<i>Cancer</i> sp.	Zoea	8.778	11,076	97,223
				Green crab	Megalops	0.2464	11,076	2,729
					Zoea	91.5475	11,076	1,013,960
					Zoea	12.3686	11,076	136,992
				Japanese shore crab	Zoea	12.3686	11,076	136,992
		October	1-Oct-06	Atlantic rock crab	Megalops	3.1484	11,076	34,871
				<i>Cancer</i> sp.	Zoea	16.7588	11,076	185,616
				Green crab	Juvenile	0.1249	11,076	1,383
					Megalops	4.1632	11,076	46,111
					Zoea	79.3942	11,076	879,353
				Japanese shore crab	Zoea	8.1965	11,076	90,782
			8-Oct-06	Jonah crab	Megalops	0.3772	11,076	4,177
				Atlantic rock crab	Megalops	6.0503	11,076	67,012
				<i>Cancer</i> sp.	Zoea	24.7395	11,076	274,010
				Green crab	Juvenile	0.2498	11,076	2,767
					Megalops	8.0801	11,076	89,493
					Zoea	67.2409	11,076	744,746
			15-Oct-06	Japanese shore crab	Zoea	4.0244	11,076	44,573
				Jonah crab	Megalops	0.7543	11,076	8,355
				Atlantic rock crab	Megalops	3.1999	11,076	35,441
				<i>Cancer</i> sp.	Zoea	12.4948	11,076	138,389
				Green crab	Juvenile	0.3495	11,076	3,871
					Megalops	4.04	11,076	44,747
					Zoea	37.0504	11,076	410,362
			22-Oct-06	Japanese shore crab	Zoea	2.3838	11,076	26,403
				Jonah crab	Juvenile	0.103	11,076	1,140
					Megalops	0.3772	11,076	4,177
					Zoea	6.8598	11,076	75,978
				Atlantic rock crab	Megalops	0.3494	11,076	3,870
				<i>Cancer</i> sp.	Zoea	0.25	11,076	2,769
				Green crab	Juvenile	0.4493	11,076	4,976
					Zoea	6.8598	11,076	75,978

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			29-Oct-06	Japanese shore crab	Zoea	0.7433	11,076	8,233
				Jonah crab	Juvenile	0.2059	11,076	2,281
				Arctic lyre crab	Zoea	0.1248	11,076	1,382
				Atlantic rock crab	Megalops	0.2995	11,076	3,318
				<i>Cancer</i> sp.	Zoea	0.2461	11,076	2,725
				Green crab	Juvenile	0.3496	11,076	3,872
					Zoea	3.8045	11,076	42,138
				Japanese shore crab	Zoea	0.3716	11,076	4,116
				Jonah crab	Juvenile	0.103	11,076	1,140
		November	5-Nov-06	Arctic lyre crab	Zoea	0.2496	11,076	2,765
				Atlantic rock crab	Megalops	0.2496	11,076	2,765
				<i>Cancer</i> sp.	Zoea	0.2421	11,076	2,682
				Green crab	Juvenile	0.2499	11,076	2,768
					Zoea	0.7492	11,076	8,298
			12-Nov-06	Arctic lyre crab	Zoea	0.1248	11,076	1,382
				Atlantic rock crab	Megalops	0.1248	11,076	1,382
				<i>Cancer</i> sp.	Zoea	0.4889	11,076	5,415
				Green crab	Juvenile	0.235	11,076	2,603
					Zoea	1.3001	11,076	14,399
			19-Nov-06	Japanese shore crab	Zoea	0.3584	11,076	3,970
				<i>Cancer</i> sp.	Zoea	0.7356	11,076	8,148
				Green crab	Juvenile	0.2201	11,076	2,438
					Zoea	1.8509	11,076	20,501
				Japanese shore crab	Zoea	0.7168	11,076	7,939
			26-Nov-06	Atlantic rock crab	Megalops	0.125	11,076	1,384
				<i>Cancer</i> sp.	Zoea	0.3678	11,076	4,074
				Green crab	Juvenile	0.1101	11,076	1,219
					Zoea	1.6773	11,076	18,577
				Japanese shore crab	Zoea	0.3584	11,076	3,970
		December	3-Dec-06	Atlantic rock crab	Megalops	0.2499	11,076	2,768
				Green crab	Zoea	1.5037	11,076	16,654
			10-Dec-06	Atlantic rock crab	Megalops	0.125	11,076	1,384
				Green crab	Zoea	1.3508	11,076	14,962
				Japanese shore crab	Zoea	0.117	11,076	1,296
			17-Dec-06	Green crab	Zoea	1.198	11,076	13,269
				Japanese shore crab	Zoea	0.234	11,076	2,591
			24-Dec-06	Green crab	Zoea	0.7119	11,076	7,884
				Japanese shore crab	Zoea	0.2416	11,076	2,676
		2007	January	31-Dec-06	Zoea	0.2257	11,076	2,500
				Japanese shore crab	Zoea	0.2492	11,076	2,760
				7-Jan-07	Green crab	0.2491	11,076	2,759
			14-Jan-07	Green crab	Zoea	0.4998	11,076	5,536
				Japanese shore crab	Zoea	0.2499	11,076	2,768
		February	4-Feb-07	<i>Cancer</i> sp.	Zoea	0.2497	11,076	2,765

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			18-Feb-07	Green crab	Juvenile	0.2087	11,076	2,311
				Green crab	Zoea	0.5072	11,076	5,618
		April	29-Apr-07	Arctic lyre crab	Zoea	0.2454	11,076	2,718
				<i>Cancer</i> sp.	Zoea	4.5691	11,076	50,606
				Green crab	Zoea	0.3717	11,076	4,117
		May	6-May-07	Arctic lyre crab	Zoea	0.4908	11,076	5,436
				<i>Cancer</i> sp.	Zoea	9.1382	11,076	101,213
				Green crab	Zoea	0.7435	11,076	8,235
			13-May-07	Arctic lyre crab	Zoea	0.781	11,076	8,651
				<i>Cancer</i> sp.	Zoea	554.7388	11,076	6,144,166
				Green crab	Zoea	11.0566	11,076	122,461
			20-May-07	Arctic lyre crab	Zoea	1.0713	11,076	11,865
				<i>Cancer</i> sp.	Zoea	1100.339	11,076	12,187,119
				Green crab	Zoea	21.3698	11,076	236,687
			27-May-07	Arctic lyre crab	Zoea	0.6689	11,076	7,409
				<i>Cancer</i> sp.	Zoea	736.1538	11,076	8,153,478
				Green crab	Juvenile	0.2051	11,076	2,271
					Zoea	1867.486	11,076	20,683,869
				Japanese shore crab	Zoea	0.3068	11,076	3,398
		June	3-Jun-07	Arctic lyre crab	Zoea	0.2666	11,076	2,953
				<i>Cancer</i> sp.	Zoea	371.9681	11,076	4,119,838
				Green crab	Juvenile	0.4101	11,076	4,542
					Zoea	3713.603	11,076	41,131,051
				Japanese shore crab	Zoea	0.6135	11,076	6,795
			10-Jun-07	Arctic lyre crab	Zoea	2.9455	11,076	32,624
				<i>Cancer</i> sp.	Zoea	361.7553	11,076	4,006,723
				Green crab	Juvenile	0.4887	11,076	5,413
					Zoea	1142.906	11,076	12,658,573
			17-Jun-07	American lobster	Stage II	0.466	11,076	5,161
				Arctic lyre crab	Zoea	0.4999	11,076	5,537
				<i>Cancer</i> sp.	Zoea	1940.289	11,076	21,490,214
				Green crab	Zoea	1386.116	11,076	15,352,315
				Japanese shore crab	Zoea	7.6797	11,076	85,059
			24-Jun-07	Arctic lyre crab	Zoea	0.4384	11,076	4,856
				Atlantic lyre crab	Zoea	0.7478	11,076	8,282
				<i>Cancer</i> sp.	Zoea	765.0436	11,076	8,473,456
				Green crab	Zoea	2003.122	11,076	22,186,137
				Japanese shore crab	Zoea	13.9008	11,076	153,962
				American lobster	Stage I	0.2499	11,076	2,768
		July	1-Jul-07	Arctic lyre crab	Zoea	0.2499	11,076	2,768
				Atlantic lyre crab	Zoea	0.7147	11,076	7,915
				Atlantic rock crab	Megalops	0.9296	11,076	10,296
				<i>Cancer</i> sp.	Zoea	596.8221	11,076	6,610,271
				Green crab	Megalops	0.2499	11,076	2,768

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
					Zoea	2012.337	11,076	22,288,202
				Japanese shore crab	Zoea	10.4906	11,076	116,192
			8-Jul-07	American lobster	Stage I	0.25	11,076	2,769
				Arctic lyre crab	Zoea	0.25	11,076	2,769
				Atlantic rock crab	Megalops	1.4987	11,076	16,600
				<i>Cancer</i> sp.	Zoea	816.281	11,076	9,040,950
				Green crab	Megalops	30.2027	11,076	334,518
					Zoea	989.6996	11,076	10,961,697
				Japanese shore crab	Zoea	9.4776	11,076	104,972
				Jonah crab	Megalops	0.5	11,076	5,537
			15-Jul-07	American lobster	Stage I	0.4975	11,076	5,511
				Arctic lyre crab	Zoea	0.25	11,076	2,769
				Atlantic rock crab	Megalops	1.9961	11,076	22,108
				<i>Cancer</i> sp.	Zoea	995.2177	11,076	11,022,814
				Green crab	Megalops	7.2404	11,076	80,193
					Zoea	2071.225	11,076	22,940,432
				Japanese shore crab	Zoea	13.9799	11,076	154,838
				Jonah crab	Megalops	0.4985	11,076	5,521
			22-Jul-07	American lobster	Stage I	0.2498	11,076	2,767
				Atlantic rock crab	Megalops	5.1279	11,076	56,796
				<i>Cancer</i> sp.	Zoea	2562.228	11,076	28,378,679
				Green crab	Juvenile	0.3811	11,076	4,221
					Megalops	121.5936	11,076	1,346,744
					Zoea	2598.449	11,076	28,779,855
			29-Jul-07	Japanese shore crab	Zoea	22.4425	11,076	248,568
				Atlantic rock crab	Megalops	0.961	11,076	10,643
				<i>Cancer</i> sp.	Megalops	1.9009	11,076	21,054
					Zoea	2491.367	11,076	27,593,834
				Green crab	Megalops	0.6786	11,076	7,516
					Zoea	2056.423	11,076	22,776,487
				Japanese shore crab	Zoea	15.8933	11,076	176,031
				Jonah crab	Megalops	1.1934	11,076	13,218
		August	5-Aug-07	Arctic lyre crab	Zoea	0.2464	11,076	2,729
				Atlantic rock crab	Juvenile	0.4929	11,076	5,459
					Megalops	3.2209	11,076	35,674
				<i>Cancer</i> sp.	Zoea	968.689	11,076	10,728,987
				Green crab	Juvenile	0.9918	11,076	10,985
					Megalops	8.4234	11,076	93,296
					Zoea	735.3508	11,076	8,144,584
				Japanese shore crab	Zoea	14.3669	11,076	159,125
			12-Aug-07	Atlantic rock crab	Juvenile	0.2489	11,076	2,757
					Megalops	11.4525	11,076	126,845
				<i>Cancer</i> sp.	Zoea	1518.798	11,076	16,821,876
				Green crab	Juvenile	0.6737	11,076	7,462

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance	
		September	19-Aug-07		Megalops	11.5279	11,076	127,681	
					Zoea	461.9304	11,076	5,116,240	
				Japanese shore crab	Zoea	7.352	11,076	81,429	
				Jonah crab	Juvenile	0.2344	11,076	2,596	
					Megalops	1.2747	11,076	14,118	
				Atlantic rock crab	Juvenile	1.1446	11,076	12,677	
					Megalops	1.8382	11,076	20,360	
				Cancer sp.	Zoea	203.3557	11,076	2,252,324	
				Green crab	Juvenile	1.399	11,076	15,495	
					Megalops	6.2552	11,076	69,282	
					Zoea	213.8866	11,076	2,368,961	
				Japanese shore crab	Zoea	7.6278	11,076	84,484	
				26-Aug-07	Atlantic rock crab	Megalops	3.9797	11,076	44,078
					Cancer sp.	Zoea	835.0739	11,076	9,249,096
					Green crab	Juvenile	0.9901	11,076	10,966
						Megalops	24.1065	11,076	266,998
						Zoea	165.4956	11,076	1,832,994
					Japanese shore crab	Zoea	3.2503	11,076	36,000
			Jonah crab		Megalops	0.2504	11,076	2,774	
			2-Sep-07	Atlantic rock crab	Megalops	2.1155	11,076	23,430	
				Cancer sp.	Zoea	444.8272	11,076	4,926,809	
				Green crab	Juvenile	0.9362	11,076	10,370	
					Megalops	17.213	11,076	190,648	
					Zoea	107.7894	11,076	1,193,852	
				Japanese shore crab	Zoea	2.4385	11,076	27,008	
				Jonah crab	Megalops	0.5342	11,076	5,917	
				9-Sep-07	Atlantic rock crab	Megalops	0.2512	11,076	2,783
					Cancer sp.	Zoea	54.5805	11,076	604,522
					Green crab	Juvenile	0.8824	11,076	9,774
						Megalops	10.3196	11,076	114,297
						Zoea	50.0832	11,076	554,710
					Japanese shore crab	Zoea	1.6267	11,076	18,017
					Jonah crab	Megalops	0.8181	11,076	9,061
				16-Sep-07	Atlantic rock crab	Megalops	0.1256	11,076	1,391
					Cancer sp.	Zoea	40.119	11,076	444,349
			Green crab		Juvenile	0.6798	11,076	7,530	
					Megalops	5.1598	11,076	57,149	
					Zoea	38.5941	11,076	427,459	
			Japanese shore crab		Zoea	0.8134	11,076	9,009	
			Jonah crab		Megalops	0.6232	11,076	6,903	
			23-Sep-07	Cancer sp.	Zoea	25.6575	11,076	284,177	
				Green crab	Juvenile	0.4773	11,076	5,286	
					Zoea	27.1049	11,076	300,208	
				Jonah crab	Megalops	0.4284	11,076	4,745	

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance		
Combined	2006	August	27-Aug-06	Atlantic rock crab	Megalops	1.4942	31,380	15,629		
				<i>Cancer</i> sp.	Zoea	525.004	31,380	5,491,562		
				Green crab	Megalops	35.4201	31,380	370,496		
					Zoea	3360.054	31,380	35,146,294		
						Japanese shore crab	Zoea	131.5426	31,380	1,375,941
		September	3-Sep-06	Atlantic rock crab	Megalops	1.5221	27,424	13,914		
				<i>Cancer</i> sp.	Zoea	406.1704	27,424	3,713,005		
				Green crab	Juvenile	0.3726	27,424	3,406		
					Megalops	21.9278	27,424	200,453		
					Zoea	2379.452	27,424	21,751,748		
					Japanese shore crab	Zoea	93.0891	27,424	850,973	
					Jonah crab	Megalops	1.5798	27,424	14,441	
				10-Sep-06	Atlantic rock crab	Megalops	1.55	32,436	16,758	
			<i>Cancer</i> sp.		Zoea	287.3369	32,436	3,106,707		
			Green crab		Juvenile	0.7452	32,436	8,057		
					Megalops	8.4354	32,436	91,205		
					Zoea	1398.851	32,436	15,124,474		
					Japanese shore crab	Zoea	54.6356	32,436	590,724	
					Jonah crab	Megalops	3.1595	32,436	34,161	
			17-Sep-06		Atlantic rock crab	Megalops	1.1446	32,962	12,576	
				<i>Cancer</i> sp.	Zoea	156.8355	32,962	1,723,223		
				Green crab	Juvenile	0.3726	32,962	4,094		
					Megalops	4.5873	32,962	50,403		
					Zoea	836.7465	32,962	9,193,717		
					Japanese shore crab	Zoea	45.8706	32,962	504,002	
				Jonah crab	Megalops	1.5798	32,962	17,358		
		24-Sep-06		Atlantic rock crab	Megalops	0.7391	29,798	7,342		
			<i>Cancer</i> sp.	Zoea	26.3341	29,798	261,566			
			Green crab	Megalops	0.7391	29,798	7,342			
				Zoea	274.6425	29,798	2,727,920			
				Japanese shore crab	Zoea	37.1057	29,798	368,557		
			October	1-Oct-06	Atlantic rock crab	Megalops	9.4451	32,962	103,777	
					<i>Cancer</i> sp.	Zoea	50.2763	32,962	552,409	
					Green crab	Juvenile	0.3747	32,962	4,117	
					Megalops	12.4897	32,962	137,230		
					Zoea	238.1827	32,962	2,617,022		
					Japanese shore crab	Zoea	24.5895	32,962	270,176	
				Jonah crab	Megalops	1.1315	32,962	12,432		
		8-Oct-06		Atlantic rock crab	Megalops	18.151	32,962	199,434		
			<i>Cancer</i> sp.	Zoea	74.2186	32,962	815,473			
			Green crab	Juvenile	0.7494	32,962	8,234			
				Megalops	24.2402	32,962	266,338			
				Zoea	201.7228	32,962	2,216,421			
				Japanese shore crab	Zoea	12.0732	32,962	132,654		

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			15-Oct-06	Jonah crab	Megalops	2.263	32,962	24,864
				Atlantic rock crab	Megalops	9.5996	23,696	75,824
				Cancer sp.	Zoea	37.4843	23,696	296,075
				Green crab	Juvenile	1.0486	23,696	8,282
					Megalops	12.1201	23,696	95,732
					Zoea	111.1512	23,696	877,945
			22-Oct-06	Japanese shore crab	Zoea	7.1515	23,696	56,488
				Jonah crab	Juvenile	0.3089	23,696	2,440
					Megalops	1.1315	23,696	8,937
				Atlantic rock crab	Megalops	1.0483	22,152	7,740
				Cancer sp.	Zoea	0.7499	22,152	5,537
				Green crab	Juvenile	1.3478	22,152	9,952
					Zoea	20.5795	22,152	151,956
				Japanese shore crab	Zoea	2.2299	22,152	16,465
				Jonah crab	Juvenile	0.6178	22,152	4,562
			29-Oct-06	Arctic lyre crab	Zoea	0.3744	22,152	2,765
				Atlantic rock crab	Megalops	0.8986	22,152	6,635
				Cancer sp.	Zoea	0.7382	22,152	5,451
				Green crab	Juvenile	1.0488	22,152	7,744
					Zoea	11.4136	22,152	84,276
				Japanese shore crab	Zoea	1.1149	22,152	8,233
			November	Jonah crab	Juvenile	0.3089	22,152	2,281
				Arctic lyre crab	Zoea	0.7489	22,152	5,530
				Atlantic rock crab	Megalops	0.7489	22,152	5,530
				Cancer sp.	Zoea	0.7264	22,152	5,364
				Green crab	Juvenile	0.7498	22,152	5,536
					Zoea	2.2476	22,152	16,596
			12-Nov-06	Arctic lyre crab	Zoea	0.3744	25,176	3,142
				Atlantic rock crab	Megalops	0.3744	25,176	3,142
				Cancer sp.	Zoea	1.4667	25,176	12,308
				Green crab	Juvenile	0.7051	25,176	5,917
					Zoea	3.9002	25,176	32,730
			19-Nov-06	Japanese shore crab	Zoea	1.0752	25,176	9,023
				Cancer sp.	Zoea	2.2069	32,962	24,248
				Green crab	Juvenile	0.6604	32,962	7,256
					Zoea	5.5528	32,962	61,011
			26-Nov-06	Japanese shore crab	Zoea	2.1504	32,962	23,628
				Atlantic rock crab	Megalops	0.3749	32,962	4,119
				Cancer sp.	Zoea	1.1034	32,962	12,124
				Green crab	Juvenile	0.3302	32,962	3,628
					Zoea	5.0319	32,962	55,288
			December	Japanese shore crab	Zoea	1.0752	32,962	11,814
				Atlantic rock crab	Megalops	0.7498	32,962	8,238
				Green crab	Zoea	4.511	32,962	49,565

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
	2007	December	10-Dec-06	Atlantic rock crab	Megalops	0.3749	32,962	4,119
				Green crab	Zoea	4.0525	32,962	44,527
				Japanese shore crab	Zoea	0.351	32,962	3,856
			17-Dec-06	Green crab	Zoea	3.594	32,962	39,489
				Japanese shore crab	Zoea	0.7019	32,962	7,712
			24-Dec-06	Green crab	Zoea	2.1356	32,962	23,465
				Japanese shore crab	Zoea	0.7248	32,962	7,964
		January	31-Dec-06	Green crab	Zoea	0.6772	32,962	7,441
				Japanese shore crab	Zoea	0.7477	32,962	8,215
			7-Jan-07	Green crab	Zoea	0.7474	32,962	8,212
			14-Jan-07	Green crab	Zoea	1.4994	32,962	16,475
				Japanese shore crab	Zoea	0.7496	32,962	8,237
		February	4-Feb-07	<i>Cancer</i> sp.	Zoea	0.749	32,962	8,229
				Green crab	Juvenile	0.626	32,962	6,878
			18-Feb-07	Green crab	Zoea	1.5217	32,962	16,720
		April	29-Apr-07	Arctic lyre crab	Zoea	0.7362	32,962	8,089
				<i>Cancer</i> sp.	Zoea	13.7073	32,962	150,608
				Green crab	Zoea	1.1152	32,962	12,254
		May	6-May-07	Arctic lyre crab	Zoea	1.4724	32,962	16,178
				<i>Cancer</i> sp.	Zoea	27.4146	32,962	301,217
				Green crab	Zoea	2.2305	32,962	24,507
			13-May-07	Arctic lyre crab	Zoea	2.3431	32,962	25,745
				<i>Cancer</i> sp.	Zoea	1664.216	32,962	18,285,508
				Green crab	Zoea	33.1699	32,962	364,453
			20-May-07	Arctic lyre crab	Zoea	3.2138	32,962	35,311
				<i>Cancer</i> sp.	Zoea	3301.018	32,962	36,269,798
				Green crab	Zoea	64.1093	32,962	704,398
			27-May-07	Arctic lyre crab	Zoea	2.0068	32,962	22,049
				<i>Cancer</i> sp.	Zoea	2208.461	32,962	24,265,375
				Green crab	Juvenile	0.6152	32,962	6,759
					Zoea	5602.458	32,962	61,556,778
				Japanese shore crab	Zoea	0.9203	32,962	10,111
		June	3-Jun-07	Arctic lyre crab	Zoea	0.7998	32,962	8,788
				<i>Cancer</i> sp.	Zoea	1115.904	32,962	12,260,953
				Green crab	Juvenile	1.2303	32,962	13,518
					Zoea	11140.81	32,962	122,409,157
				Japanese shore crab	Zoea	1.8405	32,962	20,223
			10-Jun-07	Arctic lyre crab	Zoea	8.8366	32,962	97,092
				<i>Cancer</i> sp.	Zoea	1085.266	32,962	11,924,313
				Green crab	Juvenile	1.466	32,962	16,108
					Zoea	3428.717	32,962	37,672,883
			17-Jun-07	American lobster	Stage II	1.3979	32,962	15,360
				Arctic lyre crab	Zoea	1.4998	32,962	16,479
				<i>Cancer</i> sp.	Zoea	5820.866	32,962	63,956,522

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
		July	24-Jun-07	Green crab	Zoea	4158.347	32,962	45,689,665
				Japanese shore crab	Zoea	23.0391	32,962	253,141
				Arctic lyre crab	Zoea	1.3152	32,962	14,451
				Atlantic lyre crab	Zoea	2.2433	32,962	24,648
				Cancer sp.	Zoea	2295.131	32,962	25,217,655
				Green crab	Zoea	6009.365	32,962	66,027,643
				Japanese shore crab	Zoea	41.7023	32,962	458,202
			1-Jul-07	American lobster	Stage I	0.7497	32,962	8,237
				Arctic lyre crab	Zoea	0.7498	32,962	8,239
				Atlantic lyre crab	Zoea	2.144	32,962	23,557
				Atlantic rock crab	Megalops	2.7887	32,962	30,640
				Cancer sp.	Zoea	1790.466	32,962	19,672,673
				Green crab	Megalops	0.7497	32,962	8,237
					Zoea	6037.01	32,962	66,331,396
				Japanese shore crab	Zoea	31.4719	32,962	345,796
			8-Jul-07	American lobster	Stage I	0.7499	32,962	8,240
				Arctic lyre crab	Zoea	0.7499	32,962	8,240
				Atlantic rock crab	Megalops	4.4962	32,962	49,402
				Cancer sp.	Zoea	2448.843	32,962	26,906,560
				Green crab	Megalops	90.6081	32,962	995,553
					Zoea	2969.099	32,962	32,622,849
				Japanese shore crab	Zoea	28.4328	32,962	312,404
				Jonah crab	Megalops	1.4999	32,962	16,480
			15-Jul-07	American lobster	Stage I	1.4926	32,962	16,400
				Arctic lyre crab	Zoea	0.7499	32,962	8,240
				Atlantic rock crab	Megalops	5.9882	32,962	65,795
				Cancer sp.	Zoea	2985.653	32,962	32,804,739
				Green crab	Megalops	21.7212	32,962	238,661
					Zoea	6213.674	32,962	68,272,482
				Japanese shore crab	Zoea	41.9397	32,962	460,810
				Jonah crab	Megalops	1.4954	32,962	16,430
			22-Jul-07	American lobster	Stage I	0.7495	32,962	8,235
				Atlantic rock crab	Megalops	15.3837	32,962	169,028
				Cancer sp.	Zoea	7686.684	32,962	84,457,122
				Green crab	Juvenile	1.1434	32,962	12,563
					Megalops	364.7809	32,962	4,008,014
					Zoea	7795.347	32,962	85,651,052
				Japanese shore crab	Zoea	67.3275	32,962	739,758
			29-Jul-07	Atlantic rock crab	Megalops	2.8829	32,962	31,676
				Cancer sp.	Megalops	5.7026	32,962	62,657
					Zoea	7474.1	32,962	82,121,363
				Green crab	Megalops	2.0357	32,962	22,368
					Zoea	6169.268	32,962	67,784,570
				Japanese shore crab	Zoea	47.6799	32,962	523,881

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
		August	5-Aug-07	Jonah crab	Megalops	3.5803	32,962	39,338
				Arctic lyre crab	Zoea	0.7393	32,962	8,123
				Atlantic rock crab	Juvenile	1.4786	32,962	16,246
					Megalops	9.6628	32,962	106,170
				Cancer sp.	Zoea	2906.067	32,962	31,930,288
				Green crab	Juvenile	2.9755	32,962	32,693
					Megalops	25.2703	32,962	277,657
					Zoea	2206.052	32,962	24,238,907
				Japanese shore crab	Zoea	43.1008	32,962	473,568
			12-Aug-07	Atlantic rock crab	Juvenile	0.7467	32,962	8,205
					Megalops	34.3574	32,962	377,501
				Cancer sp.	Zoea	4556.394	32,962	50,063,190
				Green crab	Juvenile	2.0212	32,962	22,208
					Megalops	34.5838	32,962	379,988
					Zoea	1385.791	32,962	15,226,321
				Japanese shore crab	Zoea	22.0559	32,962	242,339
				Jonah crab	Juvenile	0.7032	32,962	7,726
					Megalops	3.824	32,962	42,016
			19-Aug-07	Atlantic rock crab	Juvenile	3.4337	32,962	37,727
					Megalops	5.5146	32,962	60,592
				Cancer sp.	Zoea	610.0672	32,962	6,703,087
				Green crab	Juvenile	4.197	32,962	46,115
					Megalops	18.7657	32,962	206,188
					Zoea	641.6597	32,962	7,050,209
				Japanese shore crab	Zoea	22.8834	32,962	251,431
			26-Aug-07	Atlantic rock crab	Megalops	11.9391	32,962	131,180
					Zoea	2505.222	32,962	27,526,017
				Green crab	Juvenile	2.9702	32,962	32,635
					Megalops	72.3194	32,962	794,606
					Zoea	496.4869	32,962	5,455,129
				Japanese shore crab	Zoea	9.7509	32,962	107,137
				Jonah crab	Megalops	0.7513	32,962	8,255
		September	2-Sep-07	Atlantic rock crab	Megalops	6.3464	28,481	60,250
				Cancer sp.	Zoea	1334.482	28,481	12,668,937
				Green crab	Juvenile	2.8087	28,481	26,665
					Megalops	51.639	28,481	490,237
					Zoea	323.3682	28,481	3,069,905
				Japanese shore crab	Zoea	7.3155	28,481	69,450
				Jonah crab	Megalops	1.6027	28,481	15,216
			9-Sep-07	Atlantic rock crab	Megalops	0.7537	32,962	8,281
				Cancer sp.	Zoea	163.7415	32,962	1,799,103
				Green crab	Juvenile	2.6473	32,962	29,087
					Megalops	30.9587	32,962	340,157
					Zoea	150.2495	32,962	1,650,860

Unit	Year	Month	Week	Common Name	Lifestage	Density	Operating Flow	Estimated Entrainment Abundance
			16-Sep-07	Japanese shore crab	Zoea	4.8802	32,962	53,621
				Jonah crab	Megalops	2.4542	32,962	26,965
				Atlantic rock crab	Megalops	0.3768	32,962	4,141
				<i>Cancer</i> sp.	Zoea	120.357	32,962	1,322,417
				Green crab	Juvenile	2.0395	32,962	22,409
					Megalops	15.4794	32,962	170,079
					Zoea	115.7822	32,962	1,272,152
				Japanese shore crab	Zoea	2.4401	32,962	26,811
				Jonah crab	Megalops	1.8696	32,962	20,543
			23-Sep-07	<i>Cancer</i> sp.	Zoea	76.9725	32,962	845,732
				Green crab	Juvenile	1.4318	32,962	15,732
					Zoea	81.3148	32,962	893,443
				Jonah crab	Megalops	1.2851	32,962	14,120

a – weekly densities based on entrainment samples collected at Screen House #2 of Schiller Station during the period 31 August 2006 through 27 September 2007.

Appendix Table B-6. Monthly estimated entrainment abundance and adult equivalent abundance by life stage at Units 4, 5, 6, and all Units combined of Schiller Station for 17 fish taxa representing 99.0% of the total enumerated based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
4	2006	October	Atlantic menhaden	Egg	42,433	1
4	2006	October	Fourbeard rockling	Egg	4,243	4
4	2006	November	Atlantic cod	Egg	32,769	0
4	2006	November	Atlantic herring	Post-yolk-sac larvae	223,939	283
4	2006	November	Northern pipefish	Yearling or older	8,324	8,324
4	2006	November	Pollock	Egg	6,579	0
4	2006	December	Atlantic cod	Egg	26,932	0
4	2006	December	Atlantic herring	Post-yolk-sac larvae	125,247	158
4	2006	December	Northern pipefish	Yearling or older	1,347	1,347
4	2006	December	Pollock	Egg	7,806	0
4	2006	December	Pollock	Yolk-sac-larvae	1,351	0
4	2006	December	Pollock	Post-yolk-sac larvae	3,982	0
4	2007	January	American sand lance	Yolk-sac-larvae	489,575	397
4	2007	January	American sand lance	Post-yolk-sac larvae	331,353	269
4	2007	January	Atlantic cod	Egg	10,023	0
4	2007	January	Atlantic cod	Post-yolk-sac larvae	2,701	4
4	2007	January	Atlantic herring	Post-yolk-sac larvae	143,349	181
4	2007	January	Grubby	Yolk-sac-larvae	76,400	1,351
4	2007	January	Grubby	Post-yolk-sac larvae	76,600	1,354
4	2007	January	Longhorn sculpin	Yolk-sac-larvae	2,702	9
4	2007	January	Longhorn sculpin	Post-yolk-sac larvae	7,609	26
4	2007	January	Northern pipefish	Yearling or older	2,694	2,694
4	2007	January	Pollock	Egg	30,187	0
4	2007	January	Pollock	Yolk-sac-larvae	40,331	1
4	2007	January	Pollock	Post-yolk-sac larvae	64,752	2
4	2007	January	Rock gunnel	Yolk-sac-larvae	324,939	17,231
4	2007	January	Rock gunnel	Post-yolk-sac larvae	204,722	10,856
4	2007	February	American sand lance	Yolk-sac-larvae	191,229	155
4	2007	February	American sand lance	Post-yolk-sac larvae	2,200,986	1,786
4	2007	February	Atlantic cod	Post-yolk-sac larvae	7,957	13
4	2007	February	Atlantic herring	Post-yolk-sac larvae	10,420	13
4	2007	February	Grubby	Yolk-sac-larvae	36,443	644
4	2007	February	Grubby	Post-yolk-sac larvae	247,870	4,383
4	2007	February	Longhorn sculpin	Yolk-sac-larvae	5,401	19
4	2007	February	Longhorn sculpin	Post-yolk-sac larvae	79,944	274
4	2007	February	Pollock	Yolk-sac-larvae	5,397	0
4	2007	February	Pollock	Post-yolk-sac larvae	23,461	1
4	2007	February	Rock gunnel	Yolk-sac-larvae	107,942	5,724
4	2007	February	Rock gunnel	Post-yolk-sac larvae	571,368	30,299
4	2007	March	American plaice	Egg	4,755	0
4	2007	March	American sand lance	Yolk-sac-larvae	5,369	4
4	2007	March	American sand lance	Post-yolk-sac larvae	1,057,354	858
4	2007	March	Atlantic herring	Post-yolk-sac larvae	6,170	8
4	2007	March	Cunner	Egg	1,741	0
4	2007	March	Cunner	Young-of-the-year	2,413	110
4	2007	March	Grubby	Yolk-sac-larvae	39,487	698
4	2007	March	Grubby	Post-yolk-sac larvae	284,104	5,024
4	2007	March	Longhorn sculpin	Post-yolk-sac larvae	31,255	107
4	2007	March	Pollock	Post-yolk-sac larvae	23,988	1
4	2007	March	Rock gunnel	Yolk-sac-larvae	2,145	114

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Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
4	2007	March	Rock gunnel	Post-yolk-sac larvae	1,024,301	54,317
4	2007	March	Winter flounder	Egg	45,566	0
4	2007	April	American plaice	Egg	130,114	1
4	2007	April	American sand lance	Post-yolk-sac larvae	180,110	146
4	2007	April	Atlantic herring	Post-yolk-sac larvae	31,226	39
4	2007	April	Cunner	Egg	30,414	2
4	2007	April	Fourbeard rockling	Egg	9,435	10
4	2007	April	Grubby	Yolk-sac-larvae	69,844	1,235
4	2007	April	Grubby	Post-yolk-sac larvae	354,505	6,268
4	2007	April	Longhorn sculpin	Yolk-sac-larvae	5,388	18
4	2007	April	Longhorn sculpin	Post-yolk-sac larvae	7,526	26
4	2007	April	Pollock	Post-yolk-sac larvae	1,229	0
4	2007	April	Rainbow smelt	Yolk-sac-larvae	5,306	69
4	2007	April	Rock gunnel	Yolk-sac-larvae	10,804	573
4	2007	April	Rock gunnel	Post-yolk-sac larvae	449,934	23,859
4	2007	April	Winter flounder	Egg	11,320	0
4	2007	April	Winter flounder	WF Stage 2	1,326	0
4	2007	May	American plaice	Egg	131,873	1
4	2007	May	American sand lance	Post-yolk-sac larvae	3,979	3
4	2007	May	Atlantic mackerel	Egg	730,381	2
4	2007	May	Cunner	Egg	3,095,379	242
4	2007	May	Fourbeard rockling	Egg	1,690,205	1,758
4	2007	May	Grubby	Post-yolk-sac larvae	13,529	239
4	2007	May	Rainbow smelt	Yolk-sac-larvae	15,918	207
4	2007	May	Rainbow smelt	Post-yolk-sac larvae	442,094	5,748
4	2007	May	Windowpane	Egg	57,990	0
4	2007	May	Winter flounder	Egg	4,039	0
4	2007	May	Winter flounder	WF Stage 2	12,700	0
4	2007	June	American plaice	Egg	58,370	1
4	2007	June	Atlantic mackerel	Egg	1,011,001	3
4	2007	June	Atlantic menhaden	Egg	143,343	2
4	2007	June	Cunner	Egg	13,817,094	1,079
4	2007	June	Fourbeard rockling	Egg	198,842	207
4	2007	June	Hake species	Egg	25,856	0
4	2007	June	Northern pipefish	Post-yolk-sac larvae	13,170	877
4	2007	June	Rainbow smelt	Post-yolk-sac larvae	72,431	942
4	2007	June	Windowpane	Egg	38,186	0
4	2007	June	Winter flounder	WF Stage 2	6,633	0
4	2007	June	Winter flounder	WF Stage 3	36,118	1
4	2007	June	Winter flounder	WF Stage 4	2,370	0
4	2007	July	American plaice	Post-yolk-sac larvae	8,096	1
4	2007	July	Atlantic mackerel	Egg	42,930	0
4	2007	July	Atlantic mackerel	Post-yolk-sac larvae	2,700	0
4	2007	July	Cunner	Egg	5,003,124	391
4	2007	July	Cunner	Post-yolk-sac larvae	3,441,949	8,605
4	2007	July	Fourbeard rockling	Egg	127,488	133
4	2007	July	Fourbeard rockling	Yolk-sac-larvae	2,681	30
4	2007	July	Fourbeard rockling	Post-yolk-sac larvae	81,270	915
4	2007	July	Hake species	Egg	94,687	0
4	2007	July	Northern pipefish	Post-yolk-sac larvae	166,370	11,073
4	2007	July	Windowpane	Egg	30,687	0
4	2007	July	Windowpane	Post-yolk-sac larvae	10,653	0
4	2007	July	Winter flounder	WF Stage 2	2,688	0
4	2007	July	Winter flounder	WF Stage 3	7,913	0
4	2007	August	Cunner	Egg	321,897	25
4	2007	August	Cunner	Post-yolk-sac larvae	6,351,157	15,879
4	2007	August	Fourbeard rockling	Egg	129,182	134

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Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
4	2007	August	Fourbeard rockling	Post-yolk-sac larvae	214,723	2,417
4	2007	August	Hake species	Egg	303,220	1
4	2007	August	Northern pipefish	Yolk-sac-larvae	2,702	180
4	2007	August	Northern pipefish	Post-yolk-sac larvae	13,035	868
4	2007	August	Northern pipefish	Yearling or older	2,702	2,702
4	2007	August	Windowpane	Egg	19,864	0
4	2007	September	Cunner	Egg	38,133	3
4	2007	September	Cunner	Post-yolk-sac larvae	164,664	412
4	2007	September	Cunner	Young-of-the-year	5,432	247
4	2007	September	Fourbeard rockling	Egg	10,774	11
4	2007	September	Fourbeard rockling	Post-yolk-sac larvae	13,653	154
4	2007	September	Hake species	Egg	3,412	0
4	2007	September	Northern pipefish	Yolk-sac-larvae	1,351	90
4	2007	September	Northern pipefish	Post-yolk-sac larvae	1,354	90
4	2007	September	Northern pipefish	Yearling or older	5,381	5,381
4	2007	September	Windowpane	Egg	6,160	0
4	2007	September	Windowpane	Post-yolk-sac larvae	4,235	0
4	All	All	American plaice	Unknown	0	
4	All	All	American plaice	Egg	325,113	4
4	All	All	American plaice	Yolk-sac-larvae	0	0
4	All	All	American plaice	Post-yolk-sac larvae	8,096	1
4	All	All	American plaice	Young-of-the-year	0	0
4	All	All	American plaice	Yearling or older	0	
4	All	All	American sand lance	Unknown	0	
4	All	All	American sand lance	Egg	0	0
4	All	All	American sand lance	Yolk-sac-larvae	686,173	557
4	All	All	American sand lance	Post-yolk-sac larvae	3,773,781	3,062
4	All	All	American sand lance	Young-of-the-year	0	0
4	All	All	American sand lance	Yearling or older	0	
4	All	All	Atlantic cod	Unknown	0	
4	All	All	Atlantic cod	Egg	69,724	1
4	All	All	Atlantic cod	Yolk-sac-larvae	0	0
4	All	All	Atlantic cod	Post-yolk-sac larvae	10,658	17
4	All	All	Atlantic cod	Young-of-the-year	0	0
4	All	All	Atlantic cod	Yearling or older	0	
4	All	All	Atlantic herring	Unknown	0	
4	All	All	Atlantic herring	Egg	0	0
4	All	All	Atlantic herring	Yolk-sac-larvae	0	0
4	All	All	Atlantic herring	Post-yolk-sac larvae	540,351	682
4	All	All	Atlantic herring	Young-of-the-year	0	0
4	All	All	Atlantic herring	Yearling or older	0	
4	All	All	Atlantic mackerel	Unknown	0	
4	All	All	Atlantic mackerel	Egg	1,784,313	4
4	All	All	Atlantic mackerel	Yolk-sac-larvae	0	0
4	All	All	Atlantic mackerel	Post-yolk-sac larvae	2,700	0
4	All	All	Atlantic mackerel	Young-of-the-year	0	0
4	All	All	Atlantic mackerel	Yearling or older	0	
4	All	All	Atlantic menhaden	Unknown	0	
4	All	All	Atlantic menhaden	Egg	185,776	2
4	All	All	Atlantic menhaden	Yolk-sac-larvae	0	0
4	All	All	Atlantic menhaden	Post-yolk-sac larvae	0	0
4	All	All	Atlantic menhaden	Young-of-the-year	0	
4	All	All	Atlantic menhaden	Yearling or older	0	
4	All	All	Cunner	Unknown	0	
4	All	All	Cunner	Egg	22,307,781	1,742
4	All	All	Cunner	Yolk-sac-larvae	0	0
4	All	All	Cunner	Post-yolk-sac larvae	9,957,770	24,896

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Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
4	All	All	Cunner	Young-of-the-year	7,845	356
4	All	All	Cunner	Yearling or older	0	
4	All	All	Fourbeard rockling	Unknown	0	
4	All	All	Fourbeard rockling	Egg	2,170,168	2,257
4	All	All	Fourbeard rockling	Yolk-sac-larvae	2,681	30
4	All	All	Fourbeard rockling	Post-yolk-sac larvae	309,646	3,485
4	All	All	Fourbeard rockling	Young-of-the-year	0	0
4	All	All	Fourbeard rockling	Yearling or older	0	
4	All	All	Grubby	Unknown	0	
4	All	All	Grubby	Egg	0	0
4	All	All	Grubby	Yolk-sac-larvae	222,175	3,929
4	All	All	Grubby	Post-yolk-sac larvae	976,608	17,269
4	All	All	Grubby	Young-of-the-year	0	0
4	All	All	Grubby	Yearling or older	0	
4	All	All	Hake species	Unknown	0	
4	All	All	Hake species	Egg	427,175	1
4	All	All	Hake species	Yolk-sac-larvae	0	0
4	All	All	Hake species	Post-yolk-sac larvae	0	0
4	All	All	Hake species	Young-of-the-year	0	0
4	All	All	Hake species	Yearling or older	0	
4	All	All	Longhorn sculpin	Unknown	0	
4	All	All	Longhorn sculpin	Egg	0	0
4	All	All	Longhorn sculpin	Yolk-sac-larvae	13,492	46
4	All	All	Longhorn sculpin	Post-yolk-sac larvae	126,334	434
4	All	All	Longhorn sculpin	Young-of-the-year	0	0
4	All	All	Longhorn sculpin	Yearling or older	0	
4	All	All	Northern pipefish	Unknown	0	
4	All	All	Northern pipefish	Egg	0	0
4	All	All	Northern pipefish	Yolk-sac-larvae	4,053	270
4	All	All	Northern pipefish	Post-yolk-sac larvae	193,928	12,907
4	All	All	Northern pipefish	Young-of-the-year	0	0
4	All	All	Northern pipefish	Yearling or older	20,449	20,449
4	All	All	Pollock	Unknown	0	
4	All	All	Pollock	Egg	44,571	0
4	All	All	Pollock	Yolk-sac-larvae	47,079	1
4	All	All	Pollock	Post-yolk-sac larvae	117,411	3
4	All	All	Pollock	Young-of-the-year	0	0
4	All	All	Pollock	Yearling or older	0	
4	All	All	Rainbow smelt	Unknown	0	
4	All	All	Rainbow smelt	Egg	0	0
4	All	All	Rainbow smelt	Yolk-sac-larvae	21,224	276
4	All	All	Rainbow smelt	Post-yolk-sac larvae	514,525	6,690
4	All	All	Rainbow smelt	Young-of-the-year	0	0
4	All	All	Rainbow smelt	Yearling or older	0	
4	All	All	Rock gunnel	Unknown	0	
4	All	All	Rock gunnel	Egg	0	0
4	All	All	Rock gunnel	Yolk-sac-larvae	445,830	23,642
4	All	All	Rock gunnel	Post-yolk-sac larvae	2,250,323	119,332
4	All	All	Rock gunnel	Young-of-the-year	0	0
4	All	All	Rock gunnel	Yearling or older	0	
4	All	All	Windowpane	Unknown	0	
4	All	All	Windowpane	Egg	152,887	1
4	All	All	Windowpane	Yolk-sac-larvae	0	0
4	All	All	Windowpane	Post-yolk-sac larvae	14,888	1
4	All	All	Windowpane	Young-of-the-year	0	0
4	All	All	Windowpane	Yearling or older	0	
4	All	All	Winter flounder	Unknown	0	

Schiller Station Entrainment and Impingement Studies

Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
4	All	All	Winter flounder	Egg	60,924	0
4	All	All	Winter flounder	Yolk-sac-larvae	0	0
4	All	All	Winter flounder	Post-yolk-sac larvae	0	0
4	All	All	Winter flounder	Young-of-the-year	0	0
4	All	All	Winter flounder	Yearling or older	0	0
4	All	All	Winter flounder	WF Stage 2	23,347	0
4	All	All	Winter flounder	WF Stage 3	44,031	1
4	All	All	Winter flounder	WF Stage 4	2,370	0
5	2006	October	Atlantic cod	Egg	6,920	0
5	2006	October	Atlantic herring	Post-yolk-sac larvae	9,470	12
5	2006	October	Atlantic menhaden	Egg	55,329	1
5	2006	October	Fourbeard rockling	Egg	5,533	6
5	2006	November	Atlantic cod	Egg	57,831	1
5	2006	November	Atlantic herring	Post-yolk-sac larvae	299,800	378
5	2006	November	Northern pipefish	Yearling or older	10,401	10,401
5	2006	November	Pollock	Egg	7,635	0
5	2006	December	Atlantic cod	Egg	27,592	0
5	2006	December	Atlantic herring	Post-yolk-sac larvae	128,317	162
5	2006	December	Northern pipefish	Yearling or older	1,380	1,380
5	2006	December	Pollock	Egg	7,997	0
5	2006	December	Pollock	Yolk-sac-larvae	1,384	0
5	2006	December	Pollock	Post-yolk-sac larvae	4,080	0
5	2007	January	American sand lance	Yolk-sac-larvae	501,575	407
5	2007	January	American sand lance	Post-yolk-sac larvae	339,474	275
5	2007	January	Atlantic cod	Egg	10,269	0
5	2007	January	Atlantic cod	Post-yolk-sac larvae	2,767	4
5	2007	January	Atlantic herring	Post-yolk-sac larvae	146,863	185
5	2007	January	Grubby	Yolk-sac-larvae	78,273	1,384
5	2007	January	Grubby	Post-yolk-sac larvae	78,478	1,388
5	2007	January	Longhorn sculpin	Yolk-sac-larvae	2,769	10
5	2007	January	Longhorn sculpin	Post-yolk-sac larvae	7,795	27
5	2007	January	Northern pipefish	Yearling or older	2,760	2,760
5	2007	January	Pollock	Egg	30,927	0
5	2007	January	Pollock	Yolk-sac-larvae	41,319	1
5	2007	January	Pollock	Post-yolk-sac larvae	66,339	2
5	2007	January	Rock gunnel	Yolk-sac-larvae	332,903	17,653
5	2007	January	Rock gunnel	Post-yolk-sac larvae	209,739	11,122
5	2007	February	American sand lance	Yolk-sac-larvae	195,916	159
5	2007	February	American sand lance	Post-yolk-sac larvae	2,254,931	1,829
5	2007	February	Atlantic cod	Post-yolk-sac larvae	8,152	13
5	2007	February	Atlantic herring	Post-yolk-sac larvae	10,675	13
5	2007	February	Grubby	Yolk-sac-larvae	37,337	660
5	2007	February	Grubby	Post-yolk-sac larvae	253,945	4,490
5	2007	February	Longhorn sculpin	Yolk-sac-larvae	5,534	19
5	2007	February	Longhorn sculpin	Post-yolk-sac larvae	81,904	281
5	2007	February	Pollock	Yolk-sac-larvae	5,530	0
5	2007	February	Pollock	Post-yolk-sac larvae	24,036	1
5	2007	February	Rock gunnel	Yolk-sac-larvae	110,587	5,864
5	2007	February	Rock gunnel	Post-yolk-sac larvae	585,372	31,041
5	2007	March	American plaice	Egg	4,872	0
5	2007	March	American sand lance	Yolk-sac-larvae	5,500	4
5	2007	March	American sand lance	Post-yolk-sac larvae	1,107,809	899
5	2007	March	Atlantic herring	Post-yolk-sac larvae	6,321	8
5	2007	March	Cunner	Egg	2,517	0
5	2007	March	Cunner	Young-of-the-year	2,473	112
5	2007	March	Grubby	Yolk-sac-larvae	44,126	780
5	2007	March	Grubby	Post-yolk-sac larvae	314,263	5,557

Schiller Station Entrainment and Impingement Studies

Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
5	2007	March	Longhorn sculpin	Post-yolk-sac larvae	33,562	115
5	2007	March	Pollock	Post-yolk-sac larvae	25,310	1
5	2007	March	Rock gunnel	Yolk-sac-larvae	2,197	117
5	2007	March	Rock gunnel	Post-yolk-sac larvae	1,167,312	61,901
5	2007	March	Winter flounder	Egg	52,643	0
5	2007	April	American plaice	Egg	111,839	1
5	2007	April	American sand lance	Post-yolk-sac larvae	156,604	127
5	2007	April	Atlantic herring	Post-yolk-sac larvae	25,661	32
5	2007	April	Cunner	Egg	26,887	2
5	2007	April	Fourbeard rockling	Egg	9,667	10
5	2007	April	Grubby	Yolk-sac-larvae	58,642	1,037
5	2007	April	Grubby	Post-yolk-sac larvae	299,742	5,300
5	2007	April	Longhorn sculpin	Yolk-sac-larvae	4,428	15
5	2007	April	Longhorn sculpin	Post-yolk-sac larvae	6,708	23
5	2007	April	Pollock	Post-yolk-sac larvae	1,259	0
5	2007	April	Rainbow smelt	Yolk-sac-larvae	5,436	71
5	2007	April	Rock gunnel	Yolk-sac-larvae	8,879	471
5	2007	April	Rock gunnel	Post-yolk-sac larvae	409,742	21,728
5	2007	April	Winter flounder	Egg	11,597	0
5	2007	April	Winter flounder	WF Stage 2	1,359	0
5	2007	May	American plaice	Egg	135,106	2
5	2007	May	American sand lance	Post-yolk-sac larvae	4,077	3
5	2007	May	Atlantic mackerel	Egg	748,283	2
5	2007	May	Cunner	Egg	3,171,246	248
5	2007	May	Fourbeard rockling	Egg	1,731,631	1,801
5	2007	May	Grubby	Post-yolk-sac larvae	13,860	245
5	2007	May	Rainbow smelt	Yolk-sac-larvae	16,308	212
5	2007	May	Rainbow smelt	Post-yolk-sac larvae	452,929	5,889
5	2007	May	Windowpane	Egg	59,411	0
5	2007	May	Winter flounder	Egg	4,138	0
5	2007	May	Winter flounder	WF Stage 2	13,011	0
5	2007	June	American plaice	Egg	59,801	1
5	2007	June	Atlantic mackerel	Egg	1,035,781	3
5	2007	June	Atlantic menhaden	Egg	146,856	2
5	2007	June	Cunner	Egg	14,155,748	1,105
5	2007	June	Fourbeard rockling	Egg	203,715	212
5	2007	June	Hake species	Egg	26,490	0
5	2007	June	Northern pipefish	Post-yolk-sac larvae	13,492	898
5	2007	June	Rainbow smelt	Post-yolk-sac larvae	74,207	965
5	2007	June	Windowpane	Egg	39,122	0
5	2007	June	Winter flounder	WF Stage 2	6,795	0
5	2007	June	Winter flounder	WF Stage 3	37,003	1
5	2007	June	Winter flounder	WF Stage 4	2,428	0
5	2007	July	American plaice	Post-yolk-sac larvae	8,294	1
5	2007	July	Atlantic mackerel	Egg	43,982	0
5	2007	July	Atlantic mackerel	Post-yolk-sac larvae	2,766	0
5	2007	July	Cunner	Egg	5,125,750	400
5	2007	July	Cunner	Post-yolk-sac larvae	3,526,311	8,816
5	2007	July	Fourbeard rockling	Egg	130,612	136
5	2007	July	Fourbeard rockling	Yolk-sac-larvae	2,747	31
5	2007	July	Fourbeard rockling	Post-yolk-sac larvae	83,262	937
5	2007	July	Hake species	Egg	97,008	0
5	2007	July	Northern pipefish	Post-yolk-sac larvae	170,448	11,345
5	2007	July	Windowpane	Egg	31,439	0
5	2007	July	Windowpane	Post-yolk-sac larvae	10,914	0
5	2007	July	Winter flounder	WF Stage 2	2,753	0
5	2007	July	Winter flounder	WF Stage 3	8,107	0

Schiller Station Entrainment and Impingement Studies

Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
5	2007	August	Cunner	Egg	329,786	26
5	2007	August	Cunner	Post-yolk-sac larvae	6,506,823	16,268
5	2007	August	Fourbeard rockling	Egg	132,348	138
5	2007	August	Fourbeard rockling	Post-yolk-sac larvae	219,986	2,476
5	2007	August	Hake species	Egg	310,652	1
5	2007	August	Northern pipefish	Yolk-sac-larvae	2,768	184
5	2007	August	Northern pipefish	Post-yolk-sac larvae	13,354	889
5	2007	August	Northern pipefish	Yearling or older	2,769	2,769
5	2007	August	Windowpane	Egg	20,351	0
5	2007	September	Cunner	Egg	28,819	2
5	2007	September	Cunner	Post-yolk-sac larvae	104,486	261
5	2007	September	Cunner	Young-of-the-year	5,002	227
5	2007	September	Fourbeard rockling	Egg	9,020	9
5	2007	September	Fourbeard rockling	Post-yolk-sac larvae	9,644	109
5	2007	September	Hake species	Egg	3,142	0
5	2007	September	Northern pipefish	Yolk-sac-larvae	824	55
5	2007	September	Northern pipefish	Post-yolk-sac larvae	826	55
5	2007	September	Northern pipefish	Yearling or older	4,955	4,955
5	2007	September	Windowpane	Egg	5,197	0
5	2007	September	Windowpane	Post-yolk-sac larvae	3,900	0
5	All	All	American plaice	Unknown	0	
5	All	All	American plaice	Egg	311,617	4
5	All	All	American plaice	Yolk-sac-larvae	0	0
5	All	All	American plaice	Post-yolk-sac larvae	8,294	1
5	All	All	American plaice	Young-of-the-year	0	0
5	All	All	American plaice	Yearling or older	0	
5	All	All	American sand lance	Unknown	0	
5	All	All	American sand lance	Egg	0	0
5	All	All	American sand lance	Yolk-sac-larvae	702,991	570
5	All	All	American sand lance	Post-yolk-sac larvae	3,862,895	3,134
5	All	All	American sand lance	Young-of-the-year	0	0
5	All	All	American sand lance	Yearling or older	0	
5	All	All	Atlantic cod	Unknown	0	
5	All	All	Atlantic cod	Egg	102,612	1
5	All	All	Atlantic cod	Yolk-sac-larvae	0	0
5	All	All	Atlantic cod	Post-yolk-sac larvae	10,919	17
5	All	All	Atlantic cod	Young-of-the-year	0	0
5	All	All	Atlantic cod	Yearling or older	0	
5	All	All	Atlantic herring	Unknown	0	
5	All	All	Atlantic herring	Egg	0	0
5	All	All	Atlantic herring	Yolk-sac-larvae	0	0
5	All	All	Atlantic herring	Post-yolk-sac larvae	627,107	792
5	All	All	Atlantic herring	Young-of-the-year	0	0
5	All	All	Atlantic herring	Yearling or older	0	
5	All	All	Atlantic mackerel	Unknown	0	
5	All	All	Atlantic mackerel	Egg	1,828,046	5
5	All	All	Atlantic mackerel	Yolk-sac-larvae	0	0
5	All	All	Atlantic mackerel	Post-yolk-sac larvae	2,766	0
5	All	All	Atlantic mackerel	Young-of-the-year	0	0
5	All	All	Atlantic mackerel	Yearling or older	0	
5	All	All	Atlantic menhaden	Unknown	0	
5	All	All	Atlantic menhaden	Egg	202,186	3
5	All	All	Atlantic menhaden	Yolk-sac-larvae	0	0
5	All	All	Atlantic menhaden	Post-yolk-sac larvae	0	0
5	All	All	Atlantic menhaden	Young-of-the-year	0	
5	All	All	Atlantic menhaden	Yearling or older	0	
5	All	All	Cunner	Unknown	0	

Schiller Station Entrainment and Impingement Studies

Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
5	All	All	Cunner	Egg	22,840,753	1,783
5	All	All	Cunner	Yolk-sac-larvae	0	0
5	All	All	Cunner	Post-yolk-sac larvae	10,137,620	25,345
5	All	All	Cunner	Young-of-the-year	7,475	340
5	All	All	Cunner	Yearling or older	0	
5	All	All	Fourbeard rockling	Unknown	0	
5	All	All	Fourbeard rockling	Egg	2,222,526	2,312
5	All	All	Fourbeard rockling	Yolk-sac-larvae	2,747	31
5	All	All	Fourbeard rockling	Post-yolk-sac larvae	312,892	3,521
5	All	All	Fourbeard rockling	Young-of-the-year	0	0
5	All	All	Fourbeard rockling	Yearling or older	0	
5	All	All	Grubby	Unknown	0	
5	All	All	Grubby	Egg	0	0
5	All	All	Grubby	Yolk-sac-larvae	218,377	3,861
5	All	All	Grubby	Post-yolk-sac larvae	960,288	16,980
5	All	All	Grubby	Young-of-the-year	0	0
5	All	All	Grubby	Yearling or older	0	
5	All	All	Hake species	Unknown	0	
5	All	All	Hake species	Egg	437,291	1
5	All	All	Hake species	Yolk-sac-larvae	0	0
5	All	All	Hake species	Post-yolk-sac larvae	0	0
5	All	All	Hake species	Young-of-the-year	0	0
5	All	All	Hake species	Yearling or older	0	
5	All	All	Longhorn sculpin	Unknown	0	
5	All	All	Longhorn sculpin	Egg	0	0
5	All	All	Longhorn sculpin	Yolk-sac-larvae	12,730	44
5	All	All	Longhorn sculpin	Post-yolk-sac larvae	129,969	446
5	All	All	Longhorn sculpin	Young-of-the-year	0	0
5	All	All	Longhorn sculpin	Yearling or older	0	
5	All	All	Northern pipefish	Unknown	0	
5	All	All	Northern pipefish	Egg	0	0
5	All	All	Northern pipefish	Yolk-sac-larvae	3,592	239
5	All	All	Northern pipefish	Post-yolk-sac larvae	198,120	13,186
5	All	All	Northern pipefish	Young-of-the-year	0	0
5	All	All	Northern pipefish	Yearling or older	22,266	22,266
5	All	All	Pollock	Unknown	0	
5	All	All	Pollock	Egg	46,559	0
5	All	All	Pollock	Yolk-sac-larvae	48,233	1
5	All	All	Pollock	Post-yolk-sac larvae	121,023	3
5	All	All	Pollock	Young-of-the-year	0	0
5	All	All	Pollock	Yearling or older	0	
5	All	All	Rainbow smelt	Unknown	0	
5	All	All	Rainbow smelt	Egg	0	0
5	All	All	Rainbow smelt	Yolk-sac-larvae	21,744	283
5	All	All	Rainbow smelt	Post-yolk-sac larvae	527,136	6,854
5	All	All	Rainbow smelt	Young-of-the-year	0	0
5	All	All	Rainbow smelt	Yearling or older	0	
5	All	All	Rock gunnel	Unknown	0	
5	All	All	Rock gunnel	Egg	0	0
5	All	All	Rock gunnel	Yolk-sac-larvae	454,566	24,105
5	All	All	Rock gunnel	Post-yolk-sac larvae	2,372,165	125,793
5	All	All	Rock gunnel	Young-of-the-year	0	0
5	All	All	Rock gunnel	Yearling or older	0	
5	All	All	Windowpane	Unknown	0	
5	All	All	Windowpane	Egg	155,520	1
5	All	All	Windowpane	Yolk-sac-larvae	0	0
5	All	All	Windowpane	Post-yolk-sac larvae	14,814	1

Schiller Station Entrainment and Impingement Studies

Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
5	All	All	Windowpane	Young-of-the-year	0	0
5	All	All	Windowpane	Yearling or older	0	
5	All	All	Winter flounder	Unknown	0	
5	All	All	Winter flounder	Egg	68,378	0
5	All	All	Winter flounder	Yolk-sac-larvae	0	0
5	All	All	Winter flounder	Post-yolk-sac larvae	0	0
5	All	All	Winter flounder	Young-of-the-year	0	0
5	All	All	Winter flounder	Yearling or older	0	
5	All	All	Winter flounder	WF Stage 2	23,919	0
5	All	All	Winter flounder	WF Stage 3	45,110	1
5	All	All	Winter flounder	WF Stage 4	2,428	0
6	2006	October	Atlantic cod	Egg	6,920	0
6	2006	October	Atlantic herring	Post-yolk-sac larvae	9,470	12
6	2006	October	Atlantic menhaden	Egg	55,329	1
6	2006	October	Fourbeard rockling	Egg	5,533	6
6	2006	November	Atlantic cod	Egg	57,831	1
6	2006	November	Atlantic herring	Post-yolk-sac larvae	299,800	378
6	2006	November	Northern pipefish	Yearling or older	10,401	10,401
6	2006	November	Pollock	Egg	7,635	0
6	2006	December	Atlantic cod	Egg	27,592	0
6	2006	December	Atlantic herring	Post-yolk-sac larvae	128,317	162
6	2006	December	Northern pipefish	Yearling or older	1,380	1,380
6	2006	December	Pollock	Egg	7,997	0
6	2006	December	Pollock	Yolk-sac-larvae	1,384	0
6	2006	December	Pollock	Post-yolk-sac larvae	4,080	0
6	2007	January	American sand lance	Yolk-sac-larvae	501,575	407
6	2007	January	American sand lance	Post-yolk-sac larvae	339,474	275
6	2007	January	Atlantic cod	Egg	10,269	0
6	2007	January	Atlantic cod	Post-yolk-sac larvae	2,767	4
6	2007	January	Atlantic herring	Post-yolk-sac larvae	146,863	185
6	2007	January	Grubby	Yolk-sac-larvae	78,273	1,384
6	2007	January	Grubby	Post-yolk-sac larvae	78,478	1,388
6	2007	January	Longhorn sculpin	Yolk-sac-larvae	2,769	10
6	2007	January	Longhorn sculpin	Post-yolk-sac larvae	7,795	27
6	2007	January	Northern pipefish	Yearling or older	2,760	2,760
6	2007	January	Pollock	Egg	30,927	0
6	2007	January	Pollock	Yolk-sac-larvae	41,319	1
6	2007	January	Pollock	Post-yolk-sac larvae	66,339	2
6	2007	January	Rock gunnel	Yolk-sac-larvae	332,903	17,653
6	2007	January	Rock gunnel	Post-yolk-sac larvae	209,739	11,122
6	2007	February	American sand lance	Yolk-sac-larvae	195,916	159
6	2007	February	American sand lance	Post-yolk-sac larvae	2,254,931	1,829
6	2007	February	Atlantic cod	Post-yolk-sac larvae	8,152	13
6	2007	February	Atlantic herring	Post-yolk-sac larvae	10,675	13
6	2007	February	Grubby	Yolk-sac-larvae	37,337	660
6	2007	February	Grubby	Post-yolk-sac larvae	253,945	4,490
6	2007	February	Longhorn sculpin	Yolk-sac-larvae	5,534	19
6	2007	February	Longhorn sculpin	Post-yolk-sac larvae	81,904	281
6	2007	February	Pollock	Yolk-sac-larvae	5,530	0
6	2007	February	Pollock	Post-yolk-sac larvae	24,036	1
6	2007	February	Rock gunnel	Yolk-sac-larvae	110,587	5,864
6	2007	February	Rock gunnel	Post-yolk-sac larvae	585,372	31,041
6	2007	March	American sand lance	Post-yolk-sac larvae	327,616	266
6	2007	March	Grubby	Post-yolk-sac larvae	18,665	330
6	2007	March	Longhorn sculpin	Post-yolk-sac larvae	8,579	29
6	2007	March	Pollock	Post-yolk-sac larvae	2,162	0
6	2007	March	Rock gunnel	Yolk-sac-larvae	942	50

Schiller Station Entrainment and Impingement Studies

Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
6	2007	March	Rock gunnel	Post-yolk-sac larvae	170,581	9,046
6	2007	April	American plaice	Egg	133,303	2
6	2007	April	American sand lance	Post-yolk-sac larvae	97,239	79
6	2007	April	Atlantic herring	Post-yolk-sac larvae	28,311	36
6	2007	April	Cunner	Egg	29,901	2
6	2007	April	Fourbeard rockling	Egg	9,667	10
6	2007	April	Grubby	Yolk-sac-larvae	49,589	877
6	2007	April	Grubby	Post-yolk-sac larvae	254,784	4,505
6	2007	April	Longhorn sculpin	Yolk-sac-larvae	3,516	12
6	2007	April	Longhorn sculpin	Post-yolk-sac larvae	3,228	11
6	2007	April	Rainbow smelt	Yolk-sac-larvae	5,436	71
6	2007	April	Rock gunnel	Yolk-sac-larvae	11,069	587
6	2007	April	Rock gunnel	Post-yolk-sac larvae	170,869	9,061
6	2007	April	Winter flounder	Egg	1,379	0
6	2007	April	Winter flounder	WF Stage 2	1,359	0
6	2007	May	American plaice	Egg	135,106	2
6	2007	May	American sand lance	Post-yolk-sac larvae	4,077	3
6	2007	May	Atlantic mackerel	Egg	748,283	2
6	2007	May	Cunner	Egg	3,171,246	248
6	2007	May	Fourbeard rockling	Egg	1,731,631	1,801
6	2007	May	Grubby	Post-yolk-sac larvae	13,860	245
6	2007	May	Rainbow smelt	Yolk-sac-larvae	16,308	212
6	2007	May	Rainbow smelt	Post-yolk-sac larvae	452,929	5,889
6	2007	May	Windowpane	Egg	59,411	0
6	2007	May	Winter flounder	Egg	4,138	0
6	2007	May	Winter flounder	WF Stage 2	13,011	0
6	2007	June	American plaice	Egg	59,801	1
6	2007	June	Atlantic mackerel	Egg	1,035,781	3
6	2007	June	Atlantic menhaden	Egg	146,856	2
6	2007	June	Cunner	Egg	14,155,748	1,105
6	2007	June	Fourbeard rockling	Egg	203,715	212
6	2007	June	Hake species	Egg	26,490	0
6	2007	June	Northern pipefish	Post-yolk-sac larvae	13,492	898
6	2007	June	Rainbow smelt	Post-yolk-sac larvae	74,207	965
6	2007	June	Windowpane	Egg	39,122	0
6	2007	June	Winter flounder	WF Stage 2	6,795	0
6	2007	June	Winter flounder	WF Stage 3	37,003	1
6	2007	June	Winter flounder	WF Stage 4	2,428	0
6	2007	July	American plaice	Post-yolk-sac larvae	8,294	1
6	2007	July	Atlantic mackerel	Egg	43,982	0
6	2007	July	Atlantic mackerel	Post-yolk-sac larvae	2,766	0
6	2007	July	Cunner	Egg	5,125,750	400
6	2007	July	Cunner	Post-yolk-sac larvae	3,526,311	8,816
6	2007	July	Fourbeard rockling	Egg	130,612	136
6	2007	July	Fourbeard rockling	Yolk-sac-larvae	2,747	31
6	2007	July	Fourbeard rockling	Post-yolk-sac larvae	83,262	937
6	2007	July	Hake species	Egg	97,008	0
6	2007	July	Northern pipefish	Post-yolk-sac larvae	170,448	11,345
6	2007	July	Windowpane	Egg	31,439	0
6	2007	July	Windowpane	Post-yolk-sac larvae	10,914	0
6	2007	July	Winter flounder	WF Stage 2	2,753	0
6	2007	July	Winter flounder	WF Stage 3	8,107	0
6	2007	August	Cunner	Egg	329,786	26
6	2007	August	Cunner	Post-yolk-sac larvae	6,506,823	16,268
6	2007	August	Fourbeard rockling	Egg	132,348	138
6	2007	August	Fourbeard rockling	Post-yolk-sac larvae	219,986	2,476
6	2007	August	Hake species	Egg	310,652	1

Schiller Station Entrainment and Impingement Studies

Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
6	2007	August	Northern pipefish	Yolk-sac-larvae	2,768	184
6	2007	August	Northern pipefish	Post-yolk-sac larvae	13,354	889
6	2007	August	Northern pipefish	Yearling or older	2,769	2,769
6	2007	August	Windowpane	Egg	20,351	0
6	2007	September	Cunner	Egg	39,067	3
6	2007	September	Cunner	Post-yolk-sac larvae	168,700	422
6	2007	September	Cunner	Young-of-the-year	5,565	253
6	2007	September	Fourbeard rockling	Egg	11,038	11
6	2007	September	Fourbeard rockling	Post-yolk-sac larvae	13,988	157
6	2007	September	Hake species	Egg	3,495	0
6	2007	September	Northern pipefish	Yolk-sac-larvae	1,384	92
6	2007	September	Northern pipefish	Post-yolk-sac larvae	1,387	92
6	2007	September	Northern pipefish	Yearling or older	5,513	5,513
6	2007	September	Windowpane	Egg	6,311	0
6	2007	September	Windowpane	Post-yolk-sac larvae	4,339	0
6	All	All	American plaice	Unknown	0	
6	All	All	American plaice	Egg	328,209	4
6	All	All	American plaice	Yolk-sac-larvae	0	0
6	All	All	American plaice	Post-yolk-sac larvae	8,294	1
6	All	All	American plaice	Young-of-the-year	0	0
6	All	All	American plaice	Yearling or older	0	
6	All	All	American sand lance	Unknown	0	
6	All	All	American sand lance	Egg	0	0
6	All	All	American sand lance	Yolk-sac-larvae	697,491	566
6	All	All	American sand lance	Post-yolk-sac larvae	3,023,337	2,453
6	All	All	American sand lance	Young-of-the-year	0	0
6	All	All	American sand lance	Yearling or older	0	
6	All	All	Atlantic cod	Unknown	0	
6	All	All	Atlantic cod	Egg	102,612	1
6	All	All	Atlantic cod	Yolk-sac-larvae	0	0
6	All	All	Atlantic cod	Post-yolk-sac larvae	10,919	17
6	All	All	Atlantic cod	Young-of-the-year	0	0
6	All	All	Atlantic cod	Yearling or older	0	
6	All	All	Atlantic herring	Unknown	0	
6	All	All	Atlantic herring	Egg	0	0
6	All	All	Atlantic herring	Yolk-sac-larvae	0	0
6	All	All	Atlantic herring	Post-yolk-sac larvae	623,435	787
6	All	All	Atlantic herring	Young-of-the-year	0	0
6	All	All	Atlantic herring	Yearling or older	0	
6	All	All	Atlantic mackerel	Unknown	0	
6	All	All	Atlantic mackerel	Egg	1,828,046	5
6	All	All	Atlantic mackerel	Yolk-sac-larvae	0	0
6	All	All	Atlantic mackerel	Post-yolk-sac larvae	2,766	0
6	All	All	Atlantic mackerel	Young-of-the-year	0	0
6	All	All	Atlantic mackerel	Yearling or older	0	
6	All	All	Atlantic menhaden	Unknown	0	
6	All	All	Atlantic menhaden	Egg	202,186	3
6	All	All	Atlantic menhaden	Yolk-sac-larvae	0	0
6	All	All	Atlantic menhaden	Post-yolk-sac larvae	0	0
6	All	All	Atlantic menhaden	Young-of-the-year	0	
6	All	All	Atlantic menhaden	Yearling or older	0	
6	All	All	Cunner	Unknown	0	
6	All	All	Cunner	Egg	22,851,498	1,784
6	All	All	Cunner	Yolk-sac-larvae	0	0
6	All	All	Cunner	Post-yolk-sac larvae	10,201,833	25,506
6	All	All	Cunner	Young-of-the-year	5,565	253
6	All	All	Cunner	Yearling or older	0	

Schiller Station Entrainment and Impingement Studies

Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
6	All	All	Fourbeard rockling	Unknown	0	
6	All	All	Fourbeard rockling	Egg	2,224,544	2,314
6	All	All	Fourbeard rockling	Yolk-sac-larvae	2,747	31
6	All	All	Fourbeard rockling	Post-yolk-sac larvae	317,235	3,570
6	All	All	Fourbeard rockling	Young-of-the-year	0	0
6	All	All	Fourbeard rockling	Yearling or older	0	
6	All	All	Grubby	Unknown	0	
6	All	All	Grubby	Egg	0	0
6	All	All	Grubby	Yolk-sac-larvae	165,198	2,921
6	All	All	Grubby	Post-yolk-sac larvae	619,732	10,958
6	All	All	Grubby	Young-of-the-year	0	0
6	All	All	Grubby	Yearling or older	0	
6	All	All	Hake species	Unknown	0	
6	All	All	Hake species	Egg	437,645	1
6	All	All	Hake species	Yolk-sac-larvae	0	0
6	All	All	Hake species	Post-yolk-sac larvae	0	0
6	All	All	Hake species	Young-of-the-year	0	0
6	All	All	Hake species	Yearling or older	0	
6	All	All	Longhorn sculpin	Unknown	0	
6	All	All	Longhorn sculpin	Egg	0	0
6	All	All	Longhorn sculpin	Yolk-sac-larvae	11,818	41
6	All	All	Longhorn sculpin	Post-yolk-sac larvae	101,505	348
6	All	All	Longhorn sculpin	Young-of-the-year	0	0
6	All	All	Longhorn sculpin	Yearling or older	0	
6	All	All	Northern pipefish	Unknown	0	
6	All	All	Northern pipefish	Egg	0	0
6	All	All	Northern pipefish	Yolk-sac-larvae	4,152	276
6	All	All	Northern pipefish	Post-yolk-sac larvae	198,682	13,224
6	All	All	Northern pipefish	Young-of-the-year	0	0
6	All	All	Northern pipefish	Yearling or older	22,823	22,823
6	All	All	Pollock	Unknown	0	
6	All	All	Pollock	Egg	46,559	0
6	All	All	Pollock	Yolk-sac-larvae	48,233	1
6	All	All	Pollock	Post-yolk-sac larvae	96,616	3
6	All	All	Pollock	Young-of-the-year	0	0
6	All	All	Pollock	Yearling or older	0	
6	All	All	Rainbow smelt	Unknown	0	
6	All	All	Rainbow smelt	Egg	0	0
6	All	All	Rainbow smelt	Yolk-sac-larvae	21,744	283
6	All	All	Rainbow smelt	Post-yolk-sac larvae	527,136	6,854
6	All	All	Rainbow smelt	Young-of-the-year	0	0
6	All	All	Rainbow smelt	Yearling or older	0	
6	All	All	Rock gunnel	Unknown	0	
6	All	All	Rock gunnel	Egg	0	0
6	All	All	Rock gunnel	Yolk-sac-larvae	455,501	24,155
6	All	All	Rock gunnel	Post-yolk-sac larvae	1,136,561	60,270
6	All	All	Rock gunnel	Young-of-the-year	0	0
6	All	All	Rock gunnel	Yearling or older	0	
6	All	All	Windowpane	Unknown	0	
6	All	All	Windowpane	Egg	156,634	1
6	All	All	Windowpane	Yolk-sac-larvae	0	0
6	All	All	Windowpane	Post-yolk-sac larvae	15,253	1
6	All	All	Windowpane	Young-of-the-year	0	0
6	All	All	Windowpane	Yearling or older	0	
6	All	All	Winter flounder	Unknown	0	
6	All	All	Winter flounder	Egg	5,517	0
6	All	All	Winter flounder	Yolk-sac-larvae	0	0

Schiller Station Entrainment and Impingement Studies

Unit	Year	Month	Common Name	Life stage	Entrainment Abundance	Adult Equivalent Entrainment Abundance
6	All	All	Winter flounder	Post-yolk-sac larvae	0	0
6	All	All	Winter flounder	Young-of-the-year	0	0
6	All	All	Winter flounder	Yearling or older	0	
6	All	All	Winter flounder	WF Stage 2	23,919	0
6	All	All	Winter flounder	WF Stage 3	45,110	1
6	All	All	Winter flounder	WF Stage 4	2,428	0

Appendix Table B-7. Monthly estimated entrainment abundance and adult equivalent abundance by life stage at Units 4, 5, 6, and all Units combined of Schiller Station for 3 macrocrustacean taxa representing 99.6% of the total enumerated based on operating flows for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Unit	Year	Month	Common Name	Life stage	Estimated Entrainment Abundance	Adult Equivalent Abundance
4	2006	October	<i>Cancer</i> sp.	Juvenile	159	16
				Megalops	117,202	405
				Zoea	467,927	1
			Green crab	Juvenile	4,591	266
				Megalops	138,599	733
				Zoea	1,642,466	150
		November	<i>Cancer</i> sp.	Megalops	1,728	6
				Zoea	13,408	0
			Green crab	Juvenile	4,280	248
				Zoea	42,075	4
		December	<i>Cancer</i> sp.	Megalops	4,053	14
			Green crab	Zoea	51,507	5
	2007	January	Green crab	Zoea	10,537	1
		February	<i>Cancer</i> sp.	Zoea	2,699	0
			Green crab	Juvenile	2,256	130
				Zoea	5,484	0
		April	<i>Cancer</i> sp.	Zoea	49,396	0
			Green crab	Zoea	4,019	0
		May	<i>Cancer</i> sp.	Zoea	25,949,947	56
			Green crab	Juvenile	2,217	128
				Zoea	20,547,633	1,873
		June	American lobster	Stage II	5,038	7
			<i>Cancer</i> sp.	Zoea	37,178,981	81
				Juvenile	9,717	562
				Zoea	89,143,194	8,126
		July	American lobster	Stage I	13,484	15
			<i>Cancer</i> sp.	Megalops	157,902	546
				Zoea	80,669,359	176
			Green crab	Juvenile	4,120	238
				Megalops	1,729,353	9,142
				Zoea	105,169,002	9,587
		August	<i>Cancer</i> sp.	Juvenile	22,927	2,298
				Megalops	238,016	823
				Zoea	38,118,017	83
			Green crab	Juvenile	43,834	2,535
				Megalops	543,925	2,875
				Zoea	17,045,009	1,554
		September	<i>Cancer</i> sp.	Megalops	52,932	183
				Zoea	6,110,099	13
			Green crab	Juvenile	32,171	1,861
				Megalops	353,431	1,868
				Zoea	2,416,990	220
	All	Annual	American lobster	Stage I	13,484	15
				Stage II	5,038	7
			<i>Cancer</i> sp.	Juvenile	23,086	2,314
				Megalops	571,833	1,978
				Zoea	188,559,834	411
			Green crab	Juvenile	103,186	5,968
				Megalops	2,765,309	14,618
				Zoea	236,077,915	21,521
5	2006	October	<i>Cancer</i> sp.	Juvenile	4,562	457

Schiller Station Entrainment and Impingement Studies

Unit	Year	Month	Common Name	Life stage	Estimated Entrainment Abundance	Adult Equivalent Abundance
	2007		Green crab	Megalops	161,221	558
				Zoea	603,509	1
				Juvenile	16,869	976
				Megalops	180,351	953
		November	<i>Cancer</i> sp.	Zoea	2,152,577	196
				Megalops	5,531	19
				Zoea	20,318	0
				Juvenile	9,028	522
		December	<i>Cancer</i> sp.	Zoea	61,775	6
				Megalops	4,152	14
				Zoea	52,769	5
				Juvenile	10,795	1
		January	<i>Cancer</i> sp.	Zoea	2,765	0
		February	Green crab	Juvenile	2,311	134
				Zoea	5,618	1
				Zoea	50,606	0
		April	<i>Cancer</i> sp.	Zoea	4,117	0
				Zoea	26,585,975	58
		May	Green crab	Juvenile	2,271	131
				Zoea	21,051,251	1,919
				Stage II	5,161	8
		June	<i>Cancer</i> sp.	Zoea	38,090,231	83
				Juvenile	9,955	576
				Zoea	91,328,077	8,326
				Stage I	13,814	15
		July	<i>Cancer</i> sp.	Megalops	161,772	560
				Zoea	82,646,549	180
				Juvenile	4,221	244
				Megalops	1,771,740	9,366
		August	<i>Cancer</i> sp.	Zoea	107,746,674	9,822
				Juvenile	23,488	2,355
				Megalops	243,849	844
				Zoea	39,052,282	85
		September	Green crab	Juvenile	44,908	2,598
				Megalops	557,257	2,946
				Zoea	17,462,779	1,592
				Megalops	42,354	147
		All	Annual	Zoea	4,266,233	9
				Juvenile	28,763	1,664
				Megalops	284,948	1,506
				Zoea	1,993,140	182
		All	Annual	Stage I	13,814	15
				Stage II	5,161	8
				Juvenile	28,050	2,812
				Megalops	618,880	2,141
		All	Annual	Zoea	191,318,470	417
				Juvenile	118,328	6,844
				Megalops	2,794,295	14,771
				Zoea	241,869,573	22,049
6	2006	October	<i>Cancer</i> sp.	Juvenile	4,562	457
				Megalops	161,221	558
				Zoea	603,509	1
				Juvenile	16,869	976
		November	<i>Cancer</i> sp.	Megalops	180,351	953
				Zoea	2,152,577	196
				Megalops	5,531	19
				Zoea	20,318	0
		November	Green crab	Juvenile	9,028	522
				Juvenile	9,028	522

Schiller Station Entrainment and Impingement Studies

Unit	Year	Month	Common Name	Life stage	Estimated Entrainment Abundance	Adult Equivalent Abundance
	2007	December	Cancer sp.	Zoea	61,775	6
			Green crab	Megalops	4,152	14
		January	Green crab	Zoea	52,769	5
			Green crab	Zoea	10,795	1
		February	Cancer sp.	Zoea	2,765	0
			Green crab	Juvenile	2,311	134
			Green crab	Zoea	5,618	1
		April	Cancer sp.	Zoea	50,606	0
			Green crab	Zoea	4,117	0
		May	Cancer sp.	Zoea	26,585,975	58
			Green crab	Juvenile	2,271	131
		June	Green crab	Zoea	21,051,251	1,919
			American lobster	Stage II	5,161	8
			Cancer sp.	Zoea	38,090,231	83
			Green crab	Juvenile	9,955	576
		July	Green crab	Zoea	91,328,077	8,326
			American lobster	Stage I	13,814	15
			Cancer sp.	Megalops	161,772	560
			Green crab	Zoea	82,646,549	180
		August	Green crab	Juvenile	4,221	244
			Green crab	Megalops	1,771,740	9,366
			Green crab	Zoea	107,746,674	9,822
			Cancer sp.	Juvenile	23,488	2,355
		September	Cancer sp.	Megalops	243,849	844
			Green crab	Zoea	39,052,282	85
			Green crab	Juvenile	44,908	2,598
			Green crab	Megalops	557,257	2,946
		October	Green crab	Zoea	17,462,779	1,592
			Cancer sp.	Megalops	54,229	188
			Green crab	Zoea	6,259,857	14
			Green crab	Juvenile	32,959	1,906
		November	Green crab	Megalops	362,093	1,914
			Green crab	Zoea	2,476,230	226
			American lobster	Stage I	13,814	15
			American lobster	Stage II	5,161	8
		December	Cancer sp.	Juvenile	28,050	2,812
			Cancer sp.	Megalops	630,755	2,182
			Green crab	Zoea	193,312,093	421
			Green crab	Juvenile	122,524	7,087
		January	Green crab	Megalops	2,871,440	15,179
			Green crab	Zoea	242,352,663	22,093
			Green crab	Juvenile	12,791	44
			Green crab	Zoea	54,044	0
		February	Green crab	Juvenile	22,337	1,292
			Green crab	Zoea	165,625	15
			Cancer sp.	Megalops	12,358	43
			Green crab	Zoea	157,045	14
		March	Green crab	Zoea	32,128	3
			Cancer sp.	Zoea	8,229	0
			Green crab	Juvenile	6,878	398
			Green crab	Zoea	16,720	2
Total	Year	Month	Common Name	Life stage	Estimated Entrainment Abundance	Adult Equivalent Abundance
	2006	October	Cancer sp.	Juvenile	9,282	931
				Megalops	439,644	1,521
				Zoea	1,674,946	4
				Green crab	38,329	2,217
		November	Cancer sp.	Megalops	499,300	2,639
				Zoea	5,947,620	542
				Green crab	12,791	44
				Zoea	54,044	0
		December	Green crab	Juvenile	22,337	1,292
				Zoea	165,625	15
				Cancer sp.	12,358	43
				Green crab	157,045	14
		January	Green crab	Zoea	32,128	3
				Cancer sp.	8,229	0
		February	Green crab	Juvenile	6,878	398
				Zoea	16,720	2

Schiller Station Entrainment and Impingement Studies

Unit	Year	Month	Common Name	Life stage	Estimated Entrainment Abundance	Adult Equivalent Abundance
		April	Cancer sp.	Zoea	150,608	0
			Green crab	Zoea	12,254	1
		May	Cancer sp.	Zoea	79,121,898	172
			Green crab	Juvenile	6,759	391
		June	American lobster	Zoea	62,650,135	5,711
				Stage II	15,360	22
			Cancer sp.	Zoea	113,359,443	247
			Green crab	Juvenile	29,626	1,714
		July	American lobster	Zoea	271,799,348	24,777
				Stage I	41,112	45
				Megalops	481,447	1,666
			Green crab	Zoea	245,962,458	536
				Juvenile	12,563	727
				Megalops	5,272,832	27,873
		August	Cancer sp.	Zoea	320,662,349	29,232
				Juvenile	69,903	7,008
				Megalops	725,714	2,511
			Green crab	Zoea	116,222,582	253
				Juvenile	133,651	7,730
				Megalops	1,658,439	8,767
		September	Cancer sp.	Zoea	51,970,566	4,738
				Megalops	149,514	517
				Zoea	16,636,189	36
			Green crab	Juvenile	93,893	5,431
				Megalops	1,000,473	5,289
				Zoea	6,886,361	628
	All	Annual	American lobster	Stage I	41,112	45
				Stage II	15,360	22
			Cancer sp.	Juvenile	79,186	7,939
				Megalops	1,821,468	6,302
				Zoea	573,190,397	1,248
			Green crab	Juvenile	344,037	19,899
				Megalops	8,431,044	44,568
				Zoea	720,300,151	65,663

APPENDIX C

Schiller Station Impingement

Appendix Table C-1. Recorded water quality parameters from start and end of each 6-hour impingement sample at Schiller Station (Units 4, 5, and 6 combined) for the period 31 August 2006 through 27 September 2007.

Date	0800-1400						1400-2000						2000-0200						0200-0800					
	Start Temp	End Temp	Start Salinity	End Salinity	Start DO	End DO	Start Temp	End Temp	Start Salinity	End Salinity	Start DO	End DO	Start Temp	End Temp	Start Salinity	End Salinity	Start DO	End DO	Start Temp	End Temp	Start Salinity	End Salinity	Start DO	End DO
31-Aug-06	17.5	18.5	29.8	27.7	6.6	6.3	18.0	18.1	28.6	29.4	6.4	6.7	18.1	18.6	29.4	27.4	6.7	6.7	18.6	18.3	27.4	29.8	6.7	6.3
7-Sep-06	18.5	18.5	27.9	29.7	6.7	6.9	18.5	19.1	29.7	28.0	6.9	6.3	19.1	17.4	28.0	30.3	6.3	5.8	17.4	19.1	30.3	27.9	5.8	7.2
14-Sep-06	17.9	17.4	30.5	30.0	6.9	7.3	17.4	17.6	30.7	30.6	6.3	6.7	18.2	17.3	29.0	30.6	6.9	6.1	17.8	18.0	30.6	29.0	6.7	6.9
21-Sep-06	19.4	17.4	28.7	30.5	6.5	6.1	17.4	18.0	30.5	29.2	6.1	6.5	18.0	13.9	29.2	31.1	6.5	6.6	13.9	18.3	31.1	29.3	6.6	6.3
28-Sep-06	13.8	13.9	30.6	31.1	6.3	6.6	13.9	14.4	31.1	30.6	6.6	6.9	14.4	14.1	30.6	30.5	6.9	7.3	14.1	14.5	30.5	30.6	7.3	6.5
5-Oct-06	14.6	14.1	29.7	31.2	7.4	7.5	14.1	14.0	31.2	30.7	7.5	8.0	14.0	13.7	30.7	31.3	8.0	7.6	13.7	14.2	31.3	30.0	7.6	7.7
12-Oct-06	15.4	14.1	31.1	30.3	6.9	7.7	14.1	14.8	30.3	30.7	7.7	7.3	14.8	14.0	30.7	29.7	7.3	7.6	14.0	15.4	29.7	29.6	7.6	6.7
19-Oct-06	12.9	13.2	25.1	30.1	6.8	6.2	13.2	13.1	30.1	31.3	6.2	7.1	13.1	13.9	31.3	30.3	7.1	6.4	13.9	13.0	30.3	25.5	6.4	6.6
26-Oct-06	11.2		25.2		7.0																			
2-Nov-06	8.1	8.9	25.8	20.5	7.4	8.3	8.9	8.1	20.5	26.6	8.3	7.9	8.1	8.3	26.6	21.3	7.9	9.0	8.3	7.8	21.3	27.0	9.0	8.0
9-Nov-06	9.2	9.9	26.7	21.1	7.9	8.2	9.9	8.9	21.1	24.7	8.2	8.4	10.1	9.2	22.7	26.7	8.3	7.9	8.9	9.3	24.7	19.7	8.4	8.2
16-Nov-06	9.7	10.8	24.4	13.9	8.8	8.2	10.8	10.0	13.9	23.1	8.2	8.7	10.0	16.8	23.1	11.3	8.7	8.9	16.8	10.7	11.3	22.2	8.9	8.7
21-Nov-06	9.2	10.8	13.3	25.7	9.0	7.3	10.8	8.9	25.7	12.7	7.3	9.0	8.9	8.9	12.7	24.5	9.0	8.4	8.9	8.3	24.5	14.2	8.4	9.3
30-Nov-06	8.7	8.4	24.8	18.2	8.9	9.6	8.4	8.6	18.2	26.0	9.6	9.1	8.6	8.3	26.0	18.7	9.1	8.9	8.3	9.0	18.7	26.7	8.9	8.6
7-Dec-06	7.8	9.7	23.8	30.8	8.8	7.5	9.7	8.3	30.8	21.4	7.5	8.4	8.3	8.9	21.4	30.3	8.4	7.4	8.9	7.9	30.3	22.4	7.4	7.8
14-Dec-06	8.7	7.6	30.1	23.1	6.5	8.1	7.6	8.5	23.1	30.3	8.1	6.6	8.5	7.5	30.3	23.3	6.6	8.2	7.5	8.8	23.3	30.6	8.2	6.6
21-Dec-06	7.0	10.1	24.5	31.0	8.5	6.7	10.1	7.2	31.0	23.7	6.7	8.2	7.2	9.6	23.7	29.0	8.2	7.9	9.6	7.3	29.0	24.4	7.9	8.4
28-Dec-06	8.9	6.7	28.9	20.9	7.5	8.7	6.7	9.0	20.9	29.7	8.7	7.0	9.0	6.4	29.7	20.9	7.0	9.0	6.4	8.0	20.9	30.2	9.0	6.9
4-Jan-07	5.7	8.3	21.5	30.7	8.6	6.4	8.3	5.9	30.7	21.7	6.4	7.9	5.9	6.6	21.7	29.8	7.9	8.2	6.6	5.8	29.8	22.0	8.2	8.4
11-Jan-07	7.6	5.3	27.1	18.8	6.3	8.0	5.3	7.6	18.8	26.6	8.0	6.5	7.6	5.0	26.6	18.5	6.5	8.3	5.0	8.8	18.5	29.0	8.3	6.1
18-Jan-07	4.8	7.4	25.2	30.5	11.5	9.6	7.4	3.6	30.5	21.2	9.6	12.8	3.6	6.7	21.2	29.6	12.8	10.0	6.7	4.7	29.6	23.1	10.0	12.2
25-Jan-07	7.0	4.3	29.5	26.8	10.5	12.0	4.3	8.3	26.8	30.5	12.0	11.2	8.3	3.6	30.5	26.7	11.2	14.0	3.6	7.0	26.7	31.0	14.0	12.7
1-Feb-07	3.2	5.8	28.0	31.3	11.1	11.1	5.8	3.5	31.3	26.6	11.1	12.2	3.5	5.8	26.6	30.9	12.2	12.0	5.8	3.6	30.9	27.6	12.0	12.7
8-Feb-07	4.3	2.3	30.4	30.8	10.6	11.6	2.3	4.1	30.8	30.3	11.6	12.1	4.1	2.2	30.3	30.5	12.1	12.9	2.2	4.0	30.5	31.4	12.9	13.1
15-Feb-07	1.2	1.7	31.1	31.3	10.8	10.9	1.7	0.9	31.3	30.0	10.9	12.8	0.9	1.6	30.3	30.7	12.8	10.4	1.6	0.4	30.7	29.3	10.4	10.8
22-Feb-07	3.1	2.5	31.9	32.2	8.9	10.6	2.5	3.5	32.2	32.0	10.6	11.0	3.5	3.5	32.0	32.0	11.0	11.3	2.0	3.6	32.0	32.4	11.3	10.7
1-Mar-07	2.3	3.8	32.1	32.7	9.4	9.9	3.8	2.8	32.7	31.0	9.9	12.8	2.8	3.8	31.0	32.1	12.8	10.7	3.8	2.2	32.1	31.5	10.7	11.7
8-Mar-07	1.2	1.0	29.2	31.4	10.7	11.9	1.0	1.4	31.4	29.2	11.9	12.7	1.4	0.6	29.2	32.1	12.7	12.4	0.6	1.0	32.1	29.2	12.4	11.8
15-Mar-07	3.6	3.7	30.6	28.5	9.8	10.1	3.7	2.9	28.5	28.3	10.1	16.1	2.9	3.4	28.3	27.3	16.1	17.3	3.4	2.6	27.3	29.1	17.3	17.1
22-Mar-07	3.5	3.3	26.7	29.5	8.7	9.4	3.3	4.5	29.5	27.9	9.4	9.4	4.5	3.7	27.9	30.0	9.4	10.1	3.7	4.5	30.0	28.2	10.1	9.4
29-Mar-07	4.3	5.1	28.0	26.8	10.7	11.6	5.1	4.7	26.8	25.3	11.6	12.2	4.7	4.3	25.3	26.3	12.2	11.2	4.3	4.8	26.3	24.1	11.2	12.0
5-Apr-07	5.6	4.8	22.0	28.5	10.9	10.8	4.8	5.1	28.5	21.7	10.8	11.5	5.1	4.3	21.7	26.7	11.5	12.3	4.3	4.9	26.7	22.9	12.3	11.7

Date	0800-1400						1400-2000						2000-0200						0200-0800					
	Start Temp	End Temp	Start Salinity	End Salinity	Start DO	End DO	Start Temp	End Temp	Start Salinity	End Salinity	Start DO	End DO	Start Temp	End Temp	Start Salinity	End Salinity	Start DO	End DO	Start Temp	End Temp	Start Salinity	End Salinity	Start DO	End DO
12-Apr-07	6.0	6.0	30.3	21.9	10.6	10.9	6.0	4.6	21.7	29.1	10.9	11.8	4.6	5.8	29.1	23.0	11.8	12.3	5.8	4.1	23.0	29.8	12.3	12.0
19-Apr-07	6.0	5.0	5.7	24.4	10.1	9.3	5.0	6.3	24.4	7.5	9.3	10.3	6.3	4.5	7.5	26.7	10.3	9.8	4.5	5.8	26.7	10.0	9.8	10.7
26-Apr-07	5.7	10.0	28.7	18.3	9.4	9.6	10.0	6.3	18.3	27.4	9.6	10.3	6.3	10.0	27.4	20.1	10.3	9.9	10.0	6.3	20.1	12.4	9.9	11.7
3-May-07	10.9	8.0	17.3	27.2	9.5	10.2	8.0	11.0	27.2	18.7	10.2	9.7	11.0	6.7	18.7	28.9	9.7	10.9	6.7	10.4	28.9	18.8	10.9	9.8
10-May-07	8.6	13.1	30.0	21.1	9.8	9.5	13.1	7.2	21.1	30.0	9.5	10.4	7.2	13.1	30.0	21.8	10.4	8.1	13.1	6.4	21.8	30.4	8.1	10.1
17-May-07	12.6	9.8	23.7	29.6	6.0	8.2	9.8	12.8	29.6	23.8	8.2	7.3	12.8	9.2	23.8	29.9	7.3	8.7	9.2	12.1	29.9	23.8	8.7	7.9
24-May-07	10.6	15.3	27.4	19.5	8.3	8.2	15.3		19.5		8.2			13.1		20.8		8.6	13.9	10.5	20.8	27.8	8.6	9.8
31-May-07	16.9	12.8	22.4	28.2	8.1	8.6	12.8	16.5	28.2	23.1	8.6	8.3	16.5	11.0	23.1	29.1	8.3	9.4	11.0	16.5	29.1	23.2	9.4	7.9
7-Jun-07	13.1	15.6	24.9	17.8	8.9	8.2	15.6	11.8	17.8	27.6	8.2	9.3	11.8	15.8	27.6	18.2	9.3	8.6	15.8	11.1	18.2	28.5	8.6	9.1
14-Jun-07	16.6	15.4	21.2	28.2	7.7	7.8	15.4	16.4	28.2	22.0	7.8	8.4	16.4	14.9	22.0	28.8	8.4	8.4	14.9	16.8	28.8	21.3	8.4	6.8
21-Jun-07	15.2	18.5	29.9	24.7	8.1	7.9	18.5	14.1	24.7	30.2	7.9	8.6	14.1	17.8	30.2	25.5	8.6	7.8	17.8	13.8	25.5	29.8	7.8	8.1
28-Jun-07	18.4	15.0	27.3	30.0	6.4	8.7	15.0	18.7	30.0	27.8	8.7	8.9	18.7	13.1	27.8	30.7	8.9	7.3	13.1	19.3	30.7	27.2	7.3	13.5
5-Jul-07	16.2	16.4	30.4	29.7	7.5	5.6	16.4	16.4	29.7	30.2	5.6	7.7	16.4	16.4	30.2	29.5	7.7	7.9	16.4	15.3	29.5	31.0	7.9	7.4
12-Jul-07	17.4	17.3	29.9	30.4	7.5	6.5	17.3	18.1	30.4	29.7	6.5	5.5	18.1	16.6	29.7	31.2	5.5	6.3	16.6	19.2	31.2	29.0	6.3	6.5
19-Jul-07	16.9	17.6	30.5	30.1	7.6	8.1	17.6	17.1	30.1	30.7	8.1	8.4	17.1	18.1	30.7	29.6	8.4	7.9	18.1	17.8	29.6	31.0	7.9	8.0
26-Jul-07	18.9	20.1	29.9	29.9			20.1	19.5	29.9	30.0			19.5	19.3	30.0	30.3			19.3	21.0	30.3	28.8		
2-Aug-07	20.0	17.9	28.2	29.1	7.3	8.0	17.9	20.4	29.1	28.4	8.0	8.1	20.4	18.0	28.4	29.3	8.1	8.3	18.0	20.5	29.3	28.5	8.3	7.3
9-Aug-07	16.8	19.0	29.0	28.5	7.2	7.0	19.0	16.5	28.5	29.2	7.0	8.2	16.5	17.3	29.2	29.2	8.2	7.2	17.3	18.0	29.2	28.6	7.2	7.2
16-Aug-07	18.3	16.0	29.1	29.2	7.2	8.4	16.0	17.5	29.2	29.1	8.4	7.2	17.5	16.1	29.1	29.1	7.2	8.5	16.1	18.0	29.1	28.3	8.5	7.3
23-Aug-07	18.3	17.9					17.9	17.6					17.6	18.5					18.5	18.0				
30-Aug-07																								
6-Sep-07																								
13-Sep-07	17.4	14.1	31.4	32.2	6.3	7.6	14.1	17.1	32.2	31.8	7.6	6.2	17.1	14.7	31.8	32.4	6.2	7.1	14.7	16.4	32.4	31.8	7.1	5.5
20-Sep-07	14.5	16.6	31.9	31.1	6.3	6.9	16.6	13.9	31.1	32.1	6.9	7.3	13.9	16.7	32.1	31.4	7.3	6.9	16.7	14.9	31.4	31.8	6.9	7.1
27-Sep-07	17.5	13.1	31.3	32.0	7.4	6.9	13.1	17.1	32.0	31.9	6.9	6.4	17.1	12.4	31.9	32.8	6.4	6.8	12.4	17.1	32.8	32.1	6.8	7.0

Note: A blank cell indicates parameter was not collected on that date.

Appendix Table C-2. Recorded volume and dominant type of debris collected during each 6-hour impingement sample at Unit 4, 5, and 6 of Schiller Station for the period 31 August 2006 through 27 September 2007. Note: n/a indicates that Unit was offline, blank cell indicates that parameter was not recorded.

Unit	Date	0800-1400		1400-2000		2000-0200		0200-0800	
		Debris(gal.)	Debris Type	Debris(gal.)	Debris Type	Debris(gal.)	Debris Type	Debris(gal.)	Debris Type
4	31-Aug-06	5	Aquatic veg.	3	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	7-Sep-06	7	Aquatic veg.	5	Aquatic veg.	12	Aquatic veg.	3	Aquatic veg.
	14-Sep-06			6	Aquatic veg.	7	Aquatic veg.	5	Aquatic veg.
	21-Sep-06	5	Aquatic veg.	3	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.
	28-Sep-06	5	Aquatic veg.	3	Aquatic veg.	4	Aquatic veg.	3	Aquatic veg.
	5-Oct-06	5	Aquatic veg.	3	Aquatic veg.	4	Aquatic veg.	7	Aquatic veg.
	12-Oct-06	10	Aquatic veg.	9	Terrestrial veg.	15	Terrestrial veg.	25	Terrestrial veg.
	19-Oct-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	26-Oct-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	2-Nov-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	9-Nov-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	16-Nov-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	21-Nov-06	5	Terrestrial veg.	5	Terrestrial veg.	4	Terrestrial veg.	4	Aquatic veg.
	30-Nov-06	2	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.
	7-Dec-06	5	Aquatic veg.	3	Terrestrial veg.	4	Terrestrial veg.		
	14-Dec-06	1	Aquatic veg.	2	Aquatic veg.	1	Aquatic veg.	2	Aquatic veg.
	21-Dec-06	2	Aquatic veg.	2	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.
	28-Dec-06	2	Aquatic veg.	5	Aquatic veg.	2	Terrestrial veg.		Aquatic veg.
	4-Jan-07	1	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.
	11-Jan-07	1	Aquatic veg.	1	Aquatic veg.	2	Aquatic veg.	1	Aquatic veg.
	18-Jan-07	2	Aquatic veg.	2	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.
	25-Jan-07	2	Aquatic veg.	1	Aquatic veg.	2.5	Aquatic veg.	1	Aquatic veg.
	1-Feb-07	1	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.
	8-Feb-07	2	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.
	15-Feb-07	2	Aquatic veg.	3	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.
	22-Feb-07	2	Aquatic veg.	1	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.
	1-Mar-07	2	Aquatic veg.	2	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.
	8-Mar-07	3	Aquatic veg.	2	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.
	15-Mar-07	3	Aquatic veg.	3	Aquatic veg.	1	Aquatic veg.	2	Aquatic veg.
	22-Mar-07	3	Aquatic veg.	1.5	Aquatic veg.	1	Aquatic veg.	2	Aquatic veg.
	29-Mar-07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	5-Apr-07	2	Aquatic veg.	3	Aquatic veg.	4	Aquatic veg.	3	Aquatic veg.
	12-Apr-07	3	Aquatic veg.	4	Aquatic veg.			3	Aquatic veg.
	19-Apr-07	10	Terrestrial veg.	5	Terrestrial veg.	8	Terrestrial veg.	8	Terrestrial veg.
	26-Apr-07	6	Aquatic veg.	4	Terrestrial veg.	3	Aquatic veg.	3	Terrestrial veg.
	3-May-07	4	Aquatic veg.	4	Aquatic veg.	2	Aquatic veg.	3	Aquatic veg.
	10-May-07	2	Aquatic veg.	5	Aquatic veg.	2	Aquatic veg.	4	Aquatic veg.
	17-May-07	6	Terrestrial veg.	5	Aquatic veg.	5	Aquatic veg.	3	Aquatic veg.
	24-May-07	3	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.

Unit	Date	0800-1400		1400-2000		2000-0200		0200-0800	
		Debris(gal.)	Debris Type	Debris(gal.)	Debris Type	Debris(gal.)	Debris Type	Debris(gal.)	Debris Type
	31-May-07	2	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.
	7-Jun-07	4	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.
	14-Jun-07	5	Aquatic veg.	2	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	21-Jun-07	3	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.	3	Aquatic veg.
	28-Jun-07	3	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	5-Jul-07	4	Aquatic veg.	7	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	12-Jul-07	3	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.
	19-Jul-07	12	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.	3	Aquatic veg.
	26-Jul-07	7	Aquatic veg.	4	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.
	2-Aug-07	6	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	9-Aug-07	4	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.
	16-Aug-07	5	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.
	23-Aug-07	3	Aquatic veg.	3	Aquatic veg.	4	Aquatic veg.	3	Aquatic veg.
	30-Aug-07	4	Aquatic veg.			4	Aquatic veg.	4	Aquatic veg.
	6-Sep-07	3	Aquatic veg.	5	Aquatic veg.	2	Aquatic veg.	6	Aquatic veg.
	13-Sep-07	4	Aquatic veg.	6	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	20-Sep-07	6	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	27-Sep-07	7	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
5	31-Aug-06	4	Aquatic veg.	n/a	n/a	n/a	n/a	n/a	n/a
	7-Sep-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	14-Sep-06	12	Aquatic veg.	15	Aquatic veg.	15	Aquatic veg.	7	Aquatic veg.
	21-Sep-06	9	Aquatic veg.	6	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.
	28-Sep-06	6	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.
	5-Oct-06	14	Aquatic veg.	5	Aquatic veg.	7	Aquatic veg.	5	Aquatic veg.
	12-Oct-06	29	Aquatic veg.	11	Terrestrial veg.	26	Terrestrial veg.	25	Terrestrial veg.
	19-Oct-06	23	Aquatic veg.	12	Aquatic veg.	15	Aquatic veg.	10	Aquatic veg.
	26-Oct-06	15	Terrestrial veg.	10	Terrestrial veg.	13	Terrestrial veg.	10	Terrestrial veg.
	2-Nov-06	13	Terrestrial veg.	10	Terrestrial veg.	11	Terrestrial veg.	10	Terrestrial veg.
	9-Nov-06	15	Terrestrial veg.	10	Terrestrial veg.	9	Terrestrial veg.	7	Terrestrial veg.
	16-Nov-06	15	Terrestrial veg.	10	Terrestrial veg.	11	Terrestrial veg.	7	Terrestrial veg.
	21-Nov-06	15	Terrestrial veg.	8	Terrestrial veg.	7	Terrestrial veg.	4	Terrestrial veg.
	30-Nov-06	4	Aquatic veg.	5	Aquatic veg.	3	Aquatic veg.	5	Aquatic veg.
	7-Dec-06	5	Aquatic veg.	4	Terrestrial veg.	5	Terrestrial veg.	3	Aquatic veg.
	14-Dec-06	3	Aquatic veg.	4	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.
	21-Dec-06	4	Aquatic veg.	3	Terrestrial veg.	3	Aquatic veg.	2	Aquatic veg.
	28-Dec-06	3	Aquatic veg.	4	Aquatic veg.	3	Terrestrial veg.		
	4-Jan-07	3	Aquatic veg.		Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.
	11-Jan-07	2	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.
	18-Jan-07	5	Aquatic veg.	3	Aquatic veg.	4	Aquatic veg.	2	Aquatic veg.
	25-Jan-07	3	Aquatic veg.	1	Aquatic veg.	3	Aquatic veg.	4	Aquatic veg.
	1-Feb-07	2	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.
	8-Feb-07	3	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.	2	Aquatic veg.
	15-Feb-07	3	Aquatic veg.	2	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.
	22-Feb-07	3	Aquatic veg.	1	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.

Unit	Date	0800-1400		1400-2000		2000-0200		0200-0800	
		Debris(gal.)	Debris Type	Debris(gal.)	Debris Type	Debris(gal.)	Debris Type	Debris(gal.)	Debris Type
	1-Mar-07	2	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.	3	Aquatic veg.
	8-Mar-07	6	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.	5	Aquatic veg.
	15-Mar-07	5	Aquatic veg.	6	Aquatic veg.	4	Aquatic veg.	5	Aquatic veg.
	22-Mar-07	8	Aquatic veg.	3.5	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.
	29-Mar-07	5	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.	5	Terrestrial veg.
	5-Apr-07	5	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.
	12-Apr-07	5	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.	3	Aquatic veg.
	19-Apr-07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	26-Apr-07	8	Aquatic veg.	9	Aquatic veg.	5	Terrestrial veg.	5	Aquatic veg.
	3-May-07	5	Aquatic veg.	6	Aquatic veg.	6	Aquatic veg.	5	Aquatic veg.
	10-May-07	3	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.	2	Aquatic veg.
	17-May-07	18	Aquatic veg.	10	Aquatic veg.	10	Aquatic veg.	8	Aquatic veg.
	24-May-07	3	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	31-May-07	7	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.	2	Aquatic veg.
	7-Jun-07	4	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	14-Jun-07	10	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.	9	Aquatic veg.
	21-Jun-07	4	Aquatic veg.	5	Aquatic veg.	3	Aquatic veg.	5	Aquatic veg.
	28-Jun-07	5	Aquatic veg.	4	Aquatic veg.	3	Aquatic veg.	5	Aquatic veg.
	5-Jul-07	5	Aquatic veg.	6	Aquatic veg.	6	Aquatic veg.	4	Aquatic veg.
	12-Jul-07	10	Aquatic veg.	5	Aquatic veg.	6	Aquatic veg.	7	Aquatic veg.
	19-Jul-07	8	Aquatic veg.	8	Aquatic veg.	7	Aquatic veg.	7	Aquatic veg.
	26-Jul-07	10	Aquatic veg.	8	Aquatic veg.	6	Aquatic veg.	5	Aquatic veg.
	2-Aug-07	9	Aquatic veg.	9	Aquatic veg.	9	Aquatic veg.	4	Aquatic veg.
	9-Aug-07	13	Aquatic veg.	10	Aquatic veg.	6	Aquatic veg.	5	Aquatic veg.
	16-Aug-07	8	Aquatic veg.	10	Aquatic veg.	5	Aquatic veg.	10	Aquatic veg.
	23-Aug-07	12	Aquatic veg.	8	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	30-Aug-07	2	Aquatic veg.	7	Aquatic veg.	10	Aquatic veg.	9	Aquatic veg.
	6-Sep-07	3	Aquatic veg.	3	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.
	13-Sep-07	5	Aquatic veg.	5	Aquatic veg.	7	Aquatic veg.	5	Aquatic veg.
	20-Sep-07	9	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.	6	Aquatic veg.
27-Sep-07	5	Aquatic veg.	16	Aquatic veg.	12	Aquatic veg.	9	Aquatic veg.	
6	31-Aug-06	6	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	7-Sep-06	15	Aquatic veg.	4	Aquatic veg.	7	Aquatic veg.	10	Aquatic veg.
	14-Sep-06	10	Aquatic veg.	6	Aquatic veg.	5	Aquatic veg.	8	Aquatic veg.
	21-Sep-06	5	Aquatic veg.	8	Aquatic veg.	6	Aquatic veg.	5	Aquatic veg.
	28-Sep-06	7	Aquatic veg.	3	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	5-Oct-06	8	Aquatic veg.	5	Aquatic veg.	6	Aquatic veg.	7	Aquatic veg.
	12-Oct-06	22	Aquatic veg.	12	Terrestrial veg.	10	Terrestrial veg.	20	Terrestrial veg.
	19-Oct-06	14	Aquatic veg.	20	Aquatic veg.	10	Aquatic veg.	10	Aquatic veg.
	26-Oct-06	14	Terrestrial veg.	14	Terrestrial veg.	10	Terrestrial veg.	10	Terrestrial veg.
	2-Nov-06	25	Terrestrial veg.	16	Terrestrial veg.	10	Terrestrial veg.	25	Terrestrial veg.
	9-Nov-06	15	Terrestrial veg.	11	Terrestrial veg.	10	Terrestrial veg.	8	Terrestrial veg.
	16-Nov-06	14	Terrestrial veg.	10	Terrestrial veg.	10	Terrestrial veg.	9	Terrestrial veg.
	21-Nov-06	7	Terrestrial veg.	10	Terrestrial veg.	6	Terrestrial veg.	5	Terrestrial veg.

Unit	Date	0800-1400		1400-2000		2000-0200		0200-0800	
		Debris(gal.)	Debris Type	Debris(gal.)	Debris Type	Debris(gal.)	Debris Type	Debris(gal.)	Debris Type
	30-Nov-06	4	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.
	7-Dec-06	4	Aquatic veg.	3	Terrestrial veg.	4	Terrestrial veg.	3	Aquatic veg.
	14-Dec-06	3	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.	3	Aquatic veg.
	21-Dec-06	2	Aquatic veg.	1	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.
	28-Dec-06	2	Aquatic veg.	3	Aquatic veg.	3	Terrestrial veg.		Aquatic veg.
	4-Jan-07	3	Aquatic veg.	2	Aquatic veg.	4	Aquatic veg.	2	Aquatic veg.
	11-Jan-07	1	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.
	18-Jan-07	2	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.	4	Aquatic veg.
	25-Jan-07	2	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.
	1-Feb-07	1	Aquatic veg.	2	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.
	8-Feb-07	2	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.	1	Aquatic veg.
	15-Feb-07	2	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.
	22-Feb-07	2	Aquatic veg.	1	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.
	1-Mar-07	1	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.
	8-Mar-07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	15-Mar-07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	22-Mar-07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	29-Mar-07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	5-Apr-07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	12-Apr-07	2	Aquatic veg.	3	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.
	19-Apr-07	12	Terrestrial veg.	6	Terrestrial veg.	10	Terrestrial veg.	11	Terrestrial veg.
	26-Apr-07	5	Aquatic veg.	7	Aquatic veg.	3	Aquatic veg.	5	Terrestrial veg.
	3-May-07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	10-May-07	3	Aquatic veg.	3	Aquatic veg.	2	Aquatic veg.	1	Aquatic veg.
	17-May-07	10	Aquatic veg.	9	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.
	24-May-07	3.5	Aquatic veg.	2	Aquatic veg.	2	Aquatic veg.	4	Aquatic veg.
	31-May-07	5	Aquatic veg.	4	Aquatic veg.	4	Aquatic veg.	2	Aquatic veg.
	7-Jun-07	2	Aquatic veg.	1	Aquatic veg.	2	Aquatic veg.	1	Aquatic veg.
	14-Jun-07	4	Aquatic veg.	3	Aquatic veg.	4	Aquatic veg.	5	Aquatic veg.
	21-Jun-07	4	Aquatic veg.	2	Aquatic veg.	4	Aquatic veg.	3	Aquatic veg.
	28-Jun-07	8	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.	5	Aquatic veg.
	5-Jul-07	4	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.
	12-Jul-07	5	Aquatic veg.	2	Aquatic veg.	3	Aquatic veg.	4	Aquatic veg.
	19-Jul-07	6	Aquatic veg.	4	Aquatic veg.	6	Aquatic veg.	6	Aquatic veg.
	26-Jul-07	6	Aquatic veg.	9	Aquatic veg.	4	Aquatic veg.	2	Aquatic veg.
	2-Aug-07	5	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.
	9-Aug-07	10	Aquatic veg.	10	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.
	16-Aug-07	5	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.	7	Aquatic veg.
	23-Aug-07	3	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.	5	Aquatic veg.
	30-Aug-07	4	Aquatic veg.	8	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.
	6-Sep-07	2	Aquatic veg.	4	Aquatic veg.	3	Aquatic veg.	3	Aquatic veg.
	13-Sep-07	7	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.	4	Aquatic veg.
	20-Sep-07	6	Aquatic veg.	10	Aquatic veg.	5	Aquatic veg.	5	Aquatic veg.
	27-Sep-07	5	Aquatic veg.	5	Aquatic veg.	6	Aquatic veg.	4	Aquatic veg.

Appendix Table C-3. Weekly fish count, sample flow (million gallons), impingement rate, operating flow (million gallons/week), impingement abundance estimate, collection efficiency coefficient, and adjusted impingement abundance corrected for collection efficiency at Units 4, 5, 6 of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance	Collection Efficiency Coefficient	Adjusted Impingement Abundance
4	2006	40	1-Oct-06	Cunner	1	40.7	0.02458	285.6	7	0.92	8
4	2006	40	1-Oct-06	Striped bass	2	40.7	0.04916	285.6	14	0.92	15
4	2006	40	1-Oct-06	Winter flounder	2	40.7	0.04916	285.6	14	0.92	15
4	2006	41	8-Oct-06	Lumpfish	1	40.2	0.02486	285.6	7	0.92	8
4	2006	41	8-Oct-06	Northern pipefish	3	40.2	0.07457	285.6	21	0.92	23
4	2006	41	8-Oct-06	Rock gunnel	1	40.2	0.02486	285.6	7	0.92	8
4	2006	42	15-Oct-06	Lumpfish	0		0.00994	40.8	0	0.92	0
4	2006	42	15-Oct-06	Northern pipefish	0		0.02983	40.8	1	0.92	1
4	2006	42	15-Oct-06	Rock gunnel	0		0.00994	40.8	0	0.92	0
4	2006	43	22-Oct-06	Lumpfish	0		0.00746	0	0	0.92	0
4	2006	43	22-Oct-06	Northern pipefish	0		0.02237	0	0	0.92	0
4	2006	43	22-Oct-06	Rock gunnel	0		0.00746	0	0	0.92	0
4	2006	44	29-Oct-06	Lumpfish	0		0.00497	0	0	0.92	0
4	2006	44	29-Oct-06	Northern pipefish	0		0.01491	0	0	0.92	0
4	2006	44	29-Oct-06	Rock gunnel	0		0.00497	0	0	0.92	0
4	2006	45	5-Nov-06	Lumpfish	0		0.00249	0	0	0.92	0
4	2006	45	5-Nov-06	Northern pipefish	0		0.00746	0	0	0.92	0
4	2006	45	5-Nov-06	Rock gunnel	0		0.00249	0	0	0.92	0
4	2006	46	12-Nov-06	No Catch	0	9.8	0	79.9	0	0.92	0
4	2006	47	19-Nov-06	American sand lance	1	40.9	0.02442	285.6	7	0.92	8
4	2006	47	19-Nov-06	Atlantic cod	1	40.9	0.02442	285.6	7	0.92	8
4	2006	47	19-Nov-06	Atlantic menhaden	5	40.9	0.12212	285.6	35	0.92	38
4	2006	47	19-Nov-06	Atlantic silverside	4	40.9	0.0977	285.6	28	0.92	30
4	2006	47	19-Nov-06	Bluegill	1	40.9	0.02442	285.6	7	0.92	8
4	2006	47	19-Nov-06	Grubby	6	40.9	0.14655	285.6	42	0.92	45
4	2006	47	19-Nov-06	Inland silverside	2	40.9	0.04885	285.6	14	0.92	15
4	2006	47	19-Nov-06	Northern pipefish	1	40.9	0.02442	285.6	7	0.92	8
4	2006	47	19-Nov-06	Rainbow smelt	16	40.9	0.3908	285.6	112	0.92	121
4	2006	47	19-Nov-06	Sea raven	1	40.9	0.02442	285.6	7	0.92	8
4	2006	47	19-Nov-06	Silver hake	1	40.9	0.02442	285.6	7	0.92	8
4	2006	47	19-Nov-06	Tautog	1	40.9	0.02442	285.6	7	0.92	8
4	2006	47	19-Nov-06	White hake	4	40.9	0.0977	285.6	28	0.92	30
4	2006	47	19-Nov-06	White perch	2	40.9	0.04885	285.6	14	0.92	15
4	2006	47	19-Nov-06	Windowpane	1	40.9	0.02442	285.6	7	0.92	8
4	2006	48	26-Nov-06	Atlantic menhaden	2	40.7	0.04919	285.6	14	0.92	15

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance	Collection Efficiency Coefficient	Adjusted Impingement Abundance
4	2006	48	26-Nov-06	Cunner	1	40.7	0.0246	285.6	7	0.92	8
4	2006	48	26-Nov-06	Grubby	2	40.7	0.04919	285.6	14	0.92	15
4	2006	48	26-Nov-06	Rainbow smelt	1	40.7	0.0246	285.6	7	0.92	8
4	2006	49	3-Dec-06	Atlantic menhaden	15	41.1	0.36511	285.6	104	0.92	113
4	2006	49	3-Dec-06	Atlantic silverside	2	41.1	0.04868	285.6	14	0.92	15
4	2006	49	3-Dec-06	Atlantic tomcod	1	41.1	0.02434	285.6	7	0.92	8
4	2006	49	3-Dec-06	Grubby	8	41.1	0.19473	285.6	56	0.92	60
4	2006	49	3-Dec-06	Herring family	1	41.1	0.02434	285.6	7	0.92	8
4	2006	49	3-Dec-06	Rainbow smelt	28	41.1	0.68154	285.6	195	0.92	212
4	2006	49	3-Dec-06	White hake	3	41.1	0.07302	285.6	21	0.92	23
4	2006	50	10-Dec-06	No Catch	0	40.9	0	285.6	0	0.92	0
4	2006	51	17-Dec-06	Grubby	1	40.6	0.02461	285.6	7	0.86	8
4	2006	52	24-Dec-06	Grubby	2	40.7	0.04909	285.6	14	0.86	16
4	2006	52	24-Dec-06	White perch	1	40.7	0.02454	285.6	7	0.86	8
4	2007	1	31-Dec-06	Cunner	1	40.9	0.02442	285.6	7	0.86	8
4	2007	1	31-Dec-06	Grubby	2	40.9	0.04885	285.6	14	0.86	16
4	2007	1	31-Dec-06	Rainbow smelt	6	40.9	0.14655	285.6	42	0.86	49
4	2007	1	31-Dec-06	Threespine stickleback	1	40.9	0.02442	285.6	7	0.86	8
4	2007	1	31-Dec-06	Winter flounder	1	40.9	0.02442	285.6	7	0.86	8
4	2007	2	7-Jan-07	Grubby	1	41	0.02437	285.6	7	0.88	8
4	2007	3	14-Jan-07	Atlantic menhaden	3	41.5	0.07227	285.6	21	0.88	23
4	2007	3	14-Jan-07	Grubby	3	41.5	0.07227	285.6	21	0.88	23
4	2007	3	14-Jan-07	Northern pipefish	1	41.5	0.02409	285.6	7	0.88	8
4	2007	3	14-Jan-07	White hake	5	41.5	0.12046	285.6	34	0.88	39
4	2007	3	14-Jan-07	White perch	2	41.5	0.04818	285.6	14	0.88	16
4	2007	3	14-Jan-07	Winter flounder	2	41.5	0.04818	285.6	14	0.88	16
4	2007	4	21-Jan-07	Atlantic menhaden	4	40.5	0.09872	285.6	28	0.88	32
4	2007	4	21-Jan-07	Rainbow smelt	2	40.5	0.04936	285.6	14	0.88	16
4	2007	4	21-Jan-07	Red hake	1	40.5	0.02468	285.6	7	0.88	8
4	2007	5	28-Jan-07	Atlantic menhaden	1	41	0.02439	285.6	7	0.88	8
4	2007	5	28-Jan-07	Grubby	3	41	0.07317	285.6	21	0.88	24
4	2007	5	28-Jan-07	Rainbow smelt	2	41	0.04878	285.6	14	0.88	16
4	2007	5	28-Jan-07	White hake	1	41	0.02439	285.6	7	0.88	8
4	2007	5	28-Jan-07	Winter flounder	1	41	0.02439	285.6	7	0.88	8
4	2007	6	4-Feb-07	White hake	2	41.2	0.04851	285.6	14	0.91	15
4	2007	7	11-Feb-07	Grubby	2	40.4	0.04954	285.6	14	0.91	16
4	2007	7	11-Feb-07	White hake	1	40.4	0.02477	285.6	7	0.91	8
4	2007	7	11-Feb-07	Windowpane	2	40.4	0.04954	285.6	14	0.91	16
4	2007	7	11-Feb-07	Winter flounder	7	40.4	0.17337	285.6	50	0.91	54
4	2007	8	18-Feb-07	Grubby	1	40.2	0.02489	285.6	7	0.91	8
4	2007	9	25-Feb-07	Grubby	1	40.1	0.02494	285.6	7	0.91	8

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance	Collection Efficiency Coefficient	Adjusted Impingement Abundance
4	2007	10	4-Mar-07	Rainbow smelt	2	41.7	0.04795	285.6	14	0.93	15
4	2007	11	11-Mar-07	Northern pipefish	1	40.7	0.02456	285.6	7	0.93	8
4	2007	11	11-Mar-07	Winter flounder	1	40.7	0.02456	285.6	7	0.93	8
4	2007	12	18-Mar-07	Atlantic herring	1	40.5	0.02466	285.6	7	0.93	8
4	2007	12	18-Mar-07	Cunner	1	40.5	0.02466	285.6	7	0.93	8
4	2007	12	18-Mar-07	Threespine stickleback	1	40.5	0.02466	285.6	7	0.93	8
4	2007	12	18-Mar-07	White hake	1	40.5	0.02466	285.6	7	0.93	8
4	2007	13	25-Mar-07	Atlantic herring	0		0.01233	202.3	2	0.93	3
4	2007	13	25-Mar-07	Cunner	0		0.01233	202.3	2	0.93	3
4	2007	13	25-Mar-07	Lumpfish	0		0.01221	202.3	2	0.93	3
4	2007	13	25-Mar-07	Northern pipefish	0		0.01221	202.3	2	0.93	3
4	2007	13	25-Mar-07	Rainbow smelt	0		0.01221	202.3	2	0.93	3
4	2007	13	25-Mar-07	Threespine stickleback	0		0.01233	202.3	2	0.93	3
4	2007	13	25-Mar-07	White hake	0		0.01233	202.3	2	0.93	3
4	2007	14	1-Apr-07	Lumpfish	1	40.9	0.02442	285.6	7	0.93	8
4	2007	14	1-Apr-07	Northern pipefish	1	40.9	0.02442	285.6	7	0.93	8
4	2007	14	1-Apr-07	Rainbow smelt	1	40.9	0.02442	285.6	7	0.93	8
4	2007	15	8-Apr-07	Lumpfish	2	41.4	0.04835	285.6	14	0.93	15
4	2007	15	8-Apr-07	Northern pipefish	1	41.4	0.02417	285.6	7	0.93	7
4	2007	15	8-Apr-07	White perch	3	41.4	0.07252	285.6	21	0.93	22
4	2007	16	15-Apr-07	Alewife	3	40.2	0.07457	285.6	21	0.93	23
4	2007	16	15-Apr-07	Atlantic herring	24	40.2	0.59652	285.6	170	0.93	183
4	2007	16	15-Apr-07	Atlantic silverside	9	40.2	0.2237	285.6	64	0.93	69
4	2007	16	15-Apr-07	Blueback herring	7	40.2	0.17399	285.6	50	0.93	53
4	2007	16	15-Apr-07	Bluegill	1	40.2	0.02486	285.6	7	0.93	8
4	2007	16	15-Apr-07	Cunner	10	40.2	0.24855	285.6	71	0.93	76
4	2007	16	15-Apr-07	Grubby	4	40.2	0.09942	285.6	28	0.93	31
4	2007	16	15-Apr-07	Lumpfish	13	40.2	0.32312	285.6	92	0.93	99
4	2007	16	15-Apr-07	Northern pipefish	8	40.2	0.19884	285.6	57	0.93	61
4	2007	16	15-Apr-07	Pollock	1	40.2	0.02486	285.6	7	0.93	8
4	2007	16	15-Apr-07	Pumpkinseed	1	40.2	0.02486	285.6	7	0.93	8
4	2007	16	15-Apr-07	Threespine stickleback	3	40.2	0.07457	285.6	21	0.93	23
4	2007	16	15-Apr-07	White hake	57	40.2	1.41674	285.6	405	0.93	435
4	2007	16	15-Apr-07	White perch	2	40.2	0.04971	285.6	14	0.93	15
4	2007	16	15-Apr-07	Windowpane	6	40.2	0.14913	285.6	43	0.93	46
4	2007	16	15-Apr-07	Winter flounder	11	40.2	0.27341	285.6	78	0.93	84
4	2007	17	22-Apr-07	Atlantic herring	2	40.4	0.04954	285.6	14	0.93	15
4	2007	17	22-Apr-07	Bluegill	1	40.4	0.02477	285.6	7	0.93	8
4	2007	17	22-Apr-07	Cunner	2	40.4	0.04954	285.6	14	0.93	15
4	2007	17	22-Apr-07	Grubby	2	40.4	0.04954	285.6	14	0.93	15
4	2007	17	22-Apr-07	Lumpfish	3	40.4	0.0743	285.6	21	0.93	23

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance	Collection Efficiency Coefficient	Adjusted Impingement Abundance
4	2007	17	22-Apr-07	Northern pipefish	2	40.4	0.04954	285.6	14	0.93	15
4	2007	17	22-Apr-07	White perch	4	40.4	0.09907	285.6	28	0.93	30
4	2007	18	29-Apr-07	Lumpfish	2	39.9	0.05013	285.6	14	0.93	15
4	2007	18	29-Apr-07	Rainbow smelt	1	39.9	0.02507	285.6	7	0.93	8
4	2007	18	29-Apr-07	White hake	1	39.9	0.02507	285.6	7	0.93	8
4	2007	18	29-Apr-07	White perch	1	39.9	0.02507	285.6	7	0.93	8
4	2007	18	29-Apr-07	Winter flounder	1	39.9	0.02507	285.6	7	0.93	8
4	2007	19	6-May-07	Lumpfish	2	40.9	0.04885	285.6	14	0.96	15
4	2007	19	6-May-07	Winter flounder	1	40.9	0.02442	285.6	7	0.96	7
4	2007	20	13-May-07	Lumpfish	2	40.5	0.04943	285.6	14	0.96	15
4	2007	20	13-May-07	White perch	2	40.5	0.04943	285.6	14	0.96	15
4	2007	21	20-May-07	No Catch	0	40.8	0	285.6	0	0.96	0
4	2007	22	27-May-07	Rainbow smelt	1	40.3	0.0248	285.6	7	0.96	7
4	2007	22	27-May-07	Sea raven	1	40.3	0.0248	285.6	7	0.96	7
4	2007	23	3-Jun-07	Atlantic herring	1	41.2	0.02429	285.6	7	0.93	7
4	2007	23	3-Jun-07	Atlantic tomcod	1	41.2	0.02429	285.6	7	0.93	7
4	2007	23	3-Jun-07	Pollock	1	41.2	0.02429	285.6	7	0.93	7
4	2007	23	3-Jun-07	Shorthorn sculpin	1	41.2	0.02429	285.6	7	0.93	7
4	2007	23	3-Jun-07	White perch	2	41.2	0.04858	285.6	14	0.93	15
4	2007	24	10-Jun-07	No Catch	0	40.9	0	285.6	0	0.93	0
4	2007	25	17-Jun-07	Cunner	4	42	0.09533	285.6	27	0.93	29
4	2007	25	17-Jun-07	Grubby	2	42	0.04766	285.6	14	0.93	15
4	2007	25	17-Jun-07	Pollock	1	42	0.02383	285.6	7	0.93	7
4	2007	26	24-Jun-07	Atlantic tomcod	2	40.7	0.04919	285.6	14	0.93	15
4	2007	26	24-Jun-07	Cunner	8	40.7	0.19676	285.6	56	0.93	60
4	2007	26	24-Jun-07	White hake	2	40.7	0.04919	285.6	14	0.93	15
4	2007	26	24-Jun-07	Winter flounder	2	40.7	0.04919	285.6	14	0.93	15
4	2007	27	1-Jul-07	No Catch	0	41.1	0	285.6	0	0.93	0
4	2007	28	8-Jul-07	No Catch	0	40.9	0	285.6	0	0.85	0
4	2007	29	15-Jul-07	Atlantic tomcod	1	40.8	0.02451	285.6	7	0.85	8
4	2007	29	15-Jul-07	White hake	1	40.8	0.02451	285.6	7	0.85	8
4	2007	29	15-Jul-07	Winter flounder	1	40.8	0.02451	285.6	7	0.85	8
4	2007	30	22-Jul-07	Cunner	2	40.7	0.04916	285.6	14	0.85	17
4	2007	31	29-Jul-07	Cunner	1	40.5	0.02468	285.6	7	0.85	8
4	2007	32	5-Aug-07	Winter flounder	1	41.1	0.02434	285.6	7	0.85	8
4	2007	33	12-Aug-07	No Catch	0	39.8	0	285.6	0	0.85	0
4	2007	34	19-Aug-07	Winter flounder	1	40.7	0.0246	285.6	7	0.85	8
4	2007	35	26-Aug-07	Cunner	1	40.4	0.02477	285.6	7	0.85	8
4	2007	36	2-Sep-07	Grubby	1	40.5	0.02468	285.6	7	0.96	7
4	2007	37	9-Sep-07	Atlantic menhaden	2	40.8	0.04902	285.6	14	0.96	15
4	2007	37	9-Sep-07	Cunner	1	40.8	0.02451	285.6	7	0.96	7

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance	Collection Efficiency Coefficient	Adjusted Impingement Abundance
4	2007	38	16-Sep-07	Atlantic tomcod	1	39.4	0.02539	285.6	7	0.96	8
4	2007	38	16-Sep-07	Cunner	1	39.4	0.02539	285.6	7	0.96	8
4	2007	38	16-Sep-07	Winter flounder	2	39.4	0.05078	285.6	15	0.96	15
4	2007	39	23-Sep-07	No Catch	0	40.7	0	285.6	0	0.96	0
5	2006	40	1-Oct-06	No Catch	0	42	0	292.6	0	0.51	0
5	2006	41	8-Oct-06	No Catch	0	41.7	0	292.6	0	0.51	0
5	2006	42	15-Oct-06	White hake	1	42.1	0.02376	292.6	7	0.51	14
5	2006	43	22-Oct-06	No Catch	0	41.5	0	292.6	0	0.51	0
5	2006	44	29-Oct-06	Cunner	2	43.4	0.04609	292.6	13	0.51	26
5	2006	44	29-Oct-06	Northern pipefish	4	43.4	0.09217	292.6	27	0.51	53
5	2006	44	29-Oct-06	Rainbow smelt	1	43.4	0.02304	292.6	7	0.51	13
5	2006	45	5-Nov-06	No Catch	0	41.7	0	292.6	0	0.51	0
5	2006	46	12-Nov-06	Atlantic menhaden	1	42.8	0.02336	292.6	7	0.75	9
5	2006	46	12-Nov-06	Rainbow smelt	1	42.8	0.02336	292.6	7	0.75	9
5	2006	47	19-Nov-06	Atlantic cod	1	41.7	0.02401	292.6	7	0.75	9
5	2006	47	19-Nov-06	Atlantic menhaden	1	41.7	0.02401	292.6	7	0.75	9
5	2006	47	19-Nov-06	Grubby	1	41.7	0.02401	292.6	7	0.75	9
5	2006	47	19-Nov-06	Lumpfish	1	41.7	0.02401	292.6	7	0.75	9
5	2006	47	19-Nov-06	Rainbow smelt	4	41.7	0.09603	292.6	28	0.75	37
5	2006	47	19-Nov-06	Winter flounder	1	41.7	0.02401	292.6	7	0.75	9
5	2006	48	26-Nov-06	No Catch	0	41.7	0	292.6	0	0.75	0
5	2006	49	3-Dec-06	Grubby	1	42.1	0.02376	292.6	7	0.75	9
5	2006	49	3-Dec-06	Rainbow smelt	1	42.1	0.02376	292.6	7	0.75	9
5	2006	50	10-Dec-06	No Catch	0	41.9	0	292.6	0	0.75	0
5	2006	51	17-Dec-06	No Catch	0	41.4	0	292.6	0	0.91	0
5	2006	52	24-Dec-06	Grubby	1	41.7	0.02396	292.6	7	0.91	8
5	2006	52	24-Dec-06	Winter flounder	1	41.7	0.02396	292.6	7	0.91	8
5	2007	1	31-Dec-06	No Catch	0	42	0	292.6	0	0.91	0
5	2007	2	7-Jan-07	Winter flounder	1	41.9	0.02384	292.6	7	0.84	8
5	2007	3	14-Jan-07	Atlantic menhaden	3	42.2	0.07103	292.6	21	0.84	25
5	2007	3	14-Jan-07	Grubby	1	42.2	0.02368	292.6	7	0.84	8
5	2007	3	14-Jan-07	Rainbow smelt	1	42.2	0.02368	292.6	7	0.84	8
5	2007	4	21-Jan-07	White perch	2	40.9	0.04886	292.6	14	0.84	17
5	2007	5	28-Jan-07	Grubby	2	42	0.04762	292.6	14	0.84	17
5	2007	5	28-Jan-07	Winter flounder	1	42	0.02381	292.6	7	0.84	8
5	2007	6	4-Feb-07	Winter flounder	1	41.7	0.02401	292.6	7	0.87	8
5	2007	7	11-Feb-07	Winter flounder	1	40.9	0.02443	292.6	7	0.87	8
5	2007	8	18-Feb-07	Threespine stickleback	1	40.6	0.02464	292.6	7	0.87	8
5	2007	9	25-Feb-07	Grubby	1	41.4	0.02418	292.6	7	0.87	8
5	2007	10	4-Mar-07	Winter flounder	1	43.3	0.02309	292.6	7	0.49	14
5	2007	11	11-Mar-07	No Catch	0	41.6	0	292.6	0	0.49	0

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance	Collection Efficiency Coefficient	Adjusted Impingement Abundance
5	2007	12	18-Mar-07	Grubby	1	41.4	0.02416	292.6	7	0.49	14
5	2007	12	18-Mar-07	White perch	1	41.4	0.02416	292.6	7	0.49	14
5	2007	12	18-Mar-07	Winter flounder	2	41.4	0.04832	292.6	14	0.49	29
5	2007	13	25-Mar-07	No Catch	0	41.4	0	292.6	0	0.49	0
5	2007	14	1-Apr-07	Atlantic herring	1	41.7	0.02396	292.6	7	0.49	14
5	2007	14	1-Apr-07	Grubby	1	41.7	0.02396	292.6	7	0.49	14
5	2007	14	1-Apr-07	Lumpfish	1	41.7	0.02396	292.6	7	0.49	14
5	2007	15	8-Apr-07	Northern pipefish	1	42.1	0.02376	292.6	7	0.25	28
5	2007	16	15-Apr-07	Emerald shiner	0		0.01213	61	1	0.25	3
5	2007	16	15-Apr-07	Northern pipefish	0		0.01188	61	1	0.25	3
5	2007	17	22-Apr-07	Emerald shiner	1	41.2	0.02426	292.6	7	0.25	28
5	2007	18	29-Apr-07	Lumpfish	2	41.7	0.04791	292.6	14	0.25	56
5	2007	19	6-May-07	Grubby	1	42.2	0.02368	292.6	7	0.43	16
5	2007	20	13-May-07	Rock gunnel	1	41.5	0.02412	292.6	7	0.43	16
5	2007	21	20-May-07	Lumpfish	1	42.1	0.02376	292.6	7	0.43	16
5	2007	22	27-May-07	No Catch	0	41.5	0	292.6	0	0.43	0
5	2007	23	3-Jun-07	No Catch	0	42.1	0	292.6	0	0.2	0
5	2007	24	10-Jun-07	White hake	1	41.7	0.02396	292.6	7	0.2	35
5	2007	25	17-Jun-07	Cunner	1	43	0.02326	292.6	7	0.2	34
5	2007	26	24-Jun-07	No Catch	0	30.8	0	292.6	0	0.2	0
5	2007	27	1-Jul-07	Cunner	1	41.8	0.02392	292.6	7	0.2	35
5	2007	28	8-Jul-07	No Catch	0	41.7	0	292.6	0	0.9	0
5	2007	29	15-Jul-07	Cunner	2	41.8	0.04785	292.6	14	0.9	16
5	2007	30	22-Jul-07	Cunner	1	41.7	0.02399	292.6	7	0.9	8
5	2007	31	29-Jul-07	Cunner	1	41.5	0.02409	292.6	7	0.9	8
5	2007	31	29-Jul-07	Striped bass	1	41.5	0.02409	292.6	7	0.9	8
5	2007	32	5-Aug-07	Cunner	2	41.8	0.04785	292.6	14	0.1	140
5	2007	32	5-Aug-07	Winter flounder	1	41.8	0.02392	292.6	7	0.1	70
5	2007	33	12-Aug-07	No Catch	0	40.6	0	292.6	0	0.1	0
5	2007	34	19-Aug-07	No Catch	0	41.2	0	292.6	0	0.1	0
5	2007	35	26-Aug-07	No Catch	0	40.8	0	292.6	0	0.1	0
5	2007	36	2-Sep-07	No Catch	0		0	174.2	0	0.06	0
5	2007	37	9-Sep-07	No Catch	0	41.5	0	292.6	0	0.06	0
5	2007	38	16-Sep-07	No Catch	0	40.1	0	292.6	0	0.06	0
5	2007	39	23-Sep-07	Northern pipefish	1	41.7	0.02401	292.6	7	0.06	117
6	2006	40	1-Oct-06	Northern pipefish	1	41.4	0.02416	292.6	7	0.8	9
6	2006	41	8-Oct-06	Cunner	2	41.7	0.04791	292.6	14	0.8	18
6	2006	41	8-Oct-06	Northern pipefish	3	41.7	0.07187	292.6	21	0.8	26
6	2006	42	15-Oct-06	No Catch	0	42.2	0	292.6	0	0.8	0
6	2006	43	22-Oct-06	Northern pipefish	3	42.1	0.07128	292.6	21	0.8	26
6	2006	44	29-Oct-06	Northern pipefish	2	43.1	0.0464	292.6	14	0.8	17

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance	Collection Efficiency Coefficient	Adjusted Impingement Abundance
6	2006	44	29-Oct-06	Winter flounder	1	43.1	0.0232	292.6	7	0.8	8
6	2006	45	5-Nov-06	No Catch	0	41.6	0	292.6	0	0.8	0
6	2006	46	12-Nov-06	Atlantic cod	1	42.3	0.02363	292.6	7	0.37	19
6	2006	46	12-Nov-06	Bluegill	2	42.3	0.04726	292.6	14	0.37	37
6	2006	46	12-Nov-06	Rainbow smelt	1	42.3	0.02363	292.6	7	0.37	19
6	2006	47	19-Nov-06	Northern pipefish	1	42.2	0.02368	292.6	7	0.37	19
6	2006	47	19-Nov-06	White hake	1	42.2	0.02368	292.6	7	0.37	19
6	2006	47	19-Nov-06	Winter flounder	1	42.2	0.02368	292.6	7	0.37	19
6	2006	48	26-Nov-06	Atlantic menhaden	1	41.7	0.02401	292.6	7	0.37	19
6	2006	48	26-Nov-06	Lumpfish	1	41.7	0.02401	292.6	7	0.37	19
6	2006	49	3-Dec-06	Grubby	1	42.1	0.02376	292.6	7	0.37	19
6	2006	50	10-Dec-06	No Catch	0	41.8	0	292.6	0	0.37	0
6	2006	51	17-Dec-06	No Catch	0	41.5	0	292.6	0	0.44	0
6	2006	52	24-Dec-06	No Catch	0	41.8	0	292.6	0	0.44	0
6	2007	1	31-Dec-06	Rainbow smelt	1	41.9	0.02384	292.6	7	0.44	16
6	2007	1	31-Dec-06	Skate family	1	41.9	0.02384	292.6	7	0.44	16
6	2007	1	31-Dec-06	Winter flounder	2	41.9	0.04768	292.6	14	0.44	32
6	2007	2	7-Jan-07	Ninespine stickleback	1	42	0.02379	292.6	7	0.05	139
6	2007	3	14-Jan-07	Northern pipefish	1	41.7	0.02401	292.6	7	0.05	140
6	2007	4	21-Jan-07	No Catch	0	41.8	0	292.6	0	0.05	0
6	2007	5	28-Jan-07	No Catch	0	41.4	0	292.6	0	0.05	0
6	2007	6	4-Feb-07	Winter flounder	3	41.7	0.07202	292.6	21	0.71	30
6	2007	7	11-Feb-07	Grubby	2	41.7	0.04801	292.6	14	0.71	20
6	2007	8	18-Feb-07	No Catch	0	41.2	0	292.6	0	0.71	0
6	2007	9	25-Feb-07	Winter flounder	1	41.4	0.02418	292.6	7	0.71	10
6	2007	10	4-Mar-07	Winter flounder	0		0.01007	125.4	1	0.71	2
6	2007	11	11-Mar-07	Winter flounder	0		0.00806	0	0	0.71	0
6	2007	12	18-Mar-07	Winter flounder	0		0.00604	0	0	0.71	0
6	2007	13	25-Mar-07	Winter flounder	0		0.00403	0	0	0.73	0
6	2007	14	1-Apr-07	Winter flounder	0		0.00201	0	0	0.73	0
6	2007	15	8-Apr-07	No Catch	0	41.6	0	226.4	0	0.73	0
6	2007	16	15-Apr-07	Atlantic herring	5	41.7	0.12003	292.6	35	0.73	48
6	2007	16	15-Apr-07	Blueback herring	1	41.7	0.02401	292.6	7	0.73	10
6	2007	16	15-Apr-07	Cunner	6	41.7	0.14404	292.6	42	0.73	58
6	2007	16	15-Apr-07	Lumpfish	1	41.7	0.02401	292.6	7	0.73	10
6	2007	16	15-Apr-07	White hake	2	41.7	0.04801	292.6	14	0.73	19
6	2007	17	22-Apr-07	White perch	1	41.2	0.02426	292.6	7	0.73	10
6	2007	18	29-Apr-07	No Catch	0	10	0	292.6	0	0.73	0
6	2007	19	6-May-07	No Catch	0	42.2	0	292.6	0	0.79	0
6	2007	20	13-May-07	Lumpfish	1	41.5	0.02412	292.6	7	0.79	9
6	2007	21	20-May-07	No Catch	0	41.5	0	292.6	0	0.79	0

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance	Collection Efficiency Coefficient	Adjusted Impingement Abundance
6	2007	22	27-May-07	No Catch	0	41.2	0	292.6	0	0.79	0
6	2007	23	3-Jun-07	No Catch	0	21.1	0	292.6	0	0.92	0
6	2007	24	10-Jun-07	No Catch	0	42	0	292.6	0	0.92	0
6	2007	25	17-Jun-07	Cunner	1	43	0.02326	292.6	7	0.92	7
6	2007	25	17-Jun-07	Rainbow smelt	1	43	0.02326	292.6	7	0.92	7
6	2007	26	24-Jun-07	No Catch	0	42.1	0	292.6	0	0.92	0
6	2007	27	1-Jul-07	Winter flounder	1	41.8	0.02392	292.6	7	0.92	8
6	2007	28	8-Jul-07	No Catch	0	41.8	0	292.6	0	0.68	0
6	2007	29	15-Jul-07	No Catch	0	41.8	0	292.6	0	0.68	0
6	2007	30	22-Jul-07	No Catch	0	41.7	0	292.6	0	0.68	0
6	2007	31	29-Jul-07	Cunner	1	41.5	0.02409	292.6	7	0.68	10
6	2007	32	5-Aug-07	No Catch	0	42.4	0	292.6	0	0.1	0
6	2007	33	12-Aug-07	No Catch	0	41.9	0	292.6	0	0.1	0
6	2007	34	19-Aug-07	No Catch	0	41.2	0	292.6	0	0.1	0
6	2007	35	26-Aug-07	No Catch	0	40.2	0	292.6	0	0.1	0
6	2007	36	2-Sep-07	No Catch	0	41.7	0	292.6	0	0.43	0
6	2007	37	9-Sep-07	No Catch	0	41.5	0	292.6	0	0.43	0
6	2007	38	16-Sep-07	No Catch	0	40.1	0	292.6	0	0.43	0
6	2007	39	23-Sep-07	No Catch	0	41.7	0	292.6	0	0.43	0

Note: For taxa within a given week with an impingement density of 0 fish/million gallons, data record is not presented.

Appendix Table C-4. Weekly macrocrustacean count, sample flow (million gallons), impingement rate, operating flow (million gallons/week), impingement abundance estimate, at Units 4, 5, 6 of Schiller Station for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance
4	2006	40	1-Oct-06	American lobster	1	40.7	0.02458	285.6	7
4	2006	40	1-Oct-06	Atlantic rock crab	10	40.7	0.24578	285.6	70
4	2006	40	1-Oct-06	Green crab	8	40.7	0.19662	285.6	56
4	2006	41	8-Oct-06	Atlantic rock crab	7	40.2	0.17399	285.6	50
4	2006	41	8-Oct-06	Green crab	10	40.2	0.24855	285.6	71
4	2006	41	8-Oct-06	Jonah crab	1	40.2	0.02486	285.6	7
4	2006	42	15-Oct-06	Atlantic rock crab	0		0.06959	40.8	3
4	2006	42	15-Oct-06	Green crab	0		0.09942	40.8	4
4	2006	42	15-Oct-06	Jonah crab	0		0.00994	40.8	0
4	2006	43	22-Oct-06	Atlantic rock crab	0		0.0522	0	0
4	2006	43	22-Oct-06	Green crab	0		0.07457	0	0
4	2006	43	22-Oct-06	Jonah crab	0		0.00746	0	0
4	2006	44	29-Oct-06	Atlantic rock crab	0		0.0348	0	0
4	2006	44	29-Oct-06	Green crab	0		0.04971	0	0
4	2006	44	29-Oct-06	Jonah crab	0		0.00497	0	0
4	2006	45	5-Nov-06	Atlantic rock crab	0		0.0174	0	0
4	2006	45	5-Nov-06	Green crab	0		0.02486	0	0
4	2006	45	5-Nov-06	Jonah crab	0		0.00249	0	0
4	2006	46	12-Nov-06	No Catch	0	9.8	0	79.9	0
4	2006	47	19-Nov-06	Atlantic rock crab	24	40.9	0.5862	285.6	167
4	2006	47	19-Nov-06	Green crab	84	40.9	2.0517	285.6	586
4	2006	48	26-Nov-06	Atlantic rock crab	26	40.7	0.63948	285.6	183
4	2006	48	26-Nov-06	Green crab	39	40.7	0.95921	285.6	274
4	2006	49	3-Dec-06	Atlantic rock crab	27	41.1	0.6572	285.6	188
4	2006	49	3-Dec-06	Green crab	49	41.1	1.1927	285.6	341
4	2006	50	10-Dec-06	Atlantic rock crab	11	40.9	0.26867	285.6	77
4	2006	50	10-Dec-06	Green crab	44	40.9	1.0747	285.6	307
4	2006	51	17-Dec-06	Atlantic rock crab	7	40.6	0.17229	285.6	49
4	2006	51	17-Dec-06	Green crab	22	40.6	0.54147	285.6	155
4	2006	52	24-Dec-06	Atlantic rock crab	16	40.7	0.3927	285.6	112
4	2006	52	24-Dec-06	Green crab	35	40.7	0.85904	285.6	245
4	2007	1	31-Dec-06	Atlantic rock crab	5	40.9	0.12212	285.6	35
4	2007	1	31-Dec-06	Green crab	29	40.9	0.70832	285.6	202
4	2007	2	7-Jan-07	Atlantic rock crab	7	41	0.17062	285.6	49
4	2007	2	7-Jan-07	Green crab	26	41	0.63373	285.6	181

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance
4	2007	3	14-Jan-07	Atlantic rock crab	7	41.5	0.16864	285.6	48
4	2007	3	14-Jan-07	Green crab	17	41.5	0.40956	285.6	117
4	2007	4	21-Jan-07	Atlantic rock crab	6	40.5	0.14809	285.6	42
4	2007	4	21-Jan-07	Green crab	16	40.5	0.3949	285.6	113
4	2007	5	28-Jan-07	Atlantic rock crab	6	41	0.14635	285.6	42
4	2007	5	28-Jan-07	Green crab	4	41	0.09756	285.6	28
4	2007	6	4-Feb-07	Atlantic rock crab	1	41.2	0.02426	285.6	7
4	2007	6	4-Feb-07	Green crab	2	41.2	0.04851	285.6	14
4	2007	7	11-Feb-07	No Catch	0	40.4	0	285.6	0
4	2007	8	18-Feb-07	Atlantic rock crab	7	40.2	0.17423	285.6	50
4	2007	8	18-Feb-07	Green crab	1	40.2	0.02489	285.6	7
4	2007	9	25-Feb-07	Atlantic rock crab	8	40.1	0.19954	285.6	57
4	2007	9	25-Feb-07	Green crab	3	40.1	0.07483	285.6	21
4	2007	9	25-Feb-07	Jonah crab	2	40.1	0.04989	285.6	14
4	2007	10	4-Mar-07	Atlantic rock crab	1	41.7	0.02398	285.6	7
4	2007	10	4-Mar-07	Green crab	1	41.7	0.02398	285.6	7
4	2007	11	11-Mar-07	Atlantic rock crab	5	40.7	0.1228	285.6	35
4	2007	11	11-Mar-07	Green crab	2	40.7	0.04912	285.6	14
4	2007	12	18-Mar-07	Atlantic rock crab	1	40.5	0.02466	285.6	7
4	2007	12	18-Mar-07	Green crab	1	40.5	0.02466	285.6	7
4	2007	13	25-Mar-07	Atlantic rock crab	0		0.06118	202.3	12
4	2007	13	25-Mar-07	Green crab	0		0.14667	202.3	30
4	2007	14	1-Apr-07	Atlantic rock crab	4	40.9	0.0977	285.6	28
4	2007	14	1-Apr-07	Green crab	11	40.9	0.26867	285.6	77
4	2007	15	8-Apr-07	Atlantic rock crab	12	41.4	0.29009	285.6	83
4	2007	15	8-Apr-07	Green crab	39	41.4	0.94279	285.6	269
4	2007	16	15-Apr-07	Atlantic rock crab	5	40.2	0.12428	285.6	35
4	2007	16	15-Apr-07	Green crab	24	40.2	0.59652	285.6	170
4	2007	17	22-Apr-07	Atlantic rock crab	10	40.4	0.24768	285.6	71
4	2007	17	22-Apr-07	Green crab	64	40.4	1.58514	285.6	453
4	2007	18	29-Apr-07	Atlantic rock crab	17	39.9	0.42614	285.6	122
4	2007	18	29-Apr-07	Green crab	84	39.9	2.10561	285.6	601
4	2007	18	29-Apr-07	Horseshoe crab	1	39.9	0.02507	285.6	7
4	2007	19	6-May-07	American lobster	1	40.9	0.02442	285.6	7
4	2007	19	6-May-07	Atlantic rock crab	24	40.9	0.5862	285.6	167
4	2007	19	6-May-07	Green crab	54	40.9	1.31895	285.6	377
4	2007	20	13-May-07	Atlantic rock crab	11	40.5	0.27187	285.6	78
4	2007	20	13-May-07	Green crab	27	40.5	0.66733	285.6	191
4	2007	21	20-May-07	Atlantic rock crab	9	40.8	0.22059	285.6	63

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance
4	2007	21	20-May-07	Green crab	8	40.8	0.19608	285.6	56
4	2007	22	27-May-07	Atlantic rock crab	3	40.3	0.07441	285.6	21
4	2007	22	27-May-07	Green crab	23	40.3	0.57046	285.6	163
4	2007	22	27-May-07	Horseshoe crab	3	40.3	0.07441	285.6	21
4	2007	23	3-Jun-07	American lobster	1	41.2	0.02429	285.6	7
4	2007	23	3-Jun-07	Atlantic rock crab	22	41.2	0.53439	285.6	153
4	2007	23	3-Jun-07	Green crab	24	41.2	0.58297	285.6	166
4	2007	24	10-Jun-07	Atlantic rock crab	15	40.9	0.36663	285.6	105
4	2007	24	10-Jun-07	Green crab	31	40.9	0.7577	285.6	216
4	2007	24	10-Jun-07	Horseshoe crab	2	40.9	0.04888	285.6	14
4	2007	25	17-Jun-07	American lobster	3	42	0.07149	285.6	20
4	2007	25	17-Jun-07	Atlantic rock crab	8	42	0.19065	285.6	54
4	2007	25	17-Jun-07	Green crab	15	42	0.35747	285.6	102
4	2007	25	17-Jun-07	Horseshoe crab	2	42	0.04766	285.6	14
4	2007	26	24-Jun-07	American lobster	2	40.7	0.04919	285.6	14
4	2007	26	24-Jun-07	Atlantic rock crab	7	40.7	0.17217	285.6	49
4	2007	26	24-Jun-07	Green crab	42	40.7	1.033	285.6	295
4	2007	27	1-Jul-07	Green crab	20	41.1	0.48682	285.6	139
4	2007	28	8-Jul-07	American lobster	2	40.9	0.04885	285.6	14
4	2007	28	8-Jul-07	Atlantic rock crab	6	40.9	0.14655	285.6	42
4	2007	28	8-Jul-07	Green crab	9	40.9	0.21982	285.6	63
4	2007	29	15-Jul-07	American lobster	1	40.8	0.02451	285.6	7
4	2007	29	15-Jul-07	Atlantic rock crab	4	40.8	0.09804	285.6	28
4	2007	29	15-Jul-07	Green crab	9	40.8	0.22059	285.6	63
4	2007	30	22-Jul-07	American lobster	6	40.7	0.14747	285.6	42
4	2007	30	22-Jul-07	Atlantic rock crab	4	40.7	0.09831	285.6	28
4	2007	30	22-Jul-07	Green crab	11	40.7	0.27036	285.6	77
4	2007	31	29-Jul-07	American lobster	1	40.5	0.02468	285.6	7
4	2007	31	29-Jul-07	Atlantic rock crab	3	40.5	0.07404	285.6	21
4	2007	31	29-Jul-07	Green crab	6	40.5	0.14809	285.6	42
4	2007	32	5-Aug-07	American lobster	3	41.1	0.07302	285.6	21
4	2007	32	5-Aug-07	Atlantic rock crab	2	41.1	0.04868	285.6	14
4	2007	32	5-Aug-07	Green crab	9	41.1	0.21907	285.6	63
4	2007	33	12-Aug-07	American lobster	3	39.8	0.07536	285.6	22
4	2007	33	12-Aug-07	Atlantic rock crab	2	39.8	0.05024	285.6	14
4	2007	33	12-Aug-07	Green crab	15	39.8	0.37681	285.6	108
4	2007	34	19-Aug-07	American lobster	4	40.7	0.09838	285.6	28
4	2007	34	19-Aug-07	Atlantic rock crab	3	40.7	0.07379	285.6	21
4	2007	34	19-Aug-07	Green crab	11	40.7	0.27055	285.6	77

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance
4	2007	35	26-Aug-07	American lobster	6	40.4	0.14861	285.6	42
4	2007	35	26-Aug-07	Atlantic rock crab	2	40.4	0.04954	285.6	14
4	2007	35	26-Aug-07	Green crab	8	40.4	0.19814	285.6	57
4	2007	36	2-Sep-07	American lobster	4	40.5	0.09872	285.6	28
4	2007	36	2-Sep-07	Atlantic rock crab	2	40.5	0.04936	285.6	14
4	2007	36	2-Sep-07	Green crab	7	40.5	0.17277	285.6	49
4	2007	37	9-Sep-07	American lobster	1	40.8	0.02451	285.6	7
4	2007	37	9-Sep-07	Atlantic rock crab	2	40.8	0.04902	285.6	14
4	2007	37	9-Sep-07	Green crab	8	40.8	0.19608	285.6	56
4	2007	38	16-Sep-07	American lobster	2	39.4	0.05078	285.6	15
4	2007	38	16-Sep-07	Atlantic rock crab	3	39.4	0.07617	285.6	22
4	2007	38	16-Sep-07	Green crab	2	39.4	0.05078	285.6	15
4	2007	39	23-Sep-07	American lobster	1	40.7	0.0246	285.6	7
4	2007	39	23-Sep-07	Atlantic rock crab	5	40.7	0.12298	285.6	35
4	2007	39	23-Sep-07	Green crab	9	40.7	0.22136	285.6	63
5	2006	40	1-Oct-06	Green crab	1	42	0.02379	292.6	7
5	2006	41	8-Oct-06	No Catch	0	41.7	0	292.6	0
5	2006	42	15-Oct-06	Atlantic rock crab	1	42.1	0.02376	292.6	7
5	2006	42	15-Oct-06	Green crab	24	42.1	0.5702	292.6	167
5	2006	43	22-Oct-06	Atlantic rock crab	1	41.5	0.02409	292.6	7
5	2006	43	22-Oct-06	Green crab	3	41.5	0.07227	292.6	21
5	2006	44	29-Oct-06	Green crab	1	43.4	0.02304	292.6	7
5	2006	45	5-Nov-06	Atlantic rock crab	3	41.7	0.07187	292.6	21
5	2006	45	5-Nov-06	Green crab	3	41.7	0.07187	292.6	21
5	2006	46	12-Nov-06	Atlantic rock crab	2	42.8	0.04671	292.6	14
5	2006	46	12-Nov-06	Green crab	8	42.8	0.18685	292.6	55
5	2006	47	19-Nov-06	Atlantic rock crab	4	41.7	0.09603	292.6	28
5	2006	47	19-Nov-06	Green crab	7	41.7	0.16805	292.6	49
5	2006	48	26-Nov-06	Atlantic rock crab	4	41.7	0.09603	292.6	28
5	2006	48	26-Nov-06	Green crab	3	41.7	0.07202	292.6	21
5	2006	49	3-Dec-06	Atlantic rock crab	1	42.1	0.02376	292.6	7
5	2006	49	3-Dec-06	Green crab	2	42.1	0.04752	292.6	14
5	2006	50	10-Dec-06	Atlantic rock crab	2	41.9	0.04768	292.6	14
5	2006	50	10-Dec-06	Green crab	2	41.9	0.04768	292.6	14
5	2006	51	17-Dec-06	Atlantic rock crab	2	41.4	0.04828	292.6	14
5	2006	51	17-Dec-06	Green crab	3	41.4	0.07242	292.6	21
5	2006	52	24-Dec-06	Atlantic rock crab	5	41.7	0.11978	292.6	35
5	2006	52	24-Dec-06	Green crab	4	41.7	0.09583	292.6	28
5	2007	1	31-Dec-06	No Catch	0	42	0	292.6	0

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance
5	2007	2	7-Jan-07	Atlantic rock crab	3	41.9	0.07152	292.6	21
5	2007	2	7-Jan-07	Green crab	1	41.9	0.02384	292.6	7
5	2007	3	14-Jan-07	Atlantic rock crab	1	42.2	0.02368	292.6	7
5	2007	4	21-Jan-07	Atlantic rock crab	1	40.9	0.02443	292.6	7
5	2007	5	28-Jan-07	Atlantic rock crab	1	42	0.02381	292.6	7
5	2007	6	4-Feb-07	No Catch	0	41.7	0	292.6	0
5	2007	7	11-Feb-07	No Catch	0	40.9	0	292.6	0
5	2007	8	18-Feb-07	Green crab	1	40.6	0.02464	292.6	7
5	2007	9	25-Feb-07	No Catch	0	41.4	0	292.6	0
5	2007	10	4-Mar-07	No Catch	0	43.3	0	292.6	0
5	2007	11	11-Mar-07	Atlantic rock crab	2	41.6	0.04811	292.6	14
5	2007	12	18-Mar-07	Green crab	1	41.4	0.02416	292.6	7
5	2007	13	25-Mar-07	No Catch	0	41.4	0	292.6	0
5	2007	14	1-Apr-07	Atlantic rock crab	1	41.7	0.02396	292.6	7
5	2007	14	1-Apr-07	Green crab	1	41.7	0.02396	292.6	7
5	2007	15	8-Apr-07	Atlantic rock crab	1	42.1	0.02376	292.6	7
5	2007	15	8-Apr-07	Green crab	4	42.1	0.09503	292.6	28
5	2007	16	15-Apr-07	Atlantic rock crab	0		0.02401	61	1
5	2007	16	15-Apr-07	Green crab	0		0.05965	61	4
5	2007	17	22-Apr-07	Atlantic rock crab	1	41.2	0.02426	292.6	7
5	2007	17	22-Apr-07	Green crab	1	41.2	0.02426	292.6	7
5	2007	18	29-Apr-07	Green crab	14	41.7	0.33539	292.6	98
5	2007	19	6-May-07	Atlantic rock crab	4	42.2	0.09471	292.6	28
5	2007	19	6-May-07	Green crab	13	42.2	0.3078	292.6	90
5	2007	19	6-May-07	Horseshoe crab	1	42.2	0.02368	292.6	7
5	2007	20	13-May-07	American lobster	1	41.5	0.02412	292.6	7
5	2007	20	13-May-07	Atlantic rock crab	1	41.5	0.02412	292.6	7
5	2007	20	13-May-07	Green crab	4	41.5	0.0965	292.6	28
5	2007	21	20-May-07	Atlantic rock crab	1	42.1	0.02376	292.6	7
5	2007	21	20-May-07	Green crab	1	42.1	0.02376	292.6	7
5	2007	22	27-May-07	Atlantic rock crab	3	41.5	0.07227	292.6	21
5	2007	22	27-May-07	Green crab	6	41.5	0.14454	292.6	42
5	2007	23	3-Jun-07	Green crab	3	42.1	0.07128	292.6	21
5	2007	24	10-Jun-07	Atlantic rock crab	2	41.7	0.04791	292.6	14
5	2007	24	10-Jun-07	Green crab	6	41.7	0.14374	292.6	42
5	2007	25	17-Jun-07	Atlantic rock crab	3	43	0.06978	292.6	20
5	2007	25	17-Jun-07	Green crab	7	43	0.16283	292.6	48
5	2007	26	24-Jun-07	Green crab	4	30.8	0.13	292.6	38
5	2007	27	1-Jul-07	Atlantic rock crab	1	41.8	0.02392	292.6	7

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance
5	2007	27	1-Jul-07	Green crab	8	41.8	0.19139	292.6	56
5	2007	28	8-Jul-07	Atlantic rock crab	1	41.7	0.02401	292.6	7
5	2007	28	8-Jul-07	Green crab	2	41.7	0.04801	292.6	14
5	2007	29	15-Jul-07	Green crab	6	41.8	0.14354	292.6	42
5	2007	30	22-Jul-07	Atlantic rock crab	1	41.7	0.02399	292.6	7
5	2007	30	22-Jul-07	Green crab	4	41.7	0.09596	292.6	28
5	2007	31	29-Jul-07	Green crab	2	41.5	0.04818	292.6	14
5	2007	32	5-Aug-07	Atlantic rock crab	2	41.8	0.04785	292.6	14
5	2007	32	5-Aug-07	Green crab	5	41.8	0.11962	292.6	35
5	2007	33	12-Aug-07	Atlantic rock crab	1	40.6	0.02461	292.6	7
5	2007	33	12-Aug-07	Green crab	3	40.6	0.07382	292.6	22
5	2007	34	19-Aug-07	Atlantic rock crab	1	41.2	0.02426	292.6	7
5	2007	34	19-Aug-07	Green crab	2	41.2	0.04852	292.6	14
5	2007	35	26-Aug-07	Green crab	2	40.8	0.04904	292.6	14
5	2007	36	2-Sep-07	Atlantic rock crab	0		0.01205	174.2	2
5	2007	36	2-Sep-07	Green crab	0		0.04861	174.2	8
5	2007	37	9-Sep-07	Atlantic rock crab	1	41.5	0.02409	292.6	7
5	2007	37	9-Sep-07	Green crab	2	41.5	0.04818	292.6	14
5	2007	38	16-Sep-07	Green crab	4	40.1	0.09985	292.6	29
5	2007	39	23-Sep-07	Atlantic rock crab	1	41.7	0.02401	292.6	7
5	2007	39	23-Sep-07	Green crab	6	41.7	0.14404	292.6	42
6	2006	40	1-Oct-06	Atlantic rock crab	2	41.4	0.04832	292.6	14
6	2006	40	1-Oct-06	Green crab	2	41.4	0.04832	292.6	14
6	2006	41	8-Oct-06	Atlantic rock crab	1	41.7	0.02396	292.6	7
6	2006	41	8-Oct-06	Green crab	1	41.7	0.02396	292.6	7
6	2006	42	15-Oct-06	Atlantic rock crab	1	42.2	0.02368	292.6	7
6	2006	42	15-Oct-06	Green crab	4	42.2	0.09471	292.6	28
6	2006	43	22-Oct-06	Atlantic rock crab	1	42.1	0.02376	292.6	7
6	2006	44	29-Oct-06	Jonah crab	1	43.1	0.0232	292.6	7
6	2006	45	5-Nov-06	Green crab	1	41.6	0.02404	292.6	7
6	2006	46	12-Nov-06	Atlantic rock crab	5	42.3	0.11814	292.6	35
6	2006	46	12-Nov-06	Green crab	8	42.3	0.18902	292.6	55
6	2006	47	19-Nov-06	Atlantic rock crab	5	42.2	0.11838	292.6	35
6	2006	47	19-Nov-06	Green crab	6	42.2	0.14206	292.6	42
6	2006	48	26-Nov-06	Atlantic rock crab	1	41.7	0.02401	292.6	7
6	2006	48	26-Nov-06	Green crab	2	41.7	0.04801	292.6	14
6	2006	49	3-Dec-06	Atlantic rock crab	1	42.1	0.02376	292.6	7
6	2006	49	3-Dec-06	Green crab	2	42.1	0.04752	292.6	14
6	2006	50	10-Dec-06	Green crab	1	41.8	0.02394	292.6	7

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance
6	2006	51	17-Dec-06	Atlantic rock crab	1	41.5	0.02411	292.6	7
6	2006	51	17-Dec-06	Green crab	1	41.5	0.02411	292.6	7
6	2006	52	24-Dec-06	Atlantic rock crab	3	41.8	0.07182	292.6	21
6	2006	52	24-Dec-06	Green crab	4	41.8	0.09576	292.6	28
6	2007	1	31-Dec-06	No Catch	0	41.9	0	292.6	0
6	2007	2	7-Jan-07	Atlantic rock crab	1	42	0.02379	292.6	7
6	2007	2	7-Jan-07	Green crab	1	42	0.02379	292.6	7
6	2007	3	14-Jan-07	No Catch	0	41.7	0	292.6	0
6	2007	4	21-Jan-07	No Catch	0	41.8	0	292.6	0
6	2007	5	28-Jan-07	No Catch	0	41.4	0	292.6	0
6	2007	6	4-Feb-07	No Catch	0	41.7	0	292.6	0
6	2007	7	11-Feb-07	Atlantic rock crab	1	41.7	0.02401	292.6	7
6	2007	8	18-Feb-07	Atlantic rock crab	1	41.2	0.02429	292.6	7
6	2007	9	25-Feb-07	No Catch	0	41.4	0	292.6	0
6	2007	10	4-Mar-07	No Catch	0		0	125.4	0
6	2007	11	11-Mar-07	No Catch	0		0	0	0
6	2007	12	18-Mar-07	No Catch	0		0	0	0
6	2007	13	25-Mar-07	No Catch	0		0	0	0
6	2007	14	1-Apr-07	No Catch	0		0	0	0
6	2007	15	8-Apr-07	No Catch	0	41.6	0	226.4	0
6	2007	16	15-Apr-07	No Catch	0	41.7	0	292.6	0
6	2007	17	22-Apr-07	Atlantic rock crab	1	41.2	0.02426	292.6	7
6	2007	17	22-Apr-07	Green crab	14	41.2	0.33965	292.6	99
6	2007	18	29-Apr-07	No Catch	0	10	0	292.6	0
6	2007	19	6-May-07	Atlantic rock crab	1	42.2	0.02368	292.6	7
6	2007	19	6-May-07	Green crab	5	42.2	0.11838	292.6	35
6	2007	20	13-May-07	Atlantic rock crab	2	41.5	0.04825	292.6	14
6	2007	20	13-May-07	Green crab	7	41.5	0.16887	292.6	49
6	2007	21	20-May-07	Green crab	3	41.5	0.07227	292.6	21
6	2007	22	27-May-07	Atlantic rock crab	1	41.2	0.02426	292.6	7
6	2007	22	27-May-07	Green crab	6	41.2	0.14556	292.6	43
6	2007	23	3-Jun-07	Green crab	1	21.1	0.04748	292.6	14
6	2007	24	10-Jun-07	American lobster	0	42	0	292.6	0
6	2007	25	17-Jun-07	Atlantic rock crab	1	43	0.02326	292.6	7
6	2007	25	17-Jun-07	Green crab	8	43	0.18609	292.6	54
6	2007	25	17-Jun-07	Horseshoe crab	1	43	0.02326	292.6	7
6	2007	26	24-Jun-07	Green crab	9	42.1	0.21383	292.6	63
6	2007	27	1-Jul-07	Green crab	5	41.8	0.11962	292.6	35
6	2007	28	8-Jul-07	Green crab	4	41.8	0.09569	292.6	28

Unit	Year	Week	Date	Common Name	Raw Count	Sample flow	Impingement Rate	Generating Flow	Impingement Abundance
6	2007	29	15-Jul-07	Atlantic rock crab	1	41.8	0.02392	292.6	7
6	2007	29	15-Jul-07	Green crab	4	41.8	0.09569	292.6	28
6	2007	30	22-Jul-07	Atlantic rock crab	4	41.7	0.09596	292.6	28
6	2007	30	22-Jul-07	Green crab	5	41.7	0.11995	292.6	35
6	2007	31	29-Jul-07	Green crab	2	41.5	0.04818	292.6	14
6	2007	32	5-Aug-07	Atlantic rock crab	1	42.4	0.0236	292.6	7
6	2007	32	5-Aug-07	Green crab	3	42.4	0.07079	292.6	21
6	2007	33	12-Aug-07	Atlantic rock crab	3	41.9	0.07152	292.6	21
6	2007	33	12-Aug-07	Green crab	1	41.9	0.02384	292.6	7
6	2007	34	19-Aug-07	Green crab	2	41.2	0.04852	292.6	14
6	2007	35	26-Aug-07	Green crab	7	40.2	0.17411	292.6	51
6	2007	36	2-Sep-07	No Catch	0	41.7	0	292.6	0
6	2007	37	9-Sep-07	Atlantic rock crab	4	41.5	0.09636	292.6	28
6	2007	37	9-Sep-07	Green crab	1	41.5	0.02409	292.6	7
6	2007	38	16-Sep-07	Atlantic rock crab	1	40.1	0.02496	292.6	7
6	2007	38	16-Sep-07	Green crab	1	40.1	0.02496	292.6	7
6	2007	39	23-Sep-07	Atlantic rock crab	2	41.7	0.04801	292.6	14
6	2007	39	23-Sep-07	Green crab	4	41.7	0.09603	292.6	28

Note: For taxa within a given week with an impingement density of 0 fish/million gallons, data record is not presented.

Appendix Table C-5. Monthly estimated impingement abundance (corrected for collection efficiency) and adult equivalent abundance at Units 4, 5, 6 and all Units combined of Schiller Station for 14 fish taxa (by age class) representing 89.6% of the raw total enumerated at Schiller Station (Units 4, 5, 6 combined) for the 52 week sampling year from 2 October 2006 through 30 September 2007.

Unit	Month	Common Name	Life stage	# Impinged	Adult Equivalent Impinged
4	January	Atlantic menhaden	YOY	63	0
4	January	Cunner	Age 1+	8	5
4	January	Grubby	Age 1+	24	24
4	January	Grubby	Age 2+	48	48
4	January	Northern pipefish	YOY	8	5
4	January	Rainbow smelt	YOY	57	12
4	January	Rainbow smelt	Age 1+	24	13
4	January	White hake	YOY	47	0
4	January	White perch	Age 1+	16	6
4	January	Winter flounder	YOY	32	0
4	February	Grubby	Age 1+	16	16
4	February	Grubby	Age 3+	16	16
4	February	White hake	YOY	23	0
4	February	Windowpane	YOY	16	1
4	February	Winter flounder	YOY	54	0
4	March	Atlantic herring	YOY	10	0
4	March	Cunner	Age 1+	10	6
4	March	Lumpfish	YOY	3	0
4	March	Northern pipefish	Age 2+	10	10
4	March	Rainbow smelt	YOY	15	3
4	March	Rainbow smelt	Age 1+	3	2
4	March	White hake	YOY	10	0
4	March	Winter flounder	YOY	8	0
4	April	Atlantic herring	YOY	198	7
4	April	Cunner	YOY	8	0
4	April	Cunner	Age 1+	84	51
4	April	Grubby	Age 1+	46	46
4	April	Lumpfish	YOY	53	6
4	April	Lumpfish	Age 1+	106	23
4	April	Northern pipefish	Age 2+	91	91
4	April	Pollock	YOY	8	0
4	April	Rainbow smelt	YOY	8	2
4	April	Rainbow smelt	Age 1+	8	4
4	April	White hake	YOY	443	4
4	April	White perch	YOY	23	3
4	April	White perch	Age 1+	53	19
4	April	Windowpane	YOY	46	2
4	April	Winter flounder	YOY	92	0
4	May	Lumpfish	Age 1+	29	6
4	May	Rainbow smelt	YOY	7	1
4	May	White perch	Age 1+	7	3
4	May	White perch	Age 3+	7	7
4	May	Winter flounder	YOY	7	0
4	June	Atlantic herring	YOY	7	0

Schiller Station Entrainment and Impingement Studies

Unit	Month	Common Name	Life stage	# Impinged	Adult Equivalent Impinged
4	June	Cunner	YOY	53	2
4	June	Cunner	Age 1+	30	18
4	June	Cunner	Age 2+	7	7
4	June	Grubby	Age 2+	15	15
4	June	Pollock	YOY	15	0
4	June	White hake	YOY	15	0
4	June	White perch	Age 5+	7	7
4	June	White perch	Age 7+	7	7
4	June	Winter flounder	YOY	15	0
4	July	Cunner	YOY	17	1
4	July	Cunner	Age 2+	8	8
4	July	White hake	YOY	8	0
4	July	Winter flounder	Age 3+	8	8
4	August	Cunner	Age 1+	8	5
4	August	Winter flounder	YOY	16	0
4	September	Atlantic menhaden	YOY	15	0
4	September	Cunner	Age 1+	15	9
4	September	Grubby	Age 1+	7	7
4	September	Winter flounder	YOY	15	0
4	October	Cunner	Age 1+	8	5
4	October	Lumpfish	YOY	8	1
4	October	Northern pipefish	Age 2+	24	24
4	October	Winter flounder	YOY	15	0
4	November	Atlantic cod	Age 1+	8	6
4	November	Atlantic menhaden	YOY	53	0
4	November	Cunner	Age 1+	8	5
4	November	Grubby	Age 1+	23	23
4	November	Grubby	Age 2+	30	30
4	November	Grubby	Age 3+	8	8
4	November	Northern pipefish	Age 2+	8	8
4	November	Rainbow smelt	YOY	121	25
4	November	Silver hake	YOY	8	0
4	November	White hake	YOY	23	0
4	November	White hake	Age 1+	8	6
4	November	White perch	Age 1+	8	3
4	November	White perch	Age 2+	8	5
4	November	Windowpane	YOY	8	0
4	December	Atlantic menhaden	YOY	113	1
4	December	Grubby	Age 1+	23	23
4	December	Grubby	Age 2+	31	31
4	December	Grubby	Age 3+	31	31
4	December	Rainbow smelt	YOY	144	30
4	December	Rainbow smelt	Age 1+	68	37
4	December	White hake	YOY	15	0
4	December	White hake	Age 1+	8	6
4	December	White perch	Age 1+	8	3
4	Annual	Atlantic cod	YOY	0	0
4	Annual	Atlantic cod	Age 1+	8	6
4	Annual	Atlantic cod	Age 2+	0	0
4	Annual	Atlantic cod	Age 3+	0	0
4	Annual	Atlantic cod	Age 4+	0	0
4	Annual	Atlantic cod	Age 5+	0	0

Schiller Station Entrainment and Impingement Studies

Unit	Month	Common Name	Life stage	# Impinged	Adult Equivalent Impinged
4	Annual	Atlantic cod	Age 7+	0	0
4	Annual	Atlantic herring	YOY	215	7
4	Annual	Atlantic herring	Age 1+	0	0
4	Annual	Atlantic herring	Age 2+	0	0
4	Annual	Atlantic herring	Age 3+	0	0
4	Annual	Atlantic herring	Age 4+	0	0
4	Annual	Atlantic herring	Age 5+	0	0
4	Annual	Atlantic herring	Age 7+	0	0
4	Annual	Atlantic menhaden	YOY	244	1
4	Annual	Atlantic menhaden	Age 1+	0	0
4	Annual	Atlantic menhaden	Age 2+	0	0
4	Annual	Atlantic menhaden	Age 3+	0	0
4	Annual	Atlantic menhaden	Age 4+	0	0
4	Annual	Atlantic menhaden	Age 5+	0	0
4	Annual	Atlantic menhaden	Age 7+	0	0
4	Annual	Cunner	YOY	78	4
4	Annual	Cunner	Age 1+	171	104
4	Annual	Cunner	Age 2+	15	15
4	Annual	Cunner	Age 3+	0	0
4	Annual	Cunner	Age 4+	0	0
4	Annual	Cunner	Age 5+	0	0
4	Annual	Cunner	Age 7+	0	0
4	Annual	Grubby	YOY	0	0
4	Annual	Grubby	Age 1+	139	139
4	Annual	Grubby	Age 2+	124	124
4	Annual	Grubby	Age 3+	55	55
4	Annual	Grubby	Age 4+	0	0
4	Annual	Grubby	Age 5+	0	0
4	Annual	Grubby	Age 7+	0	0
4	Annual	Lumpfish	YOY	64	7
4	Annual	Lumpfish	Age 1+	135	30
4	Annual	Lumpfish	Age 2+	0	0
4	Annual	Lumpfish	Age 3+	0	0
4	Annual	Lumpfish	Age 4+	0	0
4	Annual	Lumpfish	Age 5+	0	0
4	Annual	Lumpfish	Age 7+	0	0
4	Annual	Northern pipefish	YOY	8	5
4	Annual	Northern pipefish	Age 1+	0	0
4	Annual	Northern pipefish	Age 2+	133	133
4	Annual	Northern pipefish	Age 3+	0	0
4	Annual	Northern pipefish	Age 4+	0	0
4	Annual	Northern pipefish	Age 5+	0	0
4	Annual	Northern pipefish	Age 7+	0	0
4	Annual	Pollock	YOY	23	0
4	Annual	Pollock	Age 1+	0	0
4	Annual	Pollock	Age 2+	0	0
4	Annual	Pollock	Age 3+	0	0
4	Annual	Pollock	Age 4+	0	0
4	Annual	Pollock	Age 5+	0	0
4	Annual	Pollock	Age 7+	0	0
4	Annual	Rainbow smelt	YOY	352	73
4	Annual	Rainbow smelt	Age 1+	103	55

Schiller Station Entrainment and Impingement Studies

Unit	Month	Common Name	Life stage	# Impinged	Adult Equivalent Impinged
4	Annual	Rainbow smelt	Age 2+	0	0
4	Annual	Rainbow smelt	Age 3+	0	0
4	Annual	Rainbow smelt	Age 4+	0	0
4	Annual	Rainbow smelt	Age 5+	0	0
4	Annual	Rainbow smelt	Age 7+	0	0
4	Annual	Silver hake	YOY	8	0
4	Annual	Silver hake	Age 1+	0	0
4	Annual	Silver hake	Age 2+	0	0
4	Annual	Silver hake	Age 3+	0	0
4	Annual	Silver hake	Age 4+	0	0
4	Annual	Silver hake	Age 5+	0	0
4	Annual	Silver hake	Age 7+	0	0
4	Annual	White hake	YOY	584	5
4	Annual	White hake	Age 1+	16	12
4	Annual	White hake	Age 2+	0	0
4	Annual	White hake	Age 3+	0	0
4	Annual	White hake	Age 4+	0	0
4	Annual	White hake	Age 5+	0	0
4	Annual	White hake	Age 7+	0	0
4	Annual	White perch	YOY	23	3
4	Annual	White perch	Age 1+	92	33
4	Annual	White perch	Age 2+	8	5
4	Annual	White perch	Age 3+	7	7
4	Annual	White perch	Age 4+	0	0
4	Annual	White perch	Age 5+	7	7
4	Annual	White perch	Age 7+	7	7
4	Annual	Windowpane	YOY	70	3
4	Annual	Windowpane	Age 1+	0	0
4	Annual	Windowpane	Age 2+	0	0
4	Annual	Windowpane	Age 3+	0	0
4	Annual	Windowpane	Age 4+	0	0
4	Annual	Windowpane	Age 5+	0	0
4	Annual	Windowpane	Age 7+	0	0
4	Annual	Winter flounder	YOY	254	0
4	Annual	Winter flounder	Age 1+	0	0
4	Annual	Winter flounder	Age 2+	0	0
4	Annual	Winter flounder	Age 3+	8	8
4	Annual	Winter flounder	Age 4+	0	0
4	Annual	Winter flounder	Age 5+	0	0
4	Annual	Winter flounder	Age 7+	0	0
5	January	Atlantic menhaden	YOY	25	0
5	January	Grubby	Age 1+	8	8
5	January	Grubby	Age 2+	17	17
5	January	Rainbow smelt	YOY	8	2
5	January	White perch	YOY	17	2
5	January	Winter flounder	YOY	17	0
5	February	Grubby	YOY	8	5
5	February	Winter flounder	YOY	16	0
5	March	Grubby	Age 2+	14	14
5	March	White perch	Age 1+	14	5
5	March	Winter flounder	YOY	43	0
5	April	Atlantic herring	YOY	14	0

Schiller Station Entrainment and Impingement Studies

Unit	Month	Common Name	Life stage	# Impinged	Adult Equivalent Impinged
5	April	Grubby	Age 2+	14	14
5	April	Lumpfish	YOY	42	5
5	April	Lumpfish	Age 1+	28	6
5	April	Northern pipefish	Age 2+	31	31
5	May	Grubby	Age 1+	16	16
5	May	Lumpfish	Age 1+	16	4
5	June	Cunner	Age 2+	34	34
5	June	White hake	YOY	35	0
5	July	Cunner	Age 1+	23	14
5	July	Cunner	Age 2+	43	43
5	August	Cunner	Age 1+	140	85
5	August	Winter flounder	YOY	70	0
5	September	Northern pipefish	Age 2+	117	117
5	October	Cunner	YOY	13	1
5	October	Cunner	Age 1+	13	8
5	October	Northern pipefish	Age 2+	53	53
5	October	Rainbow smelt	YOY	13	3
5	October	White hake	YOY	14	0
5	November	Atlantic cod	Age 1+	9	7
5	November	Atlantic menhaden	YOY	18	0
5	November	Grubby	Age 2+	9	9
5	November	Lumpfish	Age 1+	9	2
5	November	Rainbow smelt	YOY	47	10
5	November	Winter flounder	YOY	9	0
5	December	Grubby	Age 1+	9	9
5	December	Grubby	Age 2+	8	8
5	December	Rainbow smelt	Age 1+	9	5
5	December	Winter flounder	YOY	8	0
5	Annual	Atlantic cod	YOY	0	0
5	Annual	Atlantic cod	Age 1+	9	7
5	Annual	Atlantic cod	Age 2+	0	0
5	Annual	Atlantic cod	Age 3+	0	0
5	Annual	Atlantic cod	Age 4+	0	0
5	Annual	Atlantic cod	Age 5+	0	0
5	Annual	Atlantic cod	Age 7+	0	0
5	Annual	Atlantic herring	YOY	14	0
5	Annual	Atlantic herring	Age 1+	0	0
5	Annual	Atlantic herring	Age 2+	0	0
5	Annual	Atlantic herring	Age 3+	0	0
5	Annual	Atlantic herring	Age 4+	0	0
5	Annual	Atlantic herring	Age 5+	0	0
5	Annual	Atlantic herring	Age 7+	0	0
5	Annual	Atlantic menhaden	YOY	43	0
5	Annual	Atlantic menhaden	Age 1+	0	0
5	Annual	Atlantic menhaden	Age 2+	0	0
5	Annual	Atlantic menhaden	Age 3+	0	0
5	Annual	Atlantic menhaden	Age 4+	0	0
5	Annual	Atlantic menhaden	Age 5+	0	0
5	Annual	Atlantic menhaden	Age 7+	0	0
5	Annual	Cunner	YOY	13	1
5	Annual	Cunner	Age 1+	176	107
5	Annual	Cunner	Age 2+	77	77

Schiller Station Entrainment and Impingement Studies

Unit	Month	Common Name	Life stage	# Impinged	Adult Equivalent Impinged
5	Annual	Cunner	Age 3+	0	0
5	Annual	Cunner	Age 4+	0	0
5	Annual	Cunner	Age 5+	0	0
5	Annual	Cunner	Age 7+	0	0
5	Annual	Grubby	YOY	8	5
5	Annual	Grubby	Age 1+	33	33
5	Annual	Grubby	Age 2+	62	62
5	Annual	Grubby	Age 3+	0	0
5	Annual	Grubby	Age 4+	0	0
5	Annual	Grubby	Age 5+	0	0
5	Annual	Grubby	Age 7+	0	0
5	Annual	Lumpfish	YOY	42	5
5	Annual	Lumpfish	Age 1+	53	12
5	Annual	Lumpfish	Age 2+	0	0
5	Annual	Lumpfish	Age 3+	0	0
5	Annual	Lumpfish	Age 4+	0	0
5	Annual	Lumpfish	Age 5+	0	0
5	Annual	Lumpfish	Age 7+	0	0
5	Annual	Northern pipefish	YOY	0	0
5	Annual	Northern pipefish	Age 1+	0	0
5	Annual	Northern pipefish	Age 2+	201	201
5	Annual	Northern pipefish	Age 3+	0	0
5	Annual	Northern pipefish	Age 4+	0	0
5	Annual	Northern pipefish	Age 5+	0	0
5	Annual	Northern pipefish	Age 7+	0	0
5	Annual	Pollock	YOY	0	0
5	Annual	Pollock	Age 1+	0	0
5	Annual	Pollock	Age 2+	0	0
5	Annual	Pollock	Age 3+	0	0
5	Annual	Pollock	Age 4+	0	0
5	Annual	Pollock	Age 5+	0	0
5	Annual	Pollock	Age 7+	0	0
5	Annual	Rainbow smelt	YOY	68	14
5	Annual	Rainbow smelt	Age 1+	9	5
5	Annual	Rainbow smelt	Age 2+	0	0
5	Annual	Rainbow smelt	Age 3+	0	0
5	Annual	Rainbow smelt	Age 4+	0	0
5	Annual	Rainbow smelt	Age 5+	0	0
5	Annual	Rainbow smelt	Age 7+	0	0
5	Annual	Silver hake	YOY	0	0
5	Annual	Silver hake	Age 1+	0	0
5	Annual	Silver hake	Age 2+	0	0
5	Annual	Silver hake	Age 3+	0	0
5	Annual	Silver hake	Age 4+	0	0
5	Annual	Silver hake	Age 5+	0	0
5	Annual	Silver hake	Age 7+	0	0
5	Annual	White hake	YOY	49	0
5	Annual	White hake	Age 1+	0	0
5	Annual	White hake	Age 2+	0	0
5	Annual	White hake	Age 3+	0	0
5	Annual	White hake	Age 4+	0	0
5	Annual	White hake	Age 5+	0	0

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Unit	Month	Common Name	Life stage	# Impinged	Adult Equivalent Impinged
5	Annual	White hake	Age 7+	0	0
5	Annual	White perch	YOY	17	2
5	Annual	White perch	Age 1+	14	5
5	Annual	White perch	Age 2+	0	0
5	Annual	White perch	Age 3+	0	0
5	Annual	White perch	Age 4+	0	0
5	Annual	White perch	Age 5+	0	0
5	Annual	White perch	Age 7+	0	0
5	Annual	Windowpane	YOY	0	0
5	Annual	Windowpane	Age 1+	0	0
5	Annual	Windowpane	Age 2+	0	0
5	Annual	Windowpane	Age 3+	0	0
5	Annual	Windowpane	Age 4+	0	0
5	Annual	Windowpane	Age 5+	0	0
5	Annual	Windowpane	Age 7+	0	0
5	Annual	Winter flounder	YOY	163	0
5	Annual	Winter flounder	Age 1+	0	0
5	Annual	Winter flounder	Age 2+	0	0
5	Annual	Winter flounder	Age 3+	0	0
5	Annual	Winter flounder	Age 4+	0	0
5	Annual	Winter flounder	Age 5+	0	0
5	Annual	Winter flounder	Age 7+	0	0
6	January	Northern pipefish	Age 2+	140	140
6	January	Rainbow smelt	YOY	16	3
6	January	Winter flounder	YOY	32	0
6	February	Grubby	Age 2+	10	10
6	February	Grubby	Age 3+	10	10
6	February	Winter flounder	YOY	40	0
6	March	Winter flounder	YOY	2	0
6	April	Atlantic herring	YOY	48	2
6	April	Cunner	YOY	19	1
6	April	Cunner	Age 1+	29	18
6	April	Cunner	Age 2+	10	10
6	April	Lumpfish	YOY	10	1
6	April	White hake	YOY	19	0
6	April	White perch	Age 1+	10	4
6	May	Lumpfish	Age 1+	9	2
6	June	Cunner	Age 2+	7	7
6	June	Rainbow smelt	YOY	7	1
6	July	Cunner	Age 4+	10	10
6	July	Winter flounder	YOY	8	0
6	October	Cunner	Age 3+	9	9
6	October	Cunner	Age 5+	9	9
6	October	Northern pipefish	YOY	9	5
6	October	Northern pipefish	Age 2+	69	69
6	October	Winter flounder	YOY	8	0
6	November	Atlantic cod	Age 1+	19	15
6	November	Atlantic menhaden	YOY	19	0
6	November	Lumpfish	Age 1+	19	4
6	November	Northern pipefish	Age 2+	19	19
6	November	Rainbow smelt	YOY	19	4
6	November	White hake	YOY	19	0

Schiller Station Entrainment and Impingement Studies

Unit	Month	Common Name	Life stage	# Impinged	Adult Equivalent Impinged
6	November	Winter flounder	YOY	19	0
6	December	Grubby	Age 2+	19	19
6	Annual	Atlantic cod	YOY	0	0
6	Annual	Atlantic cod	Age 1+	19	15
6	Annual	Atlantic cod	Age 2+	0	0
6	Annual	Atlantic cod	Age 3+	0	0
6	Annual	Atlantic cod	Age 4+	0	0
6	Annual	Atlantic cod	Age 5+	0	0
6	Annual	Atlantic cod	Age 7+	0	0
6	Annual	Atlantic herring	YOY	48	2
6	Annual	Atlantic herring	Age 1+	0	0
6	Annual	Atlantic herring	Age 2+	0	0
6	Annual	Atlantic herring	Age 3+	0	0
6	Annual	Atlantic herring	Age 4+	0	0
6	Annual	Atlantic herring	Age 5+	0	0
6	Annual	Atlantic herring	Age 7+	0	0
6	Annual	Atlantic menhaden	YOY	19	0
6	Annual	Atlantic menhaden	Age 1+	0	0
6	Annual	Atlantic menhaden	Age 2+	0	0
6	Annual	Atlantic menhaden	Age 3+	0	0
6	Annual	Atlantic menhaden	Age 4+	0	0
6	Annual	Atlantic menhaden	Age 5+	0	0
6	Annual	Atlantic menhaden	Age 7+	0	0
6	Annual	Cunner	YOY	19	1
6	Annual	Cunner	Age 1+	29	18
6	Annual	Cunner	Age 2+	17	17
6	Annual	Cunner	Age 3+	9	9
6	Annual	Cunner	Age 4+	10	10
6	Annual	Cunner	Age 5+	9	9
6	Annual	Cunner	Age 7+	0	0
6	Annual	Grubby	YOY	0	0
6	Annual	Grubby	Age 1+	0	0
6	Annual	Grubby	Age 2+	29	29
6	Annual	Grubby	Age 3+	10	10
6	Annual	Grubby	Age 4+	0	0
6	Annual	Grubby	Age 5+	0	0
6	Annual	Grubby	Age 7+	0	0
6	Annual	Lumpfish	YOY	10	1
6	Annual	Lumpfish	Age 1+	28	6
6	Annual	Lumpfish	Age 2+	0	0
6	Annual	Lumpfish	Age 3+	0	0
6	Annual	Lumpfish	Age 4+	0	0
6	Annual	Lumpfish	Age 5+	0	0
6	Annual	Lumpfish	Age 7+	0	0
6	Annual	Northern pipefish	YOY	9	5
6	Annual	Northern pipefish	Age 1+	0	0
6	Annual	Northern pipefish	Age 2+	228	228
6	Annual	Northern pipefish	Age 3+	0	0
6	Annual	Northern pipefish	Age 4+	0	0
6	Annual	Northern pipefish	Age 5+	0	0
6	Annual	Northern pipefish	Age 7+	0	0
6	Annual	Pollock	YOY	0	0

Schiller Station Entrainment and Impingement Studies

Unit	Month	Common Name	Life stage	# Impinged	Adult Equivalent Impinged
6	Annual	Pollock	Age 1+	0	0
6	Annual	Pollock	Age 2+	0	0
6	Annual	Pollock	Age 3+	0	0
6	Annual	Pollock	Age 4+	0	0
6	Annual	Pollock	Age 5+	0	0
6	Annual	Pollock	Age 7+	0	0
6	Annual	Rainbow smelt	YOY	42	9
6	Annual	Rainbow smelt	Age 1+	0	0
6	Annual	Rainbow smelt	Age 2+	0	0
6	Annual	Rainbow smelt	Age 3+	0	0
6	Annual	Rainbow smelt	Age 4+	0	0
6	Annual	Rainbow smelt	Age 5+	0	0
6	Annual	Rainbow smelt	Age 7+	0	0
6	Annual	Silver hake	YOY	0	0
6	Annual	Silver hake	Age 1+	0	0
6	Annual	Silver hake	Age 2+	0	0
6	Annual	Silver hake	Age 3+	0	0
6	Annual	Silver hake	Age 4+	0	0
6	Annual	Silver hake	Age 5+	0	0
6	Annual	Silver hake	Age 7+	0	0
6	Annual	White hake	YOY	38	0
6	Annual	White hake	Age 1+	0	0
6	Annual	White hake	Age 2+	0	0
6	Annual	White hake	Age 3+	0	0
6	Annual	White hake	Age 4+	0	0
6	Annual	White hake	Age 5+	0	0
6	Annual	White hake	Age 7+	0	0
6	Annual	White perch	YOY	0	0
6	Annual	White perch	Age 1+	10	4
6	Annual	White perch	Age 2+	0	0
6	Annual	White perch	Age 3+	0	0
6	Annual	White perch	Age 4+	0	0
6	Annual	White perch	Age 5+	0	0
6	Annual	White perch	Age 7+	0	0
6	Annual	Windowpane	YOY	0	0
6	Annual	Windowpane	Age 1+	0	0
6	Annual	Windowpane	Age 2+	0	0
6	Annual	Windowpane	Age 3+	0	0
6	Annual	Windowpane	Age 4+	0	0
6	Annual	Windowpane	Age 5+	0	0
6	Annual	Windowpane	Age 7+	0	0
6	Annual	Winter flounder	YOY	109	0
6	Annual	Winter flounder	Age 1+	0	0
6	Annual	Winter flounder	Age 2+	0	0
6	Annual	Winter flounder	Age 3+	0	0
6	Annual	Winter flounder	Age 4+	0	0
6	Annual	Winter flounder	Age 5+	0	0
6	Annual	Winter flounder	Age 7+	0	0

APPENDIX D

Schiller Station Quality Control

Appendix Table D-1. Species present in the fish reference collection from impingement sampling at Schiller Station.

Family	Common Name	Scientific Name	Specimen Available
Ammodytidae	American sand lance	<i>Ammodytes americanus</i>	X
Atherinopsidae	Atlantic silverside	<i>Menidia menidia</i>	X
Atherinopsidae	Inland silverside	<i>Menidia beryllina</i>	
Centrarchidae	Bluegill	<i>Lepomis macrochirus</i>	X
	Pumpkinseed	<i>Lepomis gibbosus</i>	*
Clupeidae	Alewife	<i>Alosa pseudoharengus</i>	X
	Atlantic herring	<i>Clupea harengus</i>	X
	Atlantic menhaden	<i>Brevoortia tyrannus</i>	X
	Blueback herring	<i>Alosa aestivalis</i>	X
Cottidae	Grubby	<i>Myoxocephalus aeneus</i>	X
	Shorthorn sculpin	<i>Myoxocephalus scorpius</i>	X
Cyclopteridae	Lumpfish	<i>Cyclopterus lumpus</i>	X
Cyprinidae	Emerald shiner	<i>Notropis atherinoides</i>	X
Gadidae	Atlantic cod	<i>Gadus morhua</i>	X
	Atlantic tomcod	<i>Microgadus tomcod</i>	X
	Pollock	<i>Pollachius virens</i>	X
Gasterosteidae	Ninespine stickleback	<i>Pungitius pungitius</i>	X
	Threespine stickleback	<i>Gasterosteus aculeatus</i>	X
Hemirhamphidae	Sea raven	<i>Hemirhamphus americanus</i>	
Labridae	Cunner	<i>Tautoglabrus adspersus</i>	X
	Tautog	<i>Tautoga onitis</i>	X
Merlucciidae	Silver hake	<i>Merluccius bilinearis</i>	X
Moronidae	Striped bass	<i>Morone saxatilis</i>	
	White perch	<i>Morone americana</i>	X
Osmeridae	Rainbow smelt	<i>Osmerus mordax</i>	X
Pholidae	Rock gunnel	<i>Pholis gunnellus</i>	X
Phycidae	Red hake	<i>Urophycis chuss</i>	X
	White hake	<i>Urophycis tenuis</i>	X
Pleuronectidae	Winter flounder	<i>Pseudopleuronectes americanus</i>	X
Rajidae	Skate family	<i>Raja sp.</i>	X
Scophthalmidae	Windowpane	<i>Scophthalmus aquosus</i>	X
Syngnathidae	Northern pipefish	<i>Syngnathus fuscus</i>	X

* Specimen available in NAI collection from Merrimack Station study

Appendix Table D-2. Summary of QC effort for Schiller Station impingement and entrainment programs.

Sample Type	Task	Number of Inspections	# Passed	# Failed
Impingement	Sort	28	28	0
Impingement	Identification/Count	37	37	0
Impingement	Fish length	50	50	0
Entrainment	Sort	33	31	2
Entrainment	Count	33	31	2
Entrainment	Identification	37	37	0
Entrainment	Life Stage Determination	37	37	0

Appendix Table D-3. Summary of sample volume calculation method for all valid entrainment samples collected at Schiller Station for the sampling period from 31 August 2006 through 27 September 2007.

Sample Date	Diel Period	Sample Volume (gal.)	Duration (min.)	Flow Calculation Method
8/31/2006	0800-1400	26,386	158	Volumetric
8/31/2006	1400-2000	26,494	130	Volumetric
8/31/2006	2000-0200	26,521	145	Volumetric
8/31/2006	0200-0800	27,750	150	Volumetric
9/14/2006	0800-1400	26,597	118	Volumetric
9/14/2006	1400-2000	26,590	108	Volumetric
9/14/2006	2000-0200	24,620	100	Volumetric
9/14/2006	0200-0800	26,588	115	Volumetric
9/28/2006	0800-1400	29,950	100	In-line Flowmeter
9/28/2006	1400-2000	26,806	75	In-line Flowmeter
9/28/2006	2000-0200	30,207	80	In-line Flowmeter
9/28/2006	0200-0800	26,689	80	In-line Flowmeter
10/12/2006	0800-1400	26,439	127	In-line Flowmeter
10/12/2006	1400-2000	26,442	81	In-line Flowmeter
10/12/2006	2000-0200	25,777	115	In-line Flowmeter
10/12/2006	0200-0800	27,304	92	In-line Flowmeter
10/26/2006	0800-1400	26,420	290	In-line Flowmeter
10/26/2006	1400-2000	27,142	128	In-line Flowmeter
10/26/2006	2000-0200	18,901	360	In-line Flowmeter
10/26/2006	0200-0800	32,072	245	In-line Flowmeter
11/9/2006	0800-1400	26,457	154	In-line Flowmeter
11/9/2006	1400-2000	26,426	124	In-line Flowmeter
11/9/2006	2000-0200	27,275	330	In-line Flowmeter
11/9/2006	0200-0800	26,899	138	In-line Flowmeter
11/21/2006	0800-1400	30,004	127	In-line Flowmeter
11/21/2006	1400-2000	29,443	155	In-line Flowmeter
11/21/2006	2000-0200	27,641	118	In-line Flowmeter
11/21/2006	0200-0800	26,934	133	In-line Flowmeter
12/7/2006	0800-1400	26,432	139	In-line Flowmeter
12/7/2006	1400-2000	26,425	117	In-line Flowmeter
12/7/2006	2000-0200	25,987	150	In-line Flowmeter
12/7/2006	0200-0800	28,539	120	In-line Flowmeter
12/21/2006	0800-1400	26,444	146	In-line Flowmeter
12/21/2006	1400-2000	26,628	148	In-line Flowmeter
12/21/2006	2000-0200	26,366	142	In-line Flowmeter
12/21/2006	0200-0800	28,227	160	In-line Flowmeter
1/4/2007	0800-1400	26,499	108	In-line Flowmeter

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1/4/2007	1400-2000	26,423	115	In-line Flowmeter
1/4/2007	2000-0200	26,896	150	In-line Flowmeter
1/4/2007	0200-0800	29,258	120	In-line Flowmeter
1/11/2007	0800-1400	26,426	130	In-line Flowmeter
1/11/2007	1400-2000	26,434	151	In-line Flowmeter
1/11/2007	2000-0200	26,510	145	In-line Flowmeter
1/11/2007	0200-0800	26,421	151	In-line Flowmeter
1/18/2007	0800-1400	26,431	114	In-line Flowmeter
1/18/2007	1400-2000	26,425	170	In-line Flowmeter
1/18/2007	2000-0200	38,331	232	In-line Flowmeter
1/18/2007	0200-0800	28,517	150	In-line Flowmeter
1/25/2007	0800-1400	26,420	195	In-line Flowmeter
1/25/2007	1400-2000	26,425	128	In-line Flowmeter
1/25/2007	2000-0200	26,718	151	In-line Flowmeter
1/25/2007	0200-0800	26,420	165	In-line Flowmeter
2/1/2007	0800-1400	26,422	118	In-line Flowmeter
2/1/2007	1400-2000	26,416	181	In-line Flowmeter
2/1/2007	2000-0200	33,263	195	In-line Flowmeter
2/1/2007	0200-0800	23,464	255	In-line Flowmeter
2/8/2007	0800-1400	26,455	161	In-line Flowmeter
2/8/2007	1400-2000	26,469	125	In-line Flowmeter
2/8/2007	2000-0200	27,743	185	In-line Flowmeter
2/8/2007	0200-0800	31,651	235	In-line Flowmeter
2/15/2007	0800-1400	26,445	113	In-line Flowmeter
2/15/2007	1400-2000	26,432	190	In-line Flowmeter
2/15/2007	2000-0200	25,410	165	In-line Flowmeter
2/15/2007	0200-0800	20,319	300	In-line Flowmeter
2/22/2007	0800-1400	26,429	177	In-line Flowmeter
2/22/2007	1400-2000	31,020	133	In-line Flowmeter
2/22/2007	2000-0200	25,665	135	In-line Flowmeter
2/22/2007	0200-0800	33,103	150	In-line Flowmeter
3/1/2007	0800-1400	26,591	113	In-line Flowmeter
3/1/2007	1400-2000	26,445	147	In-line Flowmeter
3/1/2007	2000-0200	26,360	131	In-line Flowmeter
3/1/2007	0200-0800	26,422	111	In-line Flowmeter
3/8/2007	0800-1400	29,000	169	In-line Flowmeter
3/8/2007	1400-2000	26,438	116	In-line Flowmeter
3/8/2007	2000-0200	26,386	150	In-line Flowmeter
3/8/2007	0200-0800	33,293	175	In-line Flowmeter
3/15/2007	0800-1400	26,459	129	In-line Flowmeter
3/15/2007	1400-2000	29,584	160	Volumetric
3/15/2007	2000-0200	26,740	140	Volumetric

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3/15/2007	0200-0800	28,875	165	Volumetric
3/22/2007	0800-1400	26,786	244	In-line Flowmeter
3/22/2007	1400-2000	26,493	116	In-line Flowmeter
3/22/2007	2000-0200	26,465	167	In-line Flowmeter
3/22/2007	0200-0800	34,717	270	In-line Flowmeter
3/29/2007	0800-1400	31,242	123	In-line Flowmeter
3/29/2007	1400-2000	26,431	140	In-line Flowmeter
3/29/2007	2000-0200	26,418	116	In-line Flowmeter
3/29/2007	0200-0800	29,057	120	In-line Flowmeter
4/12/2007	0800-1400	26,502	89	In-line Flowmeter
4/12/2007	1400-2000	27,041	111	In-line Flowmeter
4/12/2007	2000-0200	28,866	105	In-line Flowmeter
4/12/2007	0200-0800	27,407	120	In-line Flowmeter
4/26/2007	0800-1400	26,434	126	In-line Flowmeter
4/26/2007	1400-2000	26,480	138	In-line Flowmeter
4/26/2007	2000-0200	27,803	145	In-line Flowmeter
4/26/2007	0200-0800	26,484	145	In-line Flowmeter
5/10/2007	0800-1400	26,519	160	In-line Flowmeter
5/10/2007	1400-2000	26,904	206	Volumetric
5/10/2007	2000-0200	26,364	120	Volumetric
5/10/2007	0200-0800	26,913	170	In-line Flowmeter
5/24/2007	0800-1400	28,065	140	In-line Flowmeter
5/24/2007	1400-2000	20,547	149	Volumetric
5/24/2007	2000-0200	27,706	122	In-line Flowmeter
5/24/2007	0200-0800	26,424	155	In-line Flowmeter
6/7/2007	0800-1400	10,765	315	In-line Flowmeter
6/7/2007	1400-2000	26,423	111	In-line Flowmeter
6/7/2007	2000-0200	16,104	413	In-line Flowmeter
6/7/2007	0200-0800	49,547	358	In-line Flowmeter
6/14/2007	0800-1400	27,030	125	In-line Flowmeter
6/14/2007	1400-2000	26,663	130	In-line Flowmeter
6/21/2007	0800-1400	26,421	145	In-line Flowmeter
6/21/2007	1400-2000	27,079	140	In-line Flowmeter
6/21/2007	2000-0200	27,437	120	In-line Flowmeter
6/21/2007	0200-0800	28,347	153	In-line Flowmeter
6/28/2007	0800-1400	26,497	140	In-line Flowmeter
6/28/2007	1400-2000	26,445	155	In-line Flowmeter
6/28/2007	2000-0200	26,887	180	In-line Flowmeter
6/28/2007	0200-0800	30,130	170	In-line Flowmeter
7/5/2007	0800-1400	26,430	150	In-line Flowmeter
7/5/2007	1400-2000	26,567	154	In-line Flowmeter
7/5/2007	2000-0200	26,424	170	In-line Flowmeter

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7/5/2007	0200-0800	28,420	135	In-line Flowmeter
7/12/2007	0800-1400	26,420	140	In-line Flowmeter
7/12/2007	1400-2000	26,829	188	In-line Flowmeter
7/12/2007	2000-0200	26,453	130	In-line Flowmeter
7/12/2007	0200-0800	26,442	103	In-line Flowmeter
7/19/2007	0800-1400	26,431	151	In-line Flowmeter
7/19/2007	1400-2000	26,598	125	In-line Flowmeter
7/19/2007	2000-0200	26,420	138	In-line Flowmeter
7/19/2007	0200-0800	26,500	135	In-line Flowmeter
7/26/2007	0800-1400	26,699	112	In-line Flowmeter
7/26/2007	1400-2000	26,572	157	In-line Flowmeter
7/26/2007	2000-0200	34,657	160	In-line Flowmeter
7/26/2007	0200-0800	26,436	115	In-line Flowmeter
8/2/2007	0800-1400	26,630	180	In-line Flowmeter
8/2/2007	1400-2000	28,410	124	In-line Flowmeter
8/2/2007	2000-0200	27,017	157	In-line Flowmeter
8/2/2007	0200-0800	34,822	150	In-line Flowmeter
8/9/2007	0800-1400	26,906	111	Volumetric
8/9/2007	1400-2000	26,421	141	In-line Flowmeter
8/9/2007	2000-0200	26,801	118	In-line Flowmeter
8/9/2007	0200-0800	26,641	105	In-line Flowmeter
8/16/2007	0800-1400	26,534	136	Volumetric
8/16/2007	1400-2000	31,088	116	In-line Flowmeter
8/16/2007	2000-0200	28,178	131	In-line Flowmeter
8/16/2007	0200-0800	30,065	116	In-line Flowmeter
8/23/2007	0800-1400	27,098	55	In-line Flowmeter
8/23/2007	1400-2000	26,937	175	In-line Flowmeter
8/23/2007	2000-0200	28,346	106	In-line Flowmeter
8/23/2007	0200-0800	30,377	120	In-line Flowmeter
8/30/2007	0800-1400	26,372	117	Volumetric
8/30/2007	1400-2000	26,436	95	In-line Flowmeter
8/30/2007	2000-0200	26,424	132	In-line Flowmeter
8/30/2007	0200-0800	26,788	87	In-line Flowmeter
9/13/2007	0800-1400	26,536	141	Volumetric
9/13/2007	1400-2000	41,854	170	Volumetric
9/13/2007	2000-0200	33,718	151	Volumetric
9/13/2007	0200-0800	26,289	115	Volumetric
9/27/2007	0800-1400	33,210	135	Volumetric
9/27/2007	1400-2000	32,004	120	Volumetric
9/27/2007	2000-0200	25,104	120	Volumetric
9/27/2007	0200-0800	30,835	106	Volumetric