
Ecological Studies at Oyster Creek Nuclear Generating Station

Progress Report

September 1980 – February 1981

Prepared for

Jersey Central Power & Light Company



ECOLOGICAL ANALYSTS, INC.

PROGRESS REPORT OF ECOLOGICAL STUDIES
AT THE
OYSTER CREEK NUCLEAR GENERATING STATION,
SEPTEMBER 1980 - FEBRUARY 1981

Prepared for

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EXECUTIVE SUMMARY

Aquatic monitoring was conducted at the Oyster Creek Nuclear Generating Station (OCNGS) and vicinity from September 1980 - February 1981. The program comprised five discipline elements: studies of fish and macroinvertebrates at four stations in Barnegat Bay, impingement of fish and macroinvertebrates on the OCNGS traveling screens, entrainment of ichthyoplankton and macroinvertebrates into the OCNGS cooling system, commercial fish landings in Atlantic and Ocean counties, and fish-kill monitoring in the OCNGS discharge. The monitoring programs were carried out pursuant to Appendix B Oyster Creek Nuclear Generating Station Technical Specifications, issued to Jersey Central Power & Light Company by the U.S. Nuclear Regulatory Commission, effective 6 June 1979. This is the third in a series of reports prepared by Ecological Analysts, Inc. for fulfillment of aquatic monitoring requirements of the OCNGS Technical Specifications.

Sampling in Barnegat Bay was carried out monthly, with each station sampled twice during day and twice during night with each of three gear: 45.7-m seine, 12.2-m seine, and 4.9-m otter trawl. Impingement collections were made for a 24-hour period once each week by securing all or known portions of the screenwash from all operating screens. Paired entrainment samples were taken two hours after sunset at both intake and discharge weekly in September and October and every other week from November through February. Once each month, a 24-hour entrainment study was conducted. Collections were made with 36-cm diameter bongo nets with 505- μ m mesh netting. In September and October, the entrainment samples were examined for live and dead fish larvae immediately after collection. Commercial fish landing data for the OCNGS environs were obtained from the National Marine Fisheries Service. Fish-kill monitoring involved observation, collection, and processing of dead fish, a tag-recapture experiment, trawling in the discharge canal, and water quality measurements. Water quality measurements (water temperature, dissolved oxygen, pH, and salinity) were made in conjunction with all biological sampling.

All field collections were processed as dictated by the Quality Assurance Procedures Manual for the Oyster Creek Project and the Technical Specifications. Data were entered on field data sheets and subsequently keypunched and entered onto a PDF-11/70 computer system. Summary programs were run and the output from many of those are incorporated in this report. In addition, total impingement and entrainment abundance estimates were computed with 80 percent confidence intervals. A fish-kill estimate was computed using a mark-recapture model. The data displays and text constitute only a data report, or progress report of data collections; interpretive analyses of data collected from September 1980 - August 1981 are to be provided in the annual report.

The majority of organisms captured in Barnegat Bay were macroinvertebrates, primarily sand shrimp, grass shrimp, blue crab, and xanthid crab juveniles. The most abundant finfish were bay anchovy, Atlantic silverside, and fourspine stickleback. Catches of many species, e.g., bay anchovy, summer flounder, and blue crab, decreased with lowering water temperature throughout the study period. Several species, e.g., sand shrimp and winter flounder, increased in abundance with colder temperatures. Organism abundances varied among stations, but were consistently greater at night. The length-frequency analyses revealed that most organisms occurred in the catches as a mixture

of young and adult forms. No evidence of serious parasitism or disease of fish or macroinvertebrates was noted. Water quality measurements provided typical seasonal ranges: water temperature 0.0-29.3 C, dissolved oxygen 5.1-15.5 mg/liter, pH 7.5-8.3, and salinity 15.0-30.6 ppt.

The impingement of organisms on the OCNGS traveling screens followed a pattern similar to the Barnegat Bay catches. The dominant organisms were macroinvertebrates with sand shrimp, grass shrimp, and blue crab constituting 87.9 percent of impinged organisms. The Atlantic silverside and naked goby were the most abundant finfish impinged. Summer flounder, weakfish, and bluefish were more abundant during the first half of the study period while sand shrimp and winter flounder were impinged in greater numbers during the second half of the study period. Several species, i.e., bluefish, blueback herring, Atlantic menhaden, Atlantic silverside, and northern pipefish, peaked in abundance in the middle part of the study period (late October - early December). Night impingement catches were about four times as great as day catches. It was estimated that 5.5 million organisms were impinged from September 1980 - February 1981; of this total, 4.2 million were sand shrimp. Water quality data for impingement were similar to those described above for Barnegat Bay.

Entrainment sampling revealed that winter flounder eggs and larvae and American sand lance larvae were the most abundant ichthyoplankton. These forms, together constituting 92.7 percent of all entrained ichthyoplankton, were collected primarily in January and February. The collections during September and October were composed of relatively low numbers of larvae and juveniles of summer spawners such as bay anchovy and northern pipefish. Ichthyoplankton densities were quite low from November through early December. No differences in ichthyoplankton densities were noted between day and night except for winter flounder eggs in February night collections; this was attributed to the extrusion of unfertilized eggs from impinged ripe females. In general, viability studies during September and October revealed a greater proportion of live and stunned fish larvae and juveniles at the intake compared to the discharge. The estimated total number of entrained ichthyoplankton for the study period was $1,820.39 \times 10^6$. Water quality patterns are described above.

The entrainment samples were also analyzed for macroinvertebrates. The mysid shrimp, Neomysis americana, was the most abundant macroinvertebrate collected, with densities ranging up to 12,500/100 m³. The amphipod Jassa falcata, was second in abundance. These two species, together with ostracods and the amphipod genus Corophium, accounted for 78 percent of total catch. Organism abundances decreased from a peak of 18,206/100 m³ in September to 3,290/100 m³ in December, then increased slightly to 7,319/100 m³ by February. Whereas N. americana dominated the September through November collections, J. falcata was the most abundant organism from December through February. Most forms were generally more abundant in night collections compared to day collections. An estimated total of $54,113.84 \times 10^6$ macroinvertebrates were entrained during the six-month study period. The estimates for N. americana and J. falcata were $26,512.31 \times 10^6$ and $9,701.08 \times 10^6$, respectively. Water quality patterns are described above.

Because of a time-lag in compilation of data by the National Marine Fisheries Service, commercial landing data for Ocean and Atlantic counties were only available for September 1980 - January 1981. The top three species in Ocean County were summer flounder, weakfish, and hard clam (meats), while corresponding positions in Atlantic County were held by hard clam (meats), summer flounder, and blue crab. The total value of all landings was \$842,905 in Ocean County and \$314,024 in Atlantic County. Only hard clam (meats) in Atlantic County approached the weight and value landed in Ocean County. Separate Barnegat Bay data are no longer compiled, but based on data from previous years, it can be estimated that all of the blue crab and white perch, and substantial portions of the winter flounder and, to a lesser extent, hard clam landings for Ocean County, originated in Barnegat Bay.

Two fish kills in the Oyster Creek discharge were investigated in late November 1980. On 18 and 19 November, 64 blue runners and one white perch were found dead in Oyster Creek. This kill was attributed to a rapid seasonal decline in ambient water temperature. The shutdown of the OCNCS on 22 November resulted in a second kill. A total of 4,228 dead fish were collected, primarily bluefish (1,038) and jacks (3,163). Based on the recovery of fish tagged prior to the shutdown, it was estimated that 17,402 jacks were present in the discharge prior to shutdown; the corresponding estimate for bluefish was 48,833. From a review of thermal tolerance data, it was inferred that all jacks present in the discharge canal were killed while only a portion (~10 percent) of the bluefish were killed. The kill resulted from the lowering of the water temperature in the discharge canal to or below the lower lethal limit for the species involved.

1. INTRODUCTION

Nonradiological Environmental Technical Specifications monitoring was conducted at the Oyster Creek Nuclear Generating Station (OCNGS) for the period 1 September 1980 - 28 February 1981. This is the third in a series of reports of aquatic biological monitoring conducted by Ecological Analysts, Inc. (EA) pursuant to Appendix B Oyster Creek Nuclear Generating Station Technical Specifications, issued to Jersey Central Power & Light Company (JCP&L) by the U.S. Nuclear Regulatory Commission (U.S. NRC 1978) to be effective 6 June 1979.

The generating station and surrounding area were described by Danila et al. (1979), based on literature reviews and their own studies. The OCNGS is a 620-MWe boiling-water reactor, located 3.2 kilometers inland from Barnegat Bay in Lacey Township, New Jersey (Figure 1-1). During station operation, the south branch of Forked River serves as a cooling water intake canal, with streamflow reversed; Oyster Creek is the discharge canal. Cooling water is discharged into Barnegat Bay, a large, shallow estuary created by offshore barrier beaches. A limited exchange of bay and ocean water occurs through narrow Barnegat Inlet and the Manasquan Canal.

The potential or actual interaction of OCNGS and Barnegat Bay has been under study since 1966 (Danila et al. 1979). Early preoperational studies were conducted by Rutgers University and concentrated on benthic invertebrates, algae, and fish. These studies continued, with the inclusion of plankton, after commercial operation of OCNGS began in December 1969; most were carried out under the auspices of either Rutgers University or the New Jersey Division of Fish, Game, and Shellfish. The results of these studies were evaluated in the Final Environmental Statement published by the U.S. Atomic Energy Commission (U.S. AEC) in 1974. In 1978, Jersey Central Power & Light Company produced 316(a) and (b) demonstrations (JCP&L 1978) which evaluated the previous studies, including the first two years of aquatic monitoring studies done by Ichthyological Associates (IA) (Tatham et al. 1977). The IA studies continued until June 1979 when EA assumed the monitoring studies, both as a continuation of previous programs and as the first Environmental Technical Specifications aquatic monitoring. Data from April and May 1979 (IA collections) and June, July, and August 1979 were reported by Ecological Analysts, Inc. (1980). An interpretive report, covering the period September 1979 - August 1980, with comparisons to previous data, was produced in February (Ecological Analysts 1981).

This report consists of data descriptions for each discipline studied by EA for the six months ending 28 February 1981. After a description of field and laboratory methodologies in Chapter 2, Chapters 3 through 8 treat, in turn, the results of Barnegat Bay fishery studies, impingement, ichthyoplankton entrainment, macroinvertebrate entrainment, commercial catch data, and fish-kill monitoring. A combined reference section is provided at the end of the report. Tabular presentations associated with each discipline are in consecutive order at the end of the appropriate chapter. Water quality data are presented for each appropriate discipline.

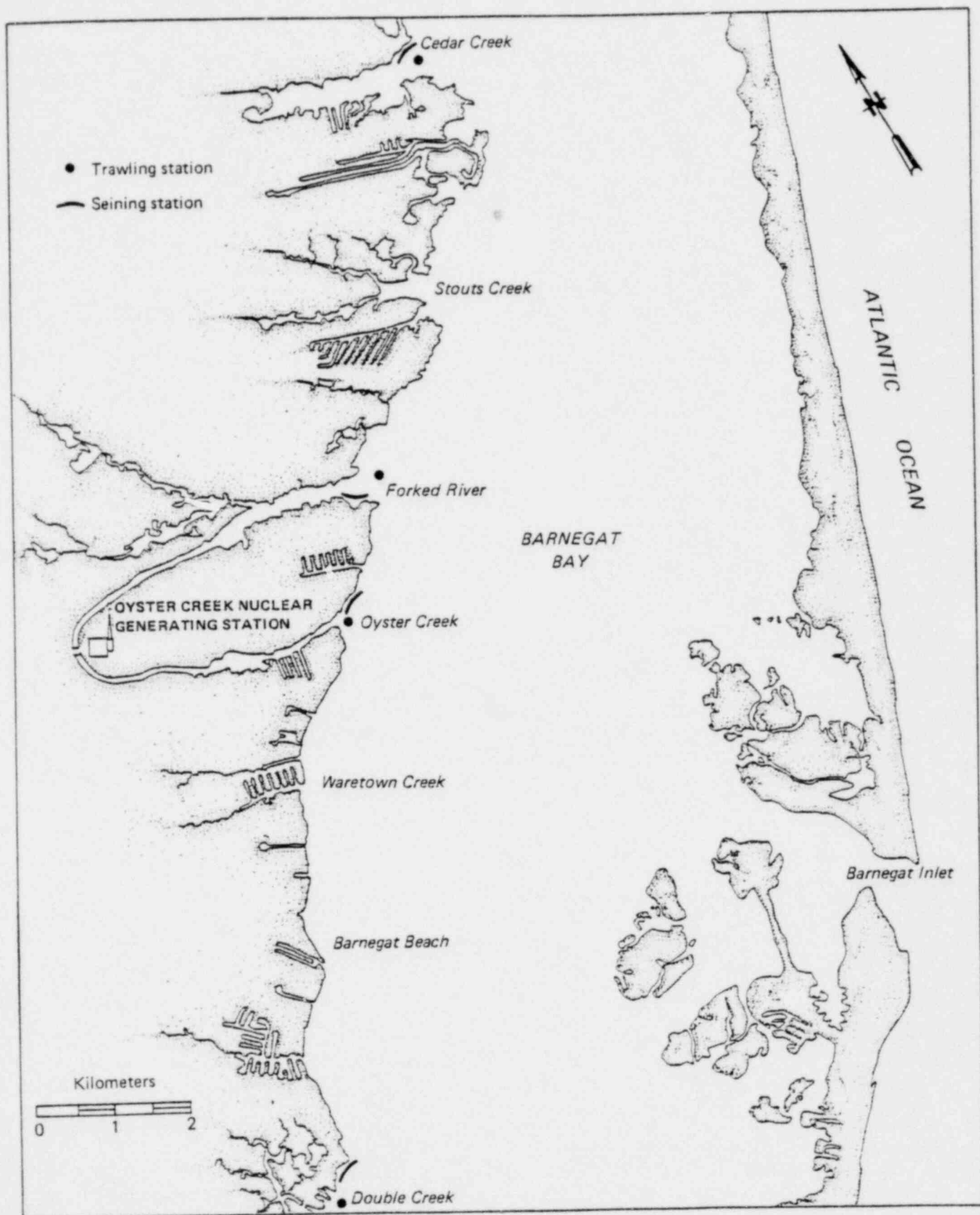


Figure 1-1. Map of the middle portion of Barnegat Bay showing trawling and seining locations (adapted from Tatham et al. 1978).

2. METHODS

2.1 BARNEGAT BAY FISHERIES

Finfish and shellfish sampling was carried out once per month at the mouths of Cedar Creek, Forked River, Oyster Creek, and Double Creek (Figure 1-1). Three gears were employed: a 45.7-m x 2.4-m bag seine with 2.5-cm stretched mesh; a 12.2-m x 1.8-m straight seine with 0.6-cm stretched mesh; and a 4.9-m semiballoon otter trawl with 1.3-cm stretched mesh codend liner. With each gear, duplicate samples were taken once during the day and once during the night at each sampling station. The 45.7-m seine was deployed in a semicircle from a boat and pulled by hand. The 12.2-m seine was extended parallel to shore with one pole onshore and pulled in a semicircle. Trawl hauls were standardized at 5-minute tows at ~1,200 rpm.

After each replicate sample, the catch was sorted and all organisms enumerated and identified. Key species, i.e., Atlantic menhaden, bay anchovy, Atlantic silverside, northern pipefish, striped bass, bluefish, weakfish, northern kingfish, summer flounder, winter flounder, northern puffer, sand shrimp (12.2-m seine only), and blue crab, were measured to the nearest millimeter fork length (finfish), carapace width (blue crab), or tip of telson to tip of antennal scale (sand shrimp). A representative selection of 50 specimens of an individual species/life stage was measured, if more than 50 were caught. If the same species/life stage was encountered in the second haul, up to 50 were again measured. When large numbers of organisms, such as shrimp, small crabs, or anchovies, or large amounts of debris were encountered, subsampling was done and total counts were extrapolated. Any organism of questionable identity was preserved and returned to the laboratory for examination. Records were kept of organisms having external parasites, disease, or morphological abnormalities.

2.2 IMPINGEMENT

Impingement sampling was performed in the sluiceway pit, an open cuboid area downstream of all intake screens, at the point in the sluiceway where the screenwash conduit leads under the adjacent roadway to the discharge area (Figure 2-1). Samples were collected in a 101.6-cm x 101.6-cm x 121.9-cm wire basket with 10.7-mm square mesh. When the larger basket was removed for emptying, a smaller basket with identical mesh was placed in the sluiceway pit.

Impingement collections were made over a 24-hour period once per week. Each collection consisted of a 2-hour time period in which

1. all organisms were collected (2-hour collection and screenwash cycle),
2. one-half of the organisms were collected (1-hour collection and screenwash cycle), or
3. some fraction of organisms less than one-half were collected (continuous screenwash mode).

In the latter two cases, the total catch for the 2-hour time period was an estimate based on the ratio of the time period sampled to the entire 2-hour period.

This sampling approach was necessitated by the variation in the amount of organisms and debris encountered. Case 1 usually held for daylight hours when organism and debris loads were relatively light, and screens were routinely washed every two hours. Because of higher debris and organism loads at night, the screens were normally washed once per hour. Only one of the two screenwashes was collected in any nighttime 2-hour block (Case 2), because of physical limitations of the sampling system. The Case 3 approach was necessary at times when the debris load was so great that the screens were operated continuously. At these times, attempts were made to obtain at least 1/2-hour subsamples for each 2-hour sample block.

Impingement catches were processed in a manner similar to that described for field fisheries in Section 2.1, except that no length measurements were taken. Also, the total weight of each species was recorded. Subsampling of shrimp was carried out when large amounts of debris were present. Any organisms of questionable identity were preserved for subsequent laboratory examination.

2.3 ENTRAINMENT

Entrainment samples were collected at both intake and discharge (Figure 2-1). During September and October 1980, two samples were collected at each location two hours after sunset once each week. From November 1980 - February 1981, these samples were taken once every two weeks. Once each month, 24-hour sampling was conducted with four pairs of samples collected, two during the night and two during the day.

Samples were collected with a frame-mounted pair of 36-cm diameter bongo nets of 505- μ m mesh. A General Oceanics flowmeter was secured in the mouth of each net and to the frame outside the nets. The gear was suspended by wire from a boom and operated by hand winch. Two consecutive oblique tows were made; each tow sampled the entire (discharge) or part (intake) of the water column. The recirculation tunnel blocked part of the water column at the intake, however, a minimum of two cubic meters of water was filtered at both locations. Discharge samples were collected 1-5 minutes after the intake samples to ensure that the same water mass was sampled. After each collection, the nets were carefully washed to concentrate the sample in the codend jars.

Samples were transported to the lab trailer where each sample was sorted in a water bath of the same temperature as the water from which the collection was made. All fish larvae were classified as either live, stunned, or dead and placed in labeled vials in 5 percent buffered formalin. After viability examination, the vials were placed in the jar with the remainder of the sample from which the larvae came. Ctenophores from the intake samples were counted prior to preservation.

In the laboratory, all samples were sorted under a dissecting stereomicroscope. Macrozooplankton and fish eggs and larvae were removed and placed in labeled vials according to gross taxonomic groups (e.g., Amphipoda, Annelida, Mysidacea) and fish larvae and eggs. When the number of organisms was large, subsampling was carried out using a Folsom plankton splitter. Sample fractions were sorted

until 50 specimens of each major (abundant) macroinvertebrate group, and 100 specimens each of fish eggs and larvae, if present, were found. Intake samples were identified to the lowest practical taxon for ichthyoplankton. Crustacean zoeae were identified to species level with the exception of mud crab which was identified to family. Other invertebrates were identified to major taxonomic groups, i.e., amphipods, mysids, isopods, cumaceans, and polychaetes. All organisms in discharge samples were identified to the lowest possible taxa.

2.4 COMMERCIAL CATCH DATA

The commercial landing data for finfish and shellfish in Ocean County and Atlantic County, New Jersey, were obtained from Mr. Eugene LoVerde of the National Marine Fisheries Service office at Toms River, New Jersey.

2.5 FISH-KILL MONITORING

During 18-23 November 1980, EA carried out a series of observations and sampling procedures in connection with fish kills in Oyster Creek. On 18 and 19 November, shoreline examinations and trawling were conducted in response to a reported fish kill. Dead fish were collected, identified, measured, and weighed.

On 20 and 21 November, sampling was carried out in the condenser discharge to identify the populations present prior to plant shutdown. Gill nets of 8.9- and 12.7-cm stretched mesh were set in the condenser discharge. Angling was done to collect additional samples. Most of the fish caught by angling were "tagged" by affixing a staple to the caudal fin, then returned to the water.

When plant shutdown procedures began on 21 November (2200 hours), frequent observations, trawl sampling, and water quality measurements were made in the discharge canal. These activities continued until midday on 22 November, and were carried out again for several hours on 23 November. Dead fish were processed as described above.

Based on the collection of dead fish that were originally tagged on 20 and 21 November, an estimate was made of the number of certain species present in the area of the condenser discharge prior to the shutdown event. The method used was the adjusted Petersen estimate (Ricker 1975):

$$N = \frac{(m+1)(c+1)}{R+1} \quad (\text{Equation 2-1})$$

where

N = number present in population sampled

M = number of fish marked

C = sample taken for census (i.e., the dead fish collected)

R = number of tagged fish recaptured

Ninety-five percent confidence limits were taken from tabulated values in Ricker (1975).

2.6 WATER QUALITY MEASUREMENTS

Water quality measurements were made in conjunction with routine biological sampling, and included water temperature, pH, salinity, dissolved oxygen (DO), and chlorine (the latter during entrainment sampling only). A Yellow Springs Instrument Co. (YSI) Model 57 DO meter was used to measure dissolved oxygen; the instrument was calibrated weekly before each use. Water temperature and salinity were measured with a YSI Model 33 Salinity-Conductivity-Temperature (S-C-T) meter that was calibrated semimonthly. Measurements of pH were made with a Corning 610A meter, calibrated at least once per week. Chlorine concentrations were determined using a Fisher-Porter amperometric titrator.

During Barnegat Bay fisheries surveys, water quality measurements were taken 0.5 meters below the surface once at each seining station; at each trawling station, they were made both before and after sampling just above the bottom. Measurements were made at the surface and bottom in the OCNGS intake during each screenwash or during each impingement collection if screens were operating continuously. Entrainment sampling included surface and bottom water quality measurements between each oblique tow at the intake and surface measurements only at the discharge. Chlorine data were taken only at the discharge.

2.7 DATA PROCESSING

Field and laboratory data were recorded on standard data sheets and checked for accuracy. Data were punched onto cards, entered on magnetic tape, and loaded into a PDP-11/70 computer. An initial data verification program was run and the output checked against the original data sheets. Various summary programs were then run to reduce the data for examination. Primary among these were a percentage abundance program and a station-date catch matrix.

Total impingement and entrainment was estimated for the period September 1980 - February 1981. Weekly total estimates of impingement were also computed.

2.7.1 Impingement Estimates

The impingement sampling program at OCNGS employed a multistage sampling design. During the first stage, sampling days were selected once a week and these sampling days were sequentially grouped into strata so that no stratum had fewer than two sample days. During the second stage, the sample day was partitioned into two 12-hour periods roughly representing day and night. As a third stage, the 12-hour periods were further subdivided into six 2-hour periods. In some cases, all fish impinged in the 2-hour period were collected and counted giving an exact count for impingement. During periods of heavy impingement, a fourth stage was employed whereby a subinterval of the 2-hour period was sampled.

Using data collected by this sampling design, impingement estimates were computed with the formulas:

$$\hat{I} = \sum_{i=1}^L N_i \bar{Y}_i \quad (\text{Equation 2-2})$$

where

\hat{I} = estimated total number (or weight) of organisms impinged
 L = total number of strata
 i = ordinal number for strata
 N_i = number of days in the i^{th} stratum

$$\bar{Y}_i = \frac{1}{n_i} \sum_{j=1}^{n_i} \hat{Y}_{ij} \quad (\text{Equation 2-3})$$

= average daily impingement for i^{th} stratum

where

n_i = number of sample days in i^{th} stratum
 j = ordinal number for sample day

$$\hat{Y}_{ij} = \sum_{k=1}^2 \hat{Y}_{ijk} \quad (\text{Equation 2-4})$$

= estimated impingement for j^{th} sample day of i^{th} stratum

where

2 = number of diel periods
 k = ordinal number for diel period

$$\hat{Y}_{ijk} = \sum_{l=1}^6 \frac{T_{Bijkl}}{T_{sijkl}} Y_{ijkl} \quad (\text{Equation 2-5})$$

= estimated impingement of the k^{th} diel period
of the j^{th} sample day of the i^{th} stratum

where

6 = number of blocks within diel periods
 l = ordinal number for block
 T_{Bijkl} = length (in minutes) of block
 T_{sijkl} = time sampled (in minutes) in block
 Y_{ijkl} = count of organisms for the sample collected in the $ijkl^{\text{th}}$ block

The estimated variance of \hat{I} that was used for computing confidence intervals was computed by the formula

(Equation 2-6)

$$\hat{\text{Var}}(\hat{I}) = \sum_{i=1}^L \frac{N_i}{n_i} \left[(N_i - n_i) S_{1i}^2 + \sum_{j=1}^{n_i} \sum_{n=1}^2 \sum_{l=1}^6 \text{Var}(Y_{ijkl}) \right]$$

where

$$S_{1i}^2 = \frac{1}{n_i - 1} \sum_{j=1}^{n_i} (\hat{Y}_{ij} - \bar{Y}_i)^2$$

$$\hat{\text{Var}}(Y_{ijkl}) = \frac{T_{Bijkl}^2 - T_{Bijkl} T_{sijkl}}{T_{sijkl}^2} Y_{ijkl}$$

The 80 percent confidence intervals were then computed using the normal approximation

$$\hat{I} \pm 1.645 \sqrt{\hat{\text{Var}}(\hat{I})}$$

Weekly impingement estimates were computed by multiplying the estimated impingement for the j^{th} sample day of the i^{th} stratum by seven.

$$\hat{I}_{ij} = \hat{Y}_{ij} \cdot 7 \quad (\text{Equation 2-7})$$

where

\hat{I}_{ij} = estimated impingement for j^{th} week of i^{th} stratum
 Y_{ij} = as defined above

2.7.2 Entrainment Estimates

The entrainment sampling program at OCNCS employs two-way stratification with subsampling of experimental units as a sampling frame. The period of collection was stratified into months to allow for seasonal variations in abundances. The collections were further stratified into periods of day and night to allow for diel trends in abundance of some organisms.

The time delimiters for diel stratification were determined by the average sunrise and sunset times for latitude 40° N during each stratum. Each diel period (day or night) was divided into two equal sampling units, and the samples from a unit were considered representative of the entire unit.

Because entrainment is known to be greater at night, the night stratum of each month was allocated a greater number of samples to improve the precision of the estimate. In general, two samples were collected during the day stratum and five or six were collected at night. Each sample consisted of

two sequential replicates to ensure that a sample of adequate duration was collected.

Using the data collected according to this sampling plan, entrainment estimates were computed for each species with the formula

$$\hat{E} = \sum_{i=1}^L N_i \bar{Y}_i \quad (\text{Equation 2-8})$$

where

\hat{E} = estimated entrainment for period of collection
 L = total number of strata
 i = ordinal number for strata
 N_i = the number of sampling units in the i^{th} stratum

$$\bar{Y}_i = \frac{1}{n_i} \sum_{j=1}^{n_i} \hat{Y}_{ij} \quad (\text{Equation 2-9})$$

where

\bar{Y}_i = estimated average daily entrainment for i^{th} stratum
 n_i = the number of sampling units sampled in the i^{th} stratum
 j = ordinal number for sample within stratum

$$\hat{Y}_{ij} = \left(\frac{T_{ui}}{1440} \right) \left(\frac{V_{ij}}{V_{sij}} \right) Y_{ij} \quad (\text{Equation 2-10})$$

where

\hat{Y}_{ij} = estimated entrainment for j^{th} day of i^{th} stratum
 T_{ui} = duration in minutes of a sampling unit in the i^{th} stratum
 1440 = number of minutes in 24 hours
 V_{ij} = volume pumped through plant (cooling water and dilution water) on j^{th} sample day of i^{th} stratum
 V_{sij} = volume sampled on j^{th} sample day of i^{th} stratum
 Y_{ij} = count of organisms collected in a sample

The variance of \hat{E} was computed as

(Equation 2-11)

$$\hat{\text{Var}}(\hat{E}) = \sum_{i=1}^L \frac{N_i^2}{n_i} \left[(N - n_i) S_{1i}^2 + \sum_{j=1}^{n_i} \hat{\text{Var}}(\hat{Y}_{ij}) \right]$$

where

$$S_{1i}^2 = \frac{\sum_{j=1}^{n_i} (\hat{Y}_{ij} - \bar{Y}_i)^2}{n_i - 1}$$

and assuming $Y_{ij} \sim$ Poisson distribution

$$\text{Var}(\hat{Y}_{ij}) = \left[\left(\frac{T_{ui}}{1440} \right) \left(\frac{V_{ij}}{V_{sij}} \right) \right]^2 Y_{ij} \quad (\text{Equation 2-12})$$

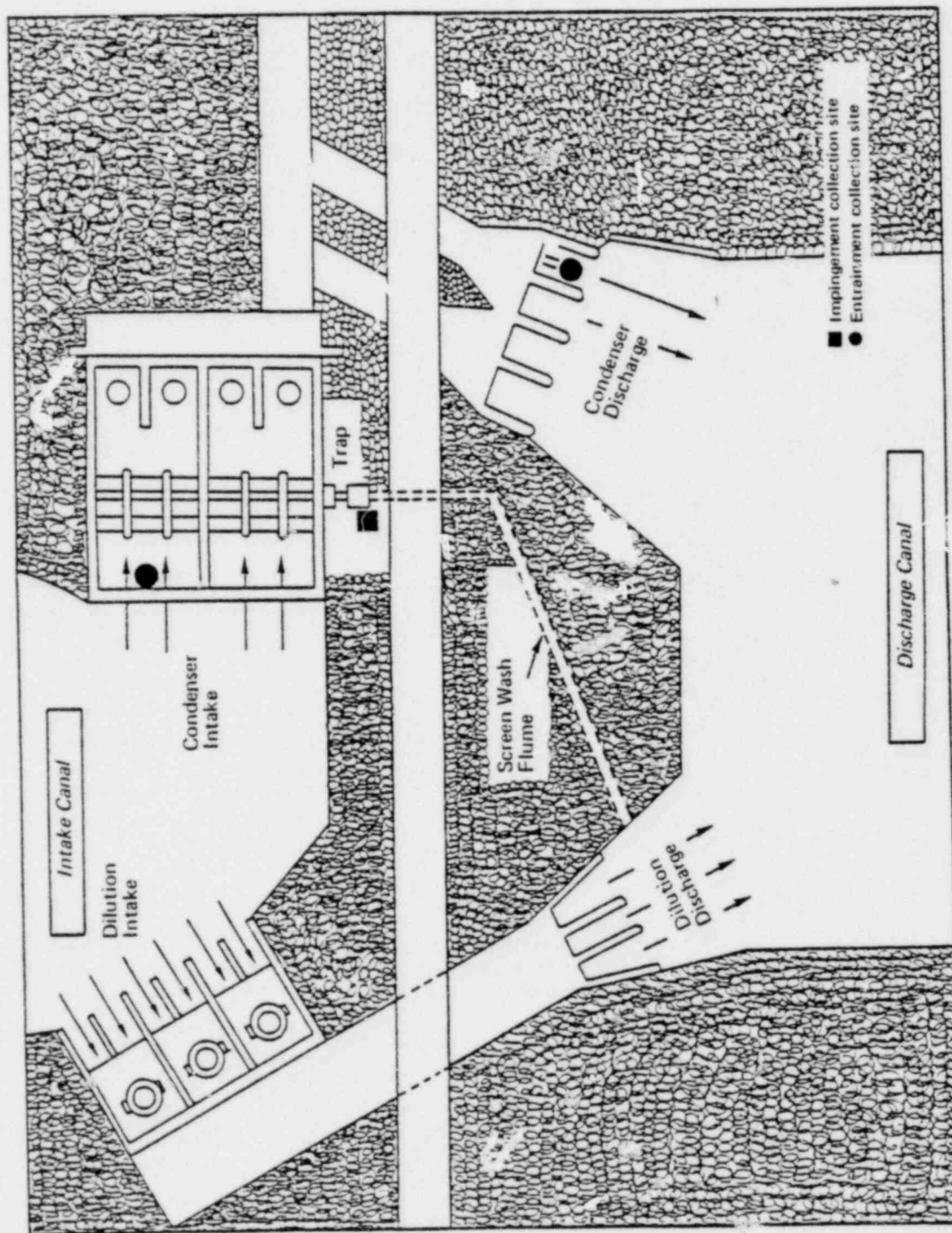


Figure 2-1. Diagram of the intake and discharge of the circulating water system and the dilution pumps at the Oyster Creek Nuclear Generating Station (adapted from Tatham et al. 1978).

3. COMPOSITION AND ABUNDANCE OF FINFISH AND SHELLFISH IN BARNEGAT BAY

The results of the September 1980 - February 1981 sampling with 45.7-m and 12.2-m seines and 4.9-m trawl are presented separately for each gear. Parasite/disease and water quality data associated with the biological sampling are included. For reference, a list of scientific and common names of finfishes is presented in Appendix A.

3.1 TRAWL DATA (4.9-m)

Trawling produced a total of 61,841 specimens comprising 35 species of finfish and 12 macroinvertebrate taxa (Table 3-1; also see Appendix B). The sand shrimp (Crangon septemspinosa) was most abundant, totaling over 48,000 specimens or 78 percent of the catch. Xanthid crab juveniles and the grass shrimp (Palaemonetes vulgaris) were the second and third ranked taxa, with just over 6,000 and 3,000 specimens, respectively. Together, these three macroinvertebrate taxa made up 92.4 percent of the total catch. The most abundant finfish was the fourspine stickleback (Apeltes quadracus), which ranked fourth in abundance, totaling 1,272 specimens or 2.1 percent of the catch. The only other finfish constituting more than 1 percent of the total catch was the bay anchovy (Anchoa mitchilli).

Of the above species, the sand shrimp and bay anchovy are key species designated in the Technical Specifications. The blue crab (Callinectes sapidus), also a key species, was fifth in overall abundance with a total of 1,037 specimens (including juveniles). Significant key species of finfish were encountered: winter flounder (Pleuronectes americanus), summer flounder (Paralichthys dentatus), Atlantic silverside (Menidia menidia), northern pipefish (Syngnathus fuscus), weakfish (Cynoscion regalis), northern puffer (Sphoeroides maculatus), and Atlantic menhaden (Brevoortia tyrannus). Of these, only the winter flounder produced more than a hundred specimens for the study period. Key species that were not collected by trawl were the bluefish (Pomatomus saltatrix), striped bass (Morone saxatilis), and northern kingfish (Menticirrhus saxatilis).

For the abundant key species, there was considerable variation in catch rates from month to month (Table 3-2). Summer flounder occurred in low numbers from September through November but disappeared thereafter. Winter flounder were collected in all months but were most abundant from December through February. Catches of bay anchovy averaged 40.8 per haul during September, but decreased rapidly thereafter and were not caught in January or February. Average catches of the sand shrimp increased from September to a peak of 1,604.4 per haul in January, then decreased sharply in February. Blue crabs were encountered in all months, but in relatively low numbers in January and February. These temporal variation patterns generally reflect the periods of abundance of these species in Barnegat Bay, as described in Ecological Analyses (1981).

Station-to-station and day-night variations were also evident in the catch data (Table 3-2). Although individual catches of summer flounder varied among sampling stations, the six-month means were consistent across stations. Night catches of this species averaged a little higher than day catches,

except at Oyster Creek. Catch rates of winter flounder were low and uniform among Cedar Creek, Forked River, and Double Creek, but were about 17 times higher at Oyster Creek. Night catches of winter flounder averaged from 1.5 to 4 times higher at all stations, compared to day catches. Individual catches of bay anchovy were quite variable among stations and day-night periods. The largest six-month mean catch of 49.4 bay anchovy per haul at Double Creek (night) was a result of a large catch on 9 September 1980. Sand shrimp were captured at all stations, but averaged nearly seven times more abundant at Double and Oyster creeks. Night catches were greater at all stations, ranging from 2.8 (Cedar Creek) to 7.2 times (Double Creek) as great as day catches. Oyster Creek produced the greatest number of blue crabs, by virtue of several large night catches. Catches were variable among the other stations, but consistently greater at night, except at Double Creek.

Length-frequency tabulations for several key species are presented in Table 3-3. Nearly all summer flounder captured were in the 100-300 millimeter range, and thus were one-year-old juveniles of the fall 1979 spawn. Winter flounder catches included a mixture of juveniles and adults. Those specimens between 50 and 150 millimeters taken from December through February were juveniles spawned the previous winter. Fishes over 250 millimeters were taken primarily during December through February, the spawning period for the species, and the majority of these were mature adults. The majority of bay anchovy were young of the year under 40 millimeters spawned in summer 1980. Most of the blue crabs captured were immature specimens under 120-mm carapace width.

3.2 SEINE DATA (45.7-m)

Forty-one species of finfish and 12 macroinvertebrate taxa were collected in the 45.7-m seine (Table 3-4). The total number collected during the study period was 17,310. Macroinvertebrates dominated the seine catches with sand shrimp, blue crab, and grass shrimp comprising 90 percent of the organisms collected. Only two finfish, Atlantic silverside and bay anchovy, separately accounted for more than 1 percent of the catch. Of the top five species, all except grass shrimp are designated as key species in the Technical Specifications. Other key species captured by the 45.7-m seine were, in decreasing abundance order, bluefish, winter flounder, northern pipefish, summer flounder, weakfish, and Atlantic menhaden.

Catch rates for abundant key species are presented by station and date in Table 3-5 (monthly catches for all species are presented in Appendix C). Bluefish were taken only in September and October. Similarly, bay anchovy occurred only in September (except for a few in the Oyster Creek discharge in December). Atlantic silverside were more abundant at Cedar Creek, Forked River, and Double Creek, and virtually absent from Oyster Creek in September and October. Conversely, the species was low in abundance or absent from Cedar Creek, Forked River, and Double Creek from November through February, while its abundance greatly increased at the Oyster Creek station. Sand shrimp numbers were relatively low during the first and last parts of the study period and high (530.6 per haul) in December. Blue crabs were collected in all months, but in low numbers after October.

Regarding station-to-station and day-night variation, the numbers of bluefish were too low to discern a pattern. The same is true for bay anchovy, with two catches, one at Forked River (day) and one at Double Creek (day) in September, accounting for the majority of the catch. Atlantic silverside catches varied considerably among stations, dates, and day-night periods, with Oyster Creek producing the greatest numbers. Sand shrimp were most abundant at Oyster Creek and least abundant at Double Creek. Sand shrimp catches were markedly greater at night at all stations. Blue crabs were most abundant at Cedar Creek and least abundant at Forked River. As with sand shrimp, blue crab catches were consistently larger at night at all stations.

Length-frequency data are presented for certain key species (Table 3-6). The relatively few bluefish caught in fall 1980 were all juveniles between 50 and 150 millimeters. Those Atlantic silverside over 80 millimeters were adults, while most of those under 80 millimeters were young spawned in spring 1980. The bay anchovy catch (primarily September) consisted of a mixture of young of the year (~40-60 mm) and older individuals. Nearly all blue crabs captured with the 45.7-m seine were immature individuals under 120-mm carapace width; most fell between 20 and 60 millimeters.

3.3 SEINE DATA (12.2-m)

A total of 27,116 organisms were collected with the 12.2-m seine during the study period, including 36 species of finfish and seven macroinvertebrate taxa (Table 3-7). As with the other gear, macroinvertebrates dominated the catch. Sand shrimp (69.7 percent), grass shrimp (5.5 percent), and blue crab (1.8 percent) together made up 77 percent of the catch. Atlantic silverside was second in overall abundance with 2,720 specimens (juveniles included). The bay anchovy and fourspine stickleback contributed 5.2 and 3.5 percent, respectively. In addition to the sand shrimp, blue crab, Atlantic silverside, and bay anchovy, five other key species were collected: northern pipefish, Atlantic menhaden, winter flounder, bluefish, and summer flounder.

To provide insight into variation over time, station, and day-night periods, station-date matrices are presented in Table 3-8 (monthly catches for all species are presented in Appendix D). Based on overall mean-catch rates, abundances of Atlantic silverside were similar for all months except January, when they were virtually absent. As previously noted for the other gear, bay anchovy were caught primarily in September. Overall mean catch rates for sand shrimp increased from 37.1 per haul in September to a peak of 488.7 per haul in December, then decreased again. Blue crab catches ranged from 1.5 to 43.5 per haul during September - October, after which very few were collected.

Although overall monthly means for Atlantic silverside were rather consistent, this was not the case for individual stations. Oyster Creek produced nine times more silversides than Cedar Creek, and most were caught in November and December. At the other stations (unheated), the greatest catches were in September and October. There was no consistent variation in day-night catches of Atlantic silverside. Most of the bay anchovy collected were taken in September at Cedar Creek and Double Creek; night catches averaged higher than day catches. The highest catches of sand shrimp were

produced at Cedar Creek and the lowest at Oyster Creek. Night catches were greater at all stations and dates. Blue crab numbers varied among stations and dates, but on the average were similar across all stations. Night abundances were greater than day abundances by a factor of 2.9 (Oyster Creek) to 4.9 (Cedar Creek).

Length-frequency data for the above species are presented in Table 3-9. Both adults (375 mm) and young-of-the-year Atlantic silverside were collected; the majority of the specimens were between 60 and 100 millimeters. The collection of bay anchovy consisted of virtually all young-of-the-year fish under 60 millimeters. This contrasts with the 45.7-m seine catch, which produced more adults. Most (93 percent) of the sand shrimp measured were adults over 20 millimeters. Smaller adults (20-40 mm) were the most abundant size group. Most blue crabs captured were immature forms between 6- and 60-mm carapace width.

3.4 EXTERNAL PARASITES, DISEASE, AND MORPHOLOGICAL ABNORMALITIES

During the study period, only minor incidences of disease and morphological abnormalities were noted. No parasitism was noted. Missing caudal fin was the most common characteristic noted; this occurred with eight four-spine stickleback and one each of striped mullet (Mugil cephalus), permit (Trachinotus falcatus), sheepshead minnow (Cyprinodon variegatus), and summer flounder. Scoliosis, or curvature of the spine, was recorded for one specimen of tidewater silverside (Menidia beryllina) and one fourspine stickleback. One winter flounder was found with a large (healed) wound in the dorsal fin area and another with a lesion on the ventral surface.

3.5 WATER QUALITY DATA ASSOCIATED WITH BARNEGAT BAY FISHERIES STUDIES

Water quality measurements were made in conjunction with each biological sample. The characteristics measured were dissolved oxygen (DO), pH, water temperature, and salinity. For seine sampling, measurements were made just below the water surface; for trawl sampling, just above the bottom. The data are provided in Tables 3-10 (seine) and 3-11 (trawl).

Mean DO values during seining ranged from 6.8 mg/liter in September to 14.1 mg/liter in January. The minimum value recorded was 5.5 mg/liter at Forked River (night) in September and the maximum was 15.5 mg/liter at Oyster Creek (day) in January. There was some variation among stations and day-night periods, but no consistent patterns.

The pH readings at inshore stations (seine) ranged from 7.5 to 8.3. There were no marked differences between stations, day-night periods, or dates.

Salinity values for seine data ranged from 15.0 ppt at Cedar Creek (day) in September to 28.0 ppt at Double Creek (day) in September. Salinity was lowest at Cedar Creek and highest at Double Creek. In general, monthly salinity values were similar throughout the six-month study period.

Near-surface water temperature ranged from 1.0 C at Forked River in January to 25.6 C at Oyster Creek in September (Table 3-10). Temperatures were similar at Cedar Creek, Forked River, and Double Creek, but averaged several degrees higher at the mouth of the Oyster Creek discharge. Daytime temperatures averaged slightly higher than nighttime temperatures at all stations.

The water quality data associated with trawl sampling (Table 3-11) were generally similar to the seine water quality data. DO averaged slightly lower and water temperature slightly higher at the trawl stations. Salinity also averaged slightly higher at the trawl stations.

TABLE 3-1 TOTAL NUMBER, PERCENT COMPOSITION, AND CUMULATIVE PERCENT
OF FISH AND MACROINVERTEBRATES COLLECTED BY OTTER TRAWL
IN BARNEGAT BAY, SEPTEMBER 1980 - FEBRUARY 1981

SPP. NAME	NUMBER	%	CUMU. %
CRANGON SEPTENTRIONALIS	48083.000	77.753	77.753
FAMILY XANTHIDAE JUV.	6025.000	9.743	87.495
PALAEMONETES VULGARIS	3032.000	4.903	92.398
APELTES QUADRATUS	1272.000	2.057	94.455
CALLINECTES SAPIDUS	922.000	1.491	95.946
ANCHOA MITCHILLI	712.000	1.151	97.097
GOBIOSOMA BOSCI	537.000	0.868	97.966
CLASS ASTEROIDEA	272.000	0.440	98.406
PSEUDOPLEURONECTES AMERI	194.000	0.314	98.719
LIBINIA DUBIA	133.000	0.215	98.934
CALLINECTES SAPIDUS JUV	115.000	0.186	99.120
HIPPOLYTE SP	101.000	0.163	99.284
PARALICHTHYS DENTATUS	56.000	0.091	99.374
MENIDIA MENIDIA	50.000	0.081	99.455
OPSANUS TAU	38.000	0.061	99.516
SYNGNATHUS FUSCUS	37.000	0.060	99.576
MYOXOCEPHALUS AENEUS	36.000	0.058	99.635
NEOPANOPE TEXANA SAYI	34.000	0.055	99.690
TRINECTES MACULATUS	27.000	0.044	99.733
CONGER OCEANICUS	24.000	0.039	99.772
CYNOSCION REGALIS	20.000	0.032	99.804
ETROPUS MICROSTOMUS	20.000	0.032	99.837
CHASMODES BOSQUIANUS	19.000	0.031	99.867
TAUTOGA ONITIS	12.000	0.019	99.887
FUNDULUS HETEROCLOTUS	11.000	0.018	99.905
ANGUILLA ROSTRATA	9.000	0.015	99.919
HIPPOCAMPUS ERECTUS	8.000	0.013	99.932
CYPRINODON VARIEGATUS	5.000	0.008	99.940
PRIONOTUS EVOLANS	5.000	0.008	99.948
PANOPEUS HERBSTII	5.000	0.008	99.956
DASYATIS SAYI	2.000	0.003	99.960
ALOSA AESTIVALIS	2.000	0.003	99.963
LUCANIA PARVA	2.000	0.003	99.966
CARANX HIPPOS	2.000	0.003	99.969
CHAETODON OCELLATUS	2.000	0.003	99.973
SCOPHTHALMUS AQUOSUS	2.000	0.003	99.976
SPHOERODES MACULATUS	2.000	0.003	99.979
CLASS SCYPHOZOA	2.000	0.003	99.982
BREVOORTIA TYRANNUS	1.000	0.002	99.984
UROPHYCIS CHUSS	1.000	0.002	99.985
MENIDIA SP	1.000	0.002	99.987
MORONE AMERICANA	1.000	0.002	99.989
LUTJANUS GRISEUS	1.000	0.002	99.990
LEIOSTOMUS XANTHURUS	1.000	0.002	99.992
CHAETODIPTERUS FABER	1.000	0.002	99.994
TAUTOGOLABRUS ADSPERSUS	1.000	0.002	99.995
PEPRILUS TRIACANTHUS	1.000	0.002	99.997
BUSYCON CANALICULATUS	1.000	0.002	99.998
PENAEUS AZTECUS	1.000	0.002	100.000

Note: Lifestage is undetermined unless otherwise indicated.

TABLE 3-2 MEAN NUMBER PER TRAWL HAUL OF SAND SHRIMP, BLUE CRAB, SUMMER FLOUNDER, WINTER FLOUNDER, AND BAY ANCHOVY, BARNEGAT BAY SAMPLING, SEPTEMBER 1980 - FEBRUARY 1981

SAND SHRIMP									
STATION									
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN
9 SEP 80	2.0	156.0	6.5	94.0	10.0	60.0	0.0	20.5	43.6
7 OCT 80	4.0	173.5	22.0	113.5	1.5	2166.5	0.0	0.5	310.2
5 NOV 80	347.0	52.0	94.5	24.0	602.0	71.0	23.0	498.0	213.9
4 DEC 80	13.5	706.0	30.5	459.5	86.0	2742.0	1961.0	5220.5	1402.4
7 JAN 81	--	--	2.0	126.5	--	--	65.0	6224.0	1604.4
4 FEB 81	96.5	201.5	1.5	270.0	50.5	383.0	43.5	816.5	232.9
MEAN	92.6	257.8	26.2	181.3	150.0	1084.5	348.8	2130.0	546.4

BLUE CRAB									
STATION									
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN
9 SEP 80	2.5	15.5	23.5	74.0	6.5	6.5	1.5	108.0	29.8
7 OCT 80	5.0	8.5	24.5	7.0	5.0	6.5	5.0	5.5	8.4
5 NOV 80	5.5	51.5	1.5	1.0	19.0	6.0	3.5	24.0	14.0
4 DEC 80	0.0	0.0	0.0	0.5	0.0	1.5	11.0	73.0	10.8
7 JAN 81	--	--	0.0	0.0	--	--	1.0	1.5	0.6
4 FEB 81	1.5	0.5	0.0	0.0	9.5	0.5	0.0	1.0	1.6
MEAN	2.9	15.2	8.3	13.8	8.0	4.2	3.7	35.5	11.8

Note: CDC = Cedar Creek; FKR = Forked River; DBC = Double Creek; OYC = Oyster Creek.
 Last letter of station code denotes day sampling (D) or night sampling (N).
 Dash (--) indicates sampling not done.

TABLE 3-2 (Cont.)

SUMMER FLOUNDER

DATE	STATION									
	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN	
9 SEP 80	0.0	0.5	0.5	1.5	1.5	6.5	0.5	0.0	1.4	
7 OCT 80	0.5	2.0	1.5	1.5	0.0	1.0	1.0	0.0	0.9	
5 NOV 80	0.0	0.0	0.0	0.0	0.0	0.0	4.5	5.0	1.2	
4 DEC 80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7 JAN 81	--	--	0.0	0.0	--	--	0.0	0.0	0.0	
4 FEB 81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEAN	0.1	0.5	0.3	0.5	0.3	1.5	1.0	0.8	0.6	

WINTER FLOUNDER

DATE	STATION									
	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN	
9 SEP 80	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.1	
7 OCT 80	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
5 NOV 80	0.5	0.0	0.0	0.0	0.5	0.5	0.5	0.0	0.2	
4 DEC 80	1.0	1.5	0.0	1.5	0.0	0.0	18.0	17.5	4.9	
7 JAN 81	--	--	0.0	0.0	--	--	4.5	6.0	2.6	
4 FEB 81	0.5	1.0	1.0	3.5	0.0	0.5	3.5	33.5	5.4	
MEAN	0.4	0.6	0.2	0.8	0.1	0.3	4.5	9.5	2.2	

TABLE 3-2 (Cont.)

DATE	RAY ANCHOUY									
	STATION									
	CHCD	CHCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN	
9 SEP 80	0.0	27.0	16.0	8.5	244.5	27.0	0.0	3.0	40.8	
7 OCT 80	0.0	3.0	0.0	4.0	1.5	13.0	0.0	1.0	2.8	
5 NOV 80	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1	
4 DEC 80	0.0	0.0	0.0	0.0	1.0	0.0	5.5	0.0	0.8	
7 JAN 81	--	--	0.0	0.0	--	--	0.0	0.0	0.0	
4 FEB 81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEAN	0.1	6.0	2.7	2.1	49.4	8.0	1.0	0.7	8.1	

TABLE 3-3 LENGTH-FREQUENCY DISTRIBUTIONS OF BLUE CRAB, SUMMER FLOUNDER, WINTER FLOUNDER, AND BAY ANCHOVY COLLECTED BY OTTER TRAWL IN BARNEGAT BAY, SEPTEMBER 1980 - FEBRUARY 1981

BLUE CRAB														
LENGTH INTERVALS (MM)														
DATE	N	X	SD	0.0	20.0	40.0	60.0	80.0	100.0	120.0	140.0	RANGE		
				19.9	39.9	59.9	79.9	99.9	119.9	139.9	>140.0	MIN	MED	MAX
9 SEP 80	295	41.1	38.7	114	85	30	12	10	25	10	9	5.0	27.0	163.0
7 OCT 80	134	41.5	42.3	67	18	25	2	5	4	5	8	6.0	19.5	182.0
5 NOV 80	210	43.7	30.2	51	42	82	21	3	2	4	5	6.0	43.0	185.0
4 DEC 80	120	54.3	33.9	6	36	47	14	3	4	4	6	9.0	47.5	163.0
7 JAN 81	5	30.8	14.2	1	3	1	0	0	0	0	0	9.0	32.0	53.0
4 FEB 81	26	31.9	17.2	10	5	9	2	0	0	0	0	13.0	25.0	68.0

SUMMER FLOUNDER														
LENGTH INTERVALS (MM)														
DATE	N	X	SD	0.0	50.0	100.0	150.0	200.0	250.0	300.0	350.0	RANGE		
				49.9	99.9	149.9	199.9	249.9	299.9	349.9	>350.0	MIN	MED	MAX
9 SEP 80	22	207.6	58.3	0	0	6	1	11	3	0	1	116.0	230.5	355.0
7 OCT 80	15	241.0	29.9	0	0	0	3	5	7	0	0	179.0	244.0	284.0
5 NOV 80	19	246.5	31.7	0	0	0	3	8	7	1	0	190.0	242.0	301.0
4 DEC 80	0	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
7 JAN 81	0	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
4 FEB 81	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0

Note: N = number of lengths; X = mean length; SD = standard deviation; NA = data not available;
 MIN = shortest length; MED = median length; MAX = greatest length.

TABLE 3-3 (Cont.)

WINTER FLOUNDER

DATE	N	X	SD	LENGTH INTERVALS (MM)										RANGE		
				0.0 49.9	50.0 99.9	100.0 149.9	150.0 199.9	200.0 249.9	250.0 299.9	300.0 349.9	350.0 >350.0	MIN	MED	MAX		
9 SEP 80	2	64.5	6.5	0	2	0	0	0	0	0	0	0	58.0	64.5	71.0	
7 OCT 80	1	253.0	0.0	0	0	0	0	0	1	0	0	0	253.0	253.0	253.0	
5 NOV 80	4	210.5	69.7	0	0	1	1	0	2	0	0	0	107.0	226.5	282.0	
4 DEC 80	79	185.9	96.7	0	24	17	1	7	16	11	3	0	66.0	130.0	357.0	
7 JAN 81	21	262.1	82.5	0	0	4	1	2	4	9	1	0	105.0	297.0	360.0	
4 FEB 81	87	225.8	84.9	0	7	16	8	14	20	20	2	0	66.0	249.0	371.0	

BAY ANCHOVY

DATE	N	X	SD	LENGTH INTERVALS (MM)										RANGE		
				0.0 19.9	20.0 39.9	40.0 59.9	60.0 79.9	80.0 99.9	100.0 119.9	120.0 139.9	140.0 >140.0	MIN	MED	MAX		
9 SEP 80	221	32.0	10.5	7	157	53	4	0	0	0	0	16.0	29.0	68.0		
7 OCT 80	45	35.6	8.1	0	28	17	0	0	0	0	0	21.0	35.0	56.0		
5 NOV 80	2	32.5	5.5	0	2	0	0	0	0	0	0	27.0	32.5	38.0		
4 DEC 80	12	45.1	11.2	0	3	8	0	1	0	0	0	37.0	42.0	80.0		
7 JAN 81	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0		
4 FEB 81	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0		

TABLE 3-4 TOTAL NUMBER, PERCENT COMPOSITION, AND CUMULATIVE PERCENT
OF FISH AND MACROINVERTEBRATES COLLECTED BY 45.7-m SEINE
IN BARNEGAT BAY, SEPTEMBER 1980 - FEBRUARY 1981

SPP. NAME	NUMBER	%	CUMU. %
CRANGON SEPTEMSPINOSA	13480.000	77.865	77.865
CALLINECTES SAPIDUS	1202.000	6.943	84.808
MENIDIA MENIDIA	715.000	4.130	88.938
PALAEMONETES VULGARIS	610.000	3.524	92.462
CALLINECTES SAPIDUS JUV	271.000	1.565	94.027
ANCHOA MITCHILLI	181.000	1.046	95.073
FUNDULUS MAJALIS	108.000	0.624	95.697
OPSANUS TAU	43.000	0.555	96.251
MUGIL CEPHALUS	63.000	0.364	96.615
APELTES QUADRACUS	62.000	0.358	96.973
GOBIOSOMA BOSCI	57.000	0.329	97.302
POMATOMUS SALTATRIX	53.000	0.306	97.609
FUNDULUS HETEROCLITUS	42.000	0.243	97.851
MUGIL CUREMA	40.000	0.231	98.082
PSEUDOPLEURONECTES AMERI	33.000	0.191	98.273
SYNGNATHUS FUSCUS	27.000	0.156	98.429
ALOSA AESTIVALIS	23.000	0.133	98.562
CYPRINODON VARIEGATUS	23.000	0.133	98.695
FUNDULUS DIAPHANUS	21.000	0.121	98.816
CHASMODES BOSQUIANUS	20.000	0.116	98.931
PARALICHTHYS DENTATUS	18.000	0.104	99.035
NEOPANOPE TEXANA SAYI	18.000	0.104	99.139
STRONGYLURA MARINA	16.000	0.092	99.232
MENIDIA BERYLLINA	16.000	0.092	99.324
PENAEUS AZTECUS	11.000	0.064	99.388
CYNOSCION REGALIS	10.000	0.058	99.445
ANGUILLA ROSTRATA	9.000	0.052	99.497
CARANX HIPPOS	9.000	0.052	99.549
ASTROSCOPUS GUTTATUS	9.000	0.052	99.601
TAUTOGA ONITIS	8.000	0.046	99.648
ETROPUS MICROSTOMUS	7.000	0.040	99.688
FAMILY XANTHIDAE JUV.	7.000	0.040	99.729
SYNODUS FOETENS	5.000	0.029	99.757
ANGUILLA ROSTRATA JUV.	4.000	0.023	99.781
TRINECTES MACULATUS	4.000	0.023	99.804
TRACHINOTUS FALCATUS	3.000	0.017	99.821
MYOXOCEPHALUS AENAEUS	3.000	0.017	99.838
CLASS SCYPHOZOA	3.000	0.017	99.856
QUALIPES OCELLATUS	3.000	0.017	99.873
LIBINIA DUBIA	3.000	0.017	99.890
HIPPOCAMPUS ERECTUS	2.000	0.012	99.902
MORONE AMERICANA	2.000	0.012	99.913
SELENE VOMER	2.000	0.012	99.925
BREVOORTIA TYRANNUS JUV	1.000	0.006	99.931
BREVOORTIA TYRANNUS	1.000	0.006	99.936
HYPORHAMPHUS UNIFASCATUS	1.000	0.006	99.942
TYLOSURUS ACUS	1.000	0.006	99.948
LUCANIA PARVA	1.000	0.006	99.954
GASTEROSTEUS ACULEATUS	1.000	0.006	99.960
CARANX CRYOS	1.000	0.006	99.965
LUTJANUS GRISEUS	1.000	0.006	99.971
PEPRILUS TRIACANTHUS	1.000	0.006	99.977
LACTOPHRYS TRIQUETER	1.000	0.006	99.983
PHYLUM NEMERTEA	1.000	0.006	99.988
HIPPOLYTE SP	1.000	0.006	99.994
CLASS ASTEROIDEA	1.000	0.006	100.000

Note: Lifestage is undetermined unless otherwise indicated.

TABLE 3-5 MEAN NUMBER PER SEINE HAUL (45.7-m) OF SAND SHRIMP, BLUE CRAB, BLUEFISH, BAY ANCHOVY, AND ATLANTIC SILVERSIDE, BARNEGAT BAY SAMPLING, SEPTEMBER 1980 - FEBRUARY 1981

SAND SHRIMP									
STATION									
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN
16 SEP 80	1.0	20.0	0.0	3.0	0.0	1.5	0.0	0.5	3.3
14 OCT 80	74.0	94.0	2.0	6.0	1.0	9.5	0.0	11.5	24.8
19 NOV 80	148.5	417.5	31.5	370.0	20.5	175.5	28.0	188.5	172.5
10 DEC 80	26.0	473.0	26.0	650.0	7.5	352.5	79.5	2630.0	530.6
14 JAN 81	--	--	5.5	117.0	--	--	0.0	16.5	34.8
12 FEB 81	11.0	255.5	2.5	66.0	4.5	224.5	32.5	156.0	94.1
MEAN	52.1	252.0	11.3	202.0	6.7	152.7	23.3	500.5	153.2

BLUE CRAB									
STATION									
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN
16 SEP 80	12.5	115.0	10.0	47.0	8.5	27.5	29.0	49.5	37.4
14 OCT 80	22.5	142.5	2.0	38.5	9.5	94.0	7.0	24.0	42.5
19 NOV 80	0.0	1.0	0.0	3.5	0.0	0.0	3.0	31.0	4.8
10 DEC 80	0.0	0.0	0.0	8.0	0.0	1.0	0.5	28.0	4.7
14 JAN 81	--	--	0.5	0.0	--	--	0.0	0.0	0.1
12 FEB 81	0.0	1.0	0.0	0.5	0.5	0.0	4.0	15.0	2.6
MEAN	7.0	51.9	2.1	16.3	3.7	24.5	7.3	24.6	16.7

Note: CDC = Cedar Creek; FKR = Forked River; DBC = Double Creek; OYC = Oyster Creek.
 Last letter of station code denotes day sampling (D) or night sampling (N).
 Dash (--) indicates sampling not done.

TABLE 3-5 (Cont.)

BLUEFISH									
STATION									
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN
16 SEP 80	0.0	0.5	15.0	0.0	9.0	0.0	0.0	0.5	3.1
14 OCT 80	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.5	0.2
19 NOV 80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 DEC 80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JAN 81	--	--	0.0	0.0	--	--	0.0	0.0	0.0
12 FEB 81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	0.0	0.1	2.5	0.0	1.8	0.0	0.2	0.2	0.6

BAY ANCHOVY									
STATION									
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN
16 SEP 80	0.0	0.0	71.0	0.5	15.0	0.0	0.0	0.5	10.7
14 OCT 80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19 NOV 80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 DEC 80	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.5	0.4
14 JAN 81	--	--	0.0	0.0	--	--	0.0	0.0	0.0
12 FEB 81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	0.0	0.0	11.8	0.1	3.0	0.0	0.3	0.3	2.1

TABLE 3-5 (Cont.)

ATLANTIC SILVERSIDE										
STATION										
DATE	CDCB	CDCN	FKRB	FKRN	DBCD	DECN	OYCD	OYCN	MEAN	
16 SEP 80	5.5	0.0	15.0	0.5	30.0	0.0	1.0	0.0	6.5	
14 OCT 80	0.0	21.0	1.5	15.5	1.5	2.0	0.0	0.0	5.2	
19 NOV 80	0.0	0.0	0.5	0.0	0.0	1.5	26.0	7.5	4.4	
10 DEC 80	0.0	0.0	0.0	0.5	0.0	0.5	8.0	5.0	1.8	
14 JAN 81	--	--	0.0	0.0	--	--	6.0	0.5	1.6	
12 FEB 81	0.0	0.0	0.0	0.0	0.0	0.5	164.5	43.0	26.0	
MEAN	1.1	4.2	2.8	2.8	6.3	0.9	34.3	9.3	8.1	

TABLE 3-6 LENGTH-FREQUENCY DISTRIBUTIONS OF BLUE CRAB, BLUEFISH, BAY ANCHOVY, AND ATLANTIC SILVERSIDES COLLECTED BY 45.7-m SEINE IN BARNEGAT BAY, SEPTEMBER 1980 - FEBRUARY 1981

BLUE CRAB														
DATE	N	X	SD	LENGTH INTERVALS (MM)										RANGE
				0.0 19.9	20.0 39.9	40.0 59.9	60.0 79.9	30.0 99.9	100.0 119.9	120.0 139.9	140.0 >140.0	MIN	MED	MAX
16 SEP 80	476	39.7	21.6	34	288	103	15	18	12	5	1	10.0	34.0	145.0
14 OCT 80	403	41.1	14.8	25	160	183	29	3	2	1	0	11.0	40.0	125.0
19 NOV 80	77	41.4	18.6	4	34	31	6	1	0	0	1	13.0	40.0	155.0
10 DEC 80	75	39.0	17.7	1	47	23	2	1	0	0	1	16.0	34.0	150.0
14 JAN 81	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
12 FEB 81	42	40.7	12.2	2	17	21	2	0	0	0	0	14.0	45.0	65.0

BLUEFISH														
DATE	N	X	SD	LENGTH INTERVALS (MM)										RANGE
				0.0 49.9	50.0 99.9	100.0 149.9	150.0 199.9	200.0 249.9	250.0 299.9	300.0 349.9	350.0 >350.0	MIN	MED	MAX
16 SEP 80	50	94.9	22.8	0	38	11	0	1	0	0	0	73.0	91.0	212.0
14 OCT 80	3	133.7	18.2	0	0	3	0	0	0	0	0	108.0	145.0	148.0
19 NOV 80	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
10 DEC 80	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
14 JAN 81	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
12 FEB 81	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0

Note: N = number of lengths; X = mean length; SD = standard deviation; NA = data not available;
 MIN = shortest length; MED = median length; MAX = greatest length.

TABLE 3-6 (Cont.)

BAY ANCHOVY														
LENGTH INTERVALS (MM)														
DATE	N	X	SD	0.0	20.0	40.0	60.0	80.0	100.0	120.0	140.0	RANGE		
				19.9	39.9	59.9	79.9	99.9	119.9	139.9	>140.0	MIN	MED	MAX
16 SEP 80	83	44.7	9.4	0	18	61	3	1	0	0	0	27.0	45.0	83.0
14 OCT 80	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
19 NOV 80	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
10 DEC 80	7	52.0	15.8	0	1	5	0	1	0	0	0	32.0	51.0	87.0
14 JAN 81	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
12 FEB 81	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0

ATLANTIC SILVERSIDE														
LENGTH INTERVALS (MM)														
DATE	N	X	SD	0.0	20.0	40.0	60.0	80.0	100.0	120.0	140.0	RANGE		
				19.9	39.9	59.9	79.9	99.9	119.9	139.9	>140.0	MIN	MED	MAX
16 SEP 80	104	77.9	15.2	0	0	10	54	32	6	2	0	48.0	76.0	129.0
14 OCT 80	83	91.0	16.1	0	0	2	17	41	19	4	0	45.0	92.0	129.0
19 NOV 80	71	102.3	18.9	0	0	1	8	19	29	14	0	52.0	104.0	136.0
10 DEC 80	28	103.5	16.5	0	0	0	3	8	12	5	0	75.0	102.5	137.0
14 JAN 81	13	92.2	10.7	0	0	0	2	8	3	0	0	77.0	92.0	116.0
12 FEB 81	126	93.8	15.7	0	0	1	23	58	35	9	0	54.0	93.5	133.0

TABLE 3-7 TOTAL NUMBER, PERCENT COMPOSITION, AND CUMULATIVE PERCENT
OF FISH AND MACROINVERTEBRATES COLLECTED BY 12.2-m SEINE
IN BARNEGAT BAY, SEPTEMBER 1980 - FEBRUARY 1981

SPP. NAME	NUMBER	%	CUMU. %
CRANGON SEPTemspINOSA	17019.000	62.764	62.764
MENIDIA MENIDIA	2671.000	9.850	72.614
CRANGON SEPTemspIN JUV	1883.000	6.944	79.558
PALAEONETES VULGARIS	1498.000	5.524	85.083
ANCHOA MITCHILLI	1402.000	5.170	90.253
APELTES QUADRACUS	962.000	3.548	93.801
CALLINECTES SAPIDUS	499.000	1.840	95.641
GOBIOSOMA BOSCI	238.000	0.878	96.519
FUNDULUS HETEROCLITUS	214.000	0.789	97.308
FUNDULUS MAJALIS	180.000	0.664	97.972
MENIDIA BERYLLINA	123.000	0.454	98.425
CYPRINODON VARIEGATUS	64.000	0.236	98.661
LUCANIA PARVA	56.000	0.207	98.868
HIPPOLYTE SP	54.000	0.199	99.067
MENIDIA MENIDIA JUV	49.000	0.181	99.248
ANGUILLA ROSTRATA	29.000	0.107	99.355
FAMILY XANTHIDAE JUV.	27.000	0.100	99.454
TRACHINOTUS FALCATUS	18.000	0.066	99.521
STRONGYLURA MARINA	15.000	0.055	99.576
SYNGNATHUS FUSCUS	15.000	0.055	99.631
BREVOORTIA TYRANNUS JUV	14.000	0.052	99.683
MUGIL CEPHALUS	13.000	0.048	99.731
MEMBRAS MARTINICA	10.000	0.037	99.768
AMMODYTES AMERICANUS	10.000	0.037	99.805
CHASMODES BOSQUIANUS	7.000	0.026	99.830
ANCHOA HEPSETUS	6.000	0.022	99.852
ANGUILLA ROSTRATA JUV.	5.000	0.018	99.871
PSEUDOPLEURONECTES AMERI	5.000	0.018	99.889
OPSANUS TAU	3.000	0.011	99.900
LUTJANUS GRISCU	3.000	0.011	99.911
MUGIL CUREMA	3.000	0.011	99.923
FUNDULUS DIAPHANUS	2.000	0.007	99.930
GASTEROSTEUS ACULEATUS	2.000	0.007	99.937
POMATOMUS SALTATRIX	2.000	0.007	99.945
PEPRILUS TRIACANTHUS	2.000	0.007	99.952
NEOPANOPE TEXANA SAYI	2.000	0.007	99.959
UROPHYCIS CHUSS	1.000	0.004	99.963
HYPORHAMPHUS UNIFASCIATU	1.000	0.004	99.967
MENIDIA SP	1.000	0.004	99.970
MORONE AMERICANA	1.000	0.004	99.974
TAUTOGA ONITIS	1.000	0.004	99.978
ASTROSCOPUS GUTTATUS	1.000	0.004	99.982
PRIONOTUS CAROLINUS	1.000	0.004	99.985
PRIONOTUS EVOLANS	1.000	0.004	99.989
ETROPUS MICROSTOMUS	1.000	0.004	99.993
PARALICHTHYS DENTATUS	1.000	0.004	99.996
PAGURUS LONGICARPUS	1.000	0.004	100.000

Note: Lifestage is undetermined unless otherwise indicated.

TABLE 3-8 MEAN NUMBER PER SEINE HAUL (12.2-m) OF SAND SHRIMP, BLUE CRAB, BAY ANCHOVY, AND ATLANTIC SILVERSIDE, BARNEGAT BAY SAMPLING, SEPTEMBER 1980 - FEBRUARY 1981

SAND SHRIMP									
STATION									
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN
16 SEP 80	7.5	137.5	0.5	44.5	1.5	24.5	0.0	80.5	37.1
14 OCT 80	239.5	463.0	21.0	253.0	8.5	879.5	2.0	78.5	243.1
19 NOV 80	187.5	191.5	15.5	107.0	4.0	178.0	42.0	74.0	105.2
10 DEC 80	66.5	1033.0	53.0	1048.0	12.5	613.0	147.0	765.5	488.7
14 JAN 81	--	--	8.0	456.5	--	--	1.0	88.5	138.5
12 FEB 81	21.0	830.0	17.0	206.0	161.5	325.0	67.0	521.5	268.6
MEAN	104.4	531.0	19.2	352.5	46.0	404.0	33.7	268.1	217.3

BLUE CRAB									
STATION									
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN
16 SEP 80	3.0	13.0	3.0	10.5	8.0	6.0	3.0	18.5	8.1
14 OCT 80	4.5	34.0	5.5	17.0	1.5	42.5	20.5	43.5	21.1
19 NOV 80	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.2
10 DEC 80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.5
14 JAN 81	--	--	0.0	0.0	--	--	0.0	0.0	0.0
12 FEB 81	2.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	1.2
MEAN	1.9	9.4	1.4	4.6	2.1	9.7	4.3	12.4	5.7

Note: CDC = Cedar Creek; FKR = Forked River; DBC = Double Creek; OYC = Oyster Creek.
 Last letter of station code denotes day sampling (D) or night sampling (N).
 Dash (--) indicates sampling not done.

TABLE 3-8 (Cont.)

BAY ANCHOVY									
STATION									
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN
16 SEP 80	3.0	103.0	8.0	25.0	193.5	329.5	1.5	12.5	84.5
14 OCT 80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19 NOV 80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 DEC 80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	3.3
14 JAN 81	--	--	0.0	0.0	--	--	0.0	0.0	0.0
12 FEB 81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	0.6	20.6	1.3	4.2	38.7	65.9	0.3	6.2	16.1

ATLANTIC SILVERSIDE									
STATION									
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN
16 SEP 80	35.5	1.0	118.5	4.5	89.5	14.5	10.5	0.5	34.3
14 OCT 80	0.0	43.5	26.0	93.0	4.0	19.5	0.0	0.0	23.3
19 NOV 80	1.5	0.0	6.0	0.0	4.5	0.5	157.5	80.5	31.3
10 DEC 80	0.0	1.0	13.0	0.5	1.5	9.0	170.0	212.5	43.0
14 JAN 81	--	--	1.0	0.0	--	--	2.5	0.0	0.9
12 FEB 81	0.0	0.0	0.0	2.0	24.5	1.0	67.0	228.5	40.4
MEAN	7.4	9.1	27.4	16.7	24.8	8.2	58.6	87.0	31.3

TABLE 3-9 LENGTH-FREQUENCY DISTRIBUTIONS OF SAND SHRIMP, BLUE CRAB, BAY ANCHOVY, AND ATLANTIC SILVERSIDE COLLECTED BY 12.2-m SEINE IN BARNEGAT BAY, SEPTEMBER 1980 - FEBRUARY 1981

BAY ANCHOVY														
LENGTH INTERVALS (MM)														
DATE	N	X	SD	0.0	20.0	40.0	60.0	80.0	100.0	120.0	140.0	RANGE		
				19.9	39.9	59.9	79.9	99.9	119.9	139.9	>140.0	MIN	MED	MAX
16 SEP 80	341	35.1	7.8	0	248	91	2	0	0	0	0	21.0	34.0	63.0
14 OCT 80	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
19 NOV 80	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
10 DEC 80	50	41.5	4.6	0	17	33	0	0	0	0	0	31.0	41.5	53.0
14 JAN 81	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
12 FEB 81	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0

ATLANTIC SILVERSIDE														
LENGTH INTERVALS (MM)														
DATE	N	X	SD	0.0	20.0	40.0	60.0	80.0	100.0	120.0	140.0	RANGE		
				19.9	39.9	59.9	79.9	99.9	119.9	139.9	>140.0	MIN	MED	MAX
16 SEP 80	333	78.6	10.9	0	0	18	153	155	6	1	0	43.0	79.0	124.0
14 OCT 80	282	81.0	15.5	0	0	30	93	128	29	2	0	43.0	82.0	129.0
19 NOV 80	218	78.2	19.6	0	0	52	73	58	32	3	0	41.0	77.0	129.0
10 DEC 80	202	76.7	10.3	0	1	6	133	56	6	0	0	37.0	76.0	113.0
14 JAN 81	5	81.4	3.6	0	0	0	1	4	0	0	0	75.0	82.0	96.0
12 FEB 81	248	79.6	11.7	0	0	9	120	103	16	0	0	51.0	79.0	114.0

Note: N = number of lengths; X = mean length; SD = standard deviation; NA = data not available; MIN = shortest length; MED = median length; MAX = greatest length.

TABLE 3-9 (Cont.)

SAND SHRIMP														
LENGTH INTERVALS (MM)														
DATE	N	X	SD	0.0	20.0	40.0	60.0	80.0	100.0	120.0	140.0	RANGE		
				19.9	39.9	59.9	79.9	99.9	119.9	139.9	>140.0	MIN	MED	MAX
16 SEP 80	268	24.1	6.2	71	195	2	0	0	0	0	0	13.0	23.0	41.0
14 OCT 80	663	29.4	8.8	59	496	108	0	0	0	0	0	15.0	27.0	57.0
19 NOV 80	599	41.4	7.6	3	243	350	3	0	0	0	0	15.0	41.0	63.0
10 DEC 80	310	37.4	8.8	10	354	244	2	0	0	0	0	16.0	37.0	64.0
14 JAN 81	286	31.5	9.8	30	205	51	0	0	0	0	0	13.0	30.0	59.0
12 FEB 81	1018	33.1	10.3	83	644	288	3	0	0	0	0	14.0	33.0	65.0

BLUE CRAB														
DATE	N	X	SD	LENGTH INTERVALS (MM)								RANGE		
				0.0	20.0	40.0	60.0	80.0	100.0	120.0	140.0	MIN	MED	MAX
				19.9	39.9	59.9	79.9	99.9	119.9	139.9	>140.0			
16 SEP 80	130	22.6	16.5	72	50	4	2	1	0	1	0	6.0	18.0	125.0
14 OCT 80	284	31.4	12.8	56	139	82	6	1	0	0	0	7.0	30.0	80.0
19 NOV 80	4	36.0	5.5	0	3	1	0	0	0	0	0	30.0	35.0	44.0
10 DEC 80	8	31.9	13.4	1	6	1	0	0	0	0	0	10.0	33.0	59.0
14 JAN 81	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
12 FEB 81	19	36.3	17.5	5	5	7	2	0	0	0	0	10.0	35.0	74.0

TABLE 3-10 SURFACE WATER QUALITY MEASUREMENTS ASSOCIATED WITH BARNEGAT BAY SEINE SAMPLING,
SEPTEMBER 1980 - FEBRUARY 1981

WATER TEMPERATURE (C)										
STATION										
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN	
16 SEP 80	21.7	20.7	24.7	22.2	21.2	20.4	24.0	25.6	22.6	
14 OCT 80	13.0	13.1	14.0	12.0	13.9	11.7	17.7	15.2	13.8	
19 NOV 80	4.9	4.3	5.5	5.2	4.9	4.1	9.1	8.1	5.8	
10 DEC 80	4.5	5.1	5.3	5.2	5.1	5.0	9.5	9.0	6.1	
14 JAN 81	--	--	2.9	1.0	--	--	4.4	2.9	2.8	
12 FEB 81	2.5	2.0	9.7	9.1	6.5	7.4	13.2	13.4	8.0	
MEAN	9.3	9.0	10.4	9.1	10.3	9.7	13.0	12.4	10.5	

DISSOLVED OXYGEN (mg/l)										
STATION										
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN	
16 SEP 80	8.0	6.5	6.0	5.5	7.2	6.9	7.9	6.3	6.8	
14 OCT 80	6.7	11.1	9.4	7.1	8.1	8.9	8.5	8.1	8.5	
19 NOV 80	9.9	11.0	9.7	9.7	9.9	10.0	9.7	9.2	9.9	
10 DEC 80	10.6	10.3	10.2	9.9	10.6	10.4	11.1	10.0	10.4	
14 JAN 81	--	--	12.4	14.0	--	--	13.5	14.5	14.1	
12 FEB 81	10.0	10.0	8.9	8.8	9.3	9.1	8.7	8.3	9.1	
MEAN	9.9	9.8	9.4	9.2	9.0	9.1	10.2	9.4	9.4	

Note: CDC = Cedar Creek; FKR = Forked River; DBC = Double Creek; OYC = Oyster Creek.
Last letter of station code denotes day sampling (D) or night sampling (N).
Dash (--) indicates sampling not done. Data records are individual measurements.

TABLE 3-10 (Cont.)

DATE	PH								
	STATION								
	CDCH	CDCH	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN
16 SEP 80	7.7	7.5	7.7	7.6	7.7	7.8	7.7	7.6	7.7
14 OCT 80	7.9	8.3	8.1	8.0	8.0	8.1	8.0	7.9	8.0
19 NOV 80	7.9	7.8	7.9	7.9	8.0	7.9	7.9	7.8	7.9
10 DEC 80	7.8	7.8	7.8	7.9	7.9	7.9	7.9	7.8	7.9
14 JAN 81	--	--	7.9	7.5	--	--	7.9	7.9	7.8
12 FEB 81	7.9	7.9	8.2	8.0	8.1	8.1	8.2	8.0	8.1
MEAN	7.8	7.9	7.9	7.8	7.9	8.0	7.9	7.8	7.9

SALINITY (PPT)

DATE	STATION								
	CDCH	CDCH	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN
16 SEP 80	15.0	24.2	27.0	27.7	28.0	27.4	26.6	27.3	25.4
14 OCT 80	22.0	22.2	24.9	25.7	26.2	26.0	23.9	24.8	24.5
19 NOV 80	23.5	22.7	26.6	26.0	27.3	26.5	26.5	25.7	25.6
10 DEC 80	22.4	18.4	25.0	25.5	26.8	27.2	24.4	24.5	24.3
14 JAN 81	--	--	22.2	17.5	--	--	23.8	25.1	22.1
12 FEB 81	22.0	23.0	25.3	25.8	27.4	28.0	24.5	25.8	25.2
MEAN	21.0	22.1	25.2	24.7	27.1	27.0	24.9	25.5	24.7

TABLE 3-11 BOTTOM WATER QUALITY MEASUREMENTS ASSOCIATED WITH BARNEGAT BAY OTTER TRAWL SAMPLING,
SEPTEMBER 1980 - FEBRUARY 1981

WATER TEMPERATURE (C)										
STATION										
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN	
9 SEP 80	23.0	24.2	23.9	24.1	23.1	23.5	28.5	29.3	24.9	
7 OCT 80	16.3	16.6	16.6	16.9	16.8	15.7	22.2	22.3	17.9	
5 NOV 80	9.6	9.8	10.4	10.1	9.3	9.0	15.4	14.2	11.0	
4 DEC 80	0.2	2.2	0.9	2.4	1.1	2.4	10.5	8.3	3.5	
7 JAN 81	--	--	0.0	--	--	--	1.4	4.8	2.4	
4 FEB 81	2.0	2.0	--	6.3	--	0.5	4.0	4.2	2.2	
MEAN	10.2	11.0	11.5	10.7	12.6	10.2	13.7	13.8	11.8	

DISSOLVED OXYGEN (mg/l)										
STATION										
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN	
9 SEP 80	5.6	6.0	5.4	6.1	6.1	7.4	5.0	5.1	5.8	
7 OCT 80	7.0	7.4	7.7	6.9	7.9	6.9	7.4	6.7	7.2	
5 NOV 80	8.6	8.5	8.9	8.2	9.2	9.0	8.5	8.4	8.7	
4 DEC 80	11.1	11.4	10.5	10.9	10.9	11.0	9.9	10.4	10.8	
7 JAN 81	--	--	12.4	10.8	--	--	12.4	11.3	11.7	
4 FEB 81	9.9	10.1	10.6	12.8	11.0	13.8	10.4	12.3	11.3	
MEAN	8.4	8.7	9.3	9.3	9.5	9.6	8.9	9.0	9.0	

Note: CDC = Cedar Creek; FKR = Forked River; DBC = Double Creek; OYC = Oyster Creek.
Last letter of station code denotes day sampling (D) or night sampling (N).
Dash (--) indicates sampling not done. Data records are individual measurements.

TABLE 3-11 (Cont.)

pH										
STATION										
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN	
9 SEP 80	7.7	7.8	7.9	7.9	7.9	8.0	7.8	7.8	7.9	
7 OCT 80	7.9	8.0	8.0	8.1	8.1	7.9	8.0	8.0	8.0	
5 NOV 80	7.8	7.9	7.9	7.9	7.8	7.9	7.8	7.8	7.8	
4 DEC 80	7.5	7.7	7.9	7.9	7.9	8.0	7.8	7.8	7.8	
7 JAN 81	---	---	8.2	8.2	---	---	8.0	7.9	8.0	
4 FEB 81	7.9	7.9	8.1	7.9	8.0	8.1	8.1	8.1	8.0	
MEAN	7.8	7.9	8.0	8.0	7.9	7.9	7.9	7.9	7.9	

SALINITY (ppt)										
STATION										
DATE	CDCD	CDCN	FKRD	FKRN	DBCD	DBCN	OYCD	OYCN	MEAN	
9 SEP 80	22.1	23.8	24.4	25.0	25.4	25.1	24.1	24.8	24.3	
7 OCT 80	24.5	25.6	26.3	26.5	27.0	30.6	25.8	26.1	26.5	
5 NOV 80	25.9	24.4	26.6	27.5	26.9	27.1	25.2	26.5	26.2	
4 DEC 80	20.2	18.5	23.6	24.0	26.0	26.8	22.1	23.6	23.1	
7 JAN 81	---	---	25.6	27.0	---	---	25.5	23.1	25.3	
4 FEB 81	20.4	23.1	25.3	26.3	27.6	27.1	25.3	26.0	25.1	
MEAN	22.6	23.1	25.3	26.0	26.6	27.3	24.7	25.0	25.1	

4. IMPINGEMENT OF FINFISH AND MACROINVERTEBRATES ON THE INTAKE SCREENS

4.1 BIOLOGICAL DATA

Impingement collections from September 1980 through February 1981 yielded 113 taxa: 27 macroinvertebrates, 85 finfish, and 1 species of turtle (Table 4-1). Macroinvertebrates dominated the catch; sand shrimp (Crangon septemspinosa) accounted for 76 percent of the total numbers collected, and with the blue crab (Callinectes sapidus) and grass shrimp (Palaemonetes vulgaris) made up 87.9 percent of all organisms collected. Atlantic silverside (Menidia menidia) (4.2 percent) and naked goby (Gobiosoma boscii) (1.9 percent) were the only finfish that contributed more than 1 percent to the total. Smallmouth flounder (Etrcpus microstomus) (0.9 percent) and northern pipefish (Syngnathus fuscus) (0.8 percent) round out the top 95 percent of all organisms collected from the screens.

All of the above species except grass shrimp are key species, as designated in the Technical Specifications, and thus receive emphasis in environmental monitoring at OCNCS. Eight other key species were taken in impingement samples but, with the exception of winter flounder (Pseudopleuronectes americanus) (0.7 percent), none were abundant. These were bay anchovy (Anchoa mitchelli), Atlantic menhaden (Brevoortia tyrannus), summer flounder (Paralichthys dentatus), weakfish (Cynoscion regalis), bluefish (Pomatomus saltatrix), northern puffer (Sphoeroides maculatus), and northern kingfish (Menticirrhus saxatilis).

Estimates of total weekly impingement by number were made for the study period (Table 4-2). Weekly estimates of numbers of organisms impinged during this period ranged from 8,629 in early October to 1,149,223 in mid-November. The peak abundance is directly due to the abundance of sand shrimp, which peaked during the same week at more than 800,000 individuals. Sand shrimp abundance increased from near zero to high weekly numbers during the latter part of October and remained high throughout the rest of the study period. The abundance of winter flounder was similar to that of sand shrimp: peak abundance (14,700 individuals) occurred in mid-November and the number of estimated flounder impinged increased dramatically during early November and remained high for the rest of the study period. Both species exploit Barnegat Bay resources during the winter period as seasonal residents.

Atlantic silverside and northern pipefish were collected in high numbers during the fall; peak weekly estimates of over 100,000 for Atlantic silverside and almost 19,000 for northern pipefish occurred during mid-November. Catch estimates for Atlantic silverside dropped during early January (the period of minimum water temperatures), then rose to high levels throughout the remainder of the sampling interval. Northern pipefish numbers gradually decreased through November and December to levels comparable to those of September and October of the previous year. Both Atlantic silverside and northern pipefish are year-round residents.

Peak blue crab abundances occurred from September through mid-November with the maximum weekly estimate of over 51,000 individuals occurring in late September. Blue crab is a year-round resident of Barnegat Bay that is active only during the warmer seasons. The eight remaining species all exhibited similar trends in abundance: blueback herring (*Alosa aestivalis*), Atlantic menhaden, bay anchovy, bluefish, weakfish, northern kingfish, summer flounder, and northern puffer use Barnegat Bay resources only during the warmer seasons and then, for the most part, leave the bay during periods of decreasing water temperature. The periods of increased abundance of these species in impingement samples reflect their exodus from the bay and consequent greater vulnerability to impingement.

Estimates of total weekly impingement by weight are presented in Table 4-3. Weekly estimates of weight ranged from ~165 kilograms in mid-February to a maximum of 6,175 kilograms by mid-November. The peak is a direct result of the abundance of both sand shrimp (1,842 kg) and winter flounder (2,281 kg) that occurred during the same week. Sand shrimp weight rose rapidly during mid-November and remained high throughout the rest of the winter, following the general numerical trends noted earlier. Likewise, winter flounder weight began to rise in early November and remained high throughout the rest of the study period. Blue crab weekly estimated weight was greatest from the beginning of this study period through mid-November, similar to the numerical distribution; however, the peak weekly estimated weight of more than 1,100 kilograms occurred during mid-October as opposed to the mid-September peak for numerical abundance. This peak is due to the presence of larger crabs that appeared in the samples during that period. All other species, except bay anchovy, exhibited maximum weight estimates during the period of falling temperatures, primarily October and November. Maximum bay anchovy weights appeared in early September, which probably represents the end of adult schooling activity in Barnegat Bay.

Total numbers and weights impinged for the entire September 1980 - February 1981 study period were computed with 80 percent confidence intervals for abundant and key species and for all species combined (Table 4-4). A total of more than 5.5 million organisms was estimated to have been impinged during the study period. Sand shrimp accounted for the bulk of the catch, contributing 4.2 million individuals; blue crab and Atlantic silverside also added substantially to the estimate with more than 340,000 and 245,000 individuals, respectively. More than 28,000 kilograms of finfish and macroinvertebrates were estimated to have been impinged throughout the study period. Winter flounder composed the greatest portion of that amount with >8,300 kilograms. Blue crab (6,700 kg), sand shrimp (5,100 kg), Atlantic silverside (1,400 kg), and summer flounder (1,400 kg) were major contributors to the total estimate.

Table 4-5 provides the basis from which day and night catch comparisons can be made. Of the eight species that make up more than 0.5 percent of the total screen catch, six were caught in greater numbers during the night. Sand shrimp, blue crab, grass shrimp, Atlantic silverside, smallmouth flounder, and winter flounder night catches contributed 70.6-89.7 percent of the total catch. Northern pipefish catches were evenly split between night and day samples with 53 percent of the catch occurring at night. Naked goby were generally caught during the day; night catches accounted for only 35.8 percent of the

total catch during the six-month study period. Night catches contributed 79.2 percent of the total catch for all species combined. This value is slightly lower than the values obtained during previous studies by Miller (1973) and Ecological Analysts (1981)--83 and 86.9 percent, respectively.

The composition of the impingement catch, in general, reflected the composition of the Barnegat Bay fisheries collections during the September 1980 - February 1981 period. The dramatic increase of sand shrimp numbers on the screen that began in late October - early November can be seen also in the two beach seines and the otter trawl catches of that period (Chapter 3). Catches in all three gear types remained high throughout the rest of the study period (Tables 3-2, 3-5, and 3-8). The declining blue crab catch that began in mid-November and continued into December on the traveling screens also was observable in all field gears. Atlantic silverside catches, which were basically bimodal on the screens (caused by a two-week low in catches during mid-January), were reflected in the 40-ft seine catches during the same period. Winter flounder catches in the field otter trawls were greatest from December through the remainder of the study. No large numbers of winter flounder were collected in November trawls, a peak period of screen abundance. This is probably because trawl samples were collected during the first week of that month, a period that reflects only an initial increase of abundance on the screens.

The specific differences observable between screen catches and bay collections, in terms of absolute numbers, may be due to several factors. The exact time of sampling efforts, water temperature differences at the various stations, and species-specific behavior are among the important parameters that can affect the measured rate of impingement on the Oyster Creek Nuclear Generating Station traveling screens.

4.2 WATER QUALITY DATA ASSOCIATED WITH IMPINGEMENT SAMPLING

Summarized water quality measurements for each impingement sampling date are shown in Tables 4-6 through 4-9. Mean water temperature values ranged from a low of -0.9 C on 5 January 1981 to a maximum of 28.5 C on 2 September 1980; little difference can be noted between surface and bottom readings and between day and night readings (Table 4-6). Dissolved oxygen values ranged from a low of 5.2 mg/liter on 2 September 1980 to a maximum of 14.7 mg/liter on 19 January 1981. As with temperature, no major differences are apparent between surface and bottom or between day and night data (Table 4-7). Salinity values ranged from 23.4 to 28.7 ppt; again no time-of-day or depth differences are apparent upon visual inspection of the data (Table 4-8). Median pH values ranged between 7.2 and 8.3 throughout the study period (Table 4-9).

TABLE 4-1 TOTAL NUMBER COLLECTED, PERCENT COMPOSITION, AND CUMULATIVE PERCENT OF FINFISH, OTHER VERTEBRATES, AND MACROINVERTEBRATES IMPINGED AT THE OYSTER CREEK NUCLEAR GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

SPP. NAME	NUMBER	%	CUMU. %
CRANGON SEPTemspINOSA	320909.000	75.978	75.978
CALLINECTES SAPIDUS	27858.000	6.596	82.574
PALAEMONETES VULGARIS	22322.000	5.285	87.859
MENIDIA MENIDIA	17795.000	4.213	92.072
GORIOSOMA BOSCI	7866.000	1.862	93.934
ETROPUS MICROSTOMUS	3784.000	0.896	94.830
SYNGNATHUS FUSCUS	3374.000	0.799	95.629
PSEUDOPLEURONECTES AMERI	2838.000	0.672	96.301
ALOSA AESTIVALIS	1883.000	0.446	96.747
CLASS SCYPHOZOA	1873.000	0.443	97.190
APELTES QUADRACUS	1802.000	0.427	97.617
ANCHOA MITCHILLI	1157.000	0.274	97.891
HIPPOCAMPUS ERECTUS	1099.000	0.260	98.151
CYPRINODON VARIEGATUS	938.000	0.222	98.373
BREVOORTIA TYRANNUS	648.000	0.153	98.527
PARALICHTHYS DENTATUS	575.000	0.136	98.663
CYNOSCION REGALIS	490.000	0.116	98.779
TAUTOGA ONITIS	482.000	0.114	98.893
MYOXOCEPHALUS AENAEUS	476.000	0.113	99.006
ANGUILLA ROSTRATA	329.000	0.078	99.084
PRIONOTUS EVOLANS	309.000	0.073	99.157
OPSANUS TAU	295.000	0.070	99.227
CHASMODES BOSQUIANUS	267.000	0.063	99.290
PHYLUM NEMERTEA	233.000	0.055	99.345
ALOSA PSEUDOHARENGUS	168.000	0.040	99.385
FUNDULUS HETEROCLITUS	154.000	0.036	99.421
CENTROPRISTIS STRIATA	136.000	0.032	99.453
ETRUMEUS TERES	124.000	0.029	99.483
PEPRILUS TRIACANTHUS	124.000	0.029	99.512
PORTUNUS GIBBESII	120.000	0.028	99.540
PENAEUS AZTECUS	117.000	0.028	99.568
TRINECTES MACULATUS	102.000	0.024	99.592
OVALIPES OCELLATUS	101.000	0.024	99.616
CONGER OCEANICUS	99.000	0.023	99.640
SCOPHTHALMUS AQUOSUS	87.000	0.021	99.660
HIPPOLYTE SP	81.000	0.019	99.679
FAMILY XANTHIDAE JUV.	79.000	0.019	99.698
AMMODYTES AMERICANUS	78.000	0.018	99.717
MUGIL CEPHALUS	74.000	0.018	99.734
SYNODUS FOETENS	73.000	0.017	99.751
POMATOMUS SALTATRIX	73.000	0.017	99.769
ASTROSCOPUS GUTTATUS	67.000	0.016	99.785
KIESOLA MARGINATA	52.000	0.012	99.797
MENIDIA BERYLLINA	52.000	0.012	99.809
LEIOSTOMUS XANTHURUS	51.000	0.012	99.821

TABLE 4-1 (Cont.)

SPP. NAME	NUMBER	%	CUMU. %
GASTEROSTEUS ACULEATUS	48.000	0.011	99.833
LIBINIA DUBIA	48.000	0.011	99.844
CARANX HIPPOS	47.000	0.011	99.855
SQUILLA EMPUSA	45.000	0.011	99.866
TAUTOGOLABRUS ADSPERSUS	44.000	0.010	99.876
MORONE AMERICANA	42.000	0.010	99.886
SPHOEROIDES MACULATUS	39.000	0.009	99.895
HYPSOBLENNIUS HENTZI	36.000	0.009	99.904
CLASS HOLOTHUROIDEA	30.000	0.007	99.911
ALOSA SAPIDISSIMA	28.000	0.007	99.918
LOLLIGUNCOLA BREVIS	25.000	0.006	99.924
LUTJANUS GRISEUS	21.000	0.005	99.929
MUGIL CUREMA	18.000	0.004	99.933
LIHULUS POLYPHEMUS	17.000	0.004	99.937
NEOPANOPE TEXANA SAYI	17.000	0.004	99.941
RACHYCENTRON CANADUM	15.000	0.004	99.944
SELENE VOMER	14.000	0.003	99.948
DOROSOMA CEPEDIANUM	13.000	0.003	99.951
STENOTOMUS CHRYSOPS	13.000	0.003	99.954
FUNDULUS MAJALIS	11.000	0.003	99.956
MEMBRAS MARTINICA	11.000	0.003	99.959
CHAETODON OCELLATUS	11.000	0.003	99.962
CALLINECTES SIMILIS	11.000	0.003	99.964
PANOPEUS HERBSTII	11.000	0.003	99.967
PRIONOTUS CAROLINUS	10.000	0.002	99.969
CANCER IRRORATUS	10.000	0.002	99.972
FUNDULUS DIAPHANUS	9.000	0.002	99.974
STRONGYLURA MARINA	8.000	0.002	99.976
UROPHYCIS CHUSS	7.000	0.002	99.977
FISTULARIA TABALARIA	7.000	0.002	99.979
LACTOPHRYS TRIQUETER	7.000	0.002	99.981
PAGURUS LONGICARPUS	6.000	0.001	99.982
CHILOMYCTERUS SCHOEFFI	5.000	0.001	99.983
MYROPHIS PUNCTATUS	4.000	0.001	99.984
BREVOORTIA TYRANNUS LAR	4.000	0.001	99.985
MERLUCCIIUS BILINEARIS	4.000	0.001	99.986
MENTICIRRHUS SAXATILIS	4.000	0.001	99.987
ALUTERUS SCHOEFFI	4.000	0.001	99.988
POLINICES DUPLICATUS	4.000	0.001	99.989
ANCHOA HEPSETUS LARVAE	3.000	0.001	99.990
ANCHOA HEPSETUS	3.000	0.001	99.990
SPHYRAENA BOREALIS	3.000	0.001	99.991
MONACANTHUS HISPIDUS	3.000	0.001	99.992
MALACLEMYS TERRAPIN	3.000	0.001	99.992
ANGUILLA RUSTRATA JUV.	2.000	0.000	99.993

TABLE 4-1 (Cont.)

SPP. NAME	NUMBER	%	CUMU. %
UROPHYCIS REGIUS	2.000	0.000	99.993
UROPHYCIS SP	2.000	0.000	99.994
ALECTIS CRINITUS	2.000	0.000	99.994
BAIRDIELLA CHRYSURA	2.000	0.000	99.995
MUGIL SP	2.000	0.000	99.995
LACTOPHRYS TRIGONUS	2.000	0.000	99.996
PORTUNUS SPINIMANUS	2.000	0.000	99.996
CLUPEIDAE	1.000	0.000	99.996
UMBRA PYGMAEA	1.000	0.000	99.997
NOTEMIGONUS CRYSOLEUCAS	1.000	0.000	99.997
HYPORHAMPHUS UNIFASCIATU	1.000	0.000	99.997
MENIDIA SP	1.000	0.000	99.997
ETHEOSTOMA FUSIFORME	1.000	0.000	99.998
DECAPTERUS PUNCTATUS	1.000	0.000	99.998
TRACHINOTUS FALCATUS	1.000	0.000	99.998
CARANJIDAE	1.000	0.000	99.998
SCORPAENA BRASILIENSIS	1.000	0.000	99.999
PARALICHTHYS OBLONGUS	1.000	0.000	99.999
UPOGEBIA AFFINIS	1.000	0.000	99.999
HOMARUS AMERICANUS ZOEAE	1.000	0.000	99.999
HOMARUS AMERICANUS JUV	1.000	0.000	99.999
FAMILY XANTHIDAE	1.000	0.000	100.000
RHITHROPANOPEUS HARRISII	1.000	0.000	100.000

TABLE 4-2 WEEKLY ESTIMATED NUMBER OF SELECTED SPECIES IMPINGED ON THE OYSTER CREEK NUCLEAR GENERATING STATION TRAVELING SCREENS, SEPTEMBER 1980 - FEBRUARY 1981

Date	Species														Total
	Blueback Herring	Atlantic Menhaden	Bay Anchovy	Atlantic Silverside	Northern Pipefish	Bluefish	Weakfish	Northern Kingfish	Summer Flounder	Winter Flounder	Northern Puffer	Sand Shrimp	Blue Crab		
1 SEP 80	28	490	1,605	21	70	76	1,488	0	834	0	56	70	38,939	45,343	
8 SEP 80	14	0	2,045	0	35	75	477	0	21	0	7	0	25,861	43,214	
15 SEP 80	0	7	14	0	7	0	21	0	41	0	0	0	35,322	38,336	
22 SEP 80	0	14	164	0	0	28	14	0	35	0	0	0	20,647	21,148	
29 SEP 80	0	0	517	26	79	119	223	0	1,376	0	130	19	51,599	60,660	
6 OCT 80	0	7	137	0	14	14	28	0	332	0	14	0	6,841	8,629	
13 OCT 80	14	35	402	96	133	43	324	0	2,327	0	55	43	20,156	28,243	
20 OCT 80	0	37	28	38	64	38	176	0	194	0	0	0	17,426	19,102	
27 OCT 80	36	1,876	175	6,718	1,883	269	827	21	305	7	88	5,877	30,350	65,353	
3 NOV 80	67	1,078	22	9,135	4,321	61	536	0	457	180	88	10,904	31,715	73,876	
10 NOV 80	764	2,494	361	102,425	11,094	151	2,652	43	750	927	0	316,168	36,824	562,256	
17 NOV 80	6,232	2,345	947	81,215	18,843	41	14	14	567	14,702	0	836,656	2,233	1,149,223	
24 NOV 80	0	0	167	695	615	0	0	0	10	153	0	217,055	24	235,772	
1 DEC 80	16,087	66	3,004	11,589	3,824	0	0	0	14	177	0	799,420	19,924	899,396	
8 DEC 80	787	0	165	4,282	1,104	0	0	0	0	370	0	315,373	1,023	347,178	
15 DEC 80	513	0	211	4,725	1,430	0	0	0	39	1,640	0	555,147	569	606,895	
22 DEC 80	0	0	23	504	101	0	0	0	0	5,119	0	400,018	2,019	418,099	
29 DEC 80	14	0	14	1,606	445	0	0	0	0	3,425	0	352,410	71	380,365	
5 JAN 81	0	0	27	247	28	0	0	0	0	3,765	0	270,847	4,252	297,369	
12 JAN 81	0	0	28	439	42	0	0	0	0	1,601	0	139,113	2,977	157,010	
19 JAN 81	28	0	0	1,865	28	0	0	0	0	925	0	56,346	422	70,680	
26 JAN 81	42	0	0	1,039	42	0	0	0	0	1,083	0	11,587	1,316	27,976	
2 FEB 81	210	28	0	2,380	0	0	0	0	28	5,978	0	12,922	392	27,342	
9 FEB 81	28	0	0	532	28	0	0	0	0	2,212	0	46,088	1,064	52,724	
16 FEB 81	14	0	0	1,177	0	0	0	0	0	275	0	39,423	3,726	58,574	
23 FEB 81	539	28	0	4,988	0	0	0	0	0	1,609	0	52,205	912	68,774	

TABLE 4-3 WEEKLY ESTIMATED WEIGHT (kg) OF SELECTED SPECIES IMPINGED ON THE OYSTER CREEK NUCLEAR GENERATING STATION TRAVELING SCREENS, SEPTEMBER 1980 - FEBRUARY 1981

Date	Species													
	Blueback Herring	Atlantic Menhaden	Bay Anchovy	Atlantic Silverside	Northern Pipefish	Bluefish	Weakfish	Northern Kingfish	Summer Flounder	Winter Flounder	Northern Puffer	Sand Shrimp	Blue Crab	Total
1 SEP 80	0.55	9.90	4.01	0.06	0.25	2.82	5.11	0.00	114.30	0.00	0.47	0.07	602.45	777.32
8 SEP 80	0.25	0.00	1.62	0.00	0.10	0.36	2.02	0.00	3.03	0.00	0.08	0.00	470.00	1,032.56
15 SEP 80	0.00	0.06	0.92	0.00	0.01	0.00	0.28	0.00	7.12	0.00	0.00	0.00	535.15	644.14
22 SEP 80	0.00	0.23	0.12	0.00	0.00	1.27	0.36	0.00	4.82	0.00	0.00	0.00	348.97	361.46
29 SEP 80	0.00	0.00	1.11	0.16	0.47	0.96	4.72	0.00	245.07	0.00	15.76	0.02	783.21	1,400.32
6 OCT 80	0.00	2.88	0.28	0.00	0.13	0.88	0.85	0.00	70.05	0.00	1.41	0.00	248.21	526.19
13 OCT 80	0.25	0.93	0.80	0.47	0.56	1.06	9.55	0.00	476.94	0.00	6.03	0.03	901.29	1,626.70
20 OCT 80	0.00	1.19	0.04	0.26	0.29	2.10	5.65	0.00	36.20	0.00	0.00	0.00	1,162.80	1,294.80
27 OCT 80	1.02	119.47	0.35	36.31	6.40	24.64	31.31	4.69	57.43	1.24	3.12	4.22	870.22	1,309.18
3 NOV 80	0.20	63.85	0.11	53.64	16.00	1.45	15.63	0.00	80.95	66.93	0.62	8.94	276.25	754.63
10 NOV 80	7.75	146.35	0.65	550.96	33.27	9.70	152.66	5.04	137.04	304.95	0.00	231.06	363.71	2,555.53
17 NOV 80	27.73	98.11	0.61	532.29	40.49	2.59	1.15	1.27	105.69	2,281.21	0.00	1,842.37	10.91	6,175.09
24 NOV 80	0.00	0.00	0.81	3.52	1.94	0.00	0.00	0.00	3.47	46.19	0.00	233.47	0.12	339.36
1 DEC 80	69.53	5.27	2.45	58.19	8.60	0.00	0.00	0.00	4.31	45.46	0.00	668.81	57.39	1,042.30
8 DEC 80	2.90	0.03	0.41	19.07	1.95	0.00	0.00	0.00	0.00	114.33	0.00	282.16	11.07	478.74
15 DEC 80	2.00	0.00	0.29	22.81	3.70	0.00	0.00	0.00	4.26	347.54	0.00	474.09	1.27	932.96
22 DEC 80	0.00	0.00	0.02	2.63	0.13	0.00	0.00	0.00	0.00	435.95	0.00	363.79	3.54	823.44
29 DEC 80	0.04	0.00	0.01	7.25	0.68	0.00	0.00	0.00	0.00	384.38	0.00	333.97	0.23	753.57
5 JAN 81	0.00	0.00	0.03	1.26	0.14	0.00	0.00	0.00	0.00	382.93	0.00	248.90	10.40	696.88
12 JAN 81	0.00	0.00	0.03	1.69	0.04	0.00	0.00	0.00	0.00	192.37	0.03	358.64	5.72	590.74
19 JAN 81	0.13	0.00	0.00	7.90	0.03	0.00	0.00	0.00	0.00	123.13	0.00	52.91	0.39	202.44
26 JAN 81	0.14	0.00	0.00	4.16	0.04	0.00	0.00	0.00	0.00	290.60	0.00	11.32	4.10	345.95
2 FEB 81	7.10	1.06	0.00	10.74	0.00	0.00	0.00	0.00	3.05	1,843.16	0.00	13.41	1.37	1,928.02
9 FEB 81	0.17	0.00	0.00	2.38	0.06	0.00	0.00	0.00	0.00	686.84	0.00	40.60	3.14	745.81
16 FEB 81	0.36	0.00	0.00	5.86	0.00	0.00	0.00	0.00	0.00	96.75	0.00	32.41	11.39	164.51
23 FEB 81	14.76	1.27	0.00	27.78	0.00	0.00	0.00	0.00	0.00	428.75	0.00	42.60	3.92	578.97

TABLE 4-4 TOTAL ESTIMATED NUMBER AND WEIGHT (kg) WITH 80 PERCENT
CONFIDENCE INTERVALS OF KEY AND ABUNDANT SPECIES
IMPINGED AT OYSTER CREEK NUCLEAR GENERATING STATION,
SEPTEMBER 1980 - FEBRUARY 1981

Species	Number		Weight	
Blueback herring	20,961 ±	19,236	116.14 ±	88.26
Atlantic menhaden	9,044 ±	5,566	485.77 ±	296.08
Bay anchovy	9,287 ±	3,416	12.28 ±	4.27
Atlantic silverside	245,409 ±	202,801	1,410.84 ±	119.40
Northern pipefish	45,260 ±	32,191	118.81 ±	70.43
Bluefish	971 ±	509	52.36 ±	4.22
Weakfish	6,627 ±	3,954	245.67 ±	229.94
Northern kingfish	85 ±	92	12.12 ±	11.87
Summer flounder	7,549 ±	4,176	1,409.38 ±	807.69
Winter flounder	46,554 ±	25,153	8,338.12 ±	4,151.37
Northern puffer	453 ±	317	29.47 ±	27.53
Sand shrimp	4,206,493 ±	1,241,583	5,154.89 ±	2,695.96
Blue crab	341,969 ±	65,216	6,710.21 ±	1,399.78
Total ^(a)	5,523,243 ± 1,793,926		28,428.29 ± 10,524.18	

(a) Total includes taxa not shown above.

TABLE 4-5 TOTAL NUMBER PER 12-HOUR PERIOD AND PERCENT COMPOSITION
OF FINFISH AND MACROINVERTEBRATES IMPINGED DURING THE
NIGHT (INTN) AND DAY (INTD) AT THE OYSTER CREEK NUCLEAR
GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

STATION	INTN		INTD			
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CRANGON SEPTEMSPINOSA	263448.00	78.73	57461.00	65.48	320909.00	75.98
CALLINECTES SAPIDUS	22155.00	6.62	5703.00	6.50	27858.00	6.60
PALAEOMNETES VULGARIS	15756.00	4.71	6566.00	7.48	22322.00	5.28
MENIDIA MENIDIA	13319.00	3.98	4476.00	5.10	17795.00	4.21
GOBIOSOMA BOSCI	2013.00	0.84	5053.00	5.76	7866.00	1.86
ETROPUS MICROSTOMUS	3394.00	1.01	390.00	0.44	3784.00	0.90
SYNGNATHUS FUSCUS	1788.00	0.53	1586.00	1.81	3374.00	0.80
PSEUDOPLEURONECTES AMERI	2344.00	0.70	494.00	0.56	2838.00	0.67
ALOSA AESTIVALIS	1652.00	0.49	231.00	0.26	1883.00	0.45
CLASS SCYPHOZOA	1157.00	0.35	716.00	0.82	1873.00	0.44
APELTES QUADRACUS	937.00	0.28	865.00	0.99	1802.00	0.43
ANCHOA MITCHILLI	403.00	0.12	754.00	0.86	1157.00	0.27
HIPPOCAMPUS ERECTUS	717.00	0.21	382.00	0.44	1099.00	0.26
CYPRINODON VARIEGATUS	91.00	0.03	847.00	0.97	938.00	0.22
BREVOORTIA TYRANNUS	415.00	0.12	233.00	0.27	648.00	0.15
PARALICHTHYS DENTATUS	337.00	0.10	238.00	0.27	575.00	0.14
CYNOSCION REGALIS	295.00	0.09	195.00	0.22	490.00	0.12
TAUTOGA ONITIS	316.00	0.09	166.00	0.19	482.00	0.11
MYOXOCEPHALUS AENAEUS	412.00	0.12	64.00	0.07	476.00	0.11
ANGUILLA ROSTRATA	290.00	0.09	39.00	0.04	329.00	0.08
PRIONOTUS EVOLANS	249.00	0.07	60.00	0.07	309.00	0.07
OPSANUS TAU	225.00	0.07	70.00	0.08	295.00	0.07
CHASMODES BOSQUIANUS	142.00	0.04	125.00	0.14	267.00	0.06
PHYLUM NEMERTEA	207.00	0.06	26.00	0.03	233.00	0.06
ALOSA PSEUDOHARENGUS	141.00	0.04	27.00	0.03	168.00	0.04
FUNDULUS HETEROCLITUS	78.00	0.02	76.00	0.09	154.00	0.04
CENTROPRISTIS STRIATA	100.00	0.03	36.00	0.04	136.00	0.03
ETRUMEUS TERES	84.00	0.03	40.00	0.05	124.00	0.03
PEPRILUS TRIACANTHUS	40.00	0.01	84.00	0.10	124.00	0.03
PORTUNUS GIBBESII	95.00	0.03	25.00	0.03	120.00	0.03
PENAEUS AZTECUS	104.00	0.03	13.00	0.01	117.00	0.03
TRINECTES MACULATUS	84.00	0.03	18.00	0.02	102.00	0.02
OVALIPES OCELLATUS	83.00	0.02	18.00	0.02	101.00	0.02
CONGER OCEANICUS	78.00	0.02	21.00	0.02	99.00	0.02
SCOPHTHALMUS AQUOSUS	55.00	0.02	32.00	0.04	87.00	0.02
HIPPOLYTE SP	0.00	0.00	81.00	0.09	81.00	0.02
FAMILY XANTHIDAE JUV.	46.00	0.01	33.00	0.04	79.00	0.02
AMMODYTES AMERICANUS	54.00	0.02	24.00	0.03	78.00	0.02
OTHER SPECIES	711.00	0.21	486.00	0.55	1197.00	0.28
TOTAL	334615.00		87754.00		422369.00	

TABLE 4-6 MEAN WATER TEMPERATURE VALUES (C) DURING NIGHT (INTN) AND DAY (INTD)
IMPINGEMENT SAMPLING AT THE OYSTER CREEK NUCLEAR GENERATING STATION,
SEPTEMBER 1980 - FEBRUARY 1981

SURFACE				BOTTOM			
DATE	INTN	INTD	MEAN	DATE	INTN	INTD	MEAN
2 SEP 80	28.8	27.6	28.2	2 SEP 80	28.9	27.7	28.3
8 SEP 80	25.7	25.3	25.5	8 SEP 80	25.8	25.3	25.5
15 SEP 80	23.2	22.3	22.8	15 SEP 80	23.3	22.3	22.8
22 SEP 80	24.4	24.6	24.5	22 SEP 80	24.4	24.6	24.5
29 SEP 80	18.1	18.7	18.4	29 SEP 80	18.1	18.7	18.4
6 OCT 80	16.7	16.6	16.8	5 OCT 80	16.9	16.6	16.8
13 OCT 80	13.9	13.3	13.6	13 OCT 80	13.9	13.4	13.6
20 OCT 80	16.7	16.6	16.6	20 OCT 80	16.7	16.5	16.6
27 OCT 80	11.5	12.5	12.0	27 OCT 80	11.6	12.5	12.0
3 NOV 80	11.2	12.5	11.9	3 NOV 80	11.2	12.5	11.8
10 NOV 80	9.3	7.8	8.5	10 NOV 80	9.3	7.8	8.6
17 NOV 80	6.4	5.9	6.2	17 NOV 80	6.4	5.9	6.2
24 NOV 80	6.3	7.7	6.7	24 NOV 80	6.2	7.0	6.6
1 DEC 80	8.0	8.7	8.4	1 DEC 80	8.0	8.7	8.3
8 DEC 80	6.1	6.0	6.1	8 DEC 80	6.1	6.0	6.0
15 DEC 80	5.1	3.9	4.5	15 DEC 80	4.0	3.9	3.9
22 DEC 80	0.7	0.1	0.4	22 DEC 80	-0.9	-0.6	-0.8
29 DEC 80	2.0	1.6	1.8	29 DEC 80	1.8	1.4	1.6
5 JAN 81	-0.0	0.5	0.2	5 JAN 81	-0.9	-0.8	-0.9
12 JAN 81	0.5	0.4	0.4	12 JAN 81	-0.9	-0.5	-0.7
19 JAN 81	6.3	1.5	3.9	19 JAN 81	6.1	1.4	3.7
26 JAN 81	4.9	4.3	4.6	26 JAN 81	4.1	3.4	3.7
2 FEB 81	3.8	2.0	2.9	2 FEB 81	3.8	1.8	2.8
9 FEB 81	0.6	1.6	1.1	9 FEB 81	0.2	0.2	0.2
17 FEB 81	10.5	8.4	9.5	17 FEB 81	8.5	7.3	7.9
23 FEB 81	8.5	8.4	8.5	23 FEB 81	8.4	8.3	8.4
MEAN	10.4	9.9	10.2	MEAN	10.1	9.7	9.9

TABLE 4-7 MEAN DISSOLVED OXYGEN VALUES (mg/l) DURING NIGHT (INTN) AND DAY (INTD) IMPINGEMENT SAMPLING
AT THE OYSTER CREEK NUCLEAR GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

SURFACE				BOTTOM			
DATE	INTN	INTD	MEAN	DATE	INTN	INTD	MEAN
2 SEP 80	4.6	5.8	5.2	2 SEP 80	4.6	6.0	5.3
8 SEP 80	5.3	5.8	5.5	8 SEP 80	5.3	5.8	5.6
15 SEP 80	5.4	5.6	5.5	15 SEP 80	5.5	5.5	5.5
22 SEP 80	5.7	5.7	5.7	22 SEP 80	5.7	5.7	5.7
29 SEP 80	6.3	6.1	6.2	29 SEP 80	6.3	6.2	6.2
6 OCT 80	7.1	7.0	7.1	6 OCT 80	7.2	7.0	7.1
13 OCT 80	7.8	7.8	7.8	13 OCT 80	7.8	8.0	7.9
20 OCT 80	7.2	7.2	7.2	20 OCT 80	7.2	7.1	7.2
27 OCT 80	7.7	7.4	7.6	27 OCT 80	7.7	7.5	7.6
3 NOV 80	8.3	8.4	8.4	3 NOV 80	8.4	8.4	8.4
10 NOV 80	8.7	9.0	8.8	10 NOV 80	8.7	8.9	8.8
17 NOV 80	9.4	9.3	9.4	17 NOV 80	9.4	9.3	9.4
24 NOV 80	10.2	9.8	10.0	24 NOV 80	10.2	9.9	10.0
1 DEC 80	9.6	9.6	9.6	1 DEC 80	9.6	9.6	9.6
8 DEC 80	10.4	10.1	10.3	8 DEC 80	10.5	10.1	10.3
15 DEC 80	11.0	11.2	11.1	15 DEC 80	11.2	11.2	11.2
22 DEC 80	11.7	11.4	11.5	22 DEC 80	11.7	11.5	11.6
29 DEC 80	10.3	10.3	10.3	29 DEC 80	10.4	10.6	10.5
5 JAN 81	13.1	13.9	13.5	5 JAN 81	13.2	14.0	13.6
12 JAN 81	12.2	11.9	12.0	12 JAN 81	12.4	12.3	12.4
19 JAN 81	13.5	15.4	14.4	19 JAN 81	13.7	15.7	14.7
26 JAN 81	10.5	11.1	10.8	26 JAN 81	10.8	11.8	11.3
2 FEB 81	10.6	11.2	10.9	2 FEB 81	11.0	11.3	11.1
9 FEB 81	10.5	10.6	10.5	9 FEB 81	10.7	10.9	10.8
17 FEB 81	9.5	9.8	9.7	17 FEB 81	9.6	10.0	9.8
23 FEB 81	8.7	8.8	8.8	23 FEB 81	8.8	8.9	8.8
MEAN	9.0	9.2	9.1	MEAN	9.1	9.3	9.2

TABLE 4-8 MEAN SALINITY VALUES (ppt) DURING NIGHT (INTN) AND DAY (INTD) IMPINGEMENT SAMPLING
AT THE OYSTER CREEK NUCLEAR GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

SURFACE				BOTTOM			
DATE	INTN	INTD	MEAN	DATE	INTN	INTD	MEAN
2 SEP 80	24.2	24.0	24.1	2 SEP 80	24.3	24.0	24.1
8 SEP 80	24.2	24.9	24.5	8 SEP 80	24.2	24.9	24.6
15 SEP 80	27.6	28.1	27.8	15 SEP 80	27.7	28.1	27.9
22 SEP 80	25.3	26.4	25.8	22 SEP 80	25.3	26.3	25.8
29 SEP 80	26.4	26.2	26.3	29 SEP 80	26.3	26.2	26.3
6 OCT 80	26.4	26.8	26.6	6 OCT 80	26.5	26.7	26.6
13 OCT 80	25.2	25.4	25.3	13 OCT 80	25.3	25.3	25.3
20 OCT 80	23.9	24.4	24.1	20 OCT 80	24.0	24.3	24.1
27 OCT 80	23.9	23.5	23.7	27 OCT 80	23.9	23.7	23.8
3 NOV 80	26.0	26.0	26.0	3 NOV 80	26.1	26.0	26.0
10 NOV 80	25.6	25.8	25.7	10 NOV 80	25.7	26.0	25.8
17 NOV 80	25.1	24.4	24.8	17 NOV 80	25.2	24.6	24.9
24 NOV 80	24.0	23.8	23.9	24 NOV 80	24.1	23.9	24.0
1 DEC 80	24.0	23.9	24.0	1 DEC 80	23.8	24.0	23.9
8 DEC 80	25.9	26.3	26.1	8 DEC 80	25.7	26.1	25.9
15 DEC 80	24.0	23.5	23.7	15 DEC 80	23.4	23.4	23.4
22 DEC 80	24.4	25.3	24.8	22 DEC 80	24.3	24.9	24.6
29 DEC 80	24.1	25.2	24.6	29 DEC 80	23.5	25.2	24.3
5 JAN 81	24.7	24.9	24.8	5 JAN 81	23.9	24.8	24.4
12 JAN 81	25.3	25.8	25.5	12 JAN 81	25.5	25.7	25.6
19 JAN 81	24.7	25.5	25.1	19 JAN 81	24.6	25.3	24.9
26 JAN 81	28.2	28.6	28.4	26 JAN 81	27.7	28.7	28.2
2 FEB 81	26.4	27.3	26.8	2 FEB 81	26.3	27.3	26.8
9 FEB 81	26.9	26.2	26.6	9 FEB 81	26.4	25.8	26.1
17 FEB 81	26.0	26.4	26.2	17 FEB 81	25.6	26.1	25.9
23 FEB 81	24.7	26.0	25.4	23 FEB 81	25.1	26.6	25.9
MEAN	25.3	25.6	25.4	MEAN	25.2	25.5	25.4

TABLE 4-9 MEDIAN pH VALUES ASSOCIATED WITH IMPINGEMENT SAMPLING
AT THE OYSTER CREEK NUCLEAR GENERATING STATION INTAKE,
SEPTEMBER 1980 - FEBRUARY 1981

Week of	Night		Day	
	Surface	Bottom	Surface	Bottom
2 SEP 80	7.6	7.6	7.7	7.8
8 SEP 80	7.9	7.8	7.9	7.9
15 SEP 80	7.7	7.7	7.6	7.6
22 SEP 80	7.7	7.7	7.7	7.7
29 SEP 80	7.5	7.5	7.4	7.4
6 OCT 80	8.0	8.0	7.9	7.9
13 OCT 80	7.9	8.0	7.9	8.0
20 OCT 80	7.8	7.8	7.8	7.8
27 OCT 80	7.8	7.8	7.5	7.2
3 NOV 80	7.8	7.8	7.6	7.5
10 NOV 80	7.9	7.9	7.9	7.9
17 NOV 80	7.7	7.8	7.8	7.8
24 NOV 80	7.8	7.8	7.9	7.8
1 DEC 80	7.8	7.8	7.9	7.9
8 DEC 80	7.9	7.9	7.9	7.9
15 DEC 80	7.9	7.9	7.9	7.9
22 DEC 80	8.0	8.0	8.0	8.0
29 DEC 80	7.9	7.9	7.9	7.9
5 JAN 81	8.0	8.0	8.0	8.0
12 JAN 81	8.1	8.1	8.1	8.2
19 JAN 81	8.3	8.3	8.3	8.3
26 JAN 81	8.2	8.2	8.3	8.3
2 FEB 81	8.1	8.1	8.2	8.1
9 FEB 81	8.3	8.2	8.3	8.3
17 FEB 81	8.1	8.1	8.1	8.1
23 FEB 81	7.9	7.9	8.0	8.0

5. ENTRAINMENT OF ICHTHYOPLANKTON

5.1 BIOLOGICAL DATA

A total of 168 samples were collected and examined for ichthyoplankton abundance from 2 September 1980 to 23 February 1981. Samples collected during September and October were also examined for ichthyoplankton viability.

Winter flounder (Pseudopleuronectes americanus) was the dominant species in the entrainment samples (Table 5-1). Eggs were the most abundant form with a mean sample density of $140.3/100\text{ m}^3$, while winter flounder larvae were the third most abundant form with a mean sample density of $5.7/100\text{ m}^3$. Together, eggs and larvae of winter flounder composed 23.9 percent of the total catch.

Sand lance (Ammodytes americanus) larvae were the second most abundant form with a mean sample density of $15.3/100\text{ m}^3$. They composed 8.8 percent of the total catch.

Unidentified eggs were the fourth most abundant form collected with a mean density of $2.3/100\text{ m}^3$, constituting 1.3 percent of the total catch. Most of these eggs were unidentified due to early stage of development. They probably were summer flounder (Paralichthys dentatus) eggs, as most of the unidentified eggs were taken at the same time as later stage eggs that could be identified as summer flounder. Summer flounder eggs were the fifth most abundant form with a mean sample density of $2.1/100\text{ m}^3$, comprising 1.2 percent of the catch.

Bay anchovy (Anchoa mitchilli) larvae and juveniles were the sixth and eighth most abundant forms with mean sample densities of 1.9 and $1.4/100\text{ m}^3$, respectively. Together they accounted for 1.9 percent of the total catch.

Eggs of the family Labridae were the seventh most abundant form. They were collected at a mean sample density of $1.8/100\text{ m}^3$, making up 1.0 percent of the total catch.

Northern pipefish (Syngnathus fuscus) juveniles were the ninth most abundant form. They were collected at a mean sample density of $1.1/100\text{ m}^3$, constituting 0.6 percent of the total catch.

The remainder of the catch was composed of 12 different forms. They were all collected at mean sample densities of $<1.0/100\text{ m}^3$ and represented only 1.2 percent of the total catch.

The early life stages of the various species appeared at different times during the study period, depending on species-specific spawning time.

Larvae and juveniles of the bay anchovy, northern pipefish juveniles, and eggs and larvae of other summer spawners were taken in low densities during September and October (Table 5-2). Eggs of the summer flounder, a fall spawner, were taken in moderate densities during October. Also taken in October were unidentified eggs that were probably early stage summer flounder eggs. Ichthyoplankton densities were extremely low in November with only occasional captures of juveniles and adults. This period of low density

continued into early December. Larvae of the sand lance, a winter spawner, first appeared in December in low densities but dominated the ichthyoplankton, accounting for 93 percent of all entrained ichthyoplankton. Densities increased in January, then dropped slightly in February. The first indication of winter flounder spawning was low densities of eggs collected in January. Egg densities were high in February, especially in night discharge collections. However, many of these eggs were unfertilized, ovarian eggs forced from ripe females impinged on the screens. Winter flounder larvae were first collected at moderate densities in February.

In comparing day and night differences in densities, only data from weeks when 24-hour studies occurred were examined (Table 5-3). In September and October, no regular day-night differences were apparent due to the low abundances of the organisms involved. From December through February, sand lance larvae showed no difference between day and night densities. This was also the case for winter flounder larvae in February. Only winter flounder eggs in February showed an obvious day-night difference, with night discharge samples having a much higher density. This was due to the higher impingement rate for winter flounder at night, since most of these eggs were unfertilized and apparently forced from impinged ripe females.

Viability determinations for bay anchovy, northern pipefish, and Gobiidae are reported in Table 5-4. Insufficient specimens of any taxon were collected for analysis of entrainment effects. However, a higher proportion of all organisms were alive or stunned at the intake than at the discharge.

Estimates of total numbers entrained during the September 1980 - February 1981 period were made for key and abundant species and for total ichthyoplankton (Table 5-5). Winter flounder eggs had the highest estimate with $1,454.54 \times 10^6$ entrained. However, most of these were unfertilized eggs extruded from impinged females. Sand lance and winter flounder larvae had the next highest estimates, 150.24×10^6 and 57.54×10^6 , respectively. A total of $1,820.39 \times 10^6$ ichthyoplankton organisms were entrained during the six-month period.

5.2 WATER QUALITY DATA ASSOCIATED WITH ENTRAINMENT SAMPLING

Mean water temperature values at the intake ranged from -0.3°C on 23 December 1980 to 30.2°C on 2 September 1980 (Table 5-6). Water temperature values differed little between surface and bottom, and day and night.

Mean water temperature values at the discharge ranged from 6.1°C on 24 November 1980 to 39.2°C on 2 September 1980. The low temperature in November occurred during a period when the plant was shut down and did not correspond to the date of the lowest intake temperature. The average delta-T between intake and discharge was $\sim 9^\circ\text{C}$ for both day and night.

Mean dissolved oxygen values ranged from 4.6 to 11.7 mg/liter at the intake, and from 4.7 to 13.3 mg/liter at the discharge (Table 5-7). There was little difference between surface and bottom values at the intake and no consistent differences between day and night values, or intake and discharge values.

Mean salinity values ranged from 23.0 to 28.8 ppt during the entrainment study period (Table 5-8). There were no consistent differences between surface and bottom, day and night, or intake and discharge.

Median pH values ranged from 7.5 to 8.3 (Table 5-9). Differences between surface and bottom, and day and night, were minor and inconsistent. However, the discharge values were often slightly lower than the intake values.

Total chlorine was measured at the discharge on each entrainment sampling date. Chlorine concentrations were always found to be <0.01 ppm.

TABLE 5-1 MEAN SAMPLE DENSITY (No./100 m³), PERCENT COMPOSITION,
AND CUMULATIVE PERCENT OF ICHTHYOPLANKTON COLLECTED AT
THE INTAKE AND DISCHARGE OF THE OYSTER CREEK NUCLEAR
GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

SPP. NAME	NUMBER	%	CUMU. %
PSEUDOPLEURONEC AMER EGG	140.342	80.608	80.608
AMMODYTES AMERICANUS LAR	15.299	8.787	89.395
PSEUDOPLEURONEC AMER LAR	5.746	3.300	92.696
UNIDENTIFIED EGG	2.314	1.329	94.025
PARALICHTHYS DENTATU EGG	2.142	1.230	95.255
ANCHOA MITCHILLI LAR	1.864	1.071	96.326
LABRIDAE EGG	1.819	1.045	97.371
ANCHOA MITCHILLI JUV	1.425	0.819	98.189
SYNGNATHUS FUSCUS JUV	1.108	0.637	98.826
GOBIIDAE LAR	0.599	0.344	99.170
ANGUILLA ROSTRATA GLASS	0.275	0.158	99.328
GOBIOSOMA BOSCI JUV	0.246	0.142	99.470
PARALICHTHYS DENTATU LAR	0.205	0.118	99.588
GOBIOSOMA BOSCI ADULT	0.126	0.072	99.660
MYOXOCEPHALUS AENAEU LAR	0.116	0.066	99.727
HIPPOCAMPUS ERECTUS JUV	0.107	0.061	99.788
APELTES QUADRACUS ADULT	0.098	0.056	99.844
BREVOORTIA TYRANNUS LAR	0.098	0.056	99.900
ATHERINIDAE LAR	0.064	0.037	99.937
FUNDULUS DIAPHANUS ADULT	0.058	0.034	99.971
SYNGNATHUS FUSCUS ADULT	0.051	0.029	100.000

TABLE 5-2 MONTHLY MEAN SAMPLE DENSITIES (No./100 m³) AND PERCENT COMPOSITION OF ICHTHYOPLANKTON
COLLECTED AT THE OYSTER CREEK NUCLEAR GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

OYSTERCR				GEAR-36BONG				SEP 80			
STATION		DSNT		DSDA		INNT		IND4			
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP	
ANCHOA MITCHILLI LAR	6.39	21.03	15.65	23.53	6.87	32.28	10.63	66.93	8.08	27.62	
LABRIDAE EGG	8.99	29.59	44.05	66.24	0.00	0.00	0.00	0.00	8.39	28.69	
ANCHOA MITCHILLI JUV	4.74	15.60	0.00	0.00	10.14	47.62	0.00	0.00	5.78	19.78	
SYNGNATHUS FUSCUS JUV	4.90	16.14	3.40	5.11	2.17	10.20	5.25	33.07	3.71	12.69	
GOBIIDAE LAR	4.79	15.78	3.40	5.11	1.34	6.31	0.00	0.00	2.76	9.45	
BREVOORTIA TYRANNUS LAR	0.56	1.86	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.75	
ATHERINIDAE LAR	0.00	0.00	0.00	0.00	0.76	3.59	0.00	0.00	0.30	1.02	
STATION TOTAL AND DATE		30.36		66.50		21.29		15.88		29.24	

TABLE 5-2 (Cont.)

OYSTER CR		GEAR-36BONG								OCT 80	
STATION	DSNT		DSDA		IHNT		INDA				
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP	
UNIDENTIFIED EGG	11.33	40.22	0.00	0.00	17.72	73.69	0.00	0.00	10.89	40.84	
PARALICHTHYS DENTATUS EGG	9.49	33.69	26.33	100.00	2.12	8.80	27.75	91.21	11.11	41.66	
ANCHOA MITCHILLI LAR	0.82	2.90	0.00	0.00	0.75	3.12	0.00	0.00	0.59	2.20	
ANCHOA MITCHILLI JUV	0.00	0.00	0.00	0.00	1.48	6.14	2.67	8.79	0.89	3.33	
SYNGNATHUS FUSCUS JUV	2.22	7.87	0.00	0.00	1.98	8.25	0.00	0.00	1.58	5.90	
PARALICHTHYS DENTATUS LAR	2.84	10.09	0.00	0.00	0.00	0.00	0.00	0.00	1.07	3.99	
HIPPOCAMPUS ERECTUS JUV	1.48	5.24	0.00	0.00	0.00	0.00	0.00	0.00	0.55	2.07	
STATION TOTAL AND DATE	28.18		26.33		24.04		30.43		26.67		

TABLE 5-2 (Cont.)

OYSTERCR		GEAR-36BOBG						NOV 80	
STATION		BSNT		DSDA		INNT		INDA	
SPECIES		NUMBER	FCT	NUMBER	FCT	NUMBER	FCT	NUMBER	FCT
		INDIVS	COMP	INDIVS	COMP	INDIVS	COMP	INDIVS	COMP
GORIOSOMA BOSCI JUV		0.00	0.00	0.00	0.00	5.11	79.26	0.00	0.00
GORIOSOMA BOSCI ADULT		1.27	54.84	0.00	0.00	1.34	20.74	0.00	0.00
SYNGNATHUS FUSCUS ADULT		1.05	45.16	0.00	0.00	0.00	0.00	0.00	0.00
STATION TOTAL AND DATE		2.33		0.00		6.45		0.00	
								2.93	

TABLE 5-2 (Cont.)

OYSTERCR				GEAR-36BONG				DEC 80			
STATION	DSNT		DSDA		INNT		INDA				
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP	
AMMODYTES AMERICANUS LAR	17.26	90.89	25.00	100.00	12.57	88.09	13.13	100.00	16.10	92.93	
AFELTES QUADRACUS ADULT	0.76	4.00	0.00	0.00	0.87	6.10	0.00	0.00	0.58	3.36	
BREVDORTIA TYRANNUS LAR	0.00	0.00	0.00	0.00	0.83	5.82	0.00	0.00	0.30	1.71	
FUNDULUS DIAPHANUS ADULT	0.97	5.11	0.00	0.00	0.00	0.00	0.00	0.00	0.35	2.00	
STATION TOTAL AND DATE	18.99		25.00		14.27		13.13		17.33		

TABLE 5-2 (Cont.)

OYSTERCR		GEAR-36BONG								JAN 81	
STATION		DSNT		DSDA		INNT		INDA			
SPECIES		NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
PSEUDOPLEURONEC AMER EGG		2.86	4.36	0.00	0.00	0.00	0.00	0.00	0.00	1.04	1.97
AMMODYTES AMERICANUS LAR		62.80	95.64	55.92	100.00	33.12	100.00	53.95	100.00	51.85	98.03
STATION TOTAL AND DATE	TOTAL	65.66		55.92		33.12		53.95		52.89	

TABLE 5-2 (Cont.)

OYSTERCR		GEAR-36BONG								FEB 81	
STATION		DSNT		DSDA		INNT		INDA			
SPECIES		NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
PSEUDOPLEURONEC AMER EGG		2579.25	97.67	158.98	75.77	185.43	63.52	130.15	53.41	969.75	92.08
AMMODYTES AMERICANUS LAR		22.43	0.85	18.30	8.72	58.50	20.07	56.78	23.30	39.51	3.75
PSEUDOPLEURONEC AMER LAR		36.36	1.38	32.53	15.50	39.83	13.64	53.55	21.93	39.74	3.77
UNIDENTIFIED EGG		0.00	0.00	0.00	0.00	2.84	0.97	3.20	1.31	1.48	0.14
ANGUILLA ROSTRATA GLASS		2.88	0.11	0.00	0.00	2.84	0.97	0.00	0.00	1.90	0.18
MYOXOCEPHALUS AENAEU LAR		0.00	0.00	0.00	0.00	2.40	0.82	0.00	0.00	0.80	0.08
STATION TOTAL AND DATE	TOTAL	2640.91		209.80		291.90		243.68		1053.18	

TABLE 5-3 MEAN SAMPLE DENSITIES (No./100 m³) AND PERCENT COMPOSITION OF ICHTHYOPLANKTON COLLECTED DURING 24-HOUR STUDIES AT THE OYSTER CREEK NUCLEAR GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

OYSTERCR		GEAR-36BONG								22 SEP 80	
STATION		DSNT		DSDA		INNT		INDA			
SPECIES		NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
ANCHOA MITCHILLI LAR		8.32	20.57	15.65	23.53	7.02	45.86	10.63	66.93	9.85	29.69
LABRIDAE EGG		20.97	51.85	44.05	66.24	0.00	0.00	0.00	0.00	15.10	45.49
ANCHOA MITCHILLI JUV		1.32	3.26	0.00	0.00	1.87	12.20	0.00	0.00	0.96	2.88
SYNGNATHUS FUSCIS JUV		6.07	15.00	3.40	5.11	3.28	21.46	5.25	33.07	4.54	13.66
Gobiidae LAR		2.45	6.06	3.40	5.11	3.13	20.48	0.00	0.00	2.36	7.09
BREVORTIA TYRANNUS LAR		1.32	3.26	0.00	0.00	0.00	0.00	0.00	0.00	0.40	1.19
STATION TOTAL AND DATE	TOTAL	40.43		66.50		15.30		15.88		33.20	

TABLE 5-3 (Cont.)

OYSTERCR				GEAR-36BONG				20 OCT 80			
STATION	DSNT		DSDA		INNT		INDA				
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP	
UNIDENTIFIED EGG	4.30	16.83	0.00	0.00	16.38	85.48	0.00	0.00	6.21	25.06	
PARALICHTHYS DENTATUS EGG	13.93	54.53	26.33	100.00	0.00	0.00	27.75	91.21	14.99	60.55	
ANCHOA MITCHILLI LAR	1.63	6.39	0.00	0.00	1.50	7.83	0.00	0.00	0.94	3.80	
ANCHOA MITCHILLI JUV	0.00	0.00	0.00	0.00	1.28	6.70	2.67	8.79	0.92	3.71	
PARALICHTHYS DENTATUS LAR	5.68	22.24	0.00	0.00	0.00	0.00	0.00	0.00	1.70	6.88	
STATION TOTAL AND DATE	25.55		26.33		19.17		30.43		24.77		

TABLE 5-3 (Cont.)

24 NOV 80

GEAR-36BONG

OYSTERCR

STATION	USNT		ISDA		INNT		INDA		NUMBER TOTAL		FCT COMP	
SPECIES	NUMBER INDIVS	FCT COMP	NUMBER INDIVS	FCT COMP	NUMBER INDIVS	FCT COMP	NUMBER INDIVS	FCT COMP	NUMBER INDIVS	FCT COMP	NUMBER TOTAL	FCT COMP
GORGOSOMA BOSCI ADULT	2.55	100.00	0.00	0.00	2.67	100.00	0.00	0.00	0.00	0.00	1.31	100.00
STATION TOTAL AND DATE	2.55		0.00		2.67		0.00		0.00		1.31	

TABLE 5-3 (Cont.)

OYSTERCR		GEAR-36BONG								23 DEC 80	
STATION		DSNT		DSDA		INNT		INDA			
SPECIES		NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
ANMODYTES AMERICANUS LAR		23.30	92.46	25.00	100.00	14.73	100.00	13.13	100.00	19.04	97.57
APELTES QUADRACUS ADULT		1.90	7.54	0.00	0.00	0.00	0.00	0.00	0.00	0.47	2.43
STATION TOTAL AND DATE	TOTAL	25.20		25.00		14.73		13.13		19.51	

TABLE 5-3 (Cont.)

OYSTERCR		GEAR-36BONG								20 JAN 81	
STATION		DSNT		BSDA		INNT		INDA			
SPECIES		NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
PSEUDOPLEURONEC AMER EGG		2.80	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.70	1.10
AMMODYTES AMERICANUS LAR		95.05	97.14	55.92	100.00	47.73	100.00	53.95	100.00	63.16	98.90
STATION TOTAL AND DATE		97.85		55.92		47.73		53.95		63.86	

TABLE 5-3 (Cont.)

OYSTERCR		GEAR-36BONG								18 FEB 81	
STATION	DSNT		DSDA		INNT		INDA				
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP	
PSEUDOPLEURONEC AMER EGG	5062.15	98.83	158.98	75.77	248.82	63.71	130.15	53.41	1400.03	93.87	
AMMODYTES AMERICANUS LAR	14.57	0.28	18.30	8.72	79.10	20.25	56.78	23.30	42.19	2.83	
PSEUDOPLEURONEC AMER LAR	39.43	0.77	32.53	15.50	53.20	13.62	53.55	21.98	44.68	3.00	
UNIDENTIFIED EGG	0.00	0.00	0.00	0.00	2.33	0.60	3.20	1.31	1.38	0.09	
ANGUILLA ROSTRATA GLASS	5.75	0.11	0.00	0.00	2.33	0.60	0.00	0.00	2.02	0.14	
MYOXOCEPHALUS AENAEU LAR	0.00	0.00	0.00	0.00	4.80	1.25	0.00	0.00	1.20	0.08	
STATION TOTAL AND DATE	5121.90		209.80		390.58		243.68		1491.49		

TABLE 5-4 NUMBER OF LIVE (L), STUNNED (S), AND DEAD (D)
SPECIMENS OF FOUR TAXA COLLECTED IN ENTRAINMENT
SAMPLES AT THE OYSTER CREEK NUCLEAR GENERATING
STATION, SEPTEMBER - OCTOBER 1980

Taxa	Month	Intake			Discharge		
		L	S	D	L	S	D
Bay anchovy larvae	SEP	0	1	11	0	0	15
	OCT	0	1	0	0	0	1
	Total	0	2	11	0	0	16
Bay anchovy juveniles	SEP	9	1	1	0	1	5
	OCT	1	2	0	0	0	0
	Total	10	3	1	0	1	5
Northern pipefish juveniles	SEP	2	0	1	1	0	1
	OCT	1	0	0	0	1	0
	Total	3	0	1	1	1	1
Gobiidae larvae	SEP	0	1	0	1	1	3
	OCT	0	0	0	0	0	0
	Total	0	1	0	1	1	3

TABLE 5-5 ESTIMATED NUMBERS OF KEY AND ABUNDANT ICHTHYOPLANKTON
ENTRAINED AT THE OYSTER CREEK NUCLEAR GENERATING STATION,
SEPTEMBER 1980 - FEBRUARY 1981

Species and Life Stage	Estimated Number Entrained ($\times 10^6$)	80 Percent Confidence Level ($\times 10^6$)
<u>Anchoa mitchilli</u> larvae	15.73	7.30
<u>Anchoa mitchilli</u> juveniles	3.77	3.86
<u>Syngnathus fuscus</u> juveniles	6.41	4.43
<u>Ammodytes americanus</u> larvae	150.24	44.87
<u>Paralichthys dentatus</u> eggs	51.54	35.20
<u>Pseudopleuronectes</u> <u>americanus</u> eggs	1,454.54	1,886.67
<u>Pseudopleuronectes</u> <u>americanus</u> larvae	57.54	22.65
unidentified eggs	9.78	11.39
Total eggs	1,550.14	1,887.43
Total larvae	239.64	52.41
Total juveniles and adults	30.61	10.03
Total entrainment	1,820.39	1,879.48

TABLE 5-6 MEAN WATER TEMPERATURE MEASUREMENTS (C) ASSOCIATED WITH
ENTRAINMENT SAMPLING AT THE OYSTER CREEK NUCLEAR
GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

Date	Intake				Discharge	
	Night		Day		Surface	
	Surface	Bottom	Surface	Bottom	Night	Day
2 SEP 80	30.2	30.2	--	--	39.2	--
8 SEP 80	25.7	25.8	--	--	37.1	--
15 SEP 80	23.0	23.0	--	--	34.5	--
22 SEP 80	25.0	25.1	--	--	25.0	--
24 SEP 80	21.9	21.9	23.1	22.6	31.7	31.0
25 SEP 80	21.6	21.6	--	--	31.9	--
29 SEP 80	18.4	18.4	--	--	29.0	--
6 OCT 80	17.3	17.2	--	--	28.2	--
13 OCT 80	14.4	14.4	--	--	25.3	--
20 OCT 80	16.9	16.9	--	--	28.2	--
21 OCT 80	17.8	17.8	--	--	29.0	--
22 OCT 80	17.8	17.8	16.5	16.5	29.0	27.8
27 OCT 80	11.2	11.2	--	--	21.0	--
3 NOV 80	11.0	11.0	--	--	24.9	--
17 NOV 80	6.8	6.8	--	--	17.6	--
24 NOV 80	6.1	6.0	--	--	6.1	--
25 NOV 80	--	--	7.2	7.1	--	7.2
1 DEC 80	8.0	8.0	--	--	17.8	--
15 DEC 80	3.8	3.8	--	--	15.0	--
23 DEC 80	-0.4	-0.3	-0.5	-0.5	11.0	10.5
29 DEC 80	2.5	1.9	--	--	12.0	--
13 JAN 81	--	--	--	--	9.0	--
20 JAN 81	0.9	0.6	--	--	12.4	--
21 JAN 81	--	--	1.2	0.9	--	11.1
26 JAN 81	6.2	5.0	--	--	17.8	--
9 FEB 81	2.0	1.0	--	--	15.9	--
18 FEB 81	10.1	9.9	10.4	9.3	18.5	20.9
19 FEB 81	11.1	10.7	--	--	21.1	--
23 FEB 81	8.8	8.6	--	--	18.0	--
MEAN	12.3	12.1	9.7	9.3	21.2	18.1

Note: dash (--) indicates sampling not done.

TABLE 5-7 MEAN DISSOLVED OX N MEASUREMENTS (mg/l) ASSOCIATED
WITH ENTRAINMENT SAMPLING AT THE OYSTER CREEK NUCLEAR
GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

Date	Intake				Discharge	
	Night		Day		Surface	
	Surface	Bottom	Surface	Bottom	Night	Day
2 SEP 80	4.6	4.7	--	--	4.7	--
8 SEP 80	5.8	5.7	--	--	5.7	--
15 SEP 80	6.6	6.5	--	--	5.8	--
22 SEP 80	6.3	6.3	--	--	6.1	--
24 SEP 80	5.1	5.1	5.2	5.3	5.9	5.7
25 SEP 80	4.9	5.1	--	--	6.0	--
29 SEP 80	6.5	6.5	--	--	6.1	--
6 OCT 80	7.3	7.4	--	--	7.5	--
13 OCT 80	8.0	8.0	--	--	7.7	--
20 OCT 80	7.5	7.5	--	--	7.3	--
21 OCT 80	7.2	7.1	--	--	7.1	--
22 OCT 80	6.9	6.7	7.4	7.3	6.9	7.4
27 OCT 80	7.8	7.8	--	--	8.0	--
3 NOV 80	8.5	8.2	--	--	7.9	--
17 NOV 80	9.5	9.5	--	--	9.7	--
24 NOV 80	10.4	10.4	--	--	10.6	--
25 NOV 80	--	--	9.9	9.9	--	9.4
1 DEC 80	9.6	9.7	--	--	9.2	--
15 DEC 80	11.6	11.7	--	--	9.9	--
23 DEC 80	11.0	11.3	11.3	11.5	11.8	12.3
29 DEC 80	9.9	10.2	--	--	11.4	--
13 JAN 81	--	--	--	--	12.6	--
20 JAN 81	--	--	--	--	13.3	--
21 JAN 81	--	--	--	--	--	13.7
26 JAN 81	9.8	10.0	--	--	11.8	--
9 FEB 81	10.4	10.6	--	--	10.6	--
18 FEB 81	9.3	9.3	9.8	10.2	10.0	10.2
19 FEB 81	8.8	8.6	--	--	9.6	--
23 FEB 81	8.8	8.9	--	--	8.5	--
MEAN	8.3	8.3	8.7	8.8	8.9	9.8

Note: dash (--) indicates sampling not done.

TABLE 5-8 MEAN SALINITY MEASUREMENTS (ppt) ASSOCIATED WITH
ENTRAINMENT SAMPLING AT THE OYSTER CREEK NUCLEAR
GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

Date	Intake				Discharge	
	Night		Day		Surface	
	Surface	Bottom	Surface	Bottom	Night	Day
2 SEP 80	23.0	23.2	--	--	26.9	--
8 SEP 80	24.2	24.2	--	--	28.1	--
15 SEP 80	27.0	26.8	--	--	25.2	--
22 SEP 80	23.1	23.0	--	--	26.8	--
24 SEP 80	28.8	28.5	29.1	28.8	27.5	27.2
25 SEP 80	27.8	27.8	--	--	27.0	--
29 SEP 80	26.6	26.3	--	--	27.8	--
6 OCT 80	26.4	26.4	--	--	27.9	--
13 OCT 80	26.0	26.1	--	--	27.0	--
20 OCT 80	23.5	23.8	--	--	26.8	--
21 OCT 80	24.3	24.2	--	--	28.5	--
22 OCT 80	24.8	24.8	24.1	24.2	27.5	26.8
27 OCT 80	24.0	24.0	--	--	28.0	--
3 NOV 80	26.5	26.5	--	--	26.9	--
17 NOV 80	26.6	26.6	--	--	25.2	--
24 NOV 80	24.2	24.3	--	--	24.6	--
25 NOV 80	--	--	24.2	24.2	--	25.2
1 DEC 80	23.8	23.8	--	--	24.1	--
15 DEC 80	24.2	23.8	--	--	23.3	--
23 DEC 80	25.9	25.7	26.1	25.8	24.5	25.3
29 DEC 80	24.9	24.5	--	--	25.5	--
13 JAN 81	--	--	--	--	24.0	--
20 JAN 81	25.6	25.6	--	--	25.6	--
21 JAN 81	--	--	27.1	27.0	--	27.3
26 JAN 81	28.4	28.4	--	--	24.7	--
9 FEB 81	27.0	26.5	--	--	26.0	--
18 FEB 81	26.1	26.0	26.3	26.2	26.4	25.0
19 FEB 81	26.0	25.5	--	--	24.6	--
23 FEB 81	24.5	24.5	--	--	25.2	--
MEAN	25.5	25.4	26.1	26.0	26.0	26.1

Note: dash (--) indicates sampling not done.

TABLE 5-9 MEDIAN pH MEASUREMENTS ASSOCIATED WITH ENTRAINMENT
SAMPLING AT THE OYSTER CREEK NUCLEAR GENERATING
STATION, SEPTEMBER 1980 - FEBRUARY 1981

Date	Intake				Discharge	
	Night		Day		Surface	
	Surface	Bottom	Surface	Bottom	Night	Day
2 SEP 80	7.6	7.6	--	--	7.5	--
8 SEP 80	7.9	7.9	--	--	8.0	--
15 SEP 80	7.7	--	--	--	7.8	--
22 SEP 80	7.6	7.6	--	--	7.5	--
24 SEP 80	7.8	7.8	7.8	7.8	7.8	7.5
29 SEP 80	7.6	7.7	--	--	7.7	--
6 OCT 80	8.0	8.0	--	--	7.7	--
13 OCT 80	8.0	8.0	--	--	7.9	--
20 OCT 80	7.9	7.9	--	--	7.8	--
21 OCT 80	7.8	7.8	7.8	7.8	7.8	7.9
27 OCT 80	7.8	7.8	--	--	7.7	--
3 NOV 80	7.9	7.9	--	--	8.0	--
17 NOV 80	7.9	7.9	--	--	7.7	--
24 NOV 80	7.9	7.9	7.9	8.0	7.6	7.6
1 DEC 80	7.9	8.0	--	--	7.9	--
15 DEC 80	7.9	8.0	--	--	7.8	--
23 DEC 80	8.0	8.0	8.0	8.0	8.0	7.9
29 DEC 80	7.9	7.9	--	--	7.6	--
13 JAN 81	--	--	--	--	7.8	--
20 JAN 81	8.3	8.3	8.3	8.3	8.2	8.2
26 JAN 81	8.2	8.2	--	--	8.2	--
9 FEB 81	8.2	8.2	--	--	8.0	--
18 FEB 81	8.1	8.1	8.1	8.1	7.9	8.0
23 FEB 81	8.0	8.0	--	--	7.9	--

Note: dash (--) indicates sampling not done.

6. MACROINVERTEBRATE ENTRAINMENT

In order to maintain continuity with previous studies, the condenser intake and discharge samples were each analyzed in a separate manner; the discharge samples were identified to a more detailed taxonomic level than those collected at the intake. This was done because previous studies by Ichthyological Associates showed the discharge samples to be more homogeneous and replicable than those from the intake. Because of the greater detail afforded them, discharge samples are emphasized in the presentation of results.

The taxa collected at the intake are presented in Table 6-1. Because organism identification is less detailed at this station, fewer taxa appear. Mysids account for >66 percent of the catch and amphipods compose slightly >9 percent of the organisms collected. Caprellids, ostracods, cumaceans, hydromedusae, and pycnogonids cumulatively account for ~20 percent of the catch. The remaining taxa each account for <1 percent of the intake catch.

In the discharge samples during the period September 1980 - February 1981, the most abundant taxa overall was Neomysis americana, totaling >58 percent of the catch (Table 6-2). The amphipod Jassa falcata was second in abundance, composing 11 percent of the discharge catch. Ostracods and the amphipod, Corophium sp., ranked third and fourth respectively, each totaling ~4 percent of the catch at the discharge. These organisms cumulatively account for >78 percent of the total taxa collected.

Those organisms less numerous, yet still within the top 95 percent of the catch, include caprellids, certain amphipods, the mysid Mysidopsis bigelowi, cumaceans, pycnogonids, and the hydromedusae Aequorea. The remaining taxa each account for <0.5 percent of the catch.

Neomysis americana, the most abundant taxon encountered at the discharge, is one of the four macroinvertebrates that have been defined as key species by the Nuclear Regulatory Commission. The other three species so designated are Corophium tuberculatum, Callinectes sp. megalopae, and Crangon septemspinosa. The majority of Corophium were identified only to the generic level, so several species, including C. tuberculatum, were grouped as undetermined Corophium. Of those Corophium identified to a species level, C. tuberculatum occurred least frequently, accounting for only 0.006 percent of the catch. Callinectes sp. megalopae, a seasonal form, occurred during two of the six months sampled, accounting for 0.09 percent of the catch. Crangon septemspinosa were present in both zoeal and undetermined (juvenile to adult) life stages. Zoeae were relatively rare and accounted for 0.23 percent of the catch. Adult and juvenile C. septemspinosa occurred in slightly higher densities than the zoeae, comprising ~0.26 percent of the organisms in the discharge sample (Table 6-2).

Macrozooplankton species composition and abundance varied considerably during the period September 1980 - February 1981. Based on the monthly means of all discharge samples, abundance of macroinvertebrates varied from a maximum of >18,200 organisms/100 m³ in September to a minimum of ~3,300 organisms/100 m³ in December (Table 6-3).

In September, the dominant organism in the discharge samples was N. americana, accounting for nearly 69 percent of the organisms collected in the discharge. September was the peak month for N. americana when $\sim 12,500/100\text{ m}^3$ were collected. Ostracods were the second most abundant taxon, with nearly 7 percent of the catch, and caprellids were third with ~ 5 percent (Table 6-3). In October the same three taxa were the dominant forms collected in discharge samples. Neomysis americana accounted for nearly 66 percent of the catch in November. Caprellids were second in abundance (7 percent), while amphipods of the genus Corophium were the third most numerous, accounting for ~ 7 percent of the catch. The relative abundance of N. americana declined in December when it accounted for only 37 percent of the catch. The amphipod, J. falcata, also accounted for 37 percent of the catch for this month, while Corophium sp. composed ~ 11 percent. Jassa falcata was the dominant organism in January, accounting for nearly 54 percent of the catch. Neomysis americana ranked second in abundance with ~ 16 percent of the catch, just a slight margin over Corophium sp., which composed nearly 16 percent. Jassa falcata was again the most abundant organism in February (34 percent) but N. americana was a close second with 33 percent of the catch. The amphipod, Gammarus sp. ranked third, accounting for 16 percent. The taxa collected per month at the intake are presented in Table 6-4.

During the six-month sampling period, most forms were generally more abundant in night collections as compared to day collections. Only in January did the total mean density of organisms from the day collections exceed those from the night collections. The majority of forms more abundant during the day were certain amphipods, several species of which occurred in very high densities (Table 6-3). When present at the OCNCS, the arrowworm, Sagitta sp., appeared in highest densities during the day for most collections. Occasionally, less numerous organisms such as Hirudinia, the hydromedusae Aequorea sp., and polychaetes were collected in higher densities during the day.

Total numbers entrained during the September 1980 - February 1981 period were estimated with confidence limits for key and abundant forms of macroinvertebrates (Table 6-5). The mysid N. americana, a key form, had the highest estimate with $26,512.31 \times 10^6$ entrained. The amphipod J. falcata was second in abundance with an estimated $9,701.08 \times 10^6$ entrained. Entrainment estimates for the remaining key species are: C. tuberculatum (7.85×10^6), C. septemspinosa zoeae (174.71×10^6), C. septemspinosa adults and juveniles (196.50×10^6), and Callinectes sp. megalopae (38.65×10^6). The estimated total number of entrained organisms is $54,113.84 \times 10^6$. Water quality data associated with macrozooplankton entrainment is discussed in Section 5.2.

TABLE 6-1 MEAN SAMPLE DENSITY (No./100 m³), PERCENT COMPOSITION, AND CUMULATIVE PERCENT OF MACROZOOPLANKTON COLLECTED AT THE INTAKE OF THE OYSTER CREEK NUCLEAR GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

SPP. NAME	NUMER	%	CUMU. %
FAMILY MYSIDAE	4439.471	66.807	66.807
ORDER AMPHIPODA	607.208	9.138	75.945
SUBORDER CAPRELLIDEA	572.588	8.617	84.561
SUBCLASS OSTRACODA	325.326	4.896	89.457
ORDER CUMACEA	231.849	3.489	92.946
HYDROMEDUSAE	95.746	1.441	94.387
CLASS PYCNOGONIDA	79.633	1.198	95.585
MNEMIOPSIS LEIDYI	64.004	0.963	96.548
CLASS POLYCHAETA	33.980	0.511	97.060
FAMILY XANTHIDAE ZOEAE	32.933	0.496	97.555
CRANGON SEPTEMSPINO ZOEAE	30.318	0.456	98.012
CRANGON SEPTEMSPINOSA	27.268	0.410	98.422
SAGITTA SP	25.009	0.376	98.798
ORDER ISOPODA	22.702	0.342	99.140
HIRUDINEA	11.300	0.170	99.310
CALLINECTES SP MEGALOP	10.917	0.164	99.474
CLASS POLYCHAETA LAR	6.063	0.091	99.565
NEOMYSIS AMERICANA	5.199	0.078	99.644
CLASS GASTROPODA	3.665	0.055	99.699
PLEUROBRACHIA PILEUS	3.059	0.046	99.745
PHYLUM CTENOPHORA	2.882	0.043	99.788
HIPPOLYTE SP ZOEAE	2.650	0.040	99.828
SECTION BRACHYURA MEGALP	2.478	0.037	99.865
PALAEMONETES VULGARIS	2.105	0.032	99.897
SUBORDER AEOLIDACEA	1.165	0.018	99.915
FAMILY CYMOTHOIDAE	0.870	0.013	99.928
LEPTOSYNAPTA SP	0.865	0.013	99.941
CALLINECTES SAPIDUS JUV	0.746	0.011	99.952
PALAEMONETES SP ZOEAE	0.734	0.011	99.963
INVERTEBRATE FRAGMENTS	0.629	0.009	99.972
UPOGERIA AFFINIS ZOEAE	0.562	0.008	99.981
ANNELIDA	0.394	0.006	99.987
ORDER ACTINIARIA	0.232	0.003	99.990
PAGURUS SP ZOEAE	0.232	0.003	99.994
PHYLUM NEMERTEA	0.170	0.003	99.996
BEROE OVATA	0.132	0.002	99.998
PALAEMONETES SP	0.110	0.002	100.000

TABLE 6-2 MEAN SAMPLE DENSITY (No./100 m³), PERCENT COMPOSITION, AND CUMULATIVE PERCENT OF MACROZOOPLANKTON COLLECTED AT THE DISCHARGE OF THE OYSTER CREEK NUCLEAR GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

SPP. NAME	NUMBER	%	CUMU. %
NEOMYSIS AMERICANA	4822.774	58.060	58.060
JASSA FALCATA	922.961	11.111	69.172
SUBCLASS OSTRACODA	408.749	4.921	74.092
COROPHIUM SP	366.142	4.408	78.500
SUBORDER CAPRELLIDEA	328.475	3.954	82.455
AMPELISCA SP	235.960	2.841	85.295
MYSIDOPSIS BIGELOWI	193.499	2.329	87.625
GAMMARUS SP	184.031	2.216	89.840
LEUCON AMERICANUS	175.069	2.108	91.948
CLASS PYCNOGONIDA	102.270	1.231	93.179
STENOTHOE SP	66.912	0.806	93.985
OXYUROSTYLIS SMITHI	57.135	0.688	94.673
AEQUOREA SP	41.088	0.495	95.167
CERAPUS TUBULARIS	35.521	0.428	95.595
EDOTEA TRILOBA	25.871	0.311	95.906
SAGITTA SP	25.865	0.311	96.218
CRANGON SEPTEMSPINOSA	21.425	0.258	96.476
TURRITOPSIS NUTRICOLA	21.163	0.255	96.731
MONOCULODES EDWARDSI	21.158	0.255	96.985
MELITA NITIDA	20.179	0.243	97.228
CRANGON SEPTEMSPINO ZOEAE	18.804	0.226	97.455
ORDER CUMACEA	16.848	0.203	97.657
PANOPEUS HERBSTII ZOEAE	15.171	0.183	97.840
COROPHIUM ACHERUSICUM	14.102	0.170	98.010
BATEA CATHARINENSIS	13.183	0.159	98.168
ELASHOPUS LEVIS	11.051	0.133	98.302
SARSIA SP	10.668	0.128	98.430
MICROPROTOPUS RANEYI	9.712	0.117	98.547
ERICHTHONIUS SP	9.239	0.111	98.658
CYADUSA COMPTA	8.610	0.104	98.762
ORDER AMPHIPODA	8.481	0.102	98.864
HYDROMEDUSAE	8.142	0.098	98.962
CALLINECTES SP MEGALOP	7.192	0.087	99.048
CLASS POLYCHAETA	6.158	0.074	99.123
HIRUDINEA	5.940	0.072	99.194
CYCLASPIS VARIANS	4.852	0.058	99.253
HIPPOLYTE SP ZOEAE	4.707	0.057	99.309
NEOPANOPE TEXA SAYI ZOEAE	4.615	0.056	99.365
COROPHIUM BONELLI	4.421	0.053	99.418
CLASS GASTROPODA	3.430	0.041	99.459
FAMILY SYLLIDAE	3.213	0.039	99.498
GAMMARUS MUCRONATUS	2.888	0.035	99.533
IDOTEA BALTICA	2.768	0.033	99.566
CLASS POLYCHAETA LAR	2.354	0.028	99.594
MICROLEUTOPUS GRILLOTALP	2.340	0.028	99.623

TABLE 6-2 (Cont.)

SPP. NAME	NUMBER	%	CUMU. %
FAMILY CAPITELLIDAE	2.279	0.027	99.650
PALAEONETES VULGARIS	2.065	0.025	99.675
HETEROMYSIS FORMOSA	1.590	0.019	99.694
LISTRIELLA BARNARDI	1.580	0.019	99.713
UPOGEBIA AFFINIS ZOEAE	1.468	0.018	99.731
FAMILY PHYLLODOCIDAE	1.383	0.017	99.747
PECTINARIA GOULDII	1.323	0.016	99.763
CLASS TURBELLARIA	1.314	0.016	99.779
AUTOLYTUS SP	1.243	0.015	99.794
ORDER ACTINIARIA	1.218	0.015	99.809
CREPIDULA SP	1.081	0.013	99.822
CALLINECTES SP JUV	0.985	0.012	99.834
PAGURUS SP ZOEAE	0.936	0.011	99.845
PHIALIDIUM SP MEDUSAE	0.931	0.011	99.856
SUBORDER DORIDACEA	0.924	0.011	99.867
CLASS PELECYPODA	0.861	0.010	99.878
PALAEONETES SP ZOEAE	0.861	0.010	99.888
HYDROIDES DIANTHUS	0.767	0.009	99.897
NEREIS SP	0.743	0.009	99.906
ORDER SABELLIDAE	0.715	0.009	99.915
HIPPOLYTE SP	0.608	0.007	99.922
UCA SP ZOEAE	0.602	0.007	99.929
LYSIANOPSIS ALBA	0.589	0.007	99.936
NATHKEA OCTOPUNCTATA	0.577	0.007	99.943
FAMILY MYSIDAE	0.501	0.006	99.949
PINNIXA SP ZOEAE	0.496	0.006	99.955
COROPHIUM TUBERCULATUM	0.475	0.006	99.961
MARPHYSA SANGUINEA	0.448	0.005	99.966
UNCIOLE SP	0.413	0.005	99.971
SECTION BRACHYURA MEGALP	0.311	0.004	99.975
POLYDORA SP	0.252	0.003	99.978
PALAEONETES SP	0.246	0.003	99.981
PODARKE OBSCURA	0.230	0.003	99.984
AMPITHOE LONGIMANA	0.225	0.003	99.987
BOUGAINVILLIA SP	0.211	0.003	99.989
CLASS INSECTA	0.198	0.002	99.992
NEMOPSIS BACHEI	0.182	0.002	99.994
CALLINECTES SAPIDUS JUV	0.156	0.002	99.996
INVERTEBRATE FRAGMENTS	0.149	0.002	99.997
TOMOPTERIS HELGOLANDICA	0.115	0.001	99.999
FAMILY SPIONIDAE	0.104	0.001	100.000

TABLE 6-3 MONTHLY MEAN SAMPLE DENSITIES (No./100 m³) AND PERCENT COMPOSITION OF MACROZOOPLANKTON COLLECTED AT THE DISCHARGE OF THE OYSTER CREEK NUCLEAR GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

OYSTERCR				SEP. 80			
STATION		DSNT		DSDA			
SPECIES		NUMBER	PCT	NUMBER	PCT	NUMBER	PCT
		INDIVS	COMP	INDIVS	COMP	TOTAL	COMP
NEOMYSIS AMERICANA		15653.24	70.02	1467.35	39.87	12500.82	68.66
JASSA FALCATA		39.61	0.18	156.68	4.26	65.63	0.36
SUBCLASS OSTRACODA		1575.09	7.05	12.25	0.33	1227.79	6.74
COROPHIUM SP		229.55	1.03	166.30	4.52	215.49	1.18
SUBORDER CAPRELLIDEA		939.72	4.20	622.00	16.90	869.12	4.77
AMPELISCA SP		981.98	4.39	7.55	0.21	765.44	4.20
MYSIDOPSIS BIGELOWI		661.79	2.96	16.43	0.45	518.38	2.85
LEUCON AMERICANUS		575.90	2.58	0.00	0.00	447.92	2.46
CLASS PYCNOGONIDA		362.40	1.62	170.78	4.64	319.82	1.76
STENOTHOE SP		55.76	0.25	397.30	10.80	131.66	0.72
OXYUROSTYLIS SMITHI		231.33	1.03	6.85	0.19	181.44	1.00
AEQUOREA SP		100.56	0.45	330.55	8.98	151.67	0.83
CERAPUS TUBULARIS		126.61	0.57	83.53	2.27	117.04	0.64
EDOTEA TRILOBA		94.35	0.42	28.60	0.78	79.74	0.44
CRANGON SEPTEMSPINOSA		9.81	0.04	0.00	0.00	7.63	0.04
TURRITOPSIS NUTRICOLA		104.18	0.47	60.08	1.63	94.38	0.52
MONOCULODES EDWARDSI		24.29	0.11	0.00	0.00	18.89	0.10
MELITA NITIDA		87.12	0.39	54.53	1.48	79.88	0.44
PANOPEUS HERBSTII ZOEAE		91.03	0.41	0.00	0.00	70.80	0.39
COROPHIUM ACHERUSICUM		16.81	0.08	13.55	0.37	16.08	0.09
BATEA CATHARINENSIS		12.06	0.05	10.80	0.29	11.78	0.06
ELASMOPUS LEVIS		15.73	0.07	0.00	0.00	12.23	0.07
MICROPROTOPUS RANEYI		45.19	0.20	10.80	0.29	37.55	0.21
ERICHTHONIUS SP		37.01	0.17	6.22	0.17	30.17	0.17
CYCADUSA COMPTA		20.56	0.09	0.00	0.00	15.99	0.09
ORDER AMPHIPODA		32.94	0.15	0.00	0.00	25.62	0.14
HYDROMEDUSAE		14.33	0.06	0.00	0.00	11.14	0.06
CALLINECTES SP MEGALOP		19.95	0.09	6.78	0.18	17.02	0.09
CLASS POLYCHAETA		6.89	0.03	3.12	0.08	6.06	0.03
CYCLASPIS VARIANS		25.32	0.11	0.00	0.00	19.69	0.11
HIPPOLYTE SP ZOEAE		22.06	0.10	3.12	0.08	17.85	0.10
NEOPANOPE TEXA SAYI ZOEAE		27.69	0.12	0.00	0.00	21.54	0.12
OTHER SPECIES		115.21	0.52	44.92	1.22	99.59	0.55

STATION TOTAL AND			
DATE	TOTAL	22356.07	3680.07 18205.85

TABLE 6-3 (Cont.)

OYSTERCR				OCT. 80			
STATION		DSNT		DSDA			
SPECIES	NUMBER		PCT	NUMBER		NUMBER	PCT
	INDIVS	COMP		INDIVS	COMP	TOTAL	COMP
NEOMYSIS AMERICANA	7141.28	68.03		1654.55	54.32	5769.59	66.82
JASSA FALCATA	194.35	1.85		168.75	5.54	187.95	2.18
SUBCLASS OSTRACODA	880.61	8.39		34.48	1.13	669.08	7.75
COROPHIUM SP	331.52	3.16		533.25	17.51	381.95	4.42
SURORDER CAPRELLIDEA	416.13	3.96		329.30	10.81	394.42	4.57
AMPELISCA SP	150.27	1.43		15.80	0.52	116.66	1.35
MYSIDOPSIS BIGELOWI	471.18	4.49		0.00	0.00	353.39	4.09
GAMMARUS SP	7.72	0.07		0.00	0.00	5.79	0.07
LEUCON AMERICANUS	234.60	2.23		0.00	0.00	175.95	2.04
CLASS PYCNOGONIDA	107.47	1.02		105.40	3.46	106.96	1.24
STENOTHOE SP	54.13	0.52		55.85	1.83	54.56	0.63
OXYUROSTYLIS SMITHI	57.25	0.55		0.00	0.00	42.94	0.50
AEGUOREA SP	56.78	0.54		9.98	0.33	45.08	0.52
CERAPUS TUBULARIS	49.80	0.47		24.80	0.81	43.55	0.50
EDOTEA TRILOBA	39.27	0.37		23.35	0.77	35.29	0.41
SAGITTA SP	1.62	0.02		0.00	0.00	1.21	0.01
TURRITOPSIS NUTRICOLA	6.58	0.06		0.00	0.00	4.93	0.06
MONOCULODES EDWARDSI	3.51	0.03		0.00	0.00	2.63	0.03
MELITA NITIDA	12.25	0.12		0.00	0.00	9.19	0.11
CRANGON SEPTEMSPIRO ZOEAE	26.67	0.25		4.53	0.15	21.13	0.24
COROPHIUM ACHERUSICUM	48.13	0.46		21.08	0.69	41.36	0.48
BATEA CATHARINENSIS	27.26	0.26		0.00	0.00	20.44	0.24
ELASMOPUS LEVIS	10.11	0.10		5.25	0.17	8.89	0.10
MICROPROTOPUS RANEYI	9.90	0.09		5.28	0.17	8.74	0.10
ERICHTHONIUS SP	3.63	0.03		0.00	0.00	2.72	0.03
CYADUSA COMPTA	28.91	0.28		0.00	0.00	21.68	0.25
ORDER AMPHIPODA	8.71	0.08		0.00	0.00	6.53	0.08
HYDROMEDUSAE	30.32	0.29		0.00	0.00	22.74	0.26
CALLINECTES SP MEGALOP	17.93	0.17		0.00	0.00	13.44	0.16
CLASS POLYCHAETA	7.06	0.07		2.63	0.09	5.95	0.07
HIPPOLYTE SP ZOEAE	6.18	0.06		0.00	0.00	4.63	0.05
OTHER SPECIES	56.06	0.53		51.50	1.69	54.92	0.64
STATION TOTAL AND							
DATE	TOTAL	10497.16		3045.75		8634.31	

TABLE 6-3 (Cont.)

OYSTERCR				NOV. 80			
STATION		DSNT		DSDA			
SPECIES	NUMBER		PCT	NUMBER		NUMBER	PCT
	INDIVS	COMP		INDIVS	COMP	TOTAL	COMP
NEOMYSIS AMERICANA	3931.44	66.93		757.65	54.29	2873.51	65.50
JASSA FALCATA	161.29	2.75		93.05	6.67	138.54	3.16
SUBCLASS OSTRACODA	138.82	2.36		3.85	0.28	93.83	2.14
COROPHIUM SP	288.39	4.91		314.10	22.51	296.96	6.78
SUBORDER CAPRELLIDEA	444.24	7.56		64.80	4.64	317.76	7.25
AMFELISCA SP	98.66	1.68		3.93	0.27	67.05	1.53
MYSIDOPSIS BIGELOWI	82.51	1.40		34.70	2.49	66.58	1.52
GAMMARUS SP	7.84	0.13		3.40	0.24	6.36	0.15
LEUCON AMERICANUS	221.66	3.77		20.33	1.46	154.55	3.53
CLASS PYCNOGONIDA	44.41	0.76		29.30	2.10	39.38	0.90
STENOTHOE SP	36.91	0.63		21.10	1.51	31.64	0.72
OXYUROSTYLIS SMITHI	37.34	0.64		0.00	0.00	24.89	0.57
CERAPUS TUBULARIS	6.72	0.11		3.83	0.27	5.76	0.13
EDOTEA TRILOBA	6.57	0.11		0.00	0.00	4.38	0.10
SAGITTA SP	2.10	0.04		7.68	0.55	3.96	0.09
CRANGON SEPTEMSPINOSA	4.97	0.08		0.00	0.00	3.32	0.08
MONOCULODES EDWARDSI	9.61	0.16		0.00	0.00	6.41	0.15
MELITA NITIDA	8.11	0.14		0.00	0.00	5.41	0.12
CRANGON SEPTEMSPINO ZOEAE	51.35	0.87		10.10	0.72	37.60	0.86
ORDER CUMACEA	175.44	2.99		0.00	0.00	114.96	2.67
BATEA CATHARINENSIS	29.98	0.51		0.00	0.00	19.98	0.46
ELASMOPIUS LEVIS	19.42	0.33		0.00	0.00	12.95	0.30
CYMADESA COMPTA	6.57	0.11		0.00	0.00	4.38	0.10
ORDER AMPHIPODA	3.49	0.06		0.00	0.00	2.33	0.05
CALLINECTES SP MEGALOP	10.32	0.18		0.00	0.00	6.88	0.16
CLASS POLYCHAETA	7.96	0.14		0.00	0.00	5.31	0.12
HIRUDINEA	1.40	0.02		0.00	0.00	0.93	0.02
CYCLASPIS VARIANS	3.80	0.06		0.00	0.00	2.53	0.06
OTHER SPECIES	32.84	0.56		27.88	2.00	31.18	0.71
STATION TOTAL AND							
DATE	TOTAL		5874.19	1395.57	4381.32		

TABLE 6-3 (Cont.)

OYSTERCR				DEC. 80			
STATION		DSNT		DSDA			
SPECIES		NUMBER	PCT	NUMBER	PCT	NUMBER	PCT
		INDIVS	COMP	INDIVS	COMP	TOTAL	COMP
NEOMYSIS AMERICANA		1332.91	34.12	879.78	50.35	1203.44	36.58
JASSA FALCATA		1472.72	37.70	619.80	35.47	1229.03	37.36
SUBCLASS OSTRACODA		9.66	0.25	0.00	0.00	6.90	0.21
COROPHIUM SP		492.43	12.61	71.35	4.08	372.12	11.31
SUBORDER CAPRELLIDEA		55.18	1.41	18.25	1.04	44.63	1.36
AMPELISCA SP		48.29	1.24	0.00	0.00	34.49	1.05
MYSIDOPSIS BIGELOWI		38.10	0.98	1.95	0.11	27.77	0.84
GAMMARUS SP		61.31	1.57	0.00	0.00	43.79	1.33
LEUCON AMERICANUS		98.51	2.52	2.13	0.12	70.97	2.16
CLASS PYCNOGONIDA		17.33	0.44	0.00	0.00	12.38	0.38
STENOTHOE SP		41.92	1.07	31.02	1.78	38.81	1.18
OXYUROSTYLIS SMITHI		16.43	0.42	0.00	0.00	11.74	0.36
CERAPUS TUBULARIS		1.93	0.05	8.77	0.50	3.89	0.12
EDOTEA TRILOBA		3.85	0.10	0.00	0.00	2.75	0.08
SAGITTA SP		65.99	1.69	86.70	4.96	71.91	2.19
CRANGON SEPTEMSPINOSA		66.11	1.69	0.00	0.00	47.22	1.44
MONOCULODES EDWARDSI		17.60	0.45	0.00	0.00	12.57	0.38
CRANGON SEPTEMSPINO ZOEAE		12.51	0.32	6.03	0.34	10.66	0.32
BATEA CATHARINENSIS		5.79	0.15	0.00	0.00	4.14	0.13
ELASMOPUS LEVIS		5.79	0.15	0.00	0.00	4.14	0.13
ERICHTHONIUS SP		1.93	0.05	0.00	0.00	1.38	0.04
ORDER AMPHIPODA		1.93	0.05	0.00	0.00	1.38	0.04
HYDROMEDUSAE		0.97	0.02	0.00	0.00	0.69	0.02
CLASS POLYCHAETA		4.63	0.12	0.00	0.00	3.31	0.10
HIRUDINEA		0.76	0.02	6.65	0.38	2.44	0.07
OTHER SPECIES		31.90	0.82	14.78	0.85	27.01	0.82
STATION TOTAL AND							
DATE	TOTAL	3906.48		1747.20		3289.54	

TABLE 6-3 (Cont.)

OYSTERCR		JAN. 81					
STATION		DSNT		DSDA			
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP	
NEDMYSIS AMERICANA	670.26	21.10	439.38	8.78	593.30	15.67	
JASSA FALCATA	1720.70	54.17	2662.60	53.20	2034.67	53.75	
SUBCLASS OSTRACODA	16.28	0.51	2.42	0.05	11.66	0.31	
COROPHIUM SP	108.68	3.42	1550.68	30.99	589.34	15.57	
SUBORDER CAPRELLIDEA	61.39	1.93	29.33	0.59	50.70	1.34	
AMPELISCA SP	162.41	5.11	0.00	0.00	108.28	2.86	
MYSIDOPSIS BIGELOWI	4.65	0.15	0.00	0.00	3.10	0.08	
GAMMARUS SP	69.05	2.17	13.33	0.27	50.48	1.33	
LEUCON AMERICANUS	95.11	2.99	4.55	0.09	64.93	1.71	
CLASS PYCNOGONIDA	0.00	0.00	2.42	0.05	0.81	0.02	
STENOTHOE SP	48.63	1.53	78.88	1.58	58.71	1.55	
OXYUROSTYLIS SMITHI	9.54	0.30	4.55	0.09	7.87	0.21	
CERAPUS TUBULARIS	7.10	0.22	0.00	0.00	4.73	0.13	
EDOTEA TRILOBA	3.89	0.12	2.42	0.05	3.40	0.09	
SAGITTA SP	38.46	1.21	53.20	1.06	43.38	1.15	
CRANGON SEPTHEMSPINOSA	12.24	0.39	0.00	0.00	8.16	0.22	
MONOCULODES EDWARDSI	44.53	1.40	0.00	0.00	29.68	0.78	
COROPHIUM ACHERUSICUM	0.00	0.00	49.35	0.99	16.45	0.43	
ELASHOPUS LEVIS	12.34	0.39	8.48	0.17	11.05	0.29	
SARSIA SP	0.00	0.00	2.13	0.04	0.71	0.02	
ERICHTHONIUS SP	0.00	0.00	12.35	0.25	4.12	0.11	
CLASS POLYCHAETA	19.28	0.61	4.85	0.10	14.47	0.38	
HIRUDINEA	8.45	0.27	14.48	0.29	10.46	0.28	
OTHER SPECIES	63.45	2.00	69.13	1.38	65.34	1.73	

STATION TOTAL AND DATE	TOTAL	3176.41	5004.50	3785.77			

TABLE 6-3 (Cont.)

OYSTERCR		FEB. 81					
STATION	DSNT		DSDA				
SPECIES	NUMBER	PCT	NUMBER	PCT	NUMBER	PCT	
	INDIVS	COMP	INDIVS	COMP	TOTAL	COMP	
NEOMYSIS AMERICANA	3620.73	38.04	92.28	3.16	2444.57	33.40	
JASSA FALCATA	2650.40	27.84	2213.03	75.76	2504.61	34.22	
SUBCLASS OSTRACODA	19.60	0.21	2.55	0.09	13.92	0.19	
COROPHIUM SP	484.53	5.09	261.07	8.94	410.04	5.60	
SUBORDER CAPRELLIDEA	65.03	0.68	17.65	0.60	49.23	0.67	
AMPELISCA SP	188.44	1.98	20.48	0.70	132.45	1.81	
MYSIDOPSIS BIGELOWI	5.50	0.06	0.00	0.00	3.67	0.05	
GAMMARUS SP	1750.49	18.39	16.73	0.57	1172.57	16.02	
LEUCON AMERICANUS	22.69	0.24	4.80	0.16	16.73	0.23	
CLASS PYCNOGONIDA	51.97	0.55	12.85	0.44	38.93	0.53	
STENOTHOE SP	77.05	0.81	33.48	1.15	62.52	0.85	
OXYUROSTYLIS SMITHI	35.01	0.37	2.17	0.07	24.07	0.33	
EDOTEA TRILOBA	4.09	0.04	2.17	0.07	3.45	0.05	
SAGITTA SP	42.75	0.45	59.15	2.02	48.22	0.66	
CRANGON SEPTEMSPINOSA	107.94	1.13	0.00	0.00	71.96	0.98	
MONOCULODES EDWARDSI	98.25	1.03	0.00	0.00	65.50	0.89	
MELITA NITIDA	5.66	0.06	0.00	0.00	3.77	0.05	
CRANGON SEPTEMSPINO ZOEAE	77.84	0.82	4.58	0.16	53.42	0.73	
ORDER CUMACEA	1.46	0.02	0.00	0.00	0.97	0.01	
COROPHIUM ACHERUSICUM	0.00	0.00	3.98	0.31	2.99	0.04	
BATEA CATHARINENSIS	29.80	0.31	8.05	0.28	22.55	0.31	
ELASMOPUS LEVIS	14.04	0.15	26.90	0.92	18.33	0.25	
SARSIA SP	79.58	0.84	62.75	2.15	73.97	1.01	
ERICHTHONIUS SP	5.66	0.06	18.90	0.65	10.08	0.14	
CYMA DUSA COMPTA	0.00	0.00	2.78	0.31	2.99	0.04	
ORDER AMPHIPODA	12.45	0.13	0.00	0.00	8.30	0.11	
HYDROMEDUSAE	13.71	0.14	0.00	0.00	9.14	0.12	
CLASS POLYCHAETA	0.00	0.00	7.38	0.25	2.46	0.03	
HIRUDINEA	41.01	0.43	0.00	0.00	27.34	0.37	
CYCLASPIS VARIANS	2.84	0.03	0.00	0.00	1.89	0.03	
OTHER SPECIES	10.04	0.11	36.13	1.24	18.73	0.26	
STATION TOTAL AND DATE	TOTAL	9518.54	2921.02	7319.36			

TABLE 6-4 MONTHLY MEAN SAMPLE DENSITIES (No./100 m³) AND PERCENT COMPOSITION OF MACROZOOPLANKTON COLLECTED AT THE INTAKE OF THE OYSTER CREEK NUCLEAR GENERATING STATION, SEPTEMBER 1980 - FEBRUARY 1981

OYSTERCR				SEP. 80			
STATION		INNT		INDA			
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP	
FAMILY MYSIDAE	8493.87	57.44	355.00	22.52	6685.23	56.41	
ORDER AMPHIPODA	1538.69	10.41	53.90	3.42	1208.73	10.20	
SUBORDER CAPRELLIDEA	2185.46	14.78	119.05	7.55	1726.26	14.57	
SUBCLASS OSTRACODA	965.03	6.53	2.38	0.15	751.11	6.34	
ORDER CUMACEA	512.51	3.47	0.00	0.00	398.62	3.36	
HYDROMEDUSAE	190.91	1.29	613.33	38.90	284.78	2.40	
CLASS PYCNOGONIDA	249.39	1.69	38.35	2.43	202.49	1.71	
MNEMIOPSIS LEIDYI	234.48	1.59	341.77	21.68	258.32	2.18	
CLASS POLYCHAETA	46.95	0.32	2.38	0.15	37.04	0.31	
FAMILY XANTHIDAE ZOEAE	192.21	1.30	2.38	0.15	150.03	1.27	
CRANGON SEPTEMPINOSA	4.71	0.03	0.00	0.00	3.66	0.03	
SAGITTA SP	0.00	0.00	2.88	0.18	0.64	0.01	
ORDER ISOPODA	75.06	0.51	23.25	1.47	63.54	0.54	
CALLINECTES SP MEGALOP	28.33	0.19	5.70	0.36	23.30	0.20	
CLASS GASTROPODA	18.51	0.13	2.38	0.15	14.93	0.13	
HIPPOLYTE SP ZOEAE	9.18	0.06	9.07	0.58	9.16	0.08	
SECTION BRACHYURA MEGALOP	14.51	0.10	0.00	0.00	11.29	0.10	
SUBORDER AEULIDACEA	5.68	0.04	0.00	0.00	4.42	0.04	
FAMILY CYMOTHOIDAE	4.41	0.03	2.38	0.15	3.96	0.03	
LEPTOSYNAPTA SP	5.06	0.03	0.00	0.00	3.94	0.03	
PALAEONETES SP ZOEAE	4.30	0.03	0.00	0.00	3.34	0.03	
INVERTEBRATE FRAGMENTS	3.69	0.02	0.00	0.00	2.87	0.02	
UPOGEBIA AFFINIS ZOEAE	3.29	0.02	0.00	0.00	2.56	0.02	
PAGURUS SP ZOEAE	0.68	0.00	2.38	0.15	1.06	0.01	

STATION TOTAL AND DATE	TOTAL	14786.91	1576.55		11851.27		

TABLE 6-4 (Cont.)

OYSTERCR				OCT. 80			
STATION		INNT		INDA			
SPECIES	NUMBER	PCT	NUMBER	PCT	NUMBER	PCT	
	INDIVS	COMP	INDIVS	COMP	TOTAL	COMP	
FAMILY MYSIDAE	7743.18	71.11	3692.42	76.38	6730.49	71.79	
ORDER AMPHIPODA	862.48	7.92	376.68	7.79	741.03	7.90	
SUBORDER CAPRELLIDEA	618.22	5.68	454.30	9.40	577.24	6.16	
SUBCLASS OSTRACODA	988.70	9.08	12.38	0.26	744.62	7.94	
ORDER CUMACEA	337.74	3.10	11.55	0.24	256.19	2.73	
HYDROMEDUSAE	51.75	0.48	8.93	0.18	41.04	0.44	
CLASS PYCNOGONIDA	153.93	1.41	145.30	3.01	151.78	1.62	
MNEMIOPSIS LEIDYI	29.66	0.27	11.98	0.25	25.24	0.27	
CLASS POLYCHAETA	24.84	0.23	63.15	1.31	34.42	0.37	
CRANGON SEPTEMSPINO ZOEAE	11.92	0.11	22.23	0.46	14.49	0.15	
ORDER ISOPODA	30.68	0.28	17.83	0.37	27.46	0.29	
CALLINECTES SP MEGALOP	27.08	0.25	11.55	0.24	23.19	0.25	
CLASS POLYCHAETA LAR	0.00	0.00	6.20	0.13	1.55	0.02	
HIPPOLYTE SP ZOEAE	4.37	0.04	0.00	0.00	3.28	0.03	
PALAEMONETES VULGARIS	2.59	0.02	0.00	0.00	1.94	0.02	
CALLINECTES SAPIDUS JUV	1.43	0.01	0.00	0.00	1.07	0.01	
PALAEMONETES SP	0.75	0.01	0.00	0.00	0.56	0.01	

STATION TOTAL AND							
DATE	TOTAL	10889.30	4834.48	9375.59			

TABLE 6-4 (Cont.)

OYSTERCR				NOV. 80			
STATION		INNT		INDA			
SPECIES		NUMBER	PCT	NUMBER	PCT	NUMBER	PCT
		INDIVS	COMP	INDIVS	COMP	TOTAL	COMP
FAMILY MYSIDAE		7202.50	80.11	2105.63	92.45	5503.54	81.50
ORDER AMPHIPODA		314.13	3.49	39.65	1.74	222.63	3.30
SUBORDER CAPRELLIDEA		552.97	6.15	35.50	1.56	380.48	5.63
SUBCLASS OSTRACODA		102.16	1.14	0.00	0.00	68.11	1.01
ORDER CUMACEA		600.79	6.68	8.20	0.36	403.26	5.97
HYDROMEDUSAE		0.00	0.00	2.70	0.12	0.90	0.01
CLASS PYCNOGONIDA		16.63	0.18	23.83	1.05	19.02	0.28
MNEMIOPSIS LEIDYI		9.18	0.10	0.00	0.00	6.12	0.09
CLASS POLYCHAETA		16.19	0.18	2.70	0.12	11.69	0.17
CRANGON SEPTemspino ZOEAE		85.67	0.95	11.10	0.49	60.82	0.90
CRANGON SEPTemspinosa		12.14	0.13	0.00	0.00	8.08	0.12
SAGITTA SP		2.80	0.03	5.50	0.24	3.70	0.05
ORDER ISOPODA		12.46	0.14	0.00	0.00	8.31	0.12
HIRUDINEA		4.35	0.05	0.00	0.00	2.90	0.04
CALLINECTES SP MEGALOP		13.09	0.15	0.00	0.00	8.72	0.13
CLASS POLYCHAETA LAR		29.14	0.32	10.80	0.47	23.03	0.34
PHYLUM CTENOPHORA		0.00	0.00	24.48	1.07	8.16	0.12
PALAEMONETES VULGARIS		11.38	0.13	0.00	0.00	7.58	0.11
CALLINECTES SAPIDUS JUV		5.51	0.06	0.00	0.00	3.67	0.05
ORDER ACTINIARIA		0.00	0.00	4.75	0.21	1.58	0.02
BEROE OVATA		0.00	0.00	2.70	0.12	0.90	0.01
STATION TOTAL AND							
DATE	TOTAL	8991.07		2277.52		6753.22	

TABLE 6-4 (Cont.)

OYSTERCR				DEC. 80			
STATION		INNT		INDA			
SPECIES		NUMBER	PCT	NUMBER	PCT	NUMBER	PCT
		INDIVS	COMP	INDIVS	COMP	TOTAL	COMP
FAMILY MYSIDAE		2394.40	77.79	1048.78	76.15	2009.94	77.54
ORDER AMPHIPODA		182.41	5.93	92.10	6.69	156.61	6.04
SUBORDER CAPRELLIDEA		101.66	3.30	34.20	2.48	82.39	3.18
SUBCLASS OSTRACODA		11.88	0.39	1.90	0.14	9.03	0.35
ORDER CUMACEA		100.65	3.27	7.65	0.56	74.08	2.86
CLASS PYCNOGONIDA		6.13	0.20	4.37	0.32	5.63	0.22
MNEMIOPSIS LEIDYI		11.37	0.37	1.90	0.14	8.66	0.33
CLASS POLYCHAETA		40.63	1.32	24.95	1.81	36.15	1.39
CRANGON SEPTemspino ZOEAE		23.46	0.76	9.95	0.72	19.60	0.76
CRANGON SEPTemspinosa		94.06	3.06	0.00	0.00	67.19	2.59
SAGITTA SP		54.18	1.76	82.68	6.00	62.32	2.40
ORDER ISOPODA		3.66	0.12	7.05	0.51	4.63	0.18
HIRUDINEA		20.57	0.67	5.15	0.37	16.16	0.62
CLASS POLYCHAETA LAR		12.11	0.39	8.93	0.65	11.20	0.43
CLASS GASTROPODA		0.00	0.00	1.90	0.14	0.54	0.02
PLEUROBRACHIA PILEUS		11.31	0.37	15.50	1.13	12.31	0.48
PHYLUM CTENOPHORA		5.00	0.16	22.10	1.60	9.89	0.38
PALAEMONETES VULGARIS		2.52	0.08	0.00	0.00	1.80	0.07
SUBORDER AEOLIDACEA		0.82	0.03	0.00	0.00	0.59	0.02
ANNELIDA		0.00	0.00	8.07	0.59	2.31	0.09
PHYLUM NEMERTEA		1.39	0.05	0.00	0.00	0.99	0.04
STATION TOTAL AND							
DATE	TOTAL	3078.21		1377.18		2592.20	

TABLE 6-4 (Cont.)

OYSTERCR				JAN. 81			
STATION		INNT		INDA			
SPECIES		NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
FAMILY MYSIDAE		1470.65	64.23	525.60	49.46	1092.63	60.74
ORDER AMPHIPODA		406.13	17.74	171.10	16.10	312.12	17.35
SUBORDER CAPRELLIDEA		64.88	2.83	79.93	7.52	70.90	3.94
SUBCLASS OSTRACODA		16.82	0.73	6.58	0.62	12.72	0.71
ORDER CUMACEA		153.20	6.69	11.33	1.07	96.45	5.36
HYDROMEDUSAE		0.00	0.00	4.18	0.39	1.67	0.09
CLASS PYCNOGONIDA		1.95	0.09	10.85	1.02	5.51	0.31
CLASS POLYCHAETA		86.92	3.80	62.63	5.89	77.20	4.29
CRANGON SEPTemspino ZOEa		1.45	0.06	0.00	0.00	0.87	0.05
CRANGON SEPTemspinosa		18.12	0.79	0.00	0.00	10.87	0.60
SAGITTA SP		27.28	1.19	55.83	5.25	38.70	2.15
ORDER ISOPODA		6.92	0.30	6.90	0.65	6.91	0.38
HIRUDINEA		27.00	1.18	8.25	0.78	19.50	1.08
CLASS POLYCHAETA LAR		1.95	0.09	2.10	0.20	2.01	0.11
NEOMYSIS AMERICANA		0.00	0.00	106.57	10.03	42.63	2.37
CLASS GASTROPODA		1.22	0.05	4.22	0.40	2.42	0.13
PLEUROBRACHIA PILEUS		2.67	0.12	6.58	0.62	4.23	0.24
PALAEONETES VULGARIS		1.22	0.05	0.00	0.00	0.73	0.04
SUBORDER AEDOLIDACEA		1.30	0.06	0.00	0.00	0.78	0.04
STATION TOTAL AND							
DATE	TOTAL	2289.67		1062.62		1798.85	

TABLE 6-4 (Cont.)

OYSTERCR

FEB. 81

STATION	INNT		INDA			
	NUMBER	PCT	NUMBER	PCT	NUMBER	PCT
SPECIES	INDIVS	COMP	INDIVS	COMP	TOTAL	COMP
FAMILY MYSIDAE	3847.00	69.09	32.70	7.65	2575.57	66.82
ORDER AMPHIPODA	966.48	17.36	115.10	26.93	682.68	17.71
SUBORDER CAPRELLIDEA	22.96	0.41	7.95	1.86	17.96	0.47
SUBCLASS OSTRACODA	21.50	0.39	0.00	0.00	14.33	0.37
ORDER CUMACEA	110.75	1.99	2.65	0.62	74.72	1.94
HYDROMEDUSAE	201.99	3.63	106.28	24.86	170.08	4.41
CLASS PYCNOGONIDA	4.93	0.09	13.75	3.22	7.87	0.20
CLASS POLYCHAETA	15.84	0.28	5.95	1.39	12.54	0.33
CRANGON SEPTemspino ZOEAE	122.08	2.19	66.18	15.48	103.44	2.68
CRANGON SEPTemspinosa	127.96	2.30	0.00	0.00	85.31	2.21
SAGITTA SP	56.42	1.01	70.98	16.60	61.28	1.59
ORDER ISOPODA	5.60	0.10	0.00	0.00	3.73	0.10
HIRUDINEA	58.81	1.06	0.00	0.00	39.21	1.02
CLASS POLYCHAETA LAR	2.40	0.04	0.00	0.00	1.60	0.04
PLEUROBRACHIA PILEUS	1.20	0.02	5.95	1.39	2.78	0.07
PALAEONETES VULGARIS	2.25	0.04	0.00	0.00	1.50	0.04
STATION TOTAL AND DATE	TOTAL	5568.16	427.47		3854.60	

TABLE 6-5 ESTIMATED NUMBERS OF KEY AND ABUNDANT MACROINVERTEBRATES
ENTRAINED AT THE OYSTER CREEK NUCLEAR GENERATING STATION,
SEPTEMBER 1980 - FEBRUARY 1981

<u>Species and Life Stages^(a)</u>	<u>Estimated Number Entrained (x 10⁶)</u>	<u>80 Percent Confidence Level (x 10⁶)</u>
Ostracoda	1,907.48	±439.55
<u>Neomysis americana</u>	26,512.31	±7,114.25
<u>Mysidopsis bigelowi</u>	963.95	±512.01
<u>Leucon americanus</u>	953.92	±249.80
<u>Gammarus sp.</u>	2,273.03	±1,671.93
<u>Ampelisca sp.</u>	1,238.79	±360.56
<u>Jassa falcata</u>	9,701.08	±2,481.09
<u>Corophium sp.</u>	3,601.87	±1,210.27
<u>Corophium tuberculatum</u>	7.85	±12.76
<u>Caprellidea</u>	2,147.01	±467.82
<u>Crangon septemspinosa zoeae</u>	174.71	±65.68
<u>Crangon septemspinosa</u>	196.60	±43.62
<u>Callinectes sp. megalopae</u>	38.65	±20.04
Total	54,113.84	±8,628.39

7. COMMERCIAL LANDINGS OF FINFISH AND SHELLFISH

Commercial landings data were compiled for Ocean and Atlantic counties (Tables 7-1 and 7-2, respectively), New Jersey. Data were available only for September through January for the September 1980 - February 1981 reporting period. Separate landings data for Barnegat Bay are no longer compiled by the National Marine Fisheries Service; commercial landings from the bay are reported as a component of the Ocean County landings.

Landings of the summer flounder produced the greatest weight and value in Ocean County (Table 7-1). Landings of weakfish were second in weight and third in value, while landings of hard clam (meats) were third in weight and second in value. Other species that contributed substantial portions to the Ocean County landings include blue crab, bluefish, winter flounder, and striped bass.

The top three species in commercial landings from Atlantic County include hard clam (meats), summer flounder, and blue crab. Weakfish and winter flounder also contributed substantial portions to the total landings. With the exception of hard clams, landings of all species were much lower in Atlantic County.

The contribution of commercial landings from Barnegat Bay to the total landings of Ocean County is difficult to determine now that separate landings are not compiled. However, several generalizations can be made based on past years' data. For the period from September through January, Ocean County landings of blue crab and white perch are entirely from Barnegat Bay. Barnegat Bay landings of winter flounder contribute a substantial portion (40-98 percent) to the total Ocean County landings. Hard clam landings from Barnegat Bay form a smaller portion (25-40 percent) of the Ocean County landings, while the landings of summer flounder, weakfish, bluefish, and striped bass are entirely from outside Barnegat Bay.

TABLE 7-1 TOTAL REPORTED COMMERCIAL LANDINGS (kg) AND VALUE OF FINFISH AND SHELLFISH
TAKEN FROM OCEAN COUNTY, NEW JERSEY, SEPTEMBER 1980 - JANUARY 1981

Species	September		October		November		December		January		Total	
	Weight (kg)	Value (\$)	Weight (kg)	Value (\$)	Weight (kg)	Value (\$)	Weight (kg)	Value (\$)	Weight (kg)	Value (\$)	Weight (kg)	Value (\$)
Bluefish	0	0	0	0	29,790	11,581	374	239	148	66	30,312	11,886
American eel	652	1,148	0	0	0	0	0	0	0	0	652	1,148
Winter flounder	0	0	2,327	753	2,136	1,645	351	125	427	311	5,241	2,834
Summer flounder	163,422	180,159	15,589	11,862	2,309	1,769	1,340	1,901	51,103	189,625	233,763	385,316
Weakfish	79,264	58,995	35,979	28,788	16,029	11,938	0	0	148	65	131,420	99,786
White perch	0	0	0	0	318	280	0	0	0	0	318	280
Striped bass	0	0	559	1,900	1,686	3,954	5	11	218	486	2,468	6,351
Blue crab	7,080	7,022	30,816	27,141	0	0	0	0	0	0	37,896	34,163
Hard clam (meats)	21,368	94,620	17,214	75,740	15,155	66,680	11,718	51,560	2,655	13,141	68,110	301,141

TABLE 7-2 TOTAL REPORTED COMMERCIAL LANDINGS (kg) AND VALUE OF FINFISH AND SHELLFISH TAKEN FROM ATLANTIC COUNTY, NEW JERSEY, SEPTEMBER 1980 - JANUARY 1981

Species	September		October		November		December		January		Total	
	Weight (kg)	Value (\$)	Weight (kg)	Value (\$)	Weight (kg)	Value (\$)	Weight (kg)	Value (\$)	Weight (kg)	Value (\$)	Weight (kg)	Value (\$)
Bluefish	267	65	0	0	0	0	0	0	0	0	267	65
American eel	209	368	0	0	0	0	0	0	0	0	209	368
Winter flounder	0	0	0	0	1,500	1,155	0	0	0	0	1,500	1,155
Summer flounder	31,035	32,284	281	390	0	0	0	0	0	0	31,316	32,674
Weakfish	4,718	2,594	0	0	0	0	0	0	0	0	4,718	2,594
White perch	0	0	0	0	182	160	0	0	0	0	182	160
Striped bass	0	0	0	0	0	0	0	0	0	0	0	0
Blue crab	7,818	6,450	3,582	2,955	0	0	0	0	0	0	11,400	9,405
Hard clam (meats)	20,996	93,380	12,646	55,640	13,082	57,560	8,709	38,320	4,586	22,703	60,019	267,603

8. FISH-KILL MONITORING

The Environmental Technical Specifications require that Oyster Creek be examined for dead fish anytime the Oyster Creek Nuclear Generating Station shuts down and the water temperature is below 8.5 C. In addition, any fish kill in the vicinity of the OCNGS while the station is operating is classified as an "Unusual or Important Environmental Event" and must be reported promptly to the Nuclear Regulatory Commission. Two fish kills occurred near the OCNGS during the September 1980 - February 1981 reporting period. These kills occurred on 18 and 22 November 1980. A summary of activities and observations associated with the reported fish kills at the OCNGS is presented in Table 8-1.

The fish kills of late November occurred as a direct result of lowered water temperatures in Oyster Creek. The kill of 18 November was most likely the result of a rapid seasonal decline in ambient water temperature. Ambient water temperatures were recorded at 6 C on 17 November; water temperatures were measured at 9.4 C midway down the thermally elevated Oyster Creek. All but one individual killed at this time were blue runners (Caranx crysos), a subtropical species. The OCNGS remained at full power output during the period preceding this incident and the number of pumps employed remained constant.

The kill of 22 November was the direct result of a planned shutdown that began on 21 November 1980. In anticipation of the shutdown, individuals of the two most abundant fish taxa (bluefish and jacks) in the warmwater discharge were caught by hook and line, tagged by affixing a staple to the caudal fin, and immediately released into the discharge. All fish collected during the kill were inspected for these tags.

The shutdown began at 2200 hours on 21 November 1980 and was completed by the early hours of 22 November. Disoriented jacks were first observed at 0125 hours when the water temperature had reached 10.5 C. Dead jacks first appeared at 0212 hours with water temperature ranging from 9.0 to 10.7 C. Dead bluefish first appeared at 0625 hours by which time the water temperature had lowered to 6.3-7.1 C. The kill was essentially over by 1000 hours that morning. The total number of fish collected was 4,228; of this total 1,038 were bluefish and 3,163 were jacks. Other species found dead were ladyfish (Elops saurus), smooth dogfish (Mustelus canis), Atlantic menhaden (Brevoortia tyrannus), northern kingfish (Menticirrhus saxatilis), American eel (Anguilla rostrata), gray snapper (Lutjanus griseus), and silver jenny (Eucinostomus gula). A total of 11 tagged jacks and 5 tagged bluefish were collected.

Use of an adjusted Petersen single-census population estimate for the jack population, as described by Ricker (1975) yielded an estimated 17,402 jacks present in the discharge at the time of shutdown (10,088 - 32,629 at $p = 0.95$). The same method employed for bluefish yielded an estimated 48,833 individuals present at the discharge when the shutdown began (23,071 - 112,692 at $p = 0.95$).

Information from Hoff (1971), Wyllie et al. (1976), and Roche (1980) suggest that the ambient temperatures encountered were below critical thermal minimum for the jacks but that only a portion of the bluefish population died as a result of coldwater shock. The collection of live bluefish more than 24

hours after the shutdown provides evidence that not all bluefish were killed. Thus, the population estimate for jacks is identical to the estimated number killed by the plant shutdown, whereas the population estimate for the bluefish is not. The percentage tag returns for jacks were 16.9 percent compared to 1.8 percent returns for bluefish. Assuming both species beach themselves at the same rate after death, it is plausible to suggest that approximately one-tenth of the bluefish population present at the time of the shutdown were killed during that period, roughly 4,880 individuals.

TABLE 8-1 CHRONOLOGICAL SUMMARY OF ACTIVITIES AND FINDINGS
ASSOCIATED WITH FISH-KILL OBSERVATIONS AT THE
OYSTER CREEK NUCLEAR GENERATING STATION,
SEPTEMBER 1980 - FEBRUARY 1981

Date	Activity	Finding																		
18 NOV 80	Discharge canal observation dip-netting	Shoreline collections from 1610 to 1715 hours yielded 55 dead blue runners.																		
19 NOV 80	Oyster Creek otter trawls	Four trawls in lagoons and creek yielded nine dead blue runners and one dead white perch.																		
20 NOV 80	Discharge canal observation	Thousands of bluefish and jacks observed in discharge bays. Gill netting collected bluefish, blue runners, white perch, crevalle jack, tautog, and striped bass. Atlantic needlefish and blue crab observed on surface of discharge.																		
20-21 NOV 80	Tagging effort	Staple tags were attached to fish after collection by angling 281 of bluefish and 65 jacks.																		
21-22 NOV 80	Water quality measurements of Oyster Creek at mouth and at Rt. 9 bridge	Four sets of temperature-profile data were collected at each station.																		
22 NOV 80	Fish-kill shoreline observations	Shoreline collections from 0625 to 1200 hours yielded: <table><tr><td>Bluefish</td><td>1,025</td></tr><tr><td>Jacks</td><td>3,153</td></tr><tr><td>Ladyfish</td><td>3</td></tr><tr><td>Silver jenny</td><td>1</td></tr><tr><td>Gray snapper</td><td>1</td></tr><tr><td>American eel</td><td>1</td></tr><tr><td>Smooth dogfish</td><td>17</td></tr><tr><td>Atlantic menhaden</td><td>2</td></tr><tr><td>Northern kingfish</td><td>2</td></tr></table>	Bluefish	1,025	Jacks	3,153	Ladyfish	3	Silver jenny	1	Gray snapper	1	American eel	1	Smooth dogfish	17	Atlantic menhaden	2	Northern kingfish	2
Bluefish	1,025																			
Jacks	3,153																			
Ladyfish	3																			
Silver jenny	1																			
Gray snapper	1																			
American eel	1																			
Smooth dogfish	17																			
Atlantic menhaden	2																			
Northern kingfish	2																			
23 NOV 80	Oyster Creek trawls	Ten trawls at the mouth of Oyster Creek and lagoons yielded 10 dead jacks and 13 dead bluefish. Additionally, eight live bluefish were collected.																		

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APPENDIX A LIST OF SCIENTIFIC AND COMMON NAMES OF FINFISHES
ENCOUNTERED DURING BARNEGAT BAY FISHERIES
IMPINGEMENT AND ENTRAINMENT SAMPLING, SEPTEMBER
1980 - FEBRUARY 1981

<u>Scientific Name</u>	<u>Common Name</u>
<u>Dasyatis sayi</u>	Bluntnose stingray
<u>Anguilla rostrata</u>	American eel
<u>Conger oceanicus</u>	Conger eel
<u>Myrophis punctatus</u>	Speckled worm eel
<u>Alosa aestivalis</u>	Blueback herring
<u>Alosa pseudoharengus</u>	Alewife
<u>Alosa sapidissima</u>	American shad
<u>Brevoortia tyrannus</u>	Atlantic menhaden
<u>Lorosoma cepedianum</u>	Gizzard shad
<u>Etrumeus teres</u>	Round herring
<u>Anchoa hepsetus</u>	Striped anchovy
<u>Anchoa mitchilli</u>	Bay anchovy
<u>Umbra pygmaea</u>	Eastern mudminnow
<u>Synodus foetens</u>	Inshore lizardfish
<u>Notemigonus crysoleucas</u>	Golden shiner
<u>Opsanus tau</u>	Oyster toadfish
<u>Merluccius bilinearis</u>	Silver hake
<u>Urophycis chuss</u>	Red hake
<u>Urophycis regius</u>	Spotted hake
<u>Rissola marginata</u>	Striped cusk-eel
<u>Hyporhamphus unifasciatus</u>	Halfbeak
<u>Strongylura marina</u>	Atlantic needlefish
<u>Tylosurus acus</u>	Agujon
<u>Cyprinodon variegatus</u>	Sheepshead minnow
<u>Fundulus diaphanus</u>	Banded killifish
<u>Fundulus heteroclitus</u>	Mummichog
<u>Fundulus majalis</u>	Striped killifish
<u>Lucania parva</u>	Rainwater killifish
<u>Membras martinica</u>	Rough silverside
<u>Menidia beryllina</u>	Tidewater silverside
<u>Menidia menidia</u>	Atlantic silverside
<u>Apeltes quadracus</u>	Fourspine stickleback
<u>Gasterosteus aculeatus</u>	Threespine stickleback
<u>Fistularia tabacaria</u>	Bluespotted cornetfish
<u>Hippocampus erectus</u>	Lined seahorse
<u>Syngnathus fuscus</u>	Northern pipefish
<u>Morone americana</u>	White perch
<u>Centropristis striata</u>	Black sea bass
<u>Etheostoma fusiforme</u>	Swamp darter
<u>Pomatomus saltatrix</u>	Bluefish
<u>Rhynchocentron canadum</u>	Cobia
<u>Alectis crinitus</u>	African pompano
<u>Caranx hippos</u>	Crevalle jack
<u>Caranx crysos</u>	Blue runner
<u>Decapterus punctatus</u>	Round scad
<u>Selene vomer</u>	Lookdown

APPENDIX A (CONT.)

<u>Scientific Name</u>	<u>Common Name</u>
<u>Trachinotus falcatus</u>	Permit
<u>Lutjanus griseus</u>	Gray snapper
<u>Stenotomus chrysops</u>	Scup
<u>Bairdiella chrysura</u>	Silver perch
<u>Cynoscion regalis</u>	Weakfish
<u>Leiostomus xanthurus</u>	Spot
<u>Menticirrhus saxatilis</u>	Northern kingfish
<u>Chaetodipterus faber</u>	Atlantic spadefish
<u>Chaetodon ocellatus</u>	Spotfin butterflyfish
<u>Tautoga onitis</u>	Tautog
<u>Tautoglabrus adspersus</u>	Cunner
<u>Mugil cephalus</u>	Striped mullet
<u>Mugil curema</u>	White mullet
<u>Sphyraena borealis</u>	Northern sennet
<u>Astroscopus guttatus</u>	Northern stargazer
<u>Chasmodes bosquianus</u>	Striped blenny
<u>Hypsoblennius hentzi</u>	Feather blenny
<u>Ammodytes americanus</u>	American sand lance
<u>Gobiosoma boscii</u>	Naked goby
<u>Peprilus triacanthus</u>	Butterfish
<u>Scorpaena brasiliensis</u>	Spotted scorpionfish
<u>Prionotus carolinus</u>	Northern searobin
<u>Prionotus evolans</u>	Striped searobin
<u>Myoxocephalus aeneus</u>	Grubby
<u>Etropis microstomus</u>	Smallmouth flounder
<u>Paralichthys dentatus</u>	Summer flounder
<u>Paralichthys oblongus</u>	Fourspot flounder
<u>Scophthalmus aquosus</u>	Windowpane
<u>Pseudopleuronectes americanus</u>	Winter flounder
<u>Trinectes maculatus</u>	Hogchoker
<u>Aluterus schoepfi</u>	Orange filefish
<u>Monocanthus hispidus</u>	Planehead filefish
<u>Lactophrys trigonus</u>	Trunkfish
<u>Lactophrys triqueter</u>	Smooth trunkfish
<u>Sphoeroides maculatus</u>	Northern puffer
<u>Chilomycterus schoepfi</u>	Striped burrfish

APPENDIX B: OTTER TRAWL DATA

Appendix B is arranged by sampling date. The catch data are expressed as total specimens captured at a station (NUMBER INDIVS) and percent composition (PCT COMP). The sampling stations are identified by the first three letters of the code: CDC = Cedar Creek, FKR = Forked River, DBC = Double Creek, and OYC = Oyster Creek. The last letter of the station code denotes day samples (D) and night samples (N).

OYSTERC

GEAR-16 TRA

9 SEP 80

STATION

SPECIES	CDCN		CDCD		FKRD		FKRN		DBCD		DBCN		OYCD	
	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP
CRANGON SEPTENTRIONALIS	312.00	68.57	4.00	33.33	13.00	9.35	188.00	39.58	20.00	1.95	120.00	11.64	0.00	0.00
FAMILY XANTHIDAE JUV.	0.00	0.00	1.00	8.33	6.00	4.32	18.00	3.79	462.00	45.12	750.00	72.74	0.00	0.00
PALAEONETES VULGARIS	0.00	0.00	0.00	0.00	2.00	1.44	21.00	4.42	5.00	0.49	15.00	1.45	0.00	0.00
APELTES QUADRATUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.19	0.00	0.00
CALLINECTES SAPIDUS	31.00	6.81	5.00	41.67	47.00	33.81	33.00	6.95	13.00	1.27	13.00	1.26	3.00	30.00
ANCHORA MITCHILLI	54.00	11.87	0.00	0.00	32.00	23.02	17.00	3.58	489.00	47.75	54.00	5.24	0.00	0.00
GORTOSOMA BOSCI	50.00	10.99	0.00	0.00	12.00	8.63	39.00	8.21	3.00	0.29	3.00	0.29	0.00	0.00
CLASS ASTEROIDEA	0.00	0.00	0.00	0.00	21.00	15.11	32.00	6.74	0.00	0.00	1.00	0.10	0.00	0.00
PSEUDOPLEURONECTES AMERI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.10	1.00	10.00
LIBINIA DUBIA	0.00	0.00	0.00	0.00	2.00	1.44	1.00	0.21	24.00	2.34	41.00	3.98	1.00	10.00
CALLINECTES SAPIDUS JUV	0.00	0.00	0.00	0.00	0.00	0.00	115.00	24.21	0.00	0.00	0.00	0.00	0.00	0.00
HIPPOLYTE SP	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.21	0.00	0.00	1.00	0.10	0.00	0.00
PARALICHTHYS DENTATUS	1.00	0.22	0.00	0.00	1.00	0.72	3.00	0.63	3.00	0.29	13.00	1.26	1.00	10.00
OPSANUS TAU	1.00	0.22	0.00	0.00	1.00	0.72	1.00	0.21	0.00	0.00	9.00	0.87	0.00	0.00
SYNGNATHUS FUSCUS	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.21	0.00	0.00	2.00	0.19	0.00	0.00
NEOPHOPE TEXANA SAYI	0.00	0.00	0.00	0.00	1.00	0.72	3.00	0.63	5.00	0.49	3.00	0.29	0.00	0.00
TRINECTES MACULATUS	3.00	0.66	2.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CYNOSCION REGALIS	2.00	0.44	0.00	0.00	1.00	0.72	1.00	0.21	0.00	0.00	0.00	0.00	1.00	10.00
CHASMOMES ROSQUIANUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	10.00
FRIONOTUS EVOLANS	1.00	0.22	0.00	0.00	0.00	0.00	1.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00
DASYATIS SAYI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	20.00
SPHOERODIDES MACULATUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.10	0.00	0.00
OTHER SPECIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.19	0.00	0.00
STATION TOTAL AND DATE	455.00		12.00		139.00		475.00		1024.00		1031.00		10.00	

9 SEP 80

GEAR-16 TRA

OYSTERCR

STATION

OYCN

SPECIES

NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
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CRANGON SEPTemspINOSA	41.00	10.85	698.00	19.81
FAMILY XANTHIDAE JUV.	1.00	0.26	1238.00	35.13
PALAEONETES VULGARIS	34.00	8.99	77.00	2.19
APELIES QUADRACUS	1.00	0.26	3.00	0.09
CALLINECTES SAPIIDUS	216.00	57.14	361.00	10.24
ANCHOA MITCHILLI	6.00	1.59	652.00	18.50
GEBIOSOMA BOSCI	53.00	14.02	160.00	4.54
CLASS ASTEROIDEA	0.00	0.00	54.00	1.53
PSEUDOPLEUROMECTES AMERI	0.00	0.00	2.00	0.06
LIEINIA RUBIA	0.00	0.00	69.00	1.96
CALLINECTES SAPIIDUS JUV	0.00	0.00	115.00	3.26
HIPPOLYIE SP	0.00	0.00	2.00	0.06
PARALICHTHYS DENTATUS	0.00	0.00	22.00	0.62
OPSANUS TAU	9.00	2.38	21.00	0.60
SYNGNATHUS FUSCUS	0.00	0.00	3.00	0.09
NEOFANOPE TEXANA SAYI	0.00	0.00	12.00	0.34
TRINECTES MACULATUS	3.00	0.79	8.00	0.23
CYNOSCION REGALIS	8.00	2.12	13.00	0.37
CHASMODES BOSQUIANUS	4.00	1.06	5.00	0.14
PRIONOTUS EVOLANS	1.00	0.26	3.00	0.09
DASYATIS SAYI	0.00	0.00	2.00	0.06
SPHOEROIDES MACULATUS	1.00	0.26	2.00	0.06
OTHER SPECIES	0.00	0.00	2.00	0.06

STATION TOTAL AND DATE	378.00	3524.00
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OYSTERCK

GEAR-16 TRA

7 OCT 80

STATION

SPECIES	CDCN		CDCD		FKRD		FKRN		DBCD		DBCN		OYCD	
	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP
CRANGON SEPTemspINOSA	347.00	80.30	8.00	33.33	44.00	16.73	227.00	63.41	3.00	1.96	4333.00	62.55	0.00	0.00
FAMILY XANTHIDAE JUV.	2.00	0.51	2.00	8.33	55.00	20.91	65.00	18.16	112.00	73.20	2470.00	35.66	0.00	0.00
PALAEOMETES VULGARIS	2.00	0.51	0.00	0.00	25.00	9.51	8.00	2.23	7.00	4.58	42.00	0.61	0.00	0.00
APELITES QUADRACUS	1.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	4.00	2.61	0.00	0.00	0.00	0.00
CALLINECTES SAPIIDUS	17.00	4.33	10.00	41.67	49.00	18.63	14.00	3.91	10.00	6.54	13.00	0.19	10.00	47.62
ANCHOA MITCHILLI	6.00	1.53	0.00	0.00	0.00	0.00	8.00	2.23	3.00	1.96	26.00	0.38	0.00	0.00
GOBIOSOMA BOSCI	2.00	2.29	0.00	0.00	31.00	11.79	3.00	0.84	1.00	0.65	17.00	0.25	0.00	0.00
CLASS ASTEROIDEA	0.00	0.00	1.00	4.17	29.00	11.03	35.00	6.98	1.00	0.65	0.00	0.00	0.00	0.00
PSEUDOPLEURONECTES AMERI	1.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LIRINIA DUBIA	0.00	0.00	1.00	4.17	7.00	2.66	3.00	0.84	8.00	5.23	16.00	0.23	0.00	0.00
HIPPOLYTE	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00
PARALICHTHYS LENTATUS	4.00	1.02	1.00	4.17	3.00	1.14	3.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00
OPHANUS TAU	0.00	0.00	0.00	0.00	3.00	1.14	1.00	0.28	2.00	1.31	3.00	0.04	2.00	9.52
SYNGNATHUS FUSCUS	1.00	0.25	0.00	0.00	1.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29
NEOPANOPE TEXANA SAYI	0.00	0.00	0.00	0.00	11.00	4.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TRINECTES MACULATUS	2.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CONGER OCEANICUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.03	0.00	0.00
CYNOSCTON REGALIS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	9.52
TAUTOGA ONITIS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ANGUILLA ROSTRATA	1.00	0.25	0.00	0.00	1.00	0.38	0.00	0.00	0.00	0.00	1.00	0.01	0.00	0.00
HIPPOCAMPUS ERECTUS	0.00	0.00	0.00	0.00	1.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CYPRINODON VARIEGATUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.01	0.00	0.00
PRIONOTUS EVOLANS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PANOFEUS HERESTII	0.00	0.00	0.00	0.00	1.00	0.38	0.00	0.00	1.00	0.65	1.00	0.01	1.00	4.76
LUCANIA PARVA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.65	0.00	0.00	0.00	0.00
CARANX HIPPOS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHAETORHYN OCELLATUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	4.76
CLASS SCYPHOZOA	0.00	0.00	1.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	4.76
OTHER SPECIES	0.00	0.00	0.00	0.00	1.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	1.00	4.76
STATION TOTAL	393.00		24.00		263.00		358.00		153.00		6927.00		21.00	

DATE

7 OCT 80

GEAR-16 TRA

OYSTERC

STATION

OYCN

SPECIES

NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
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CRANGON SEPTENTRIONALIS	1.00	2.50	4963.00	60.68
FAMILY XANTHIDAE JUV.	6.00	15.00	2712.00	33.16
PALAEOMETES VULGARIS	7.00	17.50	91.00	1.11
APELTES QUADRACUS	0.00	0.00	5.00	0.06
CALLINECTES SAPIDUS	11.00	27.50	134.00	1.64
ANCHOA MITCHILLI	2.00	5.00	45.00	0.55
GORGOSOMA BOSCI	0.00	0.00	61.00	0.75
CLASS ASTEROIDEA	0.00	0.00	56.00	0.68
PSEUDOPLEURONECTES AMERI	0.00	0.00	1.00	0.01
LIBINIA RUBIA	0.00	0.00	35.00	0.43
HIPPOLYTE SP	0.00	0.00	1.00	0.01
PARALICHTHYS DENTATUS	0.00	0.00	15.00	0.18
OPSANUS TAU	0.00	0.00	12.00	0.15
SYNGNATHUS FUSCUS	0.00	0.00	2.00	0.02
NEOPANOPE TEXANA SAYI	0.00	0.00	11.00	0.13
TRINectes MACULATUS	4.00	10.00	6.00	0.07
CONGER OCEANICUS	0.00	0.00	2.00	0.02
CYNOSCION REGALIS	5.00	12.50	7.00	0.09
TAUTOGA ONITIS	0.00	0.00	1.00	0.01
ANGUILLA ROSTRATA	0.00	0.00	3.00	0.04
HIPPOCAMPUS ERECTUS	0.00	0.00	1.00	0.01
CYPRINODON VARIEGATUS	0.00	0.00	1.00	0.01
PRIONOTUS EVOLANS	1.00	2.50	1.00	0.01
PANOPEUS HERBERTII	0.00	0.00	4.00	0.05
LUCANIA PARVA	0.00	0.00	1.00	0.01
CARANX HIPPOS	1.00	2.50	1.00	0.01
CHAETODON OCELLATUS	1.00	2.50	2.00	0.02
CLASS SCYPHOZOA	0.00	0.00	2.00	0.02
OTHER SPECIES	1.00	2.50	3.00	0.04

STATION TOTAL AND DATE	40.00	8179.00
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OYSTERC

GEAR-16 TRA

5 NOV 80

STATION

SPECIES	CDCN		CDCD		FKRD		FKRN		DBCD		DBCN		OYCD	
	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP
CRANGON SEPTENSPINOSA	104.00	47.49	694.00	88.75	189.00	62.38	48.00	37.50	1204.00	32.48	142.00	78.89	46.00	60.53
FAMILY XANTHIDAE JUV.	1.00	0.46	4.00	0.51	34.00	11.22	5.00	3.91	1722.00	46.45	0.00	0.00	1.00	1.32
PALAEOMETES VULGARIS	3.00	1.37	41.00	5.24	45.00	14.85	63.00	49.22	304.00	8.20	20.00	11.11	1.00	1.32
AFILITES QUADRACUS	0.00	0.00	0.00	0.00	3.00	0.99	0.00	0.00	233.00	6.29	0.00	0.00	1.00	6.58
CALLINECTES SAPIIUS	103.00	47.03	11.00	1.41	3.00	0.99	2.00	1.56	38.00	1.03	12.00	6.67	7.00	9.21
ANCHORA MITCHILLI	0.00	0.00	1.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.32
GOBIOSOMA BOSCI	5.00	2.28	20.00	2.56	0.00	0.00	3.00	2.34	86.00	2.32	4.00	2.22	0.00	0.00
CLASS ASTEROIDEA	0.00	0.00	0.00	0.00	18.00	5.94	4.00	3.12	2.00	0.05	0.00	0.00	0.00	0.00
PSEUDOPLEURONECTES AMERI	0.00	0.00	1.00	0.13	0.00	0.00	0.00	0.00	1.00	0.03	1.00	0.56	1.00	1.32
LIRINIA DUBIA	0.00	0.00	0.00	0.00	3.00	0.99	0.00	0.00	23.00	0.62	0.00	0.00	0.00	0.00
HIPPOLYTE SP	0.00	0.00	0.00	0.00	1.00	0.33	0.00	0.00	60.00	1.62	0.00	0.00	0.00	0.00
PARALICHTHYS DENTATUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.84
MENIDIA MENIDIA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.03	0.00	0.00	0.00	0.00
OPSANUS TAU	1.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.03	0.00	0.00	1.00	1.32
SYNGNATHUS FUSCUS	0.00	0.00	1.00	0.13	3.00	0.99	3.00	2.34	5.00	0.13	0.00	0.00	0.00	0.00
NEOPANDPE TEXANA SAYI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.27	0.00	0.00	0.00	0.00
TRINECTES MACULATUS	2.00	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CONGER OCEANICUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ETROPUS MICROSTOMUS	0.00	0.00	4.00	0.51	0.00	0.00	0.00	0.00	4.00	0.11	1.00	0.56	1.00	1.32
CHASMODES BOSQUIANUS	0.00	0.00	4.00	0.51	3.00	0.99	0.00	0.00	3.00	0.08	0.00	0.00	1.00	1.32
TAUTOGA ONITIS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.22	0.00	0.00	0.00	0.00
HIPPOCAMPUS ERECTUS	0.00	0.00	0.00	0.00	1.00	0.33	0.00	0.00	2.00	0.05	0.00	0.00	1.00	1.32
PRIONOTUS EVOLANS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PANDOEUS HERBSTII	0.00	0.00	1.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CARANX HIPPOS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.32
OTHER SPECIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

STATION TOTAL AND
DATE

219.00

782.00

303.00

128.00

3707.00

180.00

76.00

5 NOV 80

GEAR-16 TRA

OYSTERC

STATION

OYCN

SPECIES

NUMBER INDIVS	PCI COMP	NUMBER TOTAL	PCI COMP
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CRANGON SEPTENSPINOSA	996.00	90.46	3423.00	52.69
FAMILY XANTHIDAE JUV.	0.00	0.00	1767.00	27.20
PALAEONETES VULGARIS	17.00	1.54	494.00	7.60
APELITES QUADRACUS	0.00	0.00	241.00	3.71
CALLINETES SAPIDUS	48.00	4.36	224.00	3.45
ANCHORA MITCHILLI	0.00	0.00	2.00	0.03
GOBIOSOMA BOSCI	12.00	1.09	130.00	2.00
CLASS ASTEROIDEA	0.00	0.00	24.00	0.37
PSEUDOPLEURONECTES AMERI	0.00	0.00	4.00	0.06
LIBINIA RUBIA	0.00	0.00	26.00	0.40
HIPPOLYTE SP	0.00	0.00	61.00	0.94
PARALICHTHYS DENTATUS	10.00	0.91	19.00	0.29
MENIDIA MENIDIA	0.00	0.00	1.00	0.02
OFSARUS TAU	1.00	0.09	4.00	0.06
SYNGNATHUS FUSCUS	4.00	0.36	16.00	0.25
NEOPANOPE TEXANA SAYI	0.00	0.00	10.00	0.15
TRINECTES MACULATUS	10.00	0.91	12.00	0.18
CONGER OCEANICUS	1.00	0.09	1.00	0.02
ETROFUS MICROSTOMUS	0.00	0.00	10.00	0.15
CHASMODES BOSQUIANUS	0.00	0.00	11.00	0.17
TAUTOGA ONITIS	0.00	0.00	8.00	0.12
HIPPOCAMPUS ERECTUS	0.00	0.00	4.00	0.06
FRIONOTUS EVOLANS	1.00	0.09	1.00	0.02
PANOPEUS HERBSTII	0.00	0.00	1.00	0.02
CARANX HIPPOS	0.00	0.00	1.00	0.02
OTHER SPECIES	1.00	0.09	1.00	0.02

STATION TOTAL AND DATE	1101.00	6496.00
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OYSTERCR

GEAR-16 TRA

4 DEC 80

STATION

SPECIES	CDCN		CDCD		FKRD		FKRN		DBCD		DBCN		OYCD	
	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP
CRANGON SEPTEMPINOSA	1412.00	95.73	27.00	79.41	61.00	15.72	919.00	55.73	172.00	57.33	5424.00	80.66	3922.00	97.20
FAMILY XANTHIDAE JUV.	0.00	0.00	0.00	0.00	3.00	0.77	2.00	0.12	33.00	11.00	140.00	2.06	0.00	0.00
PALAEOMONETES VULGARIS	14.00	0.95	1.00	2.94	270.00	69.59	625.00	37.90	49.00	16.33	778.00	11.44	0.00	0.00
APELTES QUADRACUS	26.00	1.76	4.00	11.76	15.00	3.87	57.00	3.46	34.00	11.33	287.00	4.22	14.00	0.35
CALLINECTES SAPIIDUS	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.06	0.00	0.00	3.00	0.04	22.00	0.55
ANCHOA MITCHELLI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.67	0.00	0.00	11.00	0.27
GOBIOSOMA BOSCI	11.00	0.75	0.00	0.00	2.00	0.52	15.00	0.91	3.00	1.00	60.00	0.88	1.00	0.02
CLASS ASTEROIDEA	0.00	0.00	0.00	0.00	35.00	9.02	19.00	1.15	0.00	0.00	0.00	0.00	0.00	0.00
PSEUDOPLEURONECTES AMERI	3.00	0.20	2.00	5.88	0.00	0.00	3.00	0.18	0.00	0.00	0.00	0.00	36.00	0.89
LIRINIA DUBIA	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.06	0.00	0.00	1.00	0.01	0.00	0.00
HIPPOLYTE SP.	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.06	3.00	1.00	30.00	0.44	0.00	0.00
MENIDIA MENIDIA	1.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.01	24.00	0.59
SYNGNATHUS FUSCUS	3.00	0.20	0.00	0.00	1.00	0.26	0.00	0.00	3.00	1.00	1.00	0.01	2.00	0.05
MYOXOCEPHALUS AENAEUS	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.12	0.00	0.00	1.00	0.01	0.00	0.00
NEOPANOPE TEXANA SAYI	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TRINECTES MACULATUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CONGER OCEANICUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ETROFUS MICROSTOMUS	1.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHASMOMES BOSQUIANUS	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.00	0.00	0.00	2.00	0.03	0.00	0.00
TAUTOGA ONITIS	0.00	0.00	0.00	0.00	1.00	0.26	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
FUNDULUS HETEROCLITUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.10	0.00	0.00
AMPHIULLA ROSTRATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.01	0.00	0.00
HIPPOCAMPUS ERECTUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.02
CYPRINODON VARIEGATUS	4.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALOSA AESTIVALIS	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00
LUCANIA PARVA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.01	0.00	0.00
SCOPHTHALMUS AQUOSUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER SPECIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.33	0.00	0.00	2.00	0.05
STATION TOTAL AND DATE	1475.00		34.00		388.00		1649.00		300.00		6799.00		4035.00	

4 DEC 80

GEAR-16 TRA

OYSTERC

STATION

OYCN

SPECIES

NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
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CRANCON SEPTA SPINOSA	10441.00	95.23	22438.00	87.50
FAMILY XANTHIDAE JUV.	2.00	0.02	180.00	0.70
PALAEONETES VULGARIS	165.00	1.50	1902.00	7.42
APELTES QUADRACUS	64.00	0.58	501.00	1.95
CALLINETES SAPIIDUS	146.00	1.33	172.00	0.67
ANCHORA MITCHILLI	0.00	0.00	13.00	0.05
GOBIOSOMA ROSCI	61.00	0.56	153.00	0.60
CLASS ASTEROIDEA	0.00	0.00	54.00	0.21
PSEUDOPLEURONECTES AMERI	35.00	0.32	79.00	0.31
LIRINIA DUBIA	0.00	0.00	2.00	0.01
HIPPOLYTE SP	0.00	0.00	34.00	0.13
HERIDIA MENIDIA	5.00	0.05	31.00	0.12
SYNGNATHUS FUSCUS	5.00	0.05	15.00	0.06
MYOXOCEPHALUS AENAEUS	3.00	0.03	6.00	0.02
NEOPAROPPE TEXANA SAYI	0.00	0.00	1.00	0.00
TRINECTES MACULATUS	1.00	0.01	1.00	0.00
CONGER OCEANICUS	21.00	0.19	21.00	0.08
ETROPUS MICROSTOMUS	7.00	0.06	10.00	0.04
CHASMODES BOSQUIANUS	0.00	0.00	3.00	0.01
TAUTOGA ONITIS	0.00	0.00	2.00	0.01
FUNDULUS HETEROCLITUS	0.00	0.00	7.00	0.03
ANGUILLA ROSTRATA	4.00	0.04	5.00	0.02
HIPPOCAMPUS ERECTUS	2.00	0.02	3.00	0.01
CYPRINODON VARIEGATUS	0.00	0.00	4.00	0.02
ALOSA AESTIVALIS	0.00	0.00	1.00	0.00
LUCANIA PARVA	0.00	0.00	1.00	0.00
SCOPHTHALMUS AQUOSUS	1.00	0.01	1.00	0.00
OTHER SPECIES	1.00	0.01	4.00	0.02

STATION TOTAL AND DATE	10964.00	25644.00
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7 JAN 81

GEAR-16 TRA

OYSTERC

STATION

SPECIES	FNRD		FKRN		OYCD		OYCN		NUMBER TOTAL	PCT COMP	PCT COMP
	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP			
CRANGON SEPTENTRIONALIS	4.00	4.17	253.00	62.01	130.00	86.09	12448.00	99.20	12835.00	97.21	
FAMILY XANTHIDAE JUV.	0.00	0.00	0.00	0.00	0.00	0.00	9.00	0.07	9.00	0.07	
PALAEOMNETES VULGARIS	62.00	64.58	81.00	19.85	4.00	2.65	31.00	0.25	178.00	1.35	
APELTES QUALRACUS	2.00	2.08	43.00	10.54	2.00	1.32	10.00	0.08	57.00	0.43	
CALLINectes SAPIDUS	0.00	0.00	0.00	0.00	2.00	1.32	3.00	0.02	5.00	0.04	
GORGONIA ROSCI	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.02	2.00	0.02	
CLASS ASTEROIDEA	22.00	28.12	30.00	7.35	0.00	0.00	0.00	0.00	57.00	0.43	
PSEUDOPLEURONECTES AMERI	0.00	0.00	0.00	0.00	9.00	5.96	12.00	0.10	21.00	0.16	
LIBINIA GUBIA	1.00	1.04	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.01	
MENIDIA MENIDIA	0.00	0.00	0.00	0.00	4.00	2.65	13.00	0.10	17.00	0.13	
MYOXOCEPHALUS AENAEUS	0.00	0.00	1.00	0.25	0.00	0.00	20.00	0.16	21.00	0.16	
ANGUILLA ROSTRATA	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.01	1.00	0.01	
STATION TOTAL AND DATE	96.00		408.00		151.00		12549.00		13204.00		

4 FEB 81

[illegible]

OYSTERCR

GEAR-16 TRA

12 FEB 81

STATION	CDCN		CDCD			
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CRANGON SEPTemspINOSA	403.00	97.11	193.00	94.15	596.00	96.13
PALAEONETES VULGARIS	3.00	0.72	2.00	0.98	5.00	0.81
APELTES QUADRACUS	6.00	1.45	6.00	2.93	12.00	1.94
CALLINECTES SAPIDUS	1.00	0.24	3.00	1.46	4.00	0.65
PSEUDOPLEURONECTES AMERI	2.00	0.48	1.00	0.49	3.00	0.48
STATION TOTAL AND DATE TOTAL	415.00		205.00		620.00	

APPENDIX C: 45.7-m SEINE DATA

Appendix C is arranged by sampling date. The catch data are expressed as total specimens captured at a station (NUMBER INDIVS) and percent composition (PCT COMP). The sampling stations are identified by the first three letters of the code: CDC = Cedar Creek, FKR = Forked River, DBC = Double Creek, and OYC = Oyster Creek. The last letter of the station code denotes day samples (D) and night samples (N).

OYSTERCR

GEAR-150SEI

16 SEP 80

STATION

SPECIFS

CDCN

FKNR

DECN

	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CRANGON SEPTENTRIONALIS	40.00	13.89	6.00	3.97	3.00	3.37	49.00	9.28
CALLINECTES SAPIIDUS	15.00	5.21	94.00	62.25	55.00	61.80	164.00	31.06
MENIDIA MENIDIA	0.00	0.00	1.00	0.66	0.00	0.00	1.00	0.19
PALAEOMONETES VULGARIS	0.00	0.00	1.00	0.66	3.00	3.37	4.00	0.76
CALLINECTES SAPIIDUS JUV	215.00	74.65	0.00	0.00	0.00	0.00	215.00	40.72
ANCHOA MITCHELLI	0.00	0.00	1.00	0.66	0.00	0.00	1.00	0.19
FUNDULUS MAJALIS	0.00	0.00	0.00	0.00	5.00	5.62	5.00	0.95
OPSANUS TAU	5.00	1.74	26.00	17.22	0.00	0.00	31.00	5.87
MUGIL CEPHALUS	0.00	0.00	1.00	0.66	16.00	17.98	17.00	3.22
GOBIOSOMA ROSCI	2.00	0.69	2.00	1.32	2.00	2.25	6.00	1.14
FOMATOMUS SALTATRIX	1.00	0.35	0.00	0.00	0.00	0.00	1.00	0.19
FUNDULUS HETEROCITUS	0.00	0.00	3.00	1.99	1.00	1.12	4.00	0.76
MUGIL CUREMA	0.00	0.00	1.00	0.66	0.00	0.00	1.00	0.19
PSEUDOPLEURONECTES AMERI	2.00	0.69	0.00	0.00	0.00	0.00	2.00	0.38
SYNGNATHUS FUSCUS	1.00	0.35	4.00	2.65	0.00	0.00	5.00	0.95
CHASMODON ROSQUIANUS	1.00	0.35	3.00	1.99	1.00	1.12	5.00	0.95
PARALICHTHYS DENTATUS	4.00	1.39	3.00	1.99	0.00	0.00	7.00	1.33
ANGUILLA ROSTRATA	0.00	0.00	0.00	0.00	1.00	1.12	1.00	0.19
CARANX HIPPOS	0.00	0.00	0.00	0.00	1.00	1.12	1.00	0.19
ASTROSCOPUS GUTTATUS	0.00	0.00	4.00	2.65	0.00	0.00	4.00	0.76
FAMILY XANTHIDAE JUV.	0.00	0.00	0.00	0.00	1.00	1.12	1.00	0.19
TRINECTES MACULATUS	1.00	0.35	0.00	0.00	0.00	0.00	1.00	0.19
OTHER SPECIES	1.00	0.35	1.00	0.66	0.00	0.00	2.00	0.38

STATION TOTAL AND
DATE

288.00

151.00

89.00

528.00

OYSTERCR

GEAR-150SEI

24 SEP 80

STATION

OYCN

SPECIES

NUMBER
INDIVSPCT
COMPNUMBER
TOTALPCT
COMP

CRANGON SEPTemspINOSA	1.00	0.85	1.00	0.85
CALLINECTES SAPIDUS	43.00	36.44	43.00	36.44
CALLINECTES SAPIDUS JUV	56.00	47.46	56.00	47.46
ANCHOA MITCHILLI	1.00	0.85	1.00	0.85
OPSANUS TAU	4.00	3.39	4.00	3.39
POMATOMUS SALTATRIX	1.00	0.85	1.00	0.85
CHASMODES BOSQUIANUS	1.00	0.85	1.00	0.85
PARALICHTHYS DENTATUS	4.00	3.39	4.00	3.39
STRONGYLURA MARINA	2.00	1.69	2.00	1.69
PENAEUS AZTECUS	2.00	1.69	2.00	1.69
SYNODUS FOETENS	1.00	0.85	1.00	0.85
CLASS SCYPHOZOA	2.00	1.69	2.00	1.69

STATION TOTAL AND
DATE TOTAL

118.00

118.00

OYSTERC

GEAR-150SEI

17 SEP 80

STATION

SPECIES	CICD			FKRD			DBCD			NUMBER TOTAL	PCT	
	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CRANGON SEPTENTRIONALIS	2.00	4.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.44
CALLINECTES SAPIENS	25.00	51.02	20.00	7.94	10.90	17.00	10.90	10.90	10.90	10.90	62.00	13.57
MENIDIA MENIDIA	11.00	22.45	30.00	11.90	38.46	60.00	38.46	38.46	38.46	38.46	101.00	22.10
ANCHOVA MITCHILLI	0.00	0.00	142.00	56.35	19.23	30.00	19.23	19.23	19.23	19.23	172.00	37.64
FUNDULUS MAJALIS	0.00	0.00	0.00	0.00	0.00	1.00	0.64	0.64	0.64	0.64	1.00	0.22
OPISANUS TAU	0.00	0.00	9.00	3.57	1.28	2.00	1.28	1.28	1.28	1.28	11.00	2.41
MUGIL CEPHALUS	4.00	8.16	6.00	2.38	1.92	3.00	1.92	1.92	1.92	1.92	13.00	2.84
APELTES QUADRACUS	0.00	0.00	0.00	0.00	0.00	1.00	0.64	0.64	0.64	0.64	1.00	0.22
GOBIOSOMA BOSCI	2.00	4.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.44
POMATOMUS SALTATRIX	0.00	0.00	30.00	11.90	11.54	18.00	11.54	11.54	11.54	11.54	78.00	10.50
MUGIL CUREMA	0.00	0.00	1.00	0.40	0.62	15.00	9.62	9.62	9.62	9.62	16.00	3.50
SYNGRATHUS FUSCUS	1.00	2.04	0.00	0.00	0.00	1.00	0.64	0.64	0.64	0.64	2.00	0.44
CHASMIDES BOSQUIANUS	1.00	2.04	0.00	0.00	0.00	1.00	0.64	0.64	0.64	0.64	2.00	0.44
STRONGYLURA MARINA	0.00	0.00	0.00	0.00	0.00	4.00	2.56	2.56	2.56	2.56	4.00	0.88
MENIDIA BERYLLINA	0.00	0.00	2.00	0.79	1.28	2.00	1.28	1.28	1.28	1.28	4.00	0.88
CYNOSCION REGALIS	0.00	0.00	9.00	3.57	0.64	1.00	0.64	0.64	0.64	0.64	10.00	2.19
ANGUILLA ROSTRATA	0.00	0.00	1.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.22
CARANX HIPPOS	0.00	0.00	1.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.22
ASTROSCOPUS GUTTATUS	2.00	4.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.44
CLASS SCYPHOZOA	0.00	0.00	1.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.22
OTHER SPECIES	1.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.22
STATION TOTAL AND DATE	49.00		252.00			156.00					457.00	

OYSTERCR

GEAR-150SEI

24 SEP 80

STATION

OYCD

SPECIES	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CALLINECTES SAPIDUS	58.00	63.04	58.00	63.04
MENIDIA MENIDIA	2.00	2.17	2.00	2.17
PALAEMONETES VULGARIS	1.00	1.09	1.00	1.09
OPSANUS TAU	1.00	1.09	1.00	1.09
MUGIL CEPHALUS	5.00	5.43	5.00	5.43
MUGIL CUREMA	14.00	15.22	14.00	15.22
CHASMODES BOSQUIANUS	5.00	5.43	5.00	5.43
PARALICHTHYS DENTATUS	2.00	2.17	2.00	2.17
ANGUILLA ROSTRATA	1.00	1.09	1.00	1.09
SYNODUS FOETENS	3.00	3.26	3.00	3.26

STATION TOTAL AND DATE	TOTAL
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92.00

92.00

OYSTERC

GEAR-150SEI

14 OCT 80

STATION

SPECIES	CDCN		CDCD		FKRD		FKRN		DBCD		DBCN		OYCD	
	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP
CRANGON SEPTEMSPINOSA	188.00	34.94	148.00	72.91	4.00	14.81	12.00	7.10	2.00	5.41	19.00	8.19	0.00	0.00
CALLINECTES SAPIDUS	285.00	52.97	45.00	22.17	4.00	14.81	77.00	45.56	19.00	51.35	188.00	81.03	14.00	32.56
MENIDIA MENIDIA	42.00	7.81	0.00	0.00	3.00	11.11	31.00	18.34	3.00	8.11	4.00	1.72	0.00	0.00
FALAEOMETES VULGARIS	0.00	0.00	0.00	0.00	1.00	3.70	1.00	0.59	10.00	27.03	0.00	0.00	0.00	0.00
FUNDULUS MAJALIS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	1.72	0.00	0.00
OPSANUS TAU	3.00	0.56	7.00	3.45	0.00	0.00	16.00	9.47	0.00	0.00	2.00	0.86	4.00	9.30
MUGIL CEPHALUS	0.00	0.00	0.00	0.00	1.00	3.70	4.00	2.37	0.00	0.00	0.00	0.00	3.00	6.98
AFELTES QUADRACUS	0.00	0.00	0.00	0.00	1.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GOBIOSOMA BOSCI	10.00	1.86	0.00	0.00	0.00	0.00	3.00	1.78	0.00	0.00	0.00	0.00	0.00	0.00
POMATOMUS SALTATRIX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	4.65
FUNDULUS HETEROCLITUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.86	0.00	0.00
MUGIL CUREMA	1.00	0.19	0.00	0.00	4.00	14.81	0.00	0.00	0.00	0.00	0.00	0.00	2.00	4.65
PSEUDOPLEURONECTES AMERI	2.00	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SYNGNATHUS FUSUS	1.00	0.19	1.00	0.49	3.00	11.11	8.00	4.73	0.00	0.00	0.00	0.00	1.00	2.33
CYPRINODON VARIEGATUS	1.00	0.19	1.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHASMONEUS BOSQUIANUS	2.00	0.37	0.00	0.00	1.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.33
PARALICHTHYS DENTATUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.43	2.00	4.65
NEOFANDOE TEXANA SAYI	0.00	0.00	0.00	0.00	2.00	7.41	7.00	4.14	0.00	0.00	4.00	1.72	0.00	0.00
STRONGYLURA MARINA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	13.95
MENIDIA BERYLLINA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.70	3.00	1.29	0.00	0.00
PENAEUS AZTECUS	0.00	0.00	0.00	0.00	0.00	0.00	3.00	1.78	0.00	0.00	0.00	0.00	0.00	0.00
ANGUILLA ROSTRATA	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.59	0.00	0.00	2.00	0.86	1.00	2.33
CARANX HIPPOS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ASTROSCOPUS GUTTATUS	1.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TAUTOGA ONITIS	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.59	0.00	0.00	1.00	0.43	1.00	2.33
ETROPUS MICROSTOMUS	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.59	0.00	0.00	0.00	0.00	0.00	0.00
FAMILY XANTHIDAE JUV.	0.00	0.00	0.00	0.00	0.00	0.00	2.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00
SYNODUS FOETENS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.33
TRINectes MACULATUS	2.00	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TRACHINOTUS FALCATUS	0.00	0.00	1.00	0.49	1.00	3.70	1.00	0.59	0.00	0.00	0.00	0.00	0.00	0.00
OTHER SPECIES	0.00	0.00	0.00	0.00	2.00	7.41	1.00	0.59	2.00	5.41	2.00	0.86	5.00	11.63

STATION TOTAL AND
DATE

538.00

203.00

27.00

169.00

37.00

232.00

43.00

OYSTERCR

GEAR-150SEI

14 OCT 80

STATION

OYCN

SPECIES	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CRANGON SEPTEMSPINOSA	23.00	16.67	396.00	28.55
CALLINECTES SAPIDUS	48.00	34.78	680.00	49.03
MENIDIA MENIDIA	0.00	0.00	83.00	5.98
PALAEMONETES VULGARIS	4.00	2.90	16.00	1.15
FUNDULUS MAJALIS	5.00	3.62	9.00	0.65
OPSANUS TAU	15.00	10.87	47.00	3.39
MUGIL CEPHALUS	9.00	6.52	17.00	1.23
APELTES QUADRACUS	0.00	0.00	1.00	0.07
GOBIOSOMA BOSCI	2.00	1.45	15.00	1.08
POMATOMUS SALTATRIX	1.00	0.72	3.00	0.22
FUNDULUS HETEROCLITUS	0.00	0.00	2.00	0.14
MUGIL CUREMA	2.00	1.45	9.00	0.65
PSEUDOPLEURONECTES AMERI	0.00	0.00	2.00	0.14
SYNGNATHUS FUSCUS	0.00	0.00	14.00	1.01
CYPRINODON VARIEGATUS	7.00	5.07	9.00	0.65
CHASMIDES BOSQUIANUS	1.00	0.72	5.00	0.36
PARALICHTHYS DENTATUS	2.00	1.45	5.00	0.36
NEOPANOPE TEXANA SAYI	3.00	2.17	16.00	1.15
STRONGYLURA MARINA	1.00	0.72	7.00	0.50
MENIDIA BERYLLINA	0.00	0.00	4.00	0.29
PENAEUS AZTECUS	6.00	4.35	9.00	0.65
ANGUILLA ROSTRATA	0.00	0.00	4.00	0.29
CARANX HIPPOS	7.00	5.07	7.00	0.50
ASTROSCOPUS GUTTATUS	0.00	0.00	3.00	0.22
TAUTOGA ONITIS	1.00	0.72	2.00	0.14
ETROPUS MICROSTOMUS	0.00	0.00	1.00	0.07
FAMILY XANTHIDAE JUV.	0.00	0.00	2.00	0.14
SYNODUS FOETENS	0.00	0.00	1.00	0.07
TRINECTES MACULATUS	0.00	0.00	2.00	0.14
TRACHINOTUS FALCATUS	0.00	0.00	3.00	0.22
OTHER SPECIES	1.00	0.72	13.00	0.94
STATION TOTAL AND DATE TOTAL	138.00		1387.00	

OYSTERC

GEAR-150SEI

19 NOV 80

STATION

SPECIES	CDCN		CBCD		FKRD		FKRN		DBCN		OYCD	
	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP
CRANGON SEPTENTRIONALIS	835.00	97.78	297.00	99.33	63.00	96.92	740.00	86.05	41.00	80.39	351.00	94.61
CALLINectes SAPIENS	2.00	0.23	0.00	0.00	0.00	0.00	7.00	0.81	0.00	0.00	0.00	0.00
MENIDIA MENIDIA	0.00	0.00	0.00	0.00	1.00	1.54	0.00	0.00	0.00	0.00	3.00	0.81
FALAEONETES VULGARIS	2.00	0.23	1.00	0.33	0.00	0.00	98.00	11.40	5.00	9.80	1.00	0.27
FUNDULUS MAJALIS	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.58	0.00	0.00	2.00	0.54
OPSANUS TAU	1.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AFELTES QUADRATUS	2.00	0.23	1.00	0.33	1.00	1.54	1.00	0.12	2.00	3.92	1.00	0.27
GORIOSOMA BOSCI	7.00	0.82	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.96	2.00	0.54
FUNDULUS HETEROCALITUS	1.00	0.12	0.00	0.00	0.00	0.00	2.00	0.23	0.00	0.00	8.00	2.16
PSEUDOPLEURONECTES AMERI	2.00	0.23	0.00	0.00	0.00	0.00	5.00	0.58	0.00	0.00	0.00	0.00
SYNGNATHUS FUSCUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CYPRINODON VARIEGATUS	1.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FUNDULUS DIAPHANUS	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.12	0.00	0.00	2.00	0.54
CHASMOMES BOSQUIANUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NEOPANOPE TEXANA SAYI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STRONGYLURA MARINA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.96	0.00	0.00
MENIDIA BERYLLINA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ANGUILLA ROSTRATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TAUTOGA ONITIS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.96	0.00	0.00
ETROFUS MICROSTOMUS	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.12	0.00	0.00	1.00	0.27
FAMILY XANTHIDAE JUV.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER SPECIES	1.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

STATION TOTAL AND
DATE

854.00

299.00

65.00

860.00

51.00

371.00

146.00

OYSTERCR

GEAR-150SEI

19 NOV 80

STATION

OYCN

SPECIES	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CRANGON SEPTEMSPINOSA	377.00	77.89	2760.00	88.18
CALLINECTES SAPIDUS	62.00	12.81	77.00	2.46
MENIDIA MENIDIA	15.00	3.10	71.00	2.27
PALAEONETES VULGARIS	1.00	0.21	113.00	3.61
FUNDULUS MAJALIS	1.00	0.21	9.00	0.29
OPSANUS TAU	0.00	0.00	1.00	0.03
APELTES QUADRACUS	2.00	0.41	17.00	0.54
GOBIOSOMA BOSCI	5.00	1.03	25.00	0.80
FUNDULUS HETEROCLITUS	0.00	0.00	11.00	0.35
PSEUDOPLEURONECTES AMERI	7.00	1.45	16.00	0.51
SYNGNATHUS FUSCUS	0.00	0.00	1.00	0.03
CYPRINODON VARIEGATUS	1.00	0.21	2.00	0.06
FUNDULUS DIAPHANUS	0.00	0.00	4.00	0.13
CHASMODES BOSQUIANUS	1.00	0.21	2.00	0.06
NEOPANOPE TEXANA SAYI	0.00	0.00	1.00	0.03
STRONGYLURA MARINA	3.00	0.62	3.00	0.10
MENIDIA BERYLLINA	0.00	0.00	1.00	0.03
ANGUILLA ROSTRATA	1.00	0.21	1.00	0.03
TAUTOGA ONITIS	4.00	0.83	5.00	0.16
ETROPUS MICROSTOMUS	2.00	0.41	5.00	0.16
FAMILY XANTHIDAE JUV.	1.00	0.21	1.00	0.03
OTHER SPECIES	1.00	0.21	4.00	0.13
STATION TOTAL AND DATE TOTAL	484.00		3130.00	

OYSTERC

GEAR-150SEI

10 DEC 80

STATION

CDCN

CUCD

FKRD

FKRN

DBCD

DECN

OYCD

SPECIES

NUMBER
INDIVSPCT
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COMP

CRANGON SEPTENTRIONALIS

CALLINectes SAPIENS

MENIDIA MENIDIA

PALAEMONETES VULGARIS

ANCHOVA MITCHILLI

FUNDULUS MAJALIS

OPSANUS TAU

MUGIL CEPHALUS

APELTES QUADRATUS

GORIOSOMA BOSCI

FUNDULUS HETEROCILITUS

PSEUDOPLEURONECTES AMERI

SYNGNATHUS FUSCUS

ALOSA AESTIVALIS

CYPRINODON VARIEGATUS

FUNDULUS DIAPHANUS

NEOPANOPE TEXANA SAYI

MENIDIA BERYLLINA

ANGUILLA ROSTRATA

TAUTOGA ONITIS

ETROPUS MICROSTOMUS

FAMILY XANTHIDAE JUV.

TRINECTES MACULATUS

MYOXOCEPHALUS AENEUS

OTHER SPECIES

STATION TOTAL AND
DATE TOTAL

194.00

734.00

19.00

180.00

46.00

56.00

952.00

GEAR-150SEI

10 DEC 80

OYSTERC

STATION

UYCN

SPECIES

NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
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CRANGON SEPTENSPINDSA	5260.00	97.41	8489.00	92.02
CALLINECTES SAPIIDUS	56.00	1.04	75.00	0.81
MENIDIA MENIDIA	10.00	0.19	28.00	0.30
PALAEOMETES VULGARIS	0.00	0.00	468.00	5.07
ANCHOA MITCHILLI	3.00	0.06	7.00	0.08
FUNDULUS MAJALIS	14.00	0.26	38.00	0.41
OPSANUS TAU	0.00	0.00	1.00	0.01
MUGIL CEPHALUS	10.00	0.19	10.00	0.11
APELTES QUADRACUS	4.00	0.07	27.00	0.29
GRIOSOMA BOSCI	9.00	0.17	9.00	0.10
FUNDULUS HETEROCILITUS	1.00	0.02	5.00	0.05
PSEUDOPLEURONECTES AMERI	7.00	0.13	11.00	0.12
SYNGNATHUS FUSCUS	0.00	0.00	5.00	0.05
ALOSA AESTIVALIS	18.00	0.33	19.00	0.21
CYPRINODON VARIEGATUS	1.00	0.02	3.00	0.03
FUNDULUS DIAFANUS	0.00	0.00	17.00	0.18
NEOPOMOPS TEXANA SAYI	0.00	0.00	1.00	0.01
MENIDIA BERYLLINA	0.00	0.00	1.00	0.01
ANGUILLA ROSTRATA	1.00	0.02	1.00	0.01
TAUTOGA ONITIS	1.00	0.02	1.00	0.01
ETROPLUS MICROSTOMUS	0.00	0.00	2.00	0.02
FAMILY XANTHIDAE JUV.	1.00	0.02	1.00	0.01
TRINECTES MACULATUS	1.00	0.02	2.00	0.02
MYOXOCEPHALUS AENAEUS	1.00	0.02	2.00	0.02
OTHER SPECIES	2.00	0.04	3.00	0.03

STATION TOTAL AND DATE	5400.00	9225.00
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14 JAN 81

GEAR-150SEI

OYSTERCR

STATION	OYCD			OYCN		
	NUMBER INDIVS	PCT COMP		NUMBER INDIVS	PCT COMP	
SPECIES						
CRANGON SEPTENTRIONALIS	0.00	0.00		33.00	89.19	33.00 66.00
MENIDIA MENIDIA	12.00	92.31		1.00	2.70	13.00 26.00
APELTES QUADRACUS	0.00	0.00		1.00	2.70	1.00 2.00
MENIDIA BERYLLINA	1.00	7.69		0.00	0.00	1.00 2.00
MYOXOCEPHALUS AENAEUS	0.00	0.00		1.00	2.70	1.00 2.00
OTHER SPECIES	0.00	0.00		1.00	2.70	1.00 2.00
STATION TOTAL AND DATE	13.00			37.00		50.00

OYSTERCR

GEAR-150SEI

27 JAN 81

STATION	FKRD		FKRN			
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CRANGON SEPTemspINOSA	11.00	84.62	234.00	97.91	245.00	97.22
CALLINECTES SAPIDUS	1.00	7.69	0.00	0.00	1.00	0.40
PALAEMONETES VULGARIS	0.00	0.00	3.00	1.26	3.00	1.19
FUNDULUS MAJALIS	0.00	0.00	1.00	0.42	1.00	0.40
APELTES QUADRACUS	1.00	7.69	0.00	0.00	1.00	0.40
FUNDULUS HETEROCLITUS	0.00	0.00	1.00	0.42	1.00	0.40
STATION TOTAL AND DATE	13.00		239.00		252.00	

OYSTERCR

GEAR-150SEI

12 FEB 81

STATION		CDCN		CDCD			
SPECIES		NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CRANGON SEPTemspINOSA		511.00	99.22	22.00	100.00	533.00	99.26
CALLINECTES SAPIDUS		2.00	0.39	0.00	0.00	2.00	0.37
FUNDULUS MAJALIS		1.00	0.19	0.00	0.00	1.00	0.19
OTHER SPECIES		1.00	0.19	0.00	0.00	1.00	0.19
STATION TOTAL AND DATE		515.00		22.00		537.00	

OYSTERCR

GEAR-150SEI

19 FEB 81

STATION	FKRD		FKRN		DBCD		DBCN		OYCD		OYCN		NUMBER TOTAL	PCT COMP
	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP		
CRANGON SEPTENSPINOSA	5.00	50.00	132.00	92.31	9.00	52.94	449.00	90.71	65.00	15.15	312.00	70.59	972.00	63.28
CALLINECTES SAPIIDUS	0.00	0.00	1.00	0.70	1.00	5.88	0.00	0.00	8.00	1.86	30.00	6.79	40.00	2.60
MENIDIA MENIDIA	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.20	329.00	76.69	86.00	19.46	416.00	27.08
FALAEOMETES VULGARIS	1.00	10.00	1.00	0.70	0.00	0.00	1.00	0.20	2.00	0.47	0.00	0.00	5.00	0.33
FUNDULUS MAJALIS	1.00	10.00	2.00	1.40	2.00	11.76	26.00	5.25	7.00	1.63	6.00	1.36	44.00	2.86
MUGIL CEPHALUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.23	0.00	0.00	1.00	0.07
AFELTES QUADRACJUS	0.00	0.00	2.00	1.40	0.00	0.00	8.00	1.62	4.00	0.93	0.00	0.00	14.00	0.91
FUNDULUS HETEROCILITUS	2.00	20.00	3.00	2.10	0.00	0.00	7.00	1.41	5.00	1.17	2.00	0.45	19.00	1.24
PSEUDOPLEURONECTES AMERI	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.40	0.00	0.00	0.00	0.00	2.00	0.13
ALOSA AESTIVALIS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.93	0.00	0.00	4.00	0.26
CYPRINODON VARIEGATUS	0.00	0.00	1.00	0.70	1.00	5.88	0.00	0.00	4.00	0.93	2.00	0.45	9.00	0.59
MENIDIA BERYLLINA	1.00	10.00	0.00	0.00	4.00	23.53	1.00	0.00	0.00	0.00	0.00	0.00	5.00	0.33
FAMILY XANTHIDAE JUV.	0.00	0.00	1.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.07
ANGUILLA ROSTRATA JUV.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.90	4.00	0.26
STATION TOTAL AND DATE	10.00		143.00		17.00		495.00		429.00		442.00		1536.00	

APPENDIX D: 12.2-m SEINE DATA

Appendix D is arranged by sampling date. The catch data are expressed as total specimens captured at a station (NUMBER INDIVS) and percent composition (PCT COMP). The sampling stations are identified by the first three letters of the code: CDC = Cedar Creek, FKR = Forked River, DBC = Double Creek, and OYC = Oyster Creek. The last letter of the station code denotes day samples (D) and night samples (N).

OYSTERCR

GEAR-40 SEI

16 SEP 80

STATION

SPECIES	CDCN		FKRN		DECN		NUMBER TOTAL	FCT COMP
	NUMBER INDIVS	FCT COMP	NUMBER INDIVS	FCT COMP	NUMBER INDIVS	FCT COMP		
CRANGON SEPTEMPINOSA	275.00	50.18	89.00	40.09	49.00	5.94	413.00	25.89
MENIDIA MENIDIA	2.00	0.36	9.00	4.05	29.00	3.52	40.00	2.51
PALAEOMONETES VULGARIS	12.00	2.19	34.00	15.32	58.00	7.03	104.00	6.52
ANCHOA MITCHILLI	206.00	37.59	50.00	22.52	659.00	79.88	915.00	57.37
APELTES QUADRACUS	1.00	0.18	0.00	0.00	0.00	0.00	1.00	0.06
CALLINECTES SAPIDUS	26.00	4.74	21.00	9.46	12.00	1.45	59.00	3.70
GORIOSOMA BOSCI	17.00	3.10	6.00	2.70	2.00	0.24	25.00	1.57
FUNDULUS HETEROCLITUS	5.00	0.91	0.00	0.00	0.00	0.00	5.00	0.31
FUNDULUS MAJALIS	0.00	0.00	0.00	0.00	2.00	0.24	2.00	0.13
TRACHINOTUS FALCATUS	0.00	0.00	6.00	2.70	0.00	0.00	6.00	0.38
STRONGYLURA MARINA	0.00	0.00	1.00	0.45	4.00	0.48	5.00	0.31
SYNGNATHUS FUSCUS	2.00	0.36	0.00	0.00	0.00	0.00	2.00	0.13
MUGIL CEPHALUS	0.00	0.00	0.00	0.00	5.00	0.61	5.00	0.31
MEMBRAS MARTINICA	0.00	0.00	5.00	2.25	2.00	0.24	7.00	0.44
CHASMOTES BOSQUIANUS	1.00	0.18	0.00	0.00	0.00	0.00	1.00	0.06
PSEUDOPLEURONECTES AMERI	1.00	0.18	0.00	0.00	0.00	0.00	1.00	0.06
LUTJANUS GRISEUS	0.00	0.00	0.00	0.00	1.00	0.12	1.00	0.06
MUGIL CUREMA	0.00	0.00	0.00	0.00	2.00	0.24	2.00	0.13
OTHER SPECIES	0.00	0.00	1.00	0.45	0.00	0.00	1.00	0.06
STATION TOTAL AND DATE	548.00		222.00		825.00		1595.00	

17 SEP 80

GEAR-40 SEI

OYSTERC

STATION

SPECIES	CDCI		FKRD		DECD		FCT	
	NUMBER INDIVS	FCT COMP	NUMBER INDIVS	FCT COMP	NUMBER INDIVS	FCT COMP	NUMBER TOTAL	FCT COMP
CRANGON SEPIEMSPINDSA	15.00	13.39	1.00	0.36	3.00	0.50	19.00	1.91
MENIDIA MENIDIA	71.00	63.39	237.00	84.34	179.00	29.78	487.00	48.99
FALAEOMNETES VULGARIS	0.00	0.00	0.00	0.00	6.00	1.00	6.00	0.60
ANCHOA MITCHILLI	6.00	5.36	16.00	5.69	387.00	64.39	409.00	41.15
PELITES QUADRACUS	0.00	0.00	0.00	0.00	1.00	0.17	1.00	0.10
CALLINECTES SAPIRUS	6.00	5.36	6.00	2.14	16.00	2.66	28.00	2.82
GORTOSOMA BOSCI	9.00	8.04	0.00	0.00	2.00	0.23	11.00	1.11
FUNDULUS MAJALIS	0.00	0.00	0.00	0.00	1.00	0.17	1.00	0.10
MENIDIA BERYLLINA	2.00	1.79	7.00	2.49	0.00	0.00	9.00	0.91
FAMILY XANTHIDAE JUV.	0.00	0.00	0.00	0.00	1.00	0.17	1.00	0.10
TRACHINOTUS FALCATUS	0.00	0.00	2.00	0.71	0.00	0.00	2.00	0.20
STRONGYLURA MARINA	0.00	0.00	2.00	0.71	0.00	0.00	2.00	0.20
SYNGNATHUS FUSCUS	1.00	0.89	1.00	0.36	2.00	0.33	4.00	0.40
MUGIL CEPHALUS	0.00	0.00	1.00	0.36	1.00	0.17	2.00	0.20
MEMBRAS MARTINICA	0.00	0.00	2.00	0.71	0.00	0.00	2.00	0.20
ANCHOA HEFSETUS	0.00	0.00	6.00	2.14	0.00	0.00	6.00	0.60
OFSANUS TAU	1.00	0.89	0.00	0.00	0.00	0.00	1.00	0.10
POMATOMUS SALTATRIX	0.00	0.00	0.00	0.00	2.00	0.33	2.00	0.20
OTHER SPECIES	1.00	0.89	0.00	0.00	0.00	0.00	1.00	0.10
STATION TOTAL AND DATE	112.00		281.00		601.00		994.00	

OYSTERCR

GEAR-40 SEI

24 SEP 80

STATION		OYCN			
SPECIES		NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CRANGON SEPTEMSPINOSA		161.00	60.75	161.00	60.75
MENIDIA MENIDIA		1.00	0.38	1.00	0.38
PALAEMONETES VULGARIS		15.00	5.66	15.00	5.66
ANCHOA MITCHILLI		25.00	9.43	25.00	9.43
CALLINECTES SAPIDUS		37.00	13.96	37.00	13.96
GOBIOSOMA BOSCI		10.00	3.77	10.00	3.77
HIPPOLYTE SP		2.00	0.75	2.00	0.75
STRONGYLURA MARINA		8.00	3.02	8.00	3.02
CHASMODES BOSQUIANUS		3.00	1.13	3.00	1.13
OPSANUS TAU		1.00	0.38	1.00	0.38
LUTJANUS GRISEUS		1.00	0.38	1.00	0.38
OTHER SPECIES		1.00	0.38	1.00	0.38
STATION TOTAL AND DATE TOTAL		265.00		265.00	

OYSTERCR

GEAR-40 SEI

24 SEP 80

STATION	OYCD			
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
MENIDIA MENIDIA	21.00	60.00	21.00	60.00
ANCHOA MITCHILLI	3.00	8.57	3.00	8.57
CALLINECTES SAPIDUS	6.00	17.14	6.00	17.14
FUNDULUS MAJALIS	1.00	2.86	1.00	2.86
LUCANIA PARVA	1.00	2.86	1.00	2.86
TRACHINOTUS FALCATUS	1.00	2.86	1.00	2.86
MUGIL CEPHALUS	2.00	5.71	2.00	5.71
STATION TOTAL AND DATE	35.00		35.00	

OYSTERC

GEAR-40 SEI

14 OCT 80

STATION

CICN

CICD

FKRD

FKRN

DBCD

DECN

OYCD

SPECIES

NUMBER
INDIVSPCT
COMPNUMBER
INDIVSPCT
COMPNUMBER
INDIVSPCT
COMPNUMBER
INDIVSPCT
COMP

CRANGON SEPTemspINOSA	926.00	81.23	316.00	61.48	42.00	35.90	506.00	63.41	17.00	11.49	1759.00	84.85	4.00	5.26
MENIDIA MENIDIA	87.00	7.63	0.00	0.00	52.00	44.44	186.00	23.31	6.00	4.05	39.00	1.88	0.00	0.00
CRANGON SEPTemspIN JUV	0.00	0.00	163.00	31.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PALAEOMETES VULGARIS	8.00	0.70	12.00	2.33	5.00	4.27	24.00	3.01	29.00	19.59	46.00	2.22	2.00	2.63
APELITES QUADRACUS	0.00	0.00	0.00	0.00	1.00	0.85	1.00	0.13	18.00	12.16	6.00	0.29	0.00	0.00
CALLINECTES SAPIIDUS	68.00	5.96	9.00	1.75	11.00	9.40	34.00	4.26	3.00	2.03	85.00	4.10	41.00	53.95
GORIOSOMA BOSCI	46.00	4.04	5.00	0.97	0.00	0.00	8.00	1.00	0.00	0.00	16.00	0.77	1.00	1.32
FUNDULUS HETEROCLITUS	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.25	2.00	1.35	48.00	2.32	0.00	0.00
FUNDULUS MAJALIS	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.13	1.00	0.68	10.00	0.48	0.00	0.00
MENIDIA BERYLLINA	1.00	0.09	0.00	0.00	1.00	0.85	3.00	0.38	41.00	27.70	17.00	0.82	0.00	0.00
CYPRINODON VARIEGATUS	1.00	0.09	0.00	0.00	0.00	0.00	5.00	0.63	2.00	1.35	14.00	0.68	0.00	0.00
LUCANIA FARVA	0.00	0.00	6.00	1.17	1.00	0.85	0.00	0.00	2.00	1.35	18.00	0.87	0.00	0.00
HIPPOLYTE SP	0.00	0.00	0.00	0.00	0.00	0.00	14.00	1.75	24.00	16.22	6.00	0.29	0.00	0.00
MENIDIA MENIDIA JUV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	1.35	0.00	0.00	0.00	0.00
FAMILY XANTHINAE JUV.	0.00	0.00	0.00	0.00	2.00	1.71	11.00	1.38	0.00	0.00	6.00	0.29	0.00	0.00
TRACHINOTUS FALCATUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	6.58
SYNGNATHUS FUSCUS	2.00	0.18	3.00	0.58	2.00	1.71	0.00	0.00	1.00	0.68	0.00	0.00	0.00	0.00
BREVOORTIA TYRANNUS JUV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.00	18.42
MUGIL CEPHALUS	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.13	0.00	0.00	0.00	0.00	3.00	3.95
MEMBRAS MARTINICA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.32
CHASMOMES BOSQUIANUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PSEUDOPLEURONECTES AMERI	1.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OPSANUS TAU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LUT JANUS GRISEUS	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00
MUGIL CUREMA	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.13	0.00	0.00	0.00	0.00	1.00	1.32
PEPRILUS TRIACANTHUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NEOPANOPE TEXANA SAYI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	2.00	2.63
HYFORHAMPHUS UNIFASCIATU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
OTHER SPECIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.10	1.00	1.32

STATION TOTAL AND
DATE

1140.00

514.00

117.00

798.00

148.00

2073.00

76.00

OYSTERCR

GEAR-40 SEI

14 OCT 80

STATION

OYCN

SPECIES	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CRANGON SEPTEMSPINOSA	157.00	53.77	3727.00	72.26
MENIDIA MENIDIA	0.00	0.00	370.00	7.17
CRANGON SEPTEMSPIN JUV	0.00	0.00	163.00	3.16
PALAEMONETES VULGARIS	12.00	4.11	138.00	2.68
APELTES QUADRACUS	0.00	0.00	26.00	0.50
CALLINECTES SAPIDUS	87.00	29.79	338.00	6.55
GOBIOSOMA BOSCI	14.00	4.79	90.00	1.74
FUNDULUS HETEROCLITUS	0.00	0.00	52.00	1.01
FUNDULUS MAJALIS	1.00	0.34	13.00	0.25
MENIDIA BERYLLINA	2.00	0.68	65.00	1.26
CYPRINODON VARIEGATUS	13.00	4.45	35.00	0.68
LUCANIA PARVA	0.00	0.00	27.00	0.52
HIPPOLYTE SP	0.00	0.00	44.00	0.85
MENIDIA MENIDIA JUV	0.00	0.00	2.00	0.04
FAMILY XANTHIDAE JUV.	0.00	0.00	19.00	0.37
TRACHINOTUS FALCATUS	4.00	1.37	9.00	0.17
SYNGNATHUS FUSCUS	0.00	0.00	8.00	0.16
BREVOORTIA TYRANNUS JUV	0.00	0.00	14.00	0.27
MUGIL CEPHALUS	0.00	0.00	4.00	0.08
MEMBRAS MARTINICA	0.00	0.00	1.00	0.02
CHASMODES BOSQUIANUS	1.00	0.34	1.00	0.02
PSEUDOPLEURONECTES AMERI	0.00	0.00	1.00	0.02
OPSANUS TAU	0.00	0.00	1.00	0.02
LUTJANUS GRISEUS	0.00	0.00	1.00	0.02
MUGIL CUREMA	0.00	0.00	1.00	0.02
PEPRILUS TRIACANTHUS	0.00	0.00	2.00	0.04
NEOPANDOE TEXANA SAYI	1.00	0.34	2.00	0.04
HYFORHAMPHUS UNIFASCIATU	0.00	0.00	1.00	0.02
OTHER SPECIES	0.00	0.00	3.00	0.06
STATION TOTAL AND DATE	TOTAL	292.00	5158.00	

OYSTERCR

GEAR-40 SEI

19 NOV 80

STATION

SPECIES	CDCN		CDCD		FKRD		FKRN		DECD		DECN		OYCD	
	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP
CRANGON SEPTemspINOSA	383.00	60.51	373.00	94.19	31.00	63.27	214.00	47.35	92.00	42.20	356.00	57.42	84.00	16.44
MENIDIA MENIDIA	0.00	0.00	3.00	0.76	12.00	24.49	0.00	0.00	9.00	4.13	1.00	0.16	304.00	59.49
CRANGON SEPTemspIN JUV	0.00	0.00	2.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PALAEMONETES VULGARIS	181.00	28.59	6.00	1.52	2.00	4.08	193.00	42.70	14.00	6.42	7.00	25.32	28.00	5.48
APELITES QUADRACUS	56.00	8.85	8.00	2.02	3.00	6.12	20.00	4.42	89.00	40.83	70.00	11.29	12.00	2.35
CALLINECTES SAPIDUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.92	0.00	0.00	0.00	0.00
GOBIOSOMA BOSCI	1.00	0.16	2.00	0.51	0.00	0.00	0.00	0.00	2.00	0.92	1.00	0.16	63.00	12.33
FUNDULUS HETEROCLITUS	3.00	0.47	0.00	0.00	0.00	0.00	17.00	3.76	1.00	0.46	10.00	1.61	2.00	0.39
FUNDULUS MAJALIS	2.00	0.32	0.00	0.00	0.00	0.00	2.00	0.44	0.00	0.00	12.00	1.94	1.00	0.20
MENIDIA BERYLLINA	1.00	0.16	0.00	0.00	1.00	2.04	1.00	0.22	0.00	0.00	6.00	0.97	1.00	0.20
CYPRINODON VARIEGATUS	3.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.92	2.00	0.32	0.00	0.00
LUCANIA PARVA	1.00	0.16	2.00	0.51	0.00	0.00	0.00	0.00	6.00	2.75	4.00	0.65	1.00	0.20
HIPOFOLYTE SP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.16	1.00	0.20
MENIDIA MENIDIA JUV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.00	2.15
ANGUILLA ROSTRATA	2.00	0.32	0.00	0.00	0.00	0.00	1.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00
FAMILY XANTHINAE JUV.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.46	0.00	0.00	0.00	0.00
AMMODONTES AMERICANUS	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00
ANGUILLA ROSTRATA JUV.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PSEUDOPLEURONECTES AMERI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.39
FUNDULUS DIAPHANUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER SPECIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.20

STATION TOTAL AND
DATE TOTAL

633.00

396.00

49.00

452.00

218.00

620.00

511.00

19 NOV 80

GEAR-40 SEI

OYSTERCR

STATION

OYCN

SPECIES

NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
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CRANGON SEPTEMPINOSA	148.00	36.36	1681.00	51.17
MENIDIA MENIDIA	127.00	31.20	456.00	13.88
CRANGON SEPTEMPIN JUV	0.00	0.00	2.00	0.06
PALAEMONETES VULGARIS	31.00	7.82	612.00	18.62
APELIES QUADRACUS	26.00	6.39	284.00	8.64
CALLINECTES SAPIDUS	2.00	0.49	4.00	0.12
GOBIOSOMA BOSCI	17.00	4.18	86.00	2.62
FUNDULUS HETEROCLITUS	9.00	2.21	42.00	1.28
FUNDULUS MAJALIS	5.00	1.23	22.00	0.67
MENIDIA BERYLLINA	1.00	0.25	11.00	0.33
CYPRINODON VARIEGATUS	1.00	0.25	8.00	0.24
LUCANIA PARVA	0.00	0.00	14.00	0.43
HIPPOLYTE SP	0.00	0.00	2.00	0.06
MENIDIA MENIDIA JUV	34.00	8.35	45.00	1.37
ANGUILLA ROSTRATA	0.00	0.00	3.00	0.09
FAMILY XANTHIDAE JUV.	0.00	0.00	1.00	0.03
AMMOYTES AMERICANUS	0.00	0.00	4.00	0.12
ANGUILLA ROSTRATA JUV.	5.00	1.23	5.00	0.15
FEUDOPLEURONECTES AMERI	0.00	0.00	2.00	0.06
FUNDULUS DIAPHANUS	1.00	0.25	1.00	0.03
OTHER SPECIES	0.00	0.00	1.00	0.03

STATION TOTAL AND DATE	TOTAL
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407.00

3286.00

OYSTERCK

GEAR-40 SEI

10 DEC 80

STATION

SPECIES	CDCN		CICD		FKRD		FKRN		DBCD		DBCN		OYCD	
	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP
CRANGON SEPTENTRIONALIS	2066.00	98.15	133.00	95.00	106.00	75.18	2096.00	82.04	25.00	78.12	1226.00	82.12	147.00	43.36
MENIDIA MENIDIA	2.00	0.10	0.00	0.00	26.00	18.44	1.00	0.04	3.00	9.37	18.00	1.21	170.00	50.15
PALAEMONETES VULGARIS	9.00	0.43	2.00	1.43	7.00	4.96	396.00	15.50	1.00	3.12	17.00	1.14	2.00	0.59
ANCHOVA MITCHILLI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APLETES QUADRATUS	15.00	0.71	4.00	2.86	0.00	0.00	46.00	1.80	1.00	3.12	189.00	12.66	15.00	4.42
CALLINECTES SAPIDUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GORIOSOMA ROSCI	1.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	1.00	3.12	3.00	0.20	3.00	0.88
FUNDULUS HETEROCILITUS	1.00	0.05	1.00	0.71	0.00	0.00	3.00	0.12	0.00	0.00	13.00	0.87	0.00	0.00
FUNDULUS MAJALIS	2.00	0.10	0.00	0.00	0.00	0.00	10.00	0.39	0.00	0.00	18.00	1.21	0.00	0.00
MENIDIA BERYLLINA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.07	0.00	0.00
CYPRINODON VARIEGATUS	3.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	1.00	3.12	4.00	0.27	1.00	0.29
LUCANIA PARVA	6.00	0.29	0.00	0.00	1.00	0.71	3.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
HIPPOLYTE SP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.13	0.00	0.00
MENIDIA MENIDIA JUV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ANGUILLA ROSTRATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FAMILY XANTHIDAE JUV.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SYNGNATHUS FUSCUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.07	1.00	0.29
AMMODONTES AMERICANUS	0.00	0.00	0.00	0.00	1.00	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UROPHYCIS CHUSS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER SPECIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STATION TOTAL AND DATE	2105.00		140.00		141.00		2555.00		32.00		1493.00		339.00	

10 DEC 80

GEAR-40 SEI

OYSTERCR

STATION

OYCN

SPECIES

NUMBER
INDIVSPCT
COMPNUMBER
TOTALPCT
COMP

CRANGON SEPTENSPINOSA
 MENIDIA MENIDIA
 PALAEMONETES VULGARIS
 ANCHOA MITCHILLI
 APELITES QUADRACUS
 CALLINECTES SAPINUS
 GORTOSOMA BOSCI
 FUNDULUS HETEROCILITUS
 FUNDULUS MAJALIS
 MENIDIA BERYLLINA
 CYPRINODON VARIEGATUS
 LUCANIA PARVA
 HIPPOLYTE SP
 MENIDIA MENIDIA JUV
 ANGUILLA ROSTRATA
 FAMILY XANTHIDAE JUV.
 SYNGNATHUS FUSCUS
 AMMODYTES AMERICANUS
 UROPHYCIS CHUSS
 OTHER SPECIES

1531.00 67.62 7330.00 80.82
 423.00 18.68 643.00 7.09
 80.00 3.53 514.00 5.67
 50.00 2.21 50.00 0.55
 98.00 4.33 368.00 4.06
 8.00 0.35 8.00 0.09
 7.00 0.31 15.00 0.17
 15.00 0.66 33.00 0.36
 16.00 0.71 46.00 0.51
 1.00 0.04 2.00 0.02
 1.00 0.04 10.00 0.11
 4.00 0.18 14.00 0.15
 3.00 0.13 5.00 0.06
 2.00 0.09 2.00 0.02
 20.00 0.88 20.00 0.22
 1.00 0.04 1.00 0.01
 0.00 0.00 1.00 0.01
 2.00 0.09 5.00 0.06
 1.00 0.04 1.00 0.01
 1.00 0.04 1.00 0.01

STATION TOTAL AND
DATE TOTAL

2264.00

9069.00

OYSTERCR

GEAR-40 SEI

14 JAN 81

STATION	OYCD		OYCN			
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CRANGON SEPTENSPINOSA	2.00	16.67	177.00	95.16	179.00	90.40
MENIDIA MENIDIA	5.00	41.67	0.00	0.00	5.00	2.53
PELTES QUADRATUS	5.00	41.67	5.00	2.69	10.00	5.05
FUNDULUS HETEROCILITUS	0.00	0.00	3.00	1.61	3.00	1.52
MENIDIA BERYLLINA	0.00	0.00	1.00	0.54	1.00	0.51
STATION TOTAL AND DATE	12.00		186.00		198.00	

OYSTERCR

GEAR-40 SEI

27 JAN 81

STATION		FKRD		FKRN			
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP	
CRANGON SEPTEMSPINOSA	16.00	76.19	300.00	31.32	316.00	32.28	
MENIDIA MENIDIA	2.00	9.52	0.00	0.00	2.00	0.20	
CRANGON SEPTEMSPIN JUV	0.00	0.00	613.00	63.99	613.00	62.61	
PALAEONETES VULGARIS	0.00	0.00	18.00	1.88	18.00	1.84	
APELTES QUADRACUS	1.00	4.76	24.00	2.51	25.00	2.55	
FUNDULUS HETEROCLITUS	0.00	0.00	1.00	0.10	1.00	0.10	
FUNDULUS MAJALIS	0.00	0.00	1.00	0.10	1.00	0.10	
MENIDIA BERYLLINA	2.00	9.52	0.00	0.00	2.00	0.20	
AMMODYTES AMERICANUS	0.00	0.00	1.00	0.10	1.00	0.10	
STATION TOTAL AND DATE	21.00		958.00		979.00		

OYSTERCR

GEAR-40 SEI

12 FEB 81

STATION	CDCN		CDCD			
SPECIES	NUMBER INDIVS	PCT COMP	NUMBER INDIVS	PCT COMP	NUMBER TOTAL	PCT COMP
CRANGON SEPTemspINOSA	1660.00	98.22	42.00	68.85	1702.00	97.20
PALAEONETES VULGARIS	3.00	0.18	1.00	1.64	4.00	0.23
APELTES QUADRACUS	23.00	1.36	10.00	16.39	33.00	1.88
CALLINECTES SAPIDUS	0.00	0.00	4.00	6.56	4.00	0.23
GORIOSOMA BOSCI	1.00	0.06	0.00	0.00	1.00	0.06
FUNDULUS HETEROCLITUS	1.00	0.06	2.00	3.28	3.00	0.17
MENIDIA BERYLLINA	1.00	0.06	2.00	3.28	3.00	0.17
CHASMODES BOSQUIANUS	1.00	0.06	0.00	0.00	1.00	0.06
STATION TOTAL AND DATE	1690.00		61.00		1751.00	

19 FEB 81

GEAR-40 SEI

OYSTERCR

STATION	FKRD			FKRN			DECD			DECN			OYCD			GYCN		
	NUMBER INDIVS	PCT COMP		NUMBER INDIVS	PCT COMP		NUMBER INDIVS	PCT COMP		NUMBER INDIVS	PCT COMP		NUMBER INDIVS	PCT COMP		NUMBER INDIVS	PCT COMP	
CRANGON SEPTEMSPINOSA	34.00	65.67		121.00	26.95		36.00	9.00		421.00	47.25		134.00	35.26		745.00	46.13	
MENIDIA MENIDIA	0.00	0.00		4.00	0.89		49.00	12.25		2.00	0.22		134.00	35.26		457.00	28.30	
CRANGON SEPTEMSPIN JUV	0.00	0.00		291.00	64.81		287.00	71.75		229.00	25.70		0.00	0.00		298.00	18.45	
PALAEONETES VULGARIS	6.00	11.76		2.00	0.45		15.00	3.75		42.00	4.71		4.00	1.05		18.00	1.11	
APETES QUADRACUS	6.00	11.76		0.00	2.00		5.00	1.25		154.00	17.28		7.00	1.84		33.00	2.04	
CALLINECTES SAPIDUS	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		15.00	0.93	
FUNDULUS HETEROCILITIS	5.00	9.80		20.00	4.45		0.00	0.00		20.00	2.24		18.00	4.74		12.00	0.74	
FUNDULUS MAJALIS	0.00	0.00		0.00	0.00		0.00	0.00		20.00	2.24		52.00	13.68		22.00	1.36	
MENIDIA BERYLLINA	0.00	0.00		0.00	0.00		4.00	1.00		0.00	0.00		22.00	5.79		0.00	0.25	
CYPRINOTON VARIEGATUS	0.00	0.00		0.00	0.00		0.00	0.00		2.00	0.22		8.00	2.11		1.00	0.06	
HIPPOLYTE SP	0.00	0.00		0.00	0.00		0.00	0.25		0.00	0.00		0.00	0.00		0.00	0.00	
ANGUILLA ROSTRATA	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		6.00	0.37	
FAMILY XANTHIDAE JUV.	0.00	0.00		0.00	0.45		2.00	0.50		0.00	0.00		0.00	0.00		1.00	0.06	
CHASMOTES ROSQUIANUS	0.00	0.00		0.00	0.00		1.00	0.25		0.00	0.00		0.00	0.00		0.00	0.00	
PSEUDOPLEURONCTES AMERI	0.00	0.00		0.00	0.00		0.00	0.00		1.00	0.11		0.00	0.00		0.00	0.00	
FUNDULUS DIAPHANUS	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		1.00	0.26		0.00	0.00	
GASTEROSTEUS ACULEATUS	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		2.00	0.12	
OTHER SPECIES	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		1.00	0.06	
STATION TOTAL AND DATE	51.00			449.00			400.00			891.00			380.00			1615.00		
																3786.00		