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Fish, Megainvertebrates, and Associated Hydrographic Observations Collected in Newark Bay, New Jersey, during May 1993 - April 1994

by

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX TABLES

LIST OF APPENDIX TABLES (Continued)

ABSTRACT

Summary tabulations and illustrations for 56 species representing 37 families of fish and megainvertebrates as well as associated environmental observations are given for 299 8.5-m otter trawl tows, 105 4.9-m otter trawl tows, and 92 experimental gill net sets occupied in Newark Bay, New Jersey from May 1993 to April 1994.

INTRODUCTION

Geographic Setting

Newark Bay, part of the Hudson-Raritan Estuary system, lies below the confluence of the Hackensack and Passaic Rivers, at the heart of one of the World's busiest ports and largest metropolitan areas (Figure 1). The environs of Newark Bay are an evolving monument to the industrial revolution. To the east lies the city of Bayonne, once one of the major oil refining centers at the eastern terminus of many pipeline systems; now with a diversified economy including the manufacture of chemicals, paint, plastics, wearing apparel, and food products. The western shore is dominated by either containership docks, or rail and truck loading facilities, or areas filled and/or paved with concrete, asphalt, or other impervious surfaces.

Geologically, the Newark Basin is contiguous with the Coastal Plain, which in this area is the surface of Pleistocene glacial deposits overlying Cenozoic sediments. Newark Bay is immediately north of the terminal moraine of the last glaciation. The present sediments of the Bay are predominantly fine-grained. The sediment facies patterns reflect river input of sediment at the north end as well as tidal interchange with the Lower Bay and Upper Bay of New York Harbor at its southern end. There is sand only at the mouth of the Hackensack. The central part of the bay is underlain with sandy clayey silts which grade southward to the clayey silty sand and sandy clayey silt at the connection to Arthur Kill to the south and the Kill Van Kull to the east. Coarser sediments at the southern portion of Newark Bay reflect tidal current activity at the junction of the three water bodies. Newark Bay has been extensively modified by dredging and filling since 1855.

Objectives

The objectives of this project, relative to the construction of a 26-mile 42' flood control tunnel between upper New Jersey and Newark Bay, were to assess, describe, and characterize the Newark Bay ecosystem based on: (1) one year of intense field sampling (e.g., multi-vessel, multi-gear, life stage specific, etc.); (2) faunal distribution and relative abundance of fish and megainvertebrates (e.g., catch, size-age, species composition, etc.); and (3) hydrographic profiles of temperature, salinity, and dissolved oxygen. Also, upon completion, the National Marine Fisheries Service (NMFS) was required to provide scientific interactions with other investigators relative to the *What If* phase of the flood control project (e.g., 10-, 25-, 100-year flood conditions, etc.). In addition, as necessary, NMFS was to evaluate results based on one year of data collection and make recommendations for refinement and optimization of survey design and/or protocols for subsequent research efforts (e.g. sampling elements, frequency of sampling, etc.). Herein we present those data applicable to the fish and megainvertebrates and the associated hydrographic information collected between May 1993 and April 1994.

STATION SELECTION

Channel trawl stations were allocated within the constraint of 10 tows per day for two days per sampling occasion. This constraint was both logistical as well as an educated estimate of what would be sufficient, yet would not constitute over sampling, i.e., trawling is, in most cases, considered sampling without replacement. To locate trawlable bottom, test trawls were made in March and May 1993. These tests indicated conditions that precluded trawling up into the Passaic River, in the Newark and Elizabeth reaches, and in the channel south of Port Elizabeth (Figure 1). The trawlable channel segment allowed for a transect from the Hackensack River north of Kearny Point southwesterly to the southern end of Port Elizabeth. At a trawling speed of approximately 3.7 km/hr (2 kts) the length of a tow was approximately 0.3 km for a five minute tow. This allowed stringing nine tows the length of the channel without significant overlap (Figure 2). The channel widens off Port Elizabeth so tows were made on both the east and west sides yielding a daily total of ten. These tows were replicated on the second day.

Shallow water trawl stations were selected to cover most of the area on the flats east of the channel within the logistical constraint of seven trawl tows (Figure 2). Seven gill net stations/strata comprised a similar series on the flats six east and one south of the main channel (Figure 3).

FIELD COLLECTIONS

Channel Sampling

Collections of fish and megainvertebrates in shipping channels were accomplished at predetermined stations (Figure 2) from the 19.8-m (65-ft) NOAA R\V *Gloria Michelle*. The otter trawl deployed had an 8.5-m (28-ft) headrope and a 10.4-m (34-ft) footrope. The body of the trawl was constructed of 102-mm (4-inch) stretch mesh 21-thread knotted nylon. The cod end was constructed of 45-mm (1.75-inch) stretch mesh 30-thread knotted nylon and lined with 35-mm (1.375-inch) stretch mesh 18-thread knotted nylon. Three 203-mm (8-inch) diameter plastic trawl floats were equally spaced along the headrope with a sweepline constructed of 8-mm (0.313-inches) chain attached to the footrope at intervals of ≈356-mm (14-inches). Trawl doors weighing ≈36.3-kg (80-lb) were used to spread and hold the net open.

The 8.5-m trawl was towed for 5 minutes at ≈3.7 km/hr (2 kts) at each sampling location. If possible, trawl tows were made along isobaths to minimize sudden depth changes. Although tow time was kept constant, direction and distance of each tow were affected by current, tide, wind, and in some cases by the need to shift heading to avoid commercial

vessel traffic. LORAN C coordinates or GPS positions, latitude, longitude, depth, and time were recorded at the beginning and end of each trawl tow.

After each tow, the trawl was retrieved and emptied on the deck. All fish and megainvertebrates were separated and identified. All specimens of each species were collectively weighed to the nearest 0.1 kg and individually measured to the nearest whole cm as follows: fish from the snout to the end of the middle caudal ray (i.e., either fork or total length depending on species); bivalves across the widest point of the shell; and crabs across the widest point of the carapace. All specimens of each species were usually measured except when large catches required subsampling. In such cases, an expansion factor (weight of total catch ÷ weight of subsample) was applied to the number and length frequency of the subsample to estimate the number and length frequency of the total catch. All data were recorded at sea on forms designed for subsequent inclusion into a universal data management system which incorporates sorting, listing, graphical, and statistical systems to simplify data recall, analysis, and illustration.

Hydrographic data were taken at channel stations using a Hydrolab Corporation *Hydrolab System®*. The *Hydrolab System®* is comprised of a *Surveyor 3 Display Logger®* and a *H_20 Multiprobe®* fitted with sensors for dissolved oxygen, depth, salinity, temperature, and after fitted with a turbidity probe. Calibration of the instruments occurred prior to each sampling segment using standard procedures established by the Hydrolab Corporation.

A hydrocast was taken at the beginning and end of every channel trawl station. The contiguity of the trawl stations/strata provided a certain economy; i.e., a single hydrocast could often be used to characterize either the end or starting points of up to three different stations/strata. Depth (m), temperature (°C), salinity (ppt = parts-per-thousand) and dissolved oxygen (DO = mg/l) were measured. A turbidity (NTU = *Nephelometric Turbidity Units*) sensor was added in 1994.

At each hydrocast the boat was brought to a stop relative to drift and idled. The *H_20 Multiprobe®* was lowered into the water by hand and allowed to equilibrate. An attempt was made to take a measurement at the surface (0.1 m), at each whole meter, and with the probe just touching bottom. Because of wave action, boat roll, and human error, we could not always record on the whole meter. Occasionally the hydrocasts were interrupted when the boat drifted into shoal water or commercial traffic was encountered. The hydrocast was either redone completely or resumed from the point (depth) of interruption after the boat was repositioned. Data were stored in the internal memory of the *Surveyor 3 Display Logger®* and downloaded into onshore data management systems at the end of the day. LORAN C coordinates or GPS positions, latitude, longitude, depth, and time were recorded at the beginning of each hydrocast.

Shallow Water Sampling

Sampling for fish and megainvertebrates in the shallow undredged areas adjacent to the main shipping channel was conducted from a 7.3-m (24-ft) motor launch during the same periods the R\V *Gloria Michelle* sampled the shipping channels. Both an otter trawl and experimental gill nets were deployed in predetermined stations/strata (Figures 2 and 3). The otter trawl had a 4.9-m (16-foot) headrope and a 7-m (23-foot) footrope and was constructed of 35-mm (1.375-inch) No. 9 stretch mesh Dacron with a 6-mm (1/4 inch) mesh cod end liner. Cork floats were equally spaced along the head rope with a sweep line constructed of 3-mm (0.125-inch) chain. Trawl doors weighing ≈6.8-kg (15-lb) were used to spread and hold the net open.

The 4.9-m otter trawl was set out and towed for five minutes at ≈3.7 km/hr (2 kts) after a 15.2-m (50-ft) scope was run out on the trawl warps. Tows were generally set against the tide with direction and distance variations caused by currents and winds After hand hauled retrieval the net was emptied into buckets. The fish and megainvertebrates samples were sorted, measured, and weighed and data recorded using the same techniques as on the larger vessel. LORAN C coordinates, latitude, longitude, depth, and time were recorded at the beginning of each trawl tow.

The 45.7-m (150-foot) experimental gill nets were comprised of six joined panels of graded-mesh monofilament netting. The panels were constructed of the following: No. 3 13-mm (0.50-inch), No. 6 25-mm (1-inch), No. 6 35-mm (1.375-inch), No. 8 51-mm (2 inch), No. 8 76-mm (3-inch), and No. 8 102-mm (4-inch) line and stretch mesh sizes, respectively. All panels were 7.6-m (25-ft) long and 2.4-m (8-ft) deep coastal rigged with evenly spaced cork floats along the headrope and lead weights along the footrope. Each end of the head and footropes were clipped to 10-mm (3/8 inch) rope attached to an anchor with a marked trip line.

Due to lack of storage space on the 7.3-m vessel the gill net sampling was performed over two days with half the stations sampled one day and the remaining stations sampled the next. LORAN C coordinates, latitude, longitude, depth, and time were recorded at the set out and retrieval of each gill net set. Set direction of the gill nets was determined by the vessel captain and varied according to wind and current direction, sea state, location of known bottom obstructions, and stations/strata boundaries. The gill nets were retrieved from the locations the following day and fish and megainvertebrates sorted by species and panel mesh size. Lengths and weights of species were taken and recorded using the same aforementioned standard procedures.

Hydrographic parameters were recorded at the surface and bottom at the start and end of each 4.9-m trawl station. Surface and bottom water hydrographic recordings were taken at gill net locations at the time the net was set and again upon retrieval. Until July 1993

a *Yellow Springs*® temperature-conductivity meter was used. Subsequently, a Hydrolab *Surveyor 3*® equipped with a *H20 Multiprobe*® was utilized.

ANALYSIS TECHNIQUES

Catch Analysis

All data relative to otter trawl tows, experimental gill net, and hydrocasts collected during the survey were recorded directly on data processing forms aboard ship. These data were subsequently transferred to and incorporated into data management, mapping, and statistical systems to simplify data recall, presentation, and analysis. Appropriate tables, illustrations, and appendices are presented by sampling type, i.e., 8.5- and 4.9-m otter trawls and, experimental gill. It should be noted, even though extensive data summaries are presented in this report, not all data collected during the survey are reported herein; however, all data are available upon request.

Age Composition Analysis

Length frequency histograms were individually constructed for the most common species of fish and megainvertebrates collected in the 8.5-m otter trawl tows. The 8.5-m trawl data base was used since it represented all species and was the most comprehensive relative to consistency and numbers of specimens measured. These frequencies were compared to existing published literature pertinent to age-at-length to estimate the age composition of the species collected during the survey.

Ecological Indices Analysis

In the simplest of terms, species diversity is composed of two distinct components: (1) species richness, i.e., number of species in the community; and (2) species evenness, i.e., how the abundance data is distributed among the species. Ecological indices of species diversity, evenness, and richness were calculated for the 8.5-m otter trawl data base as given in Ludwig and Reynolds (1988).

The number of species per sampling interval was used as a measure of species richness and the *Modified Hill's Evenness Index* as a measure of species evenness. This measure of evenness is an index which approaches zero as one species becomes more and more dominant. Functions of *Shannon's Index* (N1) and *Simpson's Index* (N2) were used as measures of species diversity. These indices are recommended as they are relatively unbiased and are expressed in readily interpretable species units. Index N1 is a measure of abundant species; and N2 is a measure of very abundant species. N1 is calculated as exp(H'); where H' (*Shannon's Index*) = $-\Sigma p_i \ln p_i$ and p_i is the fraction of the number of

individuals of species *I* in the sample. N2 is calculated as λ^{-1}; where λ (*Simpson's Index*) = Σp_i^2. Species evenness expressed as the *Modified Hill's Evenness Index* is calculated as (N2-1)/(N1-1).

Hydrological Preference Analysis

For each of the 10 most abundant species occurring in the 8.5-m otter trawl data base, we extracted the monthly minima, maxima, and averages of bottom temperature, salinity, and dissolved oxygen for tows in which each species was captured. These same variables were also listed and illustrated for all 8.5-m otter trawl tows; i.e., all bottom measurements.

RESULTS AND DISCUSSION

Catch Analysis

A total of 56 species representing 37 families of fish and megainvertebrates were identified from 299 8.5-m otter trawl tows, 105 4.9-m otter trawl tows, and 92 experimental gill net sets occupied in Newark Bay, New Jersey from May 1993 to April 1994 (Table 1). Station information including location, catch of finfish and megainvertebrates, and bottom hydrographic observations are given in Appendix Tables A, B, and C for 8.5-m otter trawl tows, 4.9-m otter trawl tows, and experimental gill net sets, respectively.

Fifty-one species of fish and megainvertebrates representing 33 families, which totaled 33,503 individuals weighing 2,498.3 kg, were identified from the 8.5-m otter trawl tows. Tables 2 and 3 give monthly catch, in number and weight respectively, of fish and megainvertebrates collected. Figure 4 illustrates the monthly combined catch, in number and weight, of fish and megainvertebrates collected with the 8.5-m otter trawl. A phylogenetic listing of fish and megainvertebrates collected with this gear type, including the number caught, weight, and size range by individual station, is given in Appendix Table D.

The 10 most numerically dominant species collected in the 8.5-m otter trawl were: striped bass, *Morone saxatilis* (28% of total number, 67% of all trawls); Atlantic tomcod, *Microgadus tomcod* (13%, 70%); male blue crab, *Callinectes sapidus* (12%, 80 %); white perch, *Morone americana* (11%, 51%); female blue crab, *Callinectes sapidus* (10%, 64%); weakfish, *Cynoscion regalis*, (8%, 35%); winter flounder, *Pleuronectes americanus* (5%, 82%); spotted hake, *Urophycis regius* (4%, 41%); rainbow smelt, *Osmerus mordax* (1%, 20%); and grubby, *Myoxocephalus aenaeus* (1%, 39 %). These species dominated catches throughout the study, accounting for greater than 94% and

92% of the total number and weight, respectively, of all species collected. Figure 5 and 6 illustrate the monthly individual catch of the 10 top species, in number and weight, of fish and megainvertebrates collected. And, Figures 7 and 8 illustrates the monthly percent contribution, based on number and weight respectively, of the 10 top species of fish and megainvertebrates collected with the 8.5-m otter trawl.

Thirty species of fish and megainvertebrates representing 19 families, which totaled 2,978 individuals weighing 64.9 kg, were identified from the 4.9-m otter trawl tows. Tables 4 and 5 give monthly catch, in number and weight respectively, of fish and megainvertebrates collected. A phylogenetic listing of fish and megainvertebrates collected with this gear type, including the number caught, weight, and size range by individual station, is given in Appendix Table E.

The 10 most numerically dominant species collected in the 4.9-m otter trawl were: bay anchovy, *Anchoa mitchilli* (47% of total number, 34% of all trawls); Atlantic herring, *Clupea harengus* (22%, 10%); Atlantic tomcod (10%, 18%); male blue crab (5%, 35%); winter flounder (5%, 45%); striped bass (4%, 30%); female blue crab (2%, 24%); Atlantic silverside, *Menida menida* (1%, 12%); summer flounder, *Paralichthys dentatus* (1%, 15%); and bluefish, *Pomatomus saltatrix* (1%, 10%). These species dominated catches throughout the study, accounting for greater than 97% and 97% of the total number and weight, respectively, of all species collected.

Sixteen species of fish and megainvertebrates representing 11 families, which totaled 1,154 individuals weighing 408.1 kg, were identified from the experimental gill net sets. Tables 6 and 7 give monthly catch, in number and weight respectively, of fish and megainvertebrates collected. A phylogenetic listing of fish and megainvertebrates collected with experimental gill nets, including the number caught, weight, and size range by individual station, is given in Appendix Table F.

The 10 most numerically dominant species collected in the experimental gill nets were: Atlantic menhaden, *Brevoortia tyrannus* (42% of total number, 36% of all gill sets); striped bass (19%, 43%); male blue crab (13%, 40%); bluefish (6%, 22%); blueback herring, *Alosa aestivalis* (6%, 8%); female blue crab (4%, 18%); Atlantic herring (4%, 11%); weakfish (3%, 15%); alewife, *Alosa pseudoharengus* (1%, 5%); and white perch, *Morone americana* (1%, 5%). These species dominated catches throughout the study, accounting for greater than 98% and 99% of the total number and weight, respectively, of all species collected.

Age Composition Analysis

Age-at-length for the most common species collected during the survey was estimated from published sources as compared to collected length frequencies and are summarized

as follows: An age and growth study of the gizzard shad by Bodola (1966) suggests that only yearlings were represented in our catches (Figure 9). Murawski and Cole's (1978) growth study on rainbow smelt, suggests one-year olds dominated our catches; however, young-of-the-year (YOY) specimens also appeared to be represented in April 1994 (Figure 10). Based on Will and Houston (1988), Atlantic tomcod caught during the survey progressed from YOY through one-old individuals; however, some two- and three-year olds were also present (Figure 11). Growth data from Barans (1972) suggests that the spotted hake captured during the survey were dominated by one-year olds and, to a lesser degree, by two-year olds (Figure 12). Data on grubby size-at-age given by Lazzari *et al.* (1989) strongly indicates that one- and two-year old fish made up the majority of our catch (Figure 13). Data given by Bath and O'Conner (1982) on the age and growth of white perch, suggests that six age groups (0-VI) were represented in our catches, with yearlings and one-year olds dominating (Figure 14). According to age and growth analysis done on striped bass by Mansueti (1961), ages I-V were present in our catches, with the majority being yearlings, two-, and three-year olds with some older ages mixed in particularly during the summer months (Figure 15). Size-at-age information presently available for weakfish (Bigelow and Schroeder 1953, and Wilk 1979) indicate that catches during the survey were made up of primarily yearlings from May to July 1993 and YOYs from August to December 1993 (Figure 16). The results of research on the age and growth of summer flounder by Pentilla *et al.* (1989) suggest age one- and two-year old fish dominated our catches, with smaller numbers of age three- through five-year olds also present (Figure 17). According to Lux (1973) and Pentilla *et al.* (1989), winter flounder, caught during the survey were represented primarily by one- and two-year olds; however, some three-year olds were also present (Figure 18).

Blue crabs in Newark Bay during summer probably belonged to two year classes (Figures 19 and 20). In females of June 1993, a mode of 11 and another at 15 cm which represent yearlings and 2-year-olds. In October and November another mode at 3 cm of YOYs appeared. In Chesapeake Bay, spring-spawned, fast-growing females are mature (>12 cm) at age one, while later spawned or slower-growing individuals reach that size at age two (Van Engel 1958). Since blue crabs grow more slowly in northern portions of their range due to lower temperatures (Orth and Van Montfrans 1990), New Jersey blue crabs most likely conform to the second pattern. Mature females do not molt again; they leave Newark Bay, spawn at higher salinities and die there. Males grow at the same rate as females, except that they molt after attaining maturity, and thus, grow larger.

Ecological Indices Analysis

Values of ecological indices, as illustrated in Figure 21, are not strictly comparable between ecosystems for two reasons: (1) each ecosystem has its own intrinsic signature; and (2) sampling strategies are rarely identical between studies. Species richness is a function of sampling effort and the susceptibility of extant species to the collection gear.

Although it is not possible to compare this ecosystem to others, these data provide baseline observations which can be used to identify and quantify subsequent changes in Newark Bay.

Hydrological Preference Analysis

The monthly minimum, maximum, and mean values of hydrologic variables are plotted in Figure 22. Only values for salinity show very much variability, this being due to the longitudinal salinity gradient caused by the riverine input of fresh water at the northern end of Newark Bay (Figure 1). The inverse dependence of oxygen solubility on temperature is clearly seen. Because of mixing due primarily to tidally driven turbulence, no thermocline was noticed during the course of the study.

Hydrographic ranges within which the ten most abundant species were found are listed in Appendix Table G. Most species, whether resident or transient, are found throughout the extant range of hydrographic conditions. The notable exception is white perch. This species was never collected in water with less than 6.23 mg/l of dissolved oxygen.

REFERENCES

Bigelow, H.B. and W.C. Schroeder. 1953. Fishes of the Gulf of Maine. U.S. Fish Wildl. Serv., Fish. Bull. 53; 577 p.

Barans, C.A. 1972. Spotted hake, *Urophycis regius*, of the York River and lower Chesapeake Bay. Chesapeake Sci. 13: 59-62.

Bodola, A. 1966. Life history of the gizzard shad, *Dorosoma cepianum* (Le Sueur), in western Lake Erie. U.S. Fish Wildl. Serv., Fish. Bull. 65(2): 391-425.

Cerrato, R.M. 1986. The benthic fauna of Newark Bay. Spec. Rpt. 68, Marine Sciences Research Center, State Univ. of N. Y., Stony Brook, N. Y.; 105 p.

Coch, N.K. 1986. Sediment characteristics and facies distributions in the Hudson system. pp. 109-129 in: N. K. Coch and H. J. Bokuniewicz, eds. Sedimentation in the Hudson system: the Hudson River and contiguous waterways. Special Issue, Northeastern Geology 8: 94-170.

Gosner, K.L. 1978. A field guide to the Atlantic seashore. Houghton Mifflin Co., Boston, Massachusetts; 329 p.

Lazzari, M.A., K.W. Able, and M.P. Fahay. 1989. Life history and food habits of the grubby, *Myoxocephalus aeneus* (Cottidae), in a Cape Cod Estuary. Copeia 1989(1): 7-12.

Ludwig, J. A., and J. F. Reynolds. 1988. Statistical Ecology: A primer on methods and computing. John Wiley & Sons, New York; 337 p.

Lux, F.E. 1973. Age and growth of the winter flounder, *Pseudopleuronectes americanus*, on Georges Bank. Fish. Bull. U.S. 71: 505-512.

Murawski, S.A., and C.F. Cole. 1978. Population dynamics of anadromous rainbow smelt *Osmerus mordax*, in a Massachusetts River System. Trans. Am. Fish. Soc. 107(4): 535-542.

Nichy, F.E. 1969. Growth patterns on otoliths from young silver hake, *Merluccius bilinearis* (Mitch.). ICNAF Res. Bull. 6: 107-117.

Orth, R. J., and J. Van Montfrans. 1990. Utilization of marsh and seagrass habitats by early stages of *Callinectes sapidus*: a latitudinal perspective. Bull. Mar. Sci. 46: 126-144.

Penttila, J.A., G.A. Nelson, and J.M. Burnett, III. 1989. Guidelines for estimating lengths at age for 18 Northwest Atlantic finfish and shellfish species. U.S. Dep. Commer., NOAA, NMFS, NOAA Tech. Memo. NMFS F/NEC-66. 39 p.

Robins, C.R., R.M. Bailey, C.E. Bond, J.R. Brooker, E.A. Lachner, R.N. Lea, and W.B. Scott. 1991. Common and scientific names of fishes from the United States and Canada. Amer. Fish. Soc., Special Publication 20, Bethesda, Maryland, 183.

Turgeon, D.D., A.E. Bogan, E.V. Coan, W.K. Emerson, W.G. Lyons, W.L. Pratt, C.F.E. Roper, A. Scheltema, F.G. Thompson, and J.D. Williams. 1988. Common and scientific names of aquatic invertebrates from the United States and Canada: Mollusks. Amer. Fish. Soc., Special Publication 16, Bethesda, Maryland; 277 p.

Van Engel, W. A. 1958. The blue crab and its fishery in Chesapeake Bay. Part I - Reproduction, early development, growth, and migration. Commer. Fish. Rev. 20: 6-17.

Wilk, S.J. 1979. Biological and Fisheries Data on Weakfish, *Cynoscion regalis* (Bloch and Schneider). U.S. Dep. Commer., NOAA, NMFS, NEFC, Sandy Hook Laboratory, Tech. Ser. Rep. No. 21, 49 p.

Will, R., and L.J. Houston. 1988. Fish distribution survey of Newark Bay, New Jersey, May 1987-April 1988. pp. 428-445. In: C.L. Smith, ed. Estuarine Research in the 1980's. Proc. Hudson River Environmental Soc., 7th Symposium on Hudson River Ecology.

Williams, A.B., L.G. Abele, D.L. Felder, H.H. Hobbs, Jr., R.B. Manning, P.A. McLaughlin, and I.P. Farfante. 1989. Common and Scientific Names of Aquatic Invertebrates from the United States and Canada: Decapod Crustaceans. Amer. Fish. Soc. Spec. Pub. 17; 77 p.

Table 1

Phylogenetic listing of all species of fish and megainvertebrates collected in Newark Bay, NJ between May 1993 and April 1994. Occurrence by gear type follows each species, i.e., O = 8.5-m otter trawl, S = 4.9-m otter trawl, and G = experimental gill net.

FISH

RAJIDAE
- Little Skate *Raja erinacea* (O)

ACIPENSERIDAE
- Atlantic Sturgeon *Acipenser oxyrhynchus* (O)

ANGUILLIDAE
- American Eel *Anguilla rostrata* (O)

CONGRIDAE
- Conger Eel *Congridae sp.* (O)

CLUPEIDAE
- Blueback Herring *Alosa aestivalis* (O S G)
- Alewife *Alosa pseudoharengus* (O S G)
- American Shad *Alosa sapidissima* (O S G)
- Atlantic Menhaden *Brevoortia tyrannus* (O G)
- Atlantic Herring *Clupea harengus* (O G)
- Gizzard Shad *Dorosoma cepedianum* (O)

ENGRAULIDAE
- Bay Anchovy *Anchoa mitchilli* (O S)

OSMERIDAE
- Rainbow Smelt *Osmerus mordax* (O S)

GADIDAE
- Atlantic Tomcod *Microgadus tomcod* (O S G)
- Red Hake *Urophycis chuss* (O)
- Spotted Hake *Urophycis regia* (O S)

CYPRINODONTIDAE
- Striped Killifish *Fundulus Majalis* (O)

ATHERINIDAE
- Atlantic Silverside *Menidia menidia* (S)

GASTEROSTEIDAE
- Threespine Stickleback *Gasterosteus aculeatus* (O S)

SYNGNATHIDAE
- Lined Seahorse *Hippocampus erectus* (S)
- Northern Pipefish *Syngnathus fuscus* (O S G)

TRIGLIDAE
- Northern Searobin *Prionotus carolinus* (O S)
- Striped Searobin *Prionotus evolans* (O S)

COTTIDAE
- Grubby *Myoxocephalus aenaeus* (O S)

PERCICHTHYIDAE
- White Perch *Morone americana* (O S G)
- Striped Bass *Morone saxatilis* (O S G)

POMATOMIDAE
- Bluefish *Pomatomus saltatrix* (O S G)

CARANIGIDAE
- Crevalle Jack *Caranx hippos* (O G)

SPARIDAE
- Scup *Stenotomus chrysops* (O)

SCIANIDAE
- Silver Perch *Bairdiella chrysoura* (O)
- Weakfish *Cynoscion regalis* (O S G)
- Spot *Leiostomus xanthurus* (O S)
- Northern Kingfish *Menticirrhus saxatilis* (O S)
- Atlantic Croaker *Micropogonias undulatus* (O)

LIBRIDAE
- Tautog *Tautoga onitis* (O)
- Cunner *Tautogolabrus adspersus* (O)

PHOLIDAE
- Rock Gunnel *Pholis gunnellus* (O)

GOBIIDAE
- Goby *Gobiosoma sp.* (S)

STROMATEIDAE
- Butterfish *Peprilus triacanthus* (O S G)

SCOMBRIDAE
- Chub mackerel *Scomber japonicus* (G)

BOTHIDAE
- Smallmouth Flounder *Etropus microstomus* (O S)
- Summer Flounder *Paralichthys dentatus* (O S G)
- Fourspot Flounder *Paralichthys oblongus* (O)
- Windowpane *Scophthalmus aquosus* (O S)

PLEURONECTIDAE
- Winter Flounder *Pleuronectes americanus* (O S)

SOLEIDAE
- Hogchoker *Trinectes maculatus* (O)

BALISTIDAE
- Planehead Filefish *Monacanthus hispidus* (O)

TETRAODONTIDAE
- Northern Puffer *Sphoeroides maculatus* (O S)

Table 1. (Continued)

MEGAINVERTEBRATES

OSTREIDAE
American Oyster *Crassostrea virginica* (S)

MYIDAE
Softshell Clam *Mya arenaria* (O)

LOLIGINIDAE
Longfin Squid *Loligo pealeii* (O)

LIMULIDAE
Horseshoe Crab *Limulus polyphemus* (O)

SQUILLIDAE
Mantis Shrimp *Squilla empusa* (O)

MAJIDAE
Spider Crab Uncl. *Libinia emarginata* (O)

CANCRIDAE
Atlantic Rock Crab Uncl. *Cancer irroratus* (O)
Rock Crab Male *Cancer irroratus* (O)

PORTUNIDAE
Blue Crab Male *Callinectes sapidus* (O S G)
Blue Crab Female *Callinectes sapidus* (O S G)
Lady Crab Female *Ovalipes ocellatus* (O)

Table 2

Monthly catch in number of fish and megainvertebrates collected with an 8.5-m otter trawl fished in Newark Bay, New Jersey between May 1993 and April 1994. A dash (-) indicates no catch , U = unclassified to sex, M = male, and F = female.

Common Name	Scientific Name	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Little Skate	*Raja erinacea*	-	-	-	-	-	-	1	-	-	-	-	1
Atlantic Sturgeon	*Acipenser oxyrhynchus*	-	1	-	-	-	-	-	-	-	-	-	-
American Eel	*Anguilla rostrata*	1	1	-	1	-	-	2	1	2	1	-	1
Conger Eel	*Congridae sp.*	-	-	-	-	-	-	-	-	1	-	-	-
Blueback Herring	*Alosa aestivalis*	-	-	-	-	-	-	-	1	-	-	-	1
Alewife	*Alosa pseudoharengus*	1	2	31	3	3	31	161	2	9	-	-	9
American Shad	*Alosa sapidissima*	-	1	-	-	-	-	5	-	-	-	-	2
Atlantic Menhaden	*Brevoortia tyrannus*	2	8	68	7	2	2	2	-	-	-	-	-
Atlantic Herring	*Clupea harengus*	-	3	-	-	-	-	2	-	-	-	1	1
Gizzard Shad	*Dorosoma cepedianum*	-	-	-	2	-	13	196	18	47	1	-	-
Bay Anchovy	*Anchoa mitchilli*	-	16	282	11	8	2	5	1	-	-	-	-
Rainbow Smelt	*Osmerus mordax*	1	-	-	-	-	-	-	5	313	25	27	2
Atlantic Tomcod	*Microgadus tomcod*	167	852	1226	684	15	91	276	110	9	8	7	102
Red Hake	*Urophycis chuss*	45	33	1	-	-	-	-	13	3	-	1	3
Spotted Hake	*Urophycis regia*	288	450	31	-	-	17	20	15	-	-	-	26
Striped Killifish	*Fundulus majalis*	-	-	-	-	-	-	-	-	1	1	-	-
Threespine Stickleback	*Gasterosteus aculeatus*	-	-	-	-	-	-	-	-	1	6	11	-
Northern Pipefish	*Syngnathus fuscus*	-	-	-	-	1	-	-	-	-	-	-	1
Northern Searobin	*Prionotus carolinus*	-	9	7	10	-	2	-	-	-	-	-	-
Striped Searobin	*Prionotus evolans*	2	5	3	7	44	25	7	-	-	-	-	-
Grubby	*Myoxocephalus aenaeus*	13	28	13	8	-	4	5	23	66	44	54	13
White Perch	*Morone americana*	3	1	-	-	-	1	507	264	244	737	666	354
Striped Bass	*Morone saxatilis*	22	22	323	23	-	41	1742	181	215	1021	1844	1006
Bluefish	*Pomatomus saltatrix*	-	-	-	1	2	2	-	-	-	-	-	-
Crevalle Jack	*Caranx hippos*	-	-	-	-	1	-	-	-	-	-	-	-

Table 2 (Continued)

Common Name	Scientific Name	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Scup	*Stenotomus chrysops*	1	1	-	-	-	1	-	-	-	-	-	-
Silver Perch	*Bairdiella chrysoura*	-	-	-	-	-	8	13	-	-	-	-	-
Weakfish	*Cynoscion regalis*	5	14	9	804	1128	735	104	4	-	-	-	-
Spot	*Leiostomus xanthurus*	-	-	-	2	2	1	-	-	-	-	-	-
Northern Kingfish	*Menticirrhus saxatilis*	-	-	-	1	-	-	-	-	-	-	-	-
Atlantic Croaker	*Micropogonias undulatus*	-	-	-	7	3	4	5	3	-	-	-	-
Tautog	*Tautoga onitis*	-	-	-	1	-	-	3	1	-	-	-	1
Cunner	*Tautogolabrus adspersus*	-	1	-	-	-	-	-	-	1	-	2	2
Rock Gunnel	*Pholis gunnellus*	-	-	-	-	-	-	-	-	-	-	-	1
Butterfish	*Peprilus triacanthus*	-	-	-	42	18	19	1	-	-	-	-	-
Smallmouth Flounder	*Etropus microstomus*	-	-	-	-	-	-	2	2	-	-	-	1
Summer Flounder	*Paralichthys dentatus*	28	52	80	40	10	1	-	-	-	-	-	8
Fourspot Flounder	*Paralichthys oblongus*	-	1	-	-	-	-	-	-	-	-	-	-
Windowpane	*Scophthalmus aquosus*	1	2	9	4	2	19	19	5	1	2	4	10
Winter Flounder	*Pleuronectes americanus*	17	59	161	271	53	108	365	164	51	33	57	69
Hogchoker	*Trinectes maculatus*	1	2	1	2	7	-	-	2	-	-	1	1
Planehead Filefish	*Monacanthus hispidus*	-	-	-	-	-	1	-	-	-	-	-	-
Northern Puffer	*Sphoeroides maculatus*	-	-	-	1	-	-	-	-	-	-	-	-
Soft Clam	*Mya arenaria*	-	-	-	-	-	-	4	-	2	5	5	29
Longfin Squid	*Loligo pealei*	-	-	1	-	-	-	-	-	-	-	-	-
Horseshoe Crab (U)	*Limulus polyphemus*	1	1	-	1	-	1	-	-	2	1	-	1
Mantis Shrimp	*Squilla empusa*	-	-	-	-	2	11	2	-	6	-	-	-
Spider Crab (U)	*Libinia emarginata*	-	-	-	-	-	-	-	-	-	1	1	-
Atlantic Rock Crab (U)	*Cancer irroratus*	-	-	-	-	-	-	-	1	-	-	-	-
Atlantic Rock Crab (M)	*Cancer irroratus*	-	1	-	-	-	-	-	-	3	-	1	-
Lady Crab (F)	*Ovalipes ocellatus*	-	-	-	-	-	-	-	1	-	-	-	-
Blue Crab (M)	*Callinectes sapidus*	336	876	894	163	171	368	100	69	30	54	75	23
Blue Crab (F)	*Callinectes sapidus*	228	647	1093	147	199	62	64	32	13	9	17	16

Table 3

Monthly catch in weight (kg) of fish and megainvertebrates collected with an 8.5-m otter trawl fished in Newark Bay, New Jersey between May 1993 and April 1994. A dash (-) indicates no catch , U = Unclassified to sex, M = male, and F = female.

Common Name	Scientific Name	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Little Skate	*Raja erinacea*	-	-	-	-	-	-	0.60	-	-	-	-	0.38
Atlantic Sturgeon	*Acipenser oxyrhynchus*	-	0.70	-	-	-	-	-	-	-	-	-	-
American Eel	*Anguilla rostrata*	0.60	0.45	-	0.30	-	-	0.70	0.60	0.30	0.25	-	0.15
Conger Eel	*Congridae sp.*	-	-	-	-	-	-	-	-	0.05	-	-	-
Blueback Herring	*Alosa aestivalis*	-	-	-	-	-	-	-	0.05	-	-	-	0.05
Alewife	*Alosa pseudoharengus*	0.10	0.10	1.30	0.25	0.20	1.60	7.25	0.10	0.30	-	-	0.35
American Shad	*Alosa sapidissima*	-	0.50	-	-	-	-	0.25	-	-	-	-	0.10
Atlantic Menhaden	*Brevoortia tyrannus*	0.55	2.13	13.90	1.50	0.85	0.70	0.50	-	-	-	-	-
Atlantic Herring	*Clupea harengus*	-	0.05	-	-	-	-	0.50	-	-	-	0.30	0.05
Gizzard Shad	*Dorosoma cepedianum*	-	-	-	0.25	-	0.70	7.50	1.00	3.30	0.05	-	-
Bay Anchovy	*Anchoa mitchilli*	-	0.33	1.05	0.30	0.25	0.05	0.20	0.05	-	-	-	-
Rainbow Smelt	*Osmerus mordax*	0.05	-	-	-	-	-	-	0.15	4.05	0.65	0.60	0.08
Atlantic Tomcod	*Microgadus tomcod*	8.40	6.83	15.75	16.15	0.40	5.75	31.95	10.95	0.90	0.65	1.30	9.88
Red Hake	*Urophycis chuss*	1.35	0.75	0.05	-	-	-	-	0.50	0.15	-	0.05	0.10
Spotted Hake	*Urophycis regia*	7.75	15.43	2.65	-	-	2.75	1.50	0.50	-	-	-	0.73
Striped Killifish	*Fundulus majalis*	-	-	-	-	-	-	-	-	0.05	0.05	-	-
Threespine Stickleback	*Gasterosteus aculeatus*	-	-	-	-	-	-	-	-	0.05	0.25	0.38	-
Northern Pipefish	*Syngnathus fuscus*	-	-	-	-	0.05	-	-	-	-	-	-	0.05
Northern Searobin	*Prionotus carolinus*	-	0.35	0.30	0.75	-	0.15	-	-	-	-	-	-
Striped Searobin	*Prionotus evolans*	0.90	0.90	0.25	0.20	0.75	0.60	0.35	-	-	-	-	-
Grubby	*Myoxocephalus aenaeus*	0.35	0.50	0.35	0.15	-	0.21	0.15	0.85	1.20	0.85	1.33	0.40
White Perch	*Morone americana*	0.20	0.50	-	-	-	0.05	33.90	9.60	5.95	71.75	45.73	7.13
Striped Bass	*Morone saxatilis*	5.95	12.40	84.95	10.65	-	7.25	91.35	11.45	18.70	74.00	120.05	55.33
Bluefish	*Pomatomus saltatrix*	-	-	-	3.40	0.05	0.20	-	-	-	-	-	-
Crevalle Jack	*Caranx hippos*	-	-	-	-	0.05	-	-	-	-	-	-	-
Scup	*Stenotomus chrysops*	0.05	0.05	-	-	-	0.15	-	-	-	-	-	-

Table 3 (Continued)

Common Name	Scientific Name	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Silver Perch	*Bairdiella chrysoura*	-	-	-	-	-	0.45	0.35	-	-	-	-	-
Weakfish	*Cynoscion regalis*	1.40	3.38	2.40	10.60	17.50	17.25	2.25	0.20	-	-	-	-
Spot	*Leiostomus xanthurus*	-	-	-	0.15	0.10	0.10	-	-	-	-	-	-
Northern Kingfish	*Menticirrhus saxatilis*	-	-	-	0.05	-	-	-	-	-	-	-	-
Atlantic Croaker	*Micropogonias undulatus*	-	0.05	-	0.30	0.25	0.40	0.20	0.15	-	-	-	-
Tautog	*Tautoga onitis*	-	-	-	0.10	-	-	0.50	0.20	-	-	-	0.05
Cunner	*Tautogolabrus adspersus*	-	-	-	-	-	-	-	-	0.10	-	0.10	0.13
Rock Gunnel	*Pholis gunnellus*	-	-	-	-	-	-	-	-	-	-	-	0.05
Butterfish	*Peprilus triacanthus*	-	-	-	1.50	1.05	1.25	0.10	-	-	-	-	-
Smallmouth Flounder	*Etropus microstomus*	-	-	-	-	-	-	0.05	0.10	-	-	-	0.05
Summer Flounder	*Paralichthys dentatus*	9.45	17.93	21.35	12.25	3.54	0.10	-	-	-	-	-	1.43
Fourspot Flounder	*Paralichthys oblongus*	-	0.10	-	-	-	-	-	-	-	-	-	-
Windowpane	*Scophthalmus aquosus*	0.10	0.17	0.35	0.15	0.10	2.25	1.45	0.40	0.10	0.60	0.35	2.10
Winter Flounder	*Pleuronectes americanus*	1.10	1.97	4.25	9.25	2.30	5.65	27.40	10.45	2.45	1.20	3.50	6.25
Hogchoker	*Trinectes maculatus*	0.05	0.08	0.05	0.20	0.40	-	-	0.10	-	-	0.05	0.05
Planehead Filefish	*Monacanthus hispidus*	-	-	-	-	-	0.35	-	-	-	-	-	-
Northern Puffer	*Sphoeroides maculatus*	-	-	-	0.05	-	-	-	-	-	-	-	-
Soft Clam	*Mya arenaria*	-	-	-	-	-	-	0.10	-	0.10	0.10	0.13	0.43
Longfin Squid	*Loligo pealei*	-	-	0.05	-	-	-	-	-	-	-	-	-
Horseshoe Crab (U)	*Limulus polyphemus*	1.80	1.50	-	1.10	-	1.40	-	-	3.10	3.20	-	1.05
Mantis Shrimp	*Squilla empusa*	-	-	-	-	0.10	0.25	0.10	-	0.20	-	-	-
Spider Crab (U)	*Libinia emarginata*	-	-	-	-	-	-	-	-	-	0.10	0.05	-
Atlantic Rock Crab (U)	*Cancer irroratus*	-	-	-	-	-	-	-	0.05	-	-	-	-
Atlantic Rock Crab (M)	*Cancer irroratus*	-	0.05	-	-	-	-	-	-	0.10	-	0.25	-
Lady Crab (F)	*Ovalipes ocellatus*	-	-	-	-	-	-	-	0.05	-	-	-	-
Blue Crab (M)	*Callinectes sapidus*	31.80	107.98	173.75	44.35	45.45	79.50	7.10	8.25	7.45	12.70	15.61	1.93
Blue Crab (F)	*Callinectes sapidus*	14.22	69.45	159.95	27.50	37.40	7.75	2.10	1.75	1.85	0.55	1.65	0.48

Table 4

Monthly catch in number of fish and megainvertebrates collected with a 4.9-m otter trawl fished in Newark Bay, New Jersey between May 1993 and April 1994. A dash (-) indicates no catch , U = unclassified to sex, M = male, and F = female.

Common Name	Scientific Name	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Blueback Herring	*Alosa aestivalis*	-	-	-	-	-	-	2	7	-	-	-	-
Alewife	*Alosa pseudoharengus*	2	-	-	1	-	-	-	2	-	-	-	-
American Shad	*Alosa sapidissima*	1	-	-	3	2	-	-	2	-	-	-	-
Atlantic Herring	*Clupea harengus*	50	616	-	-	-	-	-	-	-	-	-	-
Bay Anchovy	*Anchoa mitchilli*	1	79	171	398	750	-	-	8	-	-	-	1
Rainbow Smelt	*Osmerus mordax*	-	-	-	-	-	-	-	-	-	-	1	-
Atlantic Tomcod	*Microgadus tomcod*	48	246	-	-	-	-	-	-	-	-	-	-
Spotted Hake	*Urophycis regia*	-	2	-	-	-	-	-	-	-	-	-	-
Atlantic Silverside	*Menidia menidia*	-	-	-	-	-	30	3	8	1	-	2	-
Threespine Stickleback	*Gasterosteus aculeatus*	-	-	-	-	-	-	-	-	-	-	2	-
Lined Seahorse	*Hippocampus erectus*	-	1	-	-	-	-	-	-	-	-	-	-
Northern Pipefish	*Syngnathus fuscus*	1	3	4	1	1	-	-	-	-	-	-	-
Northern Searobin	*Prionotus carolinus*	1	-	-	-	-	-	-	-	-	-	-	-
Striped Searobin	*Prionotus evolans*	-	-	-	2	1	-	-	-	-	-	-	-
Grubby	*Myoxocephalus aenaeus*	-	-	-	-	-	-	1	-	-	-	-	-
White Perch	*Morone americana*	-	-	-	-	-	-	-	8	-	-	2	-
Striped Bass	*Morone saxatilis*	6	1	8	23	33	37	1	23	-	-	-	-
Bluefish	*Pomatomus saltatrix*	-	-	2	4	9	-	-	-	-	-	-	-
Weakfish	*Cynoscion regalis*	-	-	-	3	-	3	-	-	-	-	-	-
Spot	*Leiostomus xanthurus*	-	-	-	1	-	-	-	-	-	-	-	-
Northern Kingfish	*Menticirrhus saxatilis*	-	-	-	2	-	-	-	-	-	-	-	-
Goby	*Gobiidae* sp.	-	1	-	-	-	-	-	-	-	-	-	-
Butterfish	*Peprilus triacanthus*	-	-	-	-	-	1	-	-	-	-	-	-
Smallmouth Flounder	*Etropus microstomus*	-	-	-	-	2	-	1	-	-	-	-	-
Summer Flounder	*Paralichthys dentatus*	1	5	9	6	-	-	-	-	-	-	-	-
Windowpane	*Scophthalmus aquosus*	-	-	4	-	-	-	-	-	-	-	-	-

Table 4 (Continued)

Common Name	Scientific Name	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Winter Flounder	*Pleuronectes americanus*	25	53	21	14	1	8	6	5	1	-	-	3
Northern Puffer	*Sphoeroides maculatus*	-	-	-	-	1	-	-	-	-	-	-	-
Eastern Oyster	*Crassostrea virginica*	-	1	-	-	-	-	-	-	-	-	-	-
Blue Crab (M)	*Callinectes sapidus*	2	13	51	27	13	17	-	-	-	3	11	-
Blue Crab (F)	*Callinectes sapidus*	-	4	41	6	5	8	1	1	-	-	1	1
Blue Crab (U)	*Callinectes sapidus*	-	1	-	-	-	-	-	-	-	-	-	-

Table 5

Monthly catch in weight (kg) of fish and megainvertebrates collected with a 4.9-m otter trawl fished in Newark Bay, New Jersey between May 1993 and April 1994. A dash (-) indicates no catch , U = unclassified to sex, M = male, and F = female.

Common Name	Scientific Name	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Blueback Herring	*Alosa aestivalis*	-	-	-	-	-	-	0.02	0.04	-	-	-	-
Alewife	*Alosa pseudoharengus*	0.02	-	-	0.01	-	-	-	0.02	-	-	-	-
American Shad	*Alosa sapidissima*	0.01	-	-	0.03	0.04	-	-	0.02	-	-	-	-
Atlantic Herring	*Clupea harengus*	0.06	0.26	-	-	-	-	-	-	-	-	-	-
Bay Anchovy	*Anchoa mitchilli*	0.01	0.36	0.39	0.38	0.42	-	-	0.04	-	-	-	0.01
Rainbow Smelt	*Osmerus mordax*	-	-	-	-	-	-	-	-	-	-	0.01	-
Atlantic Tomcod	*Microgadus tomcod*	0.06	0.75	-	-	-	-	-	-	-	-	-	-
Spotted Hake	*Urophycis regia*	-	0.01	-	-	-	-	-	-	-	-	-	-
Atlantic Silverside	*Menidia menidia*	-	-	-	-	-	0.90	0.02	0.07	0.01	-	0.02	-
Threespine Stickleback	*Gasterosteus aculeatus*	-	-	-	-	-	-	-	-	-	-	0.02	-
Lined Seahorse	*Hippocampus erectus*	-	0.01	-	-	-	-	-	-	-	-	-	-
Northern Pipefish	*Syngnathus fuscus*	0.01	0.03	0.04	0.01	0.02	-	-	-	-	-	-	-
Northern Searobin	*Prionotus carolinus*	0.01	-	-	-	-	-	-	-	-	-	-	-
Striped Searobin	*Prionotus evolans*	-	-	-	0.02	0.01	-	-	-	-	-	-	-
Grubby	*Myoxocephalus aenaeus*	-	-	-	-	-	-	0.04	-	-	-	-	-
White Perch	*Morone americana*	-	-	-	-	-	-	-	0.32	-	-	0.02	-
Striped Bass	*Morone saxatilis*	0.24	0.05	3.50	0.46	0.90	1.96	0.07	2.15	-	-	-	-
Bluefish	*Pomatomus saltatrix*	-	-	0.02	0.16	0.55	-	-	-	-	-	-	-
Weakfish	*Cynoscion regalis*	-	-	-	0.03	-	0.06	-	-	-	-	-	-
Spot	*Leiostomus xanthurus*	-	-	-	0.01	-	-	-	-	-	-	-	-
Northern Kingfish	*Menticirrhus saxatilis*	-	-	-	0.02	-	-	-	-	-	-	-	-
Goby	*Gobiidae* sp.	-	0.01	-	-	-	-	-	-	-	-	-	-
Butterfish	*Peprilus triacanthus*	-	-	-	-	-	0.08	-	-	-	-	-	-
Smallmouth Flounder	*Etropus microstomus*	-	-	-	-	0.02	-	0.01	-	-	-	-	-
Summer Flounder	*Paralichthys dentatus*	0.75	0.90	2.10	1.35	-	-	-	-	-	-	-	-
Windowpane	*Scophthalmus aquosus*	-	-	0.02	-	-	-	-	-	-	-	-	-

Table 5 (Continued)

Common Name	Scientific Name	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Winter Flounder	*Pleuronectes americanus*	0.17	0.68	0.18	0.30	0.01	0.35	0.07	0.22	0.01	-	-	0.09
Northern Puffer	*Sphoeroides maculatus*	-	-	-	-	0.01	-	-	-	-	-	-	-
Eastern Oyster	*Crassostrea virginica*	-	0.25	-	-	-	-	-	-	-	-	-	-
Blue Crab (M)	*Callinectes sapidus*	0.20	1.31	9.50	8.00	4.00	5.40	-	-	-	0.75	3.00	-
Blue Crab (F)	*Callinectes sapidus*	-	0.30	6.30	1.25	1.00	1.33	0.20	0.01	-	-	0.25	0.03
Blue Crab (U)	*Callinectes sapidus*	-	0.10	-	-	-	-	-	-	-	-	-	-

Table 6

Monthly catch in number of fish and megainvertebrates collected with experimental gill nets set in Newark Bay, New Jersey between May 1993 and April 1994. A dash (-) indicates no catch , M = male, and F = female.

Common Name	Scientific Name	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Blueback Herring	*Alosa aestivalis*	44	8	-	-	-	2	-	-	-	-	-	-
Alewife	*Alosa pseudoharengus*	14	-	-	-	-	-	-	-	-	-	-	-
American Shad	*Alosa sapidissima*	3	-	-	-	-	-	-	-	-	-	-	1
Atlantic Herring	*Clupea harengus*	-	-	-	-	-	1	15	-	-	-	-	6
Atlantic Menhaden	*Brevoortia tyrannus*	250	17	15	15	-	28	2	-	-	-	-	2
Atlantic Tomcod	*Microgadus tomcod*	-	-	-	-	-	-	1	-	-	-	-	-
Northern Pipefish	*Syngnathus fuscus*	-	-	-	-	-	-	-	-	-	-	-	1
White Perch	*Morone americana*	1	1	-	-	-	-	-	-	-	1	1	1
Striped Bass	*Morone saxatilis*	36	59	17	1	3	2	5	1	-	-	-	3
Bluefish	*Pomatomus saltatrix*	8	16	1	2	7	1	-	-	-	-	-	-
Crevalle Jack	*Caranx hippos*	-	-	-	-	1	1	-	-	-	-	-	-
Weakfish	*Cynoscion regalis*	6	6	-	1	1	2	-	-	-	-	-	-
Chub Mackerel	*Scomber japonicus*	-	1	-	-	-	-	-	-	-	-	-	-
Butterfish	*Peprilus triacanthus*	-	-	-	-	-	3	-	-	-	-	-	-
Summer Flounder	*Paralichthys dentatus*	-	1	-	-	-	-	-	-	-	-	-	-
Blue Crab (M)	*Callinectes sapidus*	-	22	25	10	7	3	2	-	-	-	2	2
Blue Crab (F)	*Callinectes sapidus*	-	8	10	5	-	1	-	-	-	-	-	1

Table 7

Monthly catch in weight (kg) of fish and megainvertebrates collected with experimental gill nets set in Newark Bay, New Jersey between May 1993 and April 1994. A dash (-) indicates no catch , M = male, and F = female.

Common Name	Scientific Name	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Blueback Herring	*Alosa aestivalis*	0.85	0.16	-	-	-	0.03	-	-	-	-	-	-
Alewife	*Alosa pseudoharengus*	1.23	-	-	-	-	-	-	-	-	-	-	-
American Shad	*Alosa sapidissima*	0.45	-	-	-	-	-	-	-	-	-	-	0.20
Atlantic Herring	*Clupea harengus*	-	-	-	-	-	0.03	2.35	-	-	-	-	1.10
Atlantic Menhaden	*Brevoortia tyrannus*	57.10	3.40	3.10	3.00	-	4.73	0.40	-	-	-	-	0.50
Atlantic Tomcod	*Microgadus tomcod*	-	-	-	-	-	-	0.10	-	-	-	-	-
Northern Pipefish	*Syngnathus fuscus*	-	-	-	-	-	-	-	-	-	-	-	0.01
White Perch	*Morone americana*	0.20	0.10	-	-	-	-	-	-	-	0.01	0.01	0.15
Striped Bass	*Morone saxatilis*	12.66	38.05	5.25	0.20	1.70	0.50	2.20	0.20	-	-	-	4.25
Bluefish	*Pomatomus saltatrix*	28.25	30.00	0.05	5.00	10.75	3.25	-	-	-	-	-	-
Crevalle Jack	*Caranx hippos*	-	-	-	-	0.10	0.05	-	-	-	-	-	-
Weakfish	*Cynoscion regalis*	1.85	2.00	-	0.02	0.10	0.03	-	-	-	-	-	-
Chub Mackerel	*Scomber japonicus*	-	0.01	-	-	-	-	-	-	-	-	-	-
Butterfish	*Peprilus triacanthus*	-	-	-	-	-	0.13	-	-	-	-	-	-
Summer Flounder	*Paralichthys dentatus*	-	0.20	-	-	-	-	-	-	-	-	-	-
Blue Crab (M)	*Callinectes sapidus*	-	3.55	4.95	2.25	2.20	0.45	0.50	-	-	-	0.50	0.42
Blue Crab (F)	*Callinectes sapidus*	-	0.60	1.27	0.75	-	0.25	-	-	-	-	-	0.03

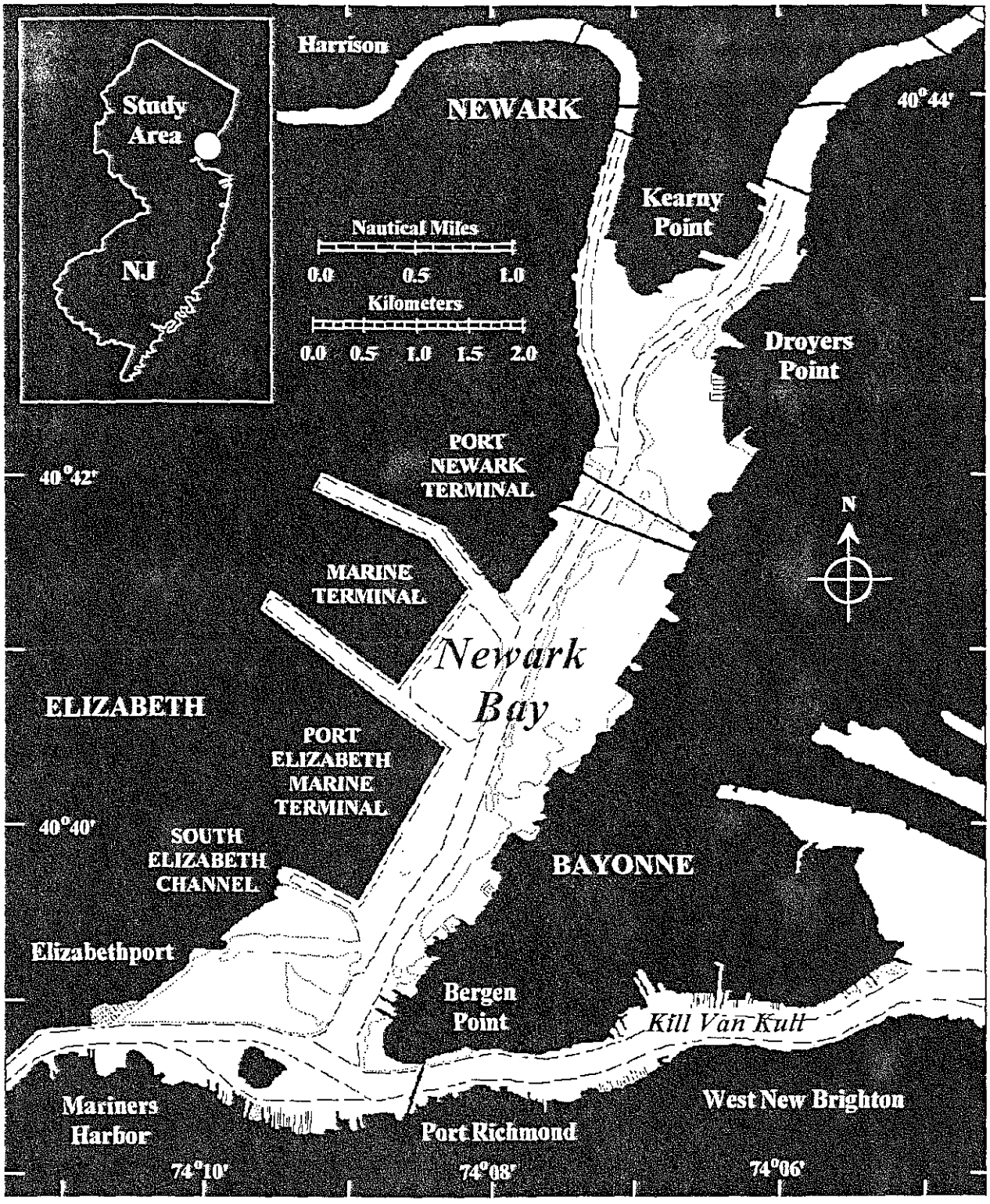


Figure 1. Outline of Newark Bay, NJ; area in which a biological and hydrographical characterization study was conducted from May 1993 to April 1994. Inset indicates location of study area in New Jersey

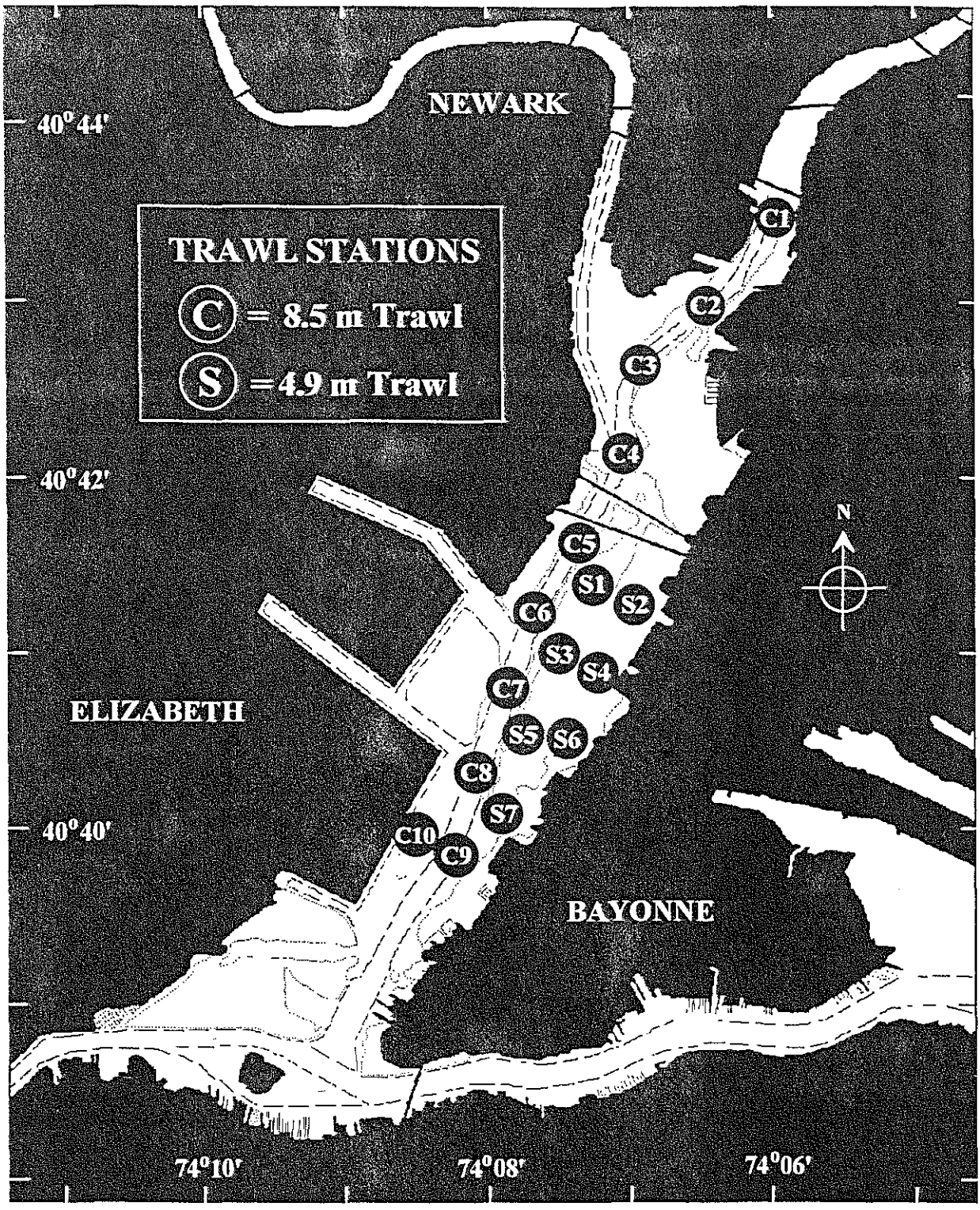


Figure 2. Locations of 8.5-m (C = channel) and 4.9-m (S = shallow water) otter trawl stations/strata sampled during a biological and hydrographical characterization study conducted in Newark Bay, NJ from May 1993 to April 1994.

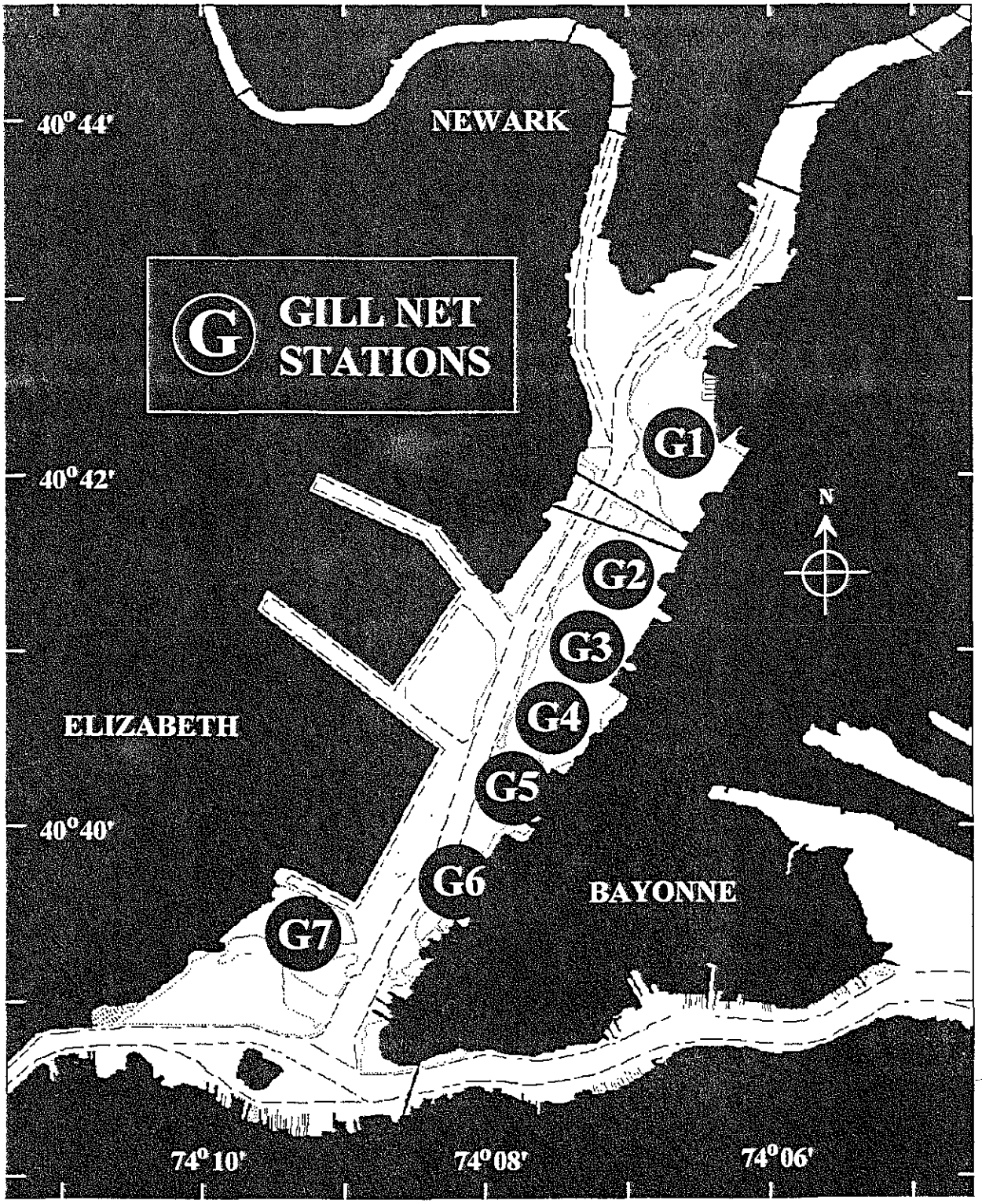


Figure 3. Locations of expertimental gill net stations/strata sampled during a biological and hydrographical characterization study conducted in Newark Bay, NJ from May 1993 to April 1994.

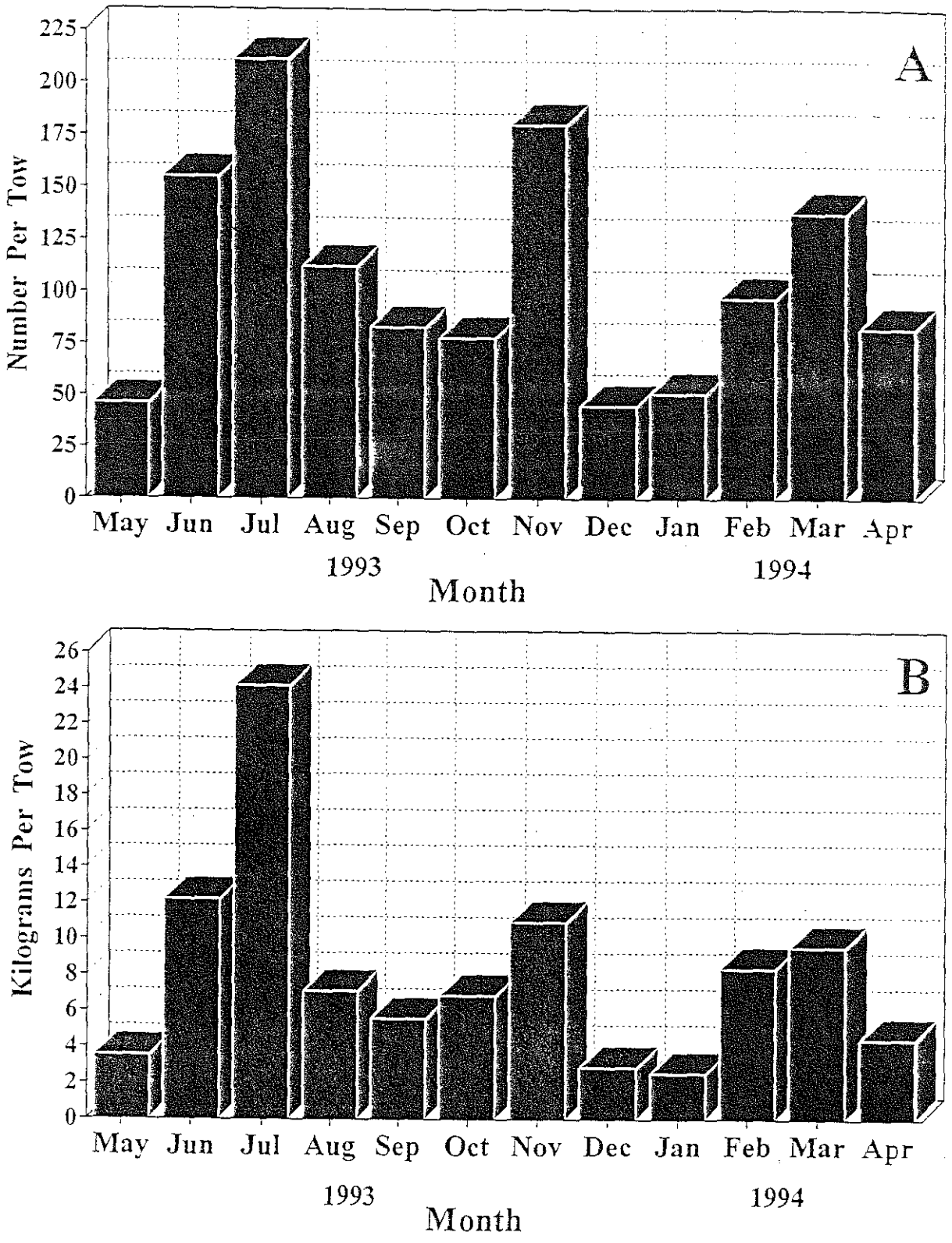


Figure 4. Monthly combined catch of fish and megainvertebrates collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ: May 1993 - April 1994 (A = total number, B = total weight).

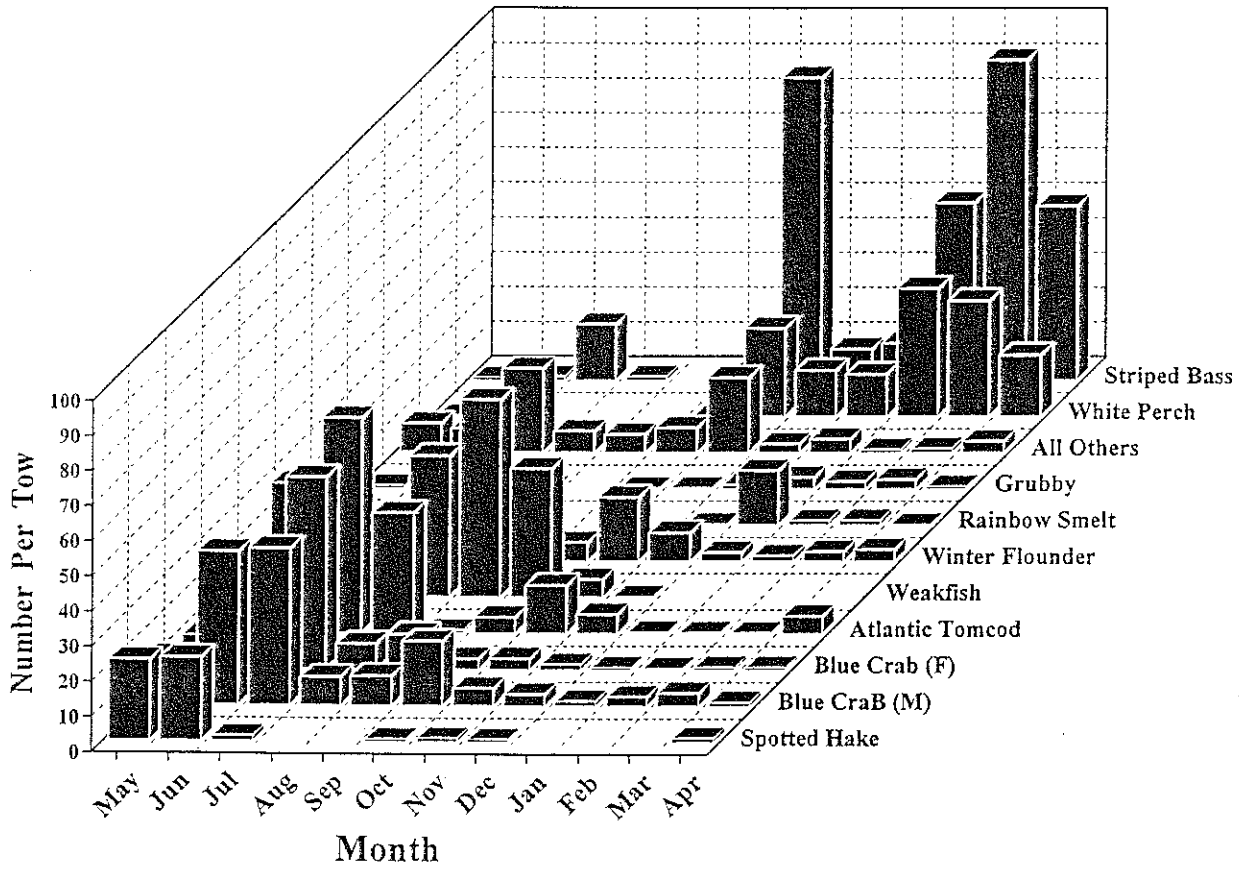


Figure 5. Monthly individual catch, in number, of the 10 most abundant species of fish and megainvertebrates collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

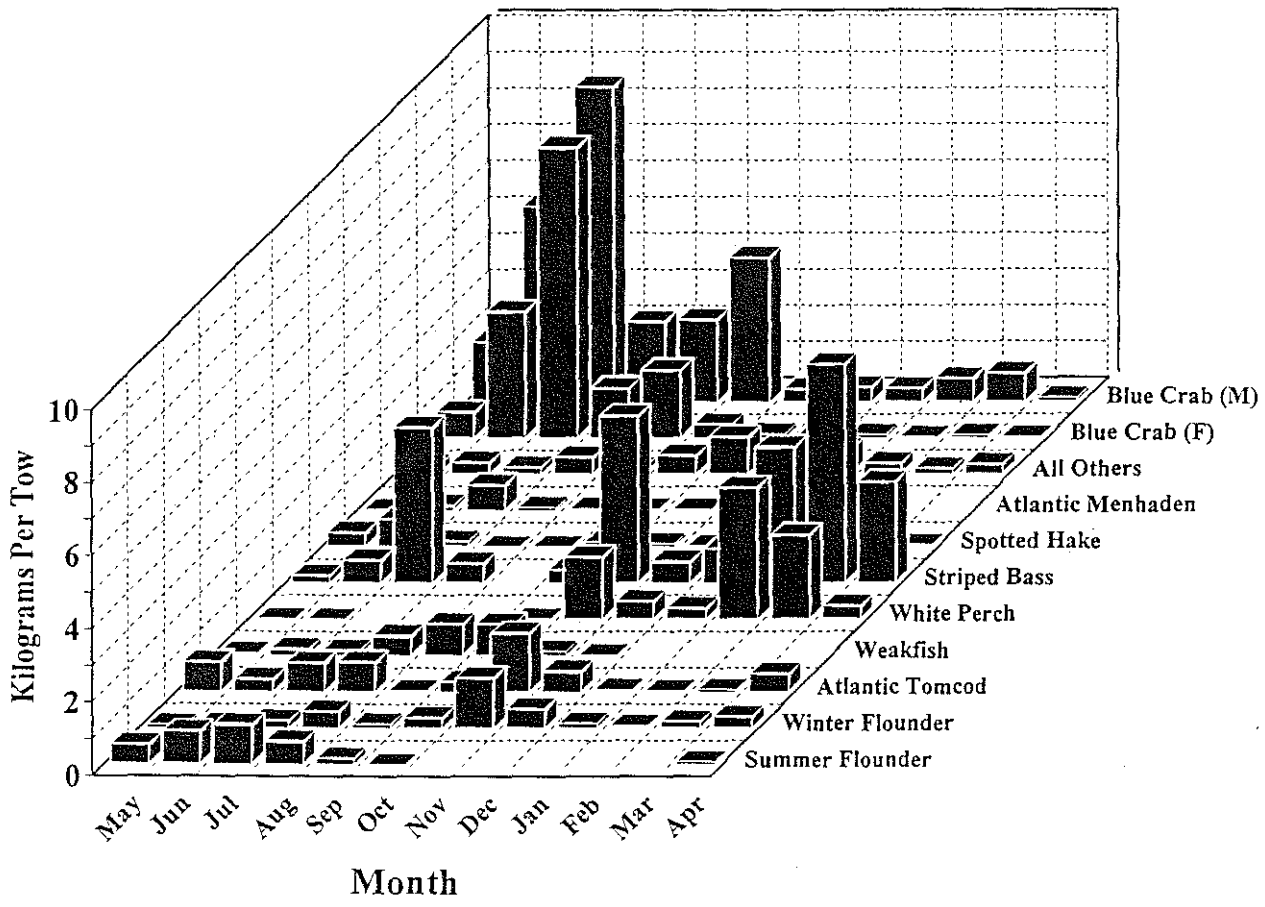


Figure 6. Monthly individual catch, in weight (kg), of the 10 most abundant species of fish and megainvertebrates collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

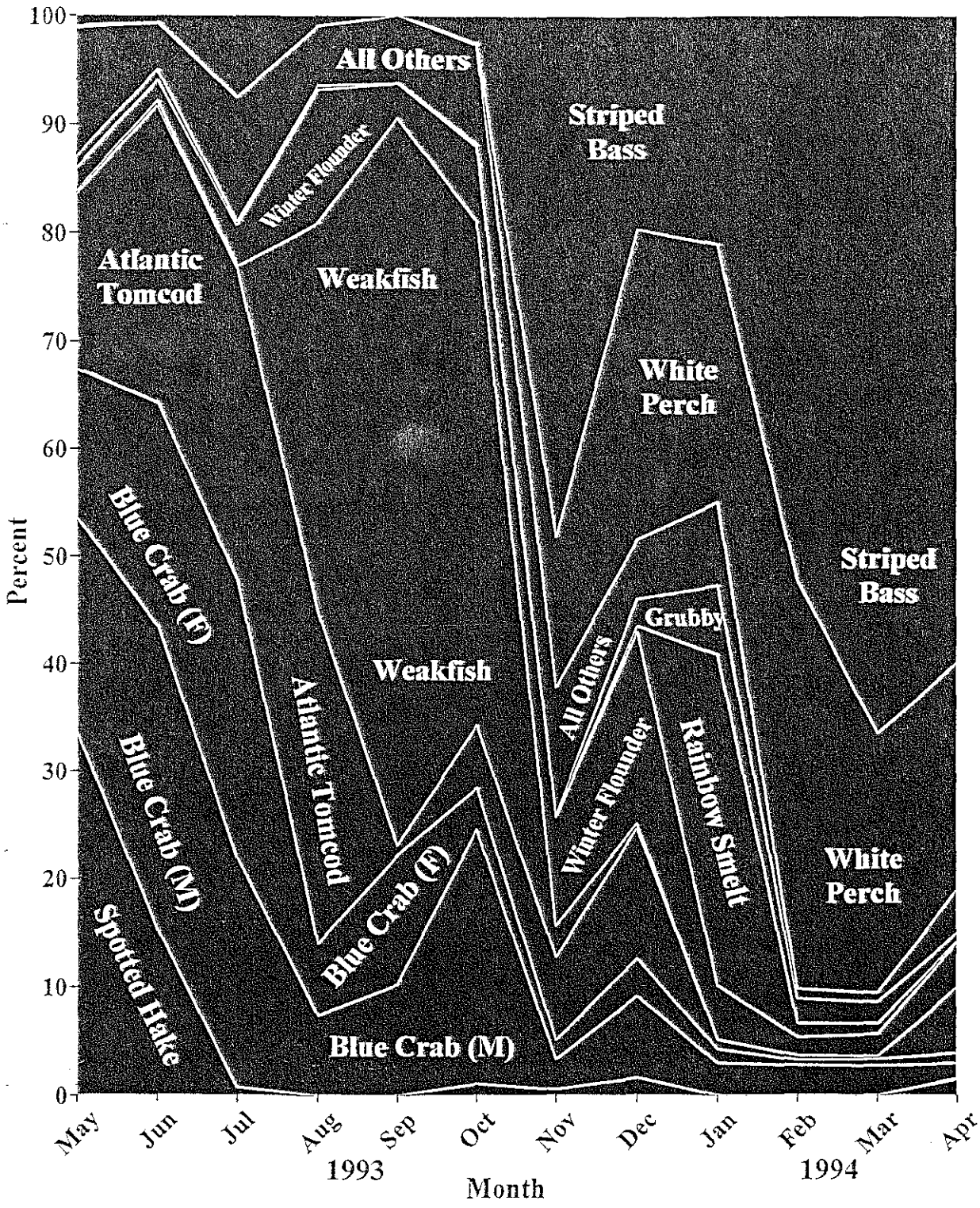


Figure 7. Monthly percent contribution, based on number, of the 10 most abundant species of fish and megainvertebrates collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

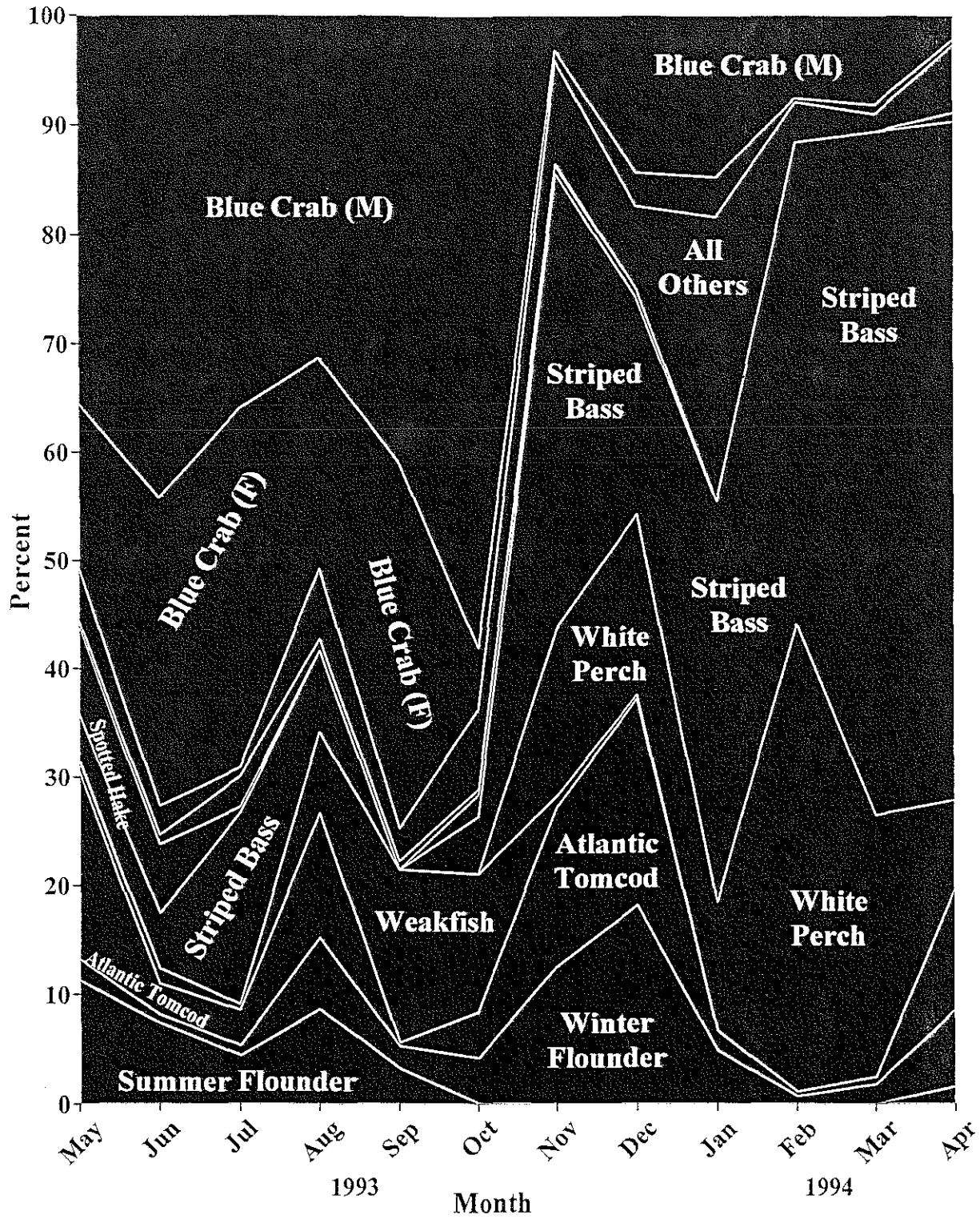


Figure 8. Monthly percent contribution, based on weight (kg), of the 10 most abundant species of fish and megainvertebrates collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 -April 1994.

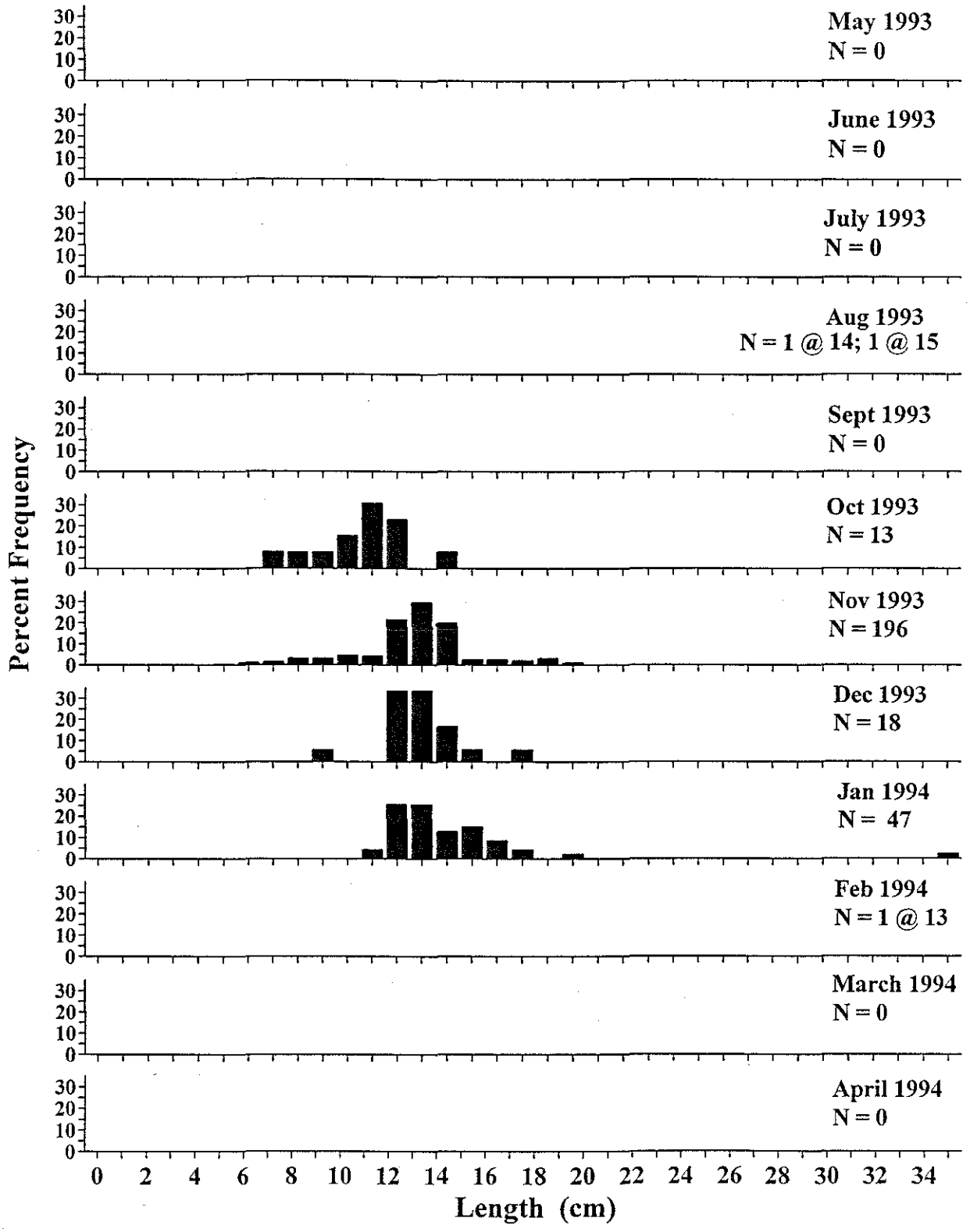


Figure 9. Length-frequency distribution of gizzard shad, *Dorosoma cepedianum*, collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

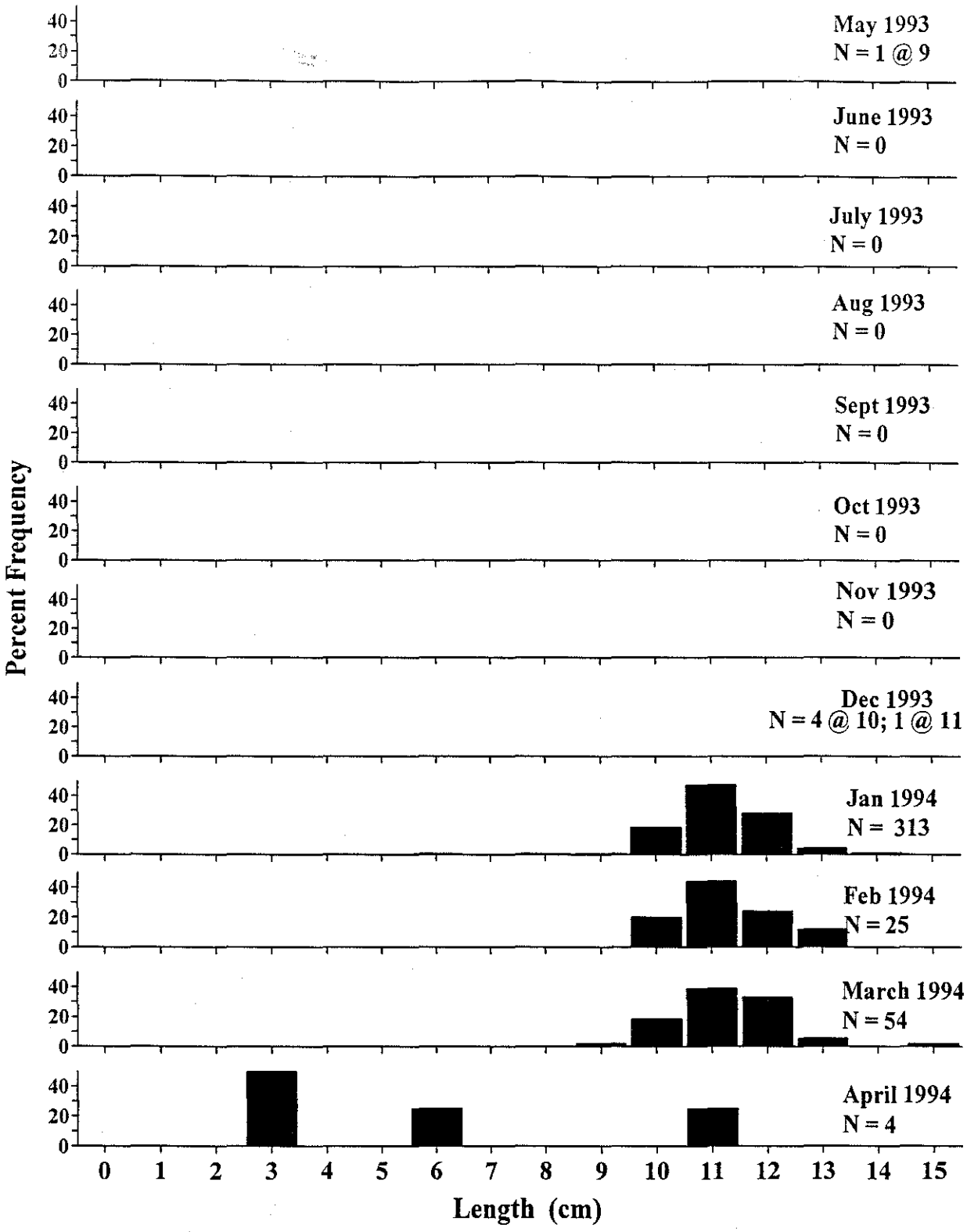


Figure 10. Length-frequency distribution of rainbow smelt, *Osmerus mordax*, collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

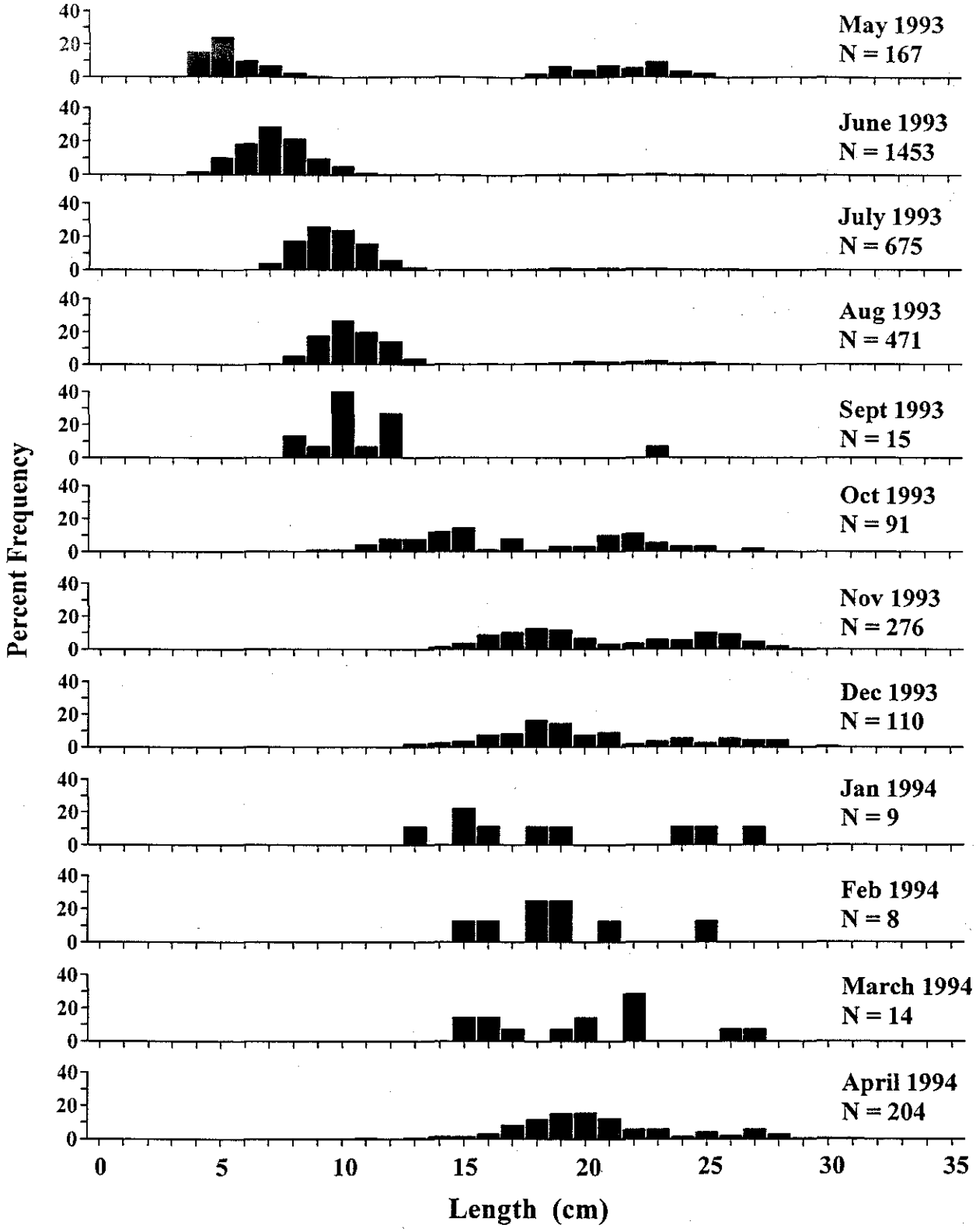


Figure 11. Length-frequency distribution of Atlantic tomcod, *Microgadus tomcod*, collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

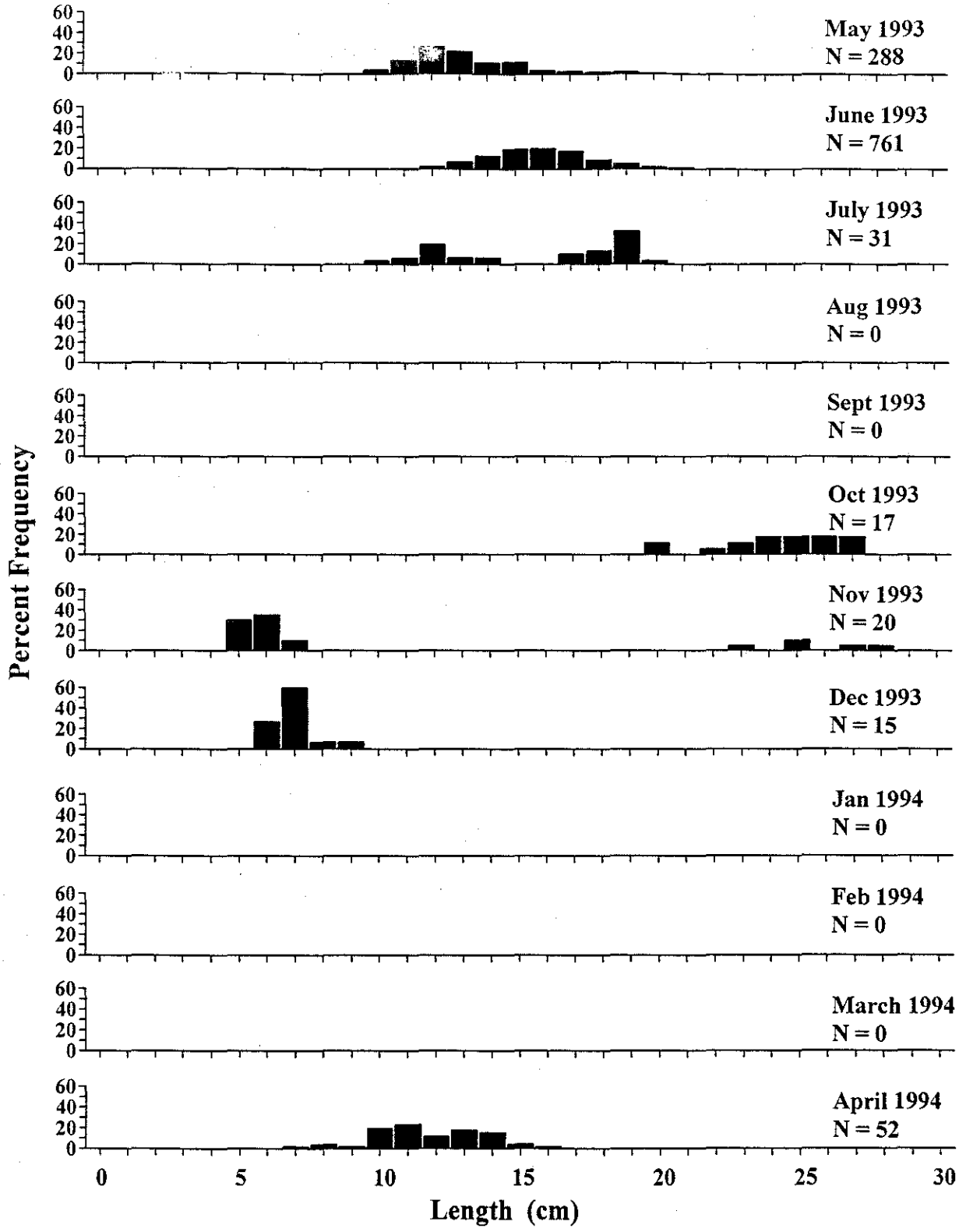


Figure 12. Length-frequency distribution of spotted hake, *Urophycis regia*, collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

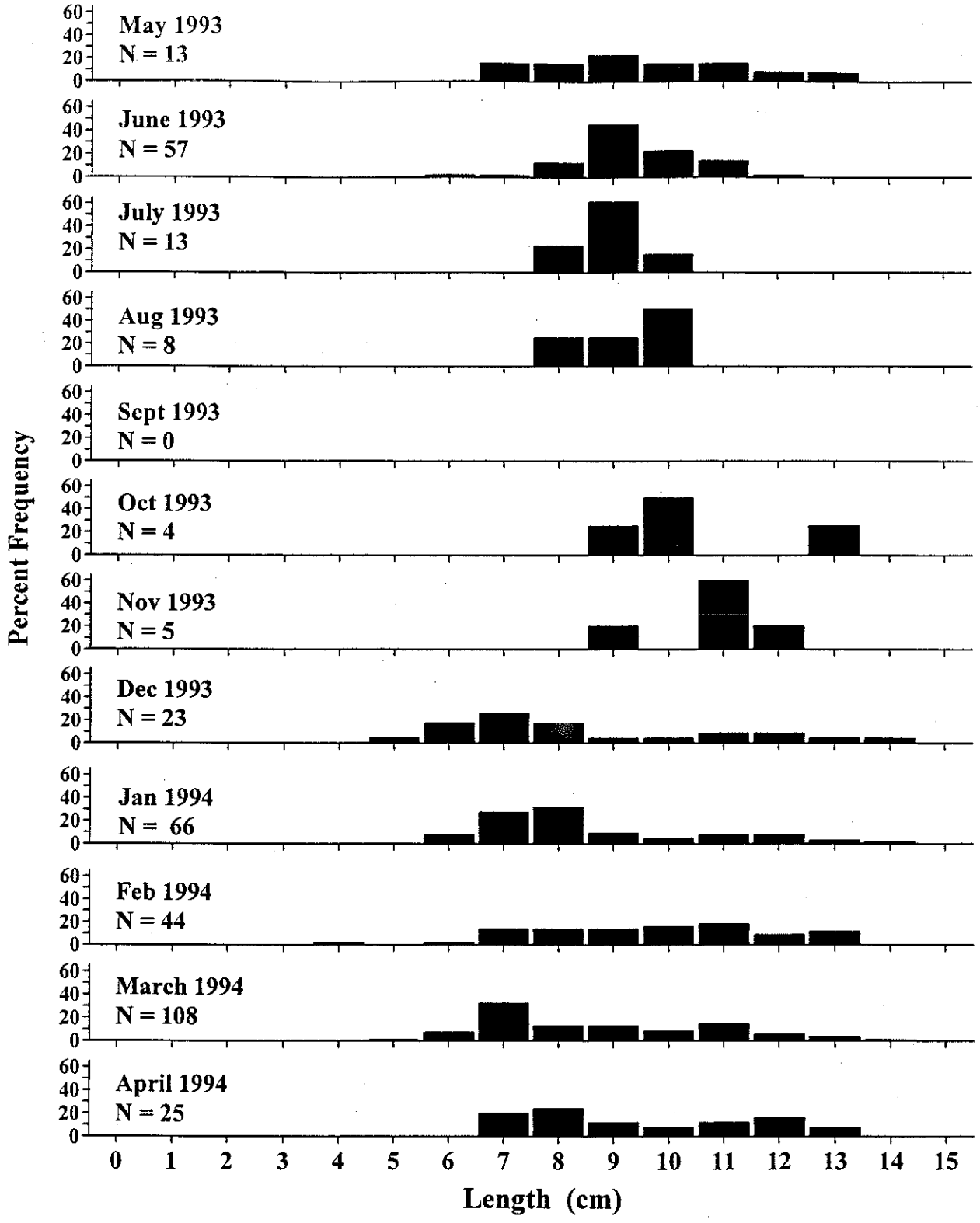


Figure 13. Length-frequency distribution of grubby, *Myoxocephalus aenaeus*, collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

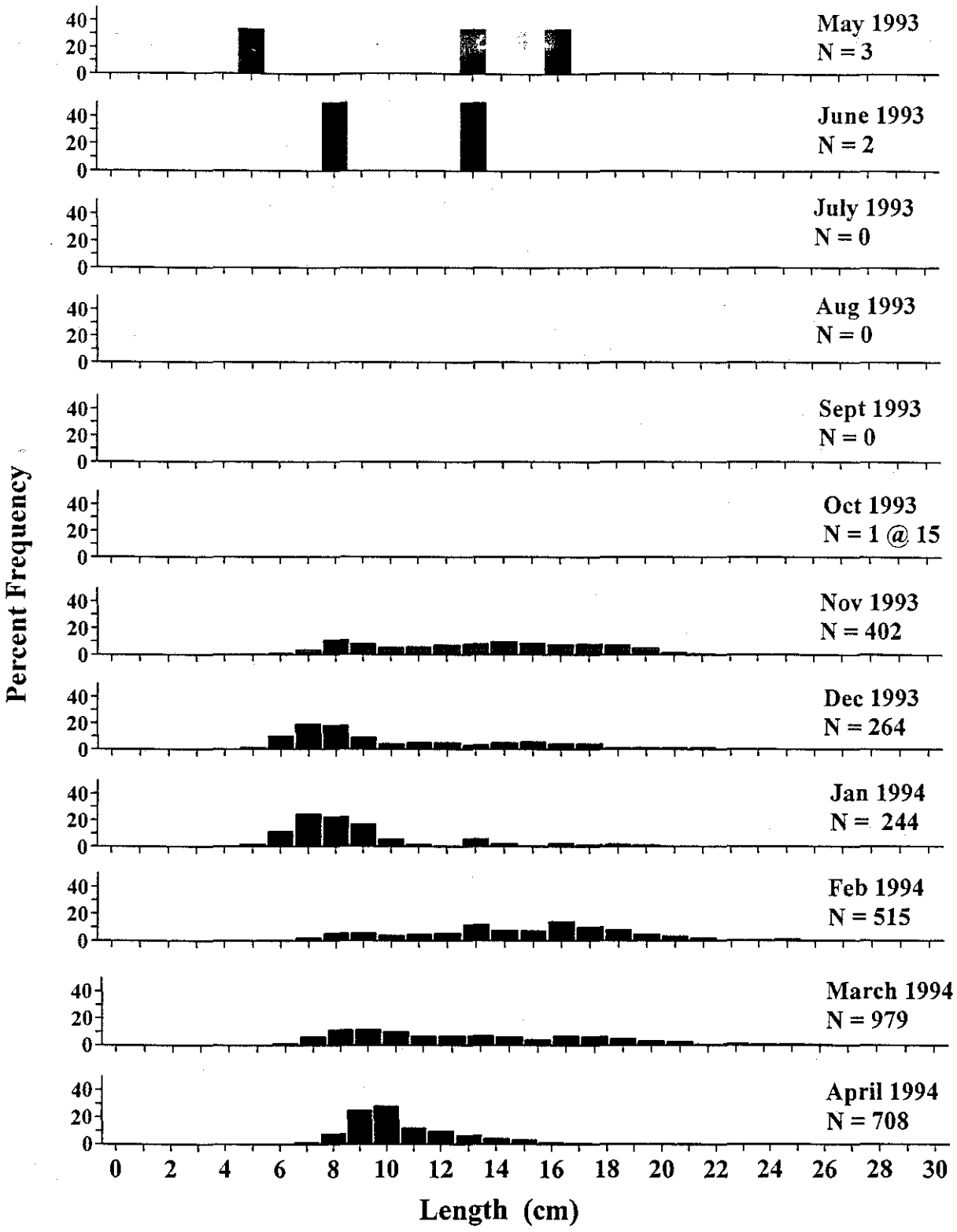


Figure 14. Length-frequency distribution of white perch, *Morone americana*, collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

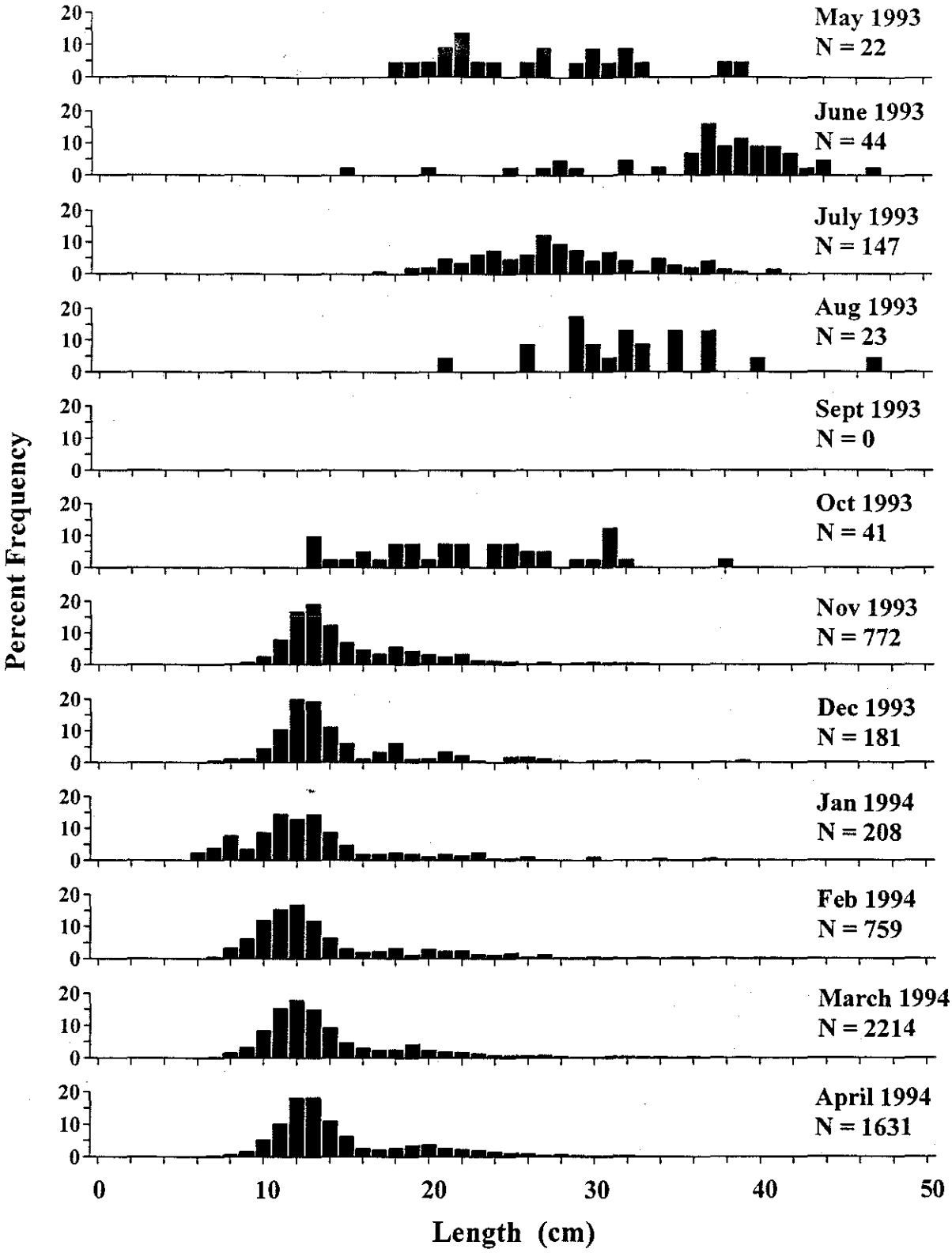


Figure 15. Length-frequency distribution of striped bass, *Morone saxatilis*, collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

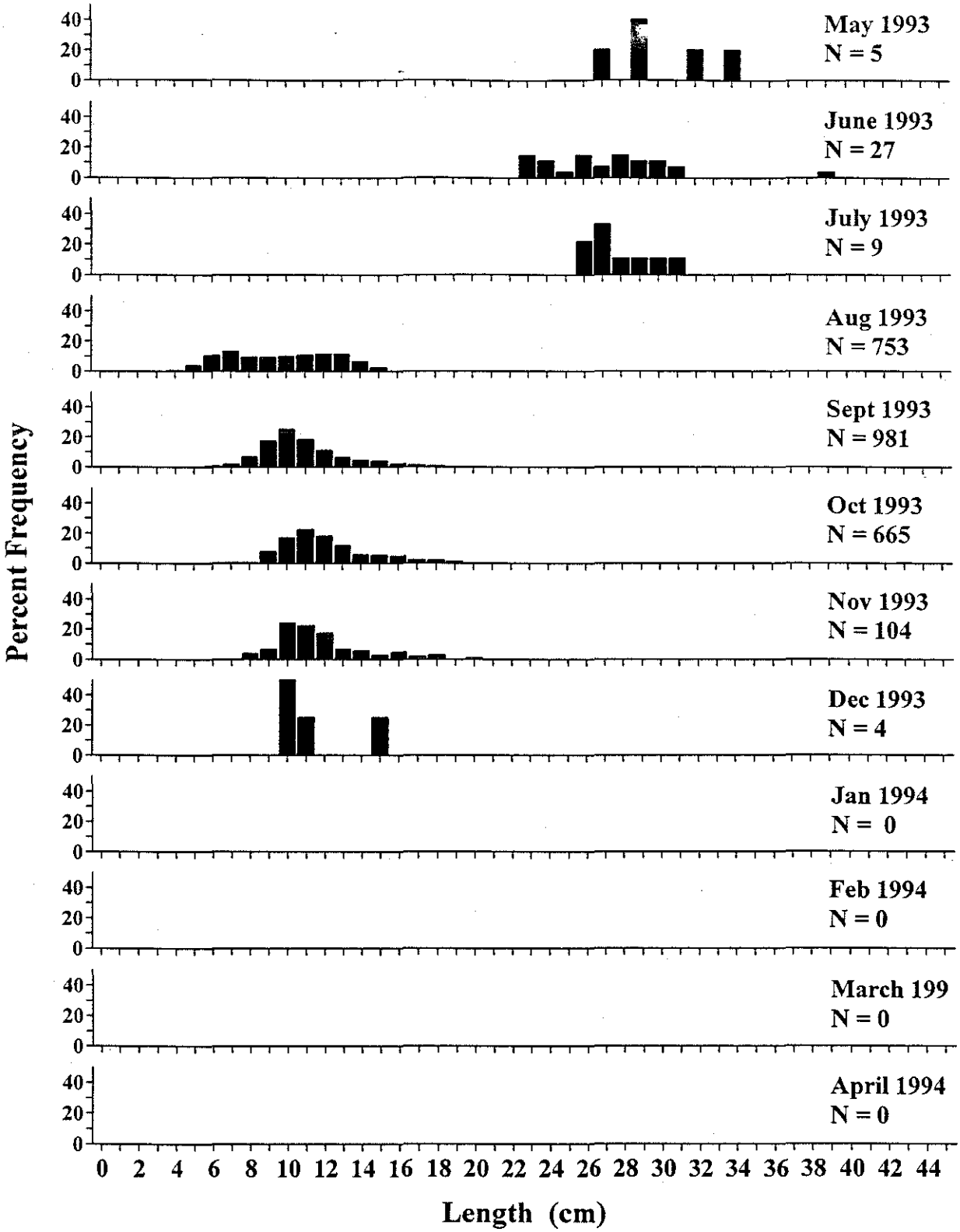


Figure 16. Length-frequency distribution of weakfish, *Cynoscion regalis*, collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

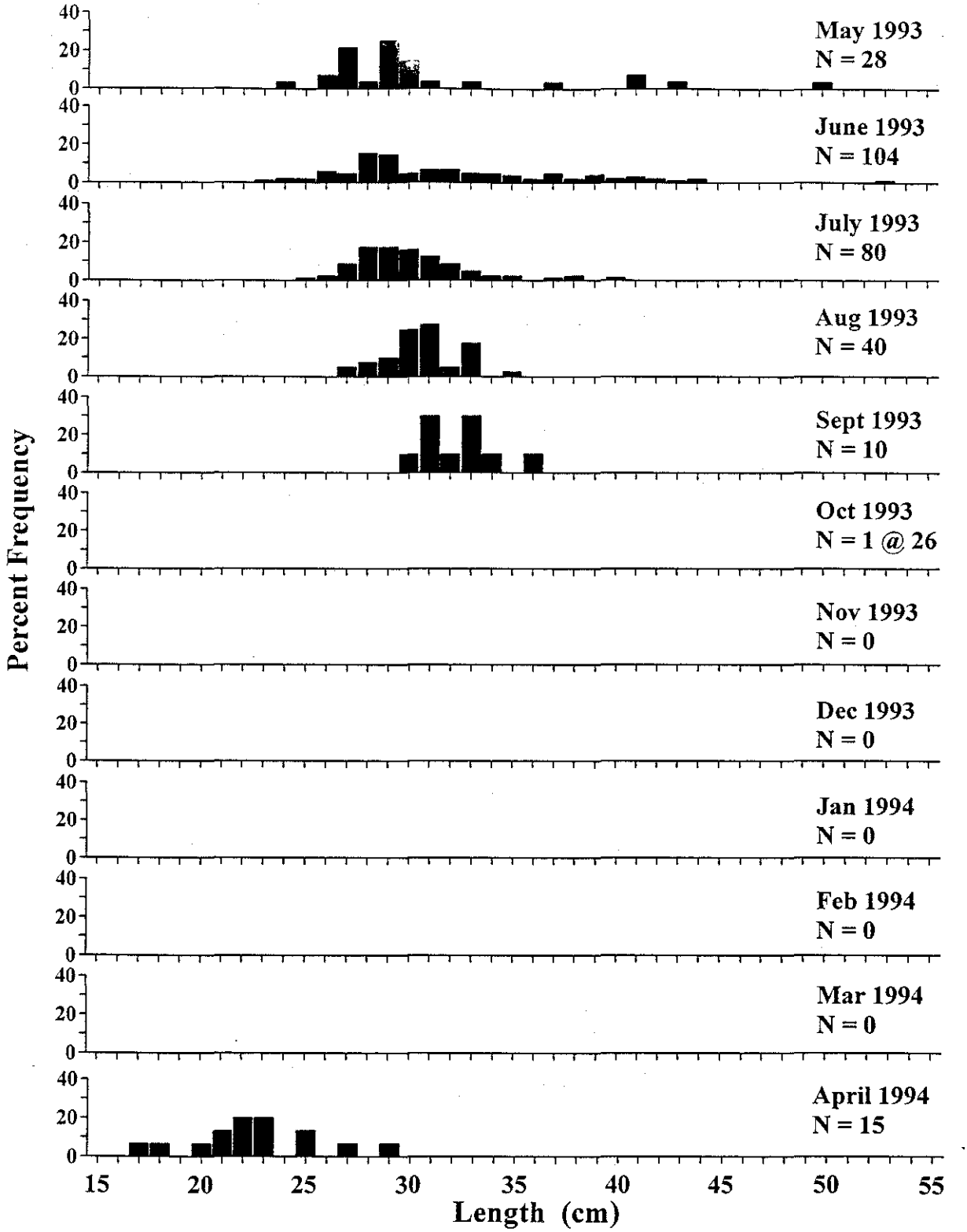


Figure 17. Length-frequency distribution of summer flounder, *Paralichthys dentatus*, collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

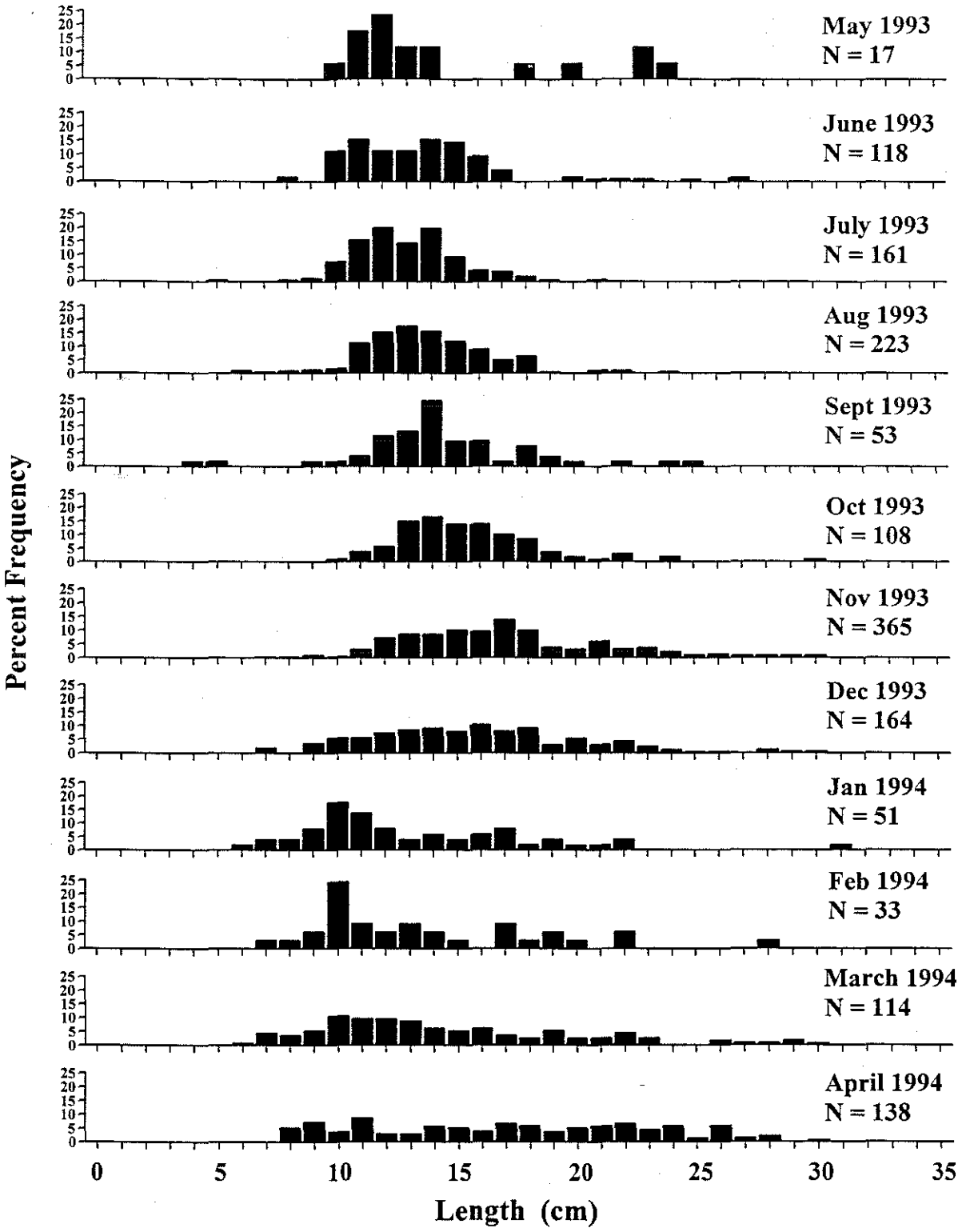


Figure 18. Length-frequency distribution of winter flounder, *Pleuronectes americanus* collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

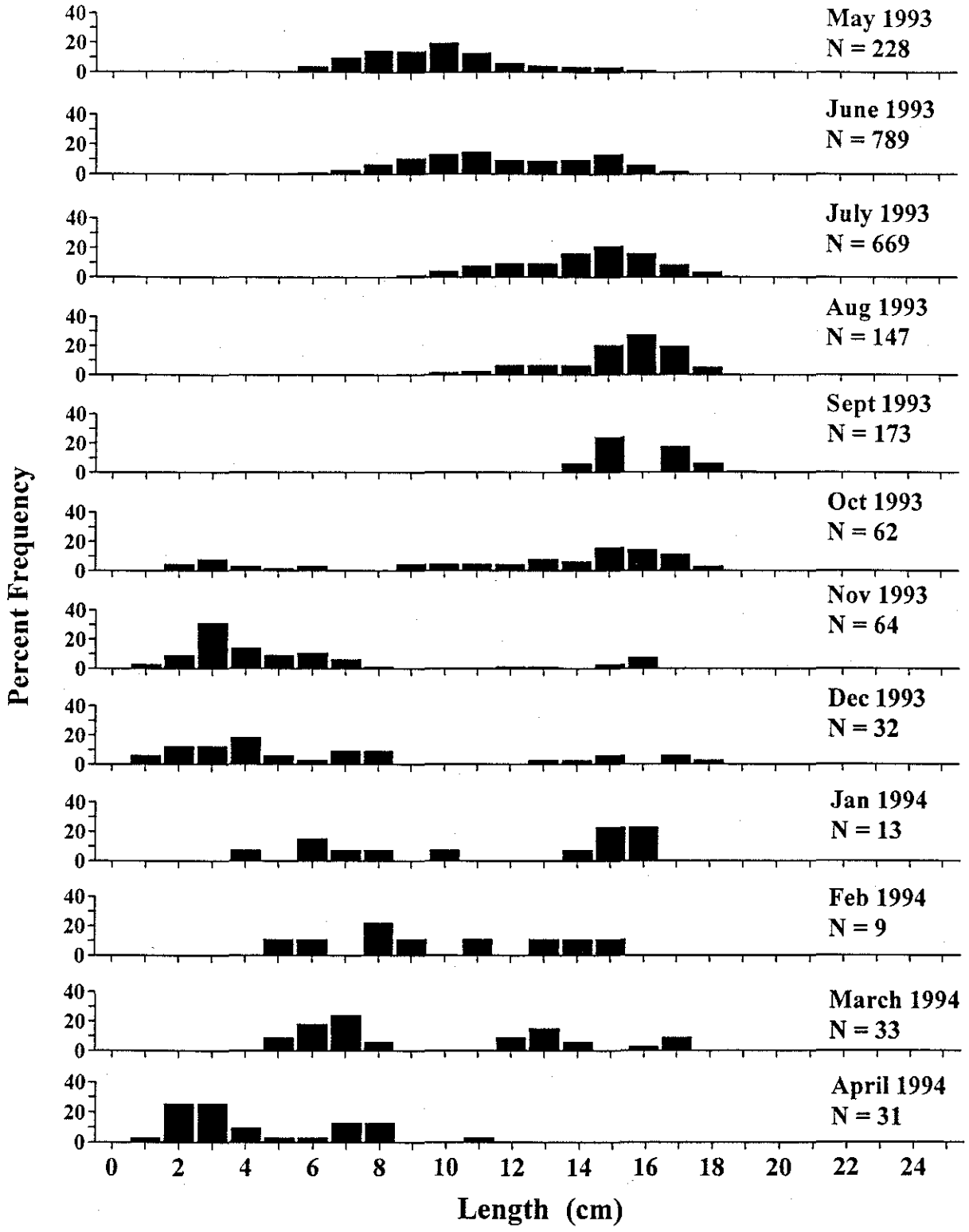


Figure 19. Length-frequency distribution of female blue crab, *Callinectes sapidus*, collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

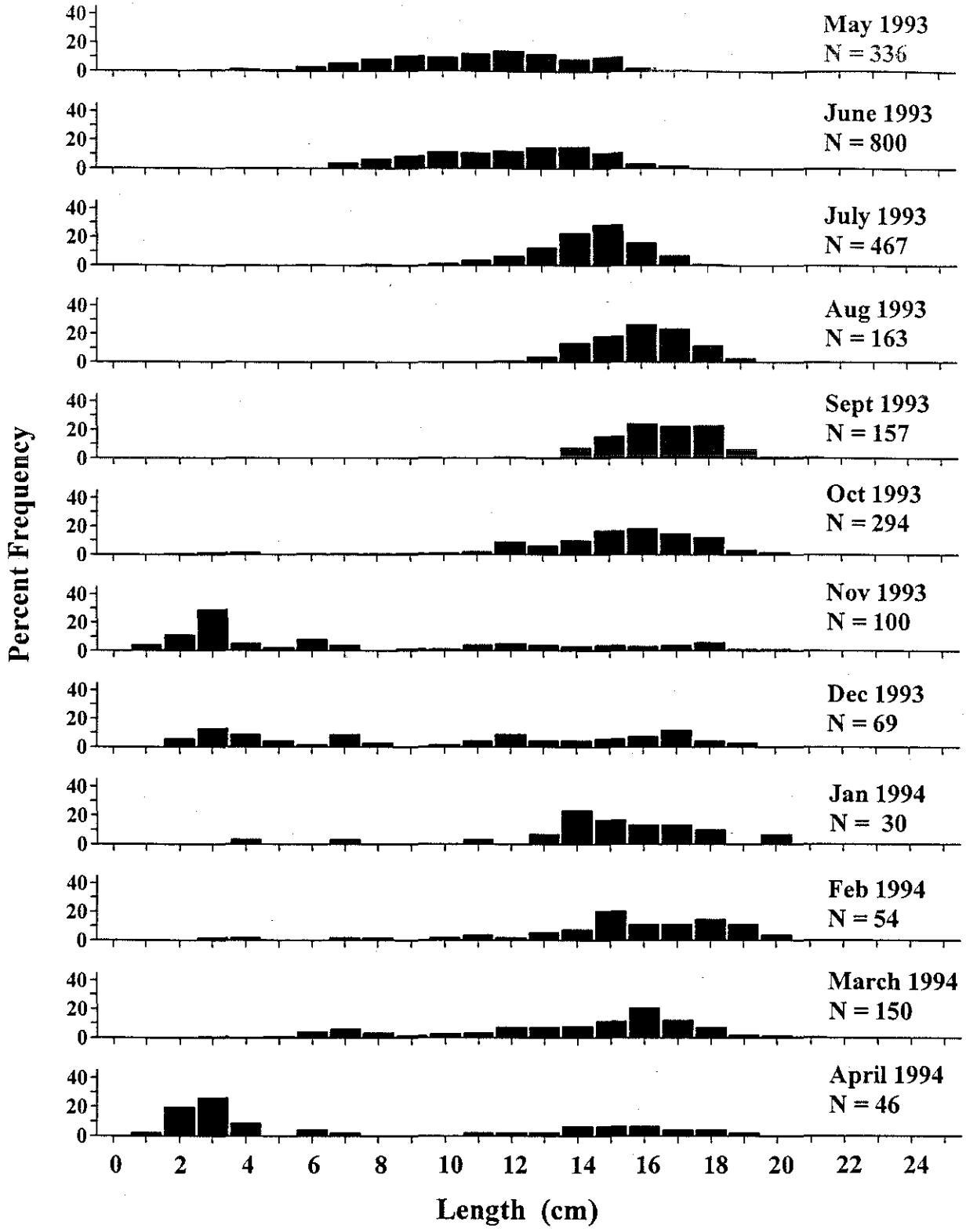


Figure 20. Length-frequency distribution of male blue crab, *Callinectes sapidus*, collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.

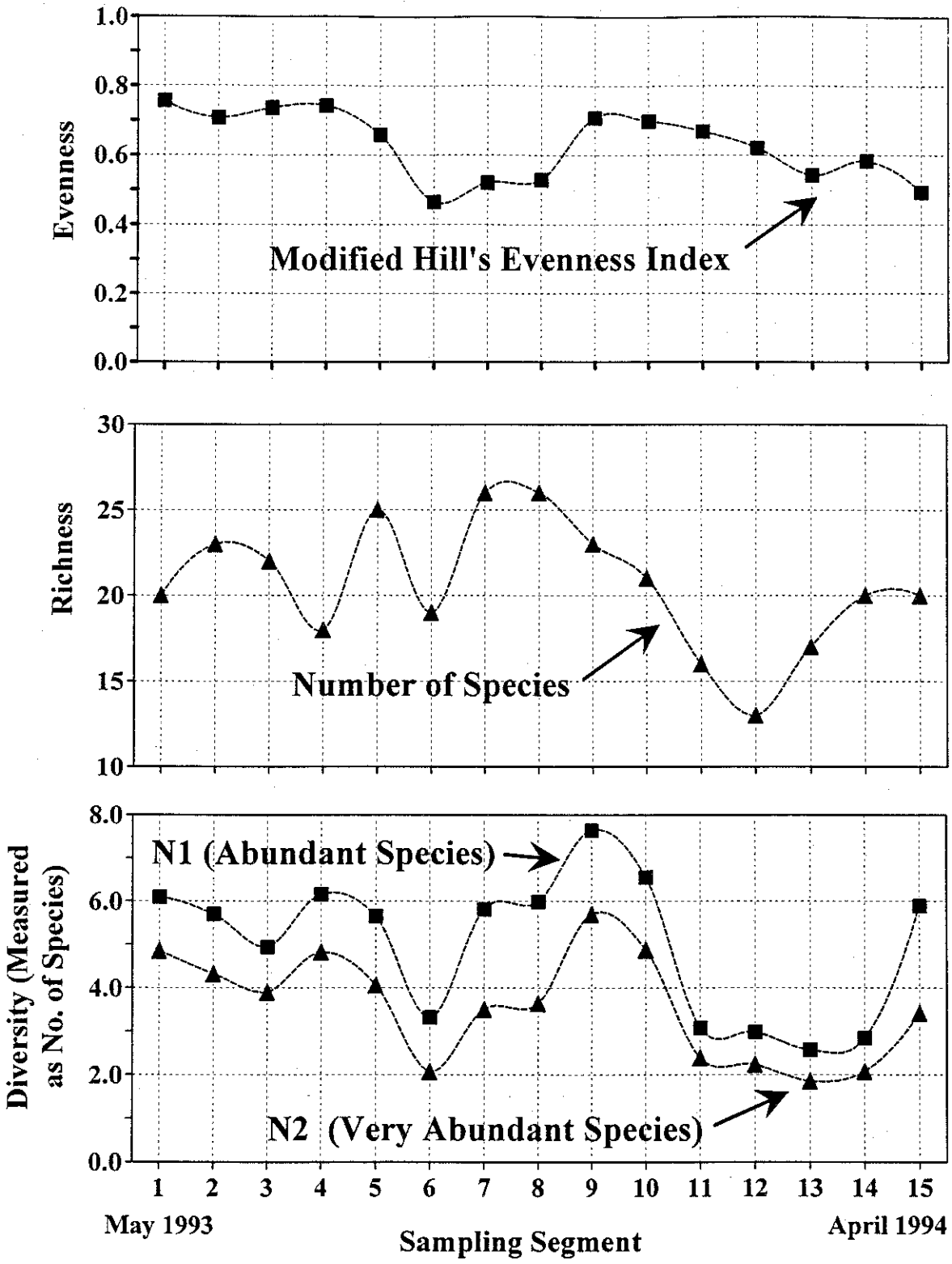
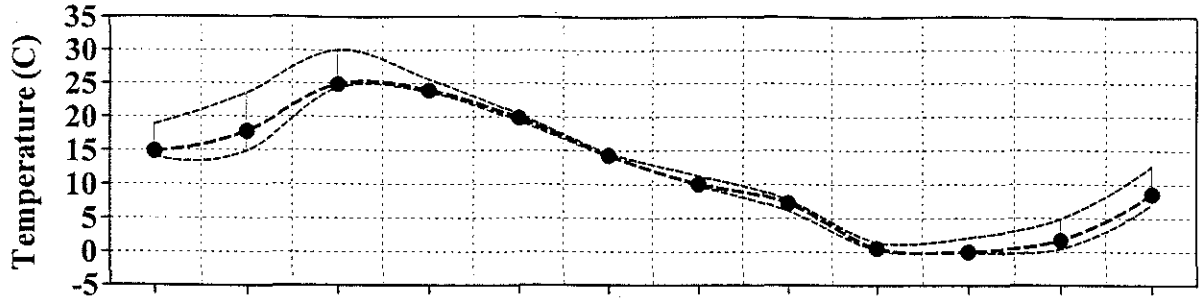
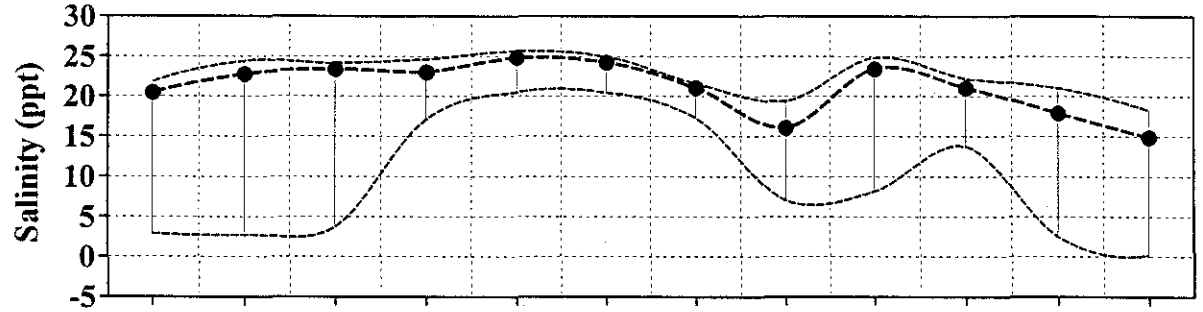


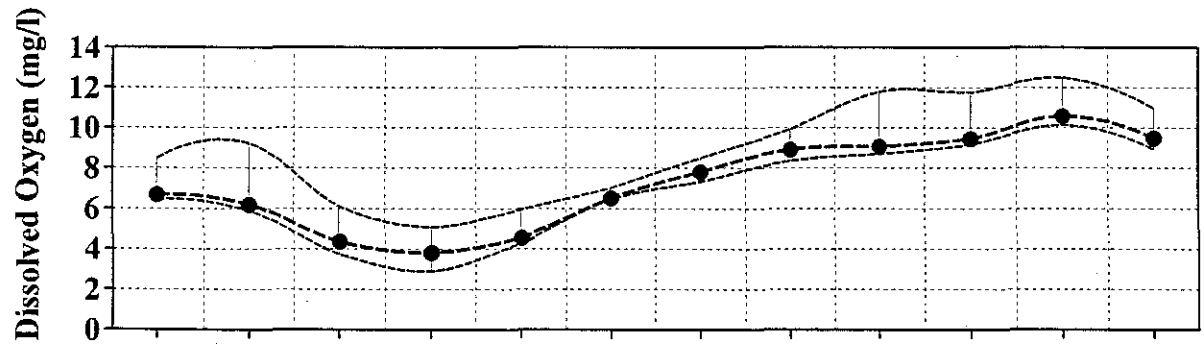
Figure 21. Ecological indices of species evenness, richness, and diversity for fish and megainvertebrates collected with an 8.5-m otter trawl during a biological and hydrographical characterization of Newark Bay, NJ; May 1993 - April 1994.



°C	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Min	14.15	14.87	24.27	23.60	19.33	14.11	9.80	6.05	0.27	-0.17	0.36	7.00
Max	18.80	23.53	30.00	25.62	20.33	14.64	11.24	7.70	1.38	2.02	4.89	12.73
Mean	14.89	17.80	24.88	23.99	19.81	14.29	10.03	7.21	0.56	0.02	1.69	8.62



ppt	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Min	2.90	2.70	3.70	17.10	20.50	20.40	17.30	7.00	8.10	13.70	2.50	0.20
Max	21.80	24.40	24.10	24.60	25.60	24.90	21.60	19.40	24.80	22.20	21.00	18.30
Mean	20.45	22.75	23.34	22.98	24.76	24.21	21.07	16.03	23.42	21.05	17.87	14.92



mg/l	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Min	6.43	5.88	3.71	2.90	4.30	6.42	7.33	8.35	8.68	9.17	10.13	8.92
Max	8.47	9.22	6.09	5.05	5.94	7.00	8.49	9.92	11.79	11.77	12.48	10.96
Mean	6.67	6.18	4.34	3.79	4.58	6.50	7.80	8.91	9.07	9.45	10.57	9.48

Figure 22. Bottom hydrographic observations for all 8.5-m otter trawl stations made during a biological and hydrographical characterization of the Newark Bay, NJ; May 1993 - April 1994

Appendix Table A

Listing of 8.5 m otter trawl stations made in Newark Bay, New Jersey between May 1993 and April 1994, including location, catch of finfish and megainvertebrates, and bottom hydrographic observations. A dash (-) = no data.

Station Information									Catch Information						Hydrographic Observations			
					Location				Finfish			Megainvertebrates						
					Start		Finish											
Sta. No.	Sta. Code	Date M/D 1993	Start Time	Depth (m)	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	No.	Wt. (kg)	No. sp.	Depth (m)	Temp. (°C)	Sal. (ppt)	DO (mg/l)
1	C1	5/24	1029	11.4	40°42.9'	74°06.6'	40°42.8'	74°06.8'	33	3.0	6	39	3.3	2	10.8	14.7	20.0	6.63
2	C2	5/24	1125	9.6	40°42.7'	74°07.0'	40°42.5'	74°07.1'	26	4.5	5	15	2.2	2	10.4	14.7	19.8	6.67
3	C3	5/24	1155	11.6	40°42.5'	74°07.2'	40°42.3'	74°07.2'	26	2.0	5	42	2.9	2	10.5	14.7	19.7	6.73
4	C5	5/24	1233	12.8	40°41.4'	74°07.7'	40°41.2'	74°07.8'	76	6.5	10	64	4.5	2	12.4	14.6	20.3	6.75
5	C8	5/24	1325	13.7	40°40.4'	74°08.2'	40°40.5'	74°08.2'	46	2.3	7	3	0.2	1	12.4	14.2	21.5	6.85
6	C9	5/24	1410	13.0	40°40.0'	74°08.4'	40°40.2'	74°08.3'	64	2.7	7	2	0.5	2	11.0	14.4	21.1	6.82
7	C10	5/24	1445	13.6	40°40.0'	74°08.5'	40°40.1'	74°08.5'	10	0.4	2	6	0.5	2	12.9	14.3	21.2	6.79
8	C6	5/24	1644	12.0	40°41.0'	74°07.9'	40°41.1'	74°07.9'	3	0.3	2	6	0.6	2	12.0	14.9	20.0	6.59
9	C1	5/25	1000	11.3	40°42.9'	74°06.6'	40°42.8'	74°06.8'	72	3.7	5	67	4.2	2	10.4	15.1	19.9	6.49
10	C2	5/25	1045	11.7	40°42.8'	74°06.7'	40°42.7'	74°06.9'	11	0.5	3	48	2.4	2	10.8	15.1	20.1	6.55
11	C3	5/25	1120	10.7	40°42.6'	74°07.1'	40°42.4'	74°07.2'	24	1.3	8	35	3.8	2	10.6	15.0	20.5	6.57
12	C4	5/25	1225	12.2	40°42.1'	74°07.3'	40°42.3'	74°07.3'	28	2.9	7	125	9.5	2	10.6	15.0	20.4	6.62
13	C6	5/25	1359	12.2	40°41.4'	74°07.7'	40°41.2'	74°07.8'	44	1.8	5	27	3.0	2	11.5	15.0	20.5	6.57
14	C7	5/25	1445	13.0	40°40.8'	74°08.0'	40°41.0'	74°08.0'	38	0.7	5	9	0.9	2	12.2	15.1	20.3	6.62
15	C7	5/25	1533	12.8	40°40.5'	74°08.2'	40°40.7'	74°08.2'	9	1.2	5	2	0.2	1	12.0	15.2	19.8	6.60
16	C9	5/25	1620	13.4	40°40.2'	74°08.3'	40°40.4'	74°08.2'	44	1.7	4	19	2.5	2	12.0	15.2	19.9	6.57
17	C8	5/26	0947	13.9	40°40.5'	74°08.2'	40°40.4'	74°08.2'	9	0.4	4	1	0.1	1	12.4	15.4	21.2	6.76
18	C10	5/26	1240	14.8	40°40.1'	74°08.6'	40°39.9'	74°08.7'	31	2.1	6	17	1.9	2	12.8	15.1	21.8	6.90
19	C4	5/26	1443	13.1	40°42.1'	74°07.3'	40°42.2'	74°07.3'	4	0.5	1	38	4.8	3	11.9	15.5	21.1	6.62
20	C1	6/7	1127	11.4	40°42.9'	74°06.6'	40°42.8'	74°06.7'	67	4.5	6	145	11.7	2	11.0	15.5	23.0	6.26
21	C2	6/7	1205	10.8	40°42.8'	74°06.7'	40°42.7'	74°06.8'	16	2.9	4	63	4.3	2	11.2	15.4	22.9	6.24
22	C3	6/7	1305	10.7	40°42.5'	74°07.0'	40°42.3'	74°07.1'	58	1.1	5	29	3.3	2	11.4	15.4	22.5	6.25
23	C4	6/7	1345	12.3	40°42.2'	74°07.1'	40°42.4'	74°07.1'	29	0.8	4	75	7.0	2	11.2	15.4	22.4	6.24
24	C10	6/7	1440	13.3	40°39.9'	74°08.5'	40°40.0'	74°08.4'	54	0.6	3	11	0.8	2	13.2	14.9	23.2	6.36
25	C9	6/7	1547	12.6	40°39.9'	74°08.3'	40°40.1'	74°08.2'	65	1.1	9	10	0.8	2	13.2	14.9	23.2	6.36
26	C8	6/7	1555	12.5	40°40.4'	74°08.0'	40°40.6'	74°07.9'	105	1.8	7	17	1.4	2	12.4	15.5	22.2	6.22
27	C7	6/7	1625	11.7	40°40.8'	74°07.9'	40°41.0'	74°07.8'	42	0.7	4	13	0.7	2	11.9	15.7	22.1	6.25
28	C5	6/8	0930	12.5	40°41.6'	74°07.4'	40°41.5'	74°07.5'	570	14.7	12	78	4.2	2	12.2	15.5	22.6	6.26
29	C6	6/8	1001	12.3	40°41.3'	74°07.6'	40°41.2'	74°07.7'	184	3.9	9	24	2.3	3	12.8	15.6	22.8	6.29
30	C1	6/8	1050	10.8	40°43.0'	74°06.5'	40°42.9'	74°06.6'	20	2.8	7	57	4.0	2	10.7	15.9	22.1	6.14

Appendix Table A (Continued)

Station Information									Catch Information						Hydrographic Observations			
					Location				Finfish			Megainvertebrates						
					Start		Finish											
Sta. No.	Sta. Code	Date M/D	Start Time	Depth (m)	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	No.	Wt. (kg)	No. sp.	Depth (m)	Temp. (°C)	Sal. (ppt)	DO (mg/l)
31	C2	6/8	1140	11.3	40°42.8'	74°06.7'	40°42.7'	74°06.9'	66	1.8	8	26	1.2	2	11.1	15.8	22.3	6.18
32	C3	6/8	1214	11.9	40°42.5'	74°07.0'	40°42.3'	74°07.1'	111	4.2	11	110	9.1	2	11.5	15.7	22.6	6.20
33	C4	6/8	1248	13.0	40°42.1'	74°07.1'	40°42.3'	74°07.1'	132	7.5	9	54	4.5	2	10.6	15.6	22.8	6.18
34	C10	6/8	1409	13.6	40°40.2'	74°08.3'	40°40.0'	74°08.5'	67	1.5	5	9	0.6	2	13.6	15.1	24.0	6.29
35	C9	6/8	1442	13.4	40°40.1'	74°08.3'	40°40.2'	74°08.2'	91	2.7	5	17	1.4	2	13.6	15.1	24.0	6.29
36	C8	6/8	1511	13.1	40°40.4'	74°08.1'	40°40.5'	74°08.0'	32	2.3	6	21	1.6	2	13.1	15.6	22.8	6.22
37	C7	6/8	1547	12.6	40°40.8'	74°07.9'	40°40.9'	74°07.8'	28	1.5	7	10	0.9	2	12.6	15.7	22.5	6.13
38	C5	6/9	0927	12.2	40°41.6'	74°07.4'	40°41.5'	74°07.5'	95	2.8	8	75	3.6	3	12.1	15.9	23.1	6.11
39	C6	6/9	1001	12.5	40°41.3'	74°07.6'	40°41.1'	74°07.7'	59	2.4	8	8	0.8	2	12.4	15.8	23.4	6.13
40	C1	6/21	1055	11.4	40°42.9'	74°06.5'	40°42.8'	74°06.7'	28	1.5	5	95	15.8	2	9.9	20.5	22.3	6.37
41	C2	6/21	1137	11.3	40°42.7'	74°06.8'	40°42.6'	74°07.0'	89	2.7	5	203	27.9	2	10.9	20.5	22.2	6.38
42	C3	6/21	1210	10.1	40°42.4'	74°07.0'	40°42.6'	74°07.0'	28	1.5	6	261	42.3	2	11.4	20.3	22.3	6.33
43	C4	6/21	1251	12.3	40°42.1'	74°07.1'	40°42.2'	74°07.0'	180	4.1	7	203	23.8	2	12.4	20.3	22.3	6.26
44	C10	6/21	1406	13.0	40°39.9'	74°08.5'	40°40.0'	74°08.4'	55	4.7	7	12	1.6	2	12.8	19.8	23.0	6.24
45	C9	6/21	1427	12.3	40°39.9'	74°08.3'	40°40.1'	74°08.2'	64	2.2	7	26	2.8	2	12.8	19.8	23.0	6.24
46	C8	6/21	1457	12.3	40°40.4'	74°08.0'	40°40.6'	74°07.9'	97	3.1	8	20	2.8	2	11.6	20.4	22.4	6.21
47	C7	6/21	1524	11.7	40°40.8'	74°07.9'	40°40.9'	74°07.8'	59	1.2	7	36	4.3	2	11.6	20.3	22.7	6.20
48	C6	6/21	1550	11.6	40°41.1'	74°07.8'	40°41.2'	74°07.7'	82	2.1	10	81	9.4	2	11.0	20.1	22.9	6.18
49	C5	6/21	1630	11.3	40°41.6'	74°07.4'	40°41.4'	74°07.5'	127	16.5	9	110	14.8	2	10.5	20.8	21.6	6.13
50	C4	6/22	0951	11.9	40°42.2'	74°07.1'	40°42.4'	74°07.1'	105	1.9	7	205	20.8	2	12.1	20.3	22.1	6.10
51	C3	6/22	1026	11.3	40°42.5'	74°07.0'	40°42.6'	74°06.9'	42	5.5	8	374	53.5	2	10.2	20.4	22.2	6.07
52	C2	6/22	1052	11.1	40°42.8'	74°06.8'	40°42.9'	74°06.6'	28	1.2	4	109	15.3	2	10.1	20.4	22.5	6.04
53	C1	6/22	1132	10.8	40°42.9'	74°06.4'	40°42.9'	74°06.6'	25	3.8	6	68	9.9	2	10.5	20.4	22.2	6.04
54	C9	6/22	1230	13.4	40°40.0'	74°08.3'	40°40.1'	74°08.2'	48	4.3	5	30	4.5	2	12.7	18.9	24.0	5.99
55	C10	6/22	1250	13.6	40°40.1'	74°08.4'	40°40.2'	74°08.3'	44	1.8	5	22	4.3	3	12.7	18.9	24.0	5.99
56	C8	6/22	1315	13.1	40°40.4'	74°08.0'	40°40.6'	74°08.0'	14	1.6	5	17	2.3	2	12.1	19.4	24.1	5.96
57	C7	6/22	1344	12.6	40°40.8'	74°07.9'	40°40.9'	74°07.8'	5	1.4	2	31	4.5	2	12.5	19.7	23.4	5.91
58	C6	6/22	1410	11.9	40°41.1'	74°07.7'	40°41.2'	74°07.7'	42	3.0	7	106	12.7	2	12.3	20.2	22.4	5.92
59	C5	6/22	1447	11.4	40°41.4'	74°07.5'	40°41.2'	74°07.7'	123	5.0	10	188	20.8	2	11.9	20.5	22.1	5.93
60	C1	7/12	1125	10.4	40°42.9'	74°06.5'	40°42.8'	74°06.7'	325	70.0	4	114	19.3	2	10.4	25.8	21.9	3.84
61	C2	7/12	1210	10.4	40°42.8'	74°06.6'	40°42.7'	74°06.9'	154	9.5	9	121	22.7	2	11.0	25.4	22.3	3.95
62	C3	7/12	1240	10.5	40°42.6'	74°07.0'	40°42.5'	74°07.0'	165	10.4	9	362	55.6	2	11.0	25.1	22.9	4.03
63	C4	7/12	1425	11.4	40°42.3'	74°07.1'	40°42.4'	74°07.1'	23	1.6	7	259	45.7	2	11.5	25.0	23.1	4.22
64	C5	7/12	1507	12.5	40°41.6'	74°07.4'	40°41.4'	74°07.5'	358	8.7	11	218	34.4	2	12.9	24.9	23.6	4.43

Appendix Table A (Continued)

Station Information									Catch Information						Hydrographic Observations			
					Location				Finfish			Megainvertebrates						
					Start		Finish											
Sta. No.	Sta. Code	Date M/D	Start Time	Depth (m)	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	No.	Wt. (kg)	No. sp.	Depth (m)	Temp. (°C)	Sal. (ppt)	DO (mg/l)
65	C6	7/12	1550	13.0	40°41.2'	74°07.7'	40°41.0'	74°07.8'	63	3.7	7	103	16.8	2	12.8	24.7	23.8	4.68
66	C10	7/13	0908	12.6	40°40.0'	74°08.4'	40°40.1'	74°08.3'	47	4.4	10	53	7.4	2	12.8	24.4	24.0	4.72
67	C9	7/13	0935	12.5	40°40.0'	74°08.3'	40°40.1'	74°08.2'	26	3.0	7	36	5.2	2	12.8	24.4	24.0	4.72
68	C8	7/13	1023	12.5	40°40.4'	74°08.0'	40°40.6'	74°08.0'	53	3.4	8	38	5.7	2	12.7	24.6	23.9	4.49
69	C7	7/13	1049	11.9	40°40.7'	74°07.9'	40°40.9'	74°07.9'	34	2.9	6	27	4.4	2	12.4	24.6	23.5	4.35
70	C1	7/13	1138	10.5	40°42.9'	74°06.5'	40°42.8'	74°06.7'	40	2.0	5	104	18.9	2	10.3	25.1	23.2	4.08
71	C2	7/13	1212	10.1	40°42.8'	74°06.6'	40°42.7'	74°06.8'	304	7.2	8	125	23.8	2	10.6	25.2	22.9	4.16
72	C3	7/13	1254	10.5	40°42.7'	74°06.9'	40°42.6'	74°07.0'	141	3.4	7	115	19.5	2	10.5	25.2	22.9	4.26
73	C4	7/13	1334	11.0	40°42.3'	74°07.1'	40°42.4'	74°07.1'	164	2.9	7	97	18.2	2	12.1	24.9	23.4	4.39
74	C10	7/14	0917	12.6	40°39.9'	74°08.5'	40°40.1'	74°08.4'	77	1.8	8	33	6.3	2	12.3	24.5	23.9	4.68
75	C9	7/14	0947	12.0	40°40.1'	74°08.2'	40°40.2'	74°08.1'	128	2.2	6	30	5.2	2	12.3	24.5	23.9	4.68
76	C8	7/14	1015	12.0	40°40.5'	74°08.0'	40°40.7'	74°07.9'	42	1.2	6	62	9.9	2	12.3	24.9	23.6	4.30
77	C7	7/14	1055	11.7	40°40.8'	74°07.9'	40°40.9'	74°07.8'	40	3.2	7	51	8.6	3	12.1	24.9	23.6	4.25
78	C6	7/14	1134	12.0	40°41.2'	74°07.7'	40°41.0'	74°07.8'	54	7.6	9	36	5.8	2	11.9	24.8	23.3	4.31
79	C5	7/14	1211	11.4	40°41.6'	74°07.4'	40°41.4'	74°07.5'	7	0.1	1	4	0.6	2	11.6	24.9	23.2	4.30
80	C1	8/23	1044	9.0	40°42.9'	74°06.5'	40°42.8'	74°06.6'	107	2.4	8	9	2.3	2	10.2	24.1	21.3	3.57
81	C2	8/23	1110	9.1	40°42.8'	74°06.7'	40°42.7'	74°06.9'	91	2.1	5	15	4.0	2	11.1	24.0	22.1	3.75
82	C3	8/23	1141	9.6	40°42.6'	74°07.0'	40°42.5'	74°07.1'	50	1.4	4	17	3.8	2	11.3	23.9	22.6	3.81
83	C4	8/23	1240	11.4	40°42.4'	74°07.1'	40°42.2'	74°07.0'	198	4.3	9	9	2.4	2	12.6	23.9	22.9	3.85
84	C5	8/23	1307	11.0	40°41.5'	74°07.4'	40°41.4'	74°07.5'	70	1.7	8	31	6.0	2	12.9	23.8	23.3	3.95
85	C6	8/23	1335	11.4	40°41.3'	74°07.6'	40°41.1'	74°07.7'	96	1.9	5	23	5.0	2	13.2	23.8	23.6	3.99
86	C7	8/23	1358	11.0	40°41.0'	74°07.7'	40°40.8'	74°07.8'	15	0.2	2	14	4.3	3	13.4	23.7	23.9	4.03
87	C10	8/23	1437	12.8	40°40.2'	74°08.4'	40°40.4'	74°08.2'	26	2.3	5	3	0.6	1	14.5	23.6	24.3	4.03
88	C9	8/23	1520	12.2	40°40.1'	74°08.2'	40°40.2'	74°08.1'	149	4.0	5	9	1.9	2	13.9	23.7	24.2	4.03
89	C8	8/23	1545	12.0	40°40.5'	74°08.0'	40°40.7'	74°08.0'	45	1.9	6	13	3.4	2	13.5	23.7	24.2	4.01
90	C1	8/24	0907	9.9	40°42.9'	74°06.5'	40°42.8'	74°06.7'	112	12.4	5	16	3.5	2	9.7	24.9	19.5	3.06
91	C3	8/24	0945	9.3	40°42.6'	74°07.0'	40°42.4'	74°07.0'	73	4.9	7	8	2.1	2	9.7	24.4	21.2	3.42
92	C2	8/24	1037	10.4	40° 42.9'	74° 06.6'	40° 42.8'	74° 06.8'	35	0.9	2	6	1.5	2	9.6	24.8	19.7	3.31
93	C4	8/24	1113	11.4	40°42.2'	74°07.1'	40°42.4'	74°07.0'	340	8.2	11	25	6.5	2	11.3	24.2	22.1	3.59
94	C5	8/24	1147	12.5	40°41.6'	74°07.4'	40°41.5'	74°07.5'	156	5.7	11	26	5.7	2	12.4	24.0	23.6	3.80
95	C6	8/24	1213	12.2	40°41.4'	74°07.5'	40°41.3'	74°07.6'	78	6.2	8	41	8.8	2	12.2	24.0	23.8	3.81
96	C7	8/24	1238	12.6	40°41.2'	74°07.7'	40°41.0'	74°07.7'	49	1.8	6	21	4.8	2	12.6	23.9	23.8	3.90
97	C8	8/24	1306	13.6	40°40.6'	74°07.9'	40°40.5'	74°08.0'	98	3.4	9	12	3.0	2	13.8	23.9	24.0	3.98
98	C9	8/24	1337	13.4	40°40.3'	74°08.1'	40°40.1'	74°08.2'	135	2.4	6	10	2.6	2	14.5	23.9	24.4	3.98

Appendix Table A (Continued)

Station Information									Catch Information						Hydrographic Observations			
					Location				Finfish			Megainvertebrates						
					Start		Finish											
Sta. No.	Sta. Code	Date M/D	Start Time	Depth (m)	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	No.	Wt. (kg)	No. sp.	Depth (m)	Temp. (°C)	Sal. (ppt)	DO (mg/l)
99	C10	8/24	1402	14.3	40°40.3'	74°08.3'	40°40.1'	74°08.4'	9	0.8	5	3	0.8	1	14.5	23.9	24.4	3.98
100	C1	9/20	0943	11.4	40°42.9'	74°06.5'	40°42.9'	74°06.6'	35	0.9	5	7	1.5	2	10.8	20.3	23.8	4.39
101	C2	9/20	1010	11.3	40°42.8'	74°06.7'	40°42.7'	74°06.8'	56	1.2	4	8	2.4	2	11.2	20.3	24.2	4.51
102	C3	9/20	1035	11.6	40°42.7'	74°06.9'	40°42.5'	74°07.0'	57	1.3	4	29	6.5	2	11.4	20.3	24.4	4.55
103	C4	9/20	1109	12.6	40°42.5'	74°07.0'	40°42.3'	74°07.1'	78	1.6	4	80	14.8	2	12.1	20.2	24.5	4.60
104	C10	9/20	1403	14.5	40°40.0'	74°08.3'	40°40.2'	74°08.2'	109	1.9	4	5	1.4	1	13.9	19.7	25.6	4.47
105	C9	9/20	1429	14.0	40°40.0'	74°08.3'	40°40.1'	74°08.2'	86	1.8	5	3	0.5	1	13.6	19.7	25.6	4.56
106	C8	9/20	1503	14.0	40°40.5'	74°08.0'	40°40.6'	74°08.0'	49	0.9	5	7	1.9	2	13.0	19.7	25.5	4.57
107	C7	9/20	1525	13.6	40°40.8'	74°07.9'	40°40.9'	74°07.9'	30	1.0	6	6	1.6	2	13.1	19.9	25.1	4.57
108	C6	9/20	1547	12.8	40°41.1'	74°07.8'	40°41.3'	74°07.6'	36	1.9	4	9	2.4	2	12.6	20.0	24.6	4.65
109	C5	9/20	1611	12.0	40°41.3'	74°07.6'	40°41.4'	74°07.5'	76	1.2	5	8	2.2	2	11.8	20.1	24.1	4.67
110	C1	9/21	1030	11.0	40°42.9'	74°06.5'	40°42.9'	74°06.6'	11	0.2	3	6	1.8	2	11.2	19.8	23.5	4.47
111	C2	9/21	1056	11.4	40°42.8'	74°06.7'	40°42.7'	74°06.9'	111	1.7	5	13	3.5	2	11.2	19.8	24.0	4.55
112	C3	9/21	1121	11.4	40°42.7'	74°06.9'	40°42.5'	74°07.0'	19	0.8	3	70	15.9	2	11.3	19.8	24.4	4.57
113	C4	9/21	1146	13.9	40°42.3'	74°07.1'	40°42.1'	74°07.0'	10	0.4	3	45	9.0	2	12.3	19.8	24.5	4.60
114	C5	9/21	1221	13.3	40°41.5'	74°07.5'	40°41.3'	74°07.6'	129	2.0	4	27	5.4	2	13.1	19.6	24.9	4.63
115	C6	9/21	1252	13.6	40°41.2'	74°07.7'	40°41.1'	74°07.8'	92	2.2	4	21	5.1	2	12.9	19.6	25.0	4.64
116	C7	9/21	1318	13.9	40°40.9'	74°07.8'	40°40.7'	74°08.0'	93	3.6	9	5	1.1	3	12.9	19.5	25.1	4.66
117	C10	9/21	1455	14.5	40°40.0'	74°08.4'	40°40.2'	74°08.3'	59	1.1	3	10	2.3	2	13.9	19.4	25.6	4.66
118	C9	9/21	1521	14.0	40°39.9'	74°08.3'	40°40.1'	74°08.2'	147	1.9	5	8	2.1	3	13.8	19.4	25.6	4.66
119	C8	9/21	1544	14.0	40°40.4'	74°08.1'	40°40.6'	74°08.0'	16	0.4	4	5	1.4	2	12.8	19.4	25.5	4.64
120	C10	10/19	1010	14.0	40°40.4'	74°08.3'	40°40.2'	74°08.4'	13	1.2	7	10	2.4	2	14.4	14.2	24.9	6.56
121	C9	10/19	1036	13.6	40°40.0'	74°08.2'	40°40.2'	74°08.1'	58	1.5	6	8	1.9	3	14.4	14.2	24.9	6.56
122	C8	10/19	1102	13.4	40°40.5'	74°08.0'	40°40.7'	74°07.9'	116	3.0	7	12	1.9	3	14.3	14.3	24.8	6.55
123	C7	10/19	1131	13.4	40°40.8'	74°07.8'	40°41.0'	74°07.8'	52	2.0	10	13	3.0	2	13.9	14.3	24.7	6.55
124	C6	10/19	1207	13.3	40°41.0'	74°07.8'	40°41.3'	74°07.6'	80	2.8	10	20	5.6	4	13.5	14.3	24.7	6.53
125	C5	10/19	1248	13.4	40°41.6'	74°07.4'	40°41.5'	74°07.5'	79	3.9	9	5	1.0	2	12.3	14.3	24.6	6.51
126	C4	10/19	1321	12.2	40°42.2'	74°07.1'	40°42.4'	74°07.1'	51	2.4	9	10	2.3	2	13.7	14.3	24.3	6.51
127	C1	10/19	1400	10.7	40°42.9'	74°06.4'	40°42.8'	74°06.7'	83	4.1	6	9	2.2	2	10.7	14.3	24.1	6.47
128	C2	10/19	1435	10.8	40°42.7'	74°06.8'	40°42.6'	74°07.0'	4	0.4	3	136	27.8	2	10.8	14.3	23.6	6.44
129	C3	10/19	1510	11.1	40°42.4'	74°07.0'	40°42.6'	74°07.0'	21	1.1	5	49	10.9	2	11.3	14.3	23.5	6.45
130	C5	10/20	0910	12.2	40°41.6'	74°07.4'	40°41.5'	74°07.5'	48	3.4	6	6	0.4	2	12.2	14.3	23.6	6.46
131	C6	10/20	0936	12.0	40°41.3'	74°07.6'	40°41.2'	74°07.7'	79	3.1	9	16	2.4	2	12.5	14.3	24.2	6.47
132	C7	10/20	1002	12.5	40°40.9'	74°07.8'	40°40.7'	74°07.9'	37	1.0	6	6	1.1	2	12.9	14.3	24.4	6.49

Appendix Table A (Continued)

Station Information									Catch Information						Hydrographic Observations			
					Location				Finfish			Megainvertebrates						
					Start		Finish											
Sta. No.	Sta. Code	Date M/D	Start Time	Depth (m)	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	No.	Wt. (kg)	No. sp.	Depth (m)	Temp. (°C)	Sal. (ppt)	DO (mg/l)
133	C8	10/20	1031	13.7	40°40.6'	74°08.0'	40°40.4'	74°08.1'	26	1.7	6	9	0.9	2	13.7	14.3	24.3	6.52
134	C9	10/20	1105	14.0	40°40.2'	74°08.2'	40°40.0'	74°08.3'	39	1.3	5	1	0.2	1	14.1	14.3	24.3	6.54
135	C10	10/20	1145	14.0	40°40.2'	74°08.3'	40°40.0'	74°08.5'	91	4.1	10	7	1.1	2	14.1	14.3	24.3	6.54
136	C4	10/20	1229	13.1	40°42.2'	74°07.1'	40°42.4'	74°07.1'	65	2.9	9	49	10.7	2	12.9	14.3	23.9	6.47
137	C3	10/20	1259	11.4	40°42.5'	74°07.0'	40°42.6'	74°06.9'	78	3.2	12	42	8.0	2	11.6	14.3	23.8	6.47
138	C2	10/20	1326	11.6	40°42.8'	74°06.8'	40°42.9'	74°06.6'	42	1.9	6	15	3.1	2	11.4	14.3	23.8	6.45
139	C1	10/20	1406	11.3	40°42.9'	74°06.6'	40°42.8'	74°06.8'	66	3.1	7	19	2.1	2	11.1	14.3	23.8	6.45
140	C1	11/22	1044	9.4	40°42.9'	74°06.5'	40°42.8'	74°06.7'	245	15.9	11	43	0.8	3	9.9	10.1	20.8	7.56
141	C2	11/22	1122	10.2	40°42.9'	74°06.6'	40°42.8'	74°06.8'	183	12.0	9	30	0.7	2	10.2	10.2	20.9	7.62
142	C3	11/22	1147	10.2	40°42.7'	74°06.9'	40°42.6'	74°07.0'	254	10.8	8	11	0.9	2	10.1	10.1	20.9	7.60
143	C4	11/22	1221	11.6	40°42.1'	74°07.1'	40°42.4'	74°07.0'	952	45.2	8	7	0.8	2	11.7	10.1	21.1	7.63
144	C5	11/22	1254	12.2	40°41.7'	74°07.3'	40°41.6'	74°07.4'	73	6.4	9	1	0.1	1	12.0	10.0	21.4	7.79
145	C6	11/22	1355	12.6	40°41.2'	74°07.6'	40°41.1'	74°07.7'	92	11.7	9	3	0.8	2	12.7	10.0	21.4	7.88
146	C7	11/22	1425	12.5	40°41.0'	74°07.7'	40°40.9'	74°07.8'	77	5.4	8	1	0.1	1	13.0	10.0	21.5	7.93
147	C8	11/22	1452	13.3	40°40.6'	74°07.9'	40°40.5'	74°08.0'	69	4.4	13	1	0.1	1	13.4	10.1	21.5	7.91
148	C9	11/22	1516	13.1	40°40.3'	74°08.1'	40°40.1'	74°08.2'	61	4.4	10	1	0.1	1	13.8	10.2	21.6	7.94
149	C10	11/22	1539	13.9	40°40.1'	74°08.5'	40°40.3'	74°08.3'	66	4.3	12	1	0.1	1	13.8	10.2	21.6	7.94
150	C1	11/23	0917	9.6	40°42.9'	74°06.6'	40°42.8'	74°06.8'	59	4.0	8	19	0.8	2	9.8	10.1	19.7	7.58
151	C4	11/23	1000	12.0	40°42.1'	74°07.1'	40°42.3'	74°07.1'	120	10.9	9	9	0.2	2	12.1	9.8	20.7	7.78
152	C3	11/23	1024	9.9	40°42.5'	74°07.0'	40°42.6'	74°06.9'	359	14.2	10	14	1.9	2	10.7	9.9	20.4	7.68
153	C2	11/23	1053	10.1	40°42.8'	74°06.8'	40°42.9'	74°06.6'	81	5.1	11	13	0.1	2	9.8	9.9	20.0	7.60
154	C5	11/23	1313	12.0	40°41.5'	74°07.5'	40°41.4'	74°07.6'	106	11.3	10	5	0.2	3	12.4	10.0	21.4	7.91
155	C6	11/23	1341	12.5	40°41.2'	74°07.7'	40°41.0'	74°07.8'	75	6.6	9	2	0.5	1	12.8	10.0	21.4	7.92
156	C7	11/23	1408	12.0	40°40.9'	74°07.8'	40°40.7'	74°07.9'	446	26.5	7	1	0.1	1	13.0	10.0	21.4	7.94
157	C8	11/23	1433	13.7	40°40.6'	74°08.0'	40°40.4'	74°08.0'	61	4.5	10	3	0.5	3	13.2	10.0	21.4	7.95
158	C9	11/23	1458	13.1	40°40.3'	74°08.1'	40°40.1'	74°08.2'	23	1.9	7	4	0.6	3	13.7	10.1	21.4	7.93
159	C10	11/23	1521	13.9	40°40.1'	74°08.4'	40°40.3'	74°08.2'	41	3.8	8	1	0.3	1	13.7	10.1	21.4	7.93
160	C10	12/13	1042	13.9	40°39.9'	74°08.5'	40°40.1'	74°08.4'	11	0.6	7	1	0.1	1	12.4	7.2	17.6	8.93
161	C9	12/13	1125	13.1	40°39.9'	74°08.3'	40°40.0'	74°08.2'	24	1.9	5	1	0.1	1	12.4	7.2	17.6	8.93
162	C8	12/13	1148	13.1	40°40.4'	74°08.0'	40°40.6'	74°07.9'	29	1.3	9	0	0.0	0	12.4	7.1	17.3	8.94
163	C7	12/13	1212	12.0	40°40.8'	74°07.9'	40°40.9'	74°07.7'	90	3.2	6	1	0.3	1	12.3	7.1	16.3	8.93
164	C6	12/13	1235	12.0	40°41.1'	74°07.7'	40°41.2'	74°07.7'	43	1.6	5	2	0.3	1	11.8	7.1	15.3	8.93
165	C5	12/13	1307	11.4	40°41.4'	74°07.6'	40°41.5'	74°07.5'	92	3.0	9	1	0.1	1	11.1	7.1	14.4	8.94
166	C4	12/13	1358	11.9	40°42.1'	74°07.1'	40°42.3'	74°07.1'	50	3.4	7	4	0.6	2	11.7	7.4	12.6	8.78

Appendix Table A (Continued)

Station Information									Catch Information						Hydrographic Observations			
					Location				Finfish			Megainvertebrates						
					Start		Finish											
Sta. No.	Sta. Code	Date M/D	Start Time	Depth (m)	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	No.	Wt. (kg)	No. sp.	Depth (m)	Temp. (°C)	Sal. (ppt)	DO (mg/l)
167	C3	12/13	1422	10.2	40°42.4'	74°07.1'	40°42.6'	74°07.0'	33	2.0	6	3	0.7	1	10.7	7.5	12.1	8.81
168	C2	12/13	1443	9.6	40°42.7'	74°06.8'	40°42.8'	74°06.6'	36	2.5	6	20	0.5	2	9.8	7.6	11.8	8.71
169	C1	12/13	1507	9.3	40°42.8'	74°06.5'	40°42.9'	74°06.4'	30	2.1	8	14	0.7	2	10.2	7.7	11.3	8.44
170	C4	12/14	0923	13.3	40°42.2'	74°07.1'	40°42.4'	74°07.1'	43	3.5	7	15	2.3	2	13.6	7.0	16.7	9.12
171	C3	12/14	0954	12.0	40°42.5'	74°07.0'	40°42.6'	74°06.9'	39	2.0	7	15	2.2	2	11.9	7.0	16.6	9.05
172	C2	12/14	1021	11.6	40°42.7'	74°06.8'	40°42.9'	74°06.6'	60	3.4	5	7	0.3	2	11.6	7.0	16.3	9.07
173	C1	12/14	1044	11.4	40°42.9'	74°06.6'	40°43.0'	74°06.4'	55	4.8	7	8	0.2	2	11.4	7.0	16.4	9.06
174	C8	12/14	1147	14.0	40°40.5'	74°08.0'	40°40.6'	74°08.0'	8	0.8	5	1	0.2	1	13.5	7.3	19.3	8.91
175	C10	12/14	1440	12.8	40°40.1'	74°08.4'	40°40.2'	74°08.3'	20	1.5	7	2	0.1	2	12.4	7.1	17.1	8.92
176	C9	12/14	1504	12.5	40°40.0'	74°08.3'	40°40.2'	74°08.2'	11	0.9	4	1	0.1	1	12.4	7.1	17.1	8.92
177	C7	12/15	1214	13.3	40°40.7'	74°07.9'	40°40.9'	74°07.8'	17	2.8	9	2	0.8	1	13.4	7.3	19.2	8.91
178	C6	12/15	1245	12.8	40°41.1'	74°07.7'	40°41.2'	74°07.6'	40	2.7	10	2	0.5	1	12.8	7.3	18.6	8.92
179	C5	12/15	1310	12.2	40°41.3'	74°07.6'	40°41.4'	74°07.5'	84	3.6	10	3	0.3	1	12.3	7.2	17.6	8.95
		1994																
180	C4	1/24	1025	11.9	40°42.1'	74°07.1'	40°42.3'	74°07.1'	49	1.1	9	16	4.0	2	11.8	0.3	22.7	8.73
181	C3	1/24	1050	10.1	40°42.4'	74°07.0'	40°42.6'	74°07.0'	72	3.8	7	7	1.1	2	11.0	0.3	22.3	8.69
182	C2	1/24	1120	10.1	40°42.8'	74°06.8'	40°42.9'	74°06.6'	39	1.1	9	3	0.8	2	9.8	0.4	21.8	8.89
183	C1	1/24	1145	9.8	40°42.9'	74°06.6'	40°43.0'	74°06.4'	29	2.1	8	0	0.0	0	9.4	0.4	22.1	8.91
184	C5	1/24	1231	11.3	40°41.5'	74°07.5'	40°41.4'	74°07.5'	28	2.1	6	0	0.0	0	11.4	0.3	23.2	8.93
185	C6	1/24	1258	12.0	40°41.1'	74°07.7'	40°40.9'	74°07.8'	60	1.7	7	3	0.5	2	11.8	0.4	23.7	9.02
186	C7	1/24	1323	12.3	40°40.9'	74°07.8'	40°40.7'	74°08.0'	26	1.0	4	0	0.0	0	12.2	0.5	24.1	9.17
187	C8	1/24	1351	13.4	40°40.5'	74°08.0'	40°40.4'	74°08.1'	51	1.8	7	1	0.1	1	13.1	0.6	24.5	9.41
188	C9	1/24	1415	12.3	40°40.3'	74°08.0'	40°40.2'	74°08.1'	53	2.2	7	7	0.8	2	13.2	0.6	24.2	9.34
189	C10	1/24	1440	13.0	40°40.3'	74°08.2'	40°40.1'	74°08.3'	72	2.8	8	3	2.5	2	13.2	0.6	24.2	9.34
190	C4	1/25	0925	10.5	40°42.1'	74°07.2'	40°42.2'	74°07.1'	15	1.3	4	3	0.5	1	12.6	0.5	23.1	9.07
191	C3	1/25	0950	11.0	40°42.3'	74°07.1'	40°42.4'	74°07.0'	63	2.5	6	1	0.1	1	9.9	0.5	23.0	8.94
192	C2	1/25	1018	10.5	40°42.7'	74°06.9'	40°42.8'	74°06.8'	16	0.4	5	2	0.1	2	9.3	0.5	23.1	8.93
193	C1	1/25	1042	10.5	40°42.9'	74°06.6'	40°42.9'	74°06.5'	37	0.6	6	2	1.6	2	10.2	0.5	22.7	8.89
194	C5	1/25	1313	11.3	40°41.5'	74°07.5'	40°41.3'	74°07.6'	18	1.2	6	1	0.1	1	11.4	0.6	23.2	8.94
195	C6	1/25	1339	12.0	40°41.2'	74°07.7'	40°41.1'	74°07.8'	37	2.0	6	0	0.0	0	11.7	0.7	23.5	9.14
196	C7	1/25	1432	11.4	40°40.9'	74°07.8'	40°40.7'	74°07.9'	5	0.7	4	0	0.0	0	12.5	0.9	24.3	9.29
197	C8	1/25	1454	12.8	40°40.6'	74°08.0'	40°40.4'	74°08.0'	93	3.4	5	1	0.3	1	13.4	1.0	24.5	9.29
198	C9	1/25	1513	13.4	40°40.2'	74°08.2'	40°40.1'	74°08.3'	102	2.2	4	2	0.3	2	14.0	0.9	24.1	9.22
199	C10	1/25	1545	14.0	40°40.3'	74°08.3'	40°40.1'	74°08.4'	99	4.1	6	4	0.6	2	14.0	0.9	24.1	9.22

Appendix Table A (Continued)

Station Information									Catch Information						Hydrographic Observations			
					Location				Finfish			Megainvertebrates						
					Start		Finish											
Sta. No.	Sta. Code	Date M/D	Start Time	Depth (m)	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	No.	Wt. (kg)	No. sp.	Depth (m)	Temp. (°C)	Sal. (ppt)	DO (mg/l)
200	C1	2/17	0939	11.0	40°42.9'	74°06.5'	40°42.9'	74°06.6'	53	3.6	3	3	0.6	2	11.0	-0.1	20.0	9.27
201	C2	2/17	1006	11.3	40°42.9'	74°06.6'	40°42.7'	74°06.8'	13	3.0	2	1	0.1	1	11.2	-0.2	20.4	9.21
202	C3	2/17	1043	10.7	40°42.6'	74°07.0'	40°42.4'	74°07.1'	34	2.6	4	1	0.3	1	11.4	-0.1	20.8	9.34
203	C4	2/17	1108	13.1	40°42.3'	74°07.1'	40°42.2'	74°07.1'	101	6.1	6	19	3.6	3	11.9	-0.1	21.1	9.39
204	C10	2/17	1329	14.3	40°40.2'	74°08.3'	40°40.4'	74°08.2'	23	1.9	5	5	1.1	2	14.4	-0.1	21.4	9.51
205	C9	2/17	1409	14.2	40°40.1'	74°08.3'	40°40.2'	74°08.2'	24	2.4	5	1	0.3	1	14.4	-0.1	21.4	9.51
206	C8	2/17	1429	13.9	40°40.5'	74°08.0'	40°40.6'	74°07.9'	174	16.5	8	3	0.7	1	13.8	-0.1	21.2	9.46
207	C7	2/17	1455	13.4	40°40.8'	74°07.9'	40°41.0'	74°07.9'	143	8.7	3	0	0.0	0	13.1	-0.1	21.1	9.40
208	C6	2/17	1516	12.6	40°41.1'	74°07.8'	40°41.3'	74°07.7'	195	17.8	3	0	0.0	0	11.8	-0.1	21.0	9.40
209	C5	2/17	1539	12.2	40°41.4'	74°07.6'	40°41.5'	74°07.4'	299	25.4	5	2	3.4	2	11.4	-0.1	21.0	9.38
210	C1	2/18	0933	10.7	40°42.9'	74°06.5'	40°42.8'	74°06.7'	62	4.0	5	6	0.2	2	10.3	0.1	19.8	9.39
211	C2	2/18	0955	10.5	40°42.8'	74°06.7'	40°42.7'	74°06.9'	27	2.4	3	1	0.1	1	10.4	0.1	20.1	9.27
212	C3	2/18	1021	10.4	40°42.7'	74°06.9'	40°42.5'	74°07.0'	23	2.0	3	4	0.7	1	9.8	0.0	20.5	9.26
213	C4	2/18	1046	11.7	40°42.4'	74°07.0'	40°42.3'	74°07.1'	31	1.5	5	0	0.0	0	11.2	0.1	21.1	9.37
214	C5	2/18	1129	12.2	40°41.5'	74°07.5'	40°41.4'	74°07.6'	85	7.0	6	0	0.0	0	12.2	0.1	21.8	9.55
215	C6	2/18	1153	12.5	40°41.3'	74°07.6'	40°41.1'	74°07.7'	64	5.0	5	1	0.1	1	12.1	0.2	21.9	9.56
216	C7	2/18	1259	12.2	40°41.0'	74°07.8'	40°40.8'	74°07.8'	51	4.5	3	5	0.3	2	12.4	0.2	21.8	9.63
217	C8	2/18	1319	14.0	40°40.6'	74°08.0'	40°40.5'	74°08.0'	125	10.7	6	8	2.4	2	11.8	0.2	21.5	9.72
218	C9	2/18	1349	13.9	40°40.2'	74°08.2'	40°40.0'	74°08.3'	158	13.6	7	5	1.6	1	12.6	0.2	21.7	9.73
219	C10	2/18	1416	14.3	40°40.2'	74°08.3'	40°40.0'	74°08.5'	194	11.5	6	5	1.3	1	12.6	0.2	21.7	9.73
220	C1	3/2	0928	11.3	40°42.9'	74°06.5'	40°42.9'	74°06.6'	42	4.8	4	0	0.0	0	11.5	0.9	18.3	10.82
221	C2	3/2	0957	10.5	40°42.9'	74°06.6'	40°42.7'	74°06.8'	32	3.7	5	1	0.1	1	11.1	0.8	18.5	10.79
222	C3	3/2	1021	10.2	40°42.6'	74°07.0'	40°42.4'	74°07.1'	105	4.6	6	0	0.0	0	10.8	0.8	18.4	10.80
223	C4	3/2	1049	12.5	40°42.4'	74°07.0'	40°42.3'	74°07.1'	125	6.3	7	4	0.3	2	11.9	0.8	18.6	10.80
224	C10	3/2	1252	14.8	40°39.9'	74°08.6'	40°40.1'	74°08.5'	79	4.8	6	0	0.0	0	13.9	0.7	20.8	10.82
225	C9	3/2	1322	13.9	40°39.9'	74°08.3'	40°40.1'	74°08.2'	9	0.8	4	0	0.0	0	13.9	0.7	20.8	10.82
226	C8	3/2	1353	13.9	40°40.5'	74°08.0'	40°40.6'	74°08.0'	72	3.8	5	5	0.5	1	13.3	0.7	20.5	10.80
227	C7	3/2	1424	13.6	40°40.8'	74°07.9'	40°40.9'	74°07.8'	175	8.5	5	0	0.0	0	12.6	0.8	20.2	10.78
228	C6	3/2	1451	13.0	40°41.1'	74°07.8'	40°41.2'	74°07.7'	287	9.5	7	4	0.5	2	11.9	0.8	20.0	10.76
229	C5	3/2	1515	12.2	40°41.3'	74°07.6'	40°41.4'	74°07.5'	85	3.6	5	1	0.1	1	11.2	0.8	19.4	10.68
230	C1	3/4	0925	10.4	40°42.9'	74°06.5'	40°42.9'	74°06.6'	10	0.5	5	0	0.0	0	10.6	0.9	13.6	10.91
231	C2	3/4	0949	10.7	40°42.9'	74°06.6'	40°42.8'	74°06.8'	11	0.5	4	0	0.0	0	10.3	0.6	15.2	10.75
232	C3	3/4	1010	10.2	40°42.6'	74°06.9'	40°42.5'	74°07.0'	54	6.1	3	0	0.0	0	9.9	0.5	17.0	10.57
233	C4	3/4	1029	12.5	40°42.3'	74°07.0'	40°42.2'	74°07.0'	88	3.9	6	1	0.1	1	11.4	0.4	17.9	10.51

Appendix Table A (Continued)

Station Information									Catch Information						Hydrographic Observations			
					Location				Finfish			Megainvertebrates						
					Start		Finish											
Sta. No.	Sta. Code	Date M/D	Start Time	Depth (m)	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	No.	Wt. (kg)	No. sp.	Depth (m)	Temp. (°C)	Sal. (ppt)	DO (mg/l)
234	C5	3/4	1136	12.3	40°41.6'	74°07.4'	40°41.4'	74°07.5'	176	9.4	7	0	0.0	0	12.8	0.4	18.9	10.46
235	C6	3/4	1201	12.8	40°41.1'	74°07.7'	40°40.9'	74°07.7'	203	11.4	5	7	0.5	2	12.5	0.4	18.8	10.49
236	C7	3/4	1231	12.6	40°40.9'	74°07.8'	40°40.8'	74°07.9'	111	5.8	3	2	0.3	2	12.4	0.4	18.9	10.56
237	C8	3/4	1253	14.0	40°40.6'	74°08.0'	40°40.4'	74°08.0'	93	5.3	7	0	0.0	0	13.4	0.4	19.4	10.65
238	C9	3/4	1316	13.3	40°40.1'	74°08.1'	40°39.9'	74°08.3'	154	17.3	5	1	0.3	1	14.3	0.5	20.5	10.65
239	C10	3/4	1342	14.3	40°40.2'	74°08.2'	40°40.0'	74°08.3'	83	5.3	7	1	0.1	1	14.3	0.5	20.5	10.65
240	C1	3/14	0933	11.3	40°42.9'	74°06.5'	40°42.8'	74°06.7'	79	6.3	5	2	0.2	2	13.4	2.7	16.5	10.36
241	C2	3/14	954	11.4	40°42.8'	74°06.8'	40°42.6'	74°06.9'	33	1.9	4	2	0.5	1	11.7	2.7	16.8	10.36
242	C3	3/14	1018	11.6	40°42.6'	74°07.0'	40°42.4'	74°07.1'	183	7.1	5	4	0.8	2	12.3	2.6	17.1	10.36
243	C4	3/14	1044	13.4	40°42.3'	74°07.1'	40°42.1'	74°07.1'	98	11.1	6	9	1.0	3	13.3	2.6	17.3	10.32
244	C10	3/14	1139	14.2	40°40.1'	74°08.4'	40°40.1'	74°08.4'	189	11.2	4	12	3.3	1	13.9	2.6	18.4	10.64
245	C9	3/14	1209	13.7	40°40.0'	74°08.4'	40°40.1'	74°08.3'	408	36.6	6	7	2.3	2	13.9	2.6	18.4	10.64
246	C8	3/14	1241	13.3	40°40.4'	74°08.0'	40°40.5'	74°08.0'	131	8.6	4	1	0.1	1	13.2	2.6	17.8	10.49
247	C7	3/14	1303	12.3	40°40.8'	74°07.9'	40°40.9'	74°07.8'	504	35.0	2	1	0.2	1	12.1	2.6	17.2	10.34
248	C6	3/14	1332	12.0	40°41.1'	74°07.8'	40°41.3'	74°07.7'	114	6.9	7	21	2.7	2	11.4	2.7	16.9	10.26
249	C5	3/14	1358	11.6	40°41.4'	74°07.5'	40°41.5'	74°07.5'	169	10.8	7	1	0.1	1	11.4	2.7	16.5	10.26
250	C5	3/15	0916	13.4	40°41.6'	74°07.4'	40°41.4'	74°07.5'	202	9.5	3	0	0.0	0	13.0	2.9	16.6	10.70
251	C1	3/15	1000	11.1	40°42.9'	74°06.5'	40°42.8'	74°06.7'	103	4.9	6	17	1.6	3	11.3	2.9	16.0	10.48
252	C2	3/15	1028	11.7	40°42.8'	74°06.7'	40°42.7'	74°06.9'	144	6.1	4	3	0.4	2	11.2	2.9	16.1	10.45
253	C3	3/15	1052	10.8	40°42.6'	74°07.0'	40°42.5'	74°07.1'	11	0.6	3	11	1.6	2	11.1	2.9	16.3	10.47
254	C4	3/15	1128	13.6	40°42.1'	74°07.1'	40°42.3'	74°07.1'	331	17.6	4	9	1.0	3	12.2	2.9	16.4	10.45
255	C10	3/15	1412	13.4	40°40.1'	74°08.4'	40°40.2'	74°08.4'	112	5.1	4	30	7.8	3	13.1	2.9	17.4	10.60
256	C9	3/15	1437	13.0	40°39.9'	74°08.3'	40°40.1'	74°08.2'	177	25.5	5	18	4.3	2	13.1	2.9	17.4	10.60
257	C8	3/15	1543	13.1	40°40.4'	74°08.0'	40°40.6'	74°07.9'	43	2.9	4	21	4.8	2	12.1	2.9	16.8	10.51
258	C7	3/15	1630	12.0	40°40.9'	74°07.8'	40°41.0'	74°07.8'	259	18.5	4	0	0.0	0	11.7	2.9	16.6	10.38
259	C6	3/15	1646	12.0	40°41.1'	74°07.7'	40°41.3'	74°07.5'	62	4.0	6	0	0.0	0	11.6	2.8	16.7	10.20
260	C1	4/14	0917	11.1	40°42.9'	74°06.5'	40°42.8'	74°06.6'	182	5.9	6	6	0.3	2	10.7	7.5	12.8	9.76
261	C2	4/14	0947	11.0	40°42.9'	74°06.6'	40°42.8'	74°06.7'	90	2.8	5	8	0.1	2	11.0	7.5	12.9	9.69
262	C3	4/14	1029	10.5	40°42.6'	74°06.9'	40°42.5'	74°07.0'	67	3.8	7	0	0.0	0	11.0	7.3	13.6	9.69
263	C4	4/14	1100	11.7	40°42.2'	74°07.1'	40°42.4'	74°07.1'	148	8.4	5	3	0.1	2	12.3	7.2	14.0	9.69
264	C10	4/14	1303	14.2	40°40.1'	74°08.4'	40°40.3'	74°08.2'	11	0.8	5	0	0.0	0	14.1	7.1	14.5	9.73
265	C9	4/14	1332	14.2	40°40.1'	74°08.4'	40°40.3'	74°08.3'	26	1.4	6	0	0.0	0	14.1	7.1	14.5	9.73
266	C8	4/14	1355	13.1	40°40.5'	74°08.0'	40°40.7'	74°07.9'	156	7.0	6	1	1.5	1	13.4	7.2	14.0	9.73
267	C7	4/14	1419	13.3	40°40.9'	74°07.9'	40°41.1'	74°07.8'	72	2.9	5	1	0.1	1	12.3	7.3	13.7	9.68
268	C6	4/14	1445	11.6	40°41.1'	74°07.7'	40°41.3'	74°07.6'	167	7.1	7	4	0.1	1	11.6	7.4	13.4	9.65

Appendix Table A (Continued)

Station Information									Catch Information						Hydrographic Observations			
					Location				Finfish			Megainvertebrates						
Sta. No.	Sta. Code	Date M/D	Start Time	Depth (m)	Start Lat. (N)	Start Long. (W)	Finish Lat. (N)	Finish Long. (W)	No.	Wt. (kg)	No. sp.	No.	Wt. (kg)	No. sp.	Depth (m)	Temp. (°C)	Sal. (ppt)	DO (mg/l)
269	C5	4/14	1522	11.9	40°41.5'	74°07.5'	40°41.3'	74°07.6'	237	12.6	6	2	0.1	2	11.9	7.5	13.1	9.61
270	C1	4/15	0909	11.0	40°42.9'	74°06.5'	40°42.8'	74°06.7'	176	9.2	7	1	0.1	1	10.5	7.8	13.0	9.73
271	C2	4/15	0933	11.0	40°42.8'	74°06.7'	40°42.7'	74°06.8'	152	5.5	6	0	0.0	0	11.0	7.8	13.0	9.63
272	C3	4/15	0956	11.1	40°42.7'	74°06.9'	40°42.6'	74°07.0'	146	9.2	5	0	0.0	0	11.2	7.8	13.2	9.66
273	C4	4/15	1039	11.9	40°42.3'	74°07.0'	40°42.4'	74°07.0'	97	7.3	8	1	0.6	1	12.5	7.6	13.7	9.68
274	C10	4/15	1136	14.2	40°40.1'	74°08.4'	40°40.2'	74°08.4'	19	0.6	4	0	0.0	0	14.9	7.5	14.6	9.74
275	C9	4/15	1210	13.6	40°40.1'	74°08.2'	40°40.3'	74°08.1'	52	2.3	3	0	0.0	0	14.9	7.5	14.6	9.74
276	C8	4/15	1241	13.6	40°40.5'	74°08.1'	40°40.6'	74°08.0'	121	3.9	6	0	0.0	0	14.4	7.6	14.3	9.79
277	C7	4/15	1309	13.6	40°40.8'	74°07.9'	40°41.0'	74°07.8'	112	4.2	7	0	0.0	0	13.4	7.7	13.9	9.85
278	C6	4/15	1337	12.5	40°41.2'	74°07.7'	40°41.3'	74°07.6'	141	6.2	5	0	0.0	0	12.8	7.7	13.8	9.73
279	C5	4/15	1404	12.3	40°41.3'	74°07.6'	40°41.4'	74°07.5'	125	6.3	4	4	0.2	3	12.6	7.7	13.7	9.52
280	C4	4/25	1009	12.8	40°42.1'	74°07.1'	40°42.3'	74°07.1'	7	0.7	5	3	0.2	2	12.1	9.5	16.6	9.36
281	C3	4/25	1033	11.0	40°42.5'	74°07.1'	40°42.6'	74°06.9'	85	4.1	6	1	0.1	1	11.3	9.6	16.1	9.38
282	C2	4/25	1057	10.7	40°42.7'	74°06.9'	40°42.8'	74°06.7'	115	6.8	8	14	0.1	2	11.1	9.7	15.8	9.38
283	C1	4/25	1120	10.7	40°42.8'	74°06.7'	40°42.9'	74°06.5'	76	3.9	6	9	0.1	2	10.9	10.2	14.7	9.38
284	C8	4/25	1204	12.8	40°40.4'	74°08.0'	40°40.6'	74°08.0'	26	2.6	8	0	0.0	0	12.9	9.2	17.6	9.39
285	C10	4/25	1235	12.6	40°40.0'	74°08.5'	40°40.2'	74°08.4'	13	1.2	7	1	0.1	1	13.4	8.9	18.1	9.38
286	C9	4/25	1259	13.0	40°40.0'	74°08.4'	40°40.2'	74°08.4'	6	0.7	4	0	0.0	0	13.4	8.9	18.1	9.38
287	C7	4/25	1338	11.6	40°40.8'	74°07.9'	40°40.9'	74°07.8'	47	2.9	6	1	0.1	1	12.4	9.3	17.3	9.36
288	C6	4/25	1359	11.6	40°41.1'	74°07.8'	40°41.3'	74°07.7'	14	1.3	8	0	0.0	0	11.4	10.2	14.9	9.30
289	C5	4/25	1419	11.0	40°41.3'	74°07.6'	40°41.5'	74°07.5'	57	3.6	9	2	0.1	2	11.1	11.3	12.3	9.27
290	C1	4/26	0908	11.3	40°42.9'	74°06.5'	40°42.8'	74°06.7'	23	2.9	6	4	0.2	3	11.6	10.2	15.1	9.28
291	C2	4/26	0935	11.6	40°42.9'	74°06.6'	40°42.8'	74°06.7'	75	5.2	5	42	0.3	2	11.4	9.9	15.9	9.20
292	C4	4/26	1014	13.7	40°42.1'	74°07.0'	40°42.3'	74°07.0'	32	4.2	7	4	1.1	2	13.7	9.8	16.1	9.20
293	C3	4/26	1043	10.2	40°42.4'	74°07.0'	40°42.6'	74°06.9'	163	9.0	6	5	0.6	1	12.2	9.9	15.9	9.20
294	C10	4/26	1307	13.3	40°40.0'	74°08.4'	40°40.1'	74°08.4'	15	0.9	6	1	0.1	1	13.1	9.3	17.6	9.16
295	C9	4/26	1336	12.8	40°40.0'	74°08.3'	40°40.1'	74°08.2'	16	1.8	3	5	0.5	2	13.1	9.3	17.6	9.16
296	C8	4/26	1403	12.6	40°40.4'	74°08.0'	40°40.6'	74°07.9'	48	3.4	8	2	0.1	1	12.3	9.8	16.4	9.19
297	C7	4/26	1424	11.3	40°40.8'	74°07.8'	40°41.0'	74°07.8'	26	1.3	4	6	0.3	3	12.1	9.9	16.3	9.17
298	C6	4/26	1447	11.6	40°41.1'	74°07.8'	40°41.2'	74°07.7'	30	1.8	9	5	0.7	3	12.2	9.8	16.5	9.08
299	C5	4/26	1512	11.3	40°41.4'	74°07.5'	40°41.5'	74°07.5'	47	4.2	8	2	0.1	1	11.9	10.9	14.2	8.98

Appendix Table B

Listing of 4.9 m otter trawl stations made in Newark Bay, New Jersey between May 1993 and April 1994, including location, catch of finfish and megainvertebrates, and bottom hydrographic observations. A dash (-) = no data.

Station Information								Catch Information						Hydrographic Observations			
				Location				Finfish			Megainvertebrates						
				Start		Finish											
Sta. No.	Sta. Code	Date M/D	Start Time	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	No.	Wt. (kg)	No. sp.	Depth (m)	Temp. (°C)	Sal. (ppt)	DO (mg/l)
		1993															
1	S1	5/24	1043	40° 41.5'	74° 07.4'	-	-	17	0.9	5	0	0.0	0	4.0	14.9	15.0	-
2	S2	5/24	1102	40° 41.5'	74° 07.4'	-	-	17	0.0	3	0	0.0	0	4.0	14.8	19.6	-
3	S3	5/24	1118	40° 41.3'	74° 07.5'	-	-	17	0.0	5	1	0.1	1	4.0	19.7	14.8	-
4	S4	5/24	1132	40° 41.1'	74° 07.7'	-	-	8	0.0	1	0	0.0	0	3.7	14.8	19.7	-
5	S5	5/24	1147	40° 40.8'	74° 07.9'	-	-	34	0.0	3	0	0.0	0	3.4	14.5	19.5	-
6	S6	5/24	1200	40° 40.6'	74° 08.0'	-	-	18	0.0	3	0	0.0	0	3.4	14.7	19.1	-
7	S7	5/24	1216	40° 40.3'	74° 08.2'	-	-	8	0.0	2	0	0.0	0	3.4	13.7	19.8	-
8	S1	6/7	1002	40° 41.6'	74° 07.4'	-	-	100	0.3	8	1	0.1	1	4.0	-	-	-
9	S2	6/7	1022	40° 41.5'	74° 07.4'	-	-	37	0.0	5	0	0.0	0	4.3	-	-	-
10	S3	6/7	1038	40° 41.4'	74° 07.6'	-	-	170	0.2	4	0	0.0	0	3.7	-	-	-
11	S4	6/7	1110	40° 41.3'	74° 07.7'	-	-	387	0.0	2	0	0.0	0	3.7	-	-	-
12	S5	6/7	1136	40° 40.8'	74° 07.9'	-	-	21	0.0	2	1	0.0	1	3.7	-	-	-
13	S6	6/7	1150	40° 40.6'	74° 07.9'	-	-	84	0.1	6	0	0.0	0	4.0	-	-	-
14	S7	6/7	1208	40° 40.4'	74° 08.1'	-	-	37	0.5	4	1	0.1	1	3.0	-	-	-
15	S2	6/21	1008	40° 41.5'	74° 07.4'	-	-	17	0.0	5	4	0.3	3	4.0	20.8	19.9	-
16	S1	6/21	1045	40° 41.6'	74° 07.4'	-	-	27	0.0	4	0	0.0	0	4.0	20.9	19.8	-
17	S4	6/21	1047	40° 41.1'	74° 07.8'	-	-	30	0.3	4	0	0.0	0	3.4	20.5	19.9	-
18	S5	6/21	1103	40° 40.8'	74° 07.9'	-	-	40	0.3	3	3	0.3	2	3.4	20.6	19.9	-
19	S6	6/21	1118	40° 40.6'	74° 08.0'	-	-	37	0.4	4	3	0.5	1	3.4	21.1	19.7	-
20	S3	6/21	1132	40° 41.2'	74° 07.7'	-	-	23	0.4	4	1	0.1	1	3.7	20.7	19.9	-
21	S7	6/21	1135	40° 40.3'	74° 08.2'	-	-	24	0.4	5	5	0.4	2	3.4	20.8	19.7	-
22	S1	7/12	1019	40° 41.6'	74° 07.5'	40° 41.4'	74° 07.6'	60	0.4	6	5	1.1	2	2.7	-	-	-
23	S2	7/14	1044	40° 41.4'	74° 07.5'	40° 41.3'	74° 07.5'	25	1.1	2	4	0.8	2	2.6	-	-	-
24	S3	7/14	1101	40° 41.2'	74° 07.7'	40° 41.1'	74° 07.9'	12	0.8	4	8	1.8	2	2.1	-	-	-
25	S4	7/14	1122	40° 41.1'	74° 07.7'	40° 40.9'	74° 07.9'	32	1.1	4	22	3.5	2	2.4	-	-	-
26	S5	7/14	1147	40° 40.8'	74° 07.9'	40° 40.6'	74° 08.1'	28	1.5	6	13	2.8	2	2.3	-	-	-
27	S6	7/14	1206	40° 40.7'	74° 07.8'	40° 40.6'	74° 08.0'	56	0.9	4	12	2.3	2	2.4	-	-	-
28	S7	7/14	1228	40° 40.5'	74° 08.1'	40° 40.4'	74° 08.2'	6	1.5	4	28	3.8	2	2.3	-	-	-
29	S1	8/23	1017	40° 41.6'	74° 07.4'	40° 41.4'	74° 07.5'	79	0.4	3	0	0.0	0	3.2	24.1	21.6	3.7
30	S2	8/23	1046	40° 41.5'	74° 07.4'	40° 41.4'	74° 07.4'	197	0.3	4	2	0.8	1	2.9	24.3	21.4	3.8

Appendix Table B (Continued)

Station Information								Catch Information						Hydrographic Observations			
				Location				Finfish			Megainvertebrates						
				Start		Finish			Wt.	No.		Wt.	No.	Depth	Temp.	Sal.	DO
Sta. No.	Sta. Code	Date M/D	Start Time	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	(kg)	sp.	No.	(kg)	sp.	(m)	(°C)	(ppt)	(mg/l)
31	S3	8/23	1123	40° 41.4'	74° 07.6'	40° 41.2'	74° 07.7'	10	0.1	4	4	1.3	1	3.4	24	22.2	3.9
32	S4	8/23	1147	40° 41.0'	74° 07.6'	40° 40.9'	74° 07.8'	9	0.6	5	6	1.8	1	3.2	24.2	22.3	4.0
33	S5	8/23	1213	40° 40.8'	74° 07.9'	40° 40.6'	74° 08.0'	78	0.2	8	9	2.5	2	3.8	24.1	22.7	3.9
34	S6	8/23	1240	40° 40.7'	74° 07.9'	40° 40.6'	74° 08.0'	20	0.8	7	7	1.8	2	3.7	24.2	23.0	3.9
35	S7	8/23	1306	40° 40.4'	74° 08.1'	40° 40.3'	74° 08.2'	65	0.3	6	5	1.3	2	3.7	24.5	23.0	3.9
36	S1	9/20	1059	40° 41.6'	74° 07.4'	40° 41.4'	74° 07.5'	17	0.2	4	1	0.3	1	4.0	20.1	24.4	5.1
37	S2	9/20	1121	40° 41.5'	74° 07.3'	40° 41.3'	74° 07.4'	30	0.3	4	2	1.0	1	3.8	20.1	24.0	5.1
38	S3	9/20	1144	40° 41.2'	74° 07.6'	40° 41.1'	74° 07.7'	31	0.2	2	2	0.8	1	4.0	20.2	24.2	4.8
39	S4	9/20	1204	40° 41.1'	74° 07.7'	40° 40.9'	74° 07.8'	22	0.3	4	3	0.5	2	3.7	20.1	24.2	4.8
40	S5	9/20	1227	-	-	-	-	23	0.1	2	3	1.0	2	4.0	20	24.7	4.9
41	S6	9/20	1251	40° 40.6'	74° 07.9'	40° 40.5'	74° 08.0'	359	0.7	5	3	0.8	2	3.8	20	24.6	4.8
42	S7	9/20	1323	40° 40.4'	74° 08.2'	40° 40.2'	74° 08.3'	318	0.2	4	4	0.8	1	5.6	19.9	24.9	4.8
43	S7	10/19	1158	40° 40.2'	74° 08.2'	40° 40.4'	74° 07.1'	0	0.0	0	0	0.0	0	3.7	14.5	25.0	6.4
44	S5	10/19	1219	40° 40.5'	74° 08.1'	40° 40.7'	74° 08.0'	20	1.5	3	4	0.7	2	3.7	14.5	25.1	6.4
45	S6	10/19	1242	40° 40.5'	74° 08.0'	40° 40.7'	74° 07.9'	8	0.3	3	0	0.0	0	3.7	14.5	24.2	6.4
46	S3	10/19	1255	40° 40.8'	74° 07.9'	40° 41.0'	74° 07.9'	37	1.2	3	2	0.7	2	3.7	14.5	25.2	6.4
47	S4	10/19	1317	40° 40.8'	74° 07.8'	40° 41.0'	74° 07.8'	5	0.1	3	17	5.0	2	3.7	14.5	25.3	6.5
48	S1	10/19	1337	40° 41.3'	74° 07.7'	40° 41.4'	74° 07.6'	6	0.1	3	1	0.1	1	3.7	14.5	24.8	6.5
49	S2	10/19	1356	40° 41.2'	74° 07.6'	-	-	3	0.1	2	1	0.2	1	3.7	14.5	24.7	6.5
50	S1	11/22	1012	40° 41.5'	74° 07.5'	40° 41.3'	74° 07.5'	2	0.0	1	0	0.0	0	2.3	9.4	19.2	7.7
51	S2	11/22	1033	40° 41.4'	74° 07.4'	40° 41.3'	74° 07.5'	0	0.0	0	0	0.0	0	2.4	9.3	20.2	8.1
52	S3	11/22	1048	40° 41.3'	74° 07.6'	40° 41.1'	74° 07.7'	3	0.1	3	0	0.0	0	2.1	8.5	21.0	8.4
53	S4	11/22	1111	40° 41.1'	74° 07.7'	40° 40.9'	74° 07.8'	0	0.0	0	0	0.0	0	2.3	8.5	21.0	8.7
54	S5	11/22	1137	40° 40.8'	74° 07.9'	40° 40.6'	74° 08.0'	2	0.0	1	0	0.0	0	2.3	9.2	21.6	8.4
55	S6	11/22	1158	40° 40.7'	74° 07.9'	40° 40.0'	74° 08.0'	2	0.0	2	0	0.0	0	2.6	9	20.9	8.5
56	S7	11/22	1216	40° 40.4'	74° 08.1'	40° 40.3'	74° 08.1'	5	0.1	3	1	0.2	1	2.4	9.5	21.3	8.4
57	S1	12/13	1012	40° 41.1'	74° 07.6'	40° 41.3'	74° 07.5'	11	0.4	4	0	0.0	0	3.7	6.9	15.9	9.2
58	S4	12/13	1031	40° 41.1'	74° 07.6'	40° 40.9'	74° 07.7'	11	0.8	6	0	0.0	0	4.0	6.7	17.2	9.0
59	S2	12/13	1035	40° 41.2'	74° 07.5'	40° 41.3'	74° 07.5'	15	0.3	5	0	0.0	0	3.5	6.8	15.4	9.3
60	S7	12/13	1120	40° 40.2'	74° 08.2'	-	-	3	0.0	3	0	0.0	0	3.2	6.2	13.2	9.5
61	S5	12/13	1145	40° 40.6'	74° 08.0'	40° 40.7'	74° 08.0'	6	0.3	2	1	0.0	1	3.0	6.4	13.4	9.5
62	S3	12/14	1008	40° 41.2'	74° 07.8'	40° 40.9'	74° 07.9'	11	1.0	3	0	0.0	0	4.1	6.6	16.1	9.3
63	S6	12/14	1053	40° 40.7'	74° 07.3'	40° 40.5'	74° 08.0'	6	0.1	4	0	0.0	0	3.7	6.7	17.2	9.2

Appendix Table B (Continued)

Station Information								Catch Information						Hydrographic Observations			
				Location				Finfish			Megainvertebrates						
				Start		Finish			Wt.	No.		Wt.	No.	Depth	Temp.	Sal.	DO
Sta. No.	Sta. Code	Date M/D	Start Time	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	(kg)	sp.	No.	(kg)	sp.	(m)	(°C)	(ppt)	(mg/l)
		1994															
64	S7	1/24	1210	40° 40.1'	74° 08.2'	40° 40.3'	74° 08.1'	0	0.0	0	0	0.0	0	2.1	-0.2	19.4	10.0
65	S5	1/24	1229	40° 40.5'	74° 08.0'	40° 40.6'	74° 07.9'	0	0.0	0	0	0.0	0	2.1	-0.1	20.3	9.4
66	S6	1/24	1246	40° 40.5'	74° 08.0'	40° 40.7'	74° 08.0'	1	0.0	1	0	0.0	0	2.0	-0.1	19.7	9.5
67	S3	1/24	1304	40° 40.8'	74° 07.9'	40° 41.0'	74° 07.8'	0	0.0	0	0	0.0	0	1.8	0.1	20.2	9.9
68	S4	1/24	1329	40° 40.9'	74° 07.9'	40° 41.0'	74° 07.8'	0	0.0	0	0	0.0	0	1.8	0.1	20.0	9.7
69	S1	1/24	1347	40° 41.4'	74° 07.6'	40° 41.5'	74° 07.5'	1	0.0	1	0	0.0	0	2.3	0.4	19.6	9.8
70	S2	1/24	1407	40° 41.3'	74° 07.6'	40° 41.5'	74° 07.5'	0	0.0	0	0	0.0	0	2.4	0.4	19.5	9.7
71	S1	2/16	1139	40° 41.4'	74° 07.5'	40° 41.2'	74° 07.6'	0	0.0	0	0	0.0	0	3.4	-0.2	19.0	9.9
72	S2	2/16	1200	40° 41.2'	74° 07.5'	40° 41.4'	74° 07.4'	0	0.0	0	0	0.0	0	2.7	-0.1	18.8	10.0
73	S3	2/16	1221	40° 40.9'	74° 07.8'	40° 41.0'	74° 07.7'	0	0.0	0	0	0.0	0	2.9	-0.1	19.2	10.1
74	S4	2/16	1241	40° 40.8'	74° 07.8'	40° 41.0'	74° 07.7'	0	0.0	0	0	0.0	0	3.0	-0.1	19.7	10.3
75	S5	2/16	1259	40° 40.4'	74° 08.0'	40° 40.6'	74° 08.0'	0	0.0	0	2	0.5	1	3.4	-0.1	19.4	10.2
76	S6	2/16	1317	40° 40.5'	74° 08.0'	40° 40.6'	74° 07.9'	0	0.0	0	1	0.3	1	2.9	0.1	19.1	10.4
77	S7	2/16	1338	40° 40.1'	74° 08.3'	40° 40.3'	74° 08.1'	0	0.0	0	0	0.0	0	3.4	0.1	19.3	10.3
78	S7	3/2	1112	40° 40.3'	74° 08.2'	40° 40.5'	74° 08.1'	0	0.0	0	0	0.0	0	3.8	0.6	18.7	10.5
79	S5	3/2	1130	40° 40.5'	74° 08.0'	40° 40.7'	74° 08.0'	1	0.0	1	1	0.3	1	3.8	0.6	18.2	10.7
80	S6	3/2	1147	40° 40.6'	74° 08.0'	40° 40.8'	74° 07.9'	1	0.0	1	0	0.0	0	4.0	0.6	18.1	10.4
81	S3	3/2	1203	40° 40.9'	74° 07.8'	40° 41.0'	74° 07.7'	1	0.0	1	0	0.0	0	3.8	0.6	16.9	10.5
82	S4	3/2	1219	40° 40.9'	74° 07.8'	40° 41.1'	74° 07.7'	0	0.0	0	0	0.0	0	4.0	0.6	17.8	10.4
83	S1	3/2	1235	40° 41.2'	74° 07.7'	40° 41.4'	74° 07.6'	0	0.0	0	0	0.0	0	4.0	0.6	18.0	10.4
84	S2	3/2	1250	40° 41.3'	74° 07.6'	-	-	0	0.0	0	0	0.0	0	4.0	0.6	18.3	10.4
85	S1	3/14	1013	40° 41.3'	74° 07.7'	40° 41.5'	74° 07.5'	0	0.0	0	0	0.0	0	4.0	2.7	14.5	10.8
86	S2	3/14	1029	40° 41.3'	74° 07.6'	40° 41.4'	74° 07.5'	0	0.0	0	0	0.0	0	3.7	2.7	14.6	10.6
87	S3	3/14	1049	40° 40.8'	74° 07.9'	40° 41.0'	74° 07.9'	0	0.0	0	0	0.0	0	3.4	2.5	15.3	10.6
88	S4	3/14	1105	40° 40.8'	74° 07.9'	40° 40.9'	74° 07.8'	0	0.0	0	0	0.0	0	3.4	2.5	15.1	10.5
89	S5	3/14	1122	40° 40.5'	74° 08.1'	40° 40.6'	74° 08.0'	0	0.0	0	4	1.3	1	3.0	2.7	14.6	10.6
90	S6	3/14	1137	40° 40.5'	74° 08.0'	40° 40.6'	74° 08.0'	2	0.0	2	6	1.5	2	3.0	2.7	15.2	10.5
91	S7	3/14	1158	40° 40.1'	74° 08.3'	40° 40.2'	74° 08.2'	2	0.0	2	1	0.3	1	4.0	2.6	16.5	10.6
92	S1	4/13	1033	40° 41.4'	74° 07.5'	40° 41.6'	74° 07.5'	0	0.0	0	0	0.0	0	4.0	8.1	10.6	10.5
93	S2	4/13	1053	40° 41.3'	74° 07.5'	40° 41.5'	74° 07.4'	0	0.0	0	1	0.0	1	4.0	8	10.6	10.4
94	S3	4/14	1131	40° 41.1'	74° 07.6'	-	-	0	0.0	0	0	0.0	0	3.7	8.7	9.7	10.2
95	S4	4/14	1157	40° 41.0'	74° 07.7'	40° 40.8'	74° 07.8'	0	0.0	0	0	0.0	0	3.7	8.8	9.8	10.2
96	S5	4/14	1213	40° 40.8'	74° 07.9'	40° 40.6'	74° 08.0'	0	0.0	0	0	0.0	0	4.0	8.8	9.9	10.2

Appendix Table B (Continued)

Station Information								Catch Information						Hydrographic Observations			
				Location				Finfish			Megainvertebrates						
				Start		Finish			Wt.	No.		Wt.	No.	Depth	Temp.	Sal.	DO
Sta. No.	Sta. Code	Date M/D	Start Time	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	(kg)	sp.	No.	(kg)	sp.	(m)	(°C)	(ppt)	(mg/l)
97	S6	4/14	1228	40° 40.7'	74° 07.9'	40° 40.5'	74° 08.0'	0	0.0	0	0	0.0	0	3.5	8.8	9.9	10.2
98	S7	4/14	1244	40° 40.4'	74° 08.1'	40° 40.2'	74° 08.2'	0	0.0	0	0	0.0	0	3.4	8.8	10.1	10.1
99	S1	4/25	1058	40° 41.2'	74° 07.6'	40° 41.3'	74° 07.5'	0	0.0	0	0	0.0	0	3.4	10	15.3	9.0
100	S2	4/25	1113	40° 41.3'	74° 07.6'	40° 41.4'	74° 07.5'	0	0.0	0	0	0.0	0	3.5	10	15.0	8.9
101	S3	4/25	1131	40° 40.9'	74° 07.8'	40° 41.1'	74° 07.7'	0	0.0	0	0	0.0	0	2.9	10.1	14.7	8.8
102	S4	4/25	1146	40° 40.8'	74° 07.8'	40° 40.9'	74° 07.8'	3	0.1	1	0	0.0	0	2.7	10.4	14.2	8.8
103	S5	4/25	1204	40° 40.5'	74° 08.0'	40° 40.6'	74° 07.9'	0	0.0	0	0	0.0	0	2.9	10	14.9	8.8
104	S6	4/25	1218	40° 40.5'	74° 08.0'	40° 40.6'	74° 07.9'	1	0.0	1	0	0.0	0	2.7	10.3	14.4	8.8
105	S7	4/25	1235	40° 40.2'	74° 08.2'	40° 40.3'	74° 08.1'	0	0.0	0	0	0.0	0	2.7	10.1	14.9	8.8

Appendix Table C

Listing of experimental gill net stations made in Newark Bay, New Jersey between May 1993 and April 1994, including location, catch of finfish and megainvertebrates, and bottom hydrographic observations. A dash (-) = no data.

Station Information													Catch Information			Hydrographic Observations		
		Set Out			Haul Back				Location									
									Anchor 1		Anchor 2							
Sta. No.	Sta. Code	Date M/D	Set Time	Depth (ft)	Date M/D	Haul Time	Depth (ft)	Duration of Set (hr)	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	Temp. (°C)	Sal. (ppt)	DO (mg/l)
		1993																
1	G4	5/10	1500	10	5/11	1043	-	18.3	40°40.7'	74°07.9'	40°40.7'	74°07.9'	82	17.4	3	-	-	-
2	G5	5/10	1458	12	5/11	1102	-	20.7	40°40.1'	74°08.3'	40°40.1'	74°08.3'	72	13.2	5	-	-	-
3	G3	5/11	1110	8	5/12	1118	-	24.1	40°40.7'	74°07.9'	40°40.9'	74°07.7'	91	16.1	5	-	-	-
4	G6	5/10	1440	-	5/12	1132	-	21.3	40°39.3'	74°09.3'	40°39.3'	74°09.4'	0	0.0	0	-	-	-
5	G3	5/24	1309	11	5/26	1147	-	45.7	40°41.0'	74°07.9'	40°41.4'	74°07.6'	13	4.8	3	-	-	-
6	G5	5/24	1300	11	5/26	1200	-	46.7	40°41.0'	74°07.9'	40°41.0'	74°07.9'	14	14.0	4	-	-	-
7	G7	5/24	1240	12	5/26	1216	-	47.5	40°40.2'	74°08.2'	40°40.2'	74°08.2'	19	18.8	5	-	-	-
8	G2	5/26	1320	10	5/27	1002	-	22.2	40°42.2'	74°07.2'	40°42.2'	74°07.1'	42	12.8	5	-	-	-
9	G4	5/26	1122	12	5/27	1022	-	25.5	40°41.4'	74°07.6'	40°41.4'	74°07.5'	18	4.0	3	-	-	-
10	G6	5/26	1200	10	5/27	1038	-	25.3	40°40.8'	74°07.8'	-	-	11	1.7	5	-	-	-
11	G2	6/7	1300	12	6/8	1110	-	20.5	40°41.5'	74°07.5'	40°41.5'	74°07.5'	2	0.3	2	-	-	-
12	G3	6/7	1255	11	6/8	1136	-	21.1	40°41.2'	74°07.7'	40°41.2'	74°07.7'	11	5.4	4	-	-	-
13	G5	6/7	1242	11	6/8	1150	-	21.8	40°40.5'	74°08.0'	40°40.5'	74°08.0'	10	3.9	5	-	-	-
14	G6	6/7	1232	11	6/8	1208	-	22.8	40°40.1'	74°08.2'	40°40.1'	74°08.2'	9	2.6	4	-	-	-
15	G4	6/8	1037	11	6/9	1008	-	23.1	40°41.0'	74°07.7'	-	-	8	4.2	5	-	-	-
16	G7	6/8	1145	10	6/9	1045	-	22.6	40°39.4'	74°09.3'	-	-	5	10.5	1	-	-	-
17	G1	6/8	1050	10	6/9	1047	-	24.4	40°42.3'	74°07.1'	40°42.3'	74°07.2'	30	18.0	6	-	-	-
18	G3	6/21	1239	10	6/22	1103	-	21.4	40°41.2'	74°07.7'	-	-	7	7.1	3	-	-	-
19	G5	6/21	1206	11	6/22	1118	-	22.2	40°40.6'	74°08.1'	40°40.6'	74°08.0'	16	7.1	2	-	-	-
20	G6	6/21	1158	11	6/22	1132	-	22.8	40°40.1'	74°08.1'	40°40.2'	74°08.2'	7	2.3	3	-	-	-
21	G2	6/21	1225	11	6/22	1135	-	23.2	40°41.4'	74°07.6'	40°41.4'	74°07.6'	7	7.2	4	-	-	-
22	G4	6/22	1010	12	6/23	1019	-	23.3	40°41.0'	74°07.8'	40°41.0'	74°07.8'	10	3.2	4	-	-	-
23	G1	6/22	1200	12	6/23	1044	-	22.2	40°42.2'	74°07.1'	-	-	16	6.4	5	-	-	-
24	G7	6/22	1100	12	6/23	1101	-	24.0	40°39.4'	74°09.3'	40°39.4'	74°09.2'	1	0.1	1	-	-	-
25	G2	7/12	1022	10	7/13	1122	10	23.9	40°41.6'	74°07.4'	40°41.5'	74°07.5'	5	1.3	4	-	-	-
26	G4	7/12	1051	9	7/13	1147	8	24.1	40°41.0'	74°07.8'	40°41.0'	74°07.7'	14	2.5	5	-	-	-

Appendix Table C (Continued)

Station Information													Catch Information			Hydrographic Observations		
		Set Out			Haul Back				Location									
									Anchor 1		Anchor 2							
Sta. No.	Sta. Code	Date M/D	Set Time	Depth (ft)	Date M/D	Haul Time	Depth (ft)	Duration of Set (hr)	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	Temp. (°C)	Sal. (ppt)	DO (mg/l)
27	G5	7/12	1059	9	7/13	1206	7	24.3	40°40.7'	74°07.9'	40°40.7'	74°07.9'	11	2.4	4	-	-	-
28	G3	7/12	1034	10	7/13	1228	10	25.9	40°41.3'	74°07.4'	40°41.3'	74°07.5'	6	1.5	3	-	-	-
29	G1	7/13	1035	8	7/14	1017	8	23.4	40°42.2'	74°07.2'	40°42.2'	74°07.1'	17	3.5	4	-	-	-
30	G6	7/13	1131	8	7/14	1046	9	25.4	40°40.4'	74°08.1'	40°40.4'	74°08.1'	10	1.7	4	-	-	-
31	G7	7/13	1155	7	7/14	1123	13	25.4	40°39.4'	74°09.2'	40°39.4'	74°09.2'	5	1.9	2	-	-	-
32	G3	8/23	1406	13	8/24	1147	8	19.6	40°41.3'	74°07.6'	40°41.2'	74°07.6'	4	3.4	4	24.2	22.3	3.9
33	G2	8/23	1415	13	8/24	1213	8	19.8	40°41.5'	74°07.4'	40°41.5'	74°07.4'	2	0.5	2	24.2	22.2	3.9
34	G5	8/23	1352	12	8/24	1240	7	21.0	40°40.6'	74°07.9'	40°40.6'	74°07.9'	8	1.8	3	24	22.7	4.2
35	G6	8/23	1336	12	8/24	1306	9	21.5	40°40.4'	74°08.1'	40°40.3'	74°08.1'	4	0.6	4	24.1	22.7	4
36	G4	8/24	1032	8	8/25	1059	7	23.3	40°41.0'	74°07.8'	40°41.0'	74°07.8'	3	2.6	3	24.2	21.4	4.3
37	G7	8/24	1126	8	8/25	1121	6	22.9	40°39.4'	74°09.3'	40°39.4'	74°09.3'	3	0.8	1	24.3	22.9	4.1
38	G1	8/24	1015	6	8/25	1144	6	24.7	40°42.2'	74°07.1'	40°42.2'	74°07.2'	10	1.8	2	24.8	20.4	[illegible]
39	G2	9/20	1436	11	9/21	1204	11	19.5	40°41.6'	74°07.4'	40°41.6'	74°07.4'	1	0.2	1	20	23.6	4.8
40	G5	9/20	1407	10	9/21	1227	11	21.3	40°40.6'	74°07.9'	40°40.6'	74°08.0'	1	0.3	1	19.9	24.6	4.7
41	G6	9/20	1355	11	9/21	1251	13	22.1	40°40.2'	74°08.2'	40°40.2'	74°08.2'	6	2.4	4	19.8	24.4	4.9
42	G3	9/21	1423	12	9/22	1323	10	20.5	40°41.3'	74°07.6'	40°41.2'	74°07.6'	4	4.0	3	20	24	4.9
43	G4	9/21	1138	10	9/22	1158	11	23.6	40°40.9'	74°07.8'	40°40.9'	74°07.9'	2	0.4	2	19.6	23.4	4.8
44	G1	9/21	1022	8	9/22	1219	9	25.3	40°42.2'	74°07.1'	40°42.2'	74°07.2'	3	5.8	2	19.7	23.2	4.7
45	G7	9/21	1237	11	9/22	1242	12	24.0	40°39.4'	74°09.3'	40°39.4'	74°09.3'	2	2.0	2	19.5	25	4.8
46	G2	10/18	1337	12	10/19	1255	12	20.4	40°41.6'	74°07.4'	40°41.6'	74°07.4'	3	0.6	3	14.6	23.7	6.6
47	G3	10/18	1354	11	10/19	1317	13	20.7	40°41.2'	74°07.6'	40°41.2'	74°07.6'	4	0.7	3	14.6	24.1	6.6
48	G4	10/18	1409	9	10/19	1337	13	20.7	40°40.9'	74°07.9'	40°40.9'	74°07.8'	5	0.5	4	14.6	24	6.6
49	G5	10/18	1429	10	10/19	1356	12	20.7	40°40.6'	74°08.1'	40°40.6'	74°08.0'	6	0.7	3	14.6	24.3	6.7
50	G1	10/19	1012	11	10/20	1012	9	24.6	40°42.2'	74°07.2'	40°42.2'	74°07.1'	24	3.6	5	14.3	23.5	6.4
51	G6	10/19	1128	14	10/20	1033	14	23.9	40°40.1'	74°08.2'	40°40.0'	74°08.2'	0	0.0	0	14.5	24.7	6.4
52	G7	10/19	1184	11	10/20	1048	14	23.3	40°39.4'	74°09.2'	40°39.4'	74°09.2'	2	3.5	2	19.7	19.8	6.4
53	G2	11/22	1316	11	11/23	1111	9	21.3	40°41.4'	74°07.5'	40°41.5'	74°07.4'	2	0.9	2	9.8	20.8	8
54	G4	11/22	1308	10	11/23	1137	7	21.9	40°40.9'	74°07.9'	40°40.9'	74°07.8'	9	1.3	1	9.6	21.7	8.3
55	G6	11/22	1258	11	11/23	1158	8	22.6	40°40.3'	74°08.2'	40°40.3'	74°07.2'	5	1.0	3	9.7	21.3	8.1
56	G3	11/23	1046	8	11/24	1216	9	25.1	40°41.3'	74°07.5'	40°41.3'	74°07.5'	1	0.2	1	10	20.8	8
57	G5	11/23	1115	6	11/24	1012	8	25.0	40°40.7'	74°07.9'	40°40.7'	74°07.8'	3	1.4	3	9.9	20.8	7.9

Appendix Table C (Continued)

Station Information													Catch Information			Hydrographic Observations		
		Set Out			Haul Back				Location									
									Anchor 1		Anchor 2							
Sta. No.	Sta. Code	Date M/D	Set Time	Depth (ft)	Date M/D	Haul Time	Depth (ft)	Duration of Set (hr)	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	Temp. (°C)	Sal. (ppt)	DO (mg/l)
58	G7	11/23	1158	12	11/24	1031	12	24.8	40°39.5'	74°09.1'	40°39.4'	74°09.2'	3	0.5	1	10.1	21.6	7.9
59	G1	11/23	1230	7	11/24	1035	7	24.9	40°42.2'	74°07.1'	40°42.2'	74°07.1'	2	0.4	2	10.1	20.5	7.7
60	G5	12/13	1223	8	12/14	1120	11	23.0	40°40.7'	74°08.0'	40°40.7'	74°08.0'	0	0.0	0	6.7	14.9	9.3
61	G6	12/13	1201	9	12/14	1145	11	23.6	40°40.4'	74°08.1'	40°40.3'	74°08.1'	0	0.0	0	6.5	15	9.4
62	G3	12/13	1250	10	12/14	1008	-	24.0	40°41.4'	74°07.5'	40°41.4'	74°07.5'	0	0.0	0	6.7	12.9	9.3
63	G2	12/13	1244	9	12/14	1053	10	24.1	40°41.6'	74°07.4'	40°41.6'	74°07.4'	0	0.0	0	10.9	9.9	9.3
64	G4	12/14	1325	8	12/15	1210	14	20.8	40°41.0'	74°07.8'	40°40.9'	74°07.9'	1	0.2	1	6.8	15.5	9.3
65	G1	12/14	1400	8	12/15	1229	14	20.6	40°42.2'	74°07.2'	40°42.2'	74°07.1'	0	0.0	0	7.1	15.4	9.1
66	G7	12/14	1205	9	12/15	1246	12	23.1	40°39.5'	74°09.2'	40°39.4'	74°09.2'	0	0.0	1	6.9	17	9.1
		1994																
67	G2	2/16	1433	10	2/17	1304	12	19.7	40°41.6'	74°07.4'	40°41.6'	74°07.3'	1	0.0	1	-0.1	19.1	9.9
68	G3	2/16	1418	10	2/17	1329	12	20.2	40°41.3'	74°07.2'	40°41.2'	74°07.7'	0	0.0	0	0.1	19	10.1
69	G5	2/16	1406	9	2/17	1347	11	20.7	40°40.1'	74°08.2'	40°40.7'	74°07.9'	0	0.0	0	0.1	20.1	10.2
70	G6	2/16	1353	14	2/17	1407	11	21.2	40°40.2'	74°08.3'	40°40.1'	74°08.2'	0	0.0	0	0.1	19.6	10.2
71	G2	3/1	1034	13	3/2	1139	13	23.6	40°41.6'	74°07.4'	40°41.6'	74°07.4'	0	0.0	0	0.6	17.3	10.6
72	G1	3/1	1117	12	3/2	1200	16	23.2	40°42.2'	74°07.2'	40°42.2'	74°07.1'	0	0.0	0	0.6	16.9	10.4
73	G2	3/14	1303	9	3/15	1221	13	20.9	40°41.7'	74°07.4'	40°41.6'	74°07.4'	0	0.0	0	3.1	11.8	11
74	G6	3/14	1215	10	3/15	1241	10	22.0	40°40.2'	74°08.3'	40°40.1'	74°08.3'	0	0.0	0	3	13.6	10.9
75	G3	3/14	1250	9	3/15	1259	14	21.7	40°41.3'	74°07.7'	40°41.3'	74°07.7'	0	0.0	0	2.9	13.9	10.7
76	G5	3/14	1233	10	3/15	1317	11	22.4	40°40.6'	74°08.0'	40°40.6'	74°08.0'	1	0.3	1	2.9	14.6	10.7
77	G1	3/15	1011	12	3/16	1338	10	24.2	40°42.2'	74°07.1'	40°42.2'	74°07.1'	1	0.3	1	3.2	13.5	11.2
78	G7	3/15	1134	10	3/16	1112	13	23.5	40°39.5'	74°09.3'	40°39.5'	74°07.3'	1	0.0	1	3.2	14.5	10.8
79	G4	4/13	1125	12	4/14	1130	11	22.6	40°41.1'	74°07.8'	40°41.1'	74°07.7'	1	0.2	1	9.6	10.3	10.6
80	G3	4/13	1133	12	4/14	1147	12	22.7	40°41.3'	74°07.6'	40°41.3'	74°07.6'	1	0.2	1	8.3	10.1	10.2
81	G1	4/13	1205	11	4/14	1203	12	22.6	40°42.1'	74°07.2'	40°42.2'	74°07.1'	0	0.0	0	8.3	10.2	10
82	G2	4/13	1113	13	4/14	1219	-	24.0	40°41.5'	74°07.4'	40°41.5'	74°07.4'	0	0.0	0	8	10.3	10.4
83	G5	4/14	1114	9	4/15	1235	9	23.2	40°40.6'	74°07.8'	40°40.6'	74°07.7'	1	0.2	1	8.9	9.6	9.7
84	G6	4/14	1303	10	4/15	1250	12	21.7	40°40.2'	74°08.2'	40°40.2'	74°08.2'	1	1.3	1	8.8	10.4	10.1
85	G7	4/14	1321	10	4/15	1013	14	22.0	40°39.4'	74°09.3'	40°39.5'	74°09.2'	1	0.2	1	7.8	11.1	10.5
86	G2	4/25	1320	8	4/26	1029	13	20.8	40°41.5'	74°07.5'	40°41.5'	74°07.4'	3	2.3	2	10.4	14	8.9

Appendix Table C (Continued)

Station Information													Catch Information			Hydrographic Observations		
		Set Out			Haul Back				Location									
									Anchor 1		Anchor 2							
Sta. No.	Sta. Code	Date M/D	Set Time	Depth (ft)	Date M/D	Haul Time	Depth (ft)	Duration of Set (hr)	Lat. (N)	Long. (W)	Lat. (N)	Long. (W)	No.	Wt. (kg)	No. sp.	Temp. (°C)	Sal. (ppt)	DO (mg/l)
87	G3	4/25	1316	7	4/26	1049	12	21.4	40°41.2'	74°07.7'	40°41.2'	74°07.7'	1	0.2	1	10.1	14.9	8.8
88	G5	4/25	1300	8	4/26	1105	12	22.0	40°40.7'	74°08.0'	40°40.7'	74°07.9'	1	0.4	1	10.1	15.2	8.8
89	G6	4/25	1248	6	4/26	1122	12	22.5	40°40.2'	74°08.2'	40°40.2'	74°08.2'	3	0.5	1	10	15.4	8.9
90	G1	4/26	1026	13	4/27	1137	12	23.8	40°42.2'	74°07.1'	40°42.2'	74°07.1'	1	1.3	1	10.3	15.4	8.6
91	G4	4/26	1047	12	4/27	1158	-	24.0	40°41.1'	74°07.8'	40°41.0'	74°07.8'	0	0.0	0	9.7	16.1	8.6
92	G7	4/26	1133	10	4/27	1033	12	23.3	40°39.6'	74°09.3'	40°39.6'	74°09.4'	3	0.1	3	9.9	16.7	8.6

Appendix Table D

Phylogenetic listing of fish and megainvertebrates collected with an 8.5-m otter trawl in Newark Bay, NJ between May 1993 and April 1994. For each station of occurrence, the number caught, weight (kg), and size range (cm) are included. Fish are arranged according to Robins *et al.* (1991), and megainvertebrates according to Gosner (1978), Turgeon *et al.* (1988), and Williams *et al.* (1989).

FISH

RAJIDAE

Little Skate ***Raja erinacea***

154 (1;0.6;40) 284 (1;0.8;41)

ACIPENSERIDAE

Atlantic Sturgeon ***Acipenser oxyrhynchus***

53 (1;1.4;60)

ANGUILLIDAE

American Eel ***Anguilla rostrata***

15 (1;0.6;60)	39 (2;0.9;54-59)	93 (1;0.3;50)	140 (1;0.3;51)
153 (1;0.4;56)	166 (1;0.6;62)	182 (1;0.1;34)	188 (1;0.2;48)
211 (1;0.3;45)	271 (1;0.3;55)		

CONGRIDAE

Conger Eel ***Congridae sp.***

180 (1;0.1;22)

CLUPEIDAE

Blueback Herring ***Alosa aestivalis***

167 (1;0.1;6) 294 (1;0.1;8)

Alewife ***Alosa pseudoharengus***

6 (1;0.1;18)	32 (1;0.1;13)	33 (1;0.1;20)	48 (1;0.1;12)
61 (14;0.6;13-15)	62 (4;0.2;13-19)	63 (1;0.1;13)	66 (1;0.1;13)
67 (1;0.1;13)	68 (1;0.1;15)	71 (1;0.1;14)	73 (1;0.1;12)
76 (1;0.1;12)	77 (1;0.1;12)	78 (5;0.1;12-14)	84 (1;0.1;17)
96 (1;0.1;12)	97 (1;0.1;14)	107 (1;0.1;16)	116 (2;0.1;16-17)
120 (2;0.1;15-17)	122 (2;0.1;15-16)	123 (5;0.3;14-15)	124 (1;0.1;22)
126 (2;0.2;16-17)	132 (10;0.3;11-16)	133 (3;0.1;15-16)	134 (1;0.1;14)
135 (4;0.1;13-16)	136 (1;0.1;15)	141 (1;0.1;14)	142 (10;0.5;13-16)
143 (4;0.1;13-16)	144 (4;0.1;15-17)	145 (33;3.0;9-16)	146 (14;0.5;11-19)
147 (14;0.5;4-8)	148 (6;0.3;14-15)	149 (10;0.3;12-16)	150 (2;0.1;15)
151 (21;0.6;8-16)	152 (3;0.1;9-15)	154 (12;0.5;14-15)	155 (10;0.3;11-15)
156 (6;0.1;14-16)	157 (6;0.1;14-15)	158 (1;0.1;14)	159 (4;0.1;12-17)
162 (1;0.1;10)	179 (1;0.1;14)	182 (2;0.1;14)	183 (2;0.1;10-11)
186 (2;0.1;15)	189 (2;0.1;14-15)	191 (1;0.1;10)	262 (1;0.1;13)

Appendix Table D (Continued)

Alewife ***Alosa pseudoharengus*** **(Continued)**

266 (2;0.1;8-10)	268 (1;0.1;16)	275 (2;0.1;10-16)	276 (3;0.1;10-13)
277 (2;0.1;9-10)	285 (1;0.1;10)	286 (1;0.1;18)	288 (1;0.1;13)
294 (3;0.1;9-16)			

American Shad ***Alosa sapidissima***

51 (1;1.0;45)	140 (1;0.1;11)	147 (1;0.1;13)	148 (1;0.1;9)
149 (1;0.1;14)	155 (1;0.1;13)	266 (1;0.1;15)	276 (1;0.1;15)
277 (2;0.1;10-11)			

Atlantic Menhaden ***Brevoortia tyrannus***

4 (1;0.3;24)	11 (1;0.3;25)	25 (1;0.2;21)	29 (1;0.3;23)
31 (1;0.2;29)	32 (1;0.5;28)	33 (4;1.1;23-30)	42 (1;0.1;22)
43 (1;0.2;22)	47 (1;0.3;27)	48 (1;0.2;24)	50 (1;0.3;26)
51 (1;0.3;25)	58 (3;0.7;23-25)	60 (30;6.0;22-30)	61 (8;1.7;22-25)
62 (5;1.0;23-26)	63 (2;0.4;24)	64 (2;0.5;24-25)	69 (1;0.2;25)
70 (7;1.5;22-26)	71 (1;0.3;23)	73 (1;0.3;26)	75 (1;0.2;27)
77 (3;0.7;25-28)	78 (7;1.2;23-26)	80 (2;0.5;24-25)	83 (1;0.3;24)
90 (1;0.2;23)	91 (2;0.3;23-24)	94 (1;0.3;26)	111 (1;0.1;22)
116 (1;0.7;29)	123 (1;0.3;29)	137 (1;0.3;29)	148 (1;0.1;23)
156 (1;0.3;25)			

Atlantic Herring ***Clupea harengus***

25 (4;0.1;4-5)	26 (1;0.1;5)	147 (2;0.5;30-31)	228 (1;0.2;26)
259 (1;0.4;31)	267 (1;0.1;9)	268 (1;0.1;8)	

Gizzard Shad ***Dorosoma cepedianum***

85 (1;0.2;15)	86 (1;0.1;14)	120 (1;0.1;13)	121 (1;0.1;12)
123 (2;0.1;12-15)	124 (5;0.1;11-13)	126 (1;0.1;9)	135 (1;0.1;10)
137 (1;0.1;8)	138 (1;0.1;11)	140 (1;0.1;8)	142 (13;0.8;10-20
143 (49;2.4;7-20)	144 (2;0.1;13-14)	145 (11;0.4;9-15)	146 (5;0.1;9-14)
147 (10;0.3;6-17)	148 (19;0.7;8-15)	150 (2;0.1;14-15)	152 (4;0.1;7-19)
153 (4;0.1;13-18)	155 (6;0.1;9-15)	156 (67;2.3;11-16)	157 (2;0.1;11-15)
158 (1;0.1;9)	160 (1;0.1;14)	161 (2;0.1;13)	162 (1;0.1;14)
165 (3;0.1;10-15)	171 (4;0.2;13-14)	177 (1;0.1;18)	178 (5;0.3;14-16)
179 (1;0.1;15)	180 (3;0.1;13-14)	181 (6;0.3;13-18)	182 (5;0.3;13-16)
184 (1;0.1;16)	185 (1;0.1;16)	187 (4;0.3;14-16)	188 (3;1.0;13-35)
189 (9;0.3;12-17)	190 (5;0.3;12-20)	191 (2;0.1;14-15)	192 (1;0.1;17)
194 (3;0.1;13)	195 (2;0.1;14-17)	197 (2;0.1;13)	218 (1;0.1;13)

ENGRAULIDAE

Bay Anchovy ***Anchoa mitchilli***

25 (2;0.1;6-7)	28 (1;0.1;6)	33 (1;0.1;7)	37 (2;0.1;6-7)
40 (1;0.1;6)	41 (3;0.1;6-8)	42 (10;0.1;6-9)	43 (1;0.1;8)
46 (5;0.1;5-7)	47 (4;0.1;6-8)	50 (2;0.1;6)	59 (1;0.1;6)
64 (1;0.1;6)	65 (2;0.1;6)	66 (3;0.1;6-8)	67 (4;0.1;6-9)

Appendix Table D (Continued)

Bay Anchovy *Anchoa mitchilli* (Continued)

68 (10;0.1;5-7)	69 (8;0.1;6-8)	71 (1;0.1;6)	72 (1;0.1;6)
73 (1;0.1;7)	74 (61;0.1;5-8)	75 (116;0.2;5-9)	76 (21;0.1;5-9)
77 (21;0.1;5-8)	78 (25;0.1;5-8)	79 (7;0.1;5-9)	80 (2;0.1;6)
89 (2;0.1;6-7)	91 (1;0.1;3)	93 (4;0.1;5-6)	94 (1;0.1;6)
97 (1;0.1;7)	101 (1;0.1;7)	109 (1;0.1;3)	112 (3;0.1;7-8)
113 (2;0.1;5-6)	117 (1;0.1;6)	132 (2;0.1;7-8)	141 (1;0.1;3)
146 (1;0.1;4)	148 (2;0.1;6)	157 (1;0.1;8)	178 (1;0.1;4)

OSMERIDAE

Rainbow Smelt *Osmerus mordax*

11 (1;0.1;9)	175 (3;0.1;10)	177 (1;0.1;10)	179 (1;0.1;11)
180 (2;0.1;10-11)	181 (2;0.1;10-12)	182 (4;0.1;11-13)	183 (3;0.1;11-12)
184 (13;0.2;8-13)	185 (23;0.3;10-14)	186 (8;0.1;10-12)	187 (16;0.1;10-12)
188 (20;0.2;10-13)	189 (22;0.3;10-14)	190 (2;0.1;11-12)	191 (5;0.1;9-12)
192 (2;0.1;10-11)	193 (1;0.1;12)	194 (4;0.1;10-11)	195 (22;0.3;10-12)
196 (1;0.1;11)	197 (58;0.7;10-13)	198 (69;0.8;6-13)	199 (36;0.5;10-14)
202 (1;0.1;10)	203 (2;0.1;11-12)	205 (2;0.1;11-13)	206 (1;0.1;13)
207 (2;0.1;10-11)	208 (1;0.1;12)	209 (1;0.1;12)	215 (1;0.1;13)
217 (1;0.1;11)	218 (8;0.1;10-12)	219 (5;0.1;11-12)	222 (6;0.1;9-13)
223 (1;0.1;12)	224 (1;0.1;12)	226 (3;0.1;11-15)	227 (2;0.1;12)
228 (1;0.1;10)	233 (3;0.1;10-11)	234 (6;0.1;10-12)	235 (4;0.1;10-11)
236 (2;0.1;10-12)	237 (2;0.1;11)	238 (2;0.1;12-13)	239 (2;0.1;11)
241 (1;0.1;11)	242 (6;0.1;10-12)	243 (2;0.1;11-12)	245 (2;0.1;12)
249 (2;0.1;12-13)	253 (2;0.1;11-12)	258 (2;0.1;11-12)	259 (2;0.1;11)
262 (1;0.1;11)	273 (2;0.1;3)	293 (1;0.1;6)	

GADIDAE

Atlantic Tomcod *Microgadus tomcod*

1 (10;0.8;5-24)	2 (6;0.6;4-24)	3 (10;0.8;7-23)	4 (29;1.8;4-25)
5 (8;0.5;4-23)	6 (19;0.1;4-9)	8 (2;0.1;4-5)	9 (21;1.0;4-23)
10 (1;0.2;23)	11 (4;0.1;4-7)	12 (9;1.0;8-25)	13 (14;0.2;4-24)
14 (20;0.2;4-19)	15 (1;0.1;20)	16 (7;0.3;6-23)	17 (1;0.2;23)
18 (1;0.1;21)	19 (4;0.5;22)	20 (15;0.2;6-21)	22 (44;0.1;4-8)
23 (20;0.3;6-22)	24 (26;0.1;4-8)	25 (49;0.2;4-8)	26 (71;0.2;5-10)
27 (34;0.1;4-8)	28 (240;2.0;4-10)	29 (121;0.3;4-10)	30 (4;0.6;22-28)
31 (35;0.3;6-22)	32 (61;0.3;4-22)	33 (88;1.8;4-26)	34 (24;0.1;5-23)
35 (32;0.1;5-8)	36 (8;0.1;5-23)	37 (16;0.2;5-23)	38 (42;0.3;6-12)
39 (44;0.1;4-11)	40 (16;0.2;6-23)	41 (64;0.3;6-11)	42 (6;0.1;6-11)
43 (114;1.6;6-25)	44 (17;0.1;6-9)	45 (43;0.2;5-10)	46 (57;0.1;5-11)
47 (44;0.2;5-9)	48 (54;0.1;5-11)	49 (57;1.1;6-24)	50 (72;0.3;6-11)
51 (18;0.1;6-10)	52 (23;0.5;7-24)	53 (16;0.7;6-28)	54 (19;0.2;5-9)
55 (16;0.1;6-14)	56 (4;0.1;7-8)	58 (26;0.3;6-10)	59 (65;0.2;6-12)
60 (15;0.4;9-22)	61 (89;1.5;7-26)	62 (107;1.8;8-27)	63 (15;0.3;8-23)
64 (310;3.3;7-24)	65 (44;0.3;7-21)	66 (18;0.3;8-24)	67 (8;0.1;8-23)
68 (27;0.2;7-12)	69 (12;0.1;8-12)	70 (25;0.3;7-19)	71 (251;2.9;7-18)
72 (121;1.6;7-23)	73 (145;2.2;7-26)	74 (5;0.1;8-10)	75 (3;0.1;9)
76 (15;0.1;7-19)	77 (6;0.1;8-10)	78 (10;0.2;8-21)	80 (89;1.3;8-25)
81 (68;1.1;9-26)	82 (12;0.5;11-22)	83 (83;1.5;7-25)	84 (15;0.2;9-16)

Appendix Table D (Continued)

Atlantic Tomcod *Microgadus tomcod* (Continued)

85 (1;0.1;12)	87 (5;0.2;9-24)	88 (3;0.1;10-11)	89 (1;0.1;10)
90 (79;4.6;9-24)	91 (19;1.2;9-27)	92 (26;0.7;8-23)	93 (183;3.0;7-23)
94 (70;1.1;8-20)	95 (25;0.4;9-23)	96 (3;0.1;11-16)	97 (1;0.1;12)
98 (1;0.1;22)	100 (1;0.1;9)	109 (1;0.1;8)	113 (7;0.1;8-12)
114 (4;0.1;10)	118 (1;0.1;23)	119 (1;0.1;12)	120 (2;0.2;18-23)
124 (2;0.3;22-27)	125 (12;0.8;12-24)	126 (8;0.5;11-22)	128 (1;0.1;17)
129 (4;0.3;12-23)	130 (12;0.9;12-27)	131 (5;0.1;10-21)	133 (2;0.1;21-22)
135 (1;0.1;21)	136 (10;0.6;11-25)	137 (6;0.3;12-25)	138 (16;0.8;9-22)
139 (10;0.7;12-24)	140 (49;4.3;15-27)	141 (41;3.5;14-27)	142 (15;1.6;14-26)
143 (19;2.0;16-26)	144 (10;1.1;16-29)	145 (7;2.5;20-27)	146 (2;0.2;22-23)
147 (6;0.8;16-28)	148 (2;0.2;19-24)	149 (4;0.8;17-28)	150 (11;1.5;17-26)
151 (45;5.9;14-28)	152 (13;1.2;15-25)	153 (18;1.3;16-27)	154 (13;1.9;16-28)
155 (4;0.4;17-27)	156 (1;0.3;25)	157 (10;1.4;18-27)	158 (1;0.3;27)
159 (5;0.8;17-26)	160 (3;0.1;15-21)	161 (2;0.2;22-25)	162 (1;0.1;18)
163 (1;0.1;25)	164 (5;0.5;17-27)	165 (8;0.7;17-28)	166 (7;1.0;16-27)
167 (4;0.5;18-30)	168 (12;1.1;15-27)	169 (10;1.0;17-27)	170 (10;0.8;14-28)
171 (3;0.3;20-26)	172 (11;0.7;14-21)	173 (20;1.8;13-28)	174 (3;0.3;18-27)
175 (1;0.1;19)	176 (1;0.2;26)	177 (1;0.5;28)	178 (2;0.6;19-28)
179 (5;0.4;16-24)	182 (2;0.1;15-24)	187 (1;0.1;18)	189 (1;0.1;19)
194 (1;0.1;13)	195 (1;0.1;15)	199 (3;0.5;16-27)	204 (1;0.1;19)
206 (1;0.1;21)	210 (2;0.1;16-25)	214 (1;0.1;18)	218 (1;0.1;18)
219 (2;0.1;15-19)	223 (1;0.1;17)	224 (1;0.1;19)	237 (1;0.1;22)
239 (1;0.1;15)	243 (5;0.7;15-26)	245 (1;0.1;27)	251 (2;0.3;20-22)
254 (2;0.1;16-20)	260 (2;0.3;19-25)	261 (3;0.8;20-29)	263 (8;0.8;17-27)
264 (2;0.1;18-20)	265 (5;0.4;18-25)	266 (2;0.1;13-19)	268 (2;0.1;15-17)
269 (1;0.1;21)	270 (6;0.4;15-23)	271 (1;0.1;19)	272 (1;0.1;14)
273 (17;1.6;14-28)	274 (3;0.1;17-18)	276 (4;0.5;11-27)	277 (1;0.1;22)
278 (3;0.3;20-24)	279 (2;0.1;17-18)	280 (2;0.3;24-27)	281 (16;1.3;16-27)
282 (4;0.4;19-23)	283 (20;1.5;16-25)	284 (6;0.3;17-23)	285 (4;0.5;4-28)
286 (3;0.3;18-21)	287 (2;0.2;18-22)	288 (3;0.3;18-23)	289 (20;1.8;14-28)
290 (1;0.1;18)	291 (8;0.8;17-27)	292 (12;1.5;15-31)	293 (9;0.8;16-26)
294 (2;0.3;19-27)	296 (8;1.3;17-28)	297 (2;0.1;20-21)	298 (3;0.3;18-20)
299 (16;2.0;18-30)			

Red Hake *Urophycis chuss*

4 (3;0.1;11-17)	5 (5;0.1;8-18)	6 (5;0.1;9-16)	7 (5;0.2;12-21)
11 (1;0.1;8)	12 (1;0.1;15)	13 (1;0.1;13)	14 (2;0.1;9)
16 (8;0.1;8-22)	17 (2;0.1;11-13)	18 (12;0.5;12-21)	24 (5;0.1;10-19)
25 (1;0.1;14)	26 (4;0.1;10-21)	28 (19;0.3;7-22)	29 (8;0.1;7-19)
32 (1;0.1;19)	34 (7;0.1;7-15)	35 (6;0.1;7-20)	36 (3;0.1;11-16)
38 (3;0.1;10-17)	43 (1;0.1;13)	44 (4;0.1;13-15)	45 (1;0.1;13)
49 (1;0.1;11)	59 (2;0.1;13-16)	66 (1;0.1;12)	160 (1;0.1;7)
162 (1;0.1;8)	163 (1;0.1;6)	165 (1;0.1;10)	170 (3;0.1;6-8)
175 (3;0.1;6-8)	178 (1;0.1;7)	179 (2;0.1;6-9)	180 (1;0.1;8)
183 (1;0.1;8)	185 (1;0.1;7)	248 (1;0.1;8)	284 (1;0.1;9)
285 (1;0.1;10)	289 (1;0.1;8)	299 (2;0.1;8-9)	

Appendix Table D (Continued)

Spotted Hake ***Urophycis regia***

1 (16;0.5;4-20)	2 (4;0.1;13-16)	3 (12;0.5;11-22)	4 (26;1.8;10-19)
5 (29;0.7;9-18)	6 (35;0.6;10-14)	7 (5;0.2;12-19)	9 (44;1.0;10-20)
10 (9;0.2;11-17)	11 (13;0.3;11-16)	12 (8;0.3;12-16)	13 (23;0.3;11-17)
14 (14;0.3;10-17)	15 (4;0.1;11-13)	16 (27;0.5;11-19)	17 (5;0.1;12-16)
18 (14;0.4;12-15)	20 (41;1.4;13-21)	21 (7;0.1;14-17)	22 (4;0.1;13-14)
23 (7;0.2;13-20)	24 (23;0.5;12-18)	25 (4;0.1;4-15)	26 (23;0.7;11-19)
27 (5;0.2;14-17)	28 (265;8.5;11-19)	29 (37;0.8;11-19)	30 (8;0.2;7-17)
31 (24;0.8;13-20)	32 (30;0.8;12-19)	33 (28;1.0;11-21)	34 (34;1.0;13-19)
35 (47;1.3;9-18)	36 (17;0.6;13-21)	37 (4;0.2;12-23)	38 (33;0.9;12-22)
39 (5;0.1;6-16)	40 (7;0.2;10-18)	41 (13;0.6;13-23)	42 (5;0.1;15-18)
43 (50;2.0;10-22)	44 (17;0.7;14-21)	45 (12;0.3;7-19)	46 (27;1.2;8-21)
47 (4;0.1;7-16)	48 (12;0.2;7-21)	49 (38;1.5;12-20)	50 (21;0.8;14-21)
51 (7;0.2;17-20)	52 (2;0.1;17)	53 (4;0.1;15-16)	54 (16;0.5;13-21)
55 (25;1.0;14-20)	56 (4;0.2;16-19)	57 (1;0.1;16)	58 (6;0.3;14-17)
59 (34;1.3;8-20)	61 (1;0.1;19)	62 (3;0.1;10-19)	63 (1;0.1;19)
64 (3;0.2;18-20)	65 (3;0.1;17-19)	66 (6;0.2;12-14)	67 (1;0.1;19)
68 (3;0.1;13-18)	70 (1;0.1;17)	71 (1;1.0;19)	72 (2;0.1;12-19)
73 (4;0.1;11-19)	74 (1;0.1;11)	77 (1;0.5;12)	120 (2;0.3;20-25)
125 (2;0.3;26)	131 (1;0.2;24)	133 (5;0.9;23-27)	134 (1;0.2;22)
135 (2;0.3;23-27)	136 (1;0.2;27)	137 (2;0.2;20-25)	139 (1;0.2;24)
141 (2;0.2;6-25)	148 (1;0.1;5)	149 (7;0.5;5-27)	150 (2;0.1;7)
151 (4;0.1;5-6)	152 (1;0.2;23)	153 (1;0.2;25)	157 (2;0.3;6-28)
162 (1;0.1;7)	163 (1;0.1;7)	164 (1;0.1;7)	169 (1;0.1;7)
170 (3;0.1;6-7)	171 (1;0.1;6)	172 (1;0.1;9)	177 (1;0.1;7)
178 (1;0.1;8)	179 (4;0.1;6-7)	260 (1;0.1;13)	262 (1;0.1;11)
265 (1;0.1;14)	267 (1;0.1;12)	269 (1;0.1;11)	277 (1;0.1;11)
280 (1;0.1;10)	281 (4;0.1;10-11)	282 (1;0.1;14)	283 (3;0.1;10-14)
284 (1;0.1;10)	285 (1;0.1;11)	287 (1;0.1;8)	288 (1;0.1;11)
289 (4;0.1;12-16)	290 (2;0.1;7-11)	291 (2;0.1;13-15)	292 (6;0.1;10-14)
293 (4;0.1;9-11)	294 (3;0.1;10-12)	295 (2;0.1;10)	296 (2;0.1;12-14)
297 (1;0.1;8)	299 (7;0.1;11-15)		

CYPRINODONTIDAE

Striped Killifish ***Fundulus Majalis***

180 (1;0.1;8)	206 (1;0.1;6)

GASTEROSTEIDAE

Threespine Stickleback ***Gasterosteus aculeatus***

193 (1;0.1;6)	203 (1;0.1;6)	206 (1;0.1;7)	210 (2;0.1;7-8)
213 (1;0.1;7)	214 (1;0.1;6)	220 (1;0.1;5)	221 (2;0.1;6)
222 (4;0.1;6)	223 (1;0.1;7)	227 (1;0.1;5)	230 (1;0.1;7)
231 (1;0.1;6)	232 (1;0.1;6)	233 (2;0.1;6-7)	234 (1;0.1;6)
235 (2;0.1;7)	238 (1;0.1;6)	239 (2;0.1;6-7)	240 (1;0.1;6)
249 (1;0.1;6)			

Appendix Table D (Continued)

SYNGNATHIDAE

Northern Pipefish ***Syngnathus fuscus***

111 (1;0.1;8)	270 (1;0.1;16)

TRIGLIDAE

Northern Searobin ***Prionotus carolinus***

20 (1;0.1;12)	26 (3;0.1;12-13)	28 (4;0.1;11-15)	29 (1;0.1;14)
30 (1;0.1;11)	32 (1;0.1;11)	33 (1;0.1;12)	36 (1;0.1;12)
46 (1;0.1;13)	48 (1;0.1;11)	55 (1;0.1;12)	56 (1;0.1;13)
59 (1;0.1;13)	61 (2;0.1;11-12)	64 (1;0.1;13)	66 (1;0.1;14)
67 (1;0.1;15)	68 (1;0.1;13)	74 (1;0.1;16)	80 (1;0.1;18)
83 (1;0.1;18)	93 (4;0.3;16-19)	96 (1;0.1;19)	97 (2;0.1;13-16)
99 (1;0.1;16)	121 (1;0.1;4)	135 (1;0.1;20)	

Striped Searobin ***Prionotus evolans***

13 (1;0.2;25)	18 (1;0.7;37)	26 (2;0.5;27-31)	28 (1;0.1;21)
30 (1;0.1;18)	31 (1;0.1;26)	33 (1;0.4;29)	49 (3;0.4;17-24)
51 (1;0.1;19)	58 (1;0.1;16)	62 (1;0.1;16)	68 (1;0.1;20)
76 (1;0.1;18)	83 (1;0.1;4)	85 (1;0.1;4)	88 (4;0.1;3-6)
94 (1;0.1;4)	102 (2;0.1;5)	104 (2;0.1;5-10)	105 (4;0.1;8-12)
106 (4;0.1;4-6)	107 (2;0.1;5-10)	108 (1;0.1;6)	109 (13;0.1;3-7)
111 (2;0.1;6)	114 (2;0.1;8-9)	115 (2;0.1;5-8)	116 (1;0.1;6)
117 (5;0.1;4-7)	118 (3;0.1;9)	119 (1;0.1;4)	121 (2;0.1;6-7)
122 (4;0.1;5-8)	123 (1;0.1;6)	124 (3;0.1;6-11)	125 (2;0.1;8)
126 (1;0.1;7)	130 (2;0.1;6-10)	131 (2;0.1;7-9)	132 (3;0.1;7-9)
133 (1;0.1;7)	136 (2;0.1;8-9)	139 (2;0.1;7-8)	140 (1;0.1;11)
147 (1;0.1;6)	149 (1;0.1;9)	152 (1;0.1;9)	153 (1;0.1;8)
154 (1;0.1;8)	157 (1;0.1;9)		

COTTIDAE

Grubby ***Myoxocephalus aenaeus***

1 (1;0.1;7)	4 (4;0.1;8-12)	5 (1;0.1;9)	9 (4;0.1;8-10)
12 (2;0.1;7-13)	18 (1;0.1;11)	20 (4;0.1;8-9)	21 (3;0.1;9-11)
28 (22;0.2;6-11)	29 (1;0.1;10)	30 (1;0.1;11)	31 (1;0.1;9)
32 (1;0.1;9)	38 (9;0.1;8-11)	39 (2;0.1;9-11)	43 (2;0.1;10-12)
44 (3;0.1;9-10)	46 (1;0.1;10)	49 (3;0.1;10-11)	54 (1;0.1;9)
59 (3;0.1;8-9)	61 (1;0.1;10)	62 (1;0.1;9)	64 (7;0.1;8-10)
70 (1;0.1;9)	71 (2;0.1;9)	73 (1;0.1;8)	84 (2;0.1;10)
94 (4;0.1;8-10)	95 (2;0.1;9-10)	125 (2;0.1;9-13)	126 (1;0.1;10)
131 (1;0.1;10)	144 (1;0.1;9)	151 (1;0.1;11)	154 (3;0.1;11-12)
162 (1;0.1;7)	165 (5;0.1;6-12)	166 (4;0.1;7-10)	168 (1;0.1;8)
169 (1;0.1;8)	170 (2;0.1;5-6)	171 (1;0.1;7)	173 (3;0.1;6-8)
174 (1;0.1;14)	177 (1;0.1;12)	178 (1;0.1;7)	179 (2;0.1;6-13)
180 (8;0.1;6-12)	181 (9;0.1;7-9)	182 (3;0.1;6-11)	183 (10;0.1;6-10)
184 (2;0.1;7-9)	185 (1;0.1;7)	187 (3;0.1;12-13)	188 (6;0.1;6-14)
189 (1;0.1;8)	192 (2;0.1;7-9)	193 (15;0.1;7-12)	194 (1;0.1;11)
196 (1;0.1;11)	199 (4;0.1;8-12)	200 (1;0.1;13)	203 (2;0.1;10)
204 (4;0.1;9-12)	205 (1;0.1;11)	206 (1;0.1;7)	209 (13;0.1;6-13)

Appendix Table D (Continued)

Grubby *Myoxocephalus aenaeus* (Continued)

210 (2;0.1;9)	213 (3;0.1;7-13)	214 (3;0.1;7-12)	215 (1;0.1;12)
217 (2;0.1;7-13)	218 (4;0.1;4-11)	219 (7;0.1;8-13)	220 (1;0.1;11)
221 (1;0.1;11)	222 (2;0.1;7-8)	223 (1;0.1;9)	224 (3;0.1;9-11)
225 (1;0.1;11)	226 (2;0.1;7-12)	228 (2;0.1;7-8)	229 (4;0.1;7-12)
230 (1;0.1;10)	231 (5;0.1;6-9)	233 (2;0.1;7-11)	234 (38;1.0;5-14)
235 (2;0.1;7-11)	237 (2;0.1;7-9)	239 (2;0.1;7-13)	240 (2;0.1;10-11)
243 (3;0.1;8-12)	244 (6;0.1;7-9)	245 (2;0.1;7-9)	246 (4;0.1;8-12)
248 (5;0.1;7-13)	249 (2;0.1;7-9)	250 (1;0.1;9)	251 (1;0.1;9)
252 (1;0.1;8)	255 (6;0.1;6-13)	256 (4;0.1;7-10)	257 (1;0.1;11)
259 (1;0.1;8)	261 (2;0.1;8)	270 (2;0.1;12)	272 (1;0.1;7)
273 (1;0.1;10)	282 (1;0.1;13)	288 (1;0.1;8)	289 (6;0.1;7-12)
292 (2;0.1;11-13)	296 (1;0.1;11)	298 (3;0.1;8-12)	299 (5;0.1;7-9)

PERCICHTHYIDAE

White Perch *Morone americana*

4 (2;0.1;6-17)	11 (1;0.1;14)	22 (1;0.1;14)	44 (1;0.1;9)
123 (1;0.1;15)	140 (61;3.1;8-21)	141 (44;2.3;10-21)	142 (82;2.4;6-19)
143 (181;12.4;7-22)	144 (25;2.7;11-28)	145 (9;2.5;14-22)	146 (2;0.2;10-18)
147 (3;0.3;13-20)	150 (7;0.4;9-17)	151 (4;0.3;9-18)	152 (23;1.3;8-20)
153 (10;0.5;9-18)	154 (46;4.7;7-25)	155 (5;0.6;11-22)	156 (5;0.3;14-18)
160 (1;0.1;10)	161 (7;0.3;9-19)	162 (4;0.2;8-16)	163 (64;1.8;7-18)
164 (26;0.6;7-17)	165 (44;0.9;7-19)	166 (23;0.8;6-21)	167 (9;0.3;6-18)
168 (2;0.1;7-18)	169 (5;0.5;8-20)	170 (5;0.5;9-21)	171 (2;0.1;7-11)
172 (4;0.4;9-22)	173 (4;0.3;11-17)	175 (5;0.7;10-22)	176 (3;0.1;8-18)
177 (2;0.2;14-17)	178 (15;0.8;7-18)	179 (39;1.2;7-22)	180 (23;0.4;6-18)
181 (42;1.0;7-19)	182 (14;0.3;7-17)	183 (7;0.1;8-10)	184 (3;0.1;8-17)
185 (16;0.4;7-17)	186 (7;0.5;7-20)	187 (8;0.3;8-18)	188 (9;0.2;5-14)
189 (8;0.5;8-20)	190 (5;0.1;7-14)	191 (46;0.9;7-20)	192 (9;0.1;8-16)
193 (15;0.2;6-10)	194 (6;0.1;7-10)	195 (3;0.2;8-18)	196 (1;0.1;11)
197 (7;0.3;8-19)	198 (6;0.1;7-11)	199 (9;0.1;6-10)	200 (22;1.9;8-22)
201 (8;0.5;11-19)	202 (16;2.0;11-22)	203 (42;2.9;8-25)	204 (8;1.0;12-22)
205 (3;0.3;15-18)	206 (31;2.4;9-28)	207 (47;3.3;7-23)	208 (119;12.5;9-25)
209 (118;12.5;9-25)	210 (21;1.5;8-22)	211 (16;0.9;8-24)	212 (10;0.7;8-22)
213 (12;1.0;9-21)	214 (31;3.5;12-24)	215 (31;3.1;8-27)	216 (24;1.8;8-25)
217 (43;5.4;10-25)	218 (72;8.9;11-21)	219 (63;5.8;9-26)	220 (11;1.2;8-22)
221 (9;0.7;8-22)	222 (38;1.3;7-26)	223 (32;1.9;7-23)	224 (12;0.5;9-19)
226 (12;0.5;10-23)	227 (65;2.5;9-27)	228 (122;5.0;8-23)	229 (34;1.8;7-26)
230 (3;0.2;12-19)	231 (2;0.3;15-21)	232 (21;2.3;7-24)	233 (29;1.6;7-18)
234 (35;1.8;6-20)	235 (95;5.0;8-21)	236 (37;2.0;8-22)	237 (17;1.2;8-19)
238 (16;2.0;9-20)	239 (10;0.3;8-12)	240 (22;2.8;9-26)	241 (9;1.0;10-21)
242 (63;3.4;8-25)	243 (30;4.8;7-25)	244 (3;0.1;10-15)	245 (2;0.1;12-19)
246 (12;1.5;9-24)	247 (90;11.3;7-28)	248 (44;4.3;8-25)	249 (71;6.0;8-26)
250 (76;4.8;7-22)	251 (43;2.4;8-24)	252 (41;2.8;8-21)	253 (4;0.1;10-15)
254 (136;7.9;8-23)	255 (6;0.1;7-17)	256 (6;0.2;11-20)	257 (7;1.2;13-24)
258 (59;4.5;8-23)	259 (8;0.4;8-19)	260 (73;1.1;7-15)	261 (29;0.6;8-17)
262 (16;0.4;9-14)	263 (30;1.0;9-21)	264 (1;0.1;10)	265 (2;0.1;8-10)
266 (23;0.6;10-14)	267 (15;0.3;7-14)	268 (62;1.2;7-16)	269 (63;1.2;8-17)
270 (44;0.6;8-24)	271 (28;0.5;8-14)	272 (44;0.8;7-13)	273 (21;0.5;8-17)
274 (5;0.1;9-14)	275 (9;0.2;8-15)	276 (34;0.8;8-19)	277 (22;0.6;7-25)

Appendix Table D (Continued)

White Perch *Morone americana* (Continued)

278 (76;1.3;8-19) 279 (24;0.5;8-15) 281 (16;0.3;9-19) 282 (8;0.1;10-13)
283 (8;0.2;8-15) 284 (1;0.1;11) 286 (1;0.1;9) 287 (6;0.1;8-11)
288 (1;0.1;9) 289 (5;0.1;8-18) 290 (1;0.1;12) 291 (3;0.1;10-15)
292 (1;0.1;10) 293 (19;0.3;9-18) 296 (6;0.1;8-13) 297 (6;0.1;8-11)
298 (5;0.3;10-19)

Striped Bass *Morone saxatilis*

1 (2;0.9;20-38) 2 (13;3.2;19-39) 3 (1;0.1;18) 4 (2;0.5;27-32)
5 (1;0.5;30) 12 (3;0.8;21-30) 20 (5;2.8;29-40) 21 (1;0.5;37)
28 (1;1.0;40) 30 (2;1.3;37-44) 31 (1;0.1;25) 33 (5;2.8;27-39)
38 (1;0.6;38) 39 (1;0.6;40) 40 (3;0.8;32-36) 48 (2;0.7;15-39)
49 (17;10.8;28-47) 50 (1;0.1;20) 51 (2;1.3;37-39) 53 (1;0.8;38)
59 (1;0.8;39) 60 (277;63.4;17-37) 61 (13;4.3;22-41) 62 (17;5.8;19-38)
63 (1;0.2;23) 64 (7;2.7;27-37) 65 (1;0.8;41) 71 (4;1.9;32-39)
72 (2;0.9;28-34) 78 (1;5.0;73) 90 (17;7.3;21-40) 91 (2;1.6;26-47)
93 (1;0.6;35) 94 (3;1.1;31-33) 124 (1;0.4;31) 125 (2;0.7;31)
126 (3;0.3;19-25) 127 (17;2.0;13-31) 129 (2;0.3;16-19) 130 (3;1.0;30-32)
131 (3;1.2;25-38) 136 (3;0.5;17-29) 137 (1;0.2;22) 138 (1;0.1;21)
139 (5;0.6;13-24) 140 (87;5.7;11-32) 141 (42;2.5;11-28) 142 (75;2.0;8-27)
143 (675;26.6;9-24) 144 (18;1.6;12-30) 145 (16;2.0;10-32) 146 (40;2.8;11-31)
147 (13;1.3;11-30) 148 (11;1.7;11-48) 149 (2;0.2;13-21) 150 (16;0.8;11-22)
151 (6;0.8;13-30) 152 (285;10.2;9-23) 153 (20;0.7;9-18) 154 (12;1.9;11-36)
155 (40;4.7;11-32) 156 (364;23.0;10-25) 157 (8;1.1;14-33) 158 (6;0.9;10-33)
159 (6;1.0;14-31) 161 (7;1.1;10-30) 162 (16;0.5;11-21) 163 (14;0.8;9-22)
164 (10;0.3;8-18) 165 (20;0.8;8-21) 166 (12;0.6;11-26) 167 (8;0.4;11-27)
168 (10;0.5;10-27) 169 (3;0.1;12-23) 170 (7;0.5;7-22) 171 (7;0.2;10-18)
172 (19;0.5;10-14) 173 (7;1.4;12-39) 174 (1;0.1;18) 175 (3;0.1;13-18)
176 (2;0.1;11-20) 177 (7;1.8;14-33) 178 (11;0.8;11-17) 179 (17;0.9;11-25)
180 (9;0.3;6-20) 181 (9;2.2;7-15) 182 (5;0.1;8-10) 183 (4;1.6;10-47)
184 (7;1.5;10-40) 185 (16;0.7;7-30) 186 (9;0.3;8-21) 187 (14;0.5;10-19)
188 (10;0.3;8-17) 189 (26;1.3;11-30) 190 (3;0.8;6-40) 191 (8;1.3;6-41)
193 (2;0.1;8) 194 (3;0.8;8-37) 195 (8;1.3;8-40) 196 (2;0.5;11-34)
197 (22;1.8;6-42) 198 (22;1.1;8-24) 199 (36;2.5;8-41) 200 (30;1.6;8-45)
201 (5;2.5;13-43) 202 (14;0.5;7-24) 203 (51;3.0;8-36) 204 (8;0.6;11-27)
205 (16;1.9;9-27) 206 (137;13.7;10-40) 207 (94;5.4;8-33) 208 (75;5.3;10-36)
209 (165;12.7;8-50) 210 (35;2.3;8-42) 211 (10;1.3;8-40) 212 (12;1.0;8-36)
213 (13;0.3;7-17) 214 (47;3.3;8-43) 215 (29;1.8;9-30) 216 (26;2.5;7-37)
217 (75;4.8;9-33) 218 (68;4.3;7-29) 219 (111;5.3;8-27) 220 (29;3.5;8-43)
221 (17;2.9;8-48) 222 (52;3.1;9-43) 223 (87;4.1;8-28) 224 (57;4.0;8-32)
225 (6;0.7;10-37) 226 (53;2.9;10-36) 227 (102;5.3;10-36) 228 (159;4.0;10-32)
229 (45;1.7;10-34) 230 (3;0.1;8-18) 232 (32;3.8;10-40) 233 (48;1.9;8-21)
234 (85;5.0;7-44) 235 (100;6.3;9-31) 236 (72;3.8;8-35) 237 (69;3.8;7-27)
238 (133;15.0;8-36) 239 (60;4.4;9-27) 240 (53;3.3;9-40) 241 (20;0.6;10-18)
242 (111;3.5;7-31) 243 (51;5.0;10-25) 244 (177;10.9;10-40) 245 (391;35.9;11-35)
246 (113;7.0;9-25) 247 (414;23.7;9-34) 248 (60;2.3;9-24) 249 (86;4.4;9-34)
250 (125;4.8;8-29) 251 (52;1.8;8-32) 252 (101;3.3;8-30) 253 (5;0.4;8-23)
254 (186;8.9;8-33) 255 (95;4.8;10-39) 256 (160;25.0;12-37) 257 (32;1.5;8-24)
258 (197;13.9;9-24) 259 (49;3.0;8-19) 260 (102;4.1;7-31) 261 (55;1.3;9-19)
262 (45;3.0;11-34) 263 (106;6.0;11-33) 264 (6;0.3;10-22) 265 (10;0.1;8-18)

Appendix Table D (Continued)

Striped Bass *Morone saxatilis* (Continued)

266 (126;6.0;9-30)	267 (52;2.5;8-33)	268 (96;5.2;9-32)	269 (168;10.7;10-35)
270 (111;7.0;8-32)	271 (118;4.0;10-28)	272 (93;7.7;7-34)	273 (48;3.5;11-32)
274 (9;0.3;10-21)	275 (41;2.0;9-39)	276 (75;2.3;10-24)	277 (79;2.8;8-28)
278 (56;3.9;7-24)	279 (94;5.0;7-25)	280 (2;0.2;20-21)	281 (44;2.3;7-33)
282 (91;5.3;11-29)	283 (42;1.8;11-25)	284 (14;0.9;11-23)	285 (2;0.1;10-13)
287 (35;2.0;9-26)	288 (5;0.6;12-31)	289 (10;0.5;9-25)	290 (17;1.8;12-28)
291 (57;4.1;10-31)	292 (3;1.8;23-40)	293 (126;7.5;8-32)	294 (4;0.3;10-24)
295 (12;1.5;7-34)	296 (25;1.0;9-23)	297 (17;1.0;9-31)	298 (13;0.4;8-22)
299 (3;0.3;13-29)			

POMATOMIDAE

Bluefish *Pomatomus saltatrix*

95 (1;3.4;63)	105 (2;0.1;11)	127 (1;0.1;18)	137 (1;0.1;13)

CARANIGIDAE

Crevalle Jack *Caranx hippos*

107 (1;0.1;14)

SPARIDAE

Scup *Stenotomus chrysops*

17 (1;0.1;11)	28 (2;0.1;10-11)	129 (1;0.1;17)

SCIAENIDAE

Silver Perch *Bairdiella chrysoura*

122 (1;0.1;9)	123 (1;0.1;9)	124 (2;0.1;8-11)	125 (2;0.1;11-12)
131 (1;0.1;11)	137 (1;0.1;11)	147 (1;0.1;10)	149 (5;0.1;8-11)
155 (1;0.1;10)	157 (4;0.1;9-11)	159 (2;0.1;9)	

Weakfish *Cynoscion regalis*

2 (2;0.4;29)	4 (2;0.7;27-34)	5 (1;0.3;32)	23 (1;0.3;31)
25 (1;0.2;28)	28 (5;1.0;23-30)	29 (1;0.8;39)	32 (3;0.6;24-26)
35 (4;0.9;23-29)	36 (1;0.3;28)	37 (3;0.8;23-30)	38 (2;0.4;24-26)
45 (1;0.2;26)	47 (1;0.2;29)	58 (3;0.8;25-31)	59 (1;0.4;27)
61 (2;0.6;27-28)	64 (1;0.3;27)	66 (1;0.4;31)	72 (1;0.3;30)
74 (1;0.2;27)	75 (1;0.2;26)	77 (1;0.2;29)	78 (1;0.2;26)
84 (45;0.7;6-15)	85 (89;1.4;6-15)	86 (14;0.1;6-13)	87 (13;0.2;7-14)
88 (128;1.3;4-15)	89 (20;0.1;6-14)	90 (7;0.1;5-13)	91 (34;0.6;7-14)
93 (47;0.5;3-15)	94 (46;0.4;4-15)	95 (34;0.6;6-16)	96 (40;0.7;5-15)
97 (74;1.3;5-15)	98 (125;1.7;5-14)	99 (4;0.1;8-15)	100 (23;0.3;8-15)
101 (49;0.9;7-17)	102 (53;0.9;8-18)	103 (72;1.1;8-17)	104 (102;1.6;8-18)
105 (69;1.1;8-17)	106 (42;0.5;7-16)	107 (24;0.6;7-18)	108 (28;0.5;6-18)
109 (57;0.8;7-17)	110 (5;0.1;9-15)	111 (102;1.3;7-17)	112 (13;0.7;8-15)
114 (113;1.5;6-18)	115 (87;1.4;7-18)	116 (82;1.7;8-17)	117 (53;1.0;5-18)
118 (141;1.5;9-17)	119 (13;0.1;8-15)	120 (3;0.1;11-18)	121 (48;0.9;7-18)
122 (102;2.3;9-19)	123 (34;0.6;9-19)	124 (57;1.2;9-19)	125 (47;1.1;9-21)
126 (22;0.6;10-20)	127 (49;1.1;9-19)	128 (2;0.1;10-12)	129 (8;0.2;9-14)

Appendix Table D (Continued)

Weakfish *Cynoscion regalis* (Continued)

130 (26;1.3;6-43)	131 (59;1.0;7-18)	132 (15;0.3;8-15)	133 (13;0.3;9-19)
134 (35;0.8;7-19)	135 (73;2.4;9-44)	136 (40;0.7;9-17)	137 (54;1.2;6-21)
138 (16;0.5;10-17)	139 (32;0.8;9-18)	140 (8;0.1;10-16)	141 (4;0.1;10-16)
142 (2;0.1;9-17)	143 (11;0.3;11-18)	145 (4;0.1;8-12)	146 (2;0.1;9-11)
147 (5;0.1;10-18)	148 (9;0.4;10-18)	149 (16;0.2;8-16)	150 (4;0.1;8-12)
151 (2;0.1;8-11)	152 (3;0.1;10-12)	153 (1;0.1;11)	154 (2;0.1;11-12)
155 (6;0.1;10-16)	157 (11;0.3;9-20)	158 (6;0.1;10-15)	159 (8;0.1;10-13)
160 (1;0.1;15)	175 (1;0.1;11)	177 (1;0.1;10)	178 (1;0.1;10)

Spot *Leiostomus xanthurus*

89 (1;0.1;13)	97 (1;0.1;14)	103 (1;0.1;14)	116 (1;0.1;14)
123 (1;0.1;15)			

Northern Kingfish *Menticirrhus saxatilis*

93 (1;0.1;9)

Atlantic Croaker *Micropogonias undulatus*

80 (1;0.1;11)	81 (1;0.1;11)	83 (2;0.1;10)	84 (1;0.1;7)
87 (1;0.1;11)	93 (1;0.1;10)	100 (1;0.1;12)	106 (1;0.1;18)
116 (1;0.1;18)	122 (2;0.2;19)	124 (1;0.1;15)	135 (1;0.1;20)
147 (1;0.1;10)	149 (1;0.1;14)	159 (3;0.1;14-17)	160 (2;0.1;11-16)
165 (1;0.1;14)			

LABRIDAE

Tautog *Tautoga onitis*

94 (1;0.1;10)	144 (1;0.1;19)	149 (1;0.2;16)	153 (1;0.1;19)
164 (1;0.2;17)	278 (1;0.1;19)		

Cunner *Tautogolabrus adspersus*

37 (1;0.1;14)	183 (1;0.1;18)	229 (1;0.1;14)	237 (1;0.1;14)
242 (1;0.1;13)	268 (1;0.1;9)	280 (1;0.1;10)	282 (1;0.1;15)
298 (1;0.1;9)			

PHOLIDAE

Rock Gunnel *Pholis gunnellus*

298 (1;0.1;14)

STROMATEIDAE

Butterfish *Peprilus triacanthus*

81 (1;0.1;11)	82 (1;0.1;11)	83 (2;0.1;5-12)	89 (18;0.6;10-15)
93 (1;0.1;3)	95 (2;0.1;12-14)	97 (12;0.4;9-12)	98 (4;0.1;6-10)
99 (1;0.1;9)	102 (1;0.1;15)	103 (1;0.1;6)	104 (4;0.1;9-15)
105 (10;0.5;9-18)	107 (1;0.1;12)	116 (1;0.2;18)	122 (1;0.1;11)

Appendix Table D (Continued)

Butterfish ***Peprilus triacanthus*** **(Continued)**

126 (4;0.3;14-16)	127 (11;0.5;9-17)	135 (1;0.1;11)	136 (1;0.2;18)
137 (1;0.1;13)	145 (1;0.1;14)		

BOTHIDAE

Smallmouth Flounder ***Etropus microstomus***

140 (2;0.1;6)	165 (1;0.1;9)	169 (1;0.1;5)	282 (1;0.1;10)

Summer Flounder ***Paralichthys dentatus***

1 (3;0.8;24-29)	2 (1;0.2;33)	3 (2;0.6;27)	4 (2;1.0;30-43)
5 (1;0.1;27)	6 (2;1.7;41)	9 (1;1.6;50)	11 (2;0.4;27-30)
12 (3;0.6;27-30)	13 (5;1.0;26-30)	15 (2;0.4;28-29)	16 (2;0.8;31-37)
18 (2;0.3;26-29)	21 (5;2.3;26-42)	22 (4;0.8;28-31)	25 (1;0.3;32)
26 (1;0.2;28)	27 (2;0.3;27-28)	28 (2;1.3;39-41)	29 (5;1.3;23-39)
30 (3;0.5;26-30)	31 (1;0.3;30)	32 (5;1.5;25-44)	34 (1;0.2;28)
35 (2;0.4;24-26)	36 (2;1.2;26-44)	37 (1;0.2;28)	38 (1;0.2;29)
39 (2;0.4;29-34)	40 (1;0.2;31)	41 (2;1.6;34-53)	42 (4;1.0;29-34)
44 (7;3.5;29-43)	45 (2;1.1;37)	46 (4;1.5;27-37)	47 (2;0.3;29-32)
48 (2;0.3;27-29)	49 (4;2.5;28-42)	50 (1;0.3;30)	51 (9;2.5;26-33)
52 (1;0.5;35)	53 (2;0.8;29)	54 (9;3.5;26-40)	55 (1;0.6;36)
56 (4;1.2;24-34)	57 (4;1.3;29-36)	58 (2;0.6;28-31)	59 (5;1.5;25-35)
62 (3;0.8;29-31)	63 (2;0.4;28-29)	64 (2;0.8;28-38)	65 (8;2.3;28-32)
66 (13;3.2;27-33)	67 (10;2.6;26-38)	68 (9;2.8;25-40)	69 (9;2.4;29-34)
72 (1;0.3;30)	74 (4;1.1;28-33)	75 (6;1.5;28-35)	76 (3;0.8;29-32)
77 (7;1.6;27-32)	78 (3;0.8;27-34)	83 (1;0.3;33)	84 (1;0.3;33)
87 (6;1.8;30-35)	88 (8;2.3;29-31)	89 (3;1.0;29-32)	91 (2;0.6;28-33)
93 (1;0.3;31)	94 (6;1.7;28-33)	95 (2;1.0;31-33)	96 (3;0.8;27-28)
97 (4;1.3;30-31)	98 (1;0.4;31)	99 (2;0.5;29-30)	102 (1;0.3;33)
106 (1;0.2;32)	108 (3;1.3;33-34)	115 (2;0.8;31)	116 (1;0.6;36)
118 (1;0.2;30)	119 (1;0.2;31)	137 (1;0.1;26)	260 (1;0.2;25)
264 (1;0.2;27)	270 (1;0.1;21)	273 (1;0.1;25)	280 (1;0.1;20)
281 (1;0.1;22)	288 (1;0.1;21)	289 (3;0.3;17-23)	290 (1;1.0;22)
296 (1;0.1;23)	299 (3;0.5;22-29)		

Fourspot Flounder ***Paralichthys oblongus***

48 (1;0.2;30)			

Windowpane ***Scophthalmus aquosus***

6 (1;0.1;20)	32 (1;0.1;19)	39 (1;0.1;17)	45 (1;0.1;17)
46 (1;0.1;19)	64 (1;0.1;4)	66 (1;0.1;6)	68 (1;0.1;6)
69 (2;0.1;5-7)	74 (2;0.1;6-8)	75 (1;0.1;4)	78 (1;0.1;7)
84 (1;0.1;9)	95 (1;0.1;10)	98 (2;0.1;10-12)	104 (1;0.1;9)
106 (1;0.1;10)	120 (1;0.1;22)	121 (1;0.1;18)	123 (1;0.1;23)
124 (2;0.2;10-26)	125 (1;0.3;23)	127 (1;0.2;24)	128 (1;0.2;24)
130 (1;0.1;13)	131 (2;0.2;15-24)	132 (2;0.1;19-22)	134 (1;0.1;15)
136 (2;0.3;24-25)	137 (1;0.1;13)	138 (1;0.1;13)	139 (1;0.1;11)
140 (3;0.2;15-20)	141 (1;0.1;19)	142 (1;0.1;14)	143 (1;0.1;21)

Appendix Table D (Continued)

Windowpane *Scophthalmus aquosus* (Continued)

144 (1;0.1;16)	145 (2;0.1;11-13)	147 (1;0.1;22)	149 (2;0.1;14-19)
151 (1;0.1;14)	152 (1;0.1;19)	153 (1;0.1;19)	154 (1;0.1;15)
158 (2;0.2;15-19)	159 (1;0.1;16)	166 (1;0.1;15)	167 (1;0.1;11)
168 (1;0.1;17)	173 (1;0.1;11)	174 (1;0.1;16)	181 (1;0.1;18)
212 (1;0.3;30)	217 (1;0.3;31)	225 (1;0.1;11)	228 (1;0.1;14)
234 (1;0.1;12)	240 (1;0.1;18)	248 (1;0.1;15)	249 (1;0.1;20)
251 (1;0.3;26)	256 (1;0.1;12)	262 (1;0.1;16)	263 (1;0.3;27)
265 (1;0.1;16)	269 (1;0.1;15)	271 (1;0.3;26)	273 (1;0.2;24)
283 (1;0.3;28)	284 (1;0.3;26)	285 (1;0.3;28)	286 (1;0.3;30)
287 (1;0.3;26)	289 (2;0.3;14-27)	292 (1;0.3;28)	296 (4;0.8;22-25)
298 (1;0.3;23)	299 (1;0.3;27)		

PLEURONECTIDAE

Winter Flounder *Pleuronectes americanus*

1 (1;0.1;23)	3 (1;0.1;12)	4 (5;0.2;11-20)	6 (1;0.1;12)
8 (1;0.2;23)	9 (2;0.1;12-13)	10 (1;0.1;10)	11 (1;0.1;11)
12 (2;0.3;12-24)	14 (1;0.1;14)	15 (1;0.1;11)	20 (1;0.1;14)
22 (5;0.1;10-15)	23 (1;0.1;15)	25 (2;0.1;13-14)	27 (1;0.1;10)
28 (8;0.1;8-17)	29 (9;0.2;10-16)	31 (2;0.1;12)	32 (6;0.1;13-17)
33 (3;0.2;13-20)	34 (1;0.1;14)	37 (1;0.1;13)	38 (4;0.2;12-25)
39 (2;0.3;17-27)	41 (7;0.2;10-16)	42 (2;0.1;17)	43 (11;0.1;10-20)
44 (6;0.1;10-16)	45 (4;0.2;11-22)	47 (3;0.1;10-11)	48 (7;0.2;8-16)
49 (3;0.1;12-14)	50 (7;0.1;11-15)	51 (3;0.1;11-15)	52 (2;0.1;13-16)
53 (1;0.1;14)	54 (3;0.1;10-13)	55 (1;0.1;15)	56 (1;0.1;16)
58 (1;0.2;27)	59 (10;0.5;10-23)	60 (3;0.1;13-16)	61 (24;0.6;5-21)
62 (24;0.7;10-16)	63 (1;0.1;18)	64 (23;0.8;10-19)	65 (4;0.1;12-14)
66 (2;0.1;14)	67 (1;0.1;14)	69 (2;0.1;14)	70 (6;0.1;9-17)
71 (43;1.0;9-17)	72 (13;0.3;8-17)	73 (11;0.2;10-16)	74 (2;0.1;12-17)
76 (1;0.1;15)	78 (1;0.1;12)	80 (8;0.1;6-15)	81 (19;0.8;9-22)
82 (19;0.6;11-18)	83 (45;1.4;8-18)	84 (4;0.2;13-16)	85 (4;0.2;12-24)
87 (1;0.1;10)	88 (6;0.3;13-16)	90 (8;0.2;7-16)	91 (13;0.5;9-18)
92 (9;0.3;10-16)	93 (96;3.0;8-18)	94 (22;0.8;11-21)	95 (11;0.6;11-21)
96 (1;0.1;17)	97 (2;0.1;15-22)	98 (2;0.1;14)	99 (1;0.1;14)
100 (5;0.3;12-19)	101 (5;0.2;11-22)	103 (4;0.3;13-24)	105 (1;0.1;13)
107 (1;0.1;9)	108 (4;0.1;14)	109 (4;0.2;14-16)	110 (5;0.1;4-17)
111 (5;0.1;5-18)	112 (3;0.1;10-13)	113 (1;0.3;25)	114 (10;0.4;12-20)
115 (1;0.1;13)	116 (3;0.1;13-18)	118 (1;0.1;14)	120 (2;0.3;14-30)
121 (5;0.3;11-18)	122 (4;0.3;11-19)	123 (5;0.3;13-17)	124 (6;0.3;14-19)
125 (9;0.5;11-21)	126 (9;0.3;13-18)	127 (4;0.1;14-16)	129 (6;0.3;13-17)
130 (4;0.1;10-16)	131 (5;0.2;12-18)	132 (5;0.2;13-19)	133 (2;0.1;15-17)
134 (1;0.1;15)	135 (6;0.5;11-24)	136 (5;0.3;12-22)	137 (8;0.5;13-19)
138 (7;0.4;12-24)	139 (15;0.8;12-22)	140 (31;2.0;8-28)	141 (47;3.1;7-28)
142 (56;3.3;11-29)	143 (12;1.4;13-29)	144 (11;0.5;12-22)	145 (9;1.0;16-30)
146 (11;1.5;9-24)	147 (11;0.5;11-23)	148 (9;0.8;12-24)	149 (16;1.8;12-30)
150 (15;1.1;13-26)	151 (36;3.2;11-29)	152 (25;1.0;11-22)	153 (23;1.6;10-30)
154 (15;1.5;11-27)	155 (2;0.3;23)	156 (2;0.1;12-13)	157 (16;1.1;13-26)
158 (6;0.3;9-18)	159 (12;1.5;15-27)	160 (2;0.1;15-20)	161 (6;0.3;10-21)
162 (3;0.2;7-21)	163 (9;0.5;7-21)	165 (9;0.3;9-18)	166 (2;0.2;14-23)
167 (10;0.7;7-25)	168 (10;0.7;11-28)	169 (8;0.3;11-18)	170 (13;1.5;9-30)

Appendix Table D (Continued)

Winter Flounder ***Pleuronectes americanus*** **(Continued)**

171 (21;1.1;11-23)	172 (25;1.8;10-29)	173 (19;1.2;9-28)	174 (2;0.2;13-23)
175 (4;0.4;10-20)	176 (5;0.4;9-23)	177 (2;0.1;16-17)	178 (2;0.1;10-18)
179 (12;0.7;9-22)	180 (1;0.1;7)	181 (3;0.1;6-12)	182 (3;0.1;10-15)
183 (1;0.1;10)	184 (2;0.1;10-17)	185 (2;0.1;10-13)	187 (5;0.3;11-21)
188 (4;0.2;10-13)	189 (3;0.1;14-19)	191 (1;0.1;11)	192 (2;0.1;16-17)
193 (3;0.1;7-10)	195 (1;0.1;19)	197 (4;0.6;9-31)	198 (5;0.2;10-20)
199 (11;0.3;8-22)	202 (3;0.1;10-14)	203 (3;0.1;10-13)	204 (2;0.1;12-18)
205 (2;0.1;19-22)	206 (1;0.1;19)	209 (2;0.1;8-11)	213 (2;0.1;10-17)
214 (2;0.1;17-22)	215 (2;0.1;9-10)	216 (1;0.3;28)	217 (3;0.1;7-12)
218 (4;0.1;10-20)	219 (6;0.1;9-17)	221 (3;0.1;7-18)	222 (3;0.1;11-19)
223 (2;0.1;10-13)	224 (5;0.1;8-18)	225 (1;0.1;7)	226 (2;0.3;22-29)
227 (5;0.7;16-28)	228 (1;0.1;20)	229 (1;0.1;10)	230 (2;0.1;11-12)
231 (3;0.1;7-19)	233 (4;0.2;7-22)	234 (10;1.5;6-29)	237 (1;0.1;10)
238 (2;0.2;10-22)	239 (6;0.3;10-20)	241 (3;0.3;9-21)	242 (2;0.1;14-15)
243 (7;0.5;8-23)	244 (3;0.1;10-16)	245 (10;0.4;9-23)	246 (2;0.1;9-12)
248 (2;0.1;12-13)	249 (6;0.2;10-17)	251 (4;0.1;9-16)	252 (1;0.1;11)
254 (7;0.7;10-30)	255 (5;0.1;10-15)	256 (6;0.2;10-19)	257 (3;0.2;9-21)
258 (1;0.1;13)	259 (1;0.1;19)	260 (3;0.1;12-21)	261 (1;0.1;13)
262 (2;0.2;19-20)	263 (3;0.3;9-25)	264 (1;0.1;14)	265 (7;0.7;17-22)
266 (2;0.2;10-21)	267 (3;0.1;10-15)	268 (4;0.4;11-24)	269 (3;0.5;20-23)
270 (11;0.9;8-30)	271 (3;0.3;11-26)	272 (7;0.6;8-26)	273 (6;1.3;9-28)
274 (2;0.1;11-21)	276 (4;0.2;11-21)	277 (5;0.5;17-28)	278 (5;0.7;16-28)
279 (5;0.6;11-26)	281 (4;0.1;14-19)	282 (8;0.8;10-24)	283 (2;0.1;14-16)
284 (1;0.2;27)	285 (3;0.3;17-20)	287 (2;0.3;20-24)	288 (1;0.1;12)
289 (6;0.4;9-23)	290 (1;0.1;9)	291 (5;0.3;8-21)	292 (7;0.4;8-26)
293 (4;0.3;8-27)	294 (2;0.2;12-21)	295 (2;0.3;18-23)	296 (1;0.1;23)
298 (2;0.2;11-24)	299 (10;0.8;8-26)		

SOLEIDAE

Hogchoker ***Trinectes maculatus***

14 (1;0.1;11)	46 (1;0.1;12)	48 (1;0.1;14)	49 (1;0.1;14)
65 (1;0.1;14)	80 (2;0.2;18)	100 (5;0.3;12-15)	101 (1;0.1;13)
110 (1;0.1;15)	169 (1;0.1;12)	173 (1;0.1;14)	248 (1;0.1;13)
298 (1;0.1;13)			

BALISTIDAE

Planehead Filefish ***Monacanthus hispidus***

135 (1;0.3;36)

TETRAODONTIDAE

Northern Puffer ***Sphoeroides maculatus***

94 (1;0.1;8)

Appendix Table D (Continued)

MEGAINVERTEBRATES

MYIDAE
Softshell Clam ***Mya arenaria***

140 (2;0.1;4)	154 (2;0.1;2-3)	191 (1;0.1;4)	192 (1;0.1;3)
203 (1;0.1;3)	210 (4;0.1;3-5)	223 (2;0.1;3)	243 (3;0.1;2-3)
251 (1;0.1;4)	252 (1;0.1;3)	254 (3;0.1;3-6)	260 (2;0.1;3)
261 (4;0.1;3-7)	263 (2;0.1;3)	268 (4;0.1;3-4)	269 (1;0.1;7)
270 (1;0.1;2)	279 (1;0.1;4)	290 (1;0.1;4)	291 (40;0.3;2-6)
294 (1;0.1;6)	297 (1;0.1;3)	298 (1;0.1;3)	

LOLIGINIDAE
Longfin Squid ***Loligo pealeii***

77 (1;0.1;3)

LIMULIDAE
Horseshoe Crab ***Limulus polyphemus***

19 (1;1.8;31)	29 (1;1.3;27)	55 (1;1.7;29)	86 (1;1.1;23)
124 (1;1.4;25)	189 (1;1.6;25)	193 (1;1.5;27)	209 (1;3.2;35)
266 (1;1.5;30)	273 (1;0.6;22)		

SQUILLIDAE
Mantis Shrimp ***Squilla empusa***

116 (1;0.1;8)	118 (1;0.1;7)	121 (1;0.1;13)	122 (5;0.1;8-10)
124 (1;0.1;8)	133 (2;0.1;6-8)	135 (2;0.1;8-9)	157 (1;0.1;7)
158 (1;0.1;5)	187 (1;0.1;8)	188 (3;0.1;5-8)	192 (1;0.1;4)
198 (1;0.1;7)			

MAJIDAE
Spider Crab Uncl. ***Libinia emarginata***

200 (1;0.1;8)	255 (1;0.1;2)

CANCRIDAE
Atlantic Rock Crab Uncl. ***Cancer irroratus***

175 (1;0.1;5)

Rock Crab Male ***Cancer irroratus***

38 (1;0.1;5)	194 (1;0.1;4)	199 (2;0.1;4)	242 (1;0.2;13)
245 (1;0.3;12)			

PORTUNIDAE
Blue Crab Male ***Callinectes sapidus***

1 (30;2.5;4-15)	2 (13;2.0;10-16)	3 (17;1.5;7-15)	4 (38;3.2;6-16)
5 (3;0.2;11-12)	6 (1;0.4;16)	7 (4;0.4;9-16)	8 (3;0.3;10-15)

Appendix Table D (Continued)

Blue Crab Male *Callinectes sapidus* (Continued)

9 (40;2.5;3-15)	10 (27;1.6;6-14)	11 (25;2.9;10-16)	12 (70;6.3;6-15)
13 (21;2.8;8-16)	14 (6;0.7;10-14)	15 (2;0.2;11-14)	16 (10;1.5;11-17)
18 (7;0.9;8-17)	19 (19;1.8;7-15)	20 (86;7.5;8-15)	21 (33;2.3;7-14)
22 (19;2.3;9-17)	23 (43;4.5;7-16)	24 (5;0.5;11-16)	25 (6;0.5;9-15)
26 (13;1.2;8-17)	27 (7;0.4;8-13)	28 (48;2.5;5-14)	29 (13;0.5;4-15)
30 (33;2.8;7-15)	31 (17;0.7;9-16)	32 (53;5.0;7-17)	33 (30;2.7;7-14)
34 (5;0.3;9-13)	35 (9;0.8;8-16)	36 (10;1.0;9-13)	37 (9;0.8;9-15)
38 (36;2.1;8-14)	39 (6;0.5;11-14)	40 (58;11.1;14-16)	41 (122;19.3;10-17)
42 (180;31.0;12-17)	43 (125;13.0;8-17)	44 (8;1.1;12-15)	45(14;1.5;7-16)
46 (13;1.8;10-17)	47 (21;2.8;8-15)	48 (43;5.6;10-16)	49 (64;9.3;8-15)
50 (115;9.6;8-15)	51 (234;33.5;8-16)	52 (69;10.3;9-16)	53 (37;6.5;11-16)
54 (16;2.3;7-17)	55 (14;2.0;11-16)	56 (10;1.3;10-16)	57 (18;2.8;11-15)
58 (42;4.9;7-15)	59 (68;7.7;8-17)	60 (65;11.8;11-17)	61 (63;12.7;12-16)
62 (135;24.3;4-17)	63 (105;20.7;8-18)	64 (55;9.6;11-17)	65 (39;7.1;9-16)
66 (29;4.5;6-17)	67 (21;3.8;10-17)	68 (27;4.5;8-17)	69 (11;2.3;14-17)
70 (58;11.9;12-17)	71 (61;14.0;13-17)	72 (67;12.5;12-16)	73 (45;10.7;11-17)
74 (18;5.1;11-16)	75 (21;3.8;11-18)	76 (31;5.9;10-17)	77 (27;5.5;10-17)
78 (14;2.9;13-18)	79 (2;0.3;12-15)	80 (7;1.9;12-18)	81 (10;2.8;16-19)
82 (5;1.3;14-17)	83 (4;1.4;16-19)	84 (5;1.5;15-17)	85 (9;2.6;14-18)
86 (11;3.0;14-18)	87 (3;0.6;13-14)	88 (7;1.6;15-18)	89 (11;2.9;14-18)
90 (13;3.1;14-17)	91 (7;2.0;13-18)	92 (4;1.4;17-18)	93 (17;5.0;14-19)
94 (9;2.5;13-18)	95 (12;3.3;13-17)	96 (9;2.3;14-18)	97 (8;2.1;13-17)
98 (9;2.4;14-19)	99 (3;0.8;14-16)	100 (6;1.4;14-18)	101 (6;1.8;15-17)
102 (15;3.8;14-20)	103 (16;3.5;12-21)	104 (5;1.4;15-18)	105 (3;0.5;15-17)
106 (6;1.8;15-19)	107 (5;1.5;15-18)	108 (6;1.7;16-18)	109 (5;1.6;17-18)
110 (4;1.3;16-18)	111 (11;3.0;15-19)	112 (26;7.3;14-19)	113 (16;4.0;14-18)
114 (9;2.1;14-19)	115 (11;3.0;15-19)	116 (3;1.0;15-18)	117 (9;2.1;15-18)
118 (6;1.8;16-19)	119 (3;1.0;17-18)	120 (9;2.2;12-20)	121 (6;1.7;13-18)
122 (5;1.3;12-18)	123 (9;2.4;12-18)	124 (13;3.4;14-19)	125 (2;0.5;15-16)
126 (7;1.7;4-20)	127 (8;2.1;12-19)	128 (130;27.0;10-20)	129 (45;10.3;12-19)
130 (1;0.2;18)	131 (10;1.8;2-19)	132 (1;0.3;18)	133 (7;0.8;4-16)
134 (1;0.2;15)	135 (5;1.1;12-18)	136 (44;10.0;6-19)	137 (40;7.8;4-18)
138 (13;3.0;3-20)	139 (12;1.8;3-16)	140 (21;0.7;1-18)	141 (18;0.6;2-17)
142 (8;0.8;7-16)	143 (3;0.3;3-18)	145 (2;0.6;16-18)	146 (1;0.1;3)
148 (1;0.1;13)	150 (13;0.6;1-19)	151 (7;0.1;1-6)	152 (11;1.5;2-18)
153 (7;0.1;2-5)	154 (1;0.1;3)	155 (2;0.5;15-17)	156 (1;0.1;12)
157 (1;0.4;20)	158 (2;0.5;15-18)	159 (1;0.3;16)	160 (1;0.1;17)
163 (1;0.3;17)	164 (2;0.3;7-16)	165 (1;0.1;7)	166 (3;0.5;12-16)
167 (3;0.7;11-17)	168 (12;0.3;2-17)	169 (4;0.6;4-17)	170 (11;1.4;2-18)
171 (12;1.9;3-18)	172 (6;0.2;2-12)	173 (3;0.1;2-12)	174 (1;0.2;16)
175 (1;0.1;3)	176 (1;0.1;5)	177 (2;0.8;14-19)	178 (2;0.5;4-19)
179 (3;0.3;3-18)	180 (12;3.2;11-18)	181 (6;1.0;4-16)	182 (2;0.7;13-20)
185 (2;0.4;14-17)	189 (2;0.9;18-20)	190 (3;0.5;7-18)	197 (1;0.3;16)
199 (2;0.5;14)	200 (2;0.5;15-16)	201 (1;0.1;14)	202 (1;0.3;19)
203 (15;3.3;4-20)	204 (3;0.9;17-18)	205 (1;0.3;18)	206 (3;0.7;15-19)
209 (1;0.2;17)	210 (2;0.1;14-15)	211 (1;0.1;3)	212 (4;0.7;11-15)
215 (1;0.1;8)	216 (2;0.2;7-15)	217 (7;2.4;12-19)	218 (5;1.6;16-20)
219 (5;1.3;13-17)	221 (1;0.1;12)	223 (2;0.3;15-17)	226 (5;0.5;11-17)
228 (2;0.3;15-16)	233 (1;0.1;10)	235 (4;0.4;7-14)	236 (1;0.3;15)
238 (1;0.3;16)	239 (1;0.1;15)	240 (1;0.1;13)	241 (2;0.5;14-16)

Appendix Table D (Continued)

Blue Crab Male *Callinectes sapidus* (Continued)

242 (3;0.6;13-17)	243 (4;0.8;10-16)	244 (12;3.3;9-19)	245 (6;2.0;14-20)
246 (1;0.1;18)	247 (1;0.2;16)	248 (15;2.1;6-17)	251 (13;1.4;3-16)
252 (2;0.3;8-12)	253 (8;1.4;5-17)	254 (4;0.9;6-18)	255 (24;6.4;7-20)
256 (17;4.3;13-18)	257 (19;4.5;8-21)	260 (4;0.3;3-14)	263 (1;0.1;3)
279 (2;0.1;2-3)	280 (1;0.1;16)	281 (1;0.1;13)	282 (9;0.1;1-4)
283 (4;0.1;3)	285 (1;0.1;4)	289 (1;0.1;4)	290 (1;0.1;2)
291 (2;0.1;2-3)	292 (3;1.0;15-18)	293 (5;0.6;2-18)	295 (3;0.3;12-16)
297 (4;0.3;6-15)	298 (2;0.6;14-19)	299 (2;0.1;3-17)	

Blue Crab Female *Callinectes sapidus*

1 (9;0.8;9-11)	2 (2;0.2;8-13)	3 (25;1.4;6-14)	4 (26;1.3;6-16)
6 (1;0.1;7)	7 (2;0.1;10)	8 (3;0.3;10-14)	9 (27;1.7;3-15)
10 (21;0.8;2-13)	11 (10;0.9;10-16)	12 (55;3.1;6-20)	13 (6;0.2;7-15)
14 (3;0.2;7-15)	16 (9;1.0;8-16)	17 (1;0.1;15)	18 (10;1.0;8-17)
19 (18;1.2;8-15)	20 (59;4.2;5-16)	21 (30;2.0;8-16)	22 (10;1.0;11-16)
23 (32;2.5;8-17)	24 (6;0.3;8-15)	25 (4;0.3;10-13)	26 (4;0.2;7-15)
27 (6;0.3;8-16)	28 (30;1.7;5-15)	29 (10;0.5;7-12)	30 (24;1.3;8-12)
31 (9;0.5;8-14)	32 (57;4.1;6-15)	33 (24;1.8;7-14)	34 (4;0.3;9-16)
35 (8;0.6;9-12)	36 (11;0.6;7-15)	37 (1;0.1;10)	38 (38;1.4;6-14)
39 (2;0.3;10)	40 (37;4.8;10-17)	41 (81;8.6;9-16)	42 (81;11.3;11-17)
43 (78;10.8;7-16)	44 (4;0.5;11-16)	45 (12;1.3;8-16)	46 (7;1.0;10-15)
47 (15;1.5;7-16)	48 (38;3.8;8-16)	49 (46;5.5;10-18)	50 (90;11.2;9-17)
51 (140;20.0;9-17)	52 (40;5.1;9-17)	53 (31;3.4;7-16)	54 (14;2.2;10-16)
55 (7;0.6;7-15)	56 (7;1.0;11-15)	57 (13;1.7;10-17)	58 (64;7.8;6-17)
59 (120;13.1;9-16)	60 (49;7.5;9-18)	61 (58;10.0;11-18)	62 (227;31.3;6-18)
63 (154;25.0;9-18)	64 (163;24.8;10-19)	65 (64;9.7;9-18)	66 (24;2.9;9-17)
67 (15;1.4;10-15)	68 (11;1.2;9-17)	69 (16;2.1;9-17)	70 (46;7.0;10-18)
71 (64;9.8;9-17)	72 (48;7.0;8-18)	73 (52;7.5;10-18)	74 (15;1.3;10-16)
75 (9;1.4;10-18)	76 (31;4.0;8-19)	77 (23;3.0;9-17)	78 (22;2.9;11-18)
79 (2;0.3;15)	80 (2;0.4;13-15)	81 (5;1.2;16-18)	82 (12;2.5;15-18)
83 (5;1.0;13-17)	84 (26;4.5;10-18)	85 (14;2.4;9-18)	86 (2;0.2;12-13)
88 (2;0.3;10-13)	89 (2;0.5;13)	90 (3;0.3;11-14)	91 (1;0.1;10)
92 (2;0.1;6-12)	93 (8;1.5;12-16)	94 (17;3.2;13-17)	95 (29;5.6;12-18)
96 (12;2.5;13-18)	97 (4;0.9;15-17)	98 (1;0.2;16)	100 (1;0.1;12)
101 (2;0.6;15-16)	102 (14;2.8;15-19)	103 (64;11.3;14-18)	106 (1;0.2;16)
107 (1;0.1;11)	108 (3;0.7;16-17)	109 (3;0.6;14-17)	110 (2;0.5;15-16)
111 (2;0.5;17)	112 (44;8.7;15-19)	113 (29;5.0;14-18)	114 (18;3.3;15-18)
115 (10;2.1;15-18)	116 (1;0.1;14)	117 (1;0.2;14)	118 (1;0.2;17)
119 (2;0.4;16)	120 (1;0.1;13)	121 (1;0.2;15)	122 (2;0.5;13-15)
123 (4;0.7;13-17)	124 (5;0.8;14-17)	125 (3;0.5;15-17)	126 (3;0.6;14-16)
127 (1;0.1;12)	128 (6;0.8;10-16)	129 (4;0.7;9-17)	130 (5;0.2;2-16)
131 (6;0.6;2-16)	132 (5;0.8;3-18)	136 (5;0.7;3-18)	137 (2;0.1;2-11)
138 (2;0.1;6-9)	139 (7;0.3;3-13)	140 (20;0.1;2-6)	141 (12;0.1;3-7)
142 (3;0.1;6-12)	143 (4;0.6;8-16)	144 (1;0.1;2)	145 (1;0.2;16)
147 (1;0.1;1)	149 (1;0.1;7)	150 (6;0.1;4-7)	151 (2;0.1;3-5)
152 (3;0.3;3-16)	153 (6;0.1;1-5)	154 (2;0.1;5-13)	157 (1;0.1;3)
158 (1;0.1;16)	166 (1;0.1;15)	168 (8;0.3;1-15)	169 (10;0.1;1-8)
170 (4;0.9;13-17)	171 (3;0.3;4-18)	172 (1;0.1;2)	173 (5;0.1;2-4)
180 (4;0.8;6-16)	181 (1;0.1;10)	182 (1;0.1;7)	185 (1;0.1;6)

Appendix Table D (Continued)

Blue Crab Female *Callinectes sapidus* (Continued)

188 (4;0.7;4-16)	193 (1;0.1;8)	198 (1;0.2;15)	203 (3;0.2;5-15)
204 (2;0.2;11-13)	216 (3;0.1;8-9)	217 (1;0.1;6)	228 (2;0.1;7)
229 (1;0.1;6)	235 (3;0.1;6-7)	236 (1;0.1;7)	240 (1;0.1;13)
243 (2;0.2;12-14)	248 (6;0.6;7-17)	249 (1;0.1;6)	251 (3;0.1;5-6)
253 (3;0.2;7-12)	254 (2;0.1;6-8)	255 (5;1.3;5-17)	256 (1;0.1;12)
257 (2;0.3;13)	261 (4;0.1;2-5)	267 (1;0.1;7)	269 (1;0.1;7)
279 (1;0.1;2)	280 (2;0.1;8)	282 (5;0.1;1-8)	283 (5;0.1;2-7)
287 (1;0.1;2)	289 (1;0.1;3)	290 (2;0.1;4-6)	292 (1;0.1;8)
295 (2;0.3;3-11)	296 (2;0.1;2-3)	297 (1;0.1;7)	298 (2;0.1;2-3)

Lady Crab Female *Ovalipes ocellatus*

161 (1;0.1;7)

Appendix Table E

Phylogenetic listing of fish and megainvertebrates collected with a 4.9-m otter trawl in Newark Bay, NJ between May 1993 and April 1994. For each station of occurrence, the number caught, weight (kg), and size range (cm) are included. Fish are arranged according to Robins *et al.* (1991), and megainvertebrates according to Gosner (1978), Turgeon *et al.* (1988), and Williams *et al.* (1989).

FISH

CLUPEIDAE

Blueback Herring ***Alosa aestivalis***

52 (1;0.0;8)	56 (1;0.0;8)	57 (2;0.0;5-6)	59 (5;0.0;5-6)

Alewife ***Alosa pseudoharengus***

32 (1;0.0;8)	58 (1;0.0;7)	63 (1;0.0;8)

American Shad ***Alosa sapidissima***

32 (2;0.0;7-8)	33 (1;0.0;10)	36 (1;0.0;9)	41 (1;0.0;10)
58 (1;0.0;8)	60 (1;0.0;9)		

Atlantic Herring ***Clupea harengus***

3 (1;0.0;4)	4 (8;0.0;4-5)	5 (26;0.0;4-6)	6 (6;0.0;4-6)
8 (68;0.0;4-5)	9 (18;0.0;4-5)	10 (156;0.2;4-6)	11 (362;0.0;4-6)
13 (9;0.0;5-6)	14 (2;0.0;5)	17 (1;0.0;4)	

ENGRAULIDAE

Bay Anchovy ***Anchoa mitchilli***

1 (1;0.0;6)	8 (2;0.0;5-7)	9 (4;0.0;6)	10 (9;0.0;6-7)
11 (25;0.0;5-8)	13 (6;0.0;5-8)	15 (1;0.0;6)	17 (6;0.1;6-8)
18 (8;0.1;5-7)	19 (5;0.1;7)	20 (10;0.1;6-7)	21 (3;0.0;6-7)
22 (50;0.1;5-7)	23 (20;0.0;5-8)	24 (5;0.0;5-9)	25 (28;0.1;5-8)
26 (19;0.1;6-8)	27 (49;0.1;5-8)	29 (66;0.2;3-5)	30 (190;0.1;3-5)
31 (5;0.0;4-5)	33 (70;0.1;2-6)	34 (10;0.0;3-4)	35 (57;0.0;3-5)
36 (7;0.0;4-6)	37 (20;0.1;3-6)	38 (25;0.0;3-6)	39 (16;0.0;3-6)
40 (22;0.0;2-6)	41 (345;0.2;3-7)	42 (315;0.1;2-5)	57 (2;0.0;4)
58 (1;0.0;3)	62 (2;0.0;3)	63 (3;0.0;3-4)	104 (1;0.0;7)

OSMERIDAE

Rainbow Smelt ***Osmerus mordax***

91 (1;0.0;13)

GADIDAE

Atlantic Tomcod ***Microgadus tomcod***

1 (6;0.0;4-8)	2 (10;0.0;4-6)	3 (11;0.0;4-6)	5 (5;0.0;4-6)
6 (10;0.0;3-5)	7 (6;0.0;4-6)	8 (2;0.0;6-7)	9 (11;0.0;4-9)

Appendix Table E (Continued)

Atlantic Tomcod *Microgadus tomcod* (Continued)

10 (4;0.0;5-7)	12 (20;0.0;5-8)	13 (65;0.0;4-9)	14 (29;0.0;5-8)
15 (11;0.1;7-10)	16 (19;0.1;7-9)	17 (13;0.1;6-8)	18 (26;0.1;6-9)
19 (24;0.1;6-9)	20 (8;0.1;7-8)	21 (14;0.1;6-9)	

Spotted Hake *Urophycis regia*

16 (2;0.0;8-10)

ATHERINIDAE

Atlantic Silverside *Menidia menidia*

44 (10;0.8;8-11)	45 (6;0.0;9-10)	46 (13;0.1;8-10)	47 (1;0.0;11)
54 (2;0.0;7)	55 (1;0.0;10)	58 (4;0.0;9-11)	59 (2;0.0;10-11)
62 (1;0.0;11)	63 (1;0.0;9)	66 (1;0.0;6)	81 (1;0.0;8)
90 (1;0.0;9)			

GASTEROSTEIDAE

Threespine Stickleback *Gasterosteus aculeatus*

79 (1;0.0;6) 80 (1;0.0;6)

SYNGNATHIDAE

Lined Seahorse *Hippocampus erectus*

16 (1;0.0;9)

Northern Pipefish *Syngnathus fuscus*

9 (1;0.0;15)	13 (1;0.0;22)	15 (1;0.0;15)	22 (1;0.0;20)
26 (1;0.0;17)	27 (1;0.0;19)	28 (1;0.0;21)	35 (1;0.0;19)
42 (1;0.0;12)			

TRIGLIDAE

Northern Searobin *Prionotus carolinus*

3 (1;0.0;12)

Striped Searobin *Prionotus evolans*

34 (1;0.0;3) 35 (1;0.0;4) 36 (1;0.0;5)

COTTIDAE

Grubby *Myoxocephalus aenaeus*

52 (1;0.0;13)

Appendix Table E (Continued)

PERCICHTHYIDAE

White Perch ***Morone americana***

58 (3;0.3;9-20)	59 (1;0.0;9)	60 (1;0.0;9)	61 (2;0.0;9)
63 (1;0.0;9)	90 (1;0.0;7)	91 (1;0.0;8)	

Striped Bass ***Morone saxatilis***

1 (2;0.0;9-15)	2 (1;0.0;11)	3 (1;0.0;10)	21 (1;0.1;7)
25 (2;0.8;30-35)	26 (3;1.3;29-34)	27 (2;0.8;24-32)	28 (1;0.8;35)
29 (11;0.2;6-10)	30 (5;0.1;7-10)	31 (1;0.0;8)	32 (3;0.1;8)
33 (1;0.0;9)	34 (2;0.0;8)	36 (8;0.1;8-12)	37 (8;0.1;8-12)
38 (6;0.1;10-12)	39 (4;0.2;11-13)	40 (1;0.1;13)	41 (6;0.1;10-11)
44 (8;0.5;11-23)	45 (1;0.3;26)	46 (23;1.1;10-33)	48 (3;0.1;9-13)
49 (2;0.0;11-13)	56 (1;0.1;17)	57 (4;0.2;7-19)	58 (1;0.5;32)
59 (6;0.2;9-19)	61 (4;0.3;12-24)	62 (8;1.0;11-26)	

POMATOMIDAE

Bluefish ***Pomatomus saltatrix***

22 (1;0.0;8)	24 (1;0.0;9)	30 (1;0.1;13)	31 (1;0.1;13)
34 (1;0.0;12)	35 (1;0.0;13)	37 (1;0.1;13)	39 (1;0.1;12)
41 (6;0.3;14-17)	42 (1;0.1;13)		

SCIAENIDAE

Weakfish ***Cynoscion regalis***

33 (1;0.0;5)	34 (2;0.0;5-7)	47 (1;0.0;16)	48 (2;0.0;10-12)

Spot ***Leiostomus xanthurus***

33 (1;0.0;11

Northern Kingfish ***Menticirrhus saxatilis***

33 (2;0.0;6-9)

GOBIIDAE

Goby ***Gobiosoma sp.***

15 (1;0.0;5)

STROMATEIDAE

Butterfish ***Peprilus triacanthus***

46 (1;0.1;17)

BOTHIDAE

Smallmouth Flounder ***Etropus microstomus***

39 (1;0.0;4)	42 (1;0.0;4)	55 (1;0.0;6)

Appendix Table E (Continued)

Summer Flounder ***Paralichthys dentatus***

1 (1;0.8;42)	13 (1;0.1;26)	14 (1;0.5;34)	19 (1;0.1;24)
20 (1;0.1;26)	21 (1;0.1;28)	22 (1;0.3;26)	24 (3;0.8;28)
25 (1;0.3;31)	26 (1;0.1;28)	28 (3;0.8;26-30)	32 (2;0.5;28)
33 (1;0.1;28)	34 (2;0.5;30)	35 (1;0.3;30)	

Windowpane ***Scophthalmus aquosus***

22 (2;0.0;4)	26 (2;0.0;4-7)

PLEURONECTIDAE

Winter Flounder ***Pleuronectes americanus***

1 (7;0.1;8-14)	2 (6;0.0;9-14)	3 (3;0.0;8-15)	5 (3;0.0;9-10)
6 (2;0.0;9-11)	7 (2;0.0;8-13)	8 (1;0.0;15)	9 (3;0.0;9-12)
10 (1;0.0;10)	12 (1;0.0;10)	13 (2;0.0;5-14)	14 (5;0.0;4-15)
15 (3;0.1;6-7)	16 (5;0.1;5-14)	17 (10;0.1;5-11)	18 (6;0.1;4-14)
19 (7;0.1;4-16)	20 (4;0.1;5-6)	21 (5;0.1;5-14)	22 (5;0.0;5-11)
23 (5;0.1;6-14)	24 (3;0.0;6-7)	25 (1;0.0;14)	26 (2;0.0;6)
27 (4;0.0;6-7)	28 (1;0.0;5)	29 (2;0.0;7)	30 (1;0.0;16)
31 (3;0.0;7)	32 (1;0.0;7)	33 (1;0.0;7)	34 (2;0.2;8)
35 (4;0.0;5-8)	41 (1;0.0;8)	44 (2;0.2;17-24)	45 (1;0.0;18)
47 (3;0.0;10-19)	48 (1;0.0;15)	49 (1;0.1;18)	50 (2;0.0;8-9)
52 (1;0.0;9)	56 (3;0.0;8-11)	57 (3;0.2;9-19)	59 (1;0.0;8)
60 (1;0.0;9)	69 (1;0.0;7)	102 (3;0.1;11-17)	

TETRAODONTIDAE

Northern Puffer ***Sphoeroides maculatus***

37 (1;0.0;1)

MEGAINVERTEBRATES

OSTREIDAE

American Oyster ***Crassostrea virginica***

15 (1;0.3;10)

PORTUNIDAE

Blue Crab Uncl. ***Callinectes sapidus***

8 (1;0.1;12)

Blue Crab Male ***Callinectes sapidus***

3 (1;0.1;8)	12 (1;0.0;13)	14 (1;0.1;13)	15 (1;0.1;9)
18 (2;0.2;10-15)	19 (3;0.5;12-15)	20 (1;0.1;12)	21 (4;0.3;9-11)
22 (1;0.3;16)	23 (3;0.5;6-17)	24 (5;1.3;15-16)	25 (13;2.3;11-16)
26 (8;1.8;12-16)	27 (8;1.8;5-7)	28 (13;1.8;10-14)	30 (2;0.8;14-17)
31 (4;1.3;14-17)	32 (6;1.8;10-18)	33 (8;2.3;13-18)	34 (4;1.0;13-18)
35 (3;1.0;16-18)	36 (1;0.3;15)	37 (2;1.0;17-18)	38 (2;0.8;15-16)

Appendix Table E (Continued)

Blue Crab Male *Callinectes sapidus* (Continue)

39 (1;0.3;18)	40 (2;0.8;16-17)	41 (1;0.3;15)	42 (4;0.8;12-16)
44 (2;0.4;12-18)	46 (1;0.5;17)	47 (14;4.5;14-19)	75 (2;0.5;13-16)
76 (1;0.3;17)	79 (1;0.3;19)	89 (4;1.3;17-18)	90 (5;1.3;12-18)
91 (1;0.3;17)			

Blue Crab Female *Callinectes sapidus*

15 (2;0.1;6-10)	18 (1;0.1;16)	21 (1;0.1;10)	22 (4;0.8;15-17)
23 (1;0.3;16)	24 (3;0.5;11-17)	25 (9;1.3;11-16)	26 (5;1.0;11-15)
27 (4;0.5;8-16)	28 (15;2.0;9-16)	33 (1;0.3;12)	34 (3;0.8;14-16)
35 (2;0.3;14-16)	39 (2;0.3;3-16)	40 (1;0.3;17)	41 (2;0.5;16-17)
44 (2;0.3;15-16)	46 (1;0.2;17)	47 (3;0.5;15-17)	48 (1;0.1;15)
49 (1;0.2;15)	56 (1;0.2;15)	61 (1;0.0;2)	90 (1;0.3;16)
93 (1;0.0;7)			

Appendix Table F

Phylogenetic listing of fish and megainvertebrates collected with experimental gill nets in Newark Bay, NJ between May 1993 and April 1994. For each station of occurrence, the number caught, weight (kg), and size range (cm) are included. Fish are arranged according to Robins *et al.* (1991), and megainvertebrates according to Gosner (1978), Turgeon *et al.* (1988), and Williams *et al.* (1989).

FISH

CLUPEIDAE

Blueback Herring ***Alosa aestivalis***

1 (4;0.1;10-11)	2 (16;0.5;8-20)	3 (24;0.3;9-11)	13 (1;0.0;10)
14 (6;0.1;10-11)	19 (1;0.1;10)	50 (2;0.0;10-11)	

Alewife ***Alosa pseudoharengus***

2 (8;1.0;17-20)	3 (3;0.2;19-22)	7 (1;0.0;10)	8 (1;0.0;10)
10 (1;0.0;10)			

American Shad ***Alosa sapidissima***

2 (1;0.2;21)	3 (2;0.3;20)	79 (1;0.2;29)

Atlantic Menhaden ***Brevoortia tyrannus***

1 (69;15.5;20-30)	2 (39;8.5;20-31)	3 (56;12.6;21-24)	5 (11;4.5;22-24)
6 (6;1.3;21-24)	7 (11;2.5;23-26)	8 (35;7.5;22-26)	9 (16;3.5;22-27)
10 (7;1.3;21-25)	12 (3;0.5;22-24)	13 (5;1.3;22-27)	17 (6;1.1;22-23)
20 (2;0.5;23-24)	23 (1;0.1;22)	25 (1;0.2;21)	26 (2;0.2;23)
27 (3;0.8;23-24)	29 (5;1.0;22-24)	30 (4;1.0;23-27)	32 (1;0.2;23)
33 (1;0.2;22)	34 (4;1.0;24-33)	36 (1;0.1;23)	38 (8;1.5;22-31)
46 (1;0.1;21)	47 (2;0.4;21-24)	48 (1;0.3;24)	49 (4;0.5;22-23)
50 (19;3.3;21-25)	52 (1;0.2;22)	57 (1;0.2;36)	59 (1;0.2;25)
86 (2;0.5;35-43)			

Atlantic Herring ***Clupea harengus***

47 (1;0.0;11)	54 (9;1.3;23-25)	55 (1;0.2;25)	56 (1;0.2;28)
57 (1;0.2;24)	58 (3;0.5;22-29)	80 (1;0.2;28)	85 (1;0.2;28)
87 (1;0.2;31)	89 (3;0.5;26-31)		

GADIDAE

Atlantic Tomcod ***Microgadus tomcod***

53 (1;0.1;20)

SYNGNATHIDAE

Northern Pipefish ***Syngnathus fuscus***

92 (1;0.0;12)

Appendix Table F (Continued)

PERCICHTHYIDAE

White Perch ***Morone americana***

10 (1;0.2;24)	17 (1;0.1;16)	67 (1;0.0;8)	78 (1;0.0;5)
83 (1;0.1;20)			

Striped Bass ***Morone saxatilis***

1 (9;1.8;17-29)	2 (8;3.0;20-45)	3 (6;2.8;20-43)	5 (1;0.1;31)
6 (4;2.3;31-42)	7 (2;0.8;31-32)	8 (4;1.8;21-34)	9 (1;0.3;29)
10 (1;0.0;21)	13 (2;0.8;30)	14 (1;0.3;31)	15 (1;1.3;48)
16 (5;10.5;41-48)	17 (16;9.3;21-46)	19 (15;7.0;30-41)	20 (4;1.5;23-31)
21 (3;2.0;32-47)	22 (3;1.0;24-31)	23 (9;4.5;22-43)	25 (1;0.5;32)
26 (4;1.0;24-30)	27 (1;0.3;48)	28 (1;0.5;32)	29 (6;1.3;21-28)
30 (2;0.3;23-24)	31 (2;1.5;37-43)	35 (1;0.2;28)	41 (1;1.3;45)
42 (1;0.2;21)	43 (1;0.3;27)	46 (1;0.3;33)	47 (1;0.3;31)
53 (1;0.8;44)	55 (2;0.3;21-22)	57 (1;1.0;43)	59 (1;0.2;20)
64 (1;0.2;28)	84 (1;1.3;37)	86 (1;1.8;42)	90 (1;1.3;49)

POMATOMIDAE

Bluefish ***Pomatomus saltatrix***

6 (3;10.0;51-62)	7 (4;15.3;54-61)	8 (1;3.0;60)	12 (3;4.3;31-57)
13 (1;1.8;51)	14 (1;2.3;53)	15 (1;2.0;53)	17 (3;6.3;52-60)
18 (3;6.3;53-55)	21 (2;5.0;54-57)	22 (1;1.5;49)	23 (1;0.8;37)
26 (1;0.1;11)	32 (1;2.8;61)	36 (1;2.3;59)	40 (3;0.5;20-25)
42 (1;3.3;69)	44 (2;5.5;67-74)	45 (1;1.5;53)	52 (1;3.3;61)

CARANIGIDAE

Crevalle Jack ***Caranx hippos***

41 (1;0.1;12)	50 (1;0.1;14)

SCIAENIDAE

Weakfish ***Cynoscion regalis***

5 (1;0.1;28)	6 (1;0.5;33)	7 (1;0.3;30)	8 (1;0.5;32)
9 (1;0.3;33)	10 (1;0.2;33)	12 (2;0.5;31-33)	15 (1;0.3;31)
17 (2;1.0;27-38)	20 (1;0.3;29)	35 (1;0.0;11)	43 (1;0.1;10)
48 (1;0.0;11)	49 (1;0.0;11)		

STROMATEIDAE

Butterfish ***Peprilus triacanthus***

48 (2;0.1;13-15)	50 (1;0.0;10)

SCOMBRIDAE

Chub mackerel ***Scomber japonicus***

14 (1;0.0;12)

Appendix Table F (Continued)

BOTHIDAE

Summer Flounder ***Paralichthys dentatus***

11 (1;0.2;31)

MEGAINVERTEBRATES

PORTUNIDAE

Blue Crab Male ***Callinectes sapidus***

11 (1;0.1;14)	12 (3;0.2;9-14)	13 (1;0.1;15)	15 (3;0.5;13-17)
17 (2;0.3;11-12)	18 (3;0.8;13-15)	21 (1;0.1;13)	22 (3;0.5;14-15)
23 (4;0.9;13-15)	24 (1;0.1;8)	25 (2;0.5;12-16)	26 (5;1.0;12-16)
27 (5;1.2;14-16)	28 (4;0.8;12-16)	29 (3;0.8;13-15)	30 (3;0.4;13-14)
31 (3;0.4;11-16)	32 (1;0.3;17)	33 (1;0.3;15)	34 (2;0.5;15-17)
35 (1;0.3;17)	37 (3;0.8;14-17)	38 (2;0.3;17)	39 (1;0.2;14)
40 (1;0.3;14)	41 (1;0.5;17)	42 (2;0.5;18)	44 (1;0.3;16)
45 (1;0.5;19)	46 (1;0.1;14)	48 (1;0.1;11)	49 (1;0.2;14)
55 (2;0.5;17-18)	76 (1;0.3;19)	77 (1;0.3;17)	88 (1;0.4;19)
92 (1;0.0;8)			

Blue Crab Female ***Callinectes sapidus***

15 (2;0.1;8-9)	18 (1;0.1;13)	21 (1;0.1;13)	22 (3;0.2;12-15)
23 (1;0.1;9)	25 (1;0.1;11)	26 (2;0.2;10-14)	27 (2;0.2;10-14)
28 (1;0.2;12)	29 (3;0.5;14-16)	30 (1;0.1;11)	32 (1;0.2;13)
34 (2;0.3;11-15)	35 (1;0.1;11)	36 (1;0.2;16)	50 (1;0.3;16)
92 (1;0.0;10)			

Appendix Table G

Bottom hydrographic observations for all 8.5-m trawl stations as well as for the occurrence of the 10 most abundant species of fish and megainvertebrates collected in Newark Bay, NJ between May 1993 and April 1994.

All Bottom Observations

	Temperature (°C)			Salinity (ppt)			Dissolved Oxygen (mg/l)			Total
Month	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Stations
May	14.2	15.6	14.9	19.6	21.8	20.5	6.43	6.90	6.67	19
Jun	14.9	21.5	17.8	21.0	24.4	22.7	5.88	6.40	6.18	40
Jul	24.3	25.9	24.9	21.8	24.1	23.3	3.71	4.89	4.34	20
Aug	23.6	25.1	24.0	18.9	24.6	23.0	2.90	4.04	3.79	20
Sep	19.3	20.3	19.8	23.3	25.6	24.8	4.30	4.69	4.58	20
Oct	14.2	14.3	14.3	23.1	24.9	24.2	6.42	6.57	6.50	20
Nov	9.8	10.3	10.0	18.8	21.6	21.1	7.44	7.96	7.80	20
Dec	7.0	7.7	7.2	11.3	19.4	16.0	8.35	9.19	8.91	20
Jan	0.3	1.1	0.6	21.4	24.8	23.4	8.68	9.50	9.07	20
Feb	-0.2	0.2	0.0	19.5	22.2	21.1	9.17	9.73	9.45	20
Mar	0.4	2.9	1.7	13.3	21.0	17.9	10.13	10.92	10.57	40
Apr	7.0	11.8	8.7	12.1	18.3	14.9	8.92	9.66	9.48	40

Atlantic Tomcod *Microgadus tomcod*

	Temperature (°C)			Salinity (ppt)			Dissolved Oxygen (mg/l)			Total	Species
Month	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Stations	Occurrence
May	14.2	15.6	14.9	19.6	21.8	20.4	6.43	6.90	6.66	19	18
Jun	14.9	21.5	17.8	21.0	24.4	22.7	5.88	6.40	6.18	40	38
Jul	24.3	25.9	24.9	21.8	24.1	23.3	3.71	4.89	4.34	20	19
Aug	23.6	25.1	24.0	18.9	24.6	22.9	2.90	4.04	3.77	20	18
Sep	19.3	20.3	19.8	23.5	25.6	24.7	4.30	4.69	4.60	20	6
Oct	14.2	14.3	14.3	23.1	24.9	24.1	6.42	6.57	6.49	20	14
Nov	9.8	10.3	10.0	18.8	21.6	21.1	7.44	7.96	7.80	20	20
Dec	7.0	7.7	7.2	11.3	19.4	16.0	8.35	9.19	8.91	20	20
Jan	0.3	0.9	0.6	21.4	24.5	23.6	8.68	9.50	9.15	20	6
Feb	-0.1	0.2	0.1	19.5	22.2	21.3	9.28	9.73	9.56	20	6
Mar	0.4	2.9	1.7	15.8	21.0	18.4	10.30	10.82	10.60	40	8
Apr	7.0	11.8	8.7	12.1	18.3	14.9	8.92	9.88	9.47	40	36

Spotted Hake *Uryophycis regia*

	Temperature (°C)			Salinity (ppt)			Dissolved Oxygen (mg/l)			Total	Species
Month	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Stations	Occurrence
May	14.2	15.6	14.9	19.6	21.8	20.4	6.43	6.90	6.67	19	17
Jun	14.9	21.5	17.8	21.0	24.4	22.7	5.88	6.40	6.18	40	40
Jul	24.3	25.7	24.9	21.8	24.1	23.4	3.94	4.89	4.36	20	14
Oct	14.2	14.3	14.3	23.7	24.9	24.2	6.45	6.57	6.51	20	9
Nov	9.8	10.3	10.0	18.8	21.6	20.8	7.44	7.96	7.76	20	8
Dec	7.0	7.7	7.2	11.3	19.4	16.5	8.35	9.19	8.93	20	10
Apr	7.0	11.8	9.2	12.1	18.3	15.4	8.92	9.88	9.38	40	24

Appendix Table G (Continued)

Grubby ***Myoxocepthalus aenaeus***

Month	Temperature (°C)			Salinity (ppt)			Dissolved Oxygen (mg/l)			Total Stations	Species Occurrence
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean		
May	14.2	15.1	14.8	19.8	21.8	20.6	6.43	6.90	6.71	19	6
Jun	15.4	21.5	17.5	21.0	24.2	22.7	5.91	6.29	6.17	40	15
Jul	24.8	25.7	25.1	21.8	23.8	23.0	3.94	4.64	4.17	20	6
Aug	23.8	24.0	23.9	23.2	23.8	23.6	3.78	3.96	3.85	20	3
Oct	14.3	14.3	14.3	24.0	24.7	24.4	6.47	6.51	6.50	20	3
Nov	9.8	10.1	10.0	20.6	21.4	21.2	7.76	7.92	7.82	20	3
Dec	7.0	7.7	7.2	11.3	19.4	15.9	8.35	9.19	8.89	20	12
Jan	0.3	1.1	0.5	21.4	24.8	23.3	8.68	9.50	9.04	20	14
Feb	-0.2	0.2	0.0	19.5	22.2	21.2	9.17	9.73	9.50	20	13
Mar	0.4	2.9	1.6	13.1	21.0	17.9	10.13	10.92	10.60	40	30
Apr	7.4	11.8	9.3	12.1	17.3	14.4	8.92	9.82	9.38	40	11

White Perch ***Morone americana***

Month	Temperature (°C)			Salinity (ppt)			Dissolved Oxygen (mg/l)			Total Stations	Species Occurrence
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean		
May	14.6	15.0	14.8	20.2	20.5	20.4	6.55	6.77	6.66	19	2
Jun	15.4	20.0	17.6	22.2	23.1	22.7	6.23	6.26	6.24	40	2
Jul	14.3	14.3	14.3	24.7	24.7	24.7	6.54	6.55	6.55	20	1
Aug	9.8	10.3	10.0	18.8	21.5	20.9	7.44	7.96	7.75	20	15
Sep	7.0	7.7	7.2	11.3	19.4	15.9	8.35	9.19	8.91	20	19
Oct	14.3	14.3	14.3	23.1	24.7	24.0	6.42	6.54	6.48	20	11
Nov	9.8	10.3	10.0	18.8	21.6	21.1	7.44	7.96	7.80	20	20
Dec	7.0	7.7	7.2	11.3	19.4	15.9	8.35	9.19	8.91	20	19
Jan	0.3	1.1	0.6	21.4	24.8	23.4	8.68	9.50	9.07	20	20
Feb	-0.2	0.2	0.0	19.5	22.2	21.1	9.17	9.73	9.45	20	20
Mar	0.4	2.9	1.7	13.1	21.0	17.8	10.13	10.92	10.57	40	39
Apr	7.0	11.4	8.5	12.1	18.2	14.6	9.04	9.88	9.52	40	35

Striped Bass ***Morone saxatilis***

Month	Temperature (°C)			Salinity (ppt)			Dissolved Oxygen (mg/l)			Total Stations	Species Occurrence
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean		
May	14.2	15.0	14.7	19.6	21.7	20.3	6.58	6.88	6.71	19	6
Jun	15.4	21.5	17.9	21.0	23.6	22.5	5.91	6.40	6.15	40	15
Jul	24.6	25.9	25.1	21.8	23.8	23.0	3.71	4.71	4.20	20	9
Aug	24.0	25.1	24.4	18.9	23.7	21.6	2.90	3.81	3.46	20	4
Oct	14.3	14.3	14.3	23.1	24.7	24.0	6.42	6.54	6.48	20	11
Nov	9.8	10.3	10.0	18.8	21.6	21.1	7.44	7.96	7.80	20	20
Dec	7.0	7.7	7.2	11.3	19.4	15.9	8.35	9.19	8.91	20	19
Jan	0.3	1.1	0.6	21.4	24.8	23.4	8.68	9.50	9.07	20	19
Feb	-0.2	0.2	0.0	19.5	22.2	21.1	9.17	9.73	9.45	20	20
Mar	0.4	2.9	1.7	13.1	21.0	17.9	10.13	10.92	10.57	40	39
Apr	7.0	11.8	8.6	12.1	18.3	14.8	8.92	9.88	9.48	40	39

Appendix Table G (Continued)

Weakfish ***Cynoscion regalis***

Month	Temperature (°C)			Salinity (ppt)			Dissolved Oxygen (mg/l)			Total Stations	Species Occurrence
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean		
May	14.2	14.7	14.5	19.7	21.7	20.5	6.62	6.88	6.76	19	3
Jun	14.9	20.6	17.0	21.8	24.3	22.8	5.88	6.39	6.18	40	13
Jul	24.3	25.7	24.8	21.8	24.1	23.4	3.94	4.89	4.41	20	8
Aug	23.6	25.1	24.0	18.9	24.6	23.1	2.90	4.04	3.82	20	19
Sep	19.3	20.3	19.8	23.3	25.6	24.8	4.30	4.69	4.58	20	19
Oct	14.2	14.3	14.3	23.1	24.9	24.2	6.42	6.57	6.50	20	20
Nov	9.8	10.3	10.0	18.8	21.6	21.0	7.44	7.96	7.79	20	18
Dec	7.0	7.3	7.2	16.9	19.4	18.1	8.87	8.97	8.92	20	4

Summer Flounder ***Paralichthys dentatus***

Month	Temperature (°C)			Salinity (ppt)			Dissolved Oxygen (mg/l)			Total Stations	Species Occurrence
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean		
May	14.2	15.4	14.8	19.6	21.8	20.4	6.43	6.90	6.67	19	13
Jun	14.9	21.5	18.0	21.0	24.4	22.8	5.88	6.40	6.16	40	35
Jul	24.3	25.5	24.7	22.6	24.1	23.6	3.94	4.89	4.43	20	14
Aug	23.6	24.4	23.9	21.0	24.6	23.5	3.41	4.04	3.87	20	13
Sep	19.3	20.3	19.7	24.3	25.6	25.1	4.49	4.66	4.63	20	7
Oct	14.3	14.3	14.3	23.8	23.8	23.8	6.46	6.48	6.47	20	1
Apr	7.0	11.8	9.2	12.1	17.3	14.5	8.92	9.85	9.42	40	11

Winter Flounder ***Pleuronectes americanus***

Month	Temperature (°C)			Salinity (ppt)			Dissolved Oxygen (mg/l)			Total Stations	Species Occurrence
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean		
May	14.2	15.4	14.9	19.6	21.4	20.2	6.43	6.84	6.63	19	11
Jun	14.9	21.5	18.0	21.0	24.4	22.7	5.88	6.40	6.16	40	31
Jul	24.3	25.9	24.9	21.8	24.1	23.3	3.71	4.89	4.32	20	16
Aug	23.6	25.1	24.0	18.9	24.6	22.9	2.90	4.04	3.77	20	18
Sep	19.3	20.3	19.9	23.3	25.6	24.6	4.30	4.69	4.58	20	15
Oct	14.2	14.3	14.3	23.1	24.9	24.2	6.42	6.57	6.50	20	19
Nov	9.8	10.3	10.0	18.8	21.6	21.1	7.44	7.96	7.80	20	20
Dec	7.0	7.7	7.2	11.3	19.4	16.1	8.35	9.19	8.91	20	19
Jan	0.3	1.1	0.6	21.4	24.8	23.4	8.68	9.50	9.05	20	16
Feb	-0.1	0.2	0.0	20.6	22.2	21.4	9.25	9.73	9.53	20	13
Mar	0.4	2.9	1.7	13.1	21.0	18.0	10.13	10.92	10.58	40	32
Apr	7.0	11.8	8.6	12.1	18.3	14.8	8.92	9.88	9.49	40	36

Appendix Table G (Continued)

Blue Crab Male *Callinectes sapidus*

	Temperature (°C)			Salinity (ppt)			Dissolved Oxygen (mg/l)			Total	Species
Month	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Stations	Occurrence
May	14.2	15.5	14.9	19.6	21.8	20.4	6.43	6.90	6.66	19	18
Jun	14.9	21.5	17.8	21.0	24.4	22.7	5.88	6.40	6.18	40	40
Jul	24.3	25.9	24.9	21.8	24.1	23.3	3.71	4.89	4.34	20	20
Aug	23.6	25.1	24.0	18.9	24.6	23.0	2.90	4.04	3.79	20	20
Sep	19.3	20.3	19.8	23.3	25.6	24.8	4.30	4.69	4.58	20	20
Oct	14.2	14.3	14.3	23.1	24.9	24.2	6.42	6.57	6.50	20	20
Nov	9.8	10.3	10.0	18.8	21.6	21.0	7.44	7.96	7.79	20	17
Dec	7.0	7.7	7.2	11.3	19.4	15.9	8.35	9.19	8.90	20	18
Jan	0.3	1.1	0.5	21.4	24.8	23.3	8.68	9.50	9.03	20	8
Feb	-0.2	0.2	0.0	19.5	22.2	21.0	9.17	9.73	9.46	20	16
Mar	0.4	2.9	2.0	15.8	21.0	17.8	10.24	10.82	10.53	40	25
Apr	7.1	11.8	9.5	12.1	18.3	15.4	8.92	9.85	9.32	40	17

Blue Crab Female *Callinectes sapidus*

	Temperature (°C)			Salinity (ppt)			Dissolved Oxygen (mg/l)			Total	Species
Month	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Stations	Occurrence
May	14.2	15.6	14.9	19.6	21.8	20.4	6.43	6.90	6.66	19	17
Jun	14.9	21.5	17.8	21.0	24.4	22.7	5.88	6.40	6.18	40	40
Jul	24.3	25.9	24.9	21.8	24.1	23.3	3.71	4.89	4.34	20	20
Aug	23.7	25.1	24.0	18.9	24.6	22.8	2.90	4.04	3.77	20	18
Sep	19.3	20.3	19.8	23.3	25.6	24.7	4.30	4.69	4.59	20	18
Oct	14.2	14.3	14.3	23.1	24.9	24.2	6.42	6.57	6.49	20	17
Nov	9.8	10.3	10.0	18.8	21.6	21.0	7.44	7.96	7.76	20	15
Dec	7.0	7.7	7.2	11.3	16.9	14.5	8.35	9.19	8.89	20	7
Jan	0.3	0.9	0.5	21.4	24.5	23.1	8.68	9.50	8.97	20	7
Feb	-0.1	0.2	0.1	21.0	21.9	21.4	9.34	9.72	9.56	20	4
Mar	0.4	2.9	2.2	15.8	20.1	17.4	10.24	10.79	10.48	40	14
Apr	7.2	11.4	9.2	12.1	18.3	15.2	9.04	9.71	9.35	40	15