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Juvenile Fish and Blue Crab Stock Assessment Program Bottom Trawl Survey Annual Data Summary Report Volume 1998

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Juvenile Fish and Blue Crab Stock Assessment Program

Bottom Trawl Survey

Annual Data Summary Report

Volume 1998

By

Patrick J. Geer

Special Scientific Report No. 124 Volume 1998

College of William and Mary

School of Marine Science

Virginia Institute of Marine Science

Gloucester Point, Virginia 23062

June 1999

RECENT VIMS TRAWL SURVEY CONTRIBUTIONS

- Austin, H.M. and C.F. Bonzek. 1996. Effects of the June 1995 freshet on the main Virginia tributaries to the Chesapeake Bay. *Virginia Journal of Science* 47(4): 252-280.
- Bonzek, C.F., P.J. Geer, and H.M. Austin. 1995. VIMS juvenile fish trawl survey. Juvenile indices 1979-1994. Virginia Sea Grant Marine Resource Advisory No. 57. Virginia Sea Grant Marine Advisory Program, College of William and Mary, VIMS/SMS, Gloucester Pt., VA. 23062. 15 p.
- Geer, P.J. 1999. Distribution, relative abundance, and hydrographical preferences of American eel, *Anguilla rostrata*, in the Virginia portion of Chesapeake Bay. Presented at the 13th annual meeting of the American Fisheries Society Tidewater Chapter, March 11-13, 1999. Gloucester Point, Virginia.
- Geer, P.J. 1998. Juvenile fish and blue crab stock assessment program bottom trawl survey annual data summary report. Volume 1997. VIMS Spec. Rpt. No. 124. Virginia Institute of Marine Science, Gloucester Pt., Va. 290 p.
- Geer, P.J., H.M. Austin, and C.F. Bonzek. 1997. Juvenile fish and blue crab stock assessment program bottom trawl survey annual data summary report. Volume 1996. VIMS Spec. Rpt. No. 124. Virginia Institute of Marine Science, Gloucester Pt., Va. 275 p.
- Geer, P.J. and H.M. Austin. 1998. Estimation of relative abundance of recreationally important finfish in the Virginia portion of Chesapeake Bay July 1997 - June 1998. Annual report to VMRC/USFWS. Virginia Institute of Marine Science, Gloucester Pt., Va. 23062. 153 p.
- Hata, D.N. 1997. Comparison of gears and vessels used in the Virginia Institute of Marine Science juvenile finfish trawl survey. Special Rept. In Applied Mar. Sci. and Ocean Engineering. No. 343. Virginia Institute of Marine Science, Gloucester Pt., Va, 23062. 244 p.
- Terwilliger, Mark. R. , and Thomas A. Munroe. 1999. Age, growth, longevity, and mortality of blackcheck tonguefish, *Symphurus plagiusa* (Cynoglossidae: Pleuronectiformes), in Chesapeake Bay, Virginia. *Fishery Bulletin* 97(2): 340-361.
- Seaver, D.M., H.M. Austin, and D.A. Bodolus. 1996. Age and growth of white perch, *Morone americana*, from three tributaries of Chesapeake Bay. Presented at the 76th annual meeting of the American Society of Ichthyologists and Herpetologists, June 13-19, 1996. New Orleans, Louisiana.

A list of all published material using VIMS trawl survey data is available upon request. All contributions are available from the author or through the VIMS library. The annual data summary report series presently dates back to 1986.

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JUVENILE FISH AND BLUE CRAB STOCK ASSESSMENT PROGRAM

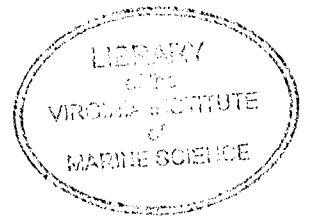
BOTTOM TRAWL SURVEY

ANNUAL DATA SUMMARY REPORT

VOLUME 1998

by

Patrick J. Geer



Special Scientific Report No. 124 Volume 1998
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School of Marine Science
Virginia Institute of Marine Science
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L. Donelson Wright, Dean and Director

June, 1999

EXECUTIVE SUMMARY

The Virginia Institute of Marine Science (VIMS) has conducted a trawl survey dating back to 1955. Over the years methods and objectives have varied according to funding sources and state and/or federal mandates. The present thrust of the program is to provide juvenile indices of relative abundance for recreationally, commercially, and ecologically important fish and invertebrates. These measures of juvenile abundance are widely used as a key element in the management of the Atlantic States' coastal fishery resources. Estimates of juveniles (age-0) have proven to be a reliable and early indicator of future year-class strength. A review of previously available indices of juvenile abundance for important fishery resource species of the Chesapeake Bay by the Chesapeake Bay Stock Assessment Committee (CBSAC), a federal/state committee sponsored and funded by the National Oceanic and Atmospheric Administration (NOAA), resulted in the recommendation that, "a unified, consistent trawl program should be one of the primary monitoring tools for finfish and crab stock assessment." (Chesapeake Bay Program Stock Assessment Plan, Chesapeake Executive Council 1988).

Several comments should be noted for the 1998 sampling year. In May, mega-invertebrates ($\geq 5\text{mm}$) began to be sampled. For most species only presence was noted at each trawl location. For selected species, counts were also collected. Habitat data began to be recorded in May as well. Categories were selected based on samples obtained in the trawl or attached to the tickler chain. Habitat types include: sponge, hydroids, sea squirts, submerged aquatic vegetation, shell, etc. These habitats were categorized for each sample based on volume. In July, sampling began on some of the smaller secondary water systems. The Pocomoke Sound, Mobjack Bay, and Piankatank River were sampled on only a limited basis over the past 40 years. The Great Wicomico River had never been sampled by the program. Information from these water systems should help better understand species distribution and essential habitat for target species. Species with marked increases in catch rates included spadefish and Atlantic croaker. Species with decreasing catch rates included scup, spot, and blue crabs. The program suffered a setback in August when the engine of the research platform, *R/V Fish Hawk*, failed. The vessel could not be repaired in time and a portion of the Rappahannock River and the entire Chesapeake Bay were not sampled. This marked the first time in over 15 years the survey was not, or could not, be completed as scheduled.

The purpose of this summary is to provide an accurate account of trawl survey sampling performed during the calendar year 1998. Previous volumes of this series have served as excellent reference guides to resource managers, scientists, academics, as well as the general public. Since there are other venues which presently detail specific results of these data (Geer and Austin, 1998), conclusions are kept at a minimum in order to provide the most information in the available space. Additional information can be obtained from the VIMS Department of Fisheries Science Web site located at www.fisheries.vims.edu. Information from several programs can be found at this site. On-line reports such as this volume can be found at www.fisheries.vims.edu/trawlseine/trawlreports.

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The author thanks the many individuals who have participated in the field collections, often under difficult and arduous circumstances. This includes scientists, technical support staff, and graduate research assistants, with the core staff listed below.

The author acknowledges federal and state agencies who provided financial support: Wallop Breaux and U.S. Fish and Wildlife Service Sportfish Restoration Project F104 (through the Virginia Marine Resources Commission). This report is part of a continuing effort to summarize data collected annually by the VIMS trawl survey.

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INTRODUCTION

This report summarizes data collected by the Virginia Institute of Marine Science (VIMS) monthly trawl survey cruises for January to December 1998. The trawl survey is a long-term, broad scope monitoring program. Its primary goal is to monitor juvenile abundance for marine and estuarine finfish and invertebrates. A major objective is to provide annual indices of juvenile abundance for recreationally, commercially, and ecologically important species of sufficient accuracy and precision for both immediate resource management needs and long-term understanding of environmental influences on fishery resources. A second important product of this effort is the documentation and monitoring of habitat utilization by juveniles and small adults of these species. The program also provides a sound framework for the procurement of biological samples for life history studies and other investigations relevant to fisheries resource management.

VIMS has conducted a bottom trawl survey of some fashion since 1955 (Figure 1). Historically, sampling has occurred as mid-channel transects at fixed locations (non-random) spaced at approximately five mile intervals on Virginia's major tributaries (James, York and Rappahannock Rivers). In the early 1970's, work was performed on the Mobjack Bay and Piankatank River using both the standard fishing gear from a large research platform, and a similar but smaller gear towed from an outboard skiff or Chesapeake dead-rise at shallow water locations (≤ 12 ft.). The first random sampling design was implemented in 1971 on the York River by Linda Pushee Mercer as part of a pipefish study. This survey, and the increasing need for a random survey of the main stem Bay and tributaries, were factors in implementing a bay wide random stratified survey in 1973. This program had a very large spatial coverage in various depth strata, but was very limited in its temporal component. Sampling occurred on a semi-annual basis primarily in January to February, and again in July (Wojcik and Van Engel, 1988a, 1988b, 1988c, and 1989). A statistical review of accumulated trawl data indicated the monthly surveys did not provide enough samples to obtain the desired margin of error (300-700 trawls per survey necessary). This random survey was discontinued by May 1981, due to decreasing funding and the recognition that many species use the estuary as nursery grounds in various temporal manners which directly conflicted with the semi-annual design. Subsequently, the program returned to the small, monthly, fixed station transect design. These monthly river transects continued unabated until 1988, when the Chesapeake Bay Stock Assessment Committee (CBSAC) encouraged and directly supported pilot studies to develop a comprehensive Bay-wide trawl survey. In Virginia this support was the initiation of a random stratified monthly trawl survey of the lower Chesapeake Bay in January 1988 (Chittenden, 1989). It was hoped this survey would produce similar surveys of Virginia's major tributaries, the James, York, and Rappahannock Rivers. With this in mind, a pilot survey similar in design was established and implemented for the York River, beginning in October 1989. This work was performed independent of, and with a different vessel and smaller fishing gear than the primary sampling of the Bay and tributaries (Land et al. 1996a). With the purchase of the solely dedicated trawler R/V *Fish Hawk*, this random survey of the York was incorporated and sampled along with the historic fixed stations (June 1991). In September 1995, a similar survey was designed and implemented for the Rappahannock River, with the James River initiated in March of 1996.

The Virginia-wide random stratified design (RSD) survey continued in 1998 with historical fixed mid-channel stations on the tributaries incorporated into the design. For each tributary, 22 stations were sampled monthly (James: 14 random, 8 fixed; York: 13 random, 9 fixed; and Rappahannock: 14 random, 8 fixed), with monthly sampling in the Bay either 39 stations (cold water months) or 45 stations (warm water months). Additionally, the furthest upriver stations which previously were only sampled during cold water months (December to April) were sampled on a continuous monthly basis. After completing the March 1997 survey, the engine of the fishing platform R/V *Fish Hawk* was upgraded from a 210 horsepower diesel to a similar make and model 310 HP turbo-diesel. Examination of mean tow distances prior to, and after the engine modification indicated no significant difference (Hata 1997, *Attachment in Geer and Austin 1997*).

In May of 1998, two new types of data began being collected. Substrate or habitat type included a description of bottom structures which can act as habitat for various organisms. The presence of items such as sand, mud, shell, sponges, hydroids, sea squirts, etc., all may effect fish distributions. Data were collected based on items in the net or on the tickler chain and roughly categorized based on abundance. Estimates were made using a commercial nest tote (internal dimensions 25.7"x16.7"x10", approximately 18 gallons), relative to the capacity of the tote (bin) (0.1 trace, 1 = ¼ bin, 2 = ½ bin, etc.) Table 1 indicates the substrate categories.

The second type of new information being collected includes the presence/absence of all mega-invertebrates ($\geq 5\text{mm}$). Since many invertebrates are food sources for the various fish species captured in the trawls, this information may assist in explaining fish distribution and abundance by examining the forage species available. A protocol has been established to either process a species by taking lengths, recording total numbers, or simply noting the presence of a species in a given sample. Appendix A indicates all the species captured in 1998 and their sampling status.

In the beginning of the fiscal year (July 1998), additional sampling was established in several small secondary water systems of the Chesapeake Bay. Water bodies such as Mobjack Bay, Piankatank River, and Pocomoke Sound have been sparsely sampled by the program in the past (Mobjack 1970-73, Piankatank 1970-71, Pocomoke 1980-81). Areas such as the Great Wicomico River have never been sampled. A random stratified design was established for each water system, with additional fixed sites added based on historical sampling. The fixed sites were selected based on location and frequency of sampling in the past. Each system was sampled once per quarter (Great Wicomico and Piankatank Rivers in the same month). The sampling order was randomly selected when the surveys were first established, and rotated each quarter. The necessity for information on these systems became evident in the late summer of 1997, when concerns of pfiesteria complex organisms effected the Pocomoke and Great Wicomico Rivers. More importantly, the additional information from these systems will assist in our knowledge of essential fish habitat for important Chesapeake Bay fishes.

The following tables and figures include data for all finfish and mega-invertebrates ($\geq 5\text{mm}$) caught during 1998. The most commonly captured species of kingfish, southern kingfish (*Menticirrhus americanus*) and northern kingfish (*M. saxatilis*), have been difficult to identify in the

field at small sizes due to overlapping, and non-distinct, meristic characteristics. As a result, the decision was made to combine these species under one heading (kingfish, *Menticirrhus* sp.) until further identification protocol can be examined. There are four classifications of blue crabs (*Callinectes sapidus*) that appear in the tables, (males, juvenile females, adult females, and unclassified, or sex unknown). Each is provided its own species code in the databases and appear in the tables as separate species. The "unclassified" category is usually reserved for small crabs (< 20mm) or when subsampling is necessary. Other data are also presented showing station locations, and atmospheric and hydrographic data collected at each station. The figures include all data collected during the 1998 sampling season.

METHODS

All sampling was performed aboard the research vessel *Fish Hawk*. The sampling gear was a 30 ft (9.144m) semi-balloon otter trawl (Marinovich Gulf Shrimp Trawl) with a 1½ inch (38.1mm) stretch mesh body, a ¼ inch (6.35mm) mesh cod end liner, attached tickler chain, 60 ft (18.29m) bridle length, and a 3:1 warp, using steel china-v doors (28 x 19 inches, 71 x 48 cm). The tow duration was typically five minutes bottom time at a speed of approximately 2½ knots (1.29m/sec). A sample day was defined as the period between sunrise and sunset.

At each station, station identification, beginning and ending latitude and longitude, depth, tidal current stage, secchi depth, tow direction (upstream vs. downstream and relative to current), beginning and ending time, tow duration, scope, net number, speed over ground, air temperature, wind direction, wind speed, weather conditions, and sea state were recorded. Surface and bottom hydrographic data (temperature, salinity and dissolved oxygen), were recorded immediately following the tow at a depth consistent with that of the trawling depth. Onboard processing of catches involved separating them according to species, and measuring individual lengths (to the nearest millimeter). For fish species, all lengths were taken as fork lengths unless no fork was present for a given species, in which case total length was measured. Invertebrates were separated and the appropriate information collected. Information for those species in which just presence or total counts were collected were placed on datasheets. For blue crabs, point-to-point carapace width was measured (called long carapace width) and fecundity of adult females was assessed with individual egg stage being determined. The penaeid shrimp were measured for total length while the squid species were measured for mantle length. Jellyfish (gelatinous zooplankton) were estimated by volume in liters and are reported in this report as such. Other selected invertebrates were measured by the appropriate meristic characteristic. These data were entered directly into computer files using electronic measuring boards. Fish species with any anomalies (lesions, fin rot, open sores) were recorded with the individual's length. Subsampling was performed when large homogeneous catches of a species were made. On these occasions, a subsampling protocol was followed with enumeration of the discarded sample taking priority over subsampling by volume. When subsampling was performed by volume, the total weights of the discarded sample and of the subsample were taken and the individual fish in the subsample were enumerated and measured. Average weight per fish was then estimated from the subsample (total subsample weight ÷ total subsample number). Number of fish in the discarded catch was estimated by dividing total discarded

weight by calculating average weight. Station, environmental, habitat type, and selected invertebrate data were recorded first on paper and later transferred to the computer database. A sample data sheet appears in Appendix B.

SAMPLING DESIGN

Chesapeake Bay

The random stratified sampling design of the main stem bay is based on latitude and water depth. The Bay is latitudinally divided into four 15 minute blocks (regions) labeled bottom (below 37°10'N), lower (37°10'-37°25'N), upper (37°25'-37°40'N), and top (above 37°40'N). Within each region, depth strata were defined as eastern shore shallow areas (4-12 ft), eastern shore shoal areas (12-30 ft), western shore shallow areas (4-12 ft), western shore shoal areas (12-30 ft), plain areas (30-42 ft), and deep areas (\geq 42 ft), resulting in a total of 24 strata. A map of these strata and the accompanying tributary strata appears in Appendix C. The northernmost portion of Virginia's waters (i.e. Top Bay) has not been sampled since 1988 because of funding and logistic constraints.

Station selection for each cruise was made randomly through use of the National Ocean Survey's Chesapeake Bay bathymetric grid system computerized files. This system contains position and depth records at ¼ mile intervals, approximately the same value as the average tow length. Four stations were selected monthly in each central plain strata and three stations from each deep strata. During warm water months (May through November) three stations were sampled in each shoal strata; during cold water months (January through April, and December) only two shoal stations were sampled per strata. One station is sampled monthly in each of the six shallow water strata.

Previous cruises have indicated few individuals of targeted species occupy the main stem Chesapeake Bay during winter months. With this in mind, a combined January/February survey was conducted for the bay in both 1992 and 1993, in order to better allocate sampling resources. Further investigation indicated no significant difference in abundance for several key species during the months of January through March (Geer, unpublished). As a result, a single bay survey in February was conducted beginning in 1994 to represent the period January through March.

Major Tributaries

The tributaries have historically been sampled with fixed mid-channel river transects, with stations designated at approximate 5-mile intervals from the river mouths to the freshwater interface. Generally one tow was made at each station each month. A second tow, opposite in direction, which had been made at selected *blue crab index stations* during the warm water months (May through November), was discontinued in June 1995. Analysis revealed no significant difference in catch in regards to tow direction up versus down river (Bonzek, unpublished), and sampling effort could be better utilized with the random stratified surveys. Prior to 1997, during the cold water months, additional stations were occupied upstream to extend the range of the survey, enabling better monitoring of some anadromous species. Sampling of these sites was expanded to include all

months beginning in 1997. These historic fixed sampling sites will continue to be monitored along with the RSD, with each site assigned the appropriate strata based on its depth and location.

The random stratified surveys were initiated in 1989 on the York River using a smaller vessel and a 22 ft version of the present gear. It was discontinued in August 1990, and re-established in June 1991 in parallel with the fixed station transects aboard the R/V *Fish Hawk*, with the standard 30ft fishing gear. In September 1995, a similar survey was implemented on the Rappahannock, with a James River survey following in March 1996. Each river is divided into four regions (bottom, lower, upper, and top) of approximately ten miles each. Within each region there are four depth strata (4-12 ft, 12-30ft, 30-42ft and ≥ 42 ft), inclusive of the lower value. In areas where certain depths were minimal, strata were collapsed to provide adequate coverage. In the York River system, the top region (Pamunkey River) is not sampled with random stations due to its homogenous water depth, limited area, and the fact the three fixed locations can provided the necessary information for the area. The York has 13 random and 9 fixed stations in 11 strata; the Rappahannock has 14 random and 8 fixed stations in 13 strata; and the James River has 14 random and 8 fixed stations in 12 strata. Reports for the York River random survey have been prepared for the years prior to 1995 (Land et al., 1996a, and Land et al., 1996b), with the York and Rappahannock surveys appearing in Geer and Austin, 1996a). Appendix D provides a description of each stratum.

Secondary Water Systems

The secondary water systems of the Mobjack Bay, Pocomoke Sound, Piankatank and Great Wicomico Rivers were sampled on a quarterly basis beginning in July 1998. The design was similar to the major tributaries with historic fixed sites incorporated into a random stratified survey. One system was sampled per month (Piankatank and Great Wicomico Rivers sampled in the same month). The sampling order was randomly selected when the surveys were first established, and rotated each quarter, ie., Jul-Sep (1,2,3), Oct-Dec (2,3,1), Jan-Mar (3,1,2), Apr-Jun (1,2,3). If, after a period of time, it becomes apparent a system represents target species best during certain months, then sampling may be revised to target those systems and time frames. Strata for these systems is shown in Appendix D.

RESULTS

Catch data in this report represent total numbers caught. The average weights were removed from these reports beginning in 1994 because, in most cases, weights were not typically taken in the field except for subsampling purposes or for unusually large specimens. Weights taken on individual specimens are not usually representative of the catch and are thus biased, prompting the removal of that information from the report. For some species, representative samples were brought back to the laboratory in order to establish accurate weight estimates and length-weight relationships. The effort to establish length-weight relationships will continue to be expanded in the future so that biomass estimates of the trawl catch can be presented along with abundance estimates. A new variable has been added to this report to indicate the frequency of occurrence. This variable is particularly useful for the invertebrate species in which only presence is recorded, however, it is

equally important in indicating how common a species is found in trawl samples.

Table 1 shows the codes used for the various station, hydrographic, atmospheric, and habitat parameters. The corresponding station information is located in Tables 2-13 (major tributaries and secondary water systems) and Tables 14-25 (Chesapeake Bay). The hydrographic and atmospheric data for the tributaries and secondary water systems are found in Tables 26-37, with the Bay in Tables 38-49.

Catch, catch per unit effort (CPUE), and length statistics for data pooled from all sampling for the entire year are given in Table 50. Data for the tributaries and secondary water systems only, by river, pooled over months is presented in Tables 51-58. Likewise, data for the Chesapeake Bay survey only, by segment, pooled by months is shown in Tables 59-62. Tables 63-119 contain analogous data summaries by month and river for the tributary and secondary surveys, with Tables 120-161 by month and segment for the Chesapeake Bay surveys.

Comments are often necessary to convey concerns, note unique occurrences, and provide general information about a particular sample. These comments are often written on data sheets then transferred to the database. They provide insight into observations which may be of interest. Comment information are provide in Tables 162-173. No attempt has been made to correct grammatical mistakes within these comments, they are presented as a means of clarifying observations of concern.

Figures 2-13 show the locations of stations occupied each month in 1998, with Figure 14 showing relative position of the fixed mid-channel stations. Figures 15-49 geographically illustrate catch by month for the predominant species (the 18 most abundant finfish species - historically, four categories of blue crabs, plus other species of interest, arranged alphabetically) over the entire sampling area. These illustrations provide a helpful synopsis for showing temporal and geographic distribution of these species. With the additional sampling taking place in the tributaries and secondary water systems it was necessary to remove zero catch values to clarify the maps. As a result, the data shown represents only where and when specimens were captured. This is a change from volumes prior to 1997. Figures 50-84 provide monthly length-frequency summaries for the above selected species. These graphs and accompanying statistics are useful in separating young-of-year from older fish since the age of each fish is not taken. Calendar year is not the optimal way to present such data for species that spawn late in the year, however the figures are presented this way for convenience and consistency. All data collected in 1998 are presented in these figures.

The appendices at the end of this volume provide additional background into the methods and operations of this program. Appendix A provides common and scientific names of all species captured in 1998 along with the standard sampling protocol for each species. Appendix B shows a sample data sheet from the Chesapeake Bay in October 1998, along with the associated invertebrate and habitat data sheets for the particular day of sampling. Appendix C displays the survey's depth strata and associated geographic regions for the Chesapeake Bay and its tributaries. Appendix D describes the strata for the random stratified design surveys.

Observations on the 1998 Sampling Season

One of the biggest concerns for the program in 1998 was the engine failure of the R/V *Fish Hawk*, which caused the program to not complete a monthly survey for the first time since 1987. The vessel's engine failed on August 11th, and could not be repaired in time to complete the August sampling. As a result, the entire main-stem Bay, and 15 stations on the Rappahannock River were not sampled. When it became evident the *Fish Hawk* would not be ready in time, a decision was made to cancel the August survey in lieu of using a vessel with unknown fishing power, which would require lengthy vessel comparison studies .

The addition of the invertebrate sampling in May had immediate results, with the discovery of an introduced species, the veined rapa whelk (*Rapana venosa*, Valenciennes, 1846). The veined rapa whelk is indigenous to the Sea of Japan and was been introduced to the Black Sea in the 1940's via ships ballast water (Drapkin, 1953). On June 5th, two specimens were captured in independent samples on the James River in the vicinity west of the Monitor-Merrimac Bridge Tunnel (Interstate 664) (general location 36°56.48' 76°24.86') (Figure 85). On August 24th, scientists from VIMS and the Smithsonian Institute sampled the area of the first observations. Although no samples of *R. venosa* were collected in three dredge a eight trawl samples, three of the trawl samples produced viable egg cases of *R. venosa* (positively identified by Y. Kantor of the Russian Academy of Science). Since then a reward program for the whelks has been established and over 600 specimens have been reported by patent tongers, crab dredgers, other commercial fishermen, as well as the general public (*Daily Press Newspaper*, 1/1/99). The impact of *R. venosa* on the hard clam, *Mercenaria mercenaria*, and the already diminished American oyster (*Crassostrea virginica*) populations of the James River is of major concern. Several research projects are underway in the VIMS' Molluscan Ecology group (www.vims.edu/fish/oyreef/rapven.html) to study this introduced species and its effect on naturally occurring shellfish species.

There was a marked increase in the number of species captured in 1998, primarily due to the sampling of mega-invertebrates. Since 1988, an average of nearly 105 species were captured annually. With the addition of invertebrates in 1998, that number rose to 140. The number of species may be higher in 1999 since invertebrate sampling did not begin until May. The number of Atlantic sturgeon rose from 3 in 1997 to 8 in 1998 (CPUE of 0.006 in 1998, 0.002 in 1997). Other species showing marked increased catch rates include Atlantic croaker and spadefish. Species such as scup, spot, and blue crabs continue to be at low levels. Some species, such as northern puffer, oyster toadfish, and smallmouth flounder have shown declining catch rates nearly every year since 1988.

DISCUSSION

The purpose of this report is to present a quick visual summary of the data collected during the 1998 VIMS trawl survey. A more analytical review of these data for target species for 1979-1995 is presented by Geer and Austin , 1998.

With a Virginia-wide random stratified design (RSD) survey of the Bay and tributaries fully established, the program can provide better statistical results for species of concern. The fixed transect sampling has provided a historical perspective for over forty years, and will continue to do so as part of the present RSD. The results from these surveys are already providing dividends: catching target species over a broader temporal scale than the fixed station transects; providing first-time observations for several species; and indications to size variations based on depth and/or strata (Geer and Austin, 1996a). With several long-term goals completed, the program is setting new goals for the future. These include an extensive evaluation of historical data, to correct possible erroneous values, examining data of similar studies for inclusion into the database, and using these historical values as a way to judge present sampling. Additionally, these data are available on-line under the program's 'home page' (www.fisheries.vims.edu/trawlseine/mainpage.htm). Conversion factors for gear and vessel have been provisionally applied to these data to standardize catch rates for all survey years back to 1955 (Geer and Austin 1998). These results will provide a longer reliable time series of juvenile abundance. The addition of habitat data allows the program to explore essential fish habitat for various life stages, while the records of invertebrate species will further enhance the knowledge of the trophic interactions taking place in the Chesapeake Bay.

NOTICE

No portion of this report may be used without consent or citation of the Virginia Institute of Marine Science, Trawl Survey Project. For further information contact Chris Bonzek or Patrick Geer at the Virginia Institute of Marine Science, Gloucester Point, Virginia, 23062, Telephone (804) 684-7000, FAX (804) 684-7327.

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TABLES

Table 1. VIMS codes for selected parameters as used in the trawl survey database. These same codes appear in several of the included tables and figures.

TOWDIR 1: Tow Direction, up or down stream

- 1: Upstream
- 2: Downstream
- 3: Slack

TOWDIR2: Tow Direction, relative to current

- 1: With
- 2: Against
- 3: Perpendicular
- 4: Oblique with
- 5: Oblique against
- 6: Slack

TIDE: Tidal stage

- 1: Early flood
- 2: Maximum flood
- 3: Late flood
- 4: Slack before ebb
- 5: Early ebb
- 6: Maximum ebb
- 7: Late ebb
- 8: Slack before flood

SEASTATE

- 0: Calm-glassy 0m
- 1: Calm-rippled 0-0.1m
- 2: Smooth-wavelets 0.1-0.5m
- 3: Slight 0.5-1.25m
- 4: Moderate 1.25-2.5m
- 5: Rough 2.5-4m
- 6: Very rough 4-6m
- 7: High 6-9m
- 8: Very high 9-14m
- 9: Phenomenal >14m

WEATHER: Observed weather

- 1: Clear-no cloud at any level
- 2: Partly cloudy-scattered or broken
- 3: Overcast
- 4: Sand, dust storm, or blowing snow
- 5: Fog-thick, dust, or haze
- 5: Drizzle
- 6: Rain
- 7: Snow-rain and snow mix
- 8: Showers
- 9: Thunderstorms

STRATUM: Geographic stratum

Chesapeake Bay

- 1: Bottom Western Shore; 12-30 ft
- 2: Bottom Eastern Shore; 12-30 ft
- 3: Bottom Plain; 30-42 ft
- 4: Bottom Deep; ≥ 42 ft
- S1: Bottom Western Shallow; 4-12 ft
- S2: Bottom Eastern Shallow; 4-12 ft
- 5: Lower Western Shore; 12-30 ft
- 6: Lower Eastern Shore; 12-30 ft
- 7: Lower Plain; 30-42 ft
- 8: Lower Deep; ≥ 42 ft
- S5: Lower Western Shallow; 4-12 ft
- S6: Lower Eastern Shallow; 4-12 ft
- 9: Upper Western Shore; 12-30 ft
- 10: Upper Eastern Shore; 12-30 ft
- 11: Upper Plain; 30-42 ft
- 12: Upper Deep; ≥ 42 ft
- S9: Upper Western Shallow 4-12 ft
- S10: Upper Eastern Shallow 4-12 ft

York R.

- 30: Bottom; 4-12 ft
- 31: Bottom; 12-30 ft
- 32: Bottom; 30-42 ft
- 33: Bot. & Lower; ≥ 42 ft
- 34: Lower; 4-12 ft
- 35: Lower; 12-30 ft
- 36: Lower; 30-42 ft
- 37: Upper & Top; 4-12 ft
- 38: Upper; 12-30 ft
- 39: Upper & Top; ≥ 30 ft
- 40: Top; 12-30 ft

Rappahannock R.

- 50: Bottom; 4-12 ft
- 51: Bottom; 12-30 ft
- 52: Bottom; 30-42 ft
- 53: Bottom; ≥ 42 ft
- 54: Lower; 4-12 ft
- 55: Lower; 12-30 ft
- 56: Lower; 30-42 ft
- 57: Lower; ≥ 42 ft
- 58: Upper; 4-12 ft
- 59: Upper; 12-30 ft
- 60: Up. & Top; ≥ 30 ft
- 61: Top; 4-12 ft
- 62: Top; 12-30 ft

James R.

- 70: Bottom; 4-12 ft
- 71: Bottom; 12-30 ft
- 72: Bottom; 30-42 ft
- 73: Bot. & Lower; ≥ 42 ft
- 74: Lower; 4-12 ft
- 75: Lower; 12-30 ft
- 76: Lower; 30-42 ft
- 77: Upper; 4-12 ft
- 78: Upper; 12-30 ft
- 79: Upper & Top; ≥ 30 ft
- 80: Top; 4-12 ft
- 81: Top; 12-30 ft

Table 1. Continued.

Habitat Data

<u>Description</u>	<u>Code</u>
Sand (hard) bottom	SND
Mud (soft) bottom	MUD
Hydroids	HYD
Dead's man fingers	DMF
Sponges (yellow, orange, etc)	SPG
Sea squirts (<i>Mogula spp.</i>)	SQT
Shell bottom (oyster, clam, etc)	SHL
Submerged Aquatic Vegetation	SAV
Seaweeds (red, green, or brown)	SWD
Artificial	ART
Detritus	DET
Tube Worms	TUB
Undetermined	UNK

Abundance is estimated relative to the capacity of a commercial nest tote (internal dimensions 25.7"x16.7"x10", approximately 18 gallons). Categories include: 0.1 = trace, 1 = ¼ bin, 2 = ½ bin, 3 = ¾ bin, 4 = full bin, etc.

Tables 2-13. Station data for the tributaries (James, York, and Rappahannock Rivers) and the secondary water systems (Pocomoke Sound, Mobjack Bay, Piankatank and Great Wicomico Rivers) by month.

A. The secondary water systems are sampled once per quarter beginning in July, 1998.

Explanation: To conserve space, some variables are presented as coded values. Code keys are shown in Table 1. (p. 11).

Table 9. Survey not completed due to engine failure of research vessel.

August 1998

System+ Cruise Number	Stat# or River		Stat. Type	Stratum Code	Station Date	Time	Location				Tow Parameters				Sea State	Tidal Stage	
	River Mile						Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two			
JA980804	JA	J01	F	71	19980804	1125	3659.70	7619.55	3659.60	7619.78	395.4	5.00	8.1	1	2	2	6
JA980804	JA	J05	F	71	19980804	1230	3656.93	7622.83	3656.91	7623.06	351.3	5.00	5.5	1	2	2	6
JA980804	JA	J13	F	76	19980804	1420	3701.37	7630.53	3701.49	7630.74	388.8	5.00	7.6	1	2	2	7
JA980805	JA	J17	F	75	19980805	1015	3705.04	7636.72	3705.26	7636.87	467.0	5.00	6.4	1	2	2	5
JA980805	JA	J24	F	79	19980805	1042	3709.18	7638.44	3709.45	7638.48	504.0	5.00	11.0	1	1	2	3
JA980805	JA	J27	F	78	19980805	1139	3712.49	7639.27	3712.64	7639.51	458.4	5.00	8.8	1	2	2	5
JA980805	JA	J35	F	81	19980805	1234	3711.24	7645.75	3711.43	7645.92	436.6	5.00	7.3	1	2	1	5
JA980805	JA	J40	F	81	19980805	1308	3713.77	7649.32	3713.84	7649.60	444.6	5.00	5.5	1	2	1	5
JA980804	JA	1	R	70	19980804	1258	3655.95	7626.97	3656.11	7627.10	356.2	5.00	2.2	1	2	2	6
JA980804	JA	4	R	71	19980804	1326	3658.87	7627.78	3659.01	7627.90	317.0	5.00	6.1	1	2	2	6
JA980804	JA	6	R	72	19980804	1358	3659.96	7627.64	3659.77	7627.49	419.4	5.00	10.9	2	1	2	6
JA980804	JA	7	R	73	19980804	1143	3659.39	7619.04	3659.25	7619.17	326.0	5.00	18.1	1	2	2	6
JA980804	JA	8	R	73	19980804	1159	3659.21	7619.28	3659.12	7619.52	400.9	5.00	17.1	1	2	2	6
JA980805	JA	10	R	74	19980805	945	3703.42	7639.27	3703.64	7639.33	417.7	5.00	3.0	1	2	2	5
JA980804	JA	12	R	75	19980804	1451	3703.55	7634.83	3703.64	7635.06	387.1	5.00	4.0	1	2	2	7
JA980804	JA	14	R	76	19980804	1503	3703.11	7635.25	3703.08	7634.99	398.8	5.00	11.6	2	1	2	7
JA980805	JA	16	R	77	19980805	1124	3711.15	7638.65	3711.34	7638.83	445.8	5.00	3.4	1	1	2	3
JA980805	JA	18	R	78	19980805	1159	3711.76	7640.46	3711.89	7640.67	399.7	5.00	4.0	1	2	2	5
JA980805	JA	19	R	79	19980805	1104	3709.53	7638.28				5.00	9.4	2	2	2	3
JA980805	JA	20	R	79	19980805	1247	3712.05	7646.55	3712.21	7646.76	435.5	5.00	11.0	1	2	1	5
JA980805	JA	22	R	80	19980805	1322	3713.88	7651.85	3713.90	7652.11	396.6	5.00	2.7	1	2	1	6
JA980805	JA	24	R	81	19980805	1338	3712.84	7651.71	3712.87	7651.41	459.0	5.00	7.0	2	1	2	6
RA980807	RA	R02	F	53	19980807	1005	3735.82	7621.11	3735.76	7620.91	323.5	5.00	17.1	2	2	2	2
RA980807	RA	R10	F	53	19980807	1124	3737.97	7628.51	3737.91	7628.82	483.8	5.00	16.8	1	1	2	2
RA980807	RA	R15	F	57	19980807	1252	3740.19	7633.10	3739.98	7633.15	396.5	5.00	15.8	2	2	1	2
RA980807	RA	R20	F	57	19980807	1330	3743.89	7634.96	3744.09	7635.17	489.0	5.00	16.8	1	1	1	2
RA980807	RA	2	R	50	19980807	1054	3738.91	7626.37	3738.73	7626.22	403.9	5.00	2.4	2	2	1	2
RA980807	RA	3	R	51	19980807	1109	3737.61	7627.36	3737.51	7627.65	477.9	5.00	9.1	1	1	2	2
RA980807	RA	6	R	52	19980807	949	3735.90	7620.04	3735.92	7620.35	472.3	5.00	9.8	1	1	2	2
RA980807	RA	8	R	53	19980807	1021	3736.33	7622.45	3736.45	7622.73	479.9	5.00	12.8	1	1	1	2
RA980807	RA	10	R	54	19980807	1146	3739.62	7629.32	3739.79	7629.14	417.1	5.00	2.7	1	1	1	2
RA980807	RA	11	R	55	19980807	1232	3737.85	7632.50	3737.71	7632.33	366.0	5.00	4.9	2	2	1	2
RA980807	RA	14	R	56	19980807	1310	3741.24	7633.34	3741.46	7633.44	435.0	5.00	10.4	1	1	1	2
RA980807	RA	16	R	57	19980807	1205	3737.85	7630.56	3737.90	7630.87	479.9	5.00	15.5	1	1	1	2
RA980811	RA	20	R	59	19980811	1130	3745.71	7637.13	3745.53	7636.96	421.8	5.00	7.1	2	6	1	8
RA980811	RA	22	R	60	19980811	1118	3745.85	7636.78	3745.91	7637.03	395.7	5.00	9.0	1	6	1	8
YK980804	YK	Y02	F	32	19980804	821	3713.65	7627.30	3713.60	7627.03	420.4	5.00	11.2	2	2	2	3
YK980804	YK	Y05	F	32	19980804	756	3714.09	7629.24	3714.07	7628.98	396.6	5.00	13.8	2	2	1	3
YK980803	YK	Y10	F	35	19980803	1458	3718.51	7635.33	3718.33	7635.21	380.1	5.00	8.2	1	1	1	3
YK980803	YK	Y15	F	35	19980803	859	3723.26	7639.40	3723.39	7639.57	353.1	5.00	8.2	1	2	1	6
YK980803	YK	Y20	F	38	19980803	943	3726.02	7642.64	3726.14	7642.85	388.8	5.00	6.4	1	2	1	6
YK980803	YK	Y25	F	38	19980803	1034	3729.07	7645.27	3729.19	7645.43	329.4	5.00	7.3	1	2	1	7
YK980803	YK	Y30	F	40	19980803	1120	3732.97	7649.58	3732.78	7649.65	367.8	5.00	5.5	1	2	1	7
YK980803	YK	Y35	F	40	19980803	1147	3733.07	7651.78	3733.23	7651.68	333.1	5.00	5.2	1	2	1	7
YK980803	YK	Y40	F	40	19980803	1219	3732.94	7653.31	3732.84	7653.51	355.8	5.00	3.7	1	2	1	7
YK980804	YK	1	R	30	19980804	924	3715.59	7623.12	3715.62	7622.87	383.8	5.00	2.8	2	2	2	3
YK980804	YK	3	R	31	19980804	904	3713.87	7623.92	3713.93	7623.66	410.3	5.00	4.9	2	2	2	3
YK980804	YK	5	R	32	19980804	945	3714.54	7622.61	3714.48	7622.84	366.6	5.00	12.5	1	1	3	3
YK980804	YK	7	R	33	19980804	849	3714.61	7624.22	3714.53	7624.48	421.8	5.00	17.0	1	1	2	3
YK980803	YK	8	R	33	19980803	1520	3715.70	7631.69	3715.52	7631.55	395.6	5.00	13.4	2	2	1	1
YK980803	YK	10	R	34	19980803	841	3722.40	7639.56	3722.55	7639.69	340.9	5.00	1.5	1	2	1	6
YK980803	YK	12	R	35	19980803	805	3721.05	7637.30	3721.23	7637.49	441.1	5.00	11.3	1	2	1	6
YK980803	YK	13	R	36	19980803	819	3721.55	7637.62	3721.72	7637.80	417.1	5.00	9.3	1	2	1	6
YK980803	YK	15	R	37	19980803	1047	3729.80	7645.97	3729.91	7646.16	353.3	5.00	2.4	1	2	1	8
YK980803	YK	16	R	37	19980803	1329	3730.98	7647.80	3731.13	7647.92	332.4	5.00	3.4	2	6	1	8
YK980803	YK	17	R	38	19980803	952	3726.16	7642.94	3726.30	7643.12	376.9	5.00	6.4	1	2	1	6
YK980803	YK	19	R	39	19980803	923	3724.92	7641.18	3725.06	7641.35	366.0	5.00	9.1	1	2	1	6
YK980803	YK	20	R	39	19980803	1347	3731.59	7647.67	3731.36	7647.43	560.8	5.00	4.0	1	2	1	7

Table 10. (Continued)
September 1998

System+ Cruise Number	Stat# or River Mile	River Type	Stat. Type	Stratum Code	Station Date	Time	Location				Tow Parameters				Sea Tidal		
							Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two		State	Stage
YK980911	YK	Y02	F	32	19980911	910	3713.68	7626.98	3713.69	7627.24	395.3	5.00	10.6	1	2	1	7
YK980911	YK	Y05	F	32	19980911	749	3714.10	7629.09	3713.97	7628.83	462.6	5.00	12.0	2	1	1	7
YK980910	YK	Y10	F	35	19980910	751	3718.33	7635.21	3718.46	7635.36	331.6	5.00	7.8	1	2	2	7
YK980910	YK	Y15	F	35	19980910	837	3723.22	7639.37	3723.34	7639.54	340.8	5.00	7.8	1	2	2	7
YK980910	YK	Y20	F	38	19980910	903	3725.97	7642.54	3726.07	7642.72	330.3	5.00	5.8	1	2	2	7
YK980910	YK	Y25	F	38	19980910	947	3728.95	7645.08	3729.10	7645.28	411.7	5.00	7.3	1	2	2	7
YK980910	YK	Y30	F	40	19980910	1130	3732.92	7649.61	3732.67	7649.67	472.1	5.00	5.0	1	1	1	1
YK980910	YK	Y35	F	40	19980910	1158	3733.05	7651.72	3733.25	7651.57	435.0	5.00	6.6	1	1	2	1
YK980910	YK	Y40	F	40	19980910	1239	3733.01	7653.07	3732.90	7653.37	499.2	5.00	4.3	1	1	1	1
YK980911	YK	2	R	30	19980911	727	3714.83	7629.55	3714.86	7629.34	323.8	5.00	3.0	2	1	1	7
YK980911	YK	4	R	31	19980911	1021	3714.86	7624.07	3714.87	7623.84	349.8	5.00	7.6	2	2	1	1
YK980911	YK	5	R	32	19980911	955	3714.66	7624.84	3714.61	7625.09	390.9	5.00	9.9	1	2	1	7
YK980911	YK	7	R	33	19980911	834	3713.97	7627.38	3713.93	7627.11	416.7	5.00	15.1	2	1	1	7
YK980910	YK	8	R	33	19980910	1545	3715.71	7631.69	3715.53	7631.47	472.1	5.00	13.7	2	1	2	5
YK980910	YK	9	R	34	19980910	1512	3717.43	7633.70	3717.25	7633.46	494.1	5.00	3.1	2	1	2	5
YK980910	YK	12	R	35	19980910	824	3722.70	7638.80	3722.83	7638.96	342.2	5.00	8.2	1	2	2	7
YK980910	YK	13	R	36	19980910	1528	3717.14	7633.66	3716.97	7633.43	470.4	5.00	10.4	2	1	2	5
YK980910	YK	15	R	37	19980910	1047	3730.42	7646.66	3730.56	7646.85	388.0	5.00	2.4	1	1	2	1
YK980910	YK	16	R	37	19980910	1350	3731.76	7647.30	3731.59	7647.25	324.0	5.00	1.7	2	2	2	2
YK980910	YK	17	R	38	19980910	918	3726.07	7642.84	3726.20	7643.01	353.1	5.00	5.9	1	2	2	7
YK980910	YK	19	R	39	19980910	1019	3729.19	7645.25	3729.30	7645.50	431.0	5.00	8.5	1	2	2	7
YK980910	YK	20	R	39	19980910	1028	3729.31	7645.49	3729.42	7645.77	471.6	5.00	8.2	1	1	2	1

Tables 14-25. Station data for the Chesapeake Bay by month. The survey is not conducted in January and March.

Explanation: To conserve space, some variables are presented as coded values. Code keys are presented in Table 1 (p. 11).

Table 14.
January 1998

System+ Cruise Number	Stat# or River		Stat. Type	Stratum Code	Station Date	Time	Location				Tow Parameters				Sea Tidal State Stage
	River Mile						Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two	
NoData.															

Table 15.
February 1998

System+ Cruise Number	Stat# or River		Stat. Type	Stratum Code	Station Date	Time	Location				Tow Parameters				Sea Tidal State Stage
	River Mile						Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two	
CL980202	CL	2	R	1	19980202	902	3703.41	7610.40	3703.15	7610.30	505.2	5.00	7.1	2 1	1 7
CL980202	CL	4	R	1	19980202	834	3707.58	7613.65	3707.29	7613.56	554.5	5.00	8.0	2 1	1 7
CL980202	CL	5	R	2	19980202	1311	3707.22	7606.63	3707.47	7606.81	537.9	5.00	8.8	1 1	1 2
CL980202	CL	6	R	2	19980202	1237	3707.90	7558.82	3707.71	7558.81	352.4	5.00	8.6	2 2	1 1
CL980202	CL	9	R	3	19980202	948	3701.01	7603.73	3701.17	7603.88	373.9	5.00	12.5	1 2	2 7
CL980202	CL	10	R	3	19980202	924	3703.34	7607.08	3703.44	7606.85	395.4	5.00	9.8	1 2	1 7
CL980202	CL	11	R	3	19980202	1150	3704.34	7559.24	3704.21	7559.17	263.3	5.00	13.0	2 2	1 1
CL980202	CL	12	R	3	19980202	1350	3709.20	7607.17	3709.43	7607.35	506.3	5.00	10.2	1 1	1 2
CL980202	CL	13	R	4	19980202	1108	3657.54	7600.38	3657.48	7600.20	295.1	5.00	22.2	2 2	2 1
CL980202	CL	14	R	4	19980202	1007	3659.93	7602.31	3700.07	7602.60	511.2	5.00	14.8	1 2	2 7
CL980202	CL	16	R	4	19980202	1328	3706.62	7608.60	3706.44	7608.58	334.9	5.00	14.0	2 2	1 2
CL980218	CL	17	R	5	19980218	1328	3715.20	7614.01	3715.06	7613.87	335.4	5.00	8.8	2 2	2 2
CL980218	CL	20	R	5	19980218	1309	3717.36	7616.17	3717.16	7616.18	370.9	5.00	7.0	2 2	2 2
CL980202	CL	22	R	6	19980202	1435	3711.66	7601.59	3711.51	7601.43	369.2	5.00	7.1	2 2	1 3
CL980218	CL	24	R	6	19980218	1132	3717.78	7603.55	3717.57	7603.66	423.5	5.00	8.2	2 2	2 2
CL980202	CL	25	R	7	19980202	1412	3711.41	7604.72	3711.28	7604.53	375.9	5.00	10.7	2 2	1 3
CL980218	CL	26	R	7	19980218	1407	3713.18	7618.73	3713.34	7618.95	446.7	5.00	11.6	1 1	2 2
CL980218	CL	27	R	7	19980218	1150	3719.07	7603.42	3719.28	7603.44	390.3	5.00	12.2	1 1	2 2
CL980210	CL	28	R	7	19980210	1526	3723.87	7609.52	3724.02	7609.58	292.5	5.00	13.1	1 2	1 6
CL980218	CL	29	R	8	19980218	1049	3714.53	7605.72	3714.31	7605.70	408.8	5.00	15.2	2 2	2 2
CL980218	CL	30	R	8	19980218	1110	3716.34	7605.25	3716.49	7605.37	332.4	5.00	25.0	1 1	2 2
CL980218	CL	32	R	8	19980218	1213	3722.36	7602.98	3722.15	7603.03	396.5	5.00	12.8	2 2	2 2
CL980210	CL	35	R	9	19980210	1607	3730.11	7615.94	3730.31	7615.66	564.1	5.00	5.7	1 2	1 7
CL980211	CL	36	R	9	19980211	1518	3733.53	7613.92	3733.36	7613.73	427.2	5.00	8.8	2 1	2 6
CL980211	CL	37	R	10	19980211	1414	3726.46	7600.05	3726.64	7600.01	339.0	5.00	4.9	1 2	2 5
CL980211	CL	39	R	10	19980211	1245	3732.86	7558.87	3732.76	7558.63	408.9	5.00	7.0	2 2	2 2
CL980211	CL	41	R	11	19980211	1325	3731.06	7600.02	3730.84	7559.99	410.2	5.00	9.8	2 2	2 2
CL980211	CL	42	R	11	19980211	1058	3733.94	7608.46	3734.17	7608.62	490.6	5.00	13.1	1 1	2 2
CL980211	CL	43	R	11	19980211	1032	3735.34	7606.64	3735.60	7606.52	515.1	5.00	13.1	1 1	2 2
CL980211	CL	44	R	11	19980211	1144	3735.80	7602.25	3736.06	7602.24	482.0	5.00	12.2	1 1	2 2
CL980211	CL	45	R	12	19980211	1352	3727.08	7602.09	3726.87	7602.01	407.7	5.00	14.0	2 2	2 2
CL980211	CL	46	R	12	19980211	1217	3732.69	7603.30	3732.50	7603.22	372.4	5.00	14.0	2 2	2 2
CL980211	CL	48	R	12	19980211	959	3738.30	7610.63	3738.09	7610.65	390.3	5.00	13.4	2 2	2 2
CL980210	CL	65	S	S01	19980210	1351	3704.52	7615.69	3704.72	7615.69	370.6	5.00	2.7	1 2	1 6
CL980202	CL	72	S	S02	19980202	1214	3705.16	7600.72	3705.43	7600.87	549.7	5.00	4.1	1 1	1 2
CL980218	CL	73	S	S05	19980218	1428	3713.79	7621.79	3713.83	7622.02	357.1	5.00	4.0	1 1	2 2
CL980202	CL	78	S	S06	19980202	1450	3712.10	7601.56	3712.31	7601.58	390.3	5.00	3.2	1 1	1 3
CL980211	CL	84	S	S09	19980211	1544	3734.04	7616.86	3733.85	7616.72	411.3	5.00	3.0	2 1	2 6
CL980211	CL	87	S	S10	19980211	1304	3732.88	7557.85	3733.02	7557.77	286.5	5.00	2.7	2 2	2 2

Table 16.
March 1998

System+ Cruise Number	Stat# or River		Stat. Type	Stratum Code	Station Date	Time	Location				Tow Parameters				Sea Tidal State Stage
	River Mile						Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two	
NoData.															

Table 17.
April 1998

System+ Cruise Number	Stat# or River	Stat. Type	Stratum Code	Station Date	Time	Location				Tow Parameters				Sea State	Tidal Stage		
						Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two				
CL980407	CL	3	R	1	19980407	1422	3700.73	7609.78	3700.75	7610.04	396.6	5.00	6.5	1	2	2	7
CL980406	CL	4	R	1	19980406	1413	3705.78	7615.33				5.00	4.3	1	2	3	7
CL980407	CL	5	R	2	19980407	1231	3700.87	7559.86	3700.66	7559.57	587.7	5.00	5.4	2	1	2	6
CL980407	CL	6	R	2	19980407	1214	3701.97	7602.47	3701.74	7602.24	551.1	5.00	5.6	2	1	2	6
CL980407	CL	9	R	3	19980407	1243	3659.41	7559.08	3659.24	7558.80	529.2	5.00	10.1	2	1	2	6
CL980407	CL	10	R	3	19980407	1352	3700.81	7605.06	3700.59	7604.87	499.5	5.00	9.8	2	1	2	7
CL980406	CL	11	R	3	19980406	1348	3709.11	7613.67	3709.26	7613.80	340.9	5.00	10.4	1	2	3	7
CL980406	CL	12	R	3	19980406	1330	3709.72	7612.84	3709.78	7613.04	323.5	5.00	11.3	2	1	2	7
CL980407	CL	13	R	4	19980407	1303	3657.32	7559.53	3657.15	7559.25	529.2	5.00	25.5	1	2	2	6
CL980407	CL	14	R	4	19980407	1317	3657.29	7559.91	3657.13	7600.14	458.2	5.00	24.8	1	2	2	6
CL980407	CL	16	R	4	19980407	1123	3709.72	7612.84	3709.78	7613.04	323.5	5.00	11.3	2	1	2	6
CL980406	CL	17	R	5	19980406	1453	3711.53	7613.69	3711.67	7613.53	355.5	5.00	7.0	2	1	2	5
CL980407	CL	17	R	5	19980407	1453	3711.53	7613.69	3711.67	7613.53	355.5	5.00	7.0	2	1	2	5
CL980402	CL	18	R	5	19980402	851	3717.15	7618.63	3717.13	7618.36	411.8	5.00	7.0	2	1	1	5
CL980407	CL	21	R	6	19980407	1058	3710.60	7604.88	3710.36	7604.74	492.9	5.00	9.5	2	1	1	5
CL980407	CL	23	R	6	19980407	1022	3713.94	7602.52	3713.74	7602.37	435.0	5.00	4.5	2	1	1	5
CL980407	CL	25	R	7	19980407	1046	3711.23	7605.87	3711.00	7605.75	463.5	5.00	10.2	2	1	3	2
CL980406	CL	26	R	7	19980406	1513	3712.19	7616.67	3712.32	7616.90	424.3	5.00	12.2	1	1	2	7
CL980406	CL	27	R	7	19980406	1306	3713.09	7611.15				5.00	10.4	1	2	2	3
CL980407	CL	28	R	7	19980407	935	3721.10	7603.61	3720.86	7603.67	454.0	5.00	12.1	2	2	1	7
CL980402	CL	29	R	8	19980402	933	3719.22	7610.93	3719.37	7611.04	324.3	5.00	13.1	1	2	2	3
CL980407	CL	31	R	8	19980407	913	3722.40	7605.35	3722.18	7605.35	407.7	5.00	15.6	2	2	1	3
CL980407	CL	32	R	8	19980407	854	3724.12	7604.79	3723.94	7604.74	342.1	5.00	22.6	2	2	2	7
CL980402	CL	33	R	9	19980402	1022	3725.03	7611.66	3725.20	7611.75	343.4	5.00	8.1	1	2	2	7
CL980402	CL	35	R	9	19980402	1107	3730.31	7611.85	3730.52	7611.88	391.8	5.00	9.2	1	1	2	1
CL980402	CL	37	R	10	19980402	1258	3728.44	7601.60	3728.69	7601.56	467.2	5.00	9.0	1	1	2	2
CL980402	CL	39	R	10	19980402	1354	3735.22	7601.11	3735.50	7601.10	519.1	5.00	8.5	1	1	2	7
CL980402	CL	41	R	11	19980402	1051	3729.64	7611.14	3729.84	7611.17	373.4	5.00	9.8	1	2	2	7
CL980402	CL	42	R	11	19980402	1127	3732.09	7611.21	3732.31	7611.20	407.9	5.00	10.4	1	2	2	7
CL980402	CL	43	R	11	19980402	1411	3735.73	7602.33	3736.00	7602.27	508.5	5.00	12.5	1	1	2	2
CL980402	CL	44	R	11	19980402	1507	3739.84	7615.85	3739.64	7615.83	371.8	5.00	10.7	2	2	2	2
CL980402	CL	46	R	12	19980402	1241	3728.97	7603.13	3728.80	7603.21	337.6	5.00	17.6	2	2	2	1
CL980402	CL	47	R	12	19980402	1227	3729.80	7602.70	3729.63	7602.77	332.5	5.00	18.3	2	2	2	1
CL980402	CL	48	R	12	19980402	1210	3731.15	7601.96	3730.96	7601.95	352.4	5.00	15.7	2	2	2	1
CL980407	CL	65	S	S01	19980407	1507	3703.69	7616.25	3703.88	7616.16	377.7	5.00	4.3	1	2	2	6
CL980407	CL	69	S	S02	19980407	1150	3704.76	7601.54	3704.83	7601.73	316.4	5.00	3.0	1	2	2	7
CL980402	CL	75	S	S05	19980402	1004	3723.42	7613.42	3723.61	7613.39	355.0	5.00	2.6	1	2	1	5
CL980407	CL	78	S	S06	19980407	1001	3716.98	7602.61	3716.70	7602.66	524.4	5.00	3.1	2	1	2	2
CL980402	CL	84	S	S09	19980402	1531	3737.07	7615.60	3736.90	7615.55	324.0	5.00	3.1	2	2	2	2
CL980402	CL	85	S	S10	19980402	1326	3732.19	7557.64	3732.45	7557.56	496.9	5.00	3.4	1	1	2	1

Table 18.
May 1998

System+ Cruise Number	Stat# or River Mile	Stat. Type	Stratum Code	Station Date	Station Time	Location				Tow Parameters				Sea Tidal			
						Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two	State	Stage		
				19980515	1102	3658.29	7608.95	3658.22	7608.74	344.3	5.00	9.1	2	2	2	2	
				19980515	1050	3658.47	7609.21	3658.35	7609.00	388.8	5.00	9.1	2	2	2	2	
CL980515	CL	1	R	1	19980515	1507	3705.66	7612.70			5.00	7.9	1	1	2	2	
CL980515	CL	2	R	1	19980515	1208	3702.13	7559.69	3702.15	7559.41	426.9	5.00	8.2	2	2	3	2
CL980515	CL	4	R	1	19980515	1337	3704.64	7604.76	3704.77	7604.95	375.9	5.00	6.7	1	1	2	2
CL980515	CL	5	R	2	19980515	1305	3708.32	7603.32	3708.13	7603.28	357.3	5.00	7.9	2	2	1	2
CL980515	CL	6	R	2	19980515	1120	3657.86	7606.56	3657.88	7606.29	411.8	5.00	8.5	2	2	2	2
CL980515	CL	7	R	2	19980515	1143	3700.07	7603.69	3700.03	7603.46	357.1	5.00	10.4	2	2	3	2
CL980515	CL	9	R	3	19980515	1435	3705.69	7609.90	3705.82	7610.14	436.9	5.00	10.4	1	1	2	2
CL980515	CL	10	R	3	19980515	1451	3706.62	7611.38	3706.76	7611.59	411.1	5.00	11.0	1	1	2	2
CL980515	CL	11	R	3	19980515	1350	3705.55	7606.12	3705.66	7606.33	378.5	5.00	13.4	1	1	2	2
CL980515	CL	12	R	3	19980515	1408	3706.19	7607.81	3706.35	7608.02	435.5	5.00	14.0	1	1	2	2
CL980515	CL	14	R	4	19980515	1408	3706.19	7607.81	3706.35	7608.02	435.5	5.00	14.0	1	1	2	2
CL980515	CL	15	R	4	19980515	1421	3706.48	7608.12	3706.68	7608.19	385.5	5.00	14.0	1	1	1	7
CL980515	CL	16	R	4	19980515	1421	3706.48	7608.12	3706.68	7608.19	385.5	5.00	14.0	1	1	1	2
CL980518	CL	17	R	5	19980518	753	3712.52	7620.60	3712.31	7620.53	403.4	5.00	7.0	2	1	1	2
CL980518	CL	18	R	5	19980518	1415	3716.81	7614.66	3716.72	7614.92	428.7	5.00	6.4	2	2	1	2
CL980518	CL	18	R	5	19980518	1355	3718.75	7613.17	3718.58	7613.33	397.9	5.00	9.1	1	2	1	7
CL980518	CL	20	R	5	19980518	924	3710.32	7604.50	3710.45	7604.37	311.5	5.00	9.1	2	1	1	7
CL980518	CL	21	R	6	19980518	909	3710.22	7605.07	3709.97	7604.99	478.9	5.00	8.8	1	2	2	7
CL980518	CL	22	R	6	19980518	1009	3716.30	7603.88			346.5	5.00	11.0	1	2	2	7
CL980518	CL	24	R	6	19980518	1040	3715.57	7610.08	3715.66	7610.28	390.3	5.00	11.9	2	2	2	2
CL980518	CL	25	R	7	19980518	1325	3722.01	7607.94	3721.80	7607.92	390.3	5.00	11.0	1	1	2	1
CL980518	CL	26	R	7	19980518	1201	3723.23	7601.46	3723.37	7601.58	317.0	5.00	12.5	1	1	2	1
CL980518	CL	27	R	7	19980518	1216	3724.09	7601.45			317.0	5.00	12.5	1	1	2	1
CL980518	CL	28	R	7	19980518	1124	3718.44	7606.09	3718.55	7606.28	353.3	5.00	20.4	1	1	2	1
CL980518	CL	29	R	8	19980518	1109	3718.37	7606.27	3718.52	7606.26	278.4	5.00	20.7	1	1	2	1
CL980518	CL	30	R	8	19980518	1239	3722.33	7605.15			278.4	5.00	16.2	1	1	2	3
CL980518	CL	32	R	8	19980518	1029	3727.64	7612.93	3727.81	7613.04	356.6	5.00	4.3	1	2	2	5
CL980518	CL	32	R	8	19980518	1029	3727.64	7612.93	3727.81	7613.04	356.6	5.00	4.3	1	2	2	5
CL980506	CL	33	R	9	19980506	1013	3729.38	7612.66	3729.52	7612.86	399.5	5.00	8.8	1	2	1	5
CL980506	CL	34	R	9	19980506	958	3729.23	7613.92	3729.00	7613.91	426.5	5.00	6.4	2	1	1	5
CL980506	CL	35	R	9	19980506	1255	3735.56	7600.22	3735.72	7600.10	348.0	5.00	7.9	1	2	1	6
CL980506	CL	38	R	10	19980506	1319	3737.63	7558.59	3737.74	7558.65	223.3	5.00	7.9	1	2	1	6
CL980506	CL	39	R	10	19980506	1336	3739.07	7558.48	3739.24	7558.49	315.4	5.00	7.6	1	2	1	6
CL980506	CL	40	R	10	19980506	918	3733.01	7610.91	3732.81	7611.01	400.5	5.00	11.3	2	1	1	5
CL980506	CL	41	R	11	19980506	859	3734.00	7610.30	3734.23	7610.31	426.5	5.00	12.8	1	2	1	5
CL980506	CL	42	R	11	19980506	1410	3736.19	7606.11	3736.36	7606.07	320.8	5.00	12.2	1	2	1	7
CL980506	CL	43	R	11	19980506	1434	3739.88	7604.65	3740.08	7604.68	373.4	5.00	11.3	1	2	1	7
CL980506	CL	44	R	11	19980506	1035	3730.38	7602.16	3730.55	7602.11	324.0	5.00	17.4	1	2	1	6
CL980506	CL	45	R	12	19980506	1229	3732.60	7603.36	3732.73	7603.56	387.7	5.00	13.4	1	2	1	6
CL980506	CL	46	R	12	19980506	1459	3739.40	7608.62			387.7	5.00	13.1	1	2	1	7
CL980506	CL	48	R	12	19980506	1459	3739.40	7608.62			387.7	5.00	13.1	1	2	1	7
CL980515	CL	68	S	S01	19980515	1535	3709.36	7617.10	3709.54	7617.21	373.0	5.00	1.8	1	1	2	2
CL980515	CL	70	S	S02	19980515	1243	3706.84	7559.77	3707.06	7559.78	407.9	5.00	1.8	1	1	1	2
CL980518	CL	74	S	S05	19980518	810	3711.77	7620.14	3711.61	7619.95	413.7	5.00	3.0	2	1	2	7
CL980518	CL	79	S	S06	19980518	955	3715.80	7602.85	3715.94	7602.87	261.2	5.00	3.0	1	2	2	6
CL980518	CL	81	S	S09	19980506	1044	3727.43	7614.80	3727.62	7614.85	360.2	5.00	1.8	1	2	2	6
CL980506	CL	86	S	S10	19980506	1201	3731.84	7557.56	3731.93	7557.34	373.5	5.00	3.0	1	2	1	6

Table 19.
June 1998

System+ Cruise Number	Stat# or River		Stat. Type	Stratum Code	Station Date	Station Time	Location				Tow Parameters				Sea Tidal		
	River	Mile					Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two	State	Stage	
CL980609	CL	1	R	1	19980609	1317	3657.07	7610.82	3657.17	7611.03	368.9	5.00	5.9	1	2	2	6
CL980609	CL	2	R	1	19980609	1115	3703.11	7608.94	3703.00	7608.71	404.5	5.00	8.6	2	2	2	3
CL980604	CL	3	R	1	19980604	1514	3709.15	7614.42	3709.35	7614.53	406.5	5.00	9.1	1	1	2	1
CL980609	CL	5	R	2	19980609	1007	3707.11	7601.60	3707.02	7601.41	333.3	5.00	6.7	2	2	2	2
CL980609	CL	6	R	2	19980609	930	3706.95	7605.35	3707.18	7605.26	447.6	5.00	7.5	2	2	2	2
CL980604	CL	8	R	2	19980604	1435	3709.81	7605.13	3709.62	7605.09	357.3	5.00	8.9	2	2	2	1
CL980609	CL	9	R	3	19980609	1233	3658.68	7602.17	3658.72	7602.40	357.1	5.00	9.8	1	2	2	5
CL980609	CL	10	R	3	19980609	1143	3702.96	7605.41	3703.17	7605.46	396.5	5.00	10.9	1	6	2	4
CL980609	CL	11	R	3	19980609	1047	3704.21	7603.40	3704.43	7603.55	467.0	5.00	12.3	1	1	2	3
CL980609	CL	12	R	3	19980609	950	3706.28	7604.30	3706.11	7604.30	315.0	5.00	9.8	2	2	2	2
CL980609	CL	14	R	4	19980609	1204	3701.06	7602.59	3700.89	7602.35	481.8	5.00	13.5	2	1	2	5
CL980609	CL	15	R	4	19980609	909	3706.69	7607.31	3706.52	7607.21	349.7	5.00	13.7	2	2	2	2
CL980609	CL	16	R	4	19980609	850	3706.98	7609.02	3706.79	7608.91	389.7	5.00	13.0	2	2	2	2
CL980604	CL	18	R	5	19980604	1533	3711.38	7614.15	3711.59	7614.19	393.8	5.00	8.0	1	1	2	1
CL980601	CL	19	R	5	19980601	915	3714.16	7616.40	3714.16	7616.18	334.1	5.00	6.7	1	2	2	6
CL980601	CL	20	R	5	19980601	839	3714.82	7617.12	3714.68	7616.92	399.5	5.00	7.0	2	1	2	6
CL980604	CL	21	R	6	19980604	1314	3717.20	7603.63	3716.94	7603.66	483.9	5.00	7.8	2	1	1	6
CL980604	CL	23	R	6	19980604	1251	3721.69	7600.75	3721.45	7600.85	469.9	5.00	7.5	2	1	1	5
CL980604	CL	24	R	6	19980604	1230	3722.88	7600.35	3722.63	7600.44	483.0	5.00	5.1	2	1	2	5
CL980604	CL	25	R	7	19980604	1610	3714.67	7622.08	3714.71	7622.41	506.7	5.00	12.9	1	1	2	1
CL980601	CL	26	R	7	19980601	947	3716.16	7610.41	3716.23	7610.25	275.5	5.00	11.0	1	2	2	6
CL980601	CL	27	R	7	19980601	1011	3718.70	7609.87	3718.84	7609.85	261.2	5.00	10.1	1	2	2	6
CL980601	CL	28	R	7	19980601	1117	3724.29	7608.75				5.00	11.6	1	2	2	6
CL980604	CL	29	R	8	19980604	1406	3714.81	7604.90	3714.58	7604.90	426.2	5.00	16.9	2	1	2	6
CL980604	CL	31	R	8	19980604	1347	3716.02	7605.39	3715.78	7605.46	457.3	5.00	29.3	2	1	2	6
CL980601	CL	32	R	8	19980601	1058	3723.18	7607.22	3723.26	7607.34	234.9	5.00	11.9	1	2	2	6
CL980603	CL	34	R	9	19980603	922	3733.02	7617.29	3732.91	7617.51	391.4	5.00	5.2	1	2	2	6
CL980603	CL	35	R	9	19980603	945	3733.55	7614.07	3733.69	7614.19	317.0	5.00	8.5	1	2	2	6
CL980603	CL	36	R	9	19980603	1003	3734.81	7613.87	3734.94	7613.75	302.1	5.00	9.1	1	2	2	6
CL980604	CL	37	R	10	19980604	1202	3727.89	7601.28	3727.63	7601.38	505.2	5.00	7.4	2	1	2	5
CL980604	CL	38	R	10	19980604	1025	3735.88	7559.87	3735.65	7559.93	435.8	5.00	8.9	2	6	2	4
CL980604	CL	40	R	10	19980604	1009	3737.57	7600.13	3737.36	7600.15	390.3	5.00	8.7	2	2	2	3
CL980601	CL	41	R	11	19980601	1145	3727.46	7607.47				5.00	11.6	1	2	2	6
CL980604	CL	42	R	11	19980604	1111	3731.06	7604.44	3730.83	7604.46	427.3	5.00	12.4	2	6	2	4
CL980604	CL	43	R	11	19980604	1049	3734.36	7603.86	3734.13	7603.87	426.5	5.00	12.6	2	2	2	3
CL980603	CL	44	R	11	19980603	1102	3739.85	7615.53	3740.02	7615.59	327.9	5.00	10.4	1	2	3	6
CL980603	CL	46	R	12	19980603	1023	3735.19	7610.99	3735.32	7611.09	284.8	5.00	13.1	1	2	2	6
CL980604	CL	47	R	12	19980604	855	3739.27	7608.71	3739.09	7608.65	345.8	5.00	13.0	2	2	2	3
CL980604	CL	48	R	12	19980604	947	3739.76	7600.54	3739.55	7600.59	396.5	5.00	13.9	2	2	2	3
CL980609	CL	65	S	S01	19980609	1354	3703.03	7614.30	3703.23	7614.36	381.6	5.00	3.6	1	2	2	6
CL980609	CL	69	S	S02	19980609	1024	3705.13	7601.29	3705.33	7601.44	435.0	5.00	2.6	1	1	2	3
CL980601	CL	74	S	S05	19980601	857	3715.00	7618.67	3714.81	7618.55	396.5	5.00	2.1	2	1	2	6
CL980604	CL	80	S	S06	19980604	1329	3716.91	7602.67	3717.11	7602.63	375.5	5.00	2.4	1	2	1	6
CL980603	CL	83	S	S09	19980603	902	3733.84	7616.91	3733.71	7616.65	462.6	5.00	1.5	2	1	2	6
CL980604	CL	85	S	S10	19980604	1141	3730.03	7558.27	3730.21	7558.26	333.9	5.00	2.6	1	2	2	5

Table 20.
July 1998

System+ Cruise Number	Stat# or River	Stat. Type	Stratum Code	Station Date	Time	Location				Tow Parameters				Sea State	Tidal Stage		
						Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two				
CL980706	CL	1	R	1	19980706	1203	3655.53	7603.32	3655.32	7603.47	450.9	5.00	7.6	1	2	2	6
CL980706	CL	3	R	1	19980706	1340	3702.10	7610.60	3701.95	7610.74	350.0	5.00	6.7	1	2	2	7
CL980706	CL	4	R	1	19980706	1403	3703.10	7610.61	3703.26	7610.70	326.5	5.00	7.9	1	2	2	7
CL980706	CL	5	R	2	19980706	1003	3706.16	7602.17	3705.99	7602.04	371.8	5.00	5.8	2	1	2	5
CL980706	CL	6	R	2	19980706	923	3706.90	7605.59	3706.74	7605.51	320.4	5.00	7.0	2	2	2	3
CL980706	CL	8	R	2	19980706	938	3707.58	7606.30	3707.77	7606.37	367.8	5.00	6.7	1	6	2	4
CL980706	CL	9	R	3	19980706	1148	3655.87	7603.09	3655.81	7603.28	309.3	5.00	11.6	1	2	2	6
CL980706	CL	10	R	3	19980706	1245	3700.73	7604.81	3700.81	7605.01	338.0	5.00	10.4	1	2	2	6
CL980706	CL	11	R	3	19980706	1046	3704.80	7559.77	3704.55	7559.69	478.9	5.00	10.7	2	1	2	5
CL980706	CL	12	R	3	19980706	842	3705.64	7609.89	3705.51	7609.76	311.5	5.00	10.1	2	2	2	3
CL980706	CL	13	R	4	19980706	1117	3659.19	7600.37	3658.97	7600.19	490.8	5.00	15.5	2	1	2	6
CL980706	CL	14	R	4	19980706	1313	3704.27	7605.68	3704.40	7605.79	293.2	5.00	14.6	1	1	2	7
CL980706	CL	16	R	4	19980706	900	3706.45	7607.70	3706.68	7607.77	439.3	5.00	14.0	1	1	2	3
CL980706	CL	17	R	5	19980706	1538	3714.30	7617.51	3714.14	7617.42	326.5	5.00	4.3	2	2	2	1
CL980706	CL	18	R	5	19980706	1558	3714.93	7620.71	3714.87	7620.52	309.3	5.00	4.9	1	1	2	1
CL980707	CL	19	R	5	19980707	812	3715.78	7613.60	3715.59	7613.58	353.4	5.00	6.8	2	2	2	2
CL980707	CL	22	R	6	19980707	952	3713.34	7602.41	3713.55	7602.51	417.7	5.00	4.1	1	6	2	4
CL980707	CL	23	R	6	19980707	1041	3717.57	7603.20	3717.77	7603.25	378.3	5.00	9.0	1	1	2	5
CL980707	CL	24	R	6	19980707	1212	3719.63	7601.90	3719.79	7601.92	298.0	5.00	6.9	1	2	2	6
CL980707	CL	25	R	7	19980707	928	3710.96	7604.96	3711.16	7605.06	400.5	5.00	10.0	1	6	2	4
CL980707	CL	26	R	7	19980707	855	3712.69	7611.78	3712.51	7611.80	334.9	5.00	10.3	2	2	3	3
CL980707	CL	27	R	7	19980707	837	3713.87	7610.42	3713.68	7610.42	352.1	5.00	10.6	2	2	3	3
CL980707	CL	28	R	7	19980707	1147	3719.50	7603.20	3719.31	7603.36	427.8	5.00	10.7	2	1	2	6
CL980707	CL	30	R	8	19980707	1014	3714.68	7606.37	3714.90	7606.46	430.0	5.00	14.2	1	2	2	5
CL980707	CL	31	R	8	19980707	1120	3718.67	7607.08	3718.88	7607.12	393.8	5.00	13.6	1	2	2	5
CL980707	CL	32	R	8	19980707	1248	3724.38	7607.14	3724.56	7607.19	342.1	5.00	12.4	1	2	2	6
CL980707	CL	33	R	9	19980707	1612	3728.95	7614.71	3729.12	7614.77	327.9	5.00	6.4	1	2	2	7
CL980707	CL	34	R	9	19980707	1556	3730.46	7613.10	3730.22	7613.18	461.0	5.00	8.3	2	1	1	7
CL980709	CL	36	R	9	19980709	1534	3736.65	7614.02	3736.82	7614.09	332.5	5.00	6.4	1	2	2	6
CL980707	CL	37	R	10	19980707	1330	3726.81	7559.70	3726.97	7559.74	302.6	5.00	4.6	1	2	2	6
CL980707	CL	39	R	10	19980707	1501	3730.80	7558.87	3730.96	7558.88	296.9	5.00	6.3	1	2	2	7
CL980709	CL	40	R	10	19980709	1420	3737.07	7600.36	3736.86	7600.39	391.8	5.00	8.1	2	1	3	5
CL980707	CL	41	R	11	19980707	1426	3729.52	7605.86	3729.69	7605.83	318.3	5.00	11.3	1	2	2	7
CL980709	CL	42	R	11	19980709	1319	3734.60	7606.47	3734.39	7606.43	393.8	5.00	12.2	2	1	3	5
CL980709	CL	43	R	11	19980709	1520	3737.03	7613.32	3736.77	7613.37	487.7	5.00	9.1	2	1	2	6
CL980709	CL	44	R	11	19980709	1409	3737.33	7600.88	3737.11	7600.87	407.9	5.00	9.5	2	1	3	5
CL980709	CL	45	R	12	19980709	1258	3735.88	7610.65	3735.69	7610.68	355.0	5.00	12.6	2	1	2	5
CL980709	CL	46	R	12	19980709	1350	3737.52	7602.36	3737.30	7602.33	410.2	5.00	16.1	2	1	3	5
CL980709	CL	48	R	12	19980709	1453	3737.82	7608.30	3737.59	7608.30	426.2	5.00	12.8	2	1	3	5
CL980706	CL	65	S	S01	19980706	1432	3704.15	7614.89	3704.28	7614.98	277.0	5.00	3.4	1	2	2	7
CL980706	CL	70	S	S02	19980706	1025	3705.06	7600.70				5.00	2.4	1	2	2	5
CL980706	CL	75	S	S05	19980706	1613	3715.41	7621.14	3715.37	7620.99	239.6	5.00	2.7	2	2	2	1
CL980707	CL	77	S	S06	19980707	1056	3717.62	7602.42	3717.80	7602.38	339.0	5.00	3.0	1	2	2	5
CL980709	CL	84	S	S09	19980709	1547	3736.67	7615.99	3736.86	7616.04	360.2	5.00	1.8	1	2	2	6
CL980707	CL	85	S	S10	19980707	1350	3727.46	7558.64	3727.22	7558.77	486.6	5.00	3.0	2	1	2	7

Table 21.
August 1998

System+ Cruise Number	Stat# or River		Stat. Type	Stratum Code	Station Date	Time	Location				Tow Parameters				Sea Tidal		
	River Mile						Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two	State	Stage	
CL980806	CL	2	R	1	19980806	858	3701.97	7615.61	3701.78	7615.59	353.4	5.00	4.5	2	2	3	2

Table 22.
September 1998

System+ Cruise Number	Stat# or River		Stat. Type	Stratum Code	Station Date	Time	Location				Tow Parameters				Sea Tidal		
	River Mile						Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two	State	Stage	
CL980914	CL	1	R	1	19980914	1057	3700.15	7606.42	3700.20	7606.65	361.4	5.00	6.1	1	2	2	6
CL980914	CL	3	R	1	19980914	933	3703.14	7609.84	3702.98	7609.60	469.9	5.00	7.0	2	1	2	6
CL980914	CL	4	R	1	19980914	919	3703.86	7611.31	3703.66	7611.14	451.7	5.00	7.6	2	1	2	6
CL980914	CL	5	R	2	19980914	1240	3701.93	7559.58	3702.16	7559.67	447.6	5.00	6.7	1	2	2	6
CL980914	CL	6	R	2	19980914	1255	3702.93	7600.68	3703.14	7600.85	467.0	5.00	9.4	1	1	2	1
CL980914	CL	8	R	2	19980914	1359	3709.60	7603.89	3709.84	7603.93	448.9	5.00	8.2	1	1	2	1
CL980914	CL	9	R	3	19980914	1038	3701.64	7606.83	3701.49	7606.59	458.4	5.00	9.4	2	1	2	6
CL980914	CL	10	R	3	19980914	952	3703.91	7607.86	3703.83	7607.57	464.7	5.00	9.4	2	1	2	6
CL980914	CL	11	R	3	19980914	1335	3706.34	7604.29	3706.50	7604.50	435.5	5.00	9.4	1	1	2	1
CL980914	CL	12	R	3	19980914	843	3706.43	7608.88	3706.26	7608.71	407.3	5.00	11.0	2	1	2	6
CL980914	CL	13	R	4	19980914	1202	3656.35	7600.01	3656.41	7600.21	323.5	5.00	14.9	1	2	2	6
CL980914	CL	14	R	4	19980914	1130	3659.85	7601.90	3659.70	7601.65	470.6	5.00	14.9	2	1	2	6
CL980914	CL	16	R	4	19980914	1013	3705.04	7606.86	3705.19	7607.02	369.2	5.00	13.7	1	2	2	6
CL980911	CL	17	R	5	19980911	1154	3711.59	7617.30	3711.44	7617.17	340.9	5.00	7.9	2	2	2	1
CL980921	CL	19	R	5	19980921	1130	3720.19	7612.10	3720.03	7612.18	320.4	5.00	8.8	2	2	2	2
CL980921	CL	20	R	5	19980921	1023	3724.25	7611.90	3724.11	7611.94	266.4	5.00	5.8	2	2	2	2
CL980914	CL	21	R	6	19980914	1421	3711.43	7601.34	3711.64	7601.53	484.5	5.00	6.1	1	1	2	2
CL980914	CL	22	R	6	19980914	1524	3712.04	7608.45	3712.29	7608.53	478.9	5.00	9.8	1	1	2	3
CL980915	CL	24	R	6	19980915	949	3720.60	7601.40	3720.79	7601.34	363.7	5.00	9.1	1	2	3	5
CL980914	CL	25	R	7	19980914	1440	3711.91	7604.79	3712.14	7604.93	476.3	5.00	10.7	1	1	2	2
CL980914	CL	26	R	7	19980914	1459	3712.15	7607.43	3712.38	7607.58	483.3	5.00	10.7	1	1	2	2
CL980911	CL	27	R	7	19980911	1132	3712.40	7616.91	3712.29	7616.73	341.0	5.00	12.9	2	2	2	1
CL980915	CL	28	R	7	19980915	1041	3724.27	7606.32	3724.48	7606.30	390.3	5.00	12.2	1	2	3	5
CL980915	CL	29	R	8	19980915	907	3718.80	7604.36	3719.00	7604.27	395.0	5.00	12.8	1	2	3	5
CL980915	CL	31	R	8	19980915	1015	3720.41	7604.87	3720.61	7604.88	370.9	5.00	18.3	1	2	3	5
CL980921	CL	32	R	8	19980921	1050	3723.36	7609.79	3723.21	7609.74	288.1	5.00	15.2	2	2	2	2
CL980921	CL	34	R	9	19980921	930	3731.71	7612.87	3731.54	7612.90	318.3	5.00	8.5	2	2	2	2
CL980921	CL	35	R	9	19980921	900	3734.39	7612.67	3734.18	7612.70	391.8	5.00	8.5	2	2	2	2
CL980917	CL	36	R	9	19980917	1536	3735.29	7616.85	3735.38	7617.10	414.7	5.00	8.5	1	2	2	6
CL980915	CL	38	R	10	19980915	1135	3727.79	7601.38	3727.94	7601.25	340.9	5.00	7.3	1	2	3	6
CL980915	CL	39	R	10	19980915	1422	3738.09	7558.61	3738.28	7558.61	352.1	5.00	7.6	1	2	3	7
CL980915	CL	40	R	10	19980915	1358	3738.99	7556.23	3739.15	7556.10	356.2	5.00	4.6	1	2	3	6
CL980915	CL	41	R	11	19980915	1132	3734.30	7604.45	3734.48	7604.38	350.1	5.00	12.2	1	2	3	6
CL980915	CL	42	R	11	19980915	1245	3734.54	7604.22	3734.68	7604.06	355.5	5.00	12.2	1	2	3	6
CL980915	CL	43	R	11	19980915	1316	3737.09	7558.82	3737.25	7558.70	348.0	5.00	9.1	1	2	3	6
CL980915	CL	44	R	11	19980915	1525	3738.58	7608.57	3738.78	7608.94	673.2	5.00	12.2	1	2	2	7
CL980915	CL	45	R	12	19980915	1108	3728.06	7603.70	3728.25	7603.61	377.7	5.00	16.2	1	2	3	5
CL980915	CL	46	R	12	19980915	1155	3729.28	7602.08	3729.45	7601.98	349.7	5.00	15.2	1	2	3	6
CL980915	CL	48	R	12	19980915	1448	3737.54	7602.75	3737.73	7602.65	383.4	5.00	18.6	1	2	3	7
CL980911	CL	68	S	S01	19980911	1217	3709.64	7617.29	3709.46	7617.25	339.0	5.00	2.2	2	2	2	1
CL980914	CL	69	S	S02	19980914	1318	3705.03	7601.48	3705.21	7601.67	441.1	5.00	3.4	1	1	2	1
CL980911	CL	73	S	S05	19980911	1051	3715.61	7619.93	3715.77	7619.77	383.4	5.00	2.0	2	2	2	1
CL980915	CL	80	S	S06	19980915	928	3718.70	7601.89	3718.47	7601.91	427.3	5.00	2.7	2	1	3	5
CL980917	CL	83	S	S09	19980917	1508	3730.60	7616.35	3730.80	7616.44	395.0	5.00	2.1	1	2	3	6
CL980915	CL	87	S	S10	19980915	1340	3736.83	7555.65	3737.00	7555.52	371.8	5.00	1.8	1	2	3	6

Table 23.
October 1998

System+ Cruise Number	Stat# or River Mile	Stat. Type	Stratum Code	Station Date	Time	Location				Tow Parameters				Sea State	Tidal Stage		
						Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two				
CL981014	CL	1	R	1	19981014	1129	3701.91	7613.84	3701.64	7613.80	504.0	5.00	5.2	2	1	2	6
CL981014	CL	3	R	1	19981014	1111	3704.27	7614.48	3703.97	7614.50	556.7	5.00	4.9	2	1	2	5
CL981014	CL	4	R	1	19981014	1024	3705.81	7614.57	3705.51	7614.53	559.2	5.00	6.1	2	1	2	5
CL981016	CL	5	R	2	19981016	1134	3705.88	7603.38	3706.02	7603.30	286.5	5.00	6.3	1	2	3	6
CL981016	CL	6	R	2	19981016	1245	3707.77	7605.87	.	.	.	5.00	6.7	1	2	3	7
CL981016	CL	8	R	2	19981016	1324	3709.96	7605.11	.	.	.	5.00	8.8	1	2	3	7
CL981016	CL	9	R	3	19981016	932	3656.81	7603.62	3656.89	7603.38	393.5	5.00	11.1	2	6	2	4
CL981016	CL	10	R	3	19981016	944	3706.75	7610.67	3706.48	7610.58	518.6	5.00	11.0	2	1	3	5
CL981016	CL	11	R	3	19981016	1302	3707.88	7607.06	3708.02	7607.13	280.4	5.00	9.7	1	2	3	7
CL981016	CL	12	R	3	19981016	923	3708.97	7612.54	3708.72	7612.44	487.5	5.00	11.0	2	1	3	5
CL981016	CL	13	R	4	19981016	1014	3700.26	7602.56	3700.38	7602.34	401.4	5.00	14.1	1	6	3	4
CL981016	CL	15	R	4	19981016	1045	3703.25	7604.41	3703.37	7604.58	340.8	5.00	13.7	1	2	3	5
CL981016	CL	16	R	4	19981016	1110	3705.55	7606.76	3705.71	7606.87	340.3	5.00	15.5	1	2	3	5
CL981014	CL	17	R	5	19981014	814	3715.76	7613.59	3715.55	7613.50	412.4	5.00	6.4	2	1	2	5
CL981013	CL	19	R	5	19981013	1453	3721.78	7613.66	3721.59	7613.66	352.1	5.00	6.4	2	6	1	8
CL981013	CL	20	R	5	19981013	1424	3724.91	7612.81	3724.72	7612.88	367.8	5.00	5.2	2	1	1	7
CL981016	CL	21	R	6	19981016	1348	3712.30	7601.97	3712.46	7601.94	300.0	5.00	5.2	1	2	3	7
CL981016	CL	22	R	6	19981016	1435	3717.28	7603.47	3717.43	7603.53	292.5	5.00	8.7	1	2	3	7
CL981016	CL	24	R	6	19981016	1501	3718.53	7602.61	3718.68	7602.71	316.7	5.00	8.8	1	2	3	7
CL981014	CL	25	R	7	19981014	836	3714.64	7610.36	3714.81	7610.26	349.7	5.00	11.0	1	2	3	5
CL981016	CL	26	R	7	19981016	1529	3717.88	7608.77	3718.02	7608.85	286.5	5.00	11.3	1	2	3	7
CL981013	CL	27	R	7	19981013	1512	3719.28	7613.46	3719.08	7613.42	375.5	5.00	12.8	2	2	1	1
CL981013	CL	28	R	7	19981013	841	3721.83	7607.91	3721.98	7607.71	411.7	5.00	11.6	1	2	1	6
CL981016	CL	29	R	8	19981016	1411	3713.93	7604.88	3714.07	7604.85	263.4	5.00	13.0	1	2	3	7
CL981013	CL	30	R	8	19981013	906	3722.22	7604.19	3722.44	7604.11	425.4	5.00	14.9	1	2	1	6
CL981013	CL	32	R	8	19981013	925	3724.09	7605.51	3724.30	7605.45	399.7	5.00	13.4	1	2	1	6
CL981013	CL	33	R	9	19981013	1410	3725.39	7611.98	3725.19	7611.94	375.5	5.00	7.9	2	1	0	7
CL981007	CL	34	R	9	19981007	1516	3735.40	7616.86	3735.30	7616.65	368.9	5.00	9.1	2	1	2	5
CL981007	CL	36	R	9	19981007	1414	3738.58	7616.69	3738.49	7616.48	359.9	5.00	5.2	2	1	3	5
CL981013	CL	37	R	10	19981013	1010	3728.90	7601.66	3729.09	7601.55	389.7	5.00	7.9	1	2	1	6
CL981013	CL	38	R	10	19981013	1112	3731.65	7559.19	3731.84	7559.20	352.4	5.00	5.5	1	2	0	6
CL981013	CL	39	R	10	19981013	1231	3737.04	7601.98	3737.25	7602.01	391.8	5.00	8.5	1	2	1	6
CL981013	CL	41	R	11	19981013	1315	3730.94	7611.22	3730.72	7611.18	412.2	5.00	9.8	2	1	1	7
CL981013	CL	42	R	11	19981013	1057	3731.59	7600.23	3731.78	7600.16	367.8	5.00	11.3	1	2	0	6
CL981013	CL	43	R	11	19981013	1212	3735.55	7602.45	3735.75	7602.51	381.6	5.00	12.8	1	2	0	6
CL981007	CL	44	R	11	19981007	1438	3738.89	7613.10	3738.81	7612.91	324.4	5.00	11.0	2	1	3	5
CL981013	CL	45	R	12	19981013	949	3728.04	7604.47	3728.24	7604.52	378.3	5.00	15.8	1	2	1	6
CL981013	CL	46	R	12	19981013	1034	3729.68	7604.78	3729.87	7604.66	396.5	5.00	13.1	1	2	1	6
CL981013	CL	47	R	12	19981013	1153	3733.65	7602.74	3733.83	7602.85	373.0	5.00	15.5	1	2	1	6
CL981014	CL	67	S	S01	19981014	1040	3705.37	7615.62	3705.09	7615.64	519.7	5.00	3.0	2	1	2	5
CL981016	CL	70	S	S02	19981016	1215	3706.25	7559.49	3706.38	7559.56	263.3	5.00	2.4	1	2	3	7
CL981013	CL	76	S	S05	19981013	1440	3722.97	7614.10	3722.79	7614.14	339.0	5.00	1.5	2	1	1	7
CL981016	CL	79	S	S06	19981016	1454	3717.89	7602.32	3718.06	7602.39	332.5	5.00	3.4	1	2	3	7
CL981013	CL	82	S	S09	19981013	1338	3727.47	7613.16	3727.25	7613.18	408.8	5.00	3.4	2	1	1	7
CL981013	CL	86	S	S10	19981013	1126	3732.25	7557.48	3732.02	7557.47	426.5	5.00	1.5	2	1	1	6

Table 24.
November 1998

System+		Stat# or		Stratum			Location				Tow Parameters				Sea Tidal	
Cruise	River	River	Stat.	Stratum	Station	Time	Beginning	Beginning	Ending	Ending	Distance	Duration	Depth	Direction	State	Stage
Number		Mile	Type	Code	Date		Latitude	Longitude	Latitude	Longitude	(m)	(min)	(m)	One Two		
CL981109	CL	1	R	1	19981109	1320	3657.67	7610.39	3657.77	7610.70	506.0	5.00	7.0	1 1	1	2
CL981109	CL	3	R	1	19981109	1200	3700.14	7610.85	3700.01	7610.65	387.7	5.00	7.6	2 2	0	2
CL981109	CL	4	R	1	19981109	1407	3702.47	7614.95	3702.72	7614.99	467.2	5.00	4.9	1 1	1	3
CL981102	CL	6	R	2	19981102	1337	3704.92	7600.97	3705.01	7601.06	215.6	5.00	4.9	1 2	2	6
CL981102	CL	7	R	2	19981102	1255	3707.55	7603.35	3707.36	7603.49	411.3	5.00	6.7	1 2	1	6
CL981102	CL	8	R	2	19981102	1240	3709.46	7604.03	3709.17	7603.94	554.5	5.00	7.9	2 1	1	6
CL981102	CL	9	R	3	19981102	1425	3658.23	7602.22	3658.11	7602.40	352.4	5.00	11.3	1 2	2	6
CL981102	CL	10	R	3	19981102	1510	3658.31	7604.64	3658.24	7604.89	401.3	5.00	10.1	1 2	0	6
CL981109	CL	11	R	3	19981109	1227	3701.20	7606.37	3701.35	7606.66	520.8	5.00	10.4	1 1	0	2
CL981109	CL	12	R	3	19981109	1245	3702.71	7605.25	3702.94	7605.41	490.6	5.00	11.3	1 1	0	2
CL981102	CL	13	R	4	19981102	1440	3656.99	7602.38	3656.85	7602.40	261.2	5.00	14.0	1 2	2	6
CL981102	CL	14	R	4	19981102	1453	3656.92	7602.94	3657.01	7603.14	346.5	5.00	13.1	1 2	2	6
CL981102	CL	15	R	4	19981102	1353	3703.45	7558.55	3703.30	7558.70	359.4	5.00	13.7	1 2	2	6
CL981102	CL	17	R	5	19981102	1037	3711.72	7613.33	3711.48	7613.25	461.0	5.00	9.1	2 1	1	6
CL981109	CL	18	R	5	19981109	1542	3717.82	7614.24	3717.62	7614.27	373.4	5.00	8.2	2 2	1	7
CL981110	CL	19	R	5	19981110	844	3722.58	7613.63	3722.79	7613.62	389.4	5.00	7.0	1 2	2	3
CL981102	CL	22	R	6	19981102	1200	3713.20	7601.72	3712.93	7601.66	508.5	5.00	4.6	2 1	0	6
CL981102	CL	23	R	6	19981102	1147	3714.02	7602.75	3714.15	7602.55	387.7	5.00	5.8	1 2	2	7
CL981113	CL	24	R	6	19981113	1422	3721.78	7600.74	3722.00	7600.65	430.0	5.00	7.5	1 2	2	7
CL981102	CL	25	R	7	19981102	1120	3712.50	7607.47	3712.67	7607.35	363.9	5.00	10.4	1 2	0	6
CL981102	CL	26	R	7	19981102	1055	3714.02	7610.94	3714.14	7610.72	401.4	5.00	11.0	1 2	2	6
CL981102	CL	27	R	7	19981102	1009	3714.32	7614.97	3714.37	7614.69	435.3	5.00	9.1	1 2	1	6
CL981110	CL	28	R	7	19981110	927	3724.61	7609.40	3724.79	7609.49	360.5	5.00	9.3	1 2	2	7
CL981113	CL	29	R	8	19981113	1351	3718.70	7605.82	3718.46	7605.70	480.6	5.00	20.0	2 1	2	7
CL981113	CL	30	R	8	19981113	1321	3724.52	7605.83	3724.62	7605.79	195.0	5.00	12.7	2 1	2	6
CL981110	CL	32	R	8	19981110	913	3724.43	7609.66	3724.61	7609.69	336.6	5.00	14.0	1 2	2	7
CL981110	CL	33	R	9	19981110	1010	3725.91	7613.93	3726.13	7613.98	414.7	5.00	4.8	1 2	2	7
CL981110	CL	34	R	9	19981110	1027	3726.27	7613.30	3726.51	7613.26	448.9	5.00	5.5	1 2	2	7
CL981113	CL	36	R	9	19981113	835	3737.03	7615.48	3737.25	7615.47	407.9	5.00	3.5	1 6	2	4
CL981113	CL	38	R	10	19981113	1227	3726.61	7559.74	3726.39	7559.88	459.8	5.00	4.3	2 1	2	6
CL981113	CL	39	R	10	19981113	1211	3727.62	7600.97	3727.35	7601.08	527.5	5.00	8.1	2 1	2	6
CL981113	CL	40	R	10	19981113	1045	3737.14	7557.93	3736.89	7557.98	469.4	5.00	7.8	2 1	1	5
CL981113	CL	41	R	11	19981113	954	3737.80	7610.93	3737.64	7610.78	373.9	5.00	12.0	2 1	1	5
CL981113	CL	42	R	11	19981113	942	3738.21	7610.96	3738.01	7611.05	395.0	5.00	12.1	2 1	1	5
CL981113	CL	43	R	11	19981113	853	3738.38	7613.79	3738.61	7613.74	432.9	5.00	10.4	1 6	1	4
CL981113	CL	44	R	11	19981113	908	3739.76	7613.45	3739.95	7613.34	389.7	5.00	11.4	1 2	2	5
CL981113	CL	45	R	12	19981113	1257	3727.34	7604.72	3727.47	7604.88	342.2	5.00	16.6	1 2	1	6
CL981113	CL	47	R	12	19981113	1135	3734.05	7602.84	3733.92	7602.65	375.9	5.00	15.6	2 1	1	5
CL981113	CL	48	R	12	19981113	927	3738.88	7610.61	3738.77	7610.39	391.4	5.00	13.2	2 1	1	5
CL981109	CL	68	S	S01	19981109	1440	3708.79	7616.83	3708.99	7616.96	419.9	5.00	2.7	1 1	1	3
CL981102	CL	69	S	S02	19981102	1317	3704.64	7602.02	3704.71	7602.21	316.4	5.00	4.6	1 2	2	6
CL981109	CL	73	S	S05	19981109	1503	3710.53	7618.28	3710.75	7618.33	414.7	5.00	2.1	1 1	1	3
CL981102	CL	79	S	S06	19981102	1215	3713.12	7602.35	3713.26	7602.48	326.0	5.00	3.0	1 2	0	7
CL981110	CL	81	S	S09	19981110	954	3725.57	7614.22	3725.79	7614.27	414.7	5.00	2.4	1 2	2	5
CL981113	CL	88	S	S10	19981113	1101	3735.45	7556.49	3735.22	7556.59	452.4	5.00	2.4	2 1	2	5

Table 25.
December 1998

System+ Cruise Number	Stat# or River			Stratum Code	Station Date	Time	Location				Tow Parameters				Sea Tidal		
	Mile	Type	Stat.				Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction		State	Stage
CL981202	CL	1	R	1	19981202	1248	3659.84	7604.47	3659.67	7604.63	397.9	5.00	7.9	1	2	1	6
CL981202	CL	3	R	1	19981202	1520	3707.32	7615.71	3707.51	7615.73	353.4	5.00	4.9	1	2	1	6
CL981202	CL	5	R	2	19981202	1158	3700.72	7558.87	3700.42	7558.83	559.2	5.00	5.2	2	1	1	5
CL981202	CL	7	R	2	19981202	1016	3706.95	7605.58	3706.74	7605.56	390.3	5.00	6.8	2	1	1	6
CL981202	CL	9	R	3	19981202	1216	3659.15	7559.31	3659.19	7559.44	210.9	5.00	10.2	1	2	1	6
CL981202	CL	10	R	3	19981202	1135	3704.85	7559.76	3704.52	7559.60	658.0	5.00	10.8	2	1	1	6
CL981202	CL	11	R	3	19981202	1400	3705.94	7609.84	3705.98	7609.96	196.8	5.00	10.0	1	2	1	7
CL981202	CL	12	R	3	19981202	1416	3706.02	7610.05	3706.17	7610.13	303.3	5.00	9.9	1	2	1	7
CL981202	CL	13	R	4	19981202	1329	3659.14	7609.73	3659.18	7609.88	239.6	5.00	12.7	1	2	1	7
CL981202	CL	15	R	4	19981202	1035	3705.26	7605.90	3705.06	7605.81	395.0	5.00	12.8	2	2	1	3
CL981202	CL	16	R	4	19981202	1436	3707.43	7609.19	3707.45	7609.42	351.3	5.00	12.1	1	2	1	7
CL981202	CL	17	R	5	19981202	824	3712.68	7616.15	3712.57	7616.00	305.7	5.00	7.9	2	2	1	2
CL981202	CL	18	R	5	19981202	752	3713.92	7621.21	3713.85	7620.95	415.7	5.00	7.0	2	2	1	2
CL981202	CL	21	R	6	19981202	951	3710.29	7603.94	3710.28	7603.66	425.7	5.00	8.8	2	2	1	3
CL981202	CL	22	R	6	19981202	923	3713.41	7602.40	3713.23	7602.28	380.1	5.00	4.4	2	2	1	2
CL981203	CL	25	R	7	19981203	828	3715.21	7610.83	3715.50	7610.71	567.4	5.00	11.8	1	2	3	6
CL981203	CL	26	R	7	19981203	854	3717.48	7607.89	3717.75	7607.78	527.5	5.00	12.2	1	1	3	3
CL981208	CL	27	R	7	19981208	1517	3719.90	7609.78	3720.15	7609.70	478.9	5.00	9.8	1	1	2	3
CL981208	CL	28	R	7	19981208	1433	3723.39	7606.51	3723.24	7606.50	278.4	5.00	12.4	2	2	2	3
CL981208	CL	29	R	8	19981208	1451	3722.02	7605.87	3721.86	7605.35	843.6	5.00	13.8	2	2	2	3
CL981208	CL	31	R	8	19981208	1413	3724.60	7604.42	3724.45	7604.44	279.6	5.00	16.0	2	2	2	3
CL981208	CL	32	R	8	19981208	1400	3724.56	7604.74	3724.40	7604.72	298.0	5.00	21.9	2	2	1	3
CL981207	CL	33	R	9	19981207	941	3730.04	7614.22	3730.28	7614.22	444.7	5.00	7.0	1	1	2	1
CL981208	CL	36	R	9	19981208	924	3739.32	7616.32	3739.54	7616.32	407.7	5.00	8.1	1	2	1	6
CL981208	CL	37	R	10	19981208	1319	3725.49	7600.89	3725.33	7600.93	302.6	5.00	7.6	2	2	2	2
CL981208	CL	39	R	10	19981208	1039	3737.87	7559.59	3737.66	7559.61	390.3	5.00	8.7	2	2	1	1
CL981207	CL	41	R	11	19981207	918	3729.41	7612.30	3729.20	7612.33	391.8	5.00	9.1	2	2	2	1
CL981208	CL	42	R	11	19981208	1230	3729.94	7607.80	3729.76	7607.85	342.1	5.00	11.2	2	2	1	2
CL981208	CL	43	R	11	19981208	1203	3730.43	7606.05	3730.27	7606.17	348.0	5.00	11.6	2	2	1	2
CL981208	CL	44	R	11	19981208	1215	3730.40	7607.00	3730.22	7607.04	339.0	5.00	11.4	2	2	1	2
CL981208	CL	45	R	12	19981208	1253	3727.20	7604.96	3727.03	7604.97	315.4	5.00	16.6	2	2	1	2
CL981208	CL	47	R	12	19981208	1137	3733.09	7602.21	3732.90	7602.24	355.0	5.00	16.9	2	2	1	1
CL981208	CL	48	R	12	19981208	1018	3737.49	7603.04	3737.75	7602.91	520.7	5.00	16.6	1	1	1	1
CL981202	CL	67	S	S01	19981202	1515	3706.95	7615.66	3707.13	7615.76	366.5	5.00	2.3	1	2	1	6
CL981202	CL	70	S	S02	19981202	1117	3705.87	7558.97	3705.95	7558.97	148.2	5.00	3.0	1	6	1	4
CL981202	CL	73	S	S05	19981202	1541	3710.42	7617.68	3710.62	7617.77	395.0	5.00	3.4	1	2	1	6
CL981208	CL	80	S	S06	19981208	1334	3724.60	7559.74	3724.86	7559.76	482.7	5.00	1.6	2	2	2	2
CL981207	CL	83	S	S09	19981207	1005	3731.32	7616.77	3731.54	7616.98	517.6	5.00	2.4	1	1	2	1
CL981208	CL	88	S	S10	19981208	1103	3736.92	7555.92	3736.74	7556.01	360.5	5.00	3.0	2	2	1	1

Tables 26-37. Atmospheric and hydrographic data for the tributaries (James, York, and Rappahannock Rivers) and the secondary water systems (Pocomoke Sound, Mobjack Bay, Piankatank and Great Wicomico Rivers) by month.

Explanation:

- A. To conserve space, some variables are presented as coded values. Code keys are presented in Table 1 (p. 11).
- B. Due to measurement error (calibration differences and instrument drift) associated with the hydrographic equipment used to measure temperature, salinity and dissolved oxygen, some calculated saturations presented here are greater than 100%.
- C. The secondary water systems are sampled once per quarter beginning in July, 1998.

Table 26.
January 1998

System+ Cruise Number	Stat # River Mile	River Depth (m)	Air		Wind		Weather		Surface				Bottom			
			Temp. (C)	Speed (m/sec)	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	
JA980112	JA	J01	6.4	8.3	2	90	2	1.8	8.60	20.7	10.26	100.5	8.62	20.8	10.35	101.5
JA980112	JA	J05	5.8	9.8	3	90	2	1.5	8.73	20.6	10.59	104.0	8.73	20.6	10.48	102.9
JA980112	JA	J13	14.0	11.7	1	90	2	1.3	9.07	13.6	11.03	104.3	8.98	16.4	10.65	102.4
JA980112	JA	J17	6.7	10.3	5	140	2	1.3	9.16	7.0	10.65	96.7	9.11	9.2	10.27	94.5
JA980112	JA	J24	7.6	11.9	1	140	2	0.4	10.07	2.2	10.73	96.6	9.85	2.8	10.40	93.5
JA980112	JA	J27	8.2	13.2	1	140	2	0.3	9.00	0.7	10.93	95.0	9.63	1.7	10.46	92.9
JA980113	JA	J35	8.1	11.4	2	220	6	0.2	9.33	0.1	10.07	87.9	9.34	0.1	9.80	85.5
JA980113	JA	J40	5.8	12.2	1	220	6	0.2	9.17	0.1	9.86	85.7	9.09	0.1	9.95	86.3
JA980112	JA	2	3.0	9.9	7	90	2	0.8	9.18	13.3	10.85	102.7	9.19	13.3	10.68	101.1
JA980112	JA	4	8.8	11.4	6	90	1	0.8	9.25	13.9	10.98	104.5	8.88	17.5	10.72	103.5
JA980112	JA	5	12.5	10.2	6	90	2	1.2	8.94	18.4	10.89	105.9	8.96	19.1	10.72	104.8
JA980112	JA	7	18.3	8.2	1	90	2	1.5	8.64	20.7	10.81	106.0	8.39	21.2	10.30	100.7
JA980112	JA	8	17.4	9.2	5	90	2	1.7	8.62	20.7	10.75	105.4	8.29	21.3	10.38	101.3
JA980112	JA	9	2.1	11.1	1	90	2	0.6	9.60	4.4	10.90	98.4	9.36	5.3	10.40	93.9
JA980112	JA	11	4.9	11.1	1	90	2	0.7	9.25	5.9	10.56	95.5	9.23	11.6	10.08	94.5
JA980112	JA	14	12.8	10.5	3	90	2	0.8	9.11	8.2	10.85	99.2	9.15	13.7	10.43	98.9
JA980112	JA	15	2.4	10.8	1	140	2	0.3	9.53	1.3	10.70	94.5	9.55	1.3	10.60	93.7
JA980112	JA	18	4.4	11.1	8	220	6	0.2	9.44	0.7	10.13	89.0	9.46	0.8	10.21	89.8
JA980112	JA	19	11.9	12.6	3	140	2	0.6	9.72	2.1	10.80	96.3	9.70	3.9	10.14	91.5
JA980113	JA	20	10.4	11.6	1	220	6	0.2	9.16	0.1	9.79	85.1	9.20	0.1	9.96	86.6
JA980113	JA	21	3.1	11.3	5	220	2	0.1	8.91	0.1	10.19	88.0	8.87	0.1	10.23	88.3
JA980113	JA	23	4.9	9.7	3	220	6	0.1	9.75	0.1	9.53	84.0	9.76	0.1	9.43	83.1
RA980115	RA	R02	17.9	6.2	8	40	6	2.9	6.74	15.9	10.25	93.1	6.85	17.0	10.21	93.7
RA980115	RA	R10	17.6	7.2	5	40	6	2.3	6.55	13.9	10.48	93.6	7.10	17.3	10.27	95.0
RA980114	RA	R15	13.7	3.7	1	320	1	1.8	7.02	13.3	10.71	96.3	7.06	17.1	9.48	87.5
RA980114	RA	R20	14.5	3.7	5	320	2	1.5	7.00	12.5	10.63	95.1	7.13	16.4	9.59	88.3
RA980114	RA	R25	8.8	8.2	2	320	2	0.9	7.43	9.3	10.37	91.8	7.41	14.3	9.50	86.8
RA980114	RA	R30	5.8	6.2	3	320	2	0.7	7.67	4.6	10.24	88.4	8.00	8.9	9.56	85.5
RA980114	RA	R35	5.2	7.8	2	320	1	0.3	7.76	5.3	10.67	92.7	8.00	8.4	8.60	76.7
RA980114	RA	R40	4.6	6.7	1	320	0	0.1	7.35	0.9	10.90	91.1	7.39	0.1	10.75	89.9
RA980115	RA	1	2.9	5.4	8	40	6	2.2	6.18	16.9	10.78	97.3	5.92	17.1	10.89	97.8
RA980115	RA	4	6.3	7.4	8	40	6	2.3	6.71	15.8	10.33	93.7	6.98	17.0	10.22	94.1
RA980115	RA	5	13.4	5.9	8	40	6	3.2	6.55	16.5	10.45	94.9	6.62	17.2	10.45	95.5
RA980115	RA	7	15.9	7.5	5	40	6	2.3	6.70	14.8	10.29	92.7	7.09	17.0	10.14	93.6
RA980115	RA	9	1.8	7.6	5	40	6	1.6	6.42	12.5	10.76	94.9	6.48	12.5	10.88	96.1
RA980115	RA	11	4.1	7.8	5	40	6	1.7	6.57	13.1	11.28	100.2	6.56	13.2	11.20	99.5
RA980114	RA	14	10.1	5.5	5	320	1	1.4	7.20	12.6	10.46	94.0	7.10	16.7	9.56	88.1
RA980114	RA	16	13.7	1.7	5	320	1	2.2	6.92	13.7	10.75	96.7	7.09	17.1	9.37	86.5
RA980114	RA	18	3.0	4.7	4	320	2	1.4	7.35	11.4	10.34	92.6	7.27	14.9	9.82	89.8
RA980114	RA	20	6.4	4.2	2	320	2	0.6	7.38	5.7	10.12	87.4	7.98	10.7	9.43	85.3
RA980114	RA	21	8.5	6.2	1	320	2	1.1	7.39	10.9	10.32	92.2	7.29	14.7	9.65	88.2
RA980114	RA	22	8.2	7.4	3	320	2	0.7	7.49	9.2	10.25	90.8	7.47	14.3	9.42	86.2
RA980114	RA	24	2.4	6.8	4	320	1	0.4	7.65	7.7	10.35	91.1	7.68	8.5	10.16	89.9
RA980114	RA	25	7.3	6.7	1	320	2	0.4	7.47	4.0	10.24	87.6	8.17	8.7	9.34	83.8
YK980109	YK	Y02	11.6	16.0	6	200	0	2.0	8.39	19.4	10.87	105.1	6.70	22.1	10.19	96.4
YK980109	YK	Y05	13.1	16.5	9	200	1	1.7	7.94	20.5	9.56	92.1	7.43	28.9	9.62	96.8
YK980108	YK	Y10	8.7	18.2	8	180	2	1.0	7.69	18.2	10.96	103.4	7.07	18.8	11.06	103.2
YK980108	YK	Y15	8.1	16.9	8	180	2	0.8	8.35	14.5	10.66	99.7	7.16	16.7	10.59	97.7
YK980108	YK	Y20	6.5	17.8	8	180	2	0.8	7.90	14.4	10.51	97.2	7.79	14.6	10.44	96.5
YK980108	YK	Y25	9.1	18.0	8	180	6	0.5	8.67	11.7	10.25	94.9	7.48	12.6	10.33	93.5
YK980108	YK	Y30	5.9	19.6	2	180	6	0.2	9.31	6.1	10.45	94.7	8.14	7.9	10.30	91.9
YK980108	YK	Y35	6.4	19.0	0	0	2	0.1	7.30	3.7	10.47	89.0	7.54	4.2	10.22	87.7
YK980108	YK	Y40	3.6	18.9	0	0	2	0.1	10.28	0.2	10.00	89.3	7.63	0.3	10.26	86.0
YK980109	YK	1	2.7	14.7	7	220	1	1.8	8.82	19.3	10.33	100.8	8.87	19.2	10.31	100.6
YK980109	YK	4	8.8	16.6	6	200	0	2.6	8.44	19.2	10.48	101.3	7.40	19.8	10.58	100.2
YK980109	YK	6	11.9	16.7	9	200	0	2.6	8.09	20.5	9.42	91.1	7.42	20.9	9.53	90.9
YK980109	YK	7	16.2	15.3	8	220	1	2.4	8.28	19.1	11.02	106.0	6.67	23.6	9.90	94.5
YK980109	YK	8	14.9	14.7	6	220	1	2.0	8.23	19.5	10.70	103.1	6.78	24.2	9.63	92.5
YK980108	YK	10	1.9	17.7	8	180	2	1.0	.	.	.	.	8.24	17.5	10.34	98.4
YK980108	YK	12	4.0	17.9	8	180	2	0.4	8.29	15.4	10.45	98.2	7.50	15.8	10.48	96.9
YK980108	YK	13	13.7	19.4	8	180	2	1.2	7.81	18.5	11.06	104.9	6.41	19.8	11.42	105.6
YK980108	YK	15	1.7	19.1	8	180	2	0.4	.	.	.	.	8.90	13.4	10.63	100.0
YK980108	YK	16	2.5	17.6	8	180	2	0.1	.	.	.	.	8.08	8.9	10.31	92.4
YK980108	YK	17	5.5	18.4	8	180	2	0.5	7.91	14.7	10.35	96.0	7.61	14.8	10.34	95.2
YK980108	YK	19	9.5	18.3	8	180	2	0.7	9.34	13.3	10.26	97.5	7.42	15.7	10.41	96.0
YK980108	YK	20	8.3	17.7	8	180	2	0.5	8.30	9.4	10.23	92.5	7.91	11.0	10.29	93.1

Table 27.
February 1998

System+	Stat #	River	Depth (m)	Air			Wind		Weather		Surface				Bottom			
				Temp. (C)	Speed (m/sec)	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.		
JA980209	JA	J01	8.8	6.7	8	40	2	0.5	5.94	7.5	11.41	96.2	5.84	15.7	10.48	93.0		
JA980209	JA	J05	6.1	9.4	3	40	2	0.4	6.04	6.6	11.03	92.7	6.13	11.6	10.38	90.3		
JA980209	JA	J13	14.3	10.0	5	20	2	0.1	6.05	1.8	10.87	88.5	6.36	7.1	10.19	86.6		
JA980209	JA	J17	7.6	9.0	6	20	2	0.1	6.03	0.1	11.02	88.7	5.75	0.7	10.95	87.8		
JA980209	JA	J24	8.2	8.0	2	40	2	0.1	5.84	0.0	11.34	90.7	5.82	0.0	11.30	90.4		
JA980209	JA	J27	9.4	10.0	1	20	2	0.2	5.58	0.0	11.41	90.7	5.53	0.0	11.42	89.7		
JA980210	JA	J35	8.0	6.3	0	0	4	0.1	5.66	0.0	11.14	88.7	5.65	0.0	11.14	88.7		
JA980210	JA	J40	6.4	8.4	0	0	4	0.1	5.46	0.0	10.82	85.7	5.47	0.0	10.92	86.5		
JA980209	JA	2	2.7	9.0	3	20	2	0.1	5.78	10.0	11.61	99.1	5.77	10.0	11.45	97.7		
JA980209	JA	4	7.6	6.9	5	40	2	0.5	6.08	5.7	11.03	92.2	6.07	10.6	10.44	90.1		
JA980209	JA	5	8.5	7.7	5	40	2	0.6	6.11	6.0	10.77	90.3	6.01	9.8	10.46	89.7		
JA980209	JA	7	15.5	7.2	4	40	2	0.7	6.01	8.4	10.65	90.5	5.83	17.4	9.91	89.0		
JA980209	JA	8	19.8	6.7	8	40	2	0.8	5.94	8.2	11.05	93.6	5.92	18.4	9.97	90.3		
JA980209	JA	10	2.7	10.0	5	20	2	0.1	5.93	0.1	11.26	90.4	5.88	0.1	11.19	89.7		
JA980209	JA	12	7.9	10.0	5	20	2	0.1	5.92	0.2	10.99	88.2	5.78	0.3	10.95	87.6		
JA980209	JA	14	13.7	8.0	3	20	2	0.2	6.16	2.6	11.06	90.8	6.35	7.1	10.42	88.5		
JA980209	JA	16	3.0	9.0	1	20	2	0.1	6.73	0.0	11.36	93.0	6.74	0.0	11.15	91.3		
JA980209	JA	17	4.6	9.0	1	20	2	0.2	5.84	0.0	11.04	88.3	5.76	0.0	11.02	88.0		
JA980210	JA	19	13.3	10.4	0	0	4	0.1	5.86	0.0	10.50	84.1	5.61	0.0	10.70	85.1		
JA980210	JA	20	14.8	10.1	0	0	1	0.1	5.61	0.0	10.58	84.2	5.52	0.0	10.80	85.7		
JA980210	JA	21	3.8	4.4	0	0	4	0.1	5.40	0.0	10.90	86.2	5.40	0.0	11.02	87.2		
JA980210	JA	24	4.5	10.7	0	0	4	0.1	5.51	0.0	10.09	80.1	5.49	0.0	11.08	87.9		
RA980211	RA	R02	18.3	9.9	3	180	1	1.4	6.35	8.1	11.90	101.7	5.29	12.0	10.63	90.8		
RA980213	RA	R10	18.3	9.3	1	320	1	0.9	6.48	6.6	10.31	87.6	5.58	15.3	9.68	85.2		
RA980213	RA	R15	15.3	11.1	3	320	1	0.6	6.74	5.8	9.88	84.0	5.77	9.7	11.30	96.2		
RA980213	RA	R20	60.9	9.7	4	340	1	0.5	6.86	5.2	9.91	84.2	5.77	11.1	9.42	81.0		
RA980212	RA	R25	7.5	12.9	7	320	1	0.2	6.22	4.2	10.50	87.2	5.74	7.4	10.50	88.0		
RA980212	RA	R30	5.7	13.8	8	320	1	0.1	6.25	1.5	10.54	86.1	5.99	1.8	10.40	84.5		
RA980212	RA	R35	5.3	13.2	7	320	1	0.1	6.00	0.0	10.24	82.3	5.92	0.0	10.57	84.7		
RA980212	RA	R40	4.3	13.4	8	320	1	0.1	6.11	0.0	10.67	86.0	6.01	0.0	10.77	86.5		
RA980211	RA	2	3.7	10.9	5	160	1	1.3	6.21	7.6	11.90	101.1	5.65	9.1	11.34	95.9		
RA980212	RA	4	4.9	14.4	6	320	1	1.1	6.99	7.4	11.20	96.8	6.25	9.9	10.20	88.0		
RA980211	RA	5	11.3	10.6	4	180	6	1.4	6.15	7.9	12.80	108.8	5.37	11.9	10.54	90.2		
RA980213	RA	8	15.0	7.7	1	320	1	1.1	6.50	7.6	10.63	90.9	5.56	13.4	10.28	89.3		
RA980212	RA	9	3.5	15.8	5	320	1	1.2				7.23	7.6	11.30	98.4			
RA980212	RA	11	5.0	14.5	5	320	1	1.0	7.54	7.6	10.80	94.8	6.25	9.2	10.80	92.8		
RA980213	RA	14	12.8	9.0	3	320	1	0.6	6.65	5.4	10.25	86.7	5.72	11.5	9.54	82.1		
RA980213	RA	16	15.5	10.0	4	320	1	0.7	6.61	6.6	10.12	86.2	5.80	11.2	9.55	82.2		
RA980212	RA	18	4.2	13.5	8	320	1	0.2	6.74	5.0	10.07	85.2	6.72	5.0	10.23	86.5		
RA980213	RA	19	4.6	10.2	4	340	1	0.5	6.34	6.8	9.53	80.8	5.83	10.4	9.38	80.4		
RA980212	RA	21	9.2	14.2	7	320	1	0.4	6.87	5.0	10.59	89.9	5.74	10.5	10.00	85.6		
RA980212	RA	22	9.0	14.2	8	320	1	0.3	6.61	5.0	10.46	88.2	5.78	9.4	9.92	84.3		
RA980212	RA	24	3.0	14.3	8	320	1	0.1	6.18	0.0	9.90	79.9	6.03	0.0	10.54	84.7		
RA980212	RA	25	5.7	15.4	8	320	1	0.1	5.98	0.0	10.29	82.6	5.96	0.0	10.57	84.8		
YK980203	YK	Y02	12.0	9.1	5	40	2	1.5	6.60	13.0	11.16	99.2	6.08	18.0	10.12	91.8		
YK980203	YK	Y05	14.1	9.8	5	40	6	1.2	6.53	12.0	10.79	95.1	6.07	18.0	10.18	92.3		
YK980203	YK	Y10	9.3	9.7	2	360	2	0.7	6.30	10.1	10.26	88.8	6.40	16.7	9.76	88.4		
YK980203	YK	Y15	8.5	10.0	3	360	2	0.2	6.05	3.9	10.13	83.6	6.32	13.1	9.51	84.0		
YK980203	YK	Y20	7.0	9.3	3	360	2	0.2	5.82	1.3	10.02	80.8	6.07	5.3	9.73	81.1		
YK980203	YK	Y25	7.3	9.4	4	360	2	0.1	5.51	0.0	10.12	80.3	5.53	0.0	9.88	78.4		
YK980203	YK	Y30	4.2	7.7	1	90	2	0.1	5.53	0.0	10.57	83.9	5.53	0.0	9.85	78.2		
YK980203	YK	Y35	6.5	7.5	1	90	2	0.1	5.45	0.0	9.71	76.9	5.45	0.0	9.56	75.7		
YK980203	YK	Y40	3.4	9.1	1	90	2	0.1	5.60	0.0	9.90	78.7	5.60	0.0	9.71	77.2		
YK980203	YK	1	3.1	8.2	6	40	6	1.5	6.64	15.7	10.78	97.6	6.63	15.8	10.93	99.0		
YK980203	YK	3	4.5	8.1	6	40	6	1.5	6.36	16.7	9.86	89.2	6.14	17.7	10.55	95.6		
YK980203	YK	6	10.8	8.4	3	40	6	1.5	6.30	16.8	10.46	94.6	6.09	18.0	10.55	95.7		
YK980203	YK	7	19.2	8.8	7	90	2	1.3	6.61	12.8	10.94	97.1	6.04	18.1	10.25	92.9		
YK980203	YK	8	17.3	8.6	6	40	6	1.0	6.46	11.8	11.26	98.9	6.35	16.8	10.30	93.3		
YK980203	YK	9	3.2	9.4	6	40	2	0.5	6.38	8.9	11.29	97.1	6.34	11.6	11.11	97.2		
YK980203	YK	11	7.4	10.3	3	360	2	0.7	6.30	9.2	10.38	89.3	6.39	15.8	9.75	87.8		
YK980203	YK	14	11.6	9.7	3	360	2	0.5	6.32	9.5	10.07	86.8	6.38	15.3	9.81	88.0		
YK980203	YK	15	3.5	8.8	4	360	2	0.1	5.53	0.0	10.53	83.6	5.53	0.0	10.50	83.3		
YK980203	YK	16	2.6	6.9	2	360	2	0.1	5.27	0.0	10.50	82.8	5.27	0.0	10.55	83.2		
YK980203	YK	18	5.1	10.3	4	360	2	0.1	5.38	0.0	10.21	80.7	5.50	0.0	9.85	78.1		
YK980203	YK	19	9.3	9.9	3	360	2	0.2	5.88	2.2	10.06	81.8	6.08	6.2	9.90	83.0		
YK980203	YK	20	8.1	9.3	4	360	2	0.1	5.43	0.0	10.26	81.2	5.48	0.0	9.97	79.0		

Table 31.
June 1998

System+ Cruise Number	Stat # River Mile	Depth (m)	Air		Wind		Weather		Surface				Bottom			
			Temp. (C)	Speed m/sec	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	
JA980605	JA J01	7.0	21.1	8	340	2	1.5	22.35	15.0	8.05	101.1	17.84	23.0	4.95	59.8	
JA980605	JA J05	5.2	20.7	11	340	2	1.0	22.96	11.8	7.69	95.9	22.15	14.7	6.34	79.2	
JA980605	JA J13	13.1	22.8	2	40	1	0.7	23.98	8.0	8.23	102.3	20.42	18.1	4.61	56.9	
JA980605	JA J17	5.5	23.8	2	40	1	0.6	25.33	2.8	7.53	93.1	23.90	7.0	5.58	68.9	
JA980605	JA J24	6.6	24.6	8	40	1	0.3	25.96	1.6	6.98	86.7	25.23	2.6	5.96	73.5	
JA980605	JA J27	8.5	22.6	2	40	1	0.3	26.46	0.3	7.31	91.0	25.10	3.5	4.93	61.0	
JA980608	JA J35	7.0	19.3	8	320	0	0.5	23.44	0.0	6.68	78.5	23.45	0.0	6.67	78.4	
JA980608	JA J40	2.7	19.2	6	320	0	0.5	22.76	0.0	8.50	98.6	22.77	0.0	8.37	97.1	
JA980605	JA 1	2.1	21.3	9	40	2	0.2	23.57	10.0	7.18	89.6	23.57	10.0	6.72	83.9	
JA980605	JA 3	4.3	21.1	11	40	2	0.4	23.65	10.5	6.93	86.9	23.11	12.6	6.24	78.4	
JA980605	JA 6	11.9	21.0	9	40	2	0.9	23.07	11.7	7.65	95.5	20.33	18.4	5.64	69.6	
JA980605	JA 7	18.3	21.2	11	340	2	1.4	22.44	14.8	8.25	103.7	16.36	25.4	4.63	55.1	
JA980605	JA 8	17.1	20.9	10	340	2	1.4	22.50	14.8	8.13	102.3	16.44	25.3	4.69	55.9	
JA980605	JA 10	3.0	23.2	1	40	1	0.8	24.74	5.5	6.56	81.5	22.83	11.6	4.92	61.1	
JA980605	JA 11	5.2	22.9	5	40	1	0.7	23.89	8.2	8.93	111.0	22.52	13.2	5.34	66.6	
JA980605	JA 13	11.0	23.0	2	40	1	0.8	23.95	7.2	7.94	98.2	20.72	17.3	4.50	55.6	
JA980605	JA 15	3.0	24.5	2	40	1	0.6	25.57	2.8	6.94	86.2	24.38	5.1	5.69	70.1	
JA980605	JA 18	7.0	23.4	1	40	1	0.3	26.33	1.2	7.37	92.0	24.87	4.1	5.34	66.0	
JA980605	JA 19	11.6	24.7	6	40	1	0.3	26.64	1.2	7.67	96.3	24.74	4.3	5.64	69.6	
JA980608	JA 20	9.4	19.7	8	320	0	0.5	23.08	0.0	7.03	82.1	23.09	0.0	6.97	81.4	
JA980608	JA 21	1.8	18.3	1	340	0	0.4	22.05	0.1	7.40	84.8	22.05	0.1	7.50	85.9	
JA980608	JA 24	4.3	20.4	8	320	0	0.4	23.53	0.0	7.77	91.5	23.51	0.0	7.59	89.3	
RA980601	RA R02	17.1	26.1	9	360	1	1.8	23.62	7.7	7.22	89.0	18.71	14.9	4.29	50.2	
RA980601	RA R10	17.4	26.1	2	360	0	1.0	23.56	7.7	6.95	85.6	18.81	13.5	3.37	39.2	
RA980602	RA R15	14.5	22.4	5	140	1	1.4	23.16	6.6	7.24	87.9	19.06	13.3	2.75	32.1	
RA980602	RA R20	13.9	24.0	5	180	1	1.1	23.32	6.5	7.02	85.5	19.22	12.4	2.34	27.3	
RA980602	RA R25	7.9	24.2	7	140	1	0.7	24.66	4.5	7.14	88.1	20.66	9.3	1.77	20.8	
RA980602	RA R30	5.5	24.8	6	140	1	0.4	25.09	3.0	7.95	98.0	24.74	3.5	6.48	79.6	
RA980602	RA R35	5.1	26.2	7	140	1	0.4	25.58	1.4	7.42	91.5	25.18	1.8	6.44	79.0	
RA980602	RA R40	3.9	29.1	5	140	1	0.4	26.06	0.2	6.86	84.7	25.87	0.2	6.54	80.5	
RA980601	RA 2	3.0	25.2	4	20	2	2.0	24.26	8.8	7.23	90.8	23.99	9.1	7.00	87.6	
RA980601	RA 3	8.2	23.9	3	20	1	2.0	23.52	7.9	7.42	91.4	19.35	14.0	5.17	61.0	
RA980601	RA 6	8.8	26.2	4	360	1	1.8	23.72	7.3	7.63	94.0	19.07	13.6	4.11	48.1	
RA980601	RA 8	19.2	25.9	5	360	0	1.5	22.97	7.4	6.75	82.1	18.79	14.1	3.43	40.0	
RA980601	RA 9	2.7	25.8	2	80	0	1.0	25.49	7.4	7.18	91.4	25.12	7.4	6.97	88.2	
RA980601	RA 11	5.2	25.5	8	340	0	1.2	23.81	7.4	7.42	91.6	23.53	7.4	7.14	87.7	
RA980602	RA 13	10.6	22.6	4	140	1	1.3	23.30	7.1	6.87	83.9	19.20	13.1	2.96	34.6	
RA980602	RA 16	14.0	23.3	5	180	1	1.2	23.20	6.7	6.99	85.0	19.27	12.1	2.29	26.7	
RA980602	RA 17	3.7	25.4	6	140	1	0.8	24.09	5.1	7.61	93.2	21.85	8.3	1.76	21.1	
RA980602	RA 19	7.0	23.5	7	140	1	0.9	23.58	5.7	7.61	92.7	20.05	10.2	1.85	21.6	
RA980602	RA 21	8.4	25.1	7	140	1	1.0	24.15	5.2	9.19	112.8	19.38	11.5	1.66	19.3	
RA980602	RA 22	10.6	23.5	6	140	1	0.9	23.50	6.4	7.51	91.7	19.32	11.7	1.80	20.9	
RA980602	RA 23	1.6	26.3	6	140	1	0.4					25.63	1.4	8.19	101.1	
RA980602	RA 26	4.4	27.0	5	140	1	0.4	25.87	0.9	7.33	90.6	25.63	1.1	6.82	84.0	
YK980611	YK Y02	11.4	20.4	2	70	2	1.0	20.96	13.6	6.46	78.4	19.87	17.7	2.63	32.0	
YK980611	YK Y05	13.4	20.0	3	70	2	1.0	20.93	13.9	6.38	77.5	20.49	15.6	4.46	54.3	
YK980610	YK Y10	7.6	18.1	1	140	2	0.8	20.50	13.1	5.90	70.8	20.90	13.6	5.30	64.3	
YK980610	YK Y15	9.1	18.8	1	140	2	0.6	21.10	10.3	5.60	66.8	21.30	11.7	4.60	55.6	
YK980610	YK Y20	7.0	19.1	1	140	2	0.5	21.30	9.1	5.70	67.8	21.50	9.9	5.00	60.0	
YK980610	YK Y25	7.9	19.8	1	140	2	0.5	21.60	8.2	6.30	75.0	21.40	8.9	5.20	61.9	
YK980610	YK Y30	6.7	19.3	1	140	2	0.5	22.30	4.1	5.70	67.1	22.20	4.6	5.20	61.3	
YK980610	YK Y35	6.4	20.6	1	140	2	0.2	23.00	0.8	5.50	64.4	22.90	1.0	5.20	60.9	
YK980610	YK Y40	4.6	20.2	1	140	2	0.3	22.80	0.0	6.20	72.0	22.80	0.0	5.90	68.5	
YK980611	YK 2	2.4	20.1	2	70	2	0.4	20.86	13.6	6.27	76.0	20.86	13.7	6.21	75.3	
YK980611	YK 4	4.0	20.7	2	90	2	1.0	21.11	13.4	7.27	88.4	21.11	13.5	7.21	87.7	
YK980611	YK 5	11.9	20.2	3	70	2	1.1	20.95	14.1	6.13	74.6	19.07	20.2	1.67	20.3	
YK980611	YK 7	21.7	20.8	2	70	2	1.3	21.12	13.6	7.19	87.5	18.54	21.7	1.74	21.2	
YK980611	YK 8	15.1	20.1	3	70	2	1.2	20.90	14.1	6.13	74.5	18.83	21.0	1.57	19.1	
YK980610	YK 10	2.4	18.7	1	140	2	0.3					20.55	11.9	6.02	71.8	
YK980610	YK 12	4.8	18.6	1	140	2	0.6	20.90	11.1	5.97	71.3	20.80	11.5	5.70	68.1	
YK980610	YK 14	9.4	18.7	1	140	2	0.6	21.50	10.5	5.80	69.8	21.30	12.4	4.30	52.2	
YK980610	YK 15	3.7	23.3	0	0	2	0.5	22.50	6.9	6.40	76.9	21.40	7.9	5.60	66.3	
YK980610	YK 16	3.4	21.6	0	0	2	0.4	22.10	7.4	6.20	74.2	21.60	7.9	5.80	68.9	
YK980610	YK 18	5.5	19.1	1	140	2	0.5	21.50	8.5	5.20	61.9	21.40	8.9	5.40	64.3	
YK980610	YK 19	8.5	20.1	1	140	2	0.6	21.50	8.3	5.40	64.2	21.30	8.3	4.80	56.8	
YK980610	YK 20	8.2	24.1	0	0	2	0.5	22.10	6.8	6.10	72.7	21.80	7.3	5.80	68.9	

Table 33. Survey not completed due to engine failure.

August 1998

System+	Stat #	River	Depth (m)	Air		Wind		Weather		Surface				Bottom			
				Temp. (C)	Speed (m/sec)	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	
JA980804	JA	J01	8.1	24.4	8	40	1	1.1	24.71	19.1	8.20	110.1	24.46	19.5	7.24	97.0	
JA980804	JA	J05	5.5	24.7	8	40	1	0.9	25.30	17.8	7.57	101.9	25.09	17.9	7.24	97.2	
JA980804	JA	J13	7.6	27.4	8	40	1	1.1	26.32	15.1	8.76	118.2	25.86	16.3	7.20	97.1	
JA980805	JA	J17	6.4	25.2	6	360	1	1.4	26.29	11.4	7.43	98.2	26.01	13.6	6.42	85.5	
JA980805	JA	J24	11.0	25.6	5	20	1	1.1	26.87	8.8	6.91	90.9	26.67	10.0	6.13	80.9	
JA980805	JA	J27	8.8	26.7	3	20	1	1.1	27.44	7.1	6.82	89.8	26.98	8.8	5.85	77.1	
JA980805	JA	J35	7.3	29.0	1	20	1	0.8	27.78	3.7	7.22	93.8	27.26	4.9	6.72	87.1	
JA980805	JA	J40	5.5	28.4	1	40	1	0.7	28.17	2.8	7.25	94.4	26.91	3.2	6.44	82.1	
JA980804	JA	1	2.2	26.4	8	40	1	0.5	24.99	16.2	7.96	105.6	24.82	16.2	7.63	100.9	
JA980804	JA	4	6.1	25.7	8	40	1	0.8	25.76	15.0	7.80	104.2	25.46	16.9	6.30	84.6	
JA980804	JA	6	10.9	26.9	8	40	1	0.9	25.87	17.0	7.28	98.5	25.34	18.3	6.42	86.7	
JA980804	JA	7	18.1	24.8	8	40	1	1.0	25.00	19.0	7.66	103.3	21.92	23.4	4.70	61.5	
JA980804	JA	8	17.1	24.7	8	40	1	1.1	25.00	19.0	7.61	102.6	22.07	23.2	4.73	62.0	
JA980805	JA	10	3.0	23.8	8	360	1	0.7	26.16	9.8	7.04	92.0	25.96	10.1	6.66	86.8	
JA980804	JA	12	4.0	27.8	8	40	1	1.3	26.73	11.6	6.93	92.4	25.96	13.6	6.27	83.4	
JA980804	JA	14	11.6	27.4	8	40	1	1.2	26.77	11.8	7.45	99.5	25.80	15.7	5.72	76.8	
JA980805	JA	16	3.4	26.3	4	20	1	1.0	27.27	8.1	7.17	94.6	26.87	8.9	6.17	81.2	
JA980805	JA	18	4.0	27.4	3	20	1	0.8	27.59	7.8	7.29	96.6	27.03	8.0	6.31	82.9	
JA980805	JA	19	9.4	25.7	3	20	1	1.2	26.83	9.0	6.84	90.0	26.58	10.2	6.06	79.9	
JA980805	JA	20	11.0	29.0	1	20	1	0.6	27.28	3.6	6.92	89.1	27.27	4.6	6.57	85.0	
JA980805	JA	22	2.7	24.5	1	40	0	0.5	27.15	2.0	7.51	95.6	26.87	2.2	6.56	83.2	
JA980805	JA	24	7.0	29.6	4	320	0	0.7	27.43	1.9	7.67	98.0	26.70	2.5	6.65	84.2	
RA980807	RA	R02	17.1	25.1	8	70	2	1.8	26.42	13.4	7.10	95.1	25.92	14.4	2.70	36.0	
RA980807	RA	R10	16.8	26.1	8	70	2	1.7	27.00	12.5	8.15	109.7	26.73	15.0	0.13	1.8	
RA980807	RA	R15	15.8	28.2	8	70	1	1.9	27.00	12.0	7.60	102.0	26.50	14.2	0.19	2.6	
RA980807	RA	R20	16.8	28.1	8	70	1	1.7	27.15	11.7	7.40	99.4	26.57	13.3	0.67	9.0	
RA980807	RA	2	2.4	25.9	8	70	2	1.7	26.83	12.8	6.60	88.7	26.72	13.0	5.80	77.9	
RA980807	RA	3	9.1	26.2	8	70	2	1.7	26.81	12.7	7.42	99.7	26.34	13.9	1.90	25.5	
RA980807	RA	6	9.8	24.4	8	70	2	1.8	26.25	13.6	6.10	81.5	26.22	13.7	5.50	73.5	
RA980807	RA	8	12.8	25.1	8	70	2	2.0	26.40	13.2	6.50	86.9	26.12	14.2	1.78	23.8	
RA980807	RA	10	2.7	26.9	8	70	1	2.0	27.07	12.4	8.00	107.8	27.09	12.5	7.80	105.2	
RA980807	RA	11	4.9	28.3	8	70	1	1.9	27.20	12.2	7.70	103.8	26.81	12.2	7.21	96.6	
RA980807	RA	14	10.4	27.4	8	70	1	2.0	27.12	12.0	7.60	102.2	26.53	13.8	0.23	3.1	
RA980807	RA	16	15.5	27.2	8	70	1	2.0	26.96	12.3	7.87	105.7	26.42	14.8	0.16	2.2	
RA980811	RA	20	7.1	28.0	1	320	4	0.5	27.57	10.6	5.63	75.7	27.28	10.7	5.00	67.0	
RA980811	RA	22	9.0	28.4	4	320	4	0.5	27.88	10.8	6.20	83.9	27.23	11.2	4.73	63.5	
YK980804	YK	Y02	11.2	22.9	8	40	1	1.4	25.73	17.8	6.68	90.6	25.75	18.1	6.03	82.0	
YK980804	YK	Y05	13.8	21.7	5	40	1	1.2	25.86	17.6	6.95	94.4	23.63	22.0	0.82	11.0	
YK980803	YK	Y10	8.2	27.0	5	40	0	1.1	26.92	15.7	6.83	93.5	26.32	17.0	4.21	57.4	
YK980803	YK	Y15	8.2	23.0	2	40	0	0.9	26.33	14.4	5.86	78.8	26.36	17.9	2.04	28.0	
YK980803	YK	Y20	6.4	24.0	2	40	0	1.0	26.31	13.2	6.26	83.6	26.72	16.5	2.41	33.0	
YK980803	YK	Y25	7.3	25.0	2	40	0	1.1	26.50	12.4	6.51	86.8	27.16	14.4	3.04	41.5	
YK980803	YK	Y30	5.5	26.0	5	40	0	0.9	27.22	9.0	4.99	66.1	27.07	9.5	4.61	61.1	
YK980803	YK	Y35	5.2	25.0	5	40	0	1.0	26.02	5.8	6.01	76.6	27.65	6.2	5.11	67.2	
YK980803	YK	Y40	3.7	28.0	5	40	0	1.0	27.23	0.1	5.55	70.0	27.18	2.4	4.83	61.6	
YK980804	YK	1	2.8	24.8	8	40	1	1.3	24.96	17.5	7.19	96.0	25.03	17.6	6.90	92.3	
YK980804	YK	3	4.9	24.2	8	40	1	1.3	24.93	17.9	6.82	91.3	24.94	17.9	6.67	89.3	
YK980804	YK	5	12.5	24.4	8	40	1	1.8	25.25	17.7	7.11	95.6	25.07	18.6	5.09	68.6	
YK980804	YK	7	17.0	23.7	5	40	1	1.5	25.23	17.7	7.05	94.7	24.02	21.2	1.06	14.2	
YK980803	YK	8	13.4	26.0	5	40	0	1.3	26.55	16.2	7.46	101.7	25.77	17.6	5.66	76.7	
YK980803	YK	10	1.5	22.0	5	40	0	0.7	26.07	13.8	5.41	72.2	26.15	14.3	5.63	75.4	
YK980803	YK	12	11.3	20.0	2	40	0	0.9	26.28	15.3	6.28	84.8	26.26	17.1	3.67	50.0	
YK980803	YK	13	9.3	23.0	3	40	0	1.1	26.15	15.0	6.92	93.1	26.26	17.6	3.73	51.0	
YK980803	YK	15	2.4	25.0	3	40	0	0.8	26.96	11.8	5.23	70.1	26.86	12.1	4.92	65.9	
YK980803	YK	16	3.4	27.0	5	40	0	1.0	27.52	9.7	6.26	83.7	27.26	10.5	5.10	68.2	
YK980803	YK	17	6.4	24.0	1	40	0	1.0	26.08	13.1	5.82	77.3	26.80	16.1	2.40	32.8	
YK980803	YK	19	9.1	23.0	3	40	0	1.2	25.80	13.2	5.64	74.6	26.59	17.3	3.81	52.3	
YK980803	YK	20	4.0	26.0	5	40	0	1.0	27.62	8.8	5.96	79.4	27.37	9.6	5.87	78.2	

Table 34. (Continued).
September 1998

System+ Cruise Number	Stat # River Mile	Depth (m)	Air		Wind		Weather		Surface				Bottom			
			Temp. (C)	Speed (m/sec)	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	
YK980911	YK Y02	10.6	21.2	3	360	1	0.9	24.61	19.2	6.02	80.7	24.52	19.3	5.94	79.5	
YK980911	YK Y05	12.0	19.0	2	360	1	1.0	24.55	19.2	5.80	77.7	24.62	19.2	5.72	76.7	
YK980910	YK Y10	7.8	18.5	6	320	1	0.5	23.89	17.5	6.98	91.5	24.37	18.0	6.53	86.6	
YK980910	YK Y15	7.8	18.7	6	320	1	0.4	23.17	14.8	7.52	95.8	23.39	15.1	6.90	88.4	
YK980910	YK Y20	5.8	19.1	7	320	1	0.2	23.48	14.0	7.10	90.5	23.50	14.0	6.81	86.9	
YK980910	YK Y25	7.3	20.3	7	320	1	0.3	23.82	12.4	6.40	81.4	23.80	12.7	6.14	78.2	
YK980910	YK Y30	5.0	21.3	3	320	1	0.4	25.13	8.2	5.70	72.4	24.75	9.0	5.26	66.7	
YK980910	YK Y35	6.6	22.0	5	320	1	0.6	24.77	4.6	6.06	75.0	24.73	4.7	5.66	70.0	
YK980910	YK Y40	4.3	23.3	5	320	1	0.4	25.21	2.5	6.24	76.9	25.09	2.6	5.75	70.7	
YK980911	YK 2	3.0	17.7	2	360	1	0.9	24.04	19.2	6.04	80.1	24.04	19.2	5.97	79.2	
YK980911	YK 4	7.6	23.2	3	360	1	.	24.36	19.6	6.40	85.6	23.77	19.7	6.30	83.4	
YK980911	YK 5	9.9	22.1	3	360	1	1.2	24.49	19.4	6.06	81.2	24.08	19.8	5.98	79.7	
YK980911	YK 7	15.1	19.7	3	360	1	0.8	24.64	19.3	5.87	78.8	24.64	19.3	5.75	77.2	
YK980910	YK 8	13.7	23.7	6	320	1	0.3	25.06	19.2	6.38	86.2	24.94	19.3	5.91	79.7	
YK980910	YK 9	3.1	24.1	6	320	1	0.3	23.39	18.3	8.29	108.2	23.73	18.4	8.13	106.8	
YK980910	YK 12	8.2	18.4	7	320	1	0.3	23.31	15.1	7.50	95.9	23.32	15.7	6.91	88.7	
YK980910	YK 13	10.4	23.2	5	320	1	0.7	24.91	19.1	6.31	85.0	25.84	19.1	5.96	81.6	
YK980910	YK 15	2.4	20.7	7	320	1	0.3	24.17	10.8	6.54	82.9	24.13	11.0	6.02	76.3	
YK980910	YK 16	1.7	22.2	5	320	1	0.3	24.14	12.2	7.31	93.4	24.01	12.3	6.64	84.6	
YK980910	YK 17	5.9	19.1	7	320	1	0.2	23.47	13.8	6.88	87.6	23.43	13.9	6.68	85.0	
YK980910	YK 19	8.5	20.7	7	320	1	0.3	23.86	12.2	6.46	82.1	23.87	13.0	6.15	78.5	
YK980910	YK 20	8.2	20.8	7	320	1	0.3	23.83	12.1	6.43	81.6	23.74	12.6	6.12	77.8	

Tables 38-49. Atmospheric and hydrographic data for the Chesapeake Bay by month. The survey is not performed in January or March.

- Explanation: A. To conserve space, some variables are presented as coded values. Code keys are presented in Table 1 (p. 11).
- B. Due to measurement error (calibration differences and instrument drift) associated with the hydrographic equipment used to measure temperature, salinity and dissolved oxygen, some calculated saturations presented here are greater than 100%.

Table 38.
January 1998

System+ Cruise Number	Stat # River Mile	River Depth (m)	Air		Wind		Weather		Surface				Bottom			
			Temp. (C)	Temp. (C)	Speed m/sec	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.
NoData.																

Table 39.
February 1998

System+ Cruise Number	Stat # River Mile	River Depth (m)	Air		Wind		Weather		Surface				Bottom			
			Temp. (C)	Temp. (C)	Speed m/sec	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.
CL980202	CL	2	7.1	7.5	1	40	0	1.3	5.93	19.1	10.30	93.7	5.93	19.2	10.37	94.4
CL980202	CL	4	8.0	6.1	2	40	0	1.6	5.90	18.3	10.64	96.2	5.91	18.4	10.88	98.5
CL980202	CL	5	8.8	10.4	1	40	0	2.0	6.50	19.7	10.53	97.5	6.06	24.7	9.60	91.0
CL980202	CL	6	8.6	10.9	3	90	0	0.9	5.98	26.9	9.97	95.7	5.87	28.6	9.89	95.7
CL980202	CL	9	12.5	8.2	3	40	0	1.6	5.89	17.3	10.50	94.3	6.09	23.5	9.70	91.2
CL980202	CL	10	9.8	9.4	2	40	0	1.8	5.59	17.1	10.60	94.4	6.05	23.0	9.88	92.5
CL980202	CL	11	13.0	10.1	2	70	0	1.0	6.00	27.9	10.00	96.6	5.84	29.6	9.89	96.3
CL980202	CL	12	10.2	11.3	2	40	2	1.9	6.65	18.0	10.65	97.9	6.05	22.4	10.00	93.3
CL980202	CL	13	22.2	9.6	3	40	1	1.6	6.19	19.8	10.45	96.1	5.98	29.4	9.40	91.7
CL980202	CL	14	14.8	8.3	3	40	1	1.7	5.96	16.8	10.43	93.6	6.09	25.9	9.40	89.8
CL980202	CL	16	14.0	10.2	3	40	0	2.0	6.47	19.2	10.66	98.4	6.12	24.1	9.60	90.7
CL980218	CL	17	8.8	12.6	5	200	1	1.1	7.27	14.6	11.16	101.8	6.27	23.0	10.37	97.6
CL980218	CL	20	7.0	11.8	5	200	1	0.8	7.22	13.8	11.30	102.5	6.27	21.0	9.61	89.3
CL980202	CL	22	7.1	9.3	1	70	0	1.8	6.52	20.0	10.41	96.7	6.13	22.2	10.47	97.7
CL980218	CL	24	8.2	12.3	2	180	0	1.6	6.94	18.4	10.94	101.5	6.25	24.3	9.70	92.1
CL980202	CL	25	10.7	10.9	2	90	0	2.1	6.58	17.7	10.71	98.1	5.99	21.5	10.05	93.1
CL980218	CL	26	11.6	12.8	6	200	1	1.5	7.64	13.3	10.93	99.8	6.27	26.5	9.37	90.3
CL980218	CL	27	12.2	11.4	1	180	0	1.8	6.77	17.0	10.67	97.7	6.24	24.2	9.44	89.5
CL980210	CL	28	13.1	11.8	1	160	1	1.6	5.43	12.9	11.91	102.7	5.75	21.1	9.96	91.5
CL980218	CL	29	15.2	12.2	5	200	0	1.7	6.69	18.2	10.33	95.2	6.52	29.5	9.24	91.3
CL980218	CL	30	25.0	12.7	2	180	0	1.5	6.90	16.9	10.47	96.1	6.42	29.5	9.13	90.0
CL980218	CL	32	12.8	14.7	2	180	1	1.6	7.15	13.4	11.38	102.7	6.22	23.9	9.83	93.0
CL980210	CL	35	5.7	9.2	1	160	1	1.5	5.28	11.3	11.20	95.2	5.27	11.3	11.34	96.4
CL980211	CL	36	8.8	10.0	4	180	1	1.6	6.07	10.8	12.69	109.7	5.32	14.1	12.20	105.8
CL980211	CL	37	4.9	12.3	1	220	1	1.5	6.71	22.0	10.43	98.6	6.33	22.5	10.12	95.1
CL980211	CL	39	7.0	8.9	2	180	4	1.6	6.34	16.6	11.04	99.8	6.11	20.7	10.12	93.5
CL980211	CL	41	9.8	9.2	3	220	4	1.6	5.86	17.7	11.36	102.3	5.89	21.1	10.20	94.0
CL980211	CL	42	13.1	10.1	3	90	2	2.0	5.54	11.5	12.66	108.5	5.70	18.8	9.86	89.1
CL980211	CL	43	13.1	9.3	2	110	2	2.0	5.88	12.3	12.16	105.7	5.84	21.3	10.14	93.4
CL980211	CL	44	12.2	9.9	1	140	4	1.9	6.12	13.8	12.12	107.0	5.88	21.8	9.43	87.3
CL980211	CL	45	14.0	9.2	2	200	1	1.5	6.42	16.9	11.40	103.5	6.07	22.8	9.84	92.1
CL980211	CL	46	14.0	8.7	3	180	4	1.8	5.93	13.3	12.52	109.6	5.88	22.7	9.58	89.2
CL980211	CL	48	13.4	8.7	1	180	2	2.0	5.55	9.3	12.37	104.5	5.72	19.4	9.68	87.8
CL980210	CL	65	2.7	10.3	1	160	1	0.8	5.85	13.9	10.83	95.0	5.81	14.0	10.96	96.1
CL980202	CL	72	4.1	11.2	3	40	0	0.8	6.01	27.0	9.70	93.2	5.90	27.2	9.70	93.1
CL980218	CL	73	4.0	14.4	7	200	1	.	7.67	13.2	11.53	105.3	7.36	13.4	11.35	103.0
CL980202	CL	78	3.2	10.5	3	70	0	1.6	6.53	21.3	10.45	97.9	6.46	21.8	10.54	98.9
CL980211	CL	84	3.0	8.8	5	180	2	1.5	5.70	9.6	11.85	100.7	5.67	9.6	11.80	100.2
CL980211	CL	87	2.7	10.3	2	200	4	1.4	6.57	19.7	10.83	100.5	6.28	20.0	10.66	98.4

Table 40.
March 1998

System+ Cruise Number	Stat # River Mile	River Depth (m)	Air		Wind		Weather		Surface				Bottom			
			Temp. (C)	Temp. (C)	Speed m/sec	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.
NoData.																

Table 41.
April 1998

System+ Cruise Number	Stat # River Mile	River Depth (m)	Air		Wind		Weather		Surface				Bottom			
			Temp. (C)	Speed m/sec	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	
CL980407	CL	3	6.5	14.5	4	180	2	1.7	13.26	15.3	8.84	92.8	11.12	18.0	8.50	86.6
CL980406	CL	4	4.3	14.1	8	360	0	1.3	11.91	14.7	9.36	95.1	11.88	14.7	9.15	92.9
CL980407	CL	5	5.4	15.6	4	180	0	1.8	10.71	24.6	8.16	85.9	10.51	25.4	8.12	85.6
CL980407	CL	6	5.6	15.3	4	180	0	2.0	11.52	18.7	8.63	89.1	10.30	26.1	8.15	85.9
CL980407	CL	9	10.1	15.4	4	180	0	1.8	11.93	18.3	8.50	88.4	9.52	31.0	7.98	85.3
CL980407	CL	10	9.8	15.3	4	180	2	2.0	12.50	15.7	8.66	89.7	10.13	26.1	7.81	82.0
CL980406	CL	11	10.4	14.7	7	360	0	2.3	12.41	14.6	9.74	100.0	10.37	22.1	8.14	83.7
CL980406	CL	12	11.3	13.1	7	360	0	1.8	11.27	15.9	9.19	92.7	10.37	24.3	7.98	83.3
CL980407	CL	13	25.5	15.4	4	180	1	1.8	11.56	18.7	8.68	89.7	9.24	31.5	7.99	85.1
CL980407	CL	14	24.8	15.1	4	180	1	1.8	12.90	17.1	8.76	92.3	9.32	31.4	7.96	84.9
CL980407	CL	16	13.3	15.7	2	140	0	2.0	11.16	16.6	8.62	87.2	9.80	29.2	7.77	82.6
CL980406	CL	17	7.0	15.4	7	360	0	1.2	12.11	15.0	9.21	94.1	10.26	16.9	8.43	83.7
CL980402	CL	18	7.0	18.8	4	270	0	1.1	14.26	14.1	8.46	90.1	11.51	15.3	8.60	86.9
CL980407	CL	21	9.5	16.1	0	0	0	2.0	10.72	16.0	8.65	86.3	10.59	23.6	7.83	81.7
CL980407	CL	23	4.5	14.9	1	220	0	2.3	10.93	19.9	8.70	89.4	10.91	21.5	8.35	86.6
CL980407	CL	25	10.2	15.4	0	0	0	2.1	10.67	15.5	8.65	85.9	10.42	23.8	7.61	79.2
CL980406	CL	26	12.2	14.4	5	360	0	1.1	11.99	15.0	8.86	90.3	10.33	24.8	6.75	70.6
CL980406	CL	27	10.4	14.2	7	20	0	1.2	11.48	15.3	9.00	90.9	10.41	22.8	8.17	84.5
CL980407	CL	28	12.1	13.3	1	220	0	2.2	11.07	13.7	9.45	93.6	10.65	23.3	7.64	79.7
CL980402	CL	29	13.1	17.6	2	270	0	1.3	10.20	16.3	8.42	83.2	10.19	18.9	7.70	77.3
CL980407	CL	31	15.6	15.0	1	220	0	2.1	10.91	12.3	9.38	91.8	10.58	24.7	6.88	72.3
CL980407	CL	32	22.6	14.1	1	220	0	2.0	10.77	12.1	9.08	88.4	10.62	25.0	7.09	74.7
CL980402	CL	33	8.1	20.3	5	270	0	1.0	10.10	13.5	9.58	92.7	9.28	14.7	9.20	88.1
CL980402	CL	35	9.2	20.2	3	270	0	1.3	12.46	11.5	9.69	97.6	8.32	15.9	7.84	74.0
CL980402	CL	37	9.0	17.3	4	220	0	1.9	12.55	13.3	9.49	96.9	10.10	17.0	8.86	87.7
CL980402	CL	39	8.5	17.9	3	220	0	1.9	12.38	12.5	10.46	105.9	11.30	13.3	10.11	100.4
CL980402	CL	41	9.8	20.7	2	270	0	1.2	12.18	11.4	10.60	106.1	8.08	15.8	8.82	82.7
CL980402	CL	42	10.4	19.9	3	270	0	1.6	11.82	12.1	10.40	103.7	8.45	16.0	8.05	76.2
CL980402	CL	43	12.5	17.5	3	220	0	1.7	13.22	12.3	10.50	108.1	9.58	15.2	8.64	83.5
CL980402	CL	44	10.7	19.9	4	220	0	0.7	13.63	11.7	11.44	118.4	8.84	13.3	10.00	93.9
CL980402	CL	46	17.6	18.6	4	270	0	2.1	12.65	12.5	10.30	104.9	10.01	18.1	7.65	76.1
CL980402	CL	47	18.3	18.4	4	270	0	1.9	11.74	12.5	10.82	108.0	9.97	17.2	7.81	77.2
CL980402	CL	48	15.7	19.1	3	270	0	1.9	12.00	12.5	10.95	109.9	9.74	16.1	8.28	80.8
CL980407	CL	65	4.3	15.7	2	90	2	1.9	12.44	14.3	8.95	91.7	12.00	14.8	8.94	91.0
CL980407	CL	69	3.0	14.9	2	140	0	2.1	10.63	24.1	8.35	87.5	10.56	24.8	8.32	87.4
CL980402	CL	75	2.6	20.0	4	270	0	0.5	11.23	13.5	9.20	91.4	11.08	13.5	9.35	92.5
CL980407	CL	78	3.1	14.8	1	220	0	1.8	11.22	19.8	8.63	89.2	11.05	20.5	8.48	87.7
CL980402	CL	84	3.1	19.2	4	220	0	1.3	11.41	12.1	10.75	106.2	11.41	12.1	11.13	110.0
CL980402	CL	85	3.4	19.1	4	220	0	1.0	.	.	.	.	14.54	13.4	9.90	105.6

Table 42.
May 1998

System+ Cruise Number	Stat # River Mile	Depth (m)	Air		Wind		Weather		Surface				Bottom			
			Temp. (C)	Temp. (C)	Speed m/sec	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.
CL980515	CL	1	9.1	21.9	2	110	0	1.5	15.74	15.7	9.08	100.7	15.53	16.2	7.90	87.5
CL980515	CL	2	9.1	21.9	4	110	0	1.2	15.95	15.5	8.85	98.4	15.54	16.1	8.04	89.0
CL980515	CL	4	7.9	24.3	1	140	0	1.3	17.51	14.0	10.05	114.3	15.75	14.7	8.44	93.0
CL980515	CL	5	8.2	20.3	2	110	0	1.3	17.46	19.9	8.38	98.7	14.64	22.9	8.13	92.1
CL980515	CL	6	6.7	25.2	2	180	0	1.9	16.44	17.7	9.51	108.3	14.99	22.3	7.98	90.7
CL980515	CL	7	7.9	22.8	3	110	0	1.8	16.20	17.3	9.10	102.8	14.37	26.4	8.14	93.7
CL980515	CL	9	8.5	20.9	3	110	0	1.3	16.21	15.4	8.49	94.9	15.59	16.0	8.17	90.5
CL980515	CL	10	10.4	19.9	1	20	0	.	16.27	14.9	9.05	100.9	14.41	26.7	7.35	84.8
CL980515	CL	11	10.4	24.8	2	180	0	1.8	17.14	13.5	8.79	99.0	15.84	14.7	8.20	90.6
CL980515	CL	12	11.0	24.8	1	180	0	2.2	17.41	13.3	9.36	105.8	14.94	25.2	5.86	67.7
CL980515	CL	14	13.4	24.2	1	180	0	1.7	17.72	14.3	8.65	99.0	14.57	26.5	7.02	81.2
CL980515	CL	15	14.0	24.7	1	180	0	2.4	18.12	13.5	8.98	103.1	14.46	27.5	6.99	81.2
CL980515	CL	16	14.0	24.6	1	180	0	2.3	17.44	13.4	9.22	104.4	14.44	27.6	7.64	88.7
CL980518	CL	17	7.0	22.3	3	320	0	2.5	18.54	12.4	9.75	112.1	18.06	13.4	8.82	101.1
CL980518	CL	18	6.4	24.2	1	40	1	.	20.16	10.7	10.16	119.4	16.61	16.4	7.20	81.6
CL980518	CL	20	9.1	23.8	2	20	0	2.3	20.40	9.9	10.26	120.6	16.31	15.2	7.64	85.4
CL980518	CL	21	9.1	21.3	4	40	0	2.5	18.58	11.9	10.65	122.2	15.47	20.3	7.65	86.8
CL980518	CL	22	9.1	19.5	3	40	0	2.5	18.53	12.0	10.81	124.0	15.40	23.7	7.51	86.8
CL980518	CL	24	8.8	21.2	5	20	0	2.0	18.89	12.8	11.26	130.7	17.28	18.3	8.82	102.5
CL980518	CL	25	11.0	21.5	4	20	0	2.1	18.62	10.7	10.83	123.5	15.49	20.2	6.77	76.8
CL980518	CL	26	11.9	22.8	2	20	0	1.6	20.05	10.5	11.09	129.9	15.22	21.7	6.62	75.3
CL980518	CL	27	11.0	21.1	8	20	0	2.6	19.90	12.6	10.60	125.3	15.69	21.0	7.33	83.9
CL980518	CL	28	12.5	21.2	6	20	0	1.9	19.99	12.9	10.92	129.6	15.68	20.8	7.27	83.1
CL980518	CL	29	20.4	22.9	4	40	0	2.3	18.90	11.1	11.14	128.0	15.13	23.6	6.87	79.0
CL980518	CL	30	20.7	20.6	5	40	0	3.0	18.74	11.1	10.95	125.4	15.09	23.6	6.94	79.7
CL980518	CL	32	16.2	21.6	5	20	0	2.2	19.22	11.4	11.40	132.1	15.13	23.3	6.77	77.7
CL980506	CL	33	4.3	19.6	2	360	4	1.8	17.23	12.2	8.20	91.8	16.90	12.7	7.90	88.1
CL980506	CL	34	8.8	18.1	2	320	4	2.2	17.16	11.5	9.10	101.3	15.11	14.6	5.20	56.5
CL980506	CL	35	6.4	17.9	2	320	4	2.3	17.64	11.1	9.11	102.1	16.09	13.1	6.40	70.4
CL980506	CL	38	7.9	19.9	2	360	1	2.3	17.60	19.4	9.60	113.0	15.06	25.8	5.70	66.3
CL980506	CL	39	7.9	19.7	1	340	1	2.5	18.50	20.6	9.49	114.5	15.57	24.4	6.39	74.5
CL980506	CL	40	7.6	20.3	1	340	1	2.4	17.99	19.9	9.33	111.0	16.50	21.7	7.66	89.5
CL980506	CL	41	11.3	17.9	1	320	4	2.5	16.89	11.4	9.43	104.3	14.52	15.8	4.50	48.7
CL980506	CL	42	12.8	17.0	1	320	4	2.2	16.86	11.4	9.13	100.9	14.30	15.8	3.95	42.5
CL980506	CL	43	12.2	21.1	1	40	1	2.6	18.15	18.0	9.20	108.6	14.26	26.6	4.20	48.3
CL980506	CL	44	11.3	20.4	2	20	1	2.6	18.51	19.1	9.60	114.8	14.18	26.3	4.30	49.3
CL980506	CL	45	17.4	19.6	1	360	2	2.7	18.17	11.8	9.50	108.1	14.93	18.6	5.80	64.4
CL980506	CL	46	13.4	20.3	1	360	1	2.5	17.97	11.3	9.20	103.9	14.61	16.2	5.10	55.4
CL980506	CL	48	13.1	20.9	1	40	1	2.0	18.31	17.4	9.70	114.4	14.13	26.4	4.40	50.4
CL980515	CL	68	1.8	24.8	3	140	0	1.7	17.64	13.9	9.64	109.9	17.22	13.9	10.19	115.2
CL980515	CL	70	1.8	21.0	1	110	0	1.0	15.45	22.1	8.78	100.6	14.73	24.2	8.21	93.9
CL980518	CL	74	3.0	23.2	4	40	0	2.0	18.36	13.0	10.06	115.7	18.36	13.0	10.08	115.9
CL980518	CL	79	3.0	20.2	5	20	0	2.2	18.44	15.1	10.51	122.6	17.69	17.3	9.29	108.2
CL980506	CL	81	1.8	19.1	4	360	2	1.9	.	.	.	.	17.48	11.6	8.30	93.0
CL980506	CL	86	3.0	19.9	3	360	1	2.0	18.89	13.9	7.70	90.0	18.43	14.1	8.10	93.9

Table 43.
June 1998

System+ Cruise Number	Stat # River Mile	Depth (m)	Air		Wind		Weather		Surface				Bottom			
			Temp. (C)	Temp. (C)	Speed m/sec	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.
CL980609	CL	1	5.9	21.9	2	40	2	1.1	21.00	15.7	8.25	101.5	19.59	19.1	5.53	67.5
CL980609	CL	2	8.6	22.7	3	40	1	1.8	21.12	14.9	8.43	103.4	18.19	23.7	6.62	80.9
CL980604	CL	3	9.1	22.3	3	220	1	1.4	22.38	13.7	7.66	95.5	20.57	16.7	4.80	58.9
CL980609	CL	5	6.7	20.7	3	40	1	2.1	20.10	20.5	7.67	95.4	19.67	24.8	6.98	88.3
CL980609	CL	6	7.5	20.9	3	40	1	2.0	20.58	15.5	8.31	101.3	19.85	20.0	7.05	87.0
CL980604	CL	8	8.9	21.2	5	220	1	1.7	21.66	17.6	8.00	100.7	17.14	24.8	5.55	66.9
CL980609	CL	9	9.8	24.2	1	40	2	2.2	19.94	21.2	7.81	97.2	17.14	27.6	6.80	83.3
CL980609	CL	10	10.9	23.1	3	40	1	1.5	20.67	16.9	8.09	99.6	16.90	27.1	6.45	78.4
CL980609	CL	11	12.3	22.6	3	40	1	1.5	19.86	21.2	7.57	94.1	18.84	24.6	6.68	83.1
CL980609	CL	12	9.8	21.2	3	40	1	2.2	20.54	16.1	8.33	101.8	18.85	23.9	6.94	86.0
CL980609	CL	14	13.5	23.6	1	40	1	2.7	20.33	20.0	8.00	99.6	17.60	27.4	6.84	84.5
CL980609	CL	15	13.7	20.7	4	40	1	1.5	20.59	15.9	8.23	100.5	19.40	20.5	7.17	88.0
CL980609	CL	16	13.0	20.3	7	40	1	1.8	20.68	15.4	8.40	102.5	17.51	25.9	5.99	73.2
CL980604	CL	18	8.0	23.5	4	220	1	1.2	21.96	15.1	8.41	104.9	21.66	15.7	6.74	83.9
CL980601	CL	19	6.7	22.8	5	110	2	2.0	22.82	12.9	7.57	94.7	18.78	18.5	5.80	69.5
CL980601	CL	20	7.0	23.3	2	110	2	1.6	22.52	13.1	7.35	91.6	18.82	17.2	4.80	57.1
CL980604	CL	21	7.8		0	0	1	1.5	20.89	18.5	7.68	95.8	19.92	20.8	6.10	75.7
CL980604	CL	23	7.5	23.6	0	0	2	1.0	20.88	18.3	6.19	77.1	19.97	19.2	5.10	62.8
CL980604	CL	24	5.1	22.1	0	0	2	1.3	20.82	18.2	5.62	69.9	20.22	18.8	5.11	63.1
CL980604	CL	25	12.9	22.6	3	220	2	1.0	24.16	13.2	10.36	133.1	19.28	18.0	2.70	32.6
CL980601	CL	26	11.0	22.4	4	70	2	2.2	21.70	13.2	7.71	94.7	18.94	19.2	5.56	67.1
CL980601	CL	27	10.1	23.0	3	70	2	2.1	21.53	13.1	7.00	85.6	19.01	19.1	5.51	66.6
CL980601	CL	28	11.6	24.3	7	20	0	2.2	22.78	9.8	8.72	107.1	18.83	18.0	5.51	65.9
CL980604	CL	29	16.9	22.6	2	220	1	1.4	21.21	16.5	7.50	93.0	20.20	21.4	6.62	82.9
CL980604	CL	31	29.3	21.4	4	220	2	1.7	21.93	16.9	7.98	100.6	18.84	22.4	5.65	69.4
CL980601	CL	32	11.9	24.0	5	70	2	2.0	22.57	10.6	8.62	106.0	18.98	19.2	5.51	66.6
CL980603	CL	34	5.2	24.4	6	340	0	1.8	22.62	10.4	6.92	85.1	20.44	13.2	5.08	60.9
CL980603	CL	35	8.5	24.5	5	340	0	2.4	22.31	10.5	7.65	93.5	19.10	15.8	4.49	53.3
CL980603	CL	36	9.1	24.1	6	340	0	3.0	22.66	10.4	7.66	94.2	18.62	16.0	4.41	51.9
CL980604	CL	37	7.4	22.1	1	360	2	1.2	20.84	16.0	6.76	83.0	20.12	18.1	5.09	62.4
CL980604	CL	38	8.9	20.7	2	40	2	1.5	21.38	12.1	6.64	80.5	19.09	17.5	4.14	49.6
CL980604	CL	40	8.7	21.1	3	40	2	1.6	22.06	11.5	6.66	81.5	19.03	16.6	3.83	45.6
CL980601	CL	41	11.6	23.6	7	20	0	2.0	23.39	9.5	8.69	107.8	18.59	17.5	5.20	61.7
CL980604	CL	42	12.4	21.4	1	40	2	1.8	21.97	11.8	6.99	85.6	19.79	18.6	4.83	59.0
CL980604	CL	43	12.6	20.6	1	40	2	1.5	22.26	11.5	7.08	87.0	19.31	17.6	4.21	50.7
CL980603	CL	44	10.4	23.4	5	340	0	2.2	22.94	10.0	7.71	95.1	18.11	16.1	3.01	35.1
CL980603	CL	46	13.1	23.9	6	340	0	1.5	22.65	11.3	7.74	95.7	18.32	16.8	3.95	46.4
CL980604	CL	47	13.0	18.7	3	40	1	1.8	22.74	10.6	7.38	91.0	18.46	16.2	3.42	40.2
CL980604	CL	48	13.9	19.6	2	40	2	1.8	22.26	11.0	7.05	86.4	18.97	16.8	3.98	47.4
CL980609	CL	65	3.6	21.2	2	40	2	1.1	21.18	14.8	8.24	101.1	21.14	14.8	8.20	100.6
CL980609	CL	69	2.6	22.7	3	40	1	2.4	19.97	22.8	7.32	92.0	19.60	25.2	7.13	90.3
CL980601	CL	74	2.1	23.2	5	110	2	1.6	23.18	12.4	7.34	92.2	22.79	12.8	6.79	84.9
CL980604	CL	80	2.4	22.9	0	0	1	1.4	20.77	19.4	6.27	78.5	20.21	20.0	6.20	77.0
CL980603	CL	83	1.5	24.1	3	340	0	2.2	22.51	10.2	7.24	88.7	22.51	10.2	7.21	88.3
CL980604	CL	85	2.6	22.2	4	360	2	1.1	20.51	16.1	5.58	68.1	19.98	16.8	4.80	58.3

Table 44.
July 1998

System+ Cruise Number	Stat # River River Mile	Depth (m)	Air		Wind		Weather		Surface				Bottom			
			Temp. (C)	Temp. (C)	Speed m/sec	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.
CL980706	CL	1	7.6	24.4	4	40	2	1.4	25.12	19.1	8.31	112.3	18.12	27.3	6.07	75.7
CL980706	CL	3	6.7	24.9	4	40	2	1.7	25.74	17.4	9.06	122.6	21.38	23.0	4.78	61.8
CL980706	CL	4	7.9	24.0	5	40	2	1.6	25.74	17.4	8.53	115.5	19.27	25.5	4.17	52.6
CL980706	CL	5	5.8	25.1	4	40	1	2.2	23.70	21.1	8.46	112.8	20.23	26.9	8.32	107.7
CL980706	CL	6	7.0	25.1	2	40	1	2.1	23.78	19.9	8.44	111.9	19.95	26.1	7.87	100.9
CL980706	CL	8	6.7	25.7	1	40	1	1.5	24.59	19.4	8.19	109.9	19.28	26.4	7.87	100.9
CL980706	CL	9	11.6	24.4	4	40	2	1.9	24.88	19.1	8.88	119.5	14.27	31.6	7.99	94.8
CL980706	CL	10	10.4	23.8	3	40	2	2.1	24.50	19.6	8.43	113.0	17.04	28.5	7.25	89.2
CL980706	CL	11	10.7	24.7	4	40	2	2.2	21.90	24.9	8.38	110.6	19.33	28.1	9.12	116.9
CL980706	CL	12	10.1	24.4	4	40	1	1.6	24.63	18.1	8.36	111.4	16.25	29.6	4.85	59.1
CL980706	CL	13	15.5	23.9	5	40	2	1.8	23.22	21.3	8.51	112.6	14.08	31.9	8.68	102.8
CL980706	CL	14	14.6	25.3	2	40	2	1.7	24.58	19.8	8.27	111.2	15.47	30.4	7.75	93.5
CL980706	CL	16	14.0	24.6	3	40	2	1.9	24.70	18.9	8.43	113.0	15.79	30.0	7.12	86.2
CL980706	CL	17	4.3	26.4	6	90	2	1.7	26.66	15.6	9.24	125.8	24.76	17.8	3.76	50.1
CL980706	CL	18	4.9	26.0	4	90	2	1.3	27.02	15.7	9.45	129.5	25.87	16.0	6.50	87.5
CL980707	CL	19	6.8	23.4	4	90	1	1.6	25.68	16.3	8.04	108.0	23.97	18.9	3.50	46.3
CL980707	CL	22	4.1	24.8	3	90	1	1.8	24.80	19.4	8.62	116.1	22.51	23.4	7.34	97.1
CL980707	CL	23	9.0	24.8	7	90	1	1.5	22.62	19.3	9.58	124.0	20.34	24.1	7.74	98.8
CL980707	CL	24	6.9	25.8	3	90	1	1.6	25.15	18.5	7.38	99.5	22.75	22.8	4.82	63.8
CL980707	CL	25	10.0	24.6	2	90	1	2.0	25.68	17.1	8.33	112.4	20.33	25.2	6.91	88.7
CL980707	CL	26	10.3	24.1	4	90	1	1.8	25.36	16.3	7.80	104.2	17.81	27.4	2.71	33.6
CL980707	CL	27	10.6	25.6	4	90	1	1.8	25.46	16.2	8.19	109.6	18.01	24.6	4.70	57.5
CL980707	CL	28	10.7	25.2	5	90	1	0.6	25.48	17.6	7.82	105.5	20.18	25.5	4.84	62.1
CL980707	CL	30	14.2	24.8	4	90	1	1.3	23.41	17.9	9.37	122.0	16.91	27.9	6.50	79.5
CL980707	CL	31	13.6	26.2	4	90	1	1.5	23.16	16.1	9.16	117.5	18.05	26.5	5.94	73.6
CL980707	CL	32	12.4	26.7	4	90	1	1.5	26.45	14.3	8.50	114.5	20.44	25.3	4.46	57.4
CL980707	CL	33	6.4	27.0	4	90	1	1.1	27.47	12.7	8.30	112.8	26.47	12.9	7.56	101.0
CL980707	CL	34	8.3	28.2	3	90	1	1.3	27.78	13.4	9.72	133.3	24.70	15.9	2.80	36.9
CL980709	CL	36	6.4	26.6	2	40	1	1.4	26.42	12.4	7.93	105.6	25.83	12.9	6.70	88.5
CL980707	CL	37	4.6	26.5	4	90	1	1.2	26.29	15.2	7.96	107.4	23.34	21.5	3.85	51.1
CL980707	CL	39	6.3	26.8	3	90	1	1.3	26.70	15.5	7.96	108.4	23.90	20.2	2.61	34.7
CL980709	CL	40	8.1	24.5	2	40	2	1.4	25.83	14.4	8.55	114.0	22.05	23.1	2.71	35.5
CL980707	CL	41	11.3	27.9	4	90	1	1.5	26.95	13.7	8.85	119.8	20.26	25.4	3.05	39.2
CL980709	CL	42	12.2	23.2	2	40	2	1.6	25.84	14.0	8.02	106.7	21.60	23.3	1.14	14.8
CL980709	CL	43	9.1	25.0	2	40	1	1.6	26.05	12.5	7.86	104.0	25.78	13.2	6.06	80.2
CL980709	CL	44	9.5	24.7	2	40	2	1.4	25.79	14.7	8.47	113.0	22.28	22.8	2.63	34.5
CL980709	CL	45	12.6	26.8	2	40	2	1.8	26.12	12.9	7.80	103.6	22.40	21.7	0.53	6.9
CL980709	CL	46	16.1	23.3	2	40	2	1.5	25.72	14.7	8.33	111.0	21.67	23.7	2.68	35.0
CL980709	CL	48	12.8	25.9	1	40	1	1.2	26.50	13.5	9.09	122.0	21.74	23.4	1.00	13.0
CL980706	CL	65	3.4	25.4	5	40	2	1.6	26.11	16.6	8.30	112.6	26.14	16.7	8.22	111.6
CL980706	CL	70	2.4	25.7	1	40	2	1.4	23.57	21.6	8.24	109.9	20.01	27.3	9.17	118.5
CL980706	CL	75	2.7	26.4	5	90	2	1.2	27.59	15.7	9.54	132.1	27.61	15.7	9.68	134.1
CL980707	CL	77	3.0	25.3	6	90	1	1.5	22.23	19.4	9.61	123.5	20.89	23.3	6.88	88.3
CL980709	CL	84	1.8	26.7	2	40	1	1.3	26.56	12.5	8.20	109.5	26.55	12.5	8.23	109.9
CL980707	CL	85	3.0	26.8	2	90	1	1.4	26.62	16.0	8.20	111.8	25.01	18.2	4.79	64.3

Table 45. Survey not completed due to engine failure.
August 1998

System+ Cruise Number	Stat # River River Mile	Depth (m)	Air		Wind		Weather		Surface				Bottom			
			Temp. (C)	Temp. (C)	Speed m/sec	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.
CL980806	CL	2	4.5	23.4	8	40	1	1.9	24.73	19.1	7.40	99.3	24.72	19.1	7.33	98.4

Table 46.
September 1998

System+ Cruise Number	Stat # River Mile	Air Depth (m)	Wind Temp. (C)	Wind Speed m/sec	Wind Direct. (deg)	Weather Obs.	Secchi (m)	Surface				Bottom				
								Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	
CL980914	CL	1	6.1	24.4	5	140	0	1.7	24.17	21.6	9.56	128.9	23.20	25.9	7.63	103.6
CL980914	CL	3	7.0	24.6	5	140	0	2.0	23.98	22.1	8.96	120.8	23.64	23.3	7.48	100.9
CL980914	CL	4	7.6	24.7	5	140	0	1.6	24.02	21.6	8.91	119.8	23.92	22.2	8.54	115.0
CL980914	CL	5	6.7	24.6	5	140	0	1.9	23.76	24.6	8.96	122.0	23.53	26.9	8.63	118.6
CL980914	CL	6	9.4	25.8	5	140	0	3.5	24.31	26.9	8.50	118.4	23.55	27.4	8.45	116.5
CL980914	CL	8	8.2	25.2	3	140	0	2.3	24.69	22.1	9.27	126.5	23.76	24.5	7.83	106.6
CL980914	CL	9	9.4	24.5	5	140	0	1.8	24.15	21.5	9.60	129.3	23.30	26.2	7.65	104.3
CL980914	CL	10	9.4	24.6	5	140	0	1.8	24.00	21.7	8.93	120.1	23.43	26.0	7.69	105.0
CL980914	CL	11	9.4	26.7	3	160	0	1.8	24.69	23.6	9.48	130.5	23.61	25.6	8.15	111.3
CL980914	CL	12	11.0	23.8	5	140	0	1.7	23.70	22.0	9.10	122.0	23.44	26.0	8.18	111.7
CL980914	CL	13	14.9	24.6	5	140	0	1.7	24.39	22.2	9.50	129.0	23.05	27.9	7.35	100.7
CL980914	CL	14	14.9	24.6	5	140	0	2.1	23.95	24.1	9.26	126.2	23.23	27.4	7.95	109.0
CL980914	CL	16	13.7	24.6	5	140	0	2.0	23.94	21.9	9.33	125.5	23.39	26.6	8.09	110.7
CL980911	CL	17	7.9	24.1	3	360	1	1.1	23.54	20.0	7.62	100.7	23.54	20.4	6.63	87.8
CL980921	CL	19	8.8	26.4	4	180	0	1.7	25.43	18.7	8.28	112.3	24.87	21.7	6.22	85.0
CL980921	CL	20	5.8	24.9	5	180	0	1.1	25.14	18.4	6.93	93.3	25.13	18.4	6.73	90.6
CL980914	CL	21	6.1	25.3	3	140	0	1.4	24.45	23.3	8.39	114.8	24.07	23.5	8.30	112.9
CL980914	CL	22	9.8	25.0	5	140	0	2.4	24.97	22.1	9.47	129.9	23.70	24.2	7.50	101.8
CL980915	CL	24	9.1	24.3	8	180	2	1.7	24.04	22.1	6.90	93.1	24.10	22.5	6.60	89.3
CL980914	CL	25	10.7	25.8	5	140	0	2.0	24.93	22.6	9.11	125.2	23.75	24.0	7.33	99.5
CL980914	CL	26	10.7	25.6	3	140	0	2.7	24.75	22.5	9.40	128.7	23.66	24.4	7.52	102.1
CL980911	CL	27	12.9	23.1	3	360	1	1.2	23.63	20.4	7.77	103.1	23.94	21.0	6.51	87.1
CL980915	CL	28	12.2	24.3	8	180	2	2.0	24.29	19.5	7.80	104.1	23.75	23.3	5.50	74.3
CL980915	CL	29	12.8	23.4	8	180	2	2.1	24.25	22.2	8.10	109.8	23.86	23.2	6.70	90.7
CL980915	CL	31	18.3	24.1	8	180	2	2.1	24.40	21.0	8.40	113.3	23.72	24.5	6.00	81.6
CL980921	CL	32	15.2	25.9	5	180	0	1.6	25.26	17.8	7.75	104.3	24.77	22.4	7.75	106.1
CL980921	CL	34	8.5	24.6	5	180	1	1.6	25.24	17.6	7.14	95.9	25.23	17.6	6.68	89.7
CL980921	CL	35	8.5	24.2	4	180	0	1.8	25.24	17.3	7.68	103.0	24.75	18.7	3.02	40.5
CL980917	CL	36	8.5	27.6	4	140	2	1.8	25.66	15.8	9.28	124.3	24.78	17.8	5.29	70.6
CL980915	CL	38	7.3	24.8	8	180	2	2.1	24.66	19.7	8.10	109.0	24.34	20.8	6.70	90.2
CL980915	CL	39	7.6	25.9	8	180	2	1.5	24.68	18.4	8.20	109.6	23.98	18.6	6.58	86.9
CL980915	CL	40	4.6	26.5	8	180	2	1.7	24.38	17.7	7.40	97.9	24.09	17.9	7.00	92.3
CL980915	CL	41	12.2	25.4	8	180	2	2.1	24.65	16.8	9.10	120.4	24.20	20.7	9.30	124.8
CL980915	CL	42	12.2	24.7	8	180	2	2.0	24.69	16.8	8.80	116.5	24.20	20.6	5.10	68.4
CL980915	CL	43	9.1	26.1	8	180	2	1.8	24.45	18.5	7.90	105.2	24.45	18.5	7.90	105.2
CL980915	CL	44	12.2	26.3	8	180	3	2.0	24.96	16.4	9.32	123.7	24.35	19.5	4.65	62.2
CL980915	CL	45	16.2	25.0	8	180	2	2.2	24.53	18.9	8.60	114.9	23.74	22.8	5.40	72.8
CL980915	CL	46	15.2	25.1	8	180	2	2.3	24.77	19.3	8.50	114.3	23.88	22.2	5.00	67.3
CL980915	CL	48	18.6	25.2	8	180	2	2.0	25.13	16.5	9.30	123.9	24.30	20.2	4.77	64.0
CL980911	CL	68	2.2	24.8	3	360	1	1.1	23.47	19.6	8.30	109.3	23.45	19.6	8.04	105.8
CL980914	CL	69	3.4	26.7	3	140	0	2.5	24.57	24.0	9.21	126.8	23.92	25.7	9.01	123.8
CL980911	CL	73	2.0	23.1	3	360	1	1.0	23.07	19.5	8.31	108.5	23.07	19.5	8.37	109.3
CL980915	CL	80	2.7	24.0	8	180	2	1.8	24.46	21.9	7.70	104.5	24.23	22.5	7.10	96.3
CL980917	CL	83	2.1	27.2	5	140	2	1.6	25.68	16.1	8.39	112.6	25.27	16.6	7.55	100.9
CL980915	CL	87	1.8	26.4	8	180	2	1.7					24.34	18.0	8.00	106.0

Table 47.
October 1998

System+ Cruise Number	Stat # River Mile	Depth (m)	Air		Wind		Weather		Surface				Bottom			
			Temp. (C)	Speed m/sec	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	
CL981014	CL	1	5.2	19.7	2	320	1	1.8	20.33	22.2	8.18	103.2	20.36	22.3	7.98	100.8
CL981014	CL	3	4.9	19.4	2	320	1	1.6	20.02	22.5	8.82	110.8	20.31	23.4	7.85	99.7
CL981014	CL	4	6.1	19.4	7	320	1	2.0	20.21	23.0	8.28	104.7	20.63	24.3	7.21	92.6
CL981016	CL	5	6.3	17.8	8	40	1	1.9	20.05	25.3	9.68	123.7	20.01	25.7	9.41	120.5
CL981016	CL	6	6.7	17.7	6	40	1	1.3	20.18	24.8	9.32	119.1	21.90	24.9	9.20	121.4
CL981016	CL	8	8.8	17.8	8	40	1	2.0	20.13	22.5	9.67	121.7	20.12	23.9	8.83	112.1
CL981016	CL	9	11.1	16.4	8	40	1	1.4	19.95	23.8	9.15	115.7	20.76	27.0	7.94	103.9
CL981014	CL	10	11.0	18.9	4	320	0	1.7	20.27	22.6	8.47	107.0	21.14	26.9	7.68	101.1
CL981016	CL	11	9.7	18.4	5	40	1	2.2	20.10	22.5	10.25	129.0	20.28	24.9	9.26	118.6
CL981014	CL	12	11.0	18.7	6	320	1	2.0	19.99	22.2	9.02	113.1	21.30	26.8	7.82	103.2
CL981016	CL	13	14.1	17.5	8	40	1	1.9	20.14	25.9	8.76	112.5	19.97	27.3	8.56	110.5
CL981016	CL	15	13.7	16.9	8	40	1	1.6	20.00	25.6	9.17	117.3	20.00	23.8	9.59	121.4
CL981016	CL	16	15.5	16.9	8	40	1	2.0	20.03	22.6	9.10	114.4	20.37	24.8	8.34	106.9
CL981014	CL	17	6.4	18.2	4	270	1	1.5	20.46	22.2	8.57	108.4	20.64	24.8	7.50	96.6
CL981013	CL	19	6.4	21.0	1	40	1	1.7	21.47	18.8	9.31	117.6	20.29	20.3	7.89	98.4
CL981013	CL	20	5.2	22.1	1	40	1	1.5	20.75	18.4	9.69	120.5	20.20	18.7	8.39	103.4
CL981016	CL	21	5.2	17.4	8	40	1	1.6	19.99	24.2	9.79	124.2	20.02	24.3	9.78	124.2
CL981016	CL	22	8.7	16.7	8	40	1	1.6	20.03	23.3	9.16	115.7	20.05	23.6	9.29	117.5
CL981016	CL	24	8.8	17.9	8	20	1	1.6	20.08	23.5	9.51	120.3	20.08	23.5	9.30	117.7
CL981014	CL	25	11.0	18.0	7	290	1	1.8	20.40	22.3	8.84	111.7	20.73	25.3	7.62	98.6
CL981016	CL	26	11.3	17.8	8	20	1	1.6	20.01	19.8	9.48	117.2	20.34	20.9	7.45	93.3
CL981013	CL	27	12.8	20.8	1	40	1	1.8	21.91	20.3	9.11	117.0	20.69	21.7	7.18	90.9
CL981013	CL	28	11.6	18.5	1	70	1	1.7	20.54	21.5	8.16	102.9	20.60	25.4	7.14	92.2
CL981016	CL	29	13.0	17.7	8	40	1	1.4	20.12	23.4	9.36	118.4	20.10	24.0	8.57	108.8
CL981013	CL	30	14.9	18.6	2	70	1	1.8	20.44	23.2	8.38	106.6	20.56	25.4	7.49	96.7
CL981013	CL	32	13.4	20.2	2	70	1	1.8	20.51	22.1	8.87	112.2	20.57	25.6	7.00	90.5
CL981013	CL	33	7.9	20.8	0	0	1	1.7	21.27	20.1	8.68	110.1	20.58	20.3	6.83	85.6
CL981007	CL	34	9.1	20.8	5	140	1	1.5	21.72	17.5	7.42	93.5	21.69	18.0	6.55	82.7
CL981007	CL	36	5.2	20.3	6	140	1	1.5	21.64	17.7	8.67	109.2	21.58	17.8	8.46	106.5
CL981013	CL	37	7.9	19.7	1	90	1	1.2	20.68	21.4	9.01	113.9	20.59	22.7	7.47	95.0
CL981013	CL	38	5.5	21.7	0	0	1	1.4	20.33	20.5	8.35	104.3	20.81	21.9	7.27	92.4
CL981013	CL	39	8.5	21.3	1	40	1	2.0	20.17	19.7	9.07	112.4	21.01	22.0	6.72	85.8
CL981013	CL	41	9.8	20.9	1	270	1	2.0	21.61	18.7	8.44	106.8	20.96	20.9	5.76	73.0
CL981013	CL	42	11.3	20.1	0	0	1	1.8	20.45	21.4	8.12	102.2	20.98	22.5	6.82	87.2
CL981013	CL	43	12.8	20.9	0	0	1	2.3	20.55	20.8	8.91	111.9	21.00	22.8	6.38	81.8
CL981007	CL	44	11.0	20.7	7	160	1	1.1	21.88	18.2	7.16	90.8	21.82	18.2	6.77	85.8
CL981013	CL	45	15.8	20.3	1	70	1	2.5	20.62	21.1	9.42	118.7	20.71	24.6	6.87	88.5
CL981013	CL	46	13.1	20.1	1	40	1	2.1	20.83	20.2	8.61	108.4	20.75	24.1	6.73	86.5
CL981013	CL	47	15.5	20.4	1	40	1	1.8	20.86	20.1	9.17	115.4	20.85	23.1	6.84	87.6
CL981014	CL	67	3.0	19.3	3	320	1	1.3	19.47	21.0	9.64	118.8	19.47	21.0	9.43	116.2
CL981016	CL	70	2.4	17.8	5	40	1	1.8	19.77	26.4	9.77	125.0	19.78	26.3	9.74	124.6
CL981013	CL	76	1.5	20.9	3	40	1	1.5	19.78	18.8	9.93	121.5	19.78	18.8	9.90	121.1
CL981016	CL	79	3.4	17.3	6	20	0	1.7	20.66	20.4	8.41	105.6	19.98	23.5	9.55	120.6
CL981013	CL	82	3.4	20.6	2	20	1	1.8	20.66	20.4	8.41	105.6	20.41	20.4	8.80	110.0
CL981013	CL	86	1.5	21.1	1	270	1	1.6	19.72	19.7	9.28	114.0	19.59	20.2	8.52	104.7

Table 48.
November 1998

System+	Stat #	Air			Wind		Weather		Surface				Bottom			
		Cruise Number	River Mile	Depth (m)	Temp. (C)	Speed (m/sec)	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.
CL981109	CL	1	7.0	14.1	3	340	0	2.1	13.00	22.9	9.44	103.3	13.10	24.0	8.37	92.5
CL981109	CL	3	7.6	13.3	0	0	1	2.3	13.10	22.1	9.42	102.8	13.60	26.6	8.52	96.7
CL981109	CL	4	4.9	15.3	3	20	0	1.6	12.00	21.7	10.32	109.8	11.80	21.7	9.55	101.1
CL981102	CL	6	4.9	16.4	5	40	2	1.6	16.74	26.8	9.18	111.1	16.75	27.0	9.22	111.7
CL981102	CL	7	6.7	15.9	2	40	2	2.0	17.16	24.5	9.18	110.5	16.58	27.2	8.92	107.9
CL981102	CL	8	7.9	14.6	2	40	2	1.7	16.95	24.6	9.19	110.2	16.88	25.0	9.05	108.7
CL981102	CL	9	11.3	15.2	5	160	2	2.0	17.09	25.8	9.48	114.8	17.22	26.7	8.74	106.7
CL981102	CL	10	10.1	15.2	0	0	2	2.2	16.89	23.8	9.45	112.6	17.16	26.1	8.44	102.6
CL981109	CL	11	10.4	15.1	3	340	1	2.5	13.10	23.0	9.18	100.8	13.40	26.4	8.56	96.6
CL981109	CL	12	11.3	15.4	0	0	1	2.7	13.10	25.8	8.89	99.3	13.10	28.4	8.70	98.8
CL981102	CL	13	14.0	16.0	5	90	2	1.8	16.83	24.3	9.23	110.2	17.14	25.8	8.40	101.8
CL981102	CL	14	13.1	15.3	5	110	2	1.5	17.03	24.3	9.12	109.3	17.09	25.4	8.52	102.9
CL981102	CL	15	13.7	15.0	3	110	2	2.4	16.50	28.7	9.42	114.8	16.67	29.6	9.12	112.1
CL981102	CL	17	9.1	14.8	2	40	1	2.0	16.72	22.0	9.65	113.4	16.99	23.9	8.39	100.3
CL981109	CL	18	8.2	13.9	3	40	0	2.6	13.30	21.4	9.37	102.3	13.40	21.4	9.16	100.2
CL981110	CL	19	7.0	13.2	8	140	5	1.7	11.80	19.0	10.15	105.7	11.81	19.0	10.37	108.0
CL981102	CL	22	4.6	16.7	0	0	2	1.9	16.71	24.5	8.99	107.2	16.38	25.3	8.99	107.0
CL981102	CL	23	5.8	15.6	2	40	1	2.0	16.61	24.7	9.24	110.1	16.61	24.8	9.07	108.2
CL981113	CL	24	7.5	12.8	8	270	2	2.0	13.30	22.9	9.50	104.7	13.30	23.0	9.30	102.5
CL981102	CL	25	10.4	14.8	0	0	1	1.9	16.77	23.3	9.65	114.4	17.00	26.1	9.62	116.5
CL981102	CL	26	11.0	15.2	2	40	1	1.8	16.59	22.0	9.42	110.4	16.98	25.2	8.19	98.6
CL981102	CL	27	9.1	15.1	2	40	1	2.0	16.62	21.3	9.11	106.4	16.70	22.0	8.45	99.3
CL981110	CL	28	9.3	13.5	8	140	2	2.1	12.84	20.1	8.88	95.2	13.51	22.9	8.23	91.1
CL981113	CL	29	20.0	13.1	8	270	2	2.4	12.79	20.5	10.00	107.4	13.00	25.4	8.42	93.6
CL981113	CL	30	12.7	13.4	8	270	2	2.1	12.92	19.9	9.62	103.2	13.16	24.8	8.40	93.4
CL981110	CL	32	14.0	13.5	8	140	2	1.8	12.72	19.5	9.27	98.8	13.51	23.5	8.41	93.4
CL981110	CL	33	4.8	13.5	8	140	2	1.9	11.62	18.1	10.35	106.7	11.60	18.1	10.35	106.7
CL981110	CL	34	5.5	13.9	8	140	2	1.8	12.47	18.4	9.83	103.4	12.56	18.6	9.28	98.0
CL981113	CL	36	3.5	10.4	5	270	2	2.6	12.50	17.9	10.02	105.2	12.66	18.2	9.95	105.0
CL981113	CL	38	4.3	13.5	8	270	2	1.7	13.22	22.2	9.60	105.1	13.21	22.1	9.39	102.7
CL981113	CL	39	8.1	12.8	8	270	2	2.0	13.26	21.9	9.00	98.5	13.28	22.3	8.70	95.5
CL981113	CL	40	7.8	13.2	8	270	2	2.0	13.20	21.4	9.40	102.4	13.20	21.4	8.90	96.9
CL981113	CL	41	12.0	13.3	5	270	2	2.0	12.75	19.1	9.42	100.2	13.32	19.7	8.70	94.0
CL981113	CL	42	12.1	12.3	5	270	2	2.3	12.85	19.1	9.50	101.2	13.54	20.4	8.13	88.6
CL981113	CL	43	10.4	11.8	5	270	2	2.4	12.82	18.7	9.21	97.8	12.92	19.1	9.37	100.0
CL981113	CL	44	11.4	12.1	5	270	2	2.0	12.95	18.3	9.80	104.1	13.26	19.1	9.49	102.0
CL981113	CL	45	16.6	13.3	8	270	2	2.2	12.90	20.3	9.60	103.2	13.10	25.9	8.30	92.8
CL981113	CL	47	15.6	12.7	8	270	2	2.0	12.89	20.3	9.60	103.2	13.41	22.1	8.71	95.7
CL981113	CL	48	13.2	12.7	5	270	2	2.4	13.02	19.3	9.63	103.1	13.25	19.6	9.40	101.3
CL981109	CL	68	2.7	14.7	3	70	0	2.7	12.60	20.8	7.08	75.8	12.60	21.3	10.52	113.1
CL981102	CL	69	4.6	15.9	3	40	2	1.9	16.63	27.4	9.27	112.4	16.87	27.7	9.18	112.0
CL981109	CL	73	2.1	15.1	4	70	0	3.0	11.80	21.3	10.53	111.2	11.80	21.4	10.65	112.6
CL981102	CL	79	3.0	17.6	0	0	1	2.1	16.71	24.6	9.48	113.1	16.69	24.6	9.39	112.0
CL981110	CL	81	2.4	13.7	8	140	2	2.0	10.78	17.9	10.65	107.7	10.87	18.1	10.73	108.8
CL981113	CL	88	2.4	13.3	8	270	2	1.7	12.34	21.0	9.41	100.4	12.50	21.3	9.50	101.9

Table 49.
December 1998

System+ Cruise Number	Stat # River River Mile	Air		Wind		Weather		Surface				Bottom				
		Depth (m)	Temp. (C)	Speed m/sec	Direct. (deg)	Obs.	Secchi (m)	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	
CL981202	CL	1	7.9	16.7	3	360	1	1.0	13.45	24.6	9.50	106.1	13.43	24.7	9.38	104.8
CL981202	CL	3	4.9	17.4	3	220	1	2.4	13.15	22.2	9.57	104.6	13.13	22.2	9.69	105.9
CL981202	CL	5	5.2	15.4	3	360	1	1.5	14.05	28.0	9.54	110.2	14.05	28.0	9.53	110.1
CL981202	CL	7	6.8	14.6	3	360	0	1.9	13.15	25.4	9.07	101.2	13.13	25.4	9.12	101.7
CL981202	CL	9	10.2	15.1	3	360	1	2.0	13.85	26.1	10.26	116.6				
CL981202	CL	10	10.8	15.9	3	360	0	1.6	13.95	28.0	9.36	107.9	14.08	28.5	9.24	107.1
CL981202	CL	11	10.0	16.5	3	360	1	2.0	13.39	23.5	9.25	102.5	12.93	24.2	9.21	101.5
CL981202	CL	12	9.9	17.1	3	360	1	2.4	13.50	23.2	9.19	101.9	12.92	24.1	9.20	101.3
CL981202	CL	13	12.7	15.9	3	360	1	1.8	13.26	23.5	9.61	106.2	13.15	23.7	9.41	103.9
CL981202	CL	15	12.8	14.6	3	360	0	2.1	13.54	26.2	8.71	98.4	13.46	26.5	9.03	102.1
CL981202	CL	16	12.1	16.3	3	360	1	2.0	13.48	23.7	9.33	103.7	13.11	24.6	10.14	112.4
CL981202	CL	17	7.9	11.9	3	360	0	2.2	12.71	22.9	9.80	106.6	12.77	23.1	9.17	100.0
CL981202	CL	18	7.0	11.3	3	360	0	2.0	12.72	22.0	10.15	109.8	12.78	22.2	9.06	98.3
CL981202	CL	21	8.8	14.4	3	360	0	1.6	12.95	24.5	8.91	98.4	12.92	24.8	9.03	99.9
CL981202	CL	22	4.4	13.2	3	360	0	2.3	12.86	24.0	9.90	108.8	12.85	24.1	9.05	99.5
CL981203	CL	25	11.8	13.3	8	220	2	1.8	12.56	22.2	9.16	98.9	12.80	22.8	9.29	101.2
CL981203	CL	26	12.2	13.3	8	220	2	2.1	12.60	21.7	8.73	94.1	12.80	22.8	9.29	101.2
CL981208	CL	27	9.8	17.6	5	160	1	2.4	14.10	20.9	9.53	105.5	13.39	23.7	8.61	95.5
CL981208	CL	28	12.4	17.1	5	160	1	2.6	13.56	20.5	9.59	104.7	13.39	24.6	8.34	93.0
CL981208	CL	29	13.8	17.6	5	160	1	2.5	13.70	21.0	9.51	104.4	13.96	26.9	8.20	93.9
CL981208	CL	31	16.0	17.8	5	160	1	2.5	14.03	21.3	9.67	107.1	13.67	26.1	7.91	89.6
CL981208	CL	32	21.9	16.7	5	160	2	2.7	13.79	21.2	9.76	107.5	13.65	26.0	7.98	90.3
CL981207	CL	33	7.0	18.9	10	220	0	2.6	13.14	20.7	8.90	96.4	12.98	19.5	8.88	95.1
CL981208	CL	36	8.1	14.7	5	160	2	3.0	13.18	18.8	9.26	99.2	12.58	19.6	7.80	82.9
CL981208	CL	37	7.6	16.2	8	160	2	2.4	13.87	23.4	8.65	96.7	13.81	23.6	8.82	98.6
CL981208	CL	39	8.7	15.5	5	160	6	2.4	13.21	20.6	8.96	97.1	12.95	20.7	9.65	104.1
CL981207	CL	41	9.1	18.2	10	220	0	2.7	13.00	19.6	9.63	103.3	12.78	21.6	8.98	97.1
CL981208	CL	42	11.2	15.9	5	160	2	2.8	13.60	20.0	9.64	105.0	13.02	22.4	8.72	95.2
CL981208	CL	43	11.6	15.3	5	160	2	2.8	13.70	20.2	9.62	105.1	13.05	22.1	8.62	94.0
CL981208	CL	44	11.4	15.9	5	160	2	2.8	13.67	20.1	9.64	105.2	13.04	22.5	8.89	97.2
CL981208	CL	45	16.6	18.7	5	160	2	2.6	13.67	21.7	9.51	104.8	13.35	24.4	8.20	91.3
CL981208	CL	47	16.9	14.8	5	160	2	2.8	13.32	21.2	9.22	100.6	13.17	22.9	8.51	93.5
CL981208	CL	48	16.6	16.3	5	160	2	3.0	13.21	20.2	9.27	100.2	12.93	20.8	8.76	94.5
CL981202	CL	67	2.3	15.4	3	220	1	3.0	13.14	22.1	9.92	108.4				
CL981202	CL	70	3.0	17.1	3	360	0	1.5	13.52	28.3	9.08	103.9				
CL981202	CL	73	3.4	15.9	3	220	1	2.1	13.26	22.0	9.76	106.8	13.32	22.0	9.84	107.8
CL981208	CL	80	1.6	17.1	5	160	2	2.5					14.33	23.2	8.89	100.3
CL981207	CL	83	2.4	19.8	10	220	0	2.0	13.50	17.6	10.13	108.4	13.47	19.3	10.05	108.7
CL981208	CL	88	3.0	15.7	5	160	6	1.8	14.08	21.0	9.28	102.7	14.09	21.3	9.44	104.7

Table 50. Species composition, number caught, catch per trawl, and length statistics for all months, all areas, and all water systems.

- A. The 'Number of Species' notation in the table header includes each of four categories of blue crabs (male, juvenile female, adult female, and unclassified) as unique species.
- B. Catch per trawl for species other than blue crabs is based on the value 'Number of Fish Trawls Made' while the catch per trawl for blue crabs is based on the sum of 'Number of Fish Trawls made' and 'Number of Additional Crab Trawls Made'.
- C. 'Adjusted Percent of Catch' excludes bay anchovy and hogchoker due to the low biomass estimates in relation to total number of fish caught.
- D. 'Frequency' is the number of samples in which a species was captured.

Table 50.

Month - All - Pooled, 1998

River - All - Pooled

No. of Random Trawls Made - 940

No. of Fixed Trawls Made - 322

No. of Species - 141

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	403,027	988	60.93	319.36		355,742	53	0.09	17	96
Atlantic croaker	84,896	924	12.83	67.27	45.47	66,057	110	0.47	6	378
hogchoker	71,782	779	10.85	56.88		22,834	81	0.22	12	201
weakfish	15,705	473	2.37	12.44	8.41	14,543	105	0.66	15	492
white perch	14,628	381	2.21	11.59	7.84	4,280	124	0.50	11	275
spot	11,700	531	1.77	9.27	6.27	10,092	140	0.33	19	262
blue catfish	8,597	167	1.30	6.81	4.60	2,622	196	0.89	54	501
blue crab, male	8,430	734	1.27	6.68	4.52		62	0.42	7	182
blue crab, juvenile female	7,203	728	1.09	5.71	3.86		51	0.32	10	147
jellyfish spp	4,901	215	0.74	3.88	2.63					
spotted hake	3,027	285	0.46	2.40	1.62	2,952	114	0.86	25	326
kingfish spp	2,549	287	0.39	2.02	1.37	2,480	91	0.80	14	316
squid spp	2,315	136	0.35	1.83	1.24		32	0.34	5	151
blackcheek tonguefish	2,275	450	0.34	1.80	1.22	1,293	102	0.87	28	251
white catfish	1,946	247	0.29	1.54	1.04	393	202	2.03	25	467
blueback herring	1,712	77	0.26	1.36	0.92	1,691	76	1.04	54	266
striped anchovy	1,633	92	0.25	1.29	0.87	1,629	79	0.64	29	136
blue crab, adult female	1,297	356	0.20	1.03	0.69		139	0.36	91	186
summer flounder	1,121	391	0.17	0.89	0.60	630	261	2.22	55	579
silver perch	983	151	0.15	0.78	0.53	768	135	1.11	39	230
spider crab, common	976	112	0.15	0.77	0.52		63	2.79	52	80
American eel	791	170	0.12	0.63	0.42		262	2.04	60	549
striped bass	711	170	0.11	0.56	0.38	509	143	4.68	19	754
spottail shiner	690	17	0.10	0.55	0.37		58	2.07	34	109
smallmouth flounder	628	132	0.09	0.50	0.34	588	79	0.71	27	128
oyster toadfish	625	156	0.09	0.50	0.33		186	2.75	38	369
sand shrimp	613	366	0.09	0.49	0.33					
mantis shrimp	502	96	0.08	0.40	0.27		77	1.06	30	147
northern searobin	482	152	0.07	0.38	0.26	470	90	1.24	37	170
channel catfish	415	87	0.06	0.33	0.22	35	246	4.13	20	518
butterfish	379	95	0.06	0.30	0.20	339	74	2.20	20	223
inshore lizardfish	349	128	0.05	0.28	0.19	249	169	2.63	62	321
northern pipefish	344	138	0.05	0.27	0.18		128	1.58	53	234
gizzard shad	275	92	0.04	0.22	0.15	157	190	4.53	94	378
naked goby	264	103	0.04	0.21	0.14		41	0.54	21	83
alewife	253	86	0.04	0.20	0.14	248	113	1.20	46	245
Atlantic thread herring	238	28	0.04	0.19	0.13		57	1.70	33	193
red hake	226	40	0.03	0.18	0.12		117	2.45	44	255
black seabass	189	100	0.03	0.15	0.10	133	114	3.85	24	255
harvestfish	182	50	0.03	0.14	0.10	181	69	1.96	19	129
Atlantic spadefish	172	76	0.03	0.14	0.09		74	3.28	24	440
Atlantic menhaden	172	68	0.03	0.14	0.09	153	106	3.78	24	333
rock crab	168	33	0.03	0.13	0.09		63	2.52	16	148
clearnose skate	126	33	0.02	0.10	0.07		387	4.99	79	488
scup	118	34	0.02	0.09	0.06	107	100	2.13	46	150
Atlantic silverside	106	21	0.02	0.08	0.06	106	82	1.14	59	108
American shad	100	56	0.02	0.08	0.05	99	118	2.44	53	214
wedge rangia clam	91	53	0.01	0.07	0.05					
seaboard goby	91	23	0.01	0.07	0.05		37	0.72	24	47
threadfin shad	86	7	0.01	0.07	0.05		87	0.98	63	114
roughneck shrimp	82	50	0.01	0.06	0.04		58	4.71	42	130
lady crab	81	35	0.01	0.06	0.04		50	1.21	18	68
spider crab, 6 spine	80	47	0.01	0.06	0.04					
moon snail	77	33	0.01	0.06	0.04					
Atlantic herring	75	41	0.01	0.06	0.04		135	11.38	36	312
striped searobin	69	51	0.01	0.05	0.04		112	5.46	26	278
white shrimp	67	39	0.01	0.05	0.04		107	2.78	56	156
grass shrimp spp	61	224	0.01	0.05	0.03					
spotted seatrout	60	11	0.01	0.05	0.03		55	6.54	21	232
northern puffer	55	27	0.01	0.04	0.03	45	92	5.62	32	218
feather blenny	54	34	0.01	0.04	0.03		62	2.54	34	118
lined seahorse	53	38	0.01	0.04	0.03		79	3.69	42	142
windowpane	51	35	0.01	0.04	0.03	35	155	9.35	37	301
channel (smooth) whelk	42	30	0.01	0.03	0.02					
horseshoe crab	34	14	0.01	0.03	0.02		235	6.43	122	294
black drum	29	8	0.00	0.02	0.02		189	8.42	62	250
blue crab, sex unknown	28	4	0.00	0.02	0.01		15	1.42	2	26
brown shrimp	27	25	0.00	0.02	0.01		106	3.23	77	134
skilletfish	25	23	0.00	0.02	0.01		46	2.83	21	70
Portunid spp	23	11	0.00	0.02	0.01					
bluefish	19	16	0.00	0.02	0.01		173	16.94	25	294
knobbed whelk	19	12	0.00	0.02	0.01					
pigfish	19	10	0.00	0.02	0.01		163	12.83	52	227
Atlantic cutlassfish	17	15	0.00	0.01	0.01		372	36.20	169	760
pink shrimp	15	12	0.00	0.01	0.01		102	4.14	64	126
whelk (conch) spp	14	18	0.00	0.01	0.01					
shells blue crab	14	5	0.00	0.01	0.01					
striped blenny	13	5	0.00	0.01	0.01		56	3.84	36	86
brown bullhead	11	9	0.00	0.01	0.01		203	17.84	88	281
tautog	11	5	0.00	0.01	0.01		327	28.86	166	468
mysid shrimp	10	10	0.00	0.01	0.01					

Table 50. (Continued)

Month - All - Pooled, 1998

River - All - Pooled

No. of Random Trawls Made - 940

No. of Fixed Trawls Made - 322

No. of Species - 141

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
banded drum	10	9	0.00	0.01	0.01	.	51	15.03	22	183
sea lamprey	9	7	0.00	0.01	0.00	.	155	3.81	135	172
mud crab spp	8	296	0.00	0.01	0.00	.	.	.	.	.
bluntnose stingray	8	7	0.00	0.01	0.00	.	310	63.74	198	745
Atlantic sturgeon	8	7	0.00	0.01	0.00	.	507	23.40	394	586
quahog clam	7	37	0.00	0.01	0.00	.	.	.	.	.
common carp	7	5	0.00	0.01	0.00	.	570	34.52	410	700
longnose gar	7	4	0.00	0.01	0.00	.	756	60.25	398	845
Atlantic moonfish	6	6	0.00	0.00	0.00	.	74	9.67	48	110
conger eel	6	5	0.00	0.00	0.00	.	408	26.04	310	490
right-hand hermit crab spp	5	122	0.00	0.00	0.00	.	.	.	.	.
bluespotted cornetfish	5	4	0.00	0.00	0.00	.	443	37.80	354	541
northern stargazer	5	4	0.00	0.00	0.00	.	37	4.41	26	52
fringed flounder	5	4	0.00	0.00	0.00	.	113	9.60	89	147
winter flounder	4	4	0.00	0.00	0.00	.	100	31.14	54	192
green goby	4	4	0.00	0.00	0.00	.	43	2.36	36	47
Atlantic stingray	4	4	0.00	0.00	0.00	.	457	32.38	390	545
iridescent swimming crab	4	4	0.00	0.00	0.00	.	.	.	.	.
striped burrfish	4	3	0.00	0.00	0.00	.	143	19.68	109	188
forbes common sea star	3	8	0.00	0.00	0.00	.	.	.	.	.
silver hake	3	3	0.00	0.00	0.00	.	119	20.80	94	160
Florida pompano	3	2	0.00	0.00	0.00	.	183	6.66	174	196
tessellated darter	3	2	0.00	0.00	0.00	.	64	7.45	53	78
striped cusk-eel	3	2	0.00	0.00	0.00	.	63	8.09	52	79
sargassum swimming crab	3	2	0.00	0.00	0.00	.	.	.	.	.
blood ark/clam	2	38	0.00	0.00	0.00	.	.	.	.	.
macoma clam spp	2	35	0.00	0.00	0.00	.	.	.	.	.
Amphipod spp	2	12	0.00	0.00	0.00	.	.	.	.	.
hickory shad	2	2	0.00	0.00	0.00	.	156	10.00	146	166
red drum	2	2	0.00	0.00	0.00	.	226	169.00	57	395
bighead searobin	2	2	0.00	0.00	0.00	.	74	33.00	41	107
pipefish spp	2	2	0.00	0.00	0.00	.	229	95.50	133	324
sandbar shark	2	2	0.00	0.00	0.00	.	535	78.50	456	613
cownose ray	2	2	0.00	0.00	0.00	.	570	2.50	567	572
spotfin butterflyfish	2	2	0.00	0.00	0.00	.	56	23.00	33	79
spotfin mojarra	2	2	0.00	0.00	0.00	.	56	17.00	39	73
silver jenny	2	2	0.00	0.00	0.00	.	75	5.50	69	80
veined rapa whelk	2	2	0.00	0.00	0.00	.	.	.	.	.
Spanish mackerel	2	1	0.00	0.00	0.00	.	108	10.50	97	118
little skate	2	1	0.00	0.00	0.00	.	250	2.00	248	252
northern sand lance	2	1	0.00	0.00	0.00	.	126	6.00	120	132
blue mussel	1	51	0.00	0.00	0.00	.	.	.	.	.
river shrimp	1	31	0.00	0.00	0.00	.	.	.	.	.
Atlantic oyster drill	1	13	0.00	0.00	0.00	.	.	.	.	.
New England dog whelk	1	7	0.00	0.00	0.00	.	.	.	.	.
purple sea urchin	1	2	0.00	0.00	0.00	.	.	.	.	.
white hake	1	1	0.00	0.00	0.00	.	418	.	418	418
pollock	1	1	0.00	0.00	0.00	.	112	.	112	112
round herring	1	1	0.00	0.00	0.00	.	58	.	58	58
surf clam	1	1	0.00	0.00	0.00	.	.	.	.	.
pumpkinseed	1	1	0.00	0.00	0.00	.	141	.	141	141
smooth dogfish	1	1	0.00	0.00	0.00	.	305	.	305	305
winter skate	1	1	0.00	0.00	0.00	.	416	.	416	416
spiny butterfly ray	1	1	0.00	0.00	0.00	.	436	.	436	436
redbreast sunfish	1	1	0.00	0.00	0.00	.	30	.	30	30
blue runner	1	1	0.00	0.00	0.00	.	155	.	155	155
lookdown	1	1	0.00	0.00	0.00	.	111	.	111	111
fawn cusk-eel	1	1	0.00	0.00	0.00	.	179	.	179	179
bluespotted sunfish	1	1	0.00	0.00	0.00	.	46	.	46	46
little surf clam	1	1	0.00	0.00	0.00	.	.	.	.	.
worm spp	.	46	.	.	.	.	.	.	.	.
soft-shell clam	.	31	.	.	.	.	.	.	.	.
sand dollar	.	25	.	.	.	.	.	.	.	.
bent mussel	.	18	.	.	.	.	.	.	.	.
oyster, common	.	16	.	.	.	.	.	.	.	.
sea cucumber spp	.	16	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	7	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	4	.	.	.	.	.	.	.	.
razor clam spp	.	4	.	.	.	.	.	.	.	.
common razor clam	.	4	.	.	.	.	.	.	.	.
yoldias clam spp	.	4	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	3	.	.	.	.	.	.	.	.
hippolyte shrimp spp	.	3	.	.	.	.	.	.	.	.
ribbed mussel	.	2	.	.	.	.	.	.	.	.

continued

Table 50. (Continued)

Month - All - Pooled, 1998

River - All - Pooled

No. of Random Trawls Made - 940

No. of Fixed Trawls Made - 322

No. of Species - 141

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
alfonsin spp	.	1	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	1	.	.	.	.	.	.	.	.
sea star spp	.	1	.	.	.	.	.	.	.	.
periwinkle spp	.	1	.	.	.	.	.	.	.	.
commensal crab spp	.	1	.	.	.	.	.	.	.	.
slipper shell spp	.	1	.	.	.	.	.	.	.	.
long-clawed hermit crab	.	1	.	.	.	.	.	.	.	.
flat-clawed hermit crab	.	1	.	.	.	.	.	.	.	.
All Species Combined	661,509									

Table 51-58. Species composition, number caught, catch per trawl, and length statistics for **all months, by river** for the tributary surveys of the James, Rappahannock, and York Rivers, and the secondary water systems of the Mobjack Bay, Pocomoke Sound, Piankatank and Great Wicomico Rivers.

- A. The 'Number of Species' notation in the table header includes each of four categories of blue crabs (male, juvenile female, adult female, and unclassified) as unique species.
- B. Catch per trawl for species other than blue crabs is based on the value 'Number of Fish Trawls Made' while the catch per trawl for blue crabs is based on the sum of 'Number of Fish Trawls made' and 'Number of Additional Crab Trawls Made'.
- C. 'Adjusted Percent of Catch' excludes bay anchovy and hogchoker due to the low biomass estimates in relation to total number of fish caught.
- D. 'Frequency' is the number of samples in which a species was captured.

Table 51.

Month - All - Pooled, 1998

System - James River

No. of Random Trawls Made - 169

No. of Fixed Trawls Made - 96

No. of Species - 95

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	84,191	186	54.24	317.70	.	81,220	53	0.23	17	95
hogchoker	33,837	205	21.80	127.69	.	14,479	71	0.35	20	187
Atlantic croaker	10,266	219	6.61	38.74	27.61	8,462	103	0.85	13	364
white perch	7,531	152	4.85	28.42	20.25	3,490	102	0.69	11	246
blue catfish	4,075	100	2.63	15.38	10.96	1,751	176	1.02	54	501
blue crab, juvenile female	2,145	204	1.38	8.09	5.77	.	49	0.54	11	147
spot	2,127	125	1.37	8.03	5.72	1,825	132	0.73	27	237
blue crab, male	2,113	212	1.36	7.97	5.68	.	60	0.74	8	172
weakfish	1,550	97	1.00	5.85	4.17	1,525	91	1.17	16	364
blueback herring	1,372	24	0.88	5.18	3.69	1,369	74	0.82	56	164
spotted hake	845	53	0.54	3.19	2.27	808	121	2.12	56	314
blackcheek tonguefish	504	90	0.32	1.90	1.36	367	91	1.63	36	172
jellyfish spp	430	24	0.28	1.62	1.16	.	.	.	.	.
white catfish	405	81	0.26	1.53	1.09	42	200	3.12	50	385
American eel	396	71	0.26	1.49	1.06	.	254	2.67	113	507
blue crab, adult female	361	88	0.23	1.36	0.97	.	141	0.66	91	175
oyster toadfish	347	64	0.22	1.31	0.93	.	182	3.73	38	369
channel catfish	272	52	0.18	1.03	0.73	18	236	4.41	20	518
silver perch	249	31	0.16	0.94	0.67	156	147	2.05	68	204
striped bass	245	50	0.16	0.92	0.66	180	154	9.47	25	754
gizzard shad	227	65	0.15	0.86	0.61	123	191	4.74	94	335
summer flounder	153	56	0.10	0.58	0.41	65	248	6.44	94	553
naked goby	129	39	0.08	0.49	0.35	.	43	0.91	21	83
striped anchovy	127	8	0.08	0.48	0.34	127	93	1.69	53	118
northern pipefish	120	29	0.08	0.45	0.32	.	134	2.69	77	221
squid spp	110	22	0.07	0.42	0.30	.	38	1.44	19	136
red hake	107	13	0.07	0.40	0.29	.	108	2.64	64	192
kingfish spp	93	34	0.06	0.35	0.25	92	117	3.16	36	235
wedge rangia clam	91	36	0.06	0.34	0.24	.	.	.	.	.
threadfin shad	85	6	0.05	0.32	0.23	.	87	0.94	63	113
seaboard goby	60	13	0.04	0.23	0.16	.	35	0.78	24	46
black seabass	58	31	0.04	0.22	0.16	25	148	7.28	44	255
Atlantic menhaden	48	24	0.03	0.18	0.13	43	112	6.57	24	190
spider crab, common	43	16	0.03	0.16	0.12	.	.	.	.	.
butterfish	42	12	0.03	0.16	0.11	41	43	3.73	20	142
alewife	41	12	0.03	0.15	0.11	41	115	2.92	69	142
smallmouth flounder	37	12	0.02	0.14	0.10	36	78	2.77	37	109
mantis shrimp	36	4	0.02	0.14	0.10	.	85	2.85	54	123
feather blenny	27	11	0.02	0.10	0.07	.	61	2.73	34	89
roughneck shrimp	27	9	0.02	0.10	0.07	.	.	.	.	.
American shad	21	8	0.01	0.08	0.06	21	128	3.47	98	152
black drum	21	2	0.01	0.08	0.06	.	182	8.23	124	250
white shrimp	18	14	0.01	0.07	0.05	.	111	6.10	65	156
spider crab, 6 spine	18	11	0.01	0.07	0.05	.	.	.	.	.
Atlantic spadefish	17	8	0.01	0.06	0.05	.	86	4.21	54	118
inshore lizardfish	15	7	0.01	0.06	0.04	13	152	11.55	108	244
Portunid spp	13	3	0.01	0.05	0.03	.	.	.	.	.
pigfish	12	4	0.01	0.05	0.03	.	197	8.88	111	227
brown shrimp	11	11	0.01	0.04	0.03	.	111	4.58	87	129
northern searobin	11	6	0.01	0.04	0.03	11	104	9.07	57	147
pink shrimp	10	8	0.01	0.04	0.03	.	98	5.15	64	124
tautog	9	3	0.01	0.03	0.02	.	352	28.99	166	468
Atlantic sturgeon	8	7	0.01	0.03	0.02	.	507	23.40	394	586
harvestfish	7	6	0.00	0.03	0.02	7	49	10.84	22	89
sand shrimp	6	76	0.00	0.02	0.02	.	.	.	.	.
striped searobin	6	4	0.00	0.02	0.02	.	100	13.72	56	148
channel (smooth) whelk	6	4	0.00	0.02	0.02	.	.	.	.	.
scup	6	3	0.00	0.02	0.02	3	122	10.43	90	150
rock crab	6	3	0.00	0.02	0.02	.	51	1.37	48	57
spottail shiner	5	5	0.00	0.02	0.01	.	79	6.81	58	99
brown bullhead	5	5	0.00	0.02	0.01	.	171	21.46	88	209
horseshoe crab	5	4	0.00	0.02	0.01	.	274	7.23	249	294
common carp	5	3	0.00	0.02	0.01	.	587	29.66	530	700
skilletfish	5	3	0.00	0.02	0.01	.	50	3.67	36	58
bluefish	4	4	0.00	0.02	0.01	.	158	23.10	100	201
Atlantic cutlassfish	4	4	0.00	0.02	0.01	.	480	67.69	356	610
windowpane	3	3	0.00	0.01	0.01	2	125	60.34	54	245
grass shrimp spp	2	73	0.00	0.01	0.01	.	.	.	.	.
lined seahorse	2	2	0.00	0.01	0.01	.	105	27.00	78	132
spotfin butterflyfish	2	2	0.00	0.01	0.01	.	56	23.00	33	79
northern stargazer	2	2	0.00	0.01	0.01	.	43	9.00	34	52
veined rapa whelk	2	2	0.00	0.01	0.01	.	.	.	.	.
Spanish mackerel	2	1	0.00	0.01	0.01	.	108	10.50	97	118
striped cusk-eel	2	1	0.00	0.01	0.01	.	66	13.50	52	79
river shrimp	1	22	0.00	0.00	0.00	.	.	.	.	.
Atlantic herring	1	1	0.00	0.00	0.00	.	73	.	73	73
Atlantic thread herring	1	1	0.00	0.00	0.00	.	92	.	92	92
northern puffer	1	1	0.00	0.00	0.00	1	110	.	110	110
bluespotted cornetfish	1	1	0.00	0.00	0.00	.	446	.	446	446
sea lamprey	1	1	0.00	0.00	0.00	.	158	.	158	158
longnose gar	1	1	0.00	0.00	0.00	.	398	.	398	398

Table 51. (Continued).

Month - All - Pooled, 1998

System - James River

No. of Random Trawls Made - 169

No. of Fixed Trawls Made - 96

No. of Species - 95

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
pumpkinseed	1	1	0.00	0.00	0.00	.	141	.	141	141
pipelish spp	1	1	0.00	0.00	0.00	.	324	.	324	324
clearnose skate	1	1	0.00	0.00	0.00	.	488	.	488	488
Atlantic stingray	1	1	0.00	0.00	0.00	.	545	.	545	545
bluntnose stingray	1	1	0.00	0.00	0.00	.	253	.	253	253
redbreast sunfish	1	1	0.00	0.00	0.00	.	30	.	30	30
conger eel	1	1	0.00	0.00	0.00	.	405	.	405	405
lookdown	1	1	0.00	0.00	0.00	.	111	.	111	111
Atlantic moonfish	1	1	0.00	0.00	0.00	.	48	.	48	48
banded drum	1	1	0.00	0.00	0.00	.	45	.	45	45
striped burrfish	1	1	0.00	0.00	0.00	.	164	.	164	164
bluespotted sunfish	1	1	0.00	0.00	0.00	.	46	.	46	46
lady crab	1	1	0.00	0.00	0.00	.	18	.	18	18
right-hand hermit crab spp	0	8	0.00	0.00	0.00	.	.	.	.	.
mud crab spp	.	80	.	.	.	.	.	.	.	.
blood ark/clam	.	18	.	.	.	.	.	.	.	.
bent mussel	.	13	.	.	.	.	.	.	.	.
blue mussel	.	10	.	.	.	.	.	.	.	.
oyster, common	.	10	.	.	.	.	.	.	.	.
worm spp	.	8	.	.	.	.	.	.	.	.
soft-shell clam	.	8	.	.	.	.	.	.	.	.
quahog clam	.	8	.	.	.	.	.	.	.	.
moon snail	.	7	.	.	.	.	.	.	.	.
macoma clam spp	.	7	.	.	.	.	.	.	.	.
New England dog whelk	.	5	.	.	.	.	.	.	.	.
sea cucumber spp	.	5	.	.	.	.	.	.	.	.
Atlantic oyster drill	.	4	.	.	.	.	.	.	.	.
whelk (conch) spp	.	3	.	.	.	.	.	.	.	.
yoldias clam spp	.	3	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	2	.	.	.	.	.	.	.	.
razor clam spp	.	2	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
slipper shell spp	.	1	.	.	.	.	.	.	.	.
flat-clawed hermit crab	.	1	.	.	.	.	.	.	.	.
All Species Combined	155,213									

Table 52.

Month - All - Pooled, 1998

System - Rappahannock River

No. of Random Trawls Made - 164

No. of Fixed Trawls Made - 92

No. of Species - 56

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	36,306	194	41.16	141.82		32,780	52	0.23	18	95
Atlantic croaker	21,086	204	23.91	82.37	50.16	17,089	103	1.09	11	378
hogchoker	9,863	189	11.18	38.53		1,774	82	0.36	26	161
white perch	5,209	136	5.91	20.35	12.39	517	141	0.66	21	274
blue catfish	4,515	62	5.12	17.64	10.74	866	230	1.20	65	414
spot	3,020	91	3.42	11.80	7.18	2,658	144	0.59	25	262
weakfish	2,904	86	3.29	11.34	6.91	2,641	106	1.53	23	466
blue crab, juvenile female	867	151	0.98	3.39	2.06		47	0.84	13	138
blue crab, male	811	151	0.92	3.17	1.93		61	1.37	7	182
white catfish	683	84	0.77	2.67	1.62	6	249	2.49	80	467
jellyfish spp	625	41	0.71	2.44	1.49					
spotted hake	281	47	0.32	1.10	0.67	281	106	1.74	58	207
American eel	276	52	0.31	1.08	0.66		275	2.84	116	549
blueback herring	229	24	0.26	0.89	0.54	225	71	1.80	56	266
kingfish spp	190	44	0.22	0.74	0.45	190	83	1.79	38	143
alewife	165	46	0.19	0.64	0.39	165	110	1.10	46	148
striped bass	162	55	0.18	0.63	0.39	75	195	6.70	23	570
blackcheek tonguefish	158	65	0.18	0.62	0.38	129	77	2.64	40	162
summer flounder	121	49	0.14	0.47	0.29	70	241	7.59	74	471
channel catfish	114	27	0.13	0.45	0.27	0	292	5.49	162	467
Atlantic menhaden	102	30	0.12	0.40	0.24	92	105	4.58	34	220
blue crab, adult female	99	35	0.11	0.39	0.24		145	1.17	116	172
striped anchovy	48	8	0.05	0.19	0.11	48	91	1.31	65	105
harvestfish	45	12	0.05	0.18	0.11	44	51	4.30	19	129
silver perch	43	11	0.05	0.17	0.10	31	148	5.85	101	223
inshore lizardfish	39	13	0.04	0.15	0.09	33	149	6.71	62	229
naked goby	35	16	0.04	0.14	0.08		38	1.27	25	53
grass shrimp spp	28	34	0.03	0.11	0.07					
mantis shrimp	27	8	0.03	0.11	0.06		60	2.47	40	86
American shad	19	14	0.02	0.07	0.05	19	115	3.38	92	140
Atlantic spadefish	19	8	0.02	0.07	0.05		64	3.71	43	116
Atlantic herring	16	7	0.02	0.06	0.04		222	25.92	47	312
gizzard shad	15	8	0.02	0.06	0.04	14	139	13.50	109	322
northern pipefish	11	10	0.01	0.04	0.03		136	5.68	104	165
blue crab, sex unknown	11	2	0.01	0.04	0.03		15	1.20	13	17
skilletfish	7	7	0.01	0.03	0.02		44	4.74	21	55
feather blenny	7	6	0.01	0.03	0.02		47	3.37	40	67
brown bullhead	6	4	0.01	0.02	0.01		230	23.35	159	281
striped blenny	6	1	0.01	0.02	0.01		48	3.83	36	62
butterfish	5	4	0.01	0.02	0.01	2	151	26.09	65	205
white shrimp	5	4	0.01	0.02	0.01		118	8.66	88	136
spottail shiner	4	4	0.00	0.02	0.01		78	4.17	67	87
oyster toadfish	4	4	0.00	0.02	0.01		141	50.64	72	290
spider crab, common	3	3	0.00	0.01	0.01					
seaboard goby	3	2	0.00	0.01	0.01		41	1.53	39	44
black seabass	2	2	0.00	0.01	0.00	1	128	82.00	46	210
spotted seatrout	2	2	0.00	0.01	0.00		158	27.00	131	185
northern searobin	2	2	0.00	0.01	0.00	2	78	32.50	45	110
Amphipod spp	2	1	0.00	0.01	0.00					
hickory shad	1	1	0.00	0.00	0.00		146		146	146
black drum	1	1	0.00	0.00	0.00		248		248	248
pollock	1	1	0.00	0.00	0.00		112		112	112
common carp	1	1	0.00	0.00	0.00		644		644	644
striped searobin	1	1	0.00	0.00	0.00		127		127	127
bluespotted comefish	1	1	0.00	0.00	0.00		510		510	510
Atlantic silverside	1	1	0.00	0.00	0.00	1	68		68	68
sand shrimp		47								
mud crab spp		27								
wedge rangia clam		14								
macoma clam spp		13								
quahog clam		8								
worm spp		6								
mysid shrimp		4								
soft-shell clam		4								
bent mussel		4								
blue mussel		3								
oyster, common		3								
big-clawed snapping shrimp		1								
river shrimp		1								
New England dog whelk		1								
right-hand hermit crab spp		1								
common razor clam		1								
blood ark/clam		1								
hippolyte shrimp spp		1								
All Species Combined	88,207									

Table 53.

Month - All - Pooled, 1998

System - York River

No. of Random Trawls Made - 156

No. of Fixed Trawls Made - 108

No. of Species - 84

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	30,952	214	27.96	117.24	.	21,553	56	0.20	22	96
Atlantic croaker	27,346	234	24.71	103.58	51.59	19,691	112	0.77	13	376
hogchoker	26,724	225	24.14	101.23	.	6,569	82	0.38	12	182
weakfish	6,556	121	5.92	24.83	12.37	6,294	92	1.34	15	492
blue crab, male	4,752	226	4.29	18.00	8.96	.	63	0.59	9	181
blue crab, juvenile female	3,251	220	2.94	12.31	6.13	.	53	0.53	10	127
white perch	1,884	91	1.70	7.14	3.55	273	140	1.27	22	275
spot	1,854	127	1.68	7.02	3.50	1,500	140	0.90	34	240
jellyfish spp	1,017	45	0.92	3.85	1.92	.	.	.	.	.
blackcheek tonguefish	866	134	0.78	3.28	1.63	668	85	1.21	28	173
white catfish	858	82	0.78	3.25	1.62	345	166	3.39	25	456
spotted hake	690	47	0.62	2.61	1.30	679	104	1.49	45	279
spottail shiner	681	8	0.62	2.58	1.28	.	56	2.14	34	109
silver perch	397	56	0.36	1.50	0.75	330	127	1.90	39	230
kingfish spp	392	58	0.35	1.48	0.74	392	86	1.75	26	199
blue crab, adult female	371	84	0.34	1.41	0.70	.	139	0.64	100	186
striped bass	289	54	0.26	1.09	0.55	254	87	5.39	19	578
mantis shrimp	270	29	0.24	1.02	0.51	.	77	1.25	38	127
oyster toadfish	244	71	0.22	0.92	0.46	.	189	4.17	54	342
striped anchovy	234	12	0.21	0.89	0.44	234	64	1.26	29	115
summer flounder	115	45	0.10	0.44	0.22	65	255	7.70	55	457
American eel	115	44	0.10	0.44	0.22	.	254	7.41	60	520
Atlantic spadefish	82	26	0.07	0.31	0.15	.	66	2.56	24	114
naked goby	62	26	0.06	0.23	0.12	.	40	0.77	24	54
blueback herring	62	15	0.06	0.23	0.12	59	81	2.30	54	158
spotted seatrout	55	6	0.05	0.21	0.10	.	49	5.92	21	232
Atlantic silverside	53	5	0.05	0.20	0.10	53	81	1.50	60	100
white shrimp	41	18	0.04	0.16	0.08	.	105	3.43	56	149
American shad	40	20	0.04	0.15	0.08	40	108	4.10	53	160
gizzard shad	32	18	0.03	0.12	0.06	19	203	17.64	102	378
inshore lizardfish	32	8	0.03	0.12	0.06	30	149	6.86	68	243
grass shrimp spp	29	60	0.03	0.11	0.05	.	.	.	.	.
channel catfish	29	8	0.03	0.11	0.05	17	163	27.40	39	489
squid spp	26	9	0.02	0.10	0.05	.	43	1.85	28	67
alewife	25	15	0.02	0.09	0.05	24	115	3.97	69	162
channel (smooth) whelk	20	14	0.02	0.08	0.04	.	.	.	.	.
harvestfish	20	5	0.02	0.08	0.04	20	71	5.72	28	102
Atlantic menhaden	18	10	0.02	0.07	0.03	16	84	9.52	36	152
spider crab, common	17	13	0.02	0.06	0.03	.	.	.	.	.
northern pipefish	17	11	0.02	0.06	0.03	.	143	7.75	111	212
spider crab, 6 spine	17	10	0.02	0.06	0.03	.	.	.	.	.
butterfish	13	7	0.01	0.05	0.02	12	56	10.10	22	142
Atlantic herring	9	9	0.01	0.03	0.02	.	244	26.61	36	284
skilletfish	8	8	0.01	0.03	0.02	.	55	4.60	36	70
sea lamprey	8	6	0.01	0.03	0.02	.	154	4.29	135	172
feather blenny	8	6	0.01	0.03	0.02	.	76	9.16	34	118
quahog clam	7	10	0.01	0.03	0.01	.	.	.	.	.
northern searobin	7	5	0.01	0.03	0.01	7	89	12.92	37	132
blue catfish	7	5	0.01	0.03	0.01	5	213	40.76	88	413
black seabass	6	4	0.01	0.02	0.01	1	166	30.14	24	230
longnose gar	6	3	0.01	0.02	0.01	.	816	9.28	789	845
Atlantic thread herring	6	1	0.01	0.02	0.01	.	70	1.08	67	74
mud crab spp	5	82	0.00	0.02	0.01	.	.	.	.	.
striped searobin	5	4	0.00	0.02	0.01	.	69	25.81	26	161
roughneck shrimp	5	2	0.00	0.02	0.01	.	.	.	.	.
black drum	4	2	0.00	0.02	0.01	.	227	8.15	205	244
green goby	3	3	0.00	0.01	0.01	.	41	2.67	36	44
tessellated darter	3	2	0.00	0.01	0.01	.	64	7.45	53	78
smallmouth flounder	3	2	0.00	0.01	0.01	3	57	3.21	51	62
knobbed whelk	3	1	0.00	0.01	0.01	.	.	.	.	.
macoma clam spp	2	7	0.00	0.01	0.00	.	.	.	.	.
bluefish	2	2	0.00	0.01	0.00	.	163	33.00	130	196
lined seahorse	2	2	0.00	0.01	0.00	.	138	4.00	134	142
Atlantic stingray	2	2	0.00	0.01	0.00	.	415	24.50	390	439
Atlantic cutlassfish	2	2	0.00	0.01	0.00	.	554	206.50	347	760
horseshoe crab	2	2	0.00	0.01	0.00	.	247	22.00	225	269
brown shrimp	2	2	0.00	0.01	0.00	.	119	0.00	119	119
pink shrimp	2	1	0.00	0.01	0.00	.	102	4.50	97	106
Atlantic oyster drill	1	2	0.00	0.00	0.00	.	.	.	.	.
scup	1	1	0.00	0.00	0.00	1	109	.	109	109
hickory shad	1	1	0.00	0.00	0.00	.	166	.	166	166
red drum	1	1	0.00	0.00	0.00	.	57	.	57	57
winter flounder	1	1	0.00	0.00	0.00	.	82	.	82	82
common carp	1	1	0.00	0.00	0.00	.	410	.	410	410
pigfish	1	1	0.00	0.00	0.00	.	52	.	52	52
seaboard goby	1	1	0.00	0.00	0.00	.	46	.	46	46
striped blenny	1	1	0.00	0.00	0.00	.	68	.	68	68
bluntnose stingray	1	1	0.00	0.00	0.00	.	198	.	198	198
conger eel	1	1	0.00	0.00	0.00	.	490	.	490	490
Atlantic moonfish	1	1	0.00	0.00	0.00	.	61	.	61	61
threadfin shad	1	1	0.00	0.00	0.00	.	114	.	114	114

Table 53. (Continued).

Month - All - Pooled, 1998

System - York River

No. of Random Trawls Made - 156

No. of Fixed Trawls Made - 108

No. of Species - 84

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
forbes common sea star	1	1	0	0	0	.	.	.	.	.
New England dog whelk	1	1	0	0	0	.	.	.	.	.
little surf clam	1	1	0	0	0	.	.	.	.	.
sand shrimp	.	43	.	.	.	.	.	.	.	.
worm spp	.	11	.	.	.	.	.	.	.	.
river shrimp	.	7	.	.	.	.	.	.	.	.
mysid shrimp	.	5	.	.	.	.	.	.	.	.
blood ark/clam	.	5	.	.	.	.	.	.	.	.
whelk (conch) spp	.	3	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
soft-shell clam	.	3	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
blue mussel	.	2	.	.	.	.	.	.	.	.
sea cucumber spp	.	2	.	.	.	.	.	.	.	.
wedge rangia clam	.	2	.	.	.	.	.	.	.	.
Amphipod spp	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
ribbed mussel	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	110,683									

Table 54.

Month - All - Pooled, 1998

System - Mobjack Bay & Tribs

No. of Random Trawls Made - 21

No. of Fixed Trawls Made - 14

No. of Species - 38

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	13,779	34	62.05	393.69	.	10,759	58	0.4	29	87
Atlantic croaker	4,971	34	22.39	142.03	59.62	4,712	99	2.2	20	350
spot	1,608	32	7.24	45.94	19.29	1,571	116	0.71	47	221
jellyfish spp	505	14	2.27	14.43	6.06	.	.	.	.	.
blue crab, juvenile female	413	35	1.86	11.8	4.95	.	59	0.95	22	119
blue crab, male	298	35	1.34	8.51	3.57	.	66	1.78	21	154
weakfish	181	24	0.82	5.17	2.17	165	136	3.8	30	286
hogchoker	89	20	0.4	2.54	.	5	101	1.47	73	141
silver perch	80	10	0.36	2.29	0.96	68	131	3.01	62	210
summer flounder	72	29	0.32	2.06	0.86	52	224	9.55	71	418
blackcheek tonguefish	34	19	0.15	0.97	0.41	22	106	5.89	51	165
blue crab, adult female	27	11	0.12	0.77	0.32	.	132	2.62	111	154
inshore lizardfish	25	13	0.11	0.71	0.3	25	109	3.75	86	145
seaboard goby	24	5	0.11	0.69	0.29	.	38	1.52	31	45
butterfish	17	10	0.08	0.49	0.2	12	130	10.03	43	189
kingfish spp	15	8	0.07	0.43	0.18	14	125	10.44	68	201
naked goby	14	7	0.06	0.4	0.17	.	39	1.84	27	47
northern pipefish	13	7	0.06	0.37	0.16	.	144	7.76	95	206
oyster toadfish	5	3	0.02	0.14	0.06	.	118	16	73	167
squid spp	5	2	0.02	0.14	0.06	.	76	6.38	55	95
bluefish	4	4	0.02	0.11	0.05	.	149	5.96	136	161
Atlantic cutlassfish	4	4	0.02	0.11	0.05	.	281	25.12	228	340
spider crab, 6 spine	4	2	0.02	0.11	0.05	.	.	.	.	.
black seabass	2	2	0.01	0.06	0.02	1	162	32	130	194
lined seahorse	2	2	0.01	0.06	0.02	.	87	37.5	49	124
feather blenny	2	2	0.01	0.06	0.02	.	76	20.5	55	96
brown shrimp	2	2	0.01	0.06	0.02	.	127	7.5	119	134
red hake	1	1	0	0.03	0.01	.	57	.	57	57
striped bass	1	1	0	0.03	0.01	0	316	.	316	316
spotted seatrout	1	1	0	0.03	0.01	.	29	.	29	29
northern searobin	1	1	0	0.03	0.01	1	85	.	85	85
striped searobin	1	1	0	0.03	0.01	.	216	.	216	216
green goby	1	1	0	0.03	0.01	.	47	.	47	47
conger eel	1	1	0	0.03	0.01	.	465	.	465	465
Atlantic moonfish	1	1	0	0.03	0.01	.	69	.	69	69
spider crab, common	1	1	0	0.03	0.01	.	.	.	.	.
mantis shrimp	1	1	0	0.03	0.01	.	69	.	69	69
channel (smooth) whelk	1	1	0	0.03	0.01	.	.	.	.	.
sand shrimp	.	11	.	.	.	.	.	.	.	.
mud crab spp	.	9	.	.	.	.	.	.	.	.
grass shrimp spp	.	9	.	.	.	.	.	.	.	.
soft-shell clam	.	4	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
periwinkle spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
ribbed mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	22,206									

Table 55.

Month - All - Pooled, 1998

System - Piankatank River

No. of Random Trawls Made - 8

No. of Fixed Trawls Made - 6

No. of Species - 26

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	26,170	12	87.81	1869.29	.	25,492	45	0.53	25	79
Atlantic croaker	1,900	14	6.38	135.71	54.49	1,165	85	3.73	13	256
spot	852	12	2.86	60.86	24.43	830	139	0.89	99	237
weakfish	367	11	1.23	26.21	10.52	345	108	3.2	33	314
hogchoker	146	8	0.49	10.43	.	0	90	1.72	57	137
harvestfish	58	10	0.19	4.14	1.66	58	83	2.39	32	115
blue crab, male	57	10	0.19	4.07	1.63	.	67	4.97	18	160
summer flounder	50	13	0.17	3.57	1.43	31	265	7.76	178	438
blue crab, juvenile female	44	12	0.15	3.14	1.26	.	56	4.91	15	126
kingfish spp	41	5	0.14	2.93	1.18	41	71	2.45	49	125
striped anchovy	40	10	0.13	2.86	1.15	40	83	2.33	63	109
silver perch	28	7	0.09	2	0.8	27	113	4.26	51	204
blue crab, adult female	12	6	0.04	0.86	0.34	.	136	2.66	116	150
inshore lizardfish	11	7	0.04	0.79	0.32	5	191	11.17	125	233
striped searobin	5	3	0.02	0.36	0.14	.	116	16.6	73	162
Atlantic spadefish	4	4	0.01	0.29	0.11	.	73	6.54	60	85
white perch	4	2	0.01	0.29	0.11	0	208	4.68	195	217
blackcheek tonguefish	4	2	0.01	0.29	0.11	0	140	8.16	123	162
Atlantic thread herring	3	2	0.01	0.21	0.09	.	76	28.01	47	132
striped bass	1	1	0	0.07	0.03	0	222	.	222	222
black drum	1	1	0	0.07	0.03	.	204	.	204	204
spotted seatrout	1	1	0	0.07	0.03	.	53	.	53	53
bluespotted cornetfish	1	1	0	0.07	0.03	.	541	.	541	541
seaboard goby	1	1	0	0.07	0.03	.	46	.	46	46
smallmouth flounder	1	1	0	0.07	0.03	1	66	.	66	66
spider crab, common	1	1	0	0.07	0.03	.	.	.	.	.
macoma clam spp	3	.	.	.	.	.	.	.	.	.
sand shrimp	.	2	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
soft-shell clam	.	2	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	29,803									

Table 56.

Month - All - Pooled, 1998
 System - Great Wicomico River
 No. of Random Trawls Made - 12
 No. of Fixed Trawls Made - 0
 No. of Species - 26
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	7,999	12	68.90	666.58	.	7,531	38	0.58	20	76
Atlantic croaker	1,573	11	13.55	131.08	44.40	1,322	64	3.19	21	217
spot	782	11	6.74	65.17	22.07	781	139	0.57	106	226
striped anchovy	502	6	4.32	41.83	14.17	502	58	2.20	43	105
weakfish	248	9	2.14	20.67	7.00	240	80	4.14	31	303
blue crab, male	175	11	1.51	14.58	4.94	.	57	2.75	12	141
blue crab, juvenile female	146	11	1.26	12.17	4.12	.	42	2.07	16	116
hogchoker	67	5	0.58	5.58	.	0	95	1.81	65	135
blue crab, adult female	26	8	0.22	2.17	0.73	.	139	1.96	120	159
summer flounder	17	8	0.15	1.42	0.48	14	250	17.66	194	506
inshore lizardfish	14	8	0.12	1.17	0.40	4	212	6.52	156	248
blue crab, sex unknown	12	1	0.10	1.00	0.34	.	18	1.71	2	26
naked goby	10	5	0.09	0.83	0.28	.	39	1.88	28	48
striped blenny	6	3	0.05	0.50	0.17	.	62	6.08	46	86
silver perch	6	2	0.05	0.50	0.17	6	100	6.75	89	129
Atlantic thread herring	5	1	0.04	0.42	0.14	.	69	1.54	64	72
blackcheek tonguefish	4	3	0.03	0.33	0.11	2	83	21.26	40	122
harvestfish	3	2	0.03	0.25	0.08	3	73	0.58	72	74
oyster toadfish	3	2	0.03	0.25	0.08	.	176	21.26	142	215
Atlantic spadefish	2	2	0.02	0.17	0.06	.	73	3.50	69	76
northern pipefish	2	2	0.02	0.17	0.06	.	79	5.50	73	84
white shrimp	2	2	0.02	0.17	0.06	.	101	21.00	80	122
kingfish spp	2	1	0.02	0.17	0.06	2	82	7.50	74	89
red drum	1	1	0.01	0.08	0.03	.	395	.	395	395
American eel	1	1	0.01	0.08	0.03	.	439	.	439	439
mantis shrimp	1	1	0.01	0.08	0.03	.	41	.	41	41
mud crab spp	.	6	.	.	.	.	.	.	.	.
sand shrimp	.	6	.	.	.	.	.	.	.	.
grass shrimp spp	.	5	.	.	.	.	.	.	.	.
worm spp	.	4	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	11,609									

Table 57.

Month - All - Pooled, 1998

System - Pocomoke Sound

No. of Random Trawls Made - 22

No. of Fixed Trawls Made - 6

No. of Species - 37

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	31,460	25	67.48	1123.57	.	27,397	51	0.58	27	89
Atlantic croaker	13,005	26	27.90	464.46	87.71	11,620	78	2.63	18	342
kingfish spp	568	14	1.22	20.29	3.83	540	84	1.20	41	181
weakfish	388	14	0.83	13.86	2.62	348	110	2.68	48	368
hogchoker	333	14	0.71	11.89	.	0	122	1.68	83	178
spot	229	12	0.49	8.18	1.54	216	152	1.34	114	237
blackcheek tonguefish	189	11	0.41	6.75	1.27	2	145	1.31	41	171
blue crab, juvenile female	158	16	0.34	5.64	1.07	.	39	1.74	11	118
blue crab, male	83	14	0.18	2.96	0.56	.	42	3.16	9	150
silver perch	49	8	0.11	1.75	0.33	43	125	4.39	80	217
mantis shrimp	22	8	0.05	0.79	0.15	.	74	3.11	44	102
summer flounder	17	6	0.04	0.61	0.11	2	330	11.70	234	423
jellyfish spp	17	1	0.04	0.61	0.11	.	.	.	.	.
blue crab, adult female	15	6	0.03	0.54	0.10	.	133	1.97	125	149
spider crab, common	15	5	0.03	0.54	0.10	.	.	.	.	.
oyster toadfish	14	4	0.03	0.50	0.09	.	235	16.34	152	312
northern pipefish	11	5	0.02	0.39	0.07	.	125	13.51	83	234
harvestfish	7	2	0.02	0.25	0.05	7	90	2.62	83	104
spider crab, 6 spine	6	3	0.01	0.21	0.04	.	.	.	.	.
Atlantic spadefish	4	3	0.01	0.14	0.03	.	57	1.71	52	60
inshore lizardfish	4	3	0.01	0.14	0.03	1	233	17.93	180	256
Atlantic silverside	4	2	0.01	0.14	0.03	4	78	6.14	70	96
striped searobin	3	3	0.01	0.11	0.02	.	139	9.77	120	153
striped bass	3	2	0.01	0.11	0.02	0	424	44.80	335	475
striped anchovy	2	2	0.00	0.07	0.01	2	95	7.00	88	102
American eel	2	1	0.00	0.07	0.01	.	388	88.50	299	476
roughneck shrimp	2	1	0.00	0.07	0.01	.	.	.	.	.
black seabass	1	1	0.00	0.04	0.01	0	210	.	210	210
butterfish	1	1	0.00	0.04	0.01	0	139	.	139	139
blueback herring	1	1	0.00	0.04	0.01	1	66	.	66	66
black drum	1	1	0.00	0.04	0.01	.	231	.	231	231
Atlantic menhaden	1	1	0.00	0.04	0.01	0	333	.	333	333
northern puffer	1	1	0.00	0.04	0.01	1	72	.	72	72
gizzard shad	1	1	0.00	0.04	0.01	1	124	.	124	124
lined seahorse	1	1	0.00	0.04	0.01	.	49	.	49	49
Atlantic cutlassfish	1	1	0.00	0.04	0.01	.	397	.	397	397
channel (smooth) whelk	1	1	0.00	0.04	0.01	.	.	.	.	.
sand shrimp	.	15	.	.	.	.	.	.	.	.
mud crab spp	.	9	.	.	.	.	.	.	.	.
grass shrimp spp	.	5	.	.	.	.	.	.	.	.
worm spp	.	5	.	.	.	.	.	.	.	.
moon snail	.	3	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	2	.	.	.	.	.	.	.	.
soft-shell clam	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	46,620									

Table 58.

Month - All - Pooled, 1998

System - All - Pooled

No. of Random Trawls Made - 552

No. of Fixed Trawls Made - 322

No. of Species - 114

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	230,857	677	49.72	264.14	.	206,732	53	0.12	17	96
Atlantic croaker	80,147	742	17.26	91.70	49.34	64,061	105	0.48	11	378
hogchoker	71,059	666	15.30	81.30	.	22,827	79	0.22	12	187
white perch	14,628	381	3.15	16.74	9.01	4,280	124	0.50	11	275
weakfish	12,194	362	2.63	13.95	7.51	11,558	99	0.74	15	492
spot	10,472	410	2.26	11.98	6.45	9,381	137	0.34	25	262
blue catfish	8,597	167	1.85	9.84	5.29	2,622	196	0.89	54	501
blue crab, male	8,289	659	1.79	9.48	5.10	.	62	0.42	7	182
blue crab, juvenile female	7,024	649	1.51	8.04	4.32	.	51	0.32	10	147
jellyfish spp	2,594	125	0.56	2.97	1.60	.	.	.	.	.
white catfish	1,946	247	0.42	2.23	1.20	393	202	2.03	25	467
spotted hake	1,816	147	0.39	2.08	1.12	1,768	111	1.11	45	314
blackcheek tonguefish	1,759	324	0.38	2.01	1.08	1,190	92	0.94	28	173
blueback herring	1,664	64	0.36	1.90	1.02	1,654	74	0.82	54	266
kingfish spp	1,301	164	0.28	1.49	0.80	1,271	88	0.97	26	235
striped anchovy	953	46	0.21	1.09	0.59	953	76	1.06	29	118
blue crab, adult female	911	238	0.20	1.04	0.56	.	140	0.41	91	186
silver perch	852	125	0.18	0.97	0.52	661	134	1.23	39	230
American eel	790	169	0.17	0.90	0.49	.	262	2.04	60	549
striped bass	701	163	0.15	0.80	0.43	509	139	4.56	19	754
spottail shiner	690	17	0.15	0.79	0.42	.	58	2.07	34	109
oyster toadfish	617	148	0.13	0.71	0.38	.	185	2.74	38	369
summer flounder	545	206	0.12	0.62	0.34	299	249	3.43	55	553
channel catfish	415	87	0.09	0.47	0.26	35	246	4.13	20	518
mantis shrimp	357	51	0.08	0.41	0.22	.	76	1.06	38	127
gizzard shad	275	92	0.06	0.31	0.17	157	190	4.53	94	378
naked goby	250	93	0.05	0.29	0.15	.	41	0.56	21	83
alewife	231	73	0.05	0.26	0.14	230	111	1.04	46	162
northern pipefish	174	64	0.04	0.20	0.11	.	135	2.32	73	234
Atlantic menhaden	169	65	0.04	0.19	0.10	151	106	3.81	24	333
squid spp	141	33	0.03	0.16	0.09	.	40	1.33	19	136
inshore lizardfish	140	59	0.03	0.16	0.09	111	154	4.03	62	256
harvestfish	140	37	0.03	0.16	0.09	139	69	2.33	19	129
Atlantic spadefish	128	51	0.03	0.15	0.08	.	68	1.93	24	118
red hake	108	14	0.02	0.12	0.07	.	108	2.66	57	192
wedge rangia clam	91	52	0.02	0.10	0.06	.	.	.	.	.
seaboard goby	89	22	0.02	0.10	0.05	.	36	0.70	24	46
threadfin shad	86	7	0.02	0.10	0.05	.	87	0.98	63	114
American shad	80	42	0.02	0.09	0.05	80	115	2.55	53	160
spider crab, common	80	39	0.02	0.09	0.05	.	.	.	.	.
butterfish	78	34	0.02	0.09	0.05	67	72	5.98	20	205
black seabass	69	40	0.01	0.08	0.04	28	150	6.92	24	255
white shrimp	66	38	0.01	0.08	0.04	.	107	2.82	56	156
grass shrimp spp	59	188	0.01	0.07	0.04	.	.	.	.	.
spotted seatrout	59	10	0.01	0.07	0.04	.	52	6.14	21	232
Atlantic silverside	58	8	0.01	0.07	0.04	58	80	1.44	60	100
spider crab, 6 spine	45	26	0.01	0.05	0.03	.	.	.	.	.
feather blenny	44	25	0.01	0.05	0.03	.	62	2.78	34	118
smallmouth flounder	41	15	0.01	0.05	0.03	40	76	2.67	37	109
roughneck shrimp	34	12	0.01	0.04	0.02	.	.	.	.	.
channel (smooth) whelk	28	20	0.01	0.03	0.02	.	.	.	.	.
black drum	28	7	0.01	0.03	0.02	.	194	7.35	124	250
Atlantic herring	26	17	0.01	0.03	0.02	.	224	19.16	36	312
blue crab, sex unknown	23	3	0.00	0.03	0.01	.	17	1.40	2	26
striped searobin	21	16	0.00	0.02	0.01	.	109	10.71	26	216
northern searobin	21	14	0.00	0.02	0.01	21	96	6.90	37	147
skilletfish	20	18	0.00	0.02	0.01	.	50	2.77	21	70
brown shrimp	15	15	0.00	0.02	0.01	.	114	3.70	87	134
Atlantic thread herring	15	5	0.00	0.02	0.01	.	72	5.02	47	132
pigfish	13	5	0.00	0.01	0.01	.	186	13.84	52	227
striped blenny	13	5	0.00	0.01	0.01	.	56	3.84	36	86
Portunid spp	13	3	0.00	0.01	0.01	.	.	.	.	.
pink shrimp	12	9	0.00	0.01	0.01	.	98	4.31	64	124
Atlantic cutlassfish	11	11	0.00	0.01	0.01	.	413	50.06	228	760
brown bullhead	11	9	0.00	0.01	0.01	.	203	17.84	88	281
bluefish	10	10	0.00	0.01	0.01	.	155	10.17	100	201
sea lamprey	9	7	0.00	0.01	0.01	.	155	3.81	135	172
tautog	9	3	0.00	0.01	0.01	.	352	28.99	166	468
Atlantic sturgeon	8	7	0.00	0.01	0.00	.	507	23.40	394	586
quahog clam	7	28	0.00	0.01	0.00	.	.	.	.	.
lined seahorse	7	7	0.00	0.01	0.00	.	101	15.58	49	142
horseshoe crab	7	6	0.00	0.01	0.00	.	266	8.49	225	294
common carp	7	5	0.00	0.01	0.00	.	570	34.52	410	700
scup	7	4	0.00	0.01	0.00	4	120	9.00	90	150
longnose gar	7	4	0.00	0.01	0.00	.	756	60.25	398	845
sand shrimp	6	200	0.00	0.01	0.00	.	.	.	.	.
rock crab	6	3	0.00	0.01	0.00	.	.	.	.	.
mud crab spp	5	213	0.00	0.01	0.00	.	51	1.37	48	57
green goby	4	4	0.00	0.00	0.00	.	43	2.36	36	47
windowpane	3	3	0.00	0.00	0.00	2	125	60.34	54	245
bluespotted cometsfish	3	3	0.00	0.00	0.00	.	499	27.97	446	541

Table 58. (Continued)

Month - All - Pooled, 1998

System - All - Pooled

No. of Random Trawls Made - 552

No. of Fixed Trawls Made - 322

No. of Species - 114

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Atlantic stingray	3	3	0.00	0.00	0.00	.	458	45.74	390	545
conger eel	3	3	0.00	0.00	0.00	.	453	25.22	405	490
Atlantic moonfish	3	3	0.00	0.00	0.00	.	59	6.12	48	69
tessellated darter	3	2	0.00	0.00	0.00	.	64	7.45	53	78
knobbed whelk	3	1	0.00	0.00	0.00	.	.	.	.	.
macoma clam spp	2	31	0.00	0.00	0.00	.	.	.	.	.
Amphipod spp	2	5	0.00	0.00	0.00	.	.	.	.	.
hickory shad	2	2	0.00	0.00	0.00	.	156	10.00	146	166
red drum	2	2	0.00	0.00	0.00	.	226	169.00	57	395
northern puffer	2	2	0.00	0.00	0.00	2	91	19.00	72	110
bluntnose stingray	2	2	0.00	0.00	0.00	.	226	27.50	198	253
spotfin butterflyfish	2	2	0.00	0.00	0.00	.	56	23.00	33	79
northern stargazer	2	2	0.00	0.00	0.00	.	43	9.00	34	52
veined rapa whelk	2	2	0.00	0.00	0.00	.	.	.	.	.
Spanish mackerel	2	1	0.00	0.00	0.00	.	108	10.50	97	118
striped cusk-eel	2	1	0.00	0.00	0.00	.	66	13.50	52	79
river shrimp	1	30	0.00	0.00	0.00	.	.	.	.	.
New England dog whelk	1	7	0.00	0.00	0.00	.	.	.	.	.
Atlantic oyster drill	1	6	0.00	0.00	0.00	.	.	.	.	.
winter flounder	1	1	0.00	0.00	0.00	.	82	.	82	82
pollock	1	1	0.00	0.00	0.00	.	112	.	112	112
pumpkinseed	1	1	0.00	0.00	0.00	.	141	.	141	141
pipefish spp	1	1	0.00	0.00	0.00	.	324	.	324	324
clearnose skate	1	1	0.00	0.00	0.00	.	488	.	488	488
redbreast sunfish	1	1	0.00	0.00	0.00	.	30	.	30	30
lookdown	1	1	0.00	0.00	0.00	.	111	.	111	111
banded drum	1	1	0.00	0.00	0.00	.	45	.	45	45
striped burrfish	1	1	0.00	0.00	0.00	.	164	.	164	164
bluespotted sunfish	1	1	0.00	0.00	0.00	.	46	.	46	46
lady crab	1	1	0.00	0.00	0.00	.	18	.	18	18
forbes common sea star	1	1	0.00	0.00	0.00	.	.	.	.	.
little surf clam	1	1	0.00	0.00	0.00	.	.	.	.	.
right-hand hermit crab spp	0	17	0.00	0.00	0.00	.	.	.	.	.
worm spp	.	35	.	.	.	.	.	.	.	.
blood ark/clam	.	24	.	.	.	.	.	.	.	.
soft-shell clam	.	23	.	.	.	.	.	.	.	.
bent mussel	.	18	.	.	.	.	.	.	.	.
oyster, common	.	16	.	.	.	.	.	.	.	.
blue mussel	.	15	.	.	.	.	.	.	.	.
moon snail	.	13	.	.	.	.	.	.	.	.
mysisid shrimp	.	9	.	.	.	.	.	.	.	.
sea cucumber spp	.	7	.	.	.	.	.	.	.	.
whelk (conch) spp	.	6	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	3	.	.	.	.	.	.	.	.
yoldias clam spp	.	3	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	2	.	.	.	.	.	.	.	.
razor clam spp	.	2	.	.	.	.	.	.	.	.
ribbed mussel	.	2	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	1	.	.	.	.	.	.	.	.
common razor clam	.	1	.	.	.	.	.	.	.	.
periwinkle spp	.	1	.	.	.	.	.	.	.	.
hippolyte shrimp spp	.	1	.	.	.	.	.	.	.	.
slipper shell spp	.	1	.	.	.	.	.	.	.	.
flat-clawed hermit crab	.	1	.	.	.	.	.	.	.	.
All Species Combined	464,341									

Table 59-62. Species composition, number caught, catch per trawl, and length statistics for **all months**, **by geographic region** for the Chesapeake Bay surveys.

- A. The 'Number of Species' notation in the table header includes each of four categories of blue crabs (male, juvenile female, adult female, and unclassified) as unique species.
- B. Catch per trawl for species other than blue crabs is based on the value 'Number of Fish Trawls Made' while the catch per trawl for blue crabs is based on the sum of 'Number of Fish Trawls made' and 'Number of Additional Crab Trawls Made'.
- C. 'Adjusted Percent of Catch' excludes bay anchovy and hogchoker due to the low biomass estimates in relation to total number of fish caught.
- D. 'Frequency' is the number of samples in which a species was captured.

Table 59.

Month - All - Pooled, 1998

Segment - Ches. Bay - Bottom

No. of Random Trawls Made - 130

No. of Fixed Trawls Made - 0

No. of Species - 84

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	29,790	100	74.75	229.15		24,698	56	0.25	29	92
squid spp	1,307	51	3.28	10.05	13.23	.	31	0.43	5	151
Atlantic croaker	1,251	46	3.14	9.62	12.66	252	170	2.30	9	311
weakfish	1,110	34	2.79	8.54	11.23	903	120	2.65	29	327
spider crab, common	860	48	2.16	6.62	8.70	.	63	2.79	52	80
jellyfish spp	750	28	1.88	5.77	7.59	.	.	.	.	.
kingfish spp	677	45	1.70	5.21	6.85	653	99	1.77	19	277
spotted hake	479	54	1.20	3.68	4.85	467	123	2.40	25	320
spot	400	36	1.00	3.08	4.05	181	162	1.04	28	232
smallmouth flounder	366	65	0.92	2.82	3.70	334	82	0.92	38	128
striped anchovy	341	17	0.86	2.62	3.45	339	82	1.09	44	136
blackcheek tonguefish	284	49	0.71	2.18	2.87	25	145	1.36	34	211
summer flounder	271	72	0.68	2.08	2.74	162	278	3.39	150	496
northern searobin	238	56	0.60	1.83	2.41	234	90	1.73	38	170
hogchoker	183	34	0.46	1.41		4	121	2.02	71	201
butterfish	178	28	0.45	1.37	1.80	165	72	3.00	28	169
blue crab, adult female	172	49	0.43	1.32	1.74	.	133	1.07	91	164
rock crab	142	23	0.36	1.09	1.44	.	60	2.74	16	148
clearnose skate	118	25	0.30	0.91	1.19	.	385	5.19	79	475
scup	81	20	0.20	0.62	0.82	76	95	2.44	46	144
lady crab	79	31	0.20	0.61	0.80	.	51	1.00	37	68
moon snail	70	15	0.18	0.54	0.71	.	.	.	.	.
red hake	66	13	0.17	0.51	0.67	.	131	5.95	44	255
northern pipefish	55	28	0.14	0.42	0.56	.	124	4.10	53	216
Atlantic thread herring	54	9	0.14	0.42	0.55	.	54	2.05	33	91
inshore lizardfish	45	24	0.11	0.35	0.46	24	200	7.60	76	321
windowpane	40	25	0.10	0.31	0.40	26	163	10.32	37	301
northern puffer	35	10	0.09	0.27	0.35	27	102	7.45	65	218
roughneck shrimp	33	22	0.08	0.25	0.33	.	54	1.78	42	64
striped searobin	28	19	0.07	0.22	0.28	.	118	8.46	33	278
lined seahorse	28	16	0.07	0.22	0.28	.	78	4.36	45	137
black seabass	25	12	0.06	0.19	0.25	21	97	7.14	48	198
mantis shrimp	25	12	0.06	0.19	0.25	.	102	8.65	65	145
Atlantic spadefish	22	12	0.06	0.17	0.22	.	99	22.24	25	440
horseshoe crab	21	5	0.05	0.16	0.21	.	221	8.23	122	276
blue crab, juvenile female	20	12	0.05	0.15	0.20	.	63	6.15	23	117
Atlantic herring	20	8	0.05	0.15	0.20	.	90	10.04	39	275
blue crab, male	18	12	0.05	0.14	0.18	.	72	9.05	17	137
Atlantic silverside	17	4	0.04	0.13	0.17	17	84	3.59	59	108
whelk (conch) spp	12	7	0.03	0.09	0.12	.	.	.	.	.
sand shrimp	10	60	0.03	0.08	0.10	.	.	.	.	.
silver perch	9	5	0.02	0.07	0.09	8	138	9.40	108	190
banded drum	8	7	0.02	0.06	0.08	.	55	18.66	22	183
channel (smooth) whelk	8	6	0.02	0.06	0.08	.	.	.	.	.
knobbed whelk	8	4	0.02	0.06	0.08	.	.	.	.	.
spider crab, 6 spine	7	5	0.02	0.05	0.07	.	.	.	.	.
feather blenny	6	5	0.02	0.05	0.06	.	68	8.67	46	94
Portunid spp	6	4	0.02	0.05	0.06	.	.	.	.	.
naked goby	6	2	0.02	0.05	0.06	.	36	2.60	27	44
Atlantic cutlassfish	5	3	0.01	0.04	0.05	.	323	20.97	267	365
bluefish	4	3	0.01	0.03	0.04	.	125	59.55	25	271
American shad	4	3	0.01	0.03	0.04	4	142	9.70	122	163
pigfish	4	3	0.01	0.03	0.04	.	113	20.40	61	157
bluntnose stingray	4	3	0.01	0.03	0.04	.	366	127.04	215	745
mud crab spp	3	39	0.01	0.02	0.03	.	.	.	.	.
silver hake	3	3	0.01	0.02	0.03	.	119	20.80	94	160
blueback herring	3	3	0.01	0.02	0.03	0	163	34.07	104	222
Atlantic menhaden	3	3	0.01	0.02	0.03	2	88	32.64	44	152
Irredescent swimming crab	3	3	0.01	0.02	0.03	.	.	.	.	.
shelligs blue crab	3	3	0.01	0.02	0.03	.	.	.	.	.
striped burrfish	3	2	0.01	0.02	0.03	.	136	26.01	109	188
sargassum swimming crab	3	2	0.01	0.02	0.03	.	.	.	.	.
right-hand hermit crab spp	2	60	0.01	0.02	0.02	.	.	.	.	.
skilletfish	2	2	0.01	0.02	0.02	.	31	10.00	21	41
oyster toadfish	2	2	0.01	0.02	0.02	.	137	42.00	95	179
cownose ray	2	2	0.01	0.02	0.02	.	570	2.50	567	572
brown shrimp	2	2	0.01	0.02	0.02	.	89	11.00	78	100
Florida pompano	2	1	0.01	0.02	0.02	.	177	2.50	174	179
little skate	2	1	0.01	0.02	0.02	.	250	2.00	248	252
harvestfish	1	1	0.00	0.01	0.01	1	35	.	35	35
white hake	1	1	0.00	0.01	0.01	.	418	.	418	418
alewife	1	1	0.00	0.01	0.01	1	118	.	118	118
striped bass	1	1	0.00	0.01	0.01	0	397	.	397	397
tautog	1	1	0.00	0.01	0.01	.	201	.	201	201
round herring	1	1	0.00	0.01	0.01	.	58	.	58	58
smooth dogfish	1	1	0.00	0.01	0.01	.	305	.	305	305
winter skate	1	1	0.00	0.01	0.01	.	416	.	416	416
Atlantic stingray	1	1	0.00	0.01	0.01	.	452	.	452	452
spiny butterfly ray	1	1	0.00	0.01	0.01	.	436	.	436	436
Atlantic moonfish	1	1	0.00	0.01	0.01	.	110	.	110	110
fawn cusk-eel	1	1	0.00	0.01	0.01	.	179	.	179	179

Table 59. (Continued)

Month - All - Pooled, 1998

Segment - Ches. Bay - Bottom

No. of Random Trawls Made - 130

No. of Fixed Trawls Made - 0

No. of Species - 84

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
spotfin mojarra	1	1	0.00	0.01	0.01	.	73	.	73	73
silver jenny	1	1	0.00	0.01	0.01	.	80	.	80	80
purple sea urchin	1	1	0.00	0.01	0.01	.	.	.	.	.
sand dollar	.	20	.	.	.	.	.	.	.	.
grass shrimp spp	.	11	.	.	.	.	.	.	.	.
blue mussel	.	9	.	.	.	.	.	.	.	.
blood ark/clam	.	6	.	.	.	.	.	.	.	.
soft-shell clam	.	5	.	.	.	.	.	.	.	.
Amphipod spp	.	5	.	.	.	.	.	.	.	.
forbes common sea star	.	4	.	.	.	.	.	.	.	.
quahog clam	.	4	.	.	.	.	.	.	.	.
Atlantic oyster drill	.	4	.	.	.	.	.	.	.	.
worm spp	.	3	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	2	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	2	.	.	.	.	.	.	.	.
razor clam spp	.	2	.	.	.	.	.	.	.	.
common razor clam	.	2	.	.	.	.	.	.	.	.
hippolyte shrimp spp	.	2	.	.	.	.	.	.	.	.
alfonsin spp	.	1	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
sea star spp	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
yoldias clam spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	39,853									

Table 60.

Month - All - Pooled, 1998

Segment - Ches. Bay - Lower

No. of Random Trawls Made - 129

No. of Fixed Trawls Made - 0

No. of Species - 82

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	76,614	95	91.03	593.91	.	65,880	52	0.21	29	90
Atlantic croaker	1,305	66	1.55	10.12	18.04	417	152	2.76	9	353
jellyfish spp	955	30	1.13	7.4	13.2	.	.	.	.	.
squid spp	746	35	0.89	5.78	10.31	.	31	0.58	8	86
weakfish	731	39	0.87	5.67	10.11	578	140	2.85	30	342
spotted hake	450	45	0.53	3.49	6.22	435	112	2.12	37	326
spot	341	48	0.41	2.64	4.71	217	168	1.11	90	258
kingfish spp	318	40	0.38	2.47	4.4	307	93	2.16	15	284
hogchoker	317	40	0.38	2.46	.	1	110	1.27	63	163
striped anchovy	267	16	0.32	2.07	3.69	265	84	1.31	48	131
sand shrimp	260	50	0.31	2.02	3.59	.	.	.	.	.
summer flounder	197	67	0.23	1.53	2.72	109	274	5.02	98	579
smallmouth flounder	196	40	0.23	1.52	2.71	190	77	1.2	27	118
Atlantic thread herring	152	9	0.18	1.18	2.1	.	52	2.01	36	170
blackcheek tonguefish	150	46	0.18	1.16	2.07	47	120	2.76	40	172
northern searobin	145	50	0.17	1.12	2	138	96	2.27	42	157
blue crab, adult female	137	42	0.16	1.06	1.89	.	139	1.1	107	174
inshore lizardfish	102	22	0.12	0.79	1.41	65	181	3.92	72	273
butterfish	90	20	0.11	0.7	1.24	80	70	3.33	23	168
mantis shrimp	74	16	0.09	0.57	1.02	.	77	3.01	30	147
blue crab, juvenile female	71	28	0.08	0.55	0.98	.	57	3.39	13	116
northern pipefish	63	23	0.07	0.49	0.87	.	121	3.01	75	188
black seabass	46	27	0.05	0.36	0.64	41	93	5.91	37	228
silver perch	46	13	0.05	0.36	0.64	35	142	4.66	79	214
blue crab, male	45	27	0.05	0.35	0.62	.	66	6.09	16	141
red hake	38	8	0.05	0.29	0.53	.	117	4.97	73	190
spider crab, common	29	21	0.03	0.22	0.4	.	.	.	.	.
scup	27	8	0.03	0.21	0.37	24	110	3.97	66	140
rock crab	20	7	0.02	0.16	0.28	.	83	6.96	20	135
striped searobin	17	13	0.02	0.13	0.24	.	105	8.44	61	189
spider crab, 6 spine	17	9	0.02	0.13	0.24	.	.	.	.	.
lined seahorse	14	12	0.02	0.11	0.19	.	72	5.97	42	113
northern puffer	14	11	0.02	0.11	0.19	13	71	8.92	32	156
roughneck shrimp	12	13	0.01	0.09	0.17	.	53	2.72	48	60
Atlantic spadefish	11	7	0.01	0.09	0.15	.	76	6.21	50	122
shellfish blue crab	11	2	0.01	0.09	0.15	.	.	.	.	.
harvestfish	10	3	0.01	0.08	0.14	10	57	6.65	22	89
Atlantic herring	9	7	0.01	0.07	0.12	.	127	35.21	41	284
alewife	9	5	0.01	0.07	0.12	8	131	14.5	109	245
American shad	7	7	0.01	0.05	0.1	7	121	6.6	97	137
clearnose skate	6	6	0.01	0.05	0.08	.	400	10.17	356	427
knobbed whelk	6	6	0.01	0.05	0.08	.	.	.	.	.
brown shrimp	6	4	0.01	0.05	0.08	.	98	6.93	77	124
Atlantic silverside	6	2	0.01	0.05	0.08	6	80	4.43	62	95
naked goby	5	5	0.01	0.04	0.07	.	40	3.66	27	49
windowpane	5	4	0.01	0.04	0.07	5	108	19.59	46	151
fringed flounder	5	4	0.01	0.04	0.07	.	113	9.6	89	147
oyster toadfish	4	4	0	0.03	0.06	.	207	62.65	73	346
Portunid spp	4	4	0	0.03	0.06	.	.	.	.	.
horseshoe crab	4	2	0	0.03	0.06	.	250	9.32	237	277
skilletfish	3	3	0	0.02	0.04	.	29	3.61	24	36
pink shrimp	3	3	0	0.02	0.04	.	119	4.67	110	126
blueback herring	3	2	0	0.02	0.04	1	114	23.97	73	156
striped bass	3	2	0	0.02	0.04	0	413	62.69	295	509
blood ark/clam	2	7	0	0.02	0.03	.	.	.	.	.
whelk (conch) spp	2	4	0	0.02	0.03	.	.	.	.	.
forbes common sea star	2	3	0	0.02	0.03	.	.	.	.	.
bluefish	2	2	0	0.02	0.03	.	291	3.5	287	294
bluntnose stingray	2	2	0	0.02	0.03	.	282	45	237	327
bluespotted cornetfish	2	1	0	0.02	0.03	.	358	4	354	362
conger eel	2	1	0	0.02	0.03	.	389	0.5	388	389
northern sand lance	2	1	0	0.02	0.03	.	126	6	120	132
northern stargazer	2	1	0	0.02	0.03	.	29	3	26	32
channel (smooth) whelk	2	1	0	0.02	0.03	.	.	.	.	.
blue mussel	1	19	0	0.01	0.01	.	.	.	.	.
lady crab	1	3	0	0.01	0.01	.	.	.	.	.
tautog	1	0	0	0.01	0.01	.	229	.	229	229
spotted seatrout	1	1	0	0.01	0.01	.	204	.	204	204
pigfish	1	1	0	0.01	0.01	.	129	.	129	129
Florida pompano	1	1	0	0.01	0.01	.	196	.	196	196
bighead searobin	1	1	0	0.01	0.01	.	107	.	107	107
surf clam	1	1	0	0.01	0.01	.	.	.	.	.
feather blenny	1	1	0	0.01	0.01	.	74	.	74	74
sandbar shark	1	1	0	0.01	0.01	.	613	.	613	613
blue runner	1	1	0	0.01	0.01	.	155	.	155	155
Atlantic moonfish	1	1	0	0.01	0.01	.	60	.	60	60
banded drum	1	1	0	0.01	0.01	.	25	.	25	25
Atlantic cutlassfish	1	1	0	0.01	0.01	.	169	.	169	169
spotfin mojarra	1	1	0	0.01	0.01	.	39	.	39	39
silver jenny	1	1	0	0.01	0.01	.	69	.	69	69
white shrimp	1	1	0	0.01	0.01	.	91	.	91	91

Table 60. (Continued)

Month - All - Pooled, 1998

Segment - Ches. Bay - Lower

No. of Random Trawls Made - 129

No. of Fixed Trawls Made - 0

No. of Species - 82

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Irresescent swimming crab	1	1	0.00	0.01	0.01	.	.	.	.	.
mud crab spp	.	26	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	26	.	.	.	.	.	.	.	.
grass shrimp spp	.	13	.	.	.	.	.	.	.	.
sand dollar	.	5	.	.	.	.	.	.	.	.
quahog clam	.	4	.	.	.	.	.	.	.	.
soft-shell clam	.	3	.	.	.	.	.	.	.	.
macoma clam spp	.	3	.	.	.	.	.	.	.	.
Amphipod spp	.	2	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	1	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
common razor clam	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
commensal crab spp	.	1	.	.	.	.	.	.	.	.
Atlantic oyster drill	.	1	.	.	.	.	.	.	.	.
purple sea urchin	.	1	.	.	.	.	.	.	.	.

All Species Combined	84,164									

Table 61.

Month - All - Pooled, 1998
 Segment - Ches. Bay - Upper
 No. of Random Trawls Made - 129
 No. of Fixed Trawls Made - 0
 No. of Species - 68

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	65,766	116	89.90	509.81	30.62	58,432	51	0.24	17	88
Atlantic croaker	2,193	70	3.00	17.00	23.32	1,327	127	2.39	6	353
weakfish	1,670	38	2.28	12.95	8.41	1,504	117	1.87	38	399
jellyfish spp	602	32	0.82	4.67	6.80	313	169	1.59	19	242
spot	487	37	0.67	3.78	4.71					
sand shrimp	337	56	0.46	2.61	3.94	282	114	2.02	43	212
spotted hake	282	39	0.39	2.19	3.53	249	82	2.03	14	316
kingfish spp	253	38	0.35	1.96		2	110	1.07	70	154
hogchoker	223	39	0.30	1.73	1.69		27	1.47	6	83
squid spp	121	17	0.17	0.94	1.51	60	256	7.72	105	544
summer flounder	108	46	0.15	0.84	1.23		43	2.59	12	127
blue crab, juvenile female	88	39	0.12	0.68	1.14	31	116	3.40	44	162
blackcheek tonguefish	82	31	0.11	0.64	1.09		55	4.50	10	158
blue crab, male	78	36	0.11	0.60	1.09	77	80	2.90	37	165
northern searobin	78	32	0.11	0.60	1.08		139	1.47	107	180
blue crab, adult female	77	27	0.11	0.60	1.06	64	142	2.91	79	212
silver perch	76	8	0.10	0.59	1.01	72	77	1.82	53	113
striped anchovy	72	13	0.10	0.56	0.87	49	161	6.46	78	265
inshore lizardfish	62	23	0.08	0.48	0.73		119	3.46	76	192
northern pipefish	52	23	0.07	0.40	0.68	43	90	4.88	47	184
black seabass	49	21	0.07	0.38	0.64		76	4.30	35	134
mantis shrimp	46	17	0.06	0.36	0.59	36	93	6.04	70	256
blueback herring	42	8	0.06	0.33	0.43		95	8.71	31	223
butterfish	33	13	0.05	0.26	0.46	27	72	3.96	32	115
harvestfish	31	9	0.04	0.24	0.35	31	73	5.17	37	124
smallmouth flounder	25	12	0.03	0.19	0.35	25	86	2.19	69	105
Atlantic silverside	25	7	0.03	0.19	0.28		67	5.93	43	156
Atlantic herring	20	9	0.03	0.16	0.24		84	10.22	46	193
Atlantic thread herring	17	5	0.02	0.13	0.20		116	9.29	49	155
red hake	14	5	0.02	0.11	0.17	9	137	8.43	99	190
alewife	12	7	0.02	0.09	0.15					
spider crab, 6 spine	11	7	0.02	0.09	0.15		84	6.50	31	106
Atlantic spadefish	11	6	0.02	0.09	0.14					
mysis shrimp	10	1	0.01	0.08	0.13	8	138	10.70	103	214
American shad	9	4	0.01	0.07	0.10					
moon snail	7	5	0.01	0.05	0.10					
spider crab, common	7	4	0.01	0.05	0.08	0	349	52.39	241	563
striped bass	6	4	0.01	0.05	0.07		7	0.75	5	9
blue crab, sex unknown	5	4	0.01	0.04	0.06	3	78	13.98	46	108
northern puffer	4	4	0.01	0.03	0.06		95	4.71	82	104
brown shrimp	4	4	0.01	0.03	0.06		67	11.87	42	88
lined seahorse	4	3	0.01	0.03	0.06					
channel (smooth) whelk	4	3	0.01	0.03	0.04					
right-hand hermit crab spp	3	19	0.00	0.02	0.04		106	43.18	54	192
winter flounder	3	3	0.00	0.02	0.04	2	160	43.37	114	247
windowpane	3	3	0.00	0.02	0.04		117	51.68	45	217
striped searobin	3	3	0.00	0.02	0.04		37	1.00	35	38
naked goby	3	3	0.00	0.02	0.04		46	8.35	37	63
feather blenny	3	3	0.00	0.02	0.04		130		130	130
roughneck shrimp	3	3	0.00	0.02	0.04	3	82	14.05	60	108
scup	3	2	0.00	0.02	0.04		215	12.60	196	239
bluefish	2	1	0.00	0.02	0.03					
grass shrimp spp	2	12	0.00	0.02	0.03		244	102.50	141	346
oyster toadfish	2	2	0.00	0.02	0.03		47	0.50	46	47
seaboard goby	2	1	0.00	0.02	0.03		240	32.00	208	272
horseshoe crab	2	1	0.00	0.02	0.03					
knobbed whelk	2	1	0.00	0.02	0.01		62		62	62
black drum	1	1	0.00	0.01	0.01		106		106	106
pigfish	1	1	0.00	0.01	0.01		347		347	347
American eel	1	1	0.00	0.01	0.01		41		41	41
bighead searobin	1	1	0.00	0.01	0.01		133		133	133
pipefish spp	1	1	0.00	0.01	0.01		456		456	456
sandbar shark	1	1	0.00	0.01	0.01		459		459	459
clearnose skate	1	1	0.00	0.01	0.01		310		310	310
conger eel	1	1	0.00	0.01	0.01		95		95	95
Atlantic moonfish	1	1	0.00	0.01	0.01		40		40	40
northern stargazer	1	1	0.00	0.01	0.01		59		59	59
striped cusk-eel		18								
mud crab spp		8								
blue mussel		7								
worm spp		7								
sea cucumber spp		2								
skeleton shrimp spp		2								
Atlantic oyster drill		1								
whelk (conch) spp		1								
river shrimp		1								
macoma clam spp		1								
quahog clam		1								
blood ark/clam		1								
wedge rangia clam		1								
long-clawed hermit crab		1								
All Species Combined	73,151									

Table 62.

Month - All - Pooled, 1998

Segment - All - Pooled

No. of Random Trawls Made - 388

No. of Fixed Trawls Made - 0

No. of Species - 108

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	172,170	311	87.32	443.74	19.56	149,010	53	0.14	17	92
Atlantic croaker	4,749	182	2.41	12.24	14.46	1,996	146	1.49	6	353
weakfish	3,511	111	1.78	9.05	9.50	2,985	124	1.37	29	399
jellyfish spp	2,307	90	1.17	5.95	8.96	.	31	0.34	5	151
squid spp	2,174	103	1.10	5.60	5.14	1,209	94	1.21	14	316
kingfish spp	1,248	123	0.63	3.22	5.06	711	166	0.76	19	258
spot	1,228	121	0.62	3.16	4.99	1,184	117	1.32	25	326
spotted hake	1,211	138	0.61	3.12	3.69	.	63	2.79	52	80
spider crab, common	896	73	0.45	2.31	.	7	113	0.86	63	201
hogchoker	723	113	0.37	1.86	2.80	676	82	0.77	44	136
striped anchovy	680	46	0.34	1.75	2.50	.	.	.	.	.
sand shrimp	607	166	0.31	1.56	2.42	548	80	0.74	27	128
smallmouth flounder	587	117	0.30	1.51	2.37	331	272	2.77	98	579
summer flounder	576	185	0.29	1.48	2.13	103	133	1.36	34	211
blackcheek tonguefish	516	126	0.26	1.33	1.90	449	90	1.26	37	170
northern searobin	461	138	0.23	1.19	1.59	.	137	0.70	91	180
blue crab, adult female	386	118	0.20	0.99	1.24	272	74	2.28	23	223
butterfish	301	61	0.15	0.78	0.92	.	55	1.76	33	193
Atlantic thread herring	223	23	0.11	0.57	0.86	138	179	3.29	72	321
inshore lizardfish	209	69	0.11	0.54	0.74	.	51	2.05	12	127
blue crab, juvenile female	179	79	0.09	0.46	0.70	.	121	2.02	53	216
northern pipefish	170	74	0.09	0.44	0.67	.	63	2.62	16	148
rock crab	162	30	0.08	0.42	0.60	.	79	2.46	30	147
mantis shrimp	145	45	0.07	0.37	0.58	.	61	3.39	10	158
blue crab, male	141	75	0.07	0.36	0.54	107	142	2.42	79	214
silver perch	131	26	0.07	0.34	0.51	.	387	4.96	79	475
clearnose skate	125	32	0.06	0.32	0.49	105	93	3.34	37	228
black seabass	120	60	0.06	0.31	0.49	.	125	3.88	44	255
red hake	118	26	0.06	0.30	0.46	103	98	2.15	46	144
scup	111	30	0.06	0.29	0.33	.	51	1.00	37	68
lady crab	80	34	0.04	0.21	0.32	.	.	.	.	.
moon snail	77	20	0.04	0.20	0.22	43	92	5.81	32	218
northern puffer	53	25	0.03	0.14	0.20	.	87	8.34	39	284
Atlantic herring	49	24	0.02	0.13	0.20	.	58	4.71	42	130
roughneck shrimp	48	38	0.02	0.12	0.20	.	113	6.36	33	278
striped searobin	48	35	0.02	0.12	0.20	33	157	9.37	37	301
windowpane	48	32	0.02	0.12	0.20	37	99	6.24	70	256
blueback herring	48	13	0.02	0.12	0.20	48	84	1.78	59	108
Atlantic silverside	48	13	0.02	0.12	0.19	.	75	3.35	42	137
lined seahorse	46	31	0.02	0.11	0.18	.	89	11.30	25	440
Atlantic spadefish	44	25	0.02	0.11	0.17	42	68	3.52	22	115
harvestfish	42	13	0.02	0.11	0.14	.	.	.	.	.
spider crab, 6 spine	35	21	0.02	0.09	0.11	.	227	7.04	122	277
horseshoe crab	27	8	0.01	0.07	0.09	18	134	7.35	99	245
alewife	22	13	0.01	0.06	0.08	19	133	5.81	97	214
American shad	20	14	0.01	0.05	0.07	.	.	.	.	.
knobbed whelk	16	11	0.01	0.04	0.06	.	.	.	.	.
whelk (conch) spp	14	12	0.01	0.04	0.06	.	37	1.71	27	49
naked goby	14	10	0.01	0.04	0.06	.	.	.	.	.
channel (smooth) whelk	14	10	0.01	0.04	0.06	.	.	.	.	.
shelligs blue crab	14	5	0.01	0.04	0.06	.	95	3.95	77	124
brown shrimp	12	10	0.01	0.03	0.05	.	62	6.49	37	94
feather blenny	10	9	0.01	0.03	0.04	.	.	.	.	.
Portunid spp	10	8	0.01	0.03	0.04	0	373	35.69	241	563
striped bass	10	7	0.01	0.03	0.04	.	.	.	.	.
mysid shrimp	10	1	0.01	0.03	0.04	.	52	16.79	22	183
banded drum	9	8	0.00	0.02	0.04	.	192	33.83	25	294
bluefish	9	6	0.00	0.02	0.03	.	199	38.62	73	346
oyster toadfish	8	8	0.00	0.02	0.03	.	114	13.28	61	157
pigfish	6	5	0.00	0.02	0.02	.	338	83.08	215	745
bluntnose stingray	6	5	0.00	0.02	0.02	.	297	30.80	169	365
Atlantic cutlassfish	6	4	0.00	0.02	0.02	.	.	.	.	.
right-hand hermit crab spp	5	5	0.00	0.01	0.02	.	30	3.76	21	41
skilletfish	5	5	0.00	0.01	0.02	.	113	9.60	89	147
fringed flounder	5	4	0.00	0.01	0.02	.	7	0.75	5	9
blue crab, sex unknown	5	1	0.00	0.01	0.02	.	.	.	.	.
Irrescendent swimming crab	4	4	0.00	0.01	0.01	.	.	.	.	.
mud crab spp	3	83	0.00	0.01	0.01	.	.	.	.	.
silver hake	3	3	0.00	0.01	0.01	2	119	20.80	94	160
Atlantic menhaden	3	3	0.00	0.01	0.01	.	88	32.64	44	152
winter flounder	3	3	0.00	0.01	0.01	.	106	43.18	54	192
Atlantic moonfish	3	3	0.00	0.01	0.01	.	88	14.81	60	110
pink shrimp	3	3	0.00	0.01	0.01	.	119	4.67	110	126
Florida pompano	3	2	0.00	0.01	0.01	.	183	6.66	174	196
conger eel	3	2	0.00	0.01	0.01	.	362	26.17	310	389
northern stargazer	3	2	0.00	0.01	0.01	.	33	4.06	26	40
striped burrfish	3	2	0.00	0.01	0.01	.	136	26.01	109	188
sargassum swimming crab	3	2	0.00	0.01	0.01	.	.	.	.	.
grass shrimp spp	2	36	0.00	0.01	0.01	.	.	.	.	.
blood ark/clam	2	14	0.00	0.01	0.01	.	.	.	.	.
forbes common sea star	2	7	0.00	0.01	0.01	.	.	.	.	.

Table 62. (Continued)

Month - All - Pooled, 1998

Segment - All - Pooled

No. of Random Trawls Made - 388

No. of Fixed Trawls Made - 0

No. of Species - 108

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
tautog	2	2	0.00	0.01	0.01	.	215	14.00	201	229
bighead searobin	2	2	0.00	0.01	0.01	.	74	33.00	41	107
sandbar shark	2	2	0.00	0.01	0.01	.	535	78.50	456	613
cownose ray	2	2	0.00	0.01	0.01	.	570	2.50	567	572
spottfin mojarra	2	2	0.00	0.01	0.01	.	56	17.00	39	73
silver jenny	2	2	0.00	0.01	0.01	.	75	5.50	69	80
bluespotted cornetfish	2	1	0.00	0.01	0.01	.	358	4.00	354	362
seaboard goby	2	1	0.00	0.01	0.01	.	47	0.50	46	47
little skate	2	1	0.00	0.01	0.01	.	250	2.00	248	252
northern sand lance	2	1	0.00	0.01	0.01	.	126	6.00	120	132
blue mussel	1	36	0.00	0.00	0.00	.	.	.	.	.
purple sea urchin	1	2	0.00	0.00	0.00	.	.	.	.	.
white hake	1	1	0.00	0.00	0.00	.	418	.	418	418
black drum	1	1	0.00	0.00	0.00	.	62	.	62	62
spotted seatrout	1	1	0.00	0.00	0.00	.	204	.	204	204
American eel	1	1	0.00	0.00	0.00	.	347	.	347	347
round herring	1	1	0.00	0.00	0.00	.	58	.	58	58
surf clam	1	1	0.00	0.00	0.00	.	133	.	133	133
pipefish spp	1	1	0.00	0.00	0.00	.	305	.	305	305
smooth dogfish	1	1	0.00	0.00	0.00	.	416	.	416	416
winter skate	1	1	0.00	0.00	0.00	.	452	.	452	452
Atlantic stingray	1	1	0.00	0.00	0.00	.	436	.	436	436
spiny butterfly ray	1	1	0.00	0.00	0.00	.	155	.	155	155
blue runner	1	1	0.00	0.00	0.00	.	179	.	179	179
fawn cusk-eel	1	1	0.00	0.00	0.00	.	59	.	59	59
striped cusk-eel	1	1	0.00	0.00	0.00	.	91	.	91	91
white shrimp	1	1	0.00	0.00	0.00	.	.	.	.	.
sand dollar	.	25	.	.	.	.	.	.	.	.
worm spp	.	11	.	.	.	.	.	.	.	.
quahog clam	.	9	.	.	.	.	.	.	.	.
sea cucumber spp	.	9	.	.	.	.	.	.	.	.
soft-shell clam	.	8	.	.	.	.	.	.	.	.
Atlantic oyster drill	.	7	.	.	.	.	.	.	.	.
Amphipod spp	.	5	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	4	.	.	.	.	.	.	.	.
macoma clam spp	.	4	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	3	.	.	.	.	.	.	.	.
common razor clam	.	3	.	.	.	.	.	.	.	.
razor clam spp	.	2	.	.	.	.	.	.	.	.
hippolyte shrimp spp	.	2	.	.	.	.	.	.	.	.
alfonsin spp	.	1	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
river shrimp	.	1	.	.	.	.	.	.	.	.
sea star spp	.	1	.	.	.	.	.	.	.	.
commensal crab spp	.	1	.	.	.	.	.	.	.	.
yoldias clam spp	.	1	.	.	.	.	.	.	.	.
wedge rangia clam	.	1	.	.	.	.	.	.	.	.
long-clawed hermit crab	.	1	.	.	.	.	.	.	.	.
All Species Combined	197,168									

Table 63-119. Species composition, number caught, catch per trawl, and length statistics for by **month and river** for the tributary (James, York, and Rappahannock Rivers), and secondary water system (Pocomoke Sound, Mobjack Bay, Piankatank and Great Wicomico Rivers) surveys.

- A. The ‘Number of Species’ notation in the table header includes each of four categories of blue crabs (male, juvenile female, adult female, and unclassified) as unique species.
- B. Catch per trawl for species other than blue crabs is based on the value ‘Number of Fish Trawls Made’ while the catch per trawl for blue crabs is based on the sum of ‘Number of Fish Trawls made’ and ‘Number of Additional Crab Trawls Made’.
- C. ‘Adjusted Percent of Catch’ excludes bay anchovy and hogchoker due to the low biomass estimates in relation to total number of fish caught.
- D. ‘Frequency’ is the number of samples in which a species was captured.
- E. Tables pooled for all rivers for each month appear as follows:

January	Table 66	Page 89
February	Table 70	Page 92
March	Table 74	Page 94
April	Table 78	Page 97
May	Table 82	Page 101
June	Table 86	Page 104
July	Table 91	Page 109
August	Table 96	Page 113
September	Table 103	Page 119
October	Table 109	Page 124
November	Table 114	Page 129
December	Table 119	Page 134

Table 63.

Month - January, 1998

System - James River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 32

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	4,097	18	36.03	186.23	.	3,974	48	0.59	30	94
hogchoker	3,585	14	31.52	162.95	.	1,950	61	1.40	30	134
blueback herring	1,109	4	9.75	50.41	30.05	1,109	75	0.48	66	90
white perch	961	15	8.45	43.68	26.04	339	114	1.64	50	246
Atlantic croaker	512	19	4.50	23.27	13.88	509	44	0.94	22	116
blue catfish	393	8	3.46	17.86	10.65	144	172	3.94	54	335
blue crab, male	156	14	1.37	7.09	4.23	.	53	2.57	15	162
blue crab, juvenile female	147	13	1.29	6.68	3.98	.	41	1.55	18	124
white catfish	73	11	0.64	3.32	1.98	14	183	7.88	61	376
spotted hake	55	8	0.48	2.50	1.49	54	83	3.15	56	214
channel catfish	49	5	0.43	2.23	1.33	4	225	9.31	100	330
gizzard shad	45	8	0.40	2.05	1.22	31	170	8.57	101	303
spot	29	5	0.26	1.32	0.79	29	111	2.45	88	145
alewife	28	6	0.25	1.27	0.76	28	123	2.51	86	142
striped bass	23	5	0.20	1.05	0.62	5	255	17.97	118	452
American shad	18	6	0.16	0.82	0.49	18	132	3.35	101	152
American eel	18	5	0.16	0.82	0.49	.	239	8.81	196	298
blue crab, adult female	15	5	0.13	0.68	0.41	.	140	2.32	128	152
summer flounder	11	6	0.10	0.50	0.30	11	177	7.85	142	227
northern pipefish	11	4	0.10	0.50	0.30	.	143	8.06	112	198
naked goby	8	4	0.07	0.36	0.22	.	42	2.33	33	50
tautog	8	2	0.07	0.36	0.22	.	362	30.91	166	468
blackcheek tonguefish	7	3	0.06	0.32	0.19	7	74	3.22	68	92
Atlantic sturgeon	3	3	0.03	0.14	0.08	.	435	20.55	394	458
oyster toadfish	3	2	0.03	0.14	0.08	.	180	64.67	54	269
feather blenny	2	1	0.02	0.09	0.05	.	66	4.00	62	70
red hake	1	1	0.01	0.05	0.03	.	71	.	71	71
Atlantic menhaden	1	1	0.01	0.05	0.03	0	64	.	64	64
sea lamprey	1	1	0.01	0.05	0.03	.	158	.	158	158
brown bullhead	1	1	0.01	0.05	0.03	.	88	.	88	88
pink shrimp	1	1	0.01	0.05	0.03	.	87	.	87	87
brown shrimp	1	1	0.01	0.05	0.03	.	109	.	109	109
All Species Combined	11,372									

Table 64.

Month - January, 1998

System - Rappahannock River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 24

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	4,472	20	55.55	203.27	.	4,376	46	0.40	30	90
white perch	1,279	15	15.89	58.14	55.03	56	145	1.19	60	274
hogchoker	1,255	13	15.59	57.05	.	188	79	1.10	32	142
blue catfish	422	6	5.24	19.18	18.16	8	246	3.95	140	388
Atlantic croaker	333	17	4.14	15.14	14.33	333	42	1.00	17	90
white catfish	113	4	1.40	5.14	4.86	0	258	5.34	143	467
striped bass	67	12	0.83	3.05	2.88	33	185	7.82	70	364
alewife	23	10	0.29	1.05	0.99	23	112	3.29	89	148
blue crab, male	17	7	0.21	0.77	0.73	.	57	8.93	24	131
blue crab, juvenile female	12	5	0.15	0.55	0.52	.	43	8.56	23	123
Atlantic herring	11	5	0.14	0.50	0.47	.	278	6.37	234	312
spotted hake	11	5	0.14	0.50	0.47	11	72	1.75	65	83
blueback herring	8	6	0.10	0.36	0.34	8	70	1.43	64	77
blue crab, sex unknown	8	1	0.10	0.36	0.34	.	.	.	.	.
gizzard shad	5	1	0.06	0.23	0.22	5	117	2.85	109	125
channel catfish	4	3	0.05	0.18	0.17	0	314	23.45	256	370
American eel	2	2	0.02	0.09	0.09	.	371	178.50	192	549
blackcheek tonguefish	2	2	0.02	0.09	0.09	2	71	5.00	66	76
skilletfish	2	2	0.02	0.09	0.09	.	52	0.50	51	52
summer flounder	1	1	0.01	0.05	0.04	1	145	.	145	145
Atlantic menhaden	1	1	0.01	0.05	0.04	0	148	.	148	148
naked goby	1	1	0.01	0.05	0.04	.	31	.	31	31
feather blenny	1	1	0.01	0.05	0.04	.	44	.	44	44
blue crab, adult female	1	1	0.01	0.05	0.04	.	151	.	151	151
All Species Combined	8,051									

Table 65.

Month - January, 1998

System - York River

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 9

No. of Species - 30

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	5,019	21	56.72	228.14	.	4,882	50	0.45	22	96
Atlantic croaker	1,707	20	19.29	77.59	58.82	1,697	45	0.67	15	139
hogchoker	927	13	10.48	42.14	.	553	74	1.66	12	178
white perch	508	14	5.74	23.09	17.51	88	132	2.32	58	275
blue crab, male	260	18	2.94	11.82	8.96	.	60	2.68	13	151
blue crab, juvenile female	159	19	1.80	7.23	5.48	.	46	2.26	12	112
blackcheek tonguefish	57	13	0.64	2.59	1.96	57	69	1.14	54	88
blueback herring	41	7	0.46	1.86	1.41	41	77	1.32	54	98
white catfish	37	4	0.42	1.68	1.27	7	198	16.28	72	400
striped bass	29	12	0.33	1.32	1.00	21	155	15.02	77	346
American shad	16	4	0.18	0.73	0.55	16	107	6.19	78	152
oyster toadfish	16	3	0.18	0.73	0.55	.	187	11.46	139	248
spotted hake	13	8	0.15	0.59	0.45	13	78	3.21	62	104
gizzard shad	9	5	0.10	0.41	0.31	6	190	29.59	109	319
spot	9	4	0.10	0.41	0.31	9	120	3.74	106	140
alewife	7	3	0.08	0.32	0.24	7	112	3.05	101	121
blue crab, adult female	6	4	0.07	0.27	0.21	.	133	7.19	100	149
skilletfish	5	5	0.06	0.23	0.17	.	62	4.43	45	70
sea lamprey	4	3	0.05	0.18	0.14	.	154	8.59	135	172
American eel	3	3	0.03	0.14	0.10	.	222	29.60	174	276
spottail shiner	3	1	0.03	0.14	0.10	.	87	4.81	78	94
Atlantic herring	2	2	0.02	0.09	0.07	.	258	26.50	231	284
naked goby	2	2	0.02	0.09	0.07	.	39	5.00	34	44
feather blenny	2	2	0.02	0.09	0.07	.	105	13.00	92	118
tessellated darter	2	1	0.02	0.09	0.07	.	57	3.50	53	60
black seabass	1	1	0.01	0.05	0.03	0	216	.	216	216
hickory shad	1	1	0.01	0.05	0.03	.	166	.	166	166
Atlantic menhaden	1	1	0.01	0.05	0.03	0	109	.	109	109
northern pipefish	1	1	0.01	0.05	0.03	.	134	.	134	134
Atlantic silverside	1	1	0.01	0.05	0.03	1	76	.	76	76
All Species Combined	8,848									

Table 66.

Month - January, 1998

System - All - Pooled

No. of Random Trawls Made - 41

No. of Fixed Trawls Made - 25

No. of Species - 40

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	13,588	59	48.06	205.88	.	13,232	48	0.28	22	96
hogchoker	5,767	40	20.40	87.38	.	2,691	71	0.84	12	178
white perch	2,748	44	9.72	41.64	30.82	483	132	0.95	50	275
Atlantic croaker	2,552	56	9.03	38.67	28.62	2,539	44	0.49	15	139
blueback herring	1,158	17	4.10	17.55	12.99	1,158	75	0.50	54	98
blue catfish	815	14	2.88	12.35	9.14	152	202	3.48	54	388
blue crab, male	433	39	1.53	6.56	4.86	.	56	1.83	13	162
blue crab, juvenile female	318	37	1.12	4.82	3.57	.	44	1.39	12	124
white catfish	223	19	0.79	3.38	2.50	21	223	5.19	61	467
striped bass	119	29	0.42	1.80	1.33	59	191	7.32	70	452
spotted hake	79	21	0.28	1.20	0.89	78	80	2.30	56	214
blackcheek tonguefish	66	18	0.23	1.00	0.74	66	70	1.05	54	92
gizzard shad	59	14	0.21	0.89	0.66	42	169	8.13	101	319
alewife	58	19	0.21	0.88	0.65	58	117	1.93	86	148
channel catfish	53	8	0.19	0.80	0.59	4	232	9.32	100	370
spot	38	9	0.13	0.58	0.43	38	113	2.13	88	145
American shad	34	10	0.12	0.52	0.38	34	120	4.00	78	152
American eel	23	10	0.08	0.35	0.26	.	248	15.80	174	549
blue crab, adult female	22	10	0.08	0.33	0.25	.	139	2.56	100	152
oyster toadfish	19	5	0.07	0.29	0.21	.	185	14.24	54	269
Atlantic herring	13	7	0.05	0.20	0.15	.	275	6.51	231	312
summer flounder	12	7	0.04	0.18	0.13	12	174	7.63	142	227
northern pipefish	12	5	0.04	0.18	0.13	.	142	7.39	112	198
naked goby	11	7	0.04	0.17	0.12	.	40	2.06	31	50
tautog	8	2	0.03	0.12	0.09	.	362	30.91	166	468
blue crab, sex unknown	8	1	0.03	0.12	0.09	.	.	.	.	.
skilletfish	7	7	0.02	0.11	0.08	.	59	3.60	45	70
sea lamprey	5	4	0.02	0.08	0.06	.	155	6.71	135	172
feather blenny	5	4	0.02	0.08	0.06	.	77	12.78	44	118
Atlantic menhaden	3	3	0.01	0.05	0.03	0	107	24.27	64	148
Atlantic sturgeon	3	3	0.01	0.05	0.03	.	435	20.55	394	458
spottail shiner	3	1	0.01	0.05	0.03	.	87	4.81	78	94
tessellated darter	2	1	0.01	0.03	0.02	.	57	3.50	53	60
black seabass	1	1	0.00	0.02	0.01	0	216	.	216	216
red hake	1	1	0.00	0.02	0.01	.	71	.	71	71
hickory shad	1	1	0.00	0.02	0.01	.	166	.	166	166
brown bullhead	1	1	0.00	0.02	0.01	.	88	.	88	88
Atlantic silverside	1	1	0.00	0.02	0.01	1	76	.	76	76
pink shrimp	1	1	0.00	0.02	0.01	.	87	.	87	87
brown shrimp	1	1	0.00	0.02	0.01	.	109	.	109	109
All Species Combined	28,271									

Table 67.

Month - February, 1998

System - James River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 35

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	2,544	16	50.07	115.64	.	1,488	64	1.14	24	116
white perch	768	19	15.12	34.91	35.28	401	91	1.16	44	214
bay anchovy	360	9	7.09	16.36	.	358	49	0.87	32	85
blue catfish	271	10	5.33	12.32	12.45	156	146	3.97	58	360
Atlantic croaker	243	9	4.78	11.05	11.16	238	48	1.37	18	117
spotted hake	146	8	2.87	6.64	6.71	145	87	1.71	59	269
blue crab, juvenile female	110	13	2.16	5.00	5.05	.	32	1.37	11	94
white catfish	110	12	2.16	5.00	5.05	6	198	4.89	73	385
blue crab, male	82	14	1.61	3.73	3.77	.	33	2.24	10	141
gizzard shad	71	15	1.40	3.23	3.26	55	157	6.06	104	294
northern pipefish	64	5	1.26	2.91	2.94	.	128	3.47	77	221
seaboard goby	52	8	1.02	2.36	2.39	.	34	0.76	24	42
blackcheek tonguefish	52	7	1.02	2.36	2.39	50	65	2.68	36	141
channel catfish	48	7	0.94	2.18	2.20	2	230	9.23	94	360
naked goby	45	6	0.89	2.05	2.07	.	42	1.00	31	54
blueback herring	15	9	0.30	0.68	0.69	12	91	9.52	63	164
striped bass	15	6	0.30	0.68	0.69	8	186	20.12	96	344
red hake	15	4	0.30	0.68	0.69	.	80	5.08	64	145
feather blenny	13	2	0.26	0.59	0.60	.	53	3.06	34	69
spot	10	4	0.20	0.45	0.46	10	118	3.21	105	141
oyster toadfish	8	3	0.16	0.36	0.37	.	128	29.28	51	229
skilletfish	5	3	0.10	0.23	0.23	.	50	3.67	36	58
rock crab	5	2	0.10	0.23	0.23	.	50	0.80	48	52
summer flounder	4	3	0.08	0.18	0.18	4	191	6.10	179	208
smallmouth flounder	4	3	0.08	0.18	0.18	4	51	6.42	37	64
American eel	4	2	0.08	0.18	0.18	.	190	23.51	123	230
alewife	4	1	0.08	0.18	0.18	4	76	3.71	69	86
blue crab, adult female	3	1	0.06	0.14	0.14	.	135	9.61	116	148
pink shrimp	2	2	0.04	0.09	0.09	.	101	1.00	100	102
Atlantic menhaden	2	1	0.04	0.09	0.09	2	28	3.50	24	31
striped cusk-eel	2	1	0.04	0.09	0.09	.	66	13.50	52	79
American shad	1	1	0.02	0.05	0.05	1	118	.	118	118
windowpane	1	1	0.02	0.05	0.05	1	54	.	54	54
longnose gar	1	1	0.02	0.05	0.05	.	398	.	398	398
brown bullhead	1	1	0.02	0.05	0.05	.	182	.	182	182
All Species Combined	5,081									

Table 68.

Month - February, 1998
 System - Rappahannock River
 No. of Random Trawls Made - 14
 No. of Fixed Trawls Made - 8
 No. of Species - 24

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	1,290	14	29.55	58.64		1,290	44	0.44	31	76
white perch	1,114	17	25.52	50.64	52.77	220	121	1.45	64	228
hogchoker	965	15	22.10	43.86		209	75	1.18	27	134
Atlantic croaker	603	13	13.81	27.41	28.56	603	38	0.88	17	96
blue catfish	67	5	1.53	3.05	3.17	15	223	6.50	136	368
white catfish	47	9	1.08	2.14	2.23	1	204	10.11	108	412
alewife	46	9	1.05	2.09	2.18	46	109	1.55	83	140
spotted hake	40	9	0.92	1.82	1.89	40	85	1.25	67	99
blue crab, juvenile female	38	3	0.87	1.73	1.80	.	22	0.86	13	34
channel catfish	29	3	0.66	1.32	1.37	0	311	6.47	236	398
striped bass	28	11	0.64	1.27	1.33	19	167	13.91	76	319
blue crab, male	28	7	0.64	1.27	1.33	.	33	6.74	14	182
blackcheek tonguefish	27	10	0.62	1.23	1.28	27	64	1.88	43	83
blueback herring	27	7	0.25	0.50	0.52	11	75	2.26	64	85
naked goby	11	2	0.21	0.41	0.43	.	35	2.43	25	47
gizzard shad	9	4	0.16	0.32	0.33	7	127	1.78	122	134
spottail shiner	7	4	0.09	0.18	0.19	.	78	4.17	67	87
brown bullhead	4	4	0.09	0.18	0.19	.	261	19.00	204	281
mantis shrimp	4	2	0.07	0.14	0.14	.	.	.	.	.
American shad	3	3	0.05	0.09	0.09	2	111	19.00	92	130
Atlantic menhaden	2	2	0.05	0.05	0.05	0	100	.	100	100
American eel	1	1	0.02	0.05	0.05	.	156	.	156	156
feather blenny	1	1	0.02	0.05	0.05	.	40	.	40	40
Atlantic silverside	1	1	0.02	0.05	0.05	1	68	.	68	68
grass shrimp spp	.	4	.	.	.	.	.	.	.	.
mysid shrimp	.	4	.	.	.	.	.	.	.	.
macoma clam spp	.	2	.	.	.	.	.	.	.	.
mud crab spp	.	1	.	.	.	.	.	.	.	.
sand shrimp	.	1	.	.	.	.	.	.	.	.
All Species Combined	4,366									

Table 69.

Month - February, 1998
 System - York River
 No. of Random Trawls Made - 13
 No. of Fixed Trawls Made - 9
 No. of Species - 29

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	1,246	14	28.68	56.64		254	78	1.21	16	164
Atlantic croaker	1,219	11	28.06	55.41	51.70	1,218	45	0.81	16	103
bay anchovy	740	12	17.03	33.64		726	49	0.60	28	84
white perch	324	13	7.46	14.73	13.74	50	133	2.65	58	252
spotted hake	263	8	6.05	11.95	11.15	263	81	0.67	62	121
white catfish	165	9	3.80	7.50	7.00	91	139	7.77	41	456
blue crab, male	88	13	2.03	4.00	3.73	.	41	3.05	10	123
blackcheek tonguefish	71	7	1.63	3.23	3.01	69	68	2.07	48	158
blue crab, juvenile female	67	10	1.54	3.05	2.84	.	34	3.25	11	116
Atlantic silverside	52	4	1.20	2.36	2.21	52	81	1.53	60	100
blueback herring	19	6	0.44	0.86	0.81	18	85	4.23	74	158
spottail shiner	16	1	0.37	0.73	0.68	.	92	1.72	80	109
spot	12	2	0.28	0.55	0.51	12	112	2.86	91	124
alewife	11	7	0.25	0.50	0.47	11	111	2.62	101	130
gizzard shad	11	3	0.25	0.50	0.47	10	143	19.88	109	339
striped bass	9	5	0.21	0.41	0.38	6	159	23.01	90	285
American shad	5	3	0.12	0.23	0.21	5	125	10.51	94	159
sea lamprey	4	3	0.09	0.18	0.17	.	155	3.47	147	162
northern pipefish	4	2	0.09	0.18	0.17	.	122	6.51	112	140
Atlantic herring	3	3	0.07	0.14	0.13	.	280	2.19	276	283
American eel	3	1	0.07	0.14	0.13	.	181	74.94	60	318
Atlantic menhaden	2	2	0.05	0.09	0.08	1	85	49.00	36	134
green goby	2	2	0.05	0.09	0.08	.	40	4.00	36	44
oyster toadfish	2	2	0.05	0.09	0.08	.	207	79.00	128	286
channel catfish	2	1	0.05	0.09	0.08	1	233	121.50	111	354
red drum	1	1	0.02	0.05	0.04	.	57	.	57	57
naked goby	1	1	0.02	0.05	0.04	.	40	.	40	40
feather blenny	1	1	0.02	0.05	0.04	.	79	.	79	79
skilletfish	1	1	0.02	0.05	0.04	.	41	.	41	41
All Species Combined	4,344									

Table 70.

Month - February, 1998

System - All - Pooled

No. of Random Trawls Made - 41

No. of Fixed Trawls Made - 25

No. of Species - 42

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	4,755	45	34.48	72.05	.	1,951	71	0.71	16	164
bay anchovy	2,390	35	17.33	36.21	.	2,374	47	0.36	28	85
white perch	2,206	49	16.00	33.42	33.19	671	113	1.02	44	252
Atlantic croaker	2,065	33	14.97	31.29	31.07	2,059	44	0.60	16	117
spotted hake	449	25	3.26	6.80	6.76	448	84	0.78	59	269
blue catfish	338	15	2.45	5.12	5.09	171	165	3.95	58	368
white catfish	322	30	2.33	4.88	4.85	98	168	4.86	41	456
blue crab, juvenile female	215	26	1.56	3.26	3.24	.	31	1.27	11	116
blue crab, male	198	34	1.44	3.00	2.98	.	37	1.91	10	182
blackcheek tonguefish	150	24	1.09	2.27	2.26	146	66	1.39	36	158
gizzard shad	89	22	0.65	1.35	1.34	72	153	5.46	104	339
channel catfish	79	11	0.57	1.20	1.19	3	259	7.81	94	398
northern pipefish	68	7	0.49	1.03	1.02	.	127	3.29	77	221
alewife	61	17	0.44	0.92	0.92	61	107	1.66	69	140
naked goby	55	9	0.40	0.83	0.83	.	41	0.99	25	54
Atlantic silverside	53	5	0.38	0.80	0.80	53	80	1.52	60	100
striped bass	52	22	0.38	0.79	0.78	33	171	10.18	76	344
seaboard goby	52	8	0.38	0.79	0.78	.	34	0.76	24	42
blueback herring	45	22	0.33	0.68	0.68	41	84	3.72	63	164
spot	22	6	0.16	0.33	0.33	22	115	2.19	91	141
spottail shiner	20	5	0.15	0.30	0.30	.	89	2.06	67	109
red hake	15	4	0.11	0.23	0.23	.	80	5.08	64	145
feather blenny	15	4	0.11	0.23	0.23	.	53	3.31	34	79
oyster toadfish	10	5	0.07	0.15	0.15	.	144	27.99	51	286
American shad	8	6	0.06	0.12	0.12	8	120	7.56	92	159
American eel	8	4	0.06	0.12	0.12	.	182	27.15	60	318
skilletfish	6	4	0.04	0.09	0.09	.	48	3.33	36	58
Atlantic menhaden	5	4	0.04	0.08	0.08	3	65	21.98	24	134
brown bullhead	5	3	0.04	0.08	0.08	.	245	21.59	182	281
rock crab	5	2	0.04	0.08	0.08	.	50	0.80	48	52
summer flounder	4	3	0.03	0.06	0.06	4	191	6.10	179	208
sea lamprey	4	3	0.03	0.06	0.06	.	155	3.47	147	162
smallmouth flounder	4	3	0.03	0.06	0.06	4	51	6.42	37	64
Atlantic herring	3	3	0.02	0.05	0.05	.	280	2.19	276	283
mantis shrimp	3	3	0.02	0.05	0.05	.	.	.	.	.
blue crab, adult female	3	1	0.02	0.05	0.05	.	135	9.61	116	148
green goby	2	2	0.01	0.03	0.03	.	40	4.00	36	44
pink shrimp	2	2	0.01	0.03	0.03	.	101	1.00	100	102
striped cusk-eel	2	1	0.01	0.03	0.03	.	66	13.50	52	79
red drum	1	1	0.01	0.02	0.02	.	57	.	57	57
windowpane	1	1	0.01	0.02	0.02	1	54	.	54	54
longnose gar	1	1	0.01	0.02	0.02	.	398	.	398	398
grass shrimp spp	.	4	.	.	.	.	.	.	.	.
mysid shrimp	.	4	.	.	.	.	.	.	.	.
macoma clam spp	.	2	.	.	.	.	.	.	.	.
mud crab spp	.	1	.	.	.	.	.	.	.	.
sand shrimp	.	1	.	.	.	.	.	.	.	.
All Species Combined	13,791									

Table 71.

Month - March, 1998

System - James River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 25

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	1,400	17	29.96	63.64	.	628	67	1.42	30	177
bay anchovy	937	12	20.05	42.59	.	902	54	0.72	30	91
white perch	697	17	14.92	31.68	29.84	423	94	1.40	42	226
blue catfish	537	11	11.49	24.41	22.99	121	175	3.33	60	310
spotted hake	242	6	5.18	11.00	10.36	242	93	1.60	58	170
Atlantic croaker	211	11	4.52	9.59	9.03	211	47	0.95	22	99
blue crab, juvenile female	185	14	3.96	8.41	7.92	.	41	1.35	16	113
blue crab, male	136	14	2.91	6.18	5.82	.	46	2.07	16	141
American eel	55	10	1.18	2.50	2.35	.	254	5.72	157	339
channel catfish	51	5	1.09	2.32	2.18	2	214	8.91	80	333
gizzard shad	44	15	0.94	2.00	1.88	31	168	10.73	94	332
blackcheek tonguefish	37	6	0.79	1.68	1.58	34	75	3.79	51	161
red hake	37	4	0.79	1.68	1.58	.	93	1.83	76	140
white catfish	33	9	0.71	1.50	1.41	3	223	11.29	60	349
striped bass	29	8	0.62	1.32	1.24	13	216	12.83	64	356
naked goby	11	3	0.24	0.50	0.47	.	43	1.82	33	52
northern pipefish	9	3	0.19	0.41	0.39	.	124	3.70	106	140
blue crab, adult female	6	3	0.13	0.27	0.26	.	141	5.00	127	162
summer flounder	5	4	0.11	0.23	0.21	0	237	15.93	196	289
alewife	3	2	0.06	0.14	0.13	3	119	3.53	114	126
pink shrimp	3	1	0.06	0.14	0.13	.	108	8.29	97	124
oyster toadfish	2	2	0.04	0.09	0.09	.	171	101.00	70	272
feather blenny	1	1	0.02	0.05	0.04	.	61	.	61	61
threadfin shad	1	1	0.02	0.05	0.04	.	87	.	87	87
lady crab	1	1	0.02	0.05	0.04	.	18	.	18	18
All Species Combined	4,673									

Table 72.

Month - March, 1998

System - Rappahannock River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 24

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	2,906	15	45.33	132.09	.	2,753	45	0.64	19	89
hogchoker	1,319	16	20.57	59.95	.	275	74	1.10	26	131
blue catfish	823	6	12.84	37.41	37.65	93	214	3.80	65	351
white perch	593	17	9.25	26.95	27.13	132	123	1.97	62	236
Atlantic croaker	446	20	6.96	20.27	20.40	446	39	0.79	15	84
white catfish	120	10	1.87	5.45	5.49	1	219	6.58	94	446
spotted hake	65	8	1.01	2.95	2.97	65	90	1.57	58	120
channel catfish	27	3	0.42	1.23	1.24	0	286	12.10	162	467
striped bass	22	10	0.34	1.00	1.01	12	202	22.13	74	466
blackcheek tonguefish	20	9	0.31	0.91	0.91	19	65	3.62	49	123
alewife	18	6	0.28	0.82	0.82	18	114	2.69	100	134
blue crab, juvenile female	17	6	0.27	0.77	0.78	.	27	1.83	15	45
blue crab, male	16	11	0.25	0.73	0.73	.	40	8.66	18	127
blueback herring	4	1	0.06	0.18	0.18	4	76	4.03	66	84
skilletfish	3	3	0.05	0.14	0.14	.	38	9.02	21	52
brown bullhead	2	2	0.03	0.09	0.09	.	167	7.50	159	174
northern pipefish	2	2	0.03	0.09	0.09	.	146	10.50	135	156
naked goby	2	2	0.03	0.09	0.09	.	46	7.00	39	53
black seabass	1	1	0.02	0.05	0.05	1	46	.	46	46
American shad	1	1	0.02	0.05	0.05	1	113	.	113	113
Atlantic menhaden	1	1	0.02	0.05	0.05	1	44	.	44	44
gizzard shad	1	1	0.02	0.05	0.05	1	123	.	123	123
American eel	1	1	0.02	0.05	0.05	.	155	.	155	155
feather blenny	1	1	0.02	0.05	0.05	.	45	.	45	45
All Species Combined	6,411									

Table 73.

Month - March, 1998

System - York River

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 9

No. of Species - 25

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	1,743	19	28.16	79.23	.	359	74	1.08	30	154
bay anchovy	1,674	18	27.04	76.09	.	1,626	47	0.44	28	86
blue crab, male	756	19	12.21	34.36	27.26	.	58	1.65	10	145
white perch	526	15	8.50	23.91	18.97	41	132	2.38	62	258
Atlantic croaker	498	15	8.05	22.64	17.96	495	41	0.78	16	109
blue crab, juvenile female	437	18	7.06	19.86	15.76	.	53	1.67	10	120
white catfish	178	13	2.88	8.09	6.42	82	157	7.51	46	430
spotted hake	150	11	2.42	6.82	5.41	150	88	1.02	45	122
blackcheek tonguefish	110	11	1.78	5.00	3.97	108	64	1.44	40	154
striped bass	42	15	0.68	1.91	1.51	35	131	10.22	72	309
naked goby	18	5	0.29	0.82	0.65	.	39	1.57	24	47
American eel	17	8	0.27	0.77	0.61	.	242	16.35	144	426
oyster toadfish	12	5	0.19	0.55	0.43	.	149	26.06	54	300
blue crab, adult female	7	4	0.11	0.32	0.25	.	133	5.23	116	160
American shad	5	4	0.08	0.23	0.18	5	120	11.99	92	160
gizzard shad	4	4	0.06	0.18	0.14	3	163	50.95	102	315
northern pipefish	3	2	0.05	0.14	0.11	.	117	3.79	111	124
skilletfish	2	2	0.03	0.09	0.07	.	47	10.50	36	57
summer flounder	2	1	0.03	0.09	0.07	0	308	46.00	262	354
alewife	1	1	0.02	0.05	0.04	1	110	.	110	110
blueback herring	1	1	0.02	0.05	0.04	0	153	.	153	153
Atlantic herring	1	1	0.02	0.05	0.04	.	280	.	280	280
Atlantic menhaden	1	1	0.02	0.05	0.04	1	44	.	44	44
tessellated darter	1	1	0.02	0.05	0.04	.	78	.	78	78
spottail shiner	1	1	0.02	0.05	0.04	.	87	.	87	87
All Species Combined	6,190									

Table 74.

Month - March, 1998

System - All - Pooled

No. of Random Trawls Made - 41

No. of Fixed Trawls Made - 25

No. of Species - 34

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	5,517	45	31.94	83.59	.	5,281	49	0.36	19	91
hogchoker	4,462	52	25.83	67.61	.	1,262	72	0.72	26	177
white perch	1,816	49	10.51	27.52	24.89	596	112	1.15	42	258
blue catfish	1,360	17	7.87	20.61	18.64	214	193	2.70	60	351
Atlantic croaker	1,155	46	6.69	17.50	15.83	1,152	42	0.50	15	109
blue crab, male	908	44	5.26	13.76	12.45	.	54	1.34	10	145
blue crab, juvenile female	639	38	3.70	9.68	8.76	.	48	1.16	10	120
spotted hake	457	25	2.65	6.92	6.26	457	90	0.80	45	170
white catfish	331	32	1.92	5.02	4.54	86	186	5.11	46	446
blackcheek tonguefish	167	26	0.97	2.53	2.29	161	67	1.38	40	161
striped bass	93	33	0.54	1.41	1.27	60	174	8.96	64	466
channel catfish	78	8	0.45	1.18	1.07	2	241	8.25	80	467
American eel	73	19	0.42	1.11	1.00	.	250	5.87	144	426
gizzard shad	49	20	0.28	0.74	0.67	35	167	10.33	94	332
red hake	37	4	0.21	0.56	0.51	.	93	1.83	76	140
naked goby	31	10	0.18	0.47	0.42	.	41	1.22	24	53
alewife	22	9	0.13	0.33	0.30	22	114	2.28	100	134
northern pipefish	14	7	0.08	0.21	0.19	.	125	3.58	106	156
oyster toadfish	14	7	0.08	0.21	0.19	.	153	24.68	54	300
blue crab, adult female	13	7	0.08	0.20	0.18	.	137	3.68	116	162
summer flounder	7	5	0.04	0.11	0.10	0	257	19.87	196	354
American shad	6	5	0.03	0.09	0.08	6	119	9.85	92	160
skilletfish	5	5	0.03	0.08	0.07	.	41	6.34	21	57
blueback herring	5	2	0.03	0.08	0.07	4	91	15.81	66	153
pink shrimp	3	1	0.02	0.05	0.04	.	108	8.29	97	124
Atlantic menhaden	2	2	0.01	0.03	0.03	2	44	0.00	44	44
brown bullhead	2	2	0.01	0.03	0.03	.	167	7.50	159	174
feather blenny	2	2	0.01	0.03	0.03	.	53	8.00	45	61
black seabass	1	1	0.01	0.02	0.01	1	46	.	46	46
Atlantic herring	1	1	0.01	0.02	0.01	.	280	.	280	280
tessellated darter	1	1	0.01	0.02	0.01	.	78	.	78	78
spottail shiner	1	1	0.01	0.02	0.01	.	87	.	87	87
threadfin shad	1	1	0.01	0.02	0.01	.	87	.	87	87
lady crab	1	1	0.01	0.02	0.01	.	18	.	18	18
All Species Combined	17,274									

Table 75.

Month - April, 1998
 System - James River
 No. of Random Trawls Made - 14
 No. of Fixed Trawls Made - 8
 No. of Species - 33
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	7,317	12	48.28	332.59	.	7,165	58	0.57	39	95
hogchoker	5,454	17	35.99	247.91	.	3,517	72	1.32	21	146
blue catfish	344	13	2.27	15.64	14.42	264	145	3.72	62	336
Atlantic croaker	328	17	2.16	14.91	13.75	292	70	4.69	21	297
spotted hake	303	10	2.00	13.77	12.70	293	131	2.80	83	314
blue crab, male	284	20	1.87	12.91	11.91	.	61	2.09	15	165
blue crab, juvenile female	283	21	1.87	12.86	11.87	.	50	1.60	15	147
white perch	258	16	1.70	11.73	10.82	136	108	2.58	55	231
American eel	119	13	0.79	5.41	4.99	.	263	4.76	113	457
blackcheek tonguefish	105	5	0.69	4.77	4.40	74	96	4.02	45	159
blue crab, adult female	76	9	0.50	3.45	3.19	.	139	1.33	113	175
oyster toadfish	65	9	0.43	2.95	2.73	.	181	8.40	49	346
red hake	48	3	0.32	2.18	2.01	.	121	2.45	91	190
white catfish	42	10	0.28	1.91	1.76	14	163	10.36	63	279
channel catfish	29	9	0.19	1.32	1.22	1	214	9.29	123	308
spot	22	3	0.15	1.00	0.92	0	174	3.34	145	201
summer flounder	18	6	0.12	0.82	0.75	0	270	16.72	184	453
northern pipefish	12	5	0.08	0.55	0.50	.	123	5.76	95	165
striped bass	9	4	0.06	0.41	0.38	0	309	32.66	222	522
black seabass	8	6	0.05	0.36	0.34	8	56	2.62	44	69
naked goby	8	3	0.05	0.36	0.34	.	41	2.93	28	51
feather blenny	6	2	0.04	0.27	0.25	.	71	6.16	55	89
gizzard shad	5	2	0.03	0.23	0.21	0	270	16.31	227	323
spottail shiner	3	3	0.02	0.14	0.13	.	84	7.77	73	99
spider crab, common	2	1	0.01	0.09	0.08	.	.	.	.	.
alewife	1	1	0.01	0.05	0.04	1	92	.	92	92
blueback herring	1	1	0.01	0.05	0.04	1	75	.	75	75
windowpane	1	1	0.01	0.05	0.04	1	76	.	76	76
brown bullhead	1	1	0.01	0.05	0.04	.	176	.	176	176
redbreast sunfish	1	1	0.01	0.05	0.04	.	30	.	30	30
silver perch	1	1	0.01	0.05	0.04	0	177	.	177	177
horseshoe crab	1	1	0.01	0.05	0.04	.	294	.	294	294
rock crab	1	1	0.01	0.05	0.04	.	57	.	57	57
All Species Combined	15,156									

Table 76.

Month - April, 1998
 System - Rappahannock River
 No. of Random Trawls Made - 14
 No. of Fixed Trawls Made - 8
 No. of Species - 25
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	1,781	16	40.76	80.95	.	1,689	56	0.79	28	95
hogchoker	1,035	19	23.68	47.05	.	268	77	0.92	26	134
Atlantic croaker	397	15	9.08	18.05	25.55	345	92	7.57	16	354
white perch	264	10	6.04	12.00	16.99	23	144	2.48	74	229
blue catfish	257	7	5.88	11.68	16.54	53	222	4.97	110	374
blue crab, male	133	22	3.04	6.05	8.56	.	60	3.11	17	154
spotted hake	127	13	2.91	5.77	8.17	127	106	1.25	63	135
blue crab, juvenile female	102	21	2.33	4.64	6.56	.	46	2.20	16	108
American eel	99	11	2.27	4.50	6.37	.	264	4.39	116	374
blackcheek tonguefish	43	10	0.98	1.95	2.77	43	60	1.45	43	80
white catfish	40	13	0.92	1.82	2.57	2	230	11.58	80	388
striped bass	26	7	0.59	1.18	1.67	6	239	14.88	63	369
channel catfish	20	3	0.46	0.91	1.29	0	275	17.04	166	467
alewife	12	6	0.27	0.55	0.77	12	114	2.14	104	126
Atlantic menhaden	9	4	0.21	0.41	0.58	7	48	1.17	43	52
naked goby	6	3	0.14	0.27	0.39	.	35	2.94	28	44
Atlantic herring	5	2	0.11	0.23	0.32	.	98	47.46	47	288
blueback herring	4	3	0.09	0.18	0.26	1	168	35.82	94	266
northern pipefish	3	3	0.07	0.14	0.19	.	119	7.77	104	130
skilletfish	2	2	0.05	0.09	0.13	.	45	10.50	34	55
summer flounder	1	1	0.02	0.05	0.06	0	410	.	410	410
American shad	1	1	0.02	0.05	0.06	1	140	.	140	140
spot	1	1	0.02	0.05	0.06	0	188	.	188	188
northern searobin	1	1	0.02	0.05	0.06	1	45	.	45	45
seaboard goby	1	1	0.02	0.05	0.06	.	39	.	39	39
All Species Combined	4,370									

Table 77.

Month - April, 1998

System - York River

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 9

No. of Species - 24

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	3,419	19	37.51	155.41	.	2,000	79	1.30	23	182
bay anchovy	3,361	15	36.88	152.77	.	3,203	54	0.67	28	93
Atlantic croaker	1,009	16	11.07	45.86	43.23	982	63	4.68	21	357
blue crab, male	432	16	4.74	19.64	18.51	.	66	1.63	13	158
blue crab, juvenile female	250	16	2.74	11.36	10.71	.	56	1.81	14	112
white catfish	211	12	2.32	9.59	9.04	127	138	6.61	37	426
spotted hake	149	6	1.63	6.77	6.38	149	103	1.33	64	139
white perch	92	10	1.01	4.18	3.94	24	140	6.14	59	255
blackcheek tonguefish	67	11	0.74	3.05	2.87	67	64	1.29	35	86
American eel	46	7	0.50	2.09	1.97	.	241	9.71	130	398
oyster toadfish	35	4	0.38	1.59	1.50	.	191	12.64	71	336
naked goby	7	3	0.08	0.32	0.30	.	38	1.42	31	42
blue crab, adult female	6	4	0.07	0.27	0.26	.	129	4.56	114	146
striped bass	6	2	0.07	0.27	0.26	6	106	7.89	75	133
summer flounder	4	3	0.04	0.18	0.17	0	387	23.17	324	436
American shad	4	3	0.04	0.18	0.17	4	125	10.94	106	153
northern pipefish	4	3	0.04	0.18	0.17	.	151	13.52	125	186
alewife	3	1	0.03	0.14	0.13	2	154	4.41	147	162
Atlantic herring	2	2	0.02	0.09	0.09	.	262	0.00	262	262
channel catfish	2	1	0.02	0.09	0.09	0	324	159.00	165	483
spottail shiner	2	1	0.02	0.09	0.09	.	94	1.00	93	95
blueback herring	1	1	0.01	0.05	0.04	0	150	.	150	150
longnose gar	1	1	0.01	0.05	0.04	.	840	.	840	840
blue catfish	1	1	0.01	0.05	0.04	1	88	.	88	88
All Species Combined	9,114									

Table 78.

Month - April, 1998

System - All - Pooled

No. of Random Trawls Made - 41

No. of Fixed Trawls Made - 25

No. of Species - 40

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	12,459	43	43.50	188.77	.	12,057	56	0.39	28	95
hogchoker	9,908	55	34.59	150.12	.	5,785	76	0.72	21	182
Atlantic croaker	1,734	48	6.05	26.27	27.64	1,619	74	3.25	16	357
blue crab, male	849	58	2.96	12.86	13.53	.	63	1.20	13	165
blue crab, juvenile female	635	58	2.22	9.62	10.12	.	51	1.07	14	147
white perch	614	36	2.14	9.30	9.79	183	128	1.91	55	255
blue catfish	602	21	2.10	9.12	9.60	318	171	3.52	62	374
spotted hake	579	29	2.02	8.77	9.23	569	115	1.38	63	314
white catfish	293	35	1.02	4.44	4.67	143	156	5.52	37	426
American eel	264	31	0.92	4.00	4.21	.	260	3.22	113	457
blackcheek tonguefish	215	26	0.75	3.26	3.43	184	74	1.97	35	159
oyster toadfish	100	13	0.35	1.52	1.59	.	184	7.01	49	346
blue crab, adult female	82	13	0.29	1.24	1.31	.	138	1.30	113	175
channel catfish	51	13	0.18	0.77	0.81	1	242	10.64	123	483
red hake	48	3	0.17	0.73	0.77	.	121	2.45	91	190
striped bass	41	13	0.14	0.62	0.65	12	234	15.07	63	522
summer flounder	23	10	0.08	0.35	0.37	0	297	17.19	184	453
spot	23	4	0.08	0.35	0.37	0	174	3.26	145	201
naked goby	21	9	0.07	0.32	0.33	.	38	1.51	28	51
northern pipefish	19	11	0.07	0.29	0.30	.	128	5.28	95	186
alewife	16	8	0.06	0.24	0.26	15	120	4.69	92	162
Atlantic menhaden	9	4	0.03	0.14	0.14	7	48	1.17	43	52
black seabass	8	6	0.03	0.12	0.13	8	56	2.62	44	69
Atlantic herring	7	4	0.02	0.11	0.11	.	145	44.56	47	288
blueback herring	6	5	0.02	0.09	0.10	2	150	27.28	75	266
feather blenny	6	2	0.02	0.09	0.10	.	71	6.16	55	89
American shad	5	4	0.02	0.08	0.08	5	128	9.01	106	153
spottail shiner	5	4	0.02	0.08	0.08	.	88	4.92	73	99
gizzard shad	5	2	0.02	0.08	0.08	0	270	16.31	227	323
skilletfish	2	2	0.01	0.03	0.03	.	45	10.50	34	55
spider crab, common	2	1	0.01	0.03	0.03	.	.	.	.	.
windowpane	1	1	0.00	0.02	0.02	1	76	.	76	76
northern searobin	1	1	0.00	0.02	0.02	1	45	.	45	45
longnose gar	1	1	0.00	0.02	0.02	.	840	.	840	840
brown bullhead	1	1	0.00	0.02	0.02	.	176	.	176	176
seaboard goby	1	1	0.00	0.02	0.02	.	39	.	39	39
redbreast sunfish	1	1	0.00	0.02	0.02	.	30	.	30	30
silver perch	1	1	0.00	0.02	0.02	0	177	.	177	177
horseshoe crab	1	1	0.00	0.02	0.02	.	294	.	294	294
rock crab	1	1	0.00	0.02	0.02	.	57	.	57	57
All Species Combined	28,640									

Table 79.

Month - May, 1998

System - James River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 31

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	2,083	20	37.76	94.68	.	893	72	1.24	27	187
Atlantic croaker	1,393	21	25.25	63.32	44.60	839	140	2.80	31	318
blue catfish	624	11	11.31	28.36	19.98	572	167	2.58	63	501
bay anchovy	310	10	5.62	14.09	.	294	64	0.88	35	87
blue crab, juvenile female	252	16	4.57	11.45	8.07	.	48	1.84	17	117
blue crab, male	193	17	3.50	8.77	6.18	.	60	2.15	14	160
white perch	149	12	2.70	6.77	4.77	0	105	2.39	67	211
spot	115	12	2.08	5.23	3.68	2	168	2.33	27	213
American eel	103	13	1.87	4.68	3.30	.	266	4.87	134	507
jellyfish spp	76	4	1.38	3.45	2.43	.	.	.	.	.
blackcheek tonguefish	47	10	0.85	2.14	1.50	22	110	4.40	60	172
spotted hake	28	8	0.51	1.27	0.90	28	173	3.15	143	211
oyster toadfish	25	6	0.45	1.14	0.80	.	143	13.43	59	369
white catfish	22	10	0.40	1.00	0.70	3	190	14.45	90	384
channel catfish	17	7	0.31	0.77	0.54	4	215	17.40	85	323
gizzard shad	16	6	0.29	0.73	0.51	0	292	11.05	159	335
summer flounder	11	4	0.20	0.50	0.35	0	289	34.13	193	553
naked goby	9	3	0.16	0.41	0.29	.	42	2.42	30	52
weakfish	7	3	0.13	0.32	0.22	4	220	9.35	192	254
red hake	6	1	0.11	0.27	0.19	.	172	6.91	144	192
striped bass	5	3	0.09	0.23	0.16	0	270	37.20	205	397
blue crab, adult female	5	3	0.09	0.23	0.16	.	141	4.31	127	150
silver perch	5	2	0.09	0.23	0.16	1	183	8.94	148	196
Atlantic menhaden	4	2	0.07	0.18	0.13	4	48	1.55	45	52
northern pipefish	4	2	0.07	0.18	0.13	.	152	16.81	120	199
black seabass	2	1	0.04	0.09	0.06	2	70	2.50	67	72
Atlantic herring	1	1	0.02	0.05	0.03	.	73	.	73	73
northern puffer	1	1	0.02	0.05	0.03	1	110	.	110	110
spottail shiner	1	1	0.02	0.05	0.03	.	86	.	86	86
feather blenny	1	1	0.02	0.05	0.03	.	64	.	64	64
bluntnose stingray	1	1	0.02	0.05	0.03	.	253	.	253	253
mud crab spp	.	8	.	.	.	.	.	.	.	.
grass shrimp spp	.	7	.	.	.	.	.	.	.	.
blood ark/clam	.	7	.	.	.	.	.	.	.	.
river shrimp	.	6	.	.	.	.	.	.	.	.
sand shrimp	.	6	.	.	.	.	.	.	.	.
whelk (conch) spp	.	3	.	.	.	.	.	.	.	.
blue mussel	.	3	.	.	.	.	.	.	.	.
macoma clam spp	.	3	.	.	.	.	.	.	.	.
razor clam spp	.	2	.	.	.	.	.	.	.	.
spider crab, common	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
flat-clawed hermit crab	.	1	.	.	.	.	.	.	.	.
All Species Combined	5,516									

Table 80.

Month - May, 1998

System - Rappahannock River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 22

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	1,901	19	44.22	86.41	.	356	75	1.18	29	148
Atlantic croaker	825	19	19.19	37.50	40.90	604	162	6.02	24	378
blue catfish	518	12	12.05	23.55	25.68	298	219	3.15	87	326
bay anchovy	381	11	8.86	17.32	.	369	59	0.83	37	87
white perch	151	15	3.51	6.86	7.49	0	147	2.34	81	210
white catfish	93	14	2.16	4.23	4.61	2	247	6.18	113	405
blue crab, juvenile female	78	18	1.81	3.55	3.87	.	75	3.25	16	138
spot	76	11	1.77	3.45	3.77	1	174	2.56	25	205
American eel	75	12	1.74	3.41	3.72	.	273	4.65	181	346
blue crab, male	71	16	1.65	3.23	3.52	.	88	3.58	28	146
jellyfish spp	51	10	1.19	2.32	2.53	.	.	.	.	.
spotted hake	33	11	0.77	1.50	1.64	33	161	2.46	131	187
summer flounder	10	5	0.23	0.45	0.50	0	279	13.27	223	374
weakfish	9	6	0.21	0.41	0.45	2	271	10.65	231	341
blue crab, adult female	8	4	0.19	0.36	0.40	.	137	1.96	127	146
striped bass	6	3	0.14	0.27	0.30	0	213	16.34	139	258
Atlantic menhaden	5	3	0.12	0.23	0.25	4	67	29.24	34	184
blackcheek tonguefish	4	4	0.09	0.18	0.20	4	75	3.50	67	84
alewife	1	1	0.02	0.05	0.05	1	134	.	134	134
channel catfish	1	1	0.02	0.05	0.05	0	301	.	301	301
northern pipefish	1	1	0.02	0.05	0.05	.	165	.	165	165
naked goby	1	1	0.02	0.05	0.05	.	35	.	35	35
mud crab spp	.	2	.	.	.	.	.	.	.	.
sand shrimp	.	2	.	.	.	.	.	.	.	.
grass shrimp spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	4,299									

Table 81.

Month - May, 1998

System - York River

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 9

No. of Species - 30

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	3,162	20	52.23	143.73	.	1,076	76	1.40	18	182
Atlantic croaker	1,704	22	28.15	77.45	73.10	731	153	2.42	21	354
bay anchovy	561	15	9.27	25.50	.	549	54	0.93	36	90
blue crab, male	120	20	1.98	5.45	5.15	.	69	2.84	16	126
spotted hake	104	12	1.72	4.73	4.46	104	160	1.77	117	201
spot	98	15	1.62	4.45	4.20	0	174	1.71	131	207
blue crab, juvenile female	84	21	1.39	3.82	3.60	.	61	3.32	14	123
white catfish	77	11	1.27	3.50	3.30	18	199	9.56	57	365
weakfish	33	9	0.55	1.50	1.42	20	231	10.58	127	408
white perch	28	8	0.46	1.27	1.20	0	193	4.92	123	239
blackcheek tonguefish	21	10	0.35	0.95	0.90	20	80	4.08	47	139
American eel	9	8	0.15	0.41	0.39	.	326	33.31	243	514
channel catfish	8	2	0.13	0.36	0.34	0	285	42.32	167	489
oyster toadfish	6	4	0.10	0.27	0.26	.	222	31.11	155	337
summer flounder	6	3	0.10	0.27	0.26	2	207	45.18	55	314
striped bass	4	4	0.07	0.18	0.17	0	271	108.34	101	578
jellyfish spp	4	2	0.07	0.18	0.17	.	.	.	.	.
blue crab, adult female	4	2	0.07	0.18	0.17	.	144	6.84	126	159
northern searobin	3	3	0.05	0.14	0.13	3	59	14.00	37	85
Atlantic menhaden	3	1	0.05	0.14	0.13	3	39	1.67	37	42
American shad	2	2	0.03	0.09	0.09	2	56	3.00	53	59
naked goby	2	2	0.03	0.09	0.09	.	41	3.00	38	44
spottail shiner	2	1	0.03	0.09	0.09	.	92	9.00	83	101
blue catfish	2	1	0.03	0.09	0.09	1	273	140.00	133	413
mantis shrimp	2	1	0.03	0.09	0.09	.	96	1.50	94	97
alewife	1	1	0.02	0.05	0.04	1	147	.	147	147
Atlantic herring	1	1	0.02	0.05	0.04	.	36	.	36	36
northern pipefish	1	1	0.02	0.05	0.04	.	146	.	146	146
horseshoe crab	1	1	0.02	0.05	0.04	.	269	.	269	269
spider crab, common	1	1	0.02	0.05	0.04	.	.	.	.	.
mud crab spp	.	8	.	.	.	.	.	.	.	.
mysid shrimp	.	5	.	.	.	.	.	.	.	.
river shrimp	.	3	.	.	.	.	.	.	.	.
grass shrimp spp	.	3	.	.	.	.	.	.	.	.
quahog clam	.	2	.	.	.	.	.	.	.	.
whelk (conch) spp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
wedge rangia clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	6,054									

Table 82.

Month - May, 1998
 System - All - Pooled
 No. of Random Trawls Made - 41
 No. of Fixed Trawls Made - 25
 No. of Species - 37
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	7,146	59	45.03	108.27	.	2,325	74	0.74	18	187
Atlantic croaker	3,922	62	24.71	59.42	52.50	2,174	149	1.81	21	378
bay anchovy	1,252	36	7.89	18.97	.	1,212	59	0.54	35	90
blue catfish	1,144	24	7.21	17.33	15.31	871	186	2.28	63	501
blue crab, juvenile female	414	55	2.61	6.27	5.54	.	58	1.61	14	138
blue crab, male	384	53	2.42	5.82	5.14	.	68	1.64	14	160
white perch	328	35	2.07	4.97	4.39	0	132	2.19	67	239
spot	289	38	1.82	4.38	3.87	3	172	1.29	25	213
white catfish	192	35	1.21	2.91	2.57	23	221	5.42	57	405
American eel	187	33	1.18	2.83	2.50	.	272	3.71	134	514
spotted hake	165	31	1.04	2.50	2.21	165	162	1.38	117	211
jellyfish spp	131	16	0.83	1.98	1.75	.	.	.	.	.
blackcheek tonguefish	72	24	0.45	1.09	0.96	46	99	3.57	47	172
weakfish	49	18	0.31	0.74	0.66	26	237	7.82	127	408
oyster toadfish	31	10	0.20	0.47	0.41	.	158	13.43	59	369
summer flounder	27	12	0.17	0.41	0.36	2	267	18.24	55	553
channel catfish	26	10	0.16	0.39	0.35	4	240	18.11	85	489
blue crab, adult female	17	9	0.11	0.26	0.23	.	139	2.17	126	159
gizzard shad	16	6	0.10	0.24	0.21	0	292	11.05	159	335
striped bass	15	10	0.09	0.23	0.20	0	247	29.96	101	578
Atlantic menhaden	12	6	0.08	0.18	0.16	11	54	11.96	34	184
naked goby	12	6	0.08	0.18	0.16	.	42	1.92	30	52
northern pipefish	6	4	0.04	0.09	0.08	.	153	10.94	120	199
red hake	6	1	0.04	0.09	0.08	.	172	6.91	144	192
silver perch	5	2	0.03	0.08	0.07	1	183	8.94	148	196
northern searobin	3	3	0.02	0.05	0.04	3	59	14.00	37	85
spottail shiner	3	2	0.02	0.05	0.04	.	90	5.57	83	101
alewife	2	2	0.01	0.03	0.03	2	141	6.50	134	147
Atlantic herring	2	2	0.01	0.03	0.03	.	55	18.50	36	73
American shad	2	2	0.01	0.03	0.03	2	56	3.00	53	59
black seabass	2	1	0.01	0.03	0.03	2	70	2.50	67	72
mantis shrimp	2	1	0.01	0.03	0.03	.	96	1.50	94	97
spider crab, common	1	2	0.01	0.02	0.01	.	.	.	.	.
northern puffer	1	1	0.01	0.02	0.01	1	110	.	110	110
feather blenny	1	1	0.01	0.02	0.01	.	64	.	64	64
bluntnose stingray	1	1	0.01	0.02	0.01	.	253	.	253	253
horseshoe crab	1	1	0.01	0.02	0.01	.	269	.	269	269
mud crab spp	.	18	.	.	.	.	.	.	.	.
grass shrimp spp	.	11	.	.	.	.	.	.	.	.
river shrimp	.	9	.	.	.	.	.	.	.	.
sand shrimp	.	8	.	.	.	.	.	.	.	.
blood ark/clam	.	7	.	.	.	.	.	.	.	.
mysid shrimp	.	5	.	.	.	.	.	.	.	.
whelk (conch) spp	.	4	.	.	.	.	.	.	.	.
blue mussel	.	3	.	.	.	.	.	.	.	.
macoma clam spp	.	3	.	.	.	.	.	.	.	.
quahog clam	.	3	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
razor clam spp	.	2	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
wedge rangia clam	.	1	.	.	.	.	.	.	.	.
flat-clawed hermit crab	.	1	.	.	.	.	.	.	.	.
All Species Combined	15,869									

Table 83.

Month - June, 1998

System - James River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 36

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
white perch	2,493	12	38.72	113.32	56.66	1,236	81	2.75	11	219
hogchoker	1,629	22	25.30	74.05		1,055	69	1.08	31	180
Atlantic croaker	907	22	14.09	41.23	20.61	526	144	2.25	45	327
bay anchovy	410	13	6.37	18.64		403	66	0.62	47	90
blue catfish	139	9	2.16	6.32	3.16	125	180	4.83	97	374
blue crab, male	130	21	2.02	5.91	2.95	.	79	2.87	21	165
blue crab, juvenile female	111	20	1.72	5.05	2.52	.	66	1.88	13	124
spot	106	15	1.65	4.82	2.41	40	133	5.69	30	215
oyster toadfish	93	8	1.44	4.23	2.11	.	195	5.92	90	330
jellyfish spp	73	5	1.13	3.32	1.66	.	.	.	.	.
striped bass	72	10	1.12	3.27	1.64	64	99	22.30	25	754
blackcheek tonguefish	48	8	0.75	2.18	1.09	25	117	4.19	54	168
spotted hake	40	4	0.62	1.82	0.91	40	196	2.68	170	249
American eel	35	6	0.54	1.59	0.80	.	248	8.86	155	324
blue crab, adult female	28	12	0.43	1.27	0.64	.	137	2.50	114	159
white catfish	18	6	0.28	0.82	0.41	0	261	12.88	176	367
Atlantic menhaden	15	5	0.23	0.68	0.34	14	77	1.98	67	86
spider crab, common	15	3	0.23	0.68	0.34	.	.	.	.	.
summer flounder	14	4	0.22	0.64	0.32	3	226	22.03	94	356
Portunid spp	13	3	0.20	0.59	0.30	.	.	.	.	.
northern pipefish	8	1	0.12	0.36	0.18	.	176	5.45	153	204
gizzard shad	7	2	0.11	0.32	0.16	0	281	11.33	254	325
weakfish	5	3	0.08	0.23	0.11	0	194	8.01	171	221
sand shrimp	4	4	0.06	0.18	0.09	.	.	.	.	.
black seabass	4	3	0.06	0.18	0.09	4	115	12.03	91	145
channel catfish	3	2	0.05	0.14	0.07	0	337	79.68	178	419
kingfish spp	3	1	0.05	0.14	0.07	2	193	23.15	155	235
northern searobin	3	1	0.05	0.14	0.07	3	89	16.50	57	112
scup	2	2	0.03	0.09	0.05	2	92	2.00	90	94
squid spp	2	2	0.03	0.09	0.05	.	32	4.50	27	36
veined rapa whelk	2	2	0.03	0.09	0.05	.	.	.	.	.
common carp	2	1	0.03	0.09	0.05	.	641	59.00	582	700
naked goby	2	1	0.03	0.09	0.05	.	37	4.50	32	41
brown bullhead	1	1	0.02	0.05	0.02	.	209	.	209	209
conger eel	1	1	0.02	0.05	0.02	.	405	.	405	405
Atlantic sturgeon	1	1	0.02	0.05	0.02	.	555	.	555	555
mud crab spp	.	15	.	.	.	.	.	.	.	.
grass shrimp spp	.	12	.	.	.	.	.	.	.	.
wedge rangia clam	.	7	.	.	.	.	.	.	.	.
river shrimp	.	4	.	.	.	.	.	.	.	.
New England dog whelk	.	4	.	.	.	.	.	.	.	.
worm spp	.	3	.	.	.	.	.	.	.	.
sea cucumber spp	.	3	.	.	.	.	.	.	.	.
yoldias clam spp	.	3	.	.	.	.	.	.	.	.
bent mussel	.	3	.	.	.	.	.	.	.	.
blue mussel	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
Atlantic oyster drill	.	2	.	.	.	.	.	.	.	.
roughneck shrimp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	6,439									

Table 84.

Month - June, 1998

System - Rappahannock River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 24

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	583	18	20.64	26.50	.	568	57	0.64	41	90
Atlantic croaker	478	17	16.93	21.73	25.37	350	156	4.60	42	311
jellyfish spp	374	13	13.24	17.00	19.85	.	.	.	.	.
hogchoker	357	19	12.64	16.23	.	131	73	1.45	26	134
blue catfish	268	5	9.49	12.18	14.23	178	233	3.00	158	313
white perch	260	10	9.21	11.82	13.80	77	120	5.27	21	246
spot	225	11	7.97	10.23	11.94	78	144	5.48	26	214
blue crab, juvenile female	57	14	2.02	2.59	3.03	.	59	2.90	21	113
American eel	50	7	1.77	2.27	2.65	.	283	6.16	185	383
blue crab, male	45	11	1.59	2.05	2.39	.	93	5.38	40	152
Atlantic menhaden	31	6	1.10	1.41	1.65	29	68	8.30	35	201
grass shrimp spp	28	5	0.99	1.27	1.49	.	.	.	.	.
summer flounder	17	5	0.60	0.77	0.90	10	183	26.39	74	331
weakfish	13	3	0.46	0.59	0.69	0	241	14.45	178	316
blue crab, adult female	9	4	0.32	0.41	0.48	.	138	2.78	125	156
white catfish	8	5	0.28	0.36	0.42	0	253	12.59	208	328
striped bass	6	5	0.21	0.27	0.32	3	168	86.16	23	570
spotted hake	5	1	0.18	0.23	0.27	5	200	3.78	186	207
naked goby	3	1	0.11	0.14	0.16	.	44	1.86	40	46
channel catfish	2	2	0.07	0.09	0.11	0	318	136.00	182	454
blackcheek tonguefish	2	2	0.07	0.09	0.11	2	84	8.00	76	92
alewife	1	1	0.04	0.05	0.05	1	46	.	46	46
blueback herring	1	1	0.04	0.05	0.05	0	78	.	78	78
northern pipefish	1	1	0.04	0.05	0.05	.	150	.	150	150
mud crab spp	.	2	.	.	.	.	.	.	.	.
sand shrimp	.	2	.	.	.	.	.	.	.	.
wedge rangia clam	.	2	.	.	.	.	.	.	.	.
river shrimp	.	1	.	.	.	.	.	.	.	.
New England dog whelk	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	2,824									

Table 85.

Month - June, 1998

System - York River

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 9

No. of Species - 27

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Atlantic croaker	2,600	22	40.89	118.18	69.24	2,413	125	1.40	37	335
hogchoker	2,016	22	31.70	91.64	.	883	74	1.70	23	166
bay anchovy	588	18	9.25	26.73	.	557	66	0.54	47	91
jellyfish spp	502	22	7.89	22.82	13.37	.	.	.	.	.
blue crab, male	183	22	2.88	8.32	4.87	.	89	2.26	17	139
blue crab, juvenile female	120	22	1.89	5.45	3.20	.	64	2.13	17	116
spot	84	12	1.32	3.82	2.24	37	143	6.06	34	224
white catfish	54	8	0.85	2.45	1.44	0	203	8.52	71	337
blue crab, adult female	39	10	0.61	1.77	1.04	.	135	1.62	117	163
blackcheek tonguefish	32	10	0.50	1.45	0.85	32	90	2.38	64	111
striped bass	31	5	0.49	1.41	0.83	25	58	11.66	21	237
oyster toadfish	30	6	0.47	1.36	0.80	.	176	11.83	87	342
grass shrimp spp	18	9	0.28	0.82	0.48	.	.	.	.	.
American eel	15	3	0.24	0.68	0.40	.	260	14.93	155	350
white perch	12	6	0.19	0.55	0.32	0	187	9.41	139	235
summer flounder	12	3	0.19	0.55	0.32	8	198	27.87	112	410
Atlantic menhaden	6	2	0.09	0.27	0.16	6	77	2.78	67	85
mud crab spp	4	7	0.06	0.18	0.11	.	.	.	.	.
weakfish	3	3	0.05	0.14	0.08	0	220	16.33	190	246
macoma clam spp	2	2	0.03	0.09	0.05	.	.	.	.	.
northern searobin	2	1	0.03	0.09	0.05	2	99	11.00	88	110
common carp	1	1	0.02	0.05	0.03	.	410	.	410	410
feather blenny	1	1	0.02	0.05	0.03	.	83	.	83	83
blue catfish	1	1	0.02	0.05	0.03	1	234	.	234	234
mantis shrimp	1	1	0.02	0.05	0.03	.	116	.	116	116
New England dog whelk	1	1	0.02	0.05	0.03	.	.	.	.	.
Atlantic oyster drill	1	1	0.02	0.05	0.03	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	6,359									

Table 86.

Month - June, 1998
 System - All - Pooled
 No. of Random Trawls Made - 41
 No. of Fixed Trawls Made - 25
 No. of Species - 45
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	4,002	63	25.62	60.64	.	2,069	72	0.81	23	180
Atlantic croaker	3,985	61	25.51	60.38	39.70	3,289	136	1.26	37	335
white perch	2,765	28	17.70	41.89	27.54	1,313	93	2.59	11	246
bay anchovy	1,581	49	10.12	23.95	.	1,528	63	0.38	41	91
jellyfish spp	949	40	6.07	14.38	9.45	.	.	.	.	.
spot	415	38	2.66	6.29	4.13	155	140	3.32	26	224
blue catfish	408	15	2.61	6.18	4.06	304	211	3.07	97	374
blue crab, male	358	54	2.29	5.42	3.57	.	86	1.71	17	165
blue crab, juvenile female	288	56	1.84	4.36	2.87	.	64	1.29	13	124
oyster toadfish	123	14	0.79	1.86	1.23	.	189	5.42	87	342
striped bass	109	20	0.70	1.65	1.09	92	89	14.90	21	754
American eel	100	16	0.64	1.52	1.00	.	267	5.13	155	383
blackcheek tonguefish	82	20	0.52	1.24	0.82	59	106	3.02	54	168
white catfish	80	19	0.51	1.21	0.80	0	221	7.13	71	367
blue crab, adult female	76	26	0.49	1.15	0.76	.	136	1.28	114	163
Atlantic menhaden	52	13	0.33	0.79	0.52	49	72	4.55	35	201
grass shrimp spp	46	26	0.29	0.70	0.46	.	.	.	.	.
spotted hake	45	5	0.29	0.68	0.45	45	196	2.42	170	249
summer flounder	43	12	0.28	0.65	0.43	21	201	14.78	74	410
weakfish	21	9	0.13	0.32	0.21	0	227	10.17	171	316
spider crab, common	15	3	0.10	0.23	0.15	.	.	.	.	.
Portunid spp	13	3	0.08	0.20	0.13	.	.	.	.	.
northern pipefish	9	2	0.06	0.14	0.09	.	173	5.62	150	204
gizzard shad	7	2	0.04	0.11	0.07	0	281	11.33	254	325
channel catfish	5	4	0.03	0.08	0.05	0	330	61.45	178	454
northern searobin	5	2	0.03	0.08	0.05	5	93	9.99	57	112
naked goby	5	2	0.03	0.08	0.05	.	41	2.48	32	46
mud crab spp	4	24	0.03	0.06	0.04	.	.	.	.	.
sand shrimp	4	6	0.03	0.06	0.04	.	.	.	.	.
black seabass	4	3	0.03	0.06	0.04	4	115	12.03	91	145
common carp	3	2	0.02	0.05	0.03	.	564	84.20	410	700
kingfish spp	3	1	0.02	0.05	0.03	2	193	23.15	155	235
macoma clam spp	2	4	0.01	0.03	0.02	.	.	.	.	.
scup	2	2	0.01	0.03	0.02	2	92	2.00	90	94
squid spp	2	2	0.01	0.03	0.02	.	32	4.50	27	36
veined rapa whelk	2	2	0.01	0.03	0.02	.	.	.	.	.
New England dog whelk	1	6	0.01	0.02	0.01	.	.	.	.	.
Atlantic oyster drill	1	3	0.01	0.02	0.01	.	.	.	.	.
alewife	1	1	0.01	0.02	0.01	1	46	.	46	46
blueback herring	1	1	0.01	0.02	0.01	0	78	.	78	78
brown bullhead	1	1	0.01	0.02	0.01	.	209	.	209	209
feather blenny	1	1	0.01	0.02	0.01	.	83	.	83	83
conger eel	1	1	0.01	0.02	0.01	.	405	.	405	405
Atlantic sturgeon	1	1	0.01	0.02	0.01	.	555	.	555	555
mantis shrimp	1	1	0.01	0.02	0.01	.	116	.	116	116
wedge rangia clam	.	9	.	.	.	.	.	.	.	.
river shrimp	.	5	.	.	.	.	.	.	.	.
worm spp	.	4	.	.	.	.	.	.	.	.
blue mussel	.	3	.	.	.	.	.	.	.	.
sea cucumber spp	.	3	.	.	.	.	.	.	.	.
yoldias clam spp	.	3	.	.	.	.	.	.	.	.
bent mussel	.	3	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
roughneck shrimp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	15,622									

Table 87.

Month - July, 1998
 System - James River
 No. of Random Trawls Made - 14
 No. of Fixed Trawls Made - 8
 No. of Species - 35
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	1,972	20	37.43	89.64	.	1,779	72	1.13	29	155
Atlantic croaker	664	20	12.60	30.18	25.19	613	137	1.76	80	364
bay anchovy	661	16	12.55	30.05	.	29	65	0.75	32	87
white perch	593	9	11.25	26.95	22.50	296	79	2.89	25	207
spot	321	11	6.09	14.59	12.18	297	113	2.03	55	209
blue catfish	315	8	5.98	14.32	11.95	310	174	2.03	120	327
weakfish	163	16	3.09	7.41	6.18	159	63	2.16	22	226
jellyfish spp	132	5	2.51	6.00	5.01	.	.	.	.	.
blue crab, male	114	19	2.16	5.18	4.32	.	87	2.51	22	150
blue crab, juvenile female	73	18	1.39	3.32	2.77	.	75	2.22	26	119
striped bass	59	1	1.12	2.68	2.24	59	46	2.86	29	71
summer flounder	41	6	0.78	1.86	1.56	17	240	10.77	148	467
blue crab, adult female	32	9	0.61	1.45	1.21	.	130	2.39	91	157
American eel	28	6	0.53	1.27	1.06	.	228	12.66	120	484
oyster toadfish	23	7	0.44	1.05	0.87	.	140	12.15	66	267
black drum	18	1	0.34	0.82	0.68	.	174	7.89	124	217
silver perch	11	2	0.21	0.50	0.42	0	182	4.70	140	195
black seabass	8	4	0.15	0.36	0.30	8	140	7.46	110	175
gizzard shad	6	4	0.11	0.27	0.23	0	288	13.77	229	327
blackcheek tonguefish	5	3	0.09	0.23	0.19	5	105	2.49	100	112
spider crab, common	5	2	0.09	0.23	0.19	.	.	.	.	.
white catfish	4	2	0.08	0.18	0.15	0	125	11.02	105	150
scup	4	1	0.08	0.18	0.15	1	136	7.34	117	150
northern searobin	3	2	0.06	0.14	0.11	3	132	8.41	118	147
northern pipefish	3	2	0.06	0.14	0.11	.	176	16.26	155	208
butterfish	2	2	0.04	0.09	0.08	2	40	2.00	38	42
channel catfish	1	1	0.02	0.05	0.04	1	20	.	20	20
common carp	1	1	0.02	0.05	0.04	.	530	.	530	530
pigfish	1	1	0.02	0.05	0.04	.	173	.	173	173
spottail shiner	1	1	0.02	0.05	0.04	.	58	.	58	58
lined seahorse	1	1	0.02	0.05	0.04	.	78	.	78	78
naked goby	1	1	0.02	0.05	0.04	.	46	.	46	46
seaboard goby	1	1	0.02	0.05	0.04	.	42	.	42	42
striped burrfish	1	1	0.02	0.05	0.04	.	164	.	164	164
spider crab, 6 spine	1	1	0.02	0.05	0.04	.	.	.	.	.
grass shrimp spp	.	12	.	.	.	.	.	.	.	.
mud crab spp	.	10	.	.	.	.	.	.	.	.
wedge rangia clam	.	6	.	.	.	.	.	.	.	.
river shrimp	.	4	.	.	.	.	.	.	.	.
sand shrimp	.	4	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	2	.	.	.	.	.	.	.	.
blue mussel	.	2	.	.	.	.	.	.	.	.
quahog clam	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
New England dog whelk	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
Atlantic oyster drill	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	5,269									

Table 88.

Month - July, 1998

System - Rappahannock River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 25

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Atlantic croaker	850	13	33.99	38.64	51.92	783	142	1.99	84	333
bay anchovy	465	15	18.59	21.14	.	0	67	0.71	50	94
hogchoker	399	14	15.95	18.14	.	207	80	1.69	38	155
blue catfish	252	6	10.08	11.45	15.39	221	215	1.94	127	360
spot	119	10	4.76	5.41	7.27	96	121	3.84	60	228
jellyfish spp	91	10	3.64	4.14	5.56	.	.	.	.	.
white perch	79	7	3.16	3.59	4.83	0	162	2.43	102	204
blue crab, juvenile female	42	9	1.68	1.91	2.57	.	67	3.48	20	118
white catfish	38	6	1.52	1.73	2.32	0	276	7.01	150	420
weakfish	37	10	1.48	1.68	2.26	36	68	5.97	31	268
blue crab, male	36	9	1.44	1.64	2.20	.	83	4.83	38	155
summer flounder	33	4	1.32	1.50	2.02	22	223	12.91	155	393
American eel	29	6	1.16	1.32	1.77	.	305	4.68	260	364
channel catfish	7	4	0.28	0.32	0.43	0	271	14.68	232	331
inshore lizardfish	7	1	0.28	0.32	0.43	7	90	8.43	62	121
blue crab, adult female	4	2	0.16	0.18	0.24	.	143	6.69	131	156
alewife	2	2	0.08	0.09	0.12	2	61	11.00	50	72
striped bass	2	2	0.08	0.09	0.12	0	219	35.50	183	254
Atlantic menhaden	2	1	0.08	0.09	0.12	2	91	9.00	82	100
northern pipefish	2	1	0.08	0.09	0.12	.	136	10.00	126	146
pollock	1	1	0.04	0.05	0.06	.	112	.	112	112
northern searobin	1	1	0.04	0.05	0.06	1	110	.	110	110
naked goby	1	1	0.04	0.05	0.06	.	37	.	37	37
blackcheek tonguefish	1	1	0.04	0.05	0.06	1	95	.	95	95
oyster toadfish	1	1	0.04	0.05	0.06	.	72	.	72	72
wedge rangia clam	.	3	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
mud crab spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
common razor clam	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
hippolyte shrimp spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	2,501									

Table 89.

Month - July, 1998

System - York River

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 9

No. of Species - 28

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	3,495	19	45.01	158.86	.	0	66	0.43	50	92
Atlantic croaker	1,501	20	19.33	68.23	47.16	1,409	134	1.63	44	369
hogchoker	1,087	19	14.00	49.41	.	394	76	1.49	19	162
spottail shiner	640	1	8.24	29.09	20.11	.	43	0.71	34	80
spot	203	12	2.61	9.23	6.38	151	110	3.94	37	236
blue crab, male	191	15	2.46	8.68	6.00	.	76	2.20	14	160
jellyfish spp	173	9	2.23	7.86	5.44	.	.	.	.	.
blue crab, juvenile female	128	16	1.65	5.82	4.02	.	68	1.53	18	112
striped bass	121	3	1.56	5.50	3.80	118	41	6.19	19	529
weakfish	75	14	0.97	3.41	2.36	52	108	11.05	24	329
white catfish	45	7	0.58	2.05	1.41	12	163	16.49	25	402
summer flounder	25	7	0.32	1.14	0.79	12	229	17.23	119	335
white perch	25	3	0.32	1.14	0.79	8	95	12.15	22	227
blue crab, adult female	15	7	0.19	0.68	0.47	.	127	3.69	108	149
blackcheek tonguefish	7	6	0.09	0.32	0.22	7	106	2.56	94	114
oyster toadfish	5	3	0.06	0.23	0.16	.	187	37.28	128	332
spider crab, common	4	4	0.05	0.18	0.13	.	.	.	.	.
American eel	4	3	0.05	0.18	0.13	.	197	32.27	133	270
gizzard shad	3	2	0.04	0.14	0.09	0	325	16.52	295	352
silver perch	3	2	0.04	0.14	0.09	0	203	3.61	196	208
blue catfish	3	2	0.04	0.14	0.09	2	208	34.71	170	277
channel (smooth) whelk	3	2	0.04	0.14	0.09	.	.	.	.	.
northern pipefish	3	1	0.04	0.14	0.09	.	195	8.51	184	212
longnose gar	2	1	0.03	0.09	0.06	.	828	17.50	810	845
Atlantic menhaden	1	1	0.01	0.05	0.03	1	52	.	52	52
winter flounder	1	1	0.01	0.05	0.03	.	82	.	82	82
inshore lizardfish	1	1	0.01	0.05	0.03	1	87	.	87	87
roughneck shrimp	1	1	0.01	0.05	0.03	.	.	.	.	.
grass shrimp spp	.	7	.	.	.	.	.	.	.	.
mud crab spp	.	6	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
river shrimp	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	7,765									

Table 90.

Month - July, 1998

System - Mobjack Bay & Tribs.

No. of Random Trawls Made - 10

No. of Fixed Trawls Made - 7

No. of Species - 28

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	2,308	16	46.49	135.76	.	87	63	0.49	30	87
spot	1,183	16	23.83	69.59	45.73	1,146	104	0.68	47	221
jellyfish spp	505	14	10.17	29.71	19.52	.	.	.	.	.
Atlantic croaker	297	16	5.98	17.47	11.48	254	157	2.61	98	350
blue crab, juvenile female	251	17	5.06	14.76	9.70	.	67	1.04	29	114
blue crab, male	165	17	3.32	9.71	6.38	.	75	2.28	22	154
hogchoker	70	10	1.41	4.12	.	5	99	1.56	73	128
weakfish	56	11	1.13	3.29	2.16	40	117	10.86	30	286
summer flounder	49	16	0.99	2.88	1.89	35	194	11.06	71	418
inshore lizardfish	25	13	0.50	1.47	0.97	25	109	3.75	86	145
silver perch	11	3	0.22	0.65	0.43	1	173	12.35	62	210
blackcheek tonguefish	10	6	0.20	0.59	0.39	10	107	2.53	95	116
northern pipefish	9	4	0.18	0.53	0.35	.	149	9.28	117	206
blue crab, adult female	5	3	0.10	0.29	0.19	.	140	4.17	130	152
Atlantic cutlassfish	4	4	0.08	0.24	0.15	.	281	25.12	228	340
butterfish	3	3	0.06	0.18	0.12	3	52	4.98	43	60
oyster toadfish	3	2	0.06	0.18	0.12	.	117	10.73	96	130
black seabass	1	1	0.02	0.06	0.04	1	130	.	130	130
striped bass	1	1	0.02	0.06	0.04	0	316	.	316	316
spotted seatrout	1	1	0.02	0.06	0.04	.	29	.	29	29
striped searobin	1	1	0.02	0.06	0.04	.	216	.	216	216
lined seahorse	1	1	0.02	0.06	0.04	.	124	.	124	124
green goby	1	1	0.02	0.06	0.04	.	47	.	47	47
naked goby	1	1	0.02	0.06	0.04	.	45	.	45	45
feather blenny	1	1	0.02	0.06	0.04	.	96	.	96	96
conger eel	1	1	0.02	0.06	0.04	.	465	.	465	465
spider crab, common	1	1	0.02	0.06	0.04	.	.	.	.	.
brown shrimp	1	1	0.02	0.06	0.04	.	134	.	134	134
mud crab spp	.	3	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
periwinkle spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
ribbed mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	4,965									

Table 91.

Month - July, 1998

System - All - Pooled

No. of Random Trawls Made - 51

No. of Fixed Trawls Made - 32

No. of Species - 50

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	6,929	66	33.80	83.48	.	116	65	0.29	30	94
hogchoker	3,528	63	17.21	42.51	.	2,385	77	0.80	19	162
Atlantic croaker	3,312	69	16.16	39.90	32.98	3,059	140	0.98	44	369
spot	1,826	49	8.91	22.00	18.18	1,690	108	0.93	37	236
jellyfish spp	901	38	4.40	10.86	8.97	.	.	.	.	.
white perch	697	19	3.40	8.40	6.94	304	99	2.93	22	227
spottail shiner	641	2	3.13	7.72	6.38	.	43	0.74	34	80
blue catfish	570	16	2.78	6.87	5.68	533	192	1.69	120	360
blue crab, male	506	60	2.47	6.10	5.04	.	79	1.31	14	160
blue crab, juvenile female	494	60	2.41	5.95	4.92	.	69	0.80	18	119
weakfish	331	51	1.61	3.99	3.30	287	83	3.57	22	329
striped bass	183	7	0.89	2.20	1.82	177	48	6.18	19	529
summer flounder	148	33	0.72	1.78	1.47	86	219	6.37	71	467
white catfish	87	15	0.42	1.05	0.87	12	210	10.98	25	420
American eel	61	15	0.30	0.73	0.61	.	263	8.34	120	484
blue crab, adult female	56	21	0.27	0.67	0.56	.	131	1.86	91	157
inshore lizardfish	33	15	0.16	0.40	0.33	33	104	3.60	62	145
oyster toadfish	32	13	0.16	0.39	0.32	.	143	11.00	66	332
silver perch	25	7	0.12	0.30	0.25	1	181	5.97	62	210
blackcheek tonguefish	23	16	0.11	0.28	0.23	23	106	1.48	94	116
black drum	18	1	0.09	0.22	0.18	.	174	7.89	124	217
northern pipefish	17	8	0.08	0.20	0.17	.	161	7.46	117	212
spider crab, common	10	7	0.05	0.12	0.10	.	.	.	.	.
gizzard shad	9	6	0.04	0.11	0.09	0	300	11.84	229	352
black seabass	9	5	0.04	0.11	0.09	9	139	6.67	110	175
channel catfish	8	5	0.04	0.10	0.08	1	239	33.82	20	331
butterfish	5	5	0.02	0.06	0.05	5	47	4.12	38	60
Atlantic cutlassfish	4	4	0.02	0.05	0.04	.	281	25.12	228	340
northern searobin	4	3	0.02	0.05	0.04	4	126	8.05	110	147
scup	4	1	0.02	0.05	0.04	1	136	7.34	117	150
naked goby	3	3	0.01	0.04	0.03	.	43	2.85	37	46
Atlantic menhaden	3	2	0.01	0.04	0.03	3	78	14.00	52	100
channel (smooth) whelk	3	2	0.01	0.04	0.03	.	.	.	.	.
alewife	2	2	0.01	0.02	0.02	2	61	11.00	50	72
lined seahorse	2	2	0.01	0.02	0.02	.	101	23.00	78	124
longnose gar	2	1	0.01	0.02	0.02	.	828	17.50	810	845
winter flounder	1	1	0.00	0.01	0.01	.	82	.	82	82
pollock	1	1	0.00	0.01	0.01	.	112	.	112	112
common carp	1	1	0.00	0.01	0.01	.	530	.	530	530
spotted seatrout	1	1	0.00	0.01	0.01	.	29	.	29	29
pigfish	1	1	0.00	0.01	0.01	.	173	.	173	173
striped searobin	1	1	0.00	0.01	0.01	.	216	.	216	216
green goby	1	1	0.00	0.01	0.01	.	47	.	47	47
seaboard goby	1	1	0.00	0.01	0.01	.	42	.	42	42
feather blenny	1	1	0.00	0.01	0.01	.	96	.	96	96
conger eel	1	1	0.00	0.01	0.01	.	465	.	465	465
striped burrfish	1	1	0.00	0.01	0.01	.	164	.	164	164
spider crab, 6 spine	1	1	0.00	0.01	0.01	.	.	.	.	.
roughneck shrimp	1	1	0.00	0.01	0.01	.	.	.	.	.
brown shrimp	1	1	0.00	0.01	0.01	.	.	.	.	.
grass shrimp spp	.	23	.	.	.	.	134	.	134	134
mud crab spp	.	20	.	.	.	.	.	.	.	.
wedge rangia clam	.	9	.	.	.	.	.	.	.	.
river shrimp	.	5	.	.	.	.	.	.	.	.
sand shrimp	.	4	.	.	.	.	.	.	.	.
blue mussel	.	3	.	.	.	.	.	.	.	.
oyster, common	.	3	.	.	.	.	.	.	.	.
quahog clam	.	3	.	.	.	.	.	.	.	.
blood ark/clam	.	3	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	2	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
New England dog whelk	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
common razor clam	.	1	.	.	.	.	.	.	.	.
periwinkle spp	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
ribbed mussel	.	1	.	.	.	.	.	.	.	.
hippolyte shrimp spp	.	1	.	.	.	.	.	.	.	.
Atlantic oyster drill	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	20,500									

Table 92.

Month - August, 1998
 System - James River
 No. of Random Trawls Made - 14
 No. of Fixed Trawls Made - 8
 No. of Species - 41
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	1,895	18	24.18	86.14	.	1,301	60	0.81	26	92
hogchoker	1,794	20	22.89	81.55	.	0	76	1.01	47	176
Atlantic croaker	1,192	21	15.21	54.18	28.74	1,022	158	1.28	32	335
white perch	654	12	8.35	29.73	15.77	270	94	2.41	45	228
weakfish	628	22	8.01	28.55	15.14	622	71	1.75	16	289
blue catfish	561	7	7.16	25.50	13.53	41	182	2.36	71	264
spot	474	21	6.05	21.55	11.43	410	130	1.48	74	228
blue crab, male	149	20	1.90	6.77	3.59	.	81	2.74	20	162
jellyfish spp	137	7	1.75	6.23	3.30	.	.	.	.	.
blue crab, juvenile female	63	14	0.80	2.86	1.52	.	85	3.46	20	128
blue crab, adult female	42	14	0.54	1.91	1.01	.	138	1.48	122	160
silver perch	41	4	0.52	1.86	0.99	1	176	3.37	68	202
butterfish	38	8	0.48	1.73	0.92	38	38	1.87	20	79
oyster toadfish	28	8	0.36	1.27	0.68	.	148	12.74	40	296
summer flounder	22	6	0.28	1.00	0.53	17	225	14.20	165	452
white catfish	22	4	0.28	1.00	0.53	1	205	11.10	50	288
striped bass	15	5	0.19	0.68	0.36	15	71	4.10	50	102
American eel	11	6	0.14	0.50	0.27	.	220	21.15	132	314
blackcheek tonguefish	10	6	0.13	0.45	0.24	0	116	4.95	87	136
channel catfish	7	3	0.09	0.32	0.17	1	282	54.42	41	518
black seabass	6	2	0.08	0.27	0.14	0	153	3.85	141	164
wedge rangia clam	4	5	0.05	0.18	0.10	.	.	.	.	.
harvestfish	4	3	0.05	0.18	0.10	4	27	3.68	22	38
Atlantic menhaden	4	3	0.05	0.18	0.10	1	145	15.11	125	190
spotted hake	4	2	0.05	0.18	0.10	4	243	13.95	208	274
striped searobin	4	2	0.05	0.18	0.10	.	93	15.24	56	118
northern pipefish	3	2	0.04	0.14	0.07	.	147	4.37	142	156
spider crab, 6 spine	3	2	0.04	0.14	0.07	.	.	.	.	.
gizzard shad	2	2	0.03	0.09	0.05	0	265	1.50	263	266
inshore lizardfish	2	2	0.03	0.09	0.05	2	179	5.00	174	184
kingfish spp	2	1	0.03	0.09	0.05	2	53	17.00	36	70
Spanish mackerel	2	1	0.03	0.09	0.05	.	108	10.50	97	118
common carp	2	1	0.03	0.09	0.05	.	561	8.50	552	569
naked goby	2	1	0.03	0.09	0.05	.	33	1.00	32	34
Atlantic sturgeon	2	1	0.03	0.09	0.05	.	547	20.00	527	567
mantis shrimp	2	1	0.03	0.09	0.05	.	117	6.50	110	123
bluefish	1	1	0.01	0.05	0.02	.	100	.	100	100
northern searobin	1	1	0.01	0.05	0.02	1	146	.	146	146
Atlantic cutlassfish	1	1	0.01	0.05	0.02	.	370	.	370	370
horseshoe crab	1	1	0.01	0.05	0.02	.	272	.	272	272
channel (smooth) whelk	1	1	0.01	0.05	0.02	.	.	.	.	.
mud crab spp	.	8	.	.	.	.	.	.	.	.
grass shrimp spp	.	6	.	.	.	.	.	.	.	.
soft-shell clam	.	4	.	.	.	.	.	.	.	.
sand shrimp	.	3	.	.	.	.	.	.	.	.
blood ark/clam	.	3	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
blue mussel	.	2	.	.	.	.	.	.	.	.
river shrimp	.	1	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	1	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	7,836									

Table 93. Sampling not completed due to vessel failure.

Month - August, 1998
 System - Rappahannock River
 No. of Random Trawls Made - 10
 No. of Fixed Trawls Made - 4
 No. of Species - 18
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Atlantic croaker	507	6	32.31	36.21	43.08	495	155	1.35	128	258
spot	368	7	23.45	26.29	31.27	366	124	0.81	96	203
bay anchovy	330	5	21.03	23.57	.	14	64	0.80	37	85
weakfish	121	7	7.71	8.64	10.28	107	97	6.58	23	373
jellyfish spp	101	7	6.44	7.21	8.58	.	.	.	.	.
hogchoker	62	7	3.95	4.43	.	0	96	1.72	61	143
inshore lizardfish	19	4	1.21	1.36	1.61	16	144	6.25	105	209
summer flounder	16	6	1.02	1.14	1.36	11	216	21.89	130	372
blue crab, male	9	5	0.57	0.64	0.76	.	106	9.84	60	139
blue crab, juvenile female	9	4	0.57	0.64	0.76	.	92	5.53	63	111
naked goby	8	1	0.51	0.57	0.68	.	36	1.92	30	44
striped blenny	6	1	0.38	0.43	0.51	.	48	3.83	36	62
kingfish spp	5	1	0.32	0.36	0.42	5	44	1.64	40	50
striped anchovy	3	1	0.19	0.21	0.25	3	73	0.33	72	73
feather blenny	2	1	0.13	0.14	0.17	.	45	1.50	43	46
butterfish	1	1	0.06	0.07	0.08	1	65	.	65	65
striped searobin	1	1	0.06	0.07	0.08	.	127	.	127	127
oyster toadfish	1	1	0.06	0.07	0.08	.	85	.	85	85
mud crab spp	.	4	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
soft-shell clam	.	2	.	.	.	.	.	.	.	.
sand shrimp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	1,569									

Table 94.

Month - August, 1998

System - York River

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 9

No. of Species - 43

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	4,126	22	37.37	187.55	.	27	79	1.15	29	165
bay anchovy	3,583	20	32.45	162.86	.	941	62	0.47	27	92
Atlantic croaker	1,369	22	12.40	62.23	41.09	1,314	153	1.57	88	376
spot	489	20	4.43	22.23	14.68	396	133	1.81	59	229
weakfish	475	19	4.30	21.59	14.26	448	64	2.91	15	340
jellyfish spp	270	11	2.45	12.27	8.10	.	.	.	.	.
blue crab, male	255	20	2.31	11.59	7.65	.	83	1.62	22	149
blue crab, juvenile female	149	18	1.35	6.77	4.47	.	83	1.59	36	125
white perch	70	2	0.63	3.18	2.10	62	60	3.83	38	175
striped bass	42	3	0.38	1.91	1.26	42	50	1.74	35	79
blue crab, adult female	35	13	0.32	1.59	1.05	.	138	1.89	108	158
striped anchovy	30	1	0.27	1.36	0.90	30	68	0.93	52	76
silver perch	20	4	0.18	0.91	0.60	0	184	3.92	154	230
inshore lizardfish	14	2	0.13	0.64	0.42	14	121	4.92	68	141
channel catfish	12	1	0.11	0.55	0.36	12	51	2.51	39	64
spottail shiner	12	1	0.11	0.55	0.36	.	48	1.23	44	52
butterfish	11	5	0.10	0.50	0.33	11	42	4.29	22	66
grass shrimp spp	11	5	0.10	0.50	0.33	.	.	.	.	.
summer flounder	10	7	0.09	0.45	0.30	4	271	29.66	152	406
oyster toadfish	8	6	0.07	0.36	0.24	.	193	12.02	164	253
kingfish spp	8	5	0.07	0.36	0.24	8	33	1.63	26	41
white catfish	7	3	0.06	0.32	0.21	2	130	30.00	51	291
blackcheek tonguefish	6	4	0.05	0.27	0.18	0	128	3.32	117	136
American eel	4	2	0.04	0.18	0.12	.	175	21.68	151	240
knobbed whelk	3	1	0.03	0.14	0.09	.	.	.	.	.
quahog clam	2	2	0.02	0.09	0.06	.	.	.	.	.
northern searobin	2	1	0.02	0.09	0.06	2	125	7.00	118	132
naked goby	2	1	0.02	0.09	0.06	.	32	4.50	27	36
channel (smooth) whelk	2	1	0.02	0.09	0.06	.	.	.	.	.
mud crab spp	1	5	0.01	0.05	0.03	.	.	.	.	.
spider crab, 6 spine	1	2	0.01	0.05	0.03	.	.	.	.	.
scup	1	1	0.01	0.05	0.03	1	109	.	109	109
alewife	1	1	0.01	0.05	0.03	1	69	.	69	69
Atlantic menhaden	1	1	0.01	0.05	0.03	1	121	.	121	121
gizzard shad	1	1	0.01	0.05	0.03	0	378	.	378	378
spotted seatrout	1	1	0.01	0.05	0.03	.	41	.	41	41
striped searobin	1	1	0.01	0.05	0.03	.	35	.	35	35
lined seahorse	1	1	0.01	0.05	0.03	.	134	.	134	134
Atlantic stingray	1	1	0.01	0.05	0.03	.	439	.	439	439
bluntnose stingray	1	1	0.01	0.05	0.03	.	198	.	198	198
Atlantic cutlassfish	1	1	0.01	0.05	0.03	.	347	.	347	347
forbes common sea star	1	1	0.01	0.05	0.03	.	.	.	.	.
little surf clam	1	1	0.01	0.05	0.03	.	.	.	.	.
sand shrimp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
ribbed mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	11,041									

Table 95. Sampling not performed due to vessel failure. Sampling performed in September.

Month - August, 1998

System - Pocomoke Sound

No. of Random Trawls Made - .

No. of Fixed Trawls Made - .

No. of Species - 0

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
NODATA.										
All Species Combined	0									

Table 96. Sampling not completed due to vessel failure.

Month - August, 1998

System - All - Pooled

No. of Random Trawls Made - 37

No. of Fixed Trawls Made - 21

No. of Species - 57

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	5,982	49	29.26	103.14	.	27	79	0.74	29	176
bay anchovy	5,808	43	28.41	100.14	.	2,256	62	0.40	26	92
Atlantic croaker	3,068	49	15.01	52.90	35.44	2,831	156	0.89	32	376
spot	1,331	48	6.51	22.95	15.38	1,172	130	0.96	59	229
weakfish	1,224	48	5.99	21.10	14.14	1,177	71	1.73	15	373
white perch	724	14	3.54	12.48	8.36	332	91	2.26	38	228
blue catfish	561	7	2.74	9.67	6.48	41	182	2.36	71	264
jellyfish spp	508	25	2.48	8.76	5.87	.	.	.	.	.
blue crab, male	413	45	2.02	7.12	4.77	.	82	1.43	20	162
blue crab, juvenile female	221	36	1.08	3.81	2.55	.	84	1.47	20	128
blue crab, adult female	77	27	0.38	1.33	0.89	.	138	1.17	108	160
silver perch	61	8	0.30	1.05	0.70	1	179	2.62	68	230
striped bass	57	8	0.28	0.98	0.66	57	55	2.09	35	102
butterfish	50	14	0.24	0.86	0.58	50	39	1.78	20	79
summer flounder	48	19	0.23	0.83	0.55	32	232	11.67	130	452
oyster toadfish	37	15	0.18	0.64	0.43	.	156	10.56	40	296
inshore lizardfish	35	8	0.17	0.60	0.40	32	137	4.68	68	209
striped anchovy	33	2	0.16	0.57	0.38	33	68	0.88	52	76
white catfish	29	7	0.14	0.50	0.34	3	187	12.37	50	291
channel catfish	19	4	0.09	0.33	0.22	13	136	32.49	39	518
blackcheek tonguefish	16	10	0.08	0.28	0.18	0	121	3.59	87	136
American eel	15	8	0.07	0.26	0.17	.	208	17.02	132	314
kingfish spp	15	7	0.07	0.26	0.17	15	39	2.74	26	70
naked goby	12	3	0.06	0.21	0.14	.	35	1.46	27	44
spottail shiner	12	1	0.06	0.21	0.14	.	48	1.23	44	52
grass shrimp spp	11	13	0.05	0.19	0.13	.	.	.	.	.
striped searobin	6	4	0.03	0.10	0.07	.	89	15.50	35	127
black seabass	6	2	0.03	0.10	0.07	0	153	3.85	141	164
striped blenny	6	1	0.03	0.10	0.07	.	48	3.83	36	62
Atlantic menhaden	5	4	0.02	0.09	0.06	2	140	12.65	121	190
wedge rangia clam	4	5	0.02	0.07	0.05	.	.	.	.	.
spider crab, 6 spine	4	4	0.02	0.07	0.05	.	.	.	.	.
harvestfish	4	3	0.02	0.07	0.05	4	27	3.68	22	38
spotted hake	4	2	0.02	0.07	0.05	4	243	13.95	208	274
gizzard shad	3	3	0.01	0.05	0.03	0	302	37.84	263	378
northern searobin	3	2	0.01	0.05	0.03	3	132	8.08	118	146
northern pipefish	3	2	0.01	0.05	0.03	.	147	4.37	142	156
channel (smooth) whelk	3	2	0.01	0.05	0.03	.	.	.	.	.
knobbed whelk	3	1	0.01	0.05	0.03	.	.	.	.	.
quahog clam	2	4	0.01	0.03	0.02	.	.	.	.	.
Atlantic cutlassfish	2	2	0.01	0.03	0.02	.	359	11.50	347	370
Spanish mackerel	2	1	0.01	0.03	0.02	.	108	10.50	97	118
common carp	2	1	0.01	0.03	0.02	.	561	8.50	552	569
feather blenny	2	1	0.01	0.03	0.02	.	45	1.50	43	46
Atlantic sturgeon	2	1	0.01	0.03	0.02	.	547	20.00	527	567
mantis shrimp	2	1	0.01	0.03	0.02	.	117	6.50	110	123
mud crab spp	1	17	0.00	0.02	0.01	.	.	.	.	.
scup	1	1	0.00	0.02	0.01	1	109	.	109	109
bluefish	1	1	0.00	0.02	0.01	.	100	.	100	100
alewife	1	1	0.00	0.02	0.01	1	69	.	69	69
spotted seatrout	1	1	0.00	0.02	0.01	.	41	.	41	41
lined seahorse	1	1	0.00	0.02	0.01	.	134	.	134	134
Atlantic stingray	1	1	0.00	0.02	0.01	.	439	.	439	439
bluntnose stingray	1	1	0.00	0.02	0.01	.	198	.	198	198
horseshoe crab	1	1	0.00	0.02	0.01	.	272	.	272	272
forbes common sea star	1	1	0.00	0.02	0.01	.	.	.	.	.
little surf clam	1	1	0.00	0.02	0.01	.	.	.	.	.
soft-shell clam	.	6	.	.	.	.	.	.	.	.
sand shrimp	.	5	.	.	.	.	.	.	.	.
blue mussel	.	3	.	.	.	.	.	.	.	.
blood ark/clam	.	3	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
river shrimp	.	1	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	1	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
ribbed mussel	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	20,446									

Table 97.

Month - September, 1998

System - James River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 51

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	2,591	19	33.18	117.77	.	2,314	44	0.70	17	85
hogchoker	1,912	18	24.49	86.91	.	9	80	0.61	24	136
Atlantic croaker	1,542	21	19.75	70.09	46.66	1,293	69	2.87	17	255
blue catfish	495	7	6.34	22.50	14.98	4	197	2.71	116	288
weakfish	289	19	3.70	13.14	8.74	284	80	2.35	42	364
white perch	242	7	3.10	11.00	7.32	143	103	3.39	47	216
spot	117	13	1.50	5.32	3.54	108	141	2.66	102	236
blue crab, juvenile female	109	16	1.40	4.95	3.30	.	47	2.18	21	126
blue crab, male	103	17	1.32	4.68	3.12	.	60	4.05	8	161
wedge rangia clam	69	2	0.88	3.14	2.09	.	.	.	.	.
threadfin shad	55	1	0.70	2.50	1.66	.	82	0.63	63	92
striped anchovy	40	4	0.51	1.82	1.21	40	77	2.01	53	103
blue crab, adult female	39	5	0.50	1.77	1.18	.	149	1.53	126	167
silver perch	36	6	0.46	1.64	1.09	33	130	4.29	72	203
blackcheek tonguefish	19	6	0.24	0.86	0.57	1	133	3.71	72	149
gizzard shad	14	5	0.18	0.64	0.42	2	246	17.02	116	332
jellyfish spp	12	3	0.15	0.55	0.36	.	.	.	.	.
spider crab, 6 spine	11	6	0.14	0.50	0.33	.	.	.	.	.
oyster toadfish	10	5	0.13	0.45	0.30	.	211	27.84	85	320
inshore lizardfish	10	2	0.13	0.45	0.30	9	131	11.11	108	229
smallmouth flounder	10	1	0.13	0.45	0.30	9	79	4.83	59	106
kingfish spp	9	6	0.12	0.41	0.27	9	80	9.14	51	139
striped bass	9	2	0.12	0.41	0.27	9	97	4.30	67	110
white catfish	8	4	0.10	0.36	0.24	1	222	27.98	67	296
Atlantic spadefish	8	4	0.10	0.36	0.24	.	89	4.27	63	104
American eel	8	3	0.10	0.36	0.24	.	211	23.37	147	292
black seabass	7	5	0.09	0.32	0.21	0	181	3.34	173	194
summer flounder	5	4	0.06	0.23	0.15	2	296	60.41	200	530
naked goby	3	2	0.04	0.14	0.09	.	50	10.20	38	70
grass shrimp spp	2	12	0.03	0.09	0.06	.	.	.	.	.
sand shrimp	2	8	0.03	0.09	0.06	.	.	.	.	.
Atlantic cutlassfish	2	2	0.03	0.09	0.06	.	597	13.50	583	610
northern stargazer	2	2	0.03	0.09	0.06	.	43	9.00	34	52
river shrimp	1	3	0.01	0.05	0.03	.	.	.	.	.
butterfish	1	1	0.01	0.05	0.03	0	133	.	133	133
harvestfish	1	1	0.01	0.05	0.03	1	60	.	60	60
squid spp	1	1	0.01	0.05	0.03	.	39	.	39	39
Atlantic menhaden	1	1	0.01	0.05	0.03	1	129	.	129	129
Atlantic thread herring	1	1	0.01	0.05	0.03	.	92	.	92	92
channel catfish	1	1	0.01	0.05	0.03	0	333	.	333	333
pigfish	1	1	0.01	0.05	0.03	.	217	.	217	217
striped searobin	1	1	0.01	0.05	0.03	.	148	.	148	148
bluespotted cornetfish	1	1	0.01	0.05	0.03	.	446	.	446	446
lined seahorse	1	1	0.01	0.05	0.03	.	132	.	132	132
pipefish spp	1	1	0.01	0.05	0.03	.	324	.	324	324
Atlantic sturgeon	1	1	0.01	0.05	0.03	.	586	.	586	586
spotfin butterflyfish	1	1	0.01	0.05	0.03	.	33	.	33	33
bluespotted sunfish	1	1	0.01	0.05	0.03	.	46	.	46	46
white shrimp	1	1	0.01	0.05	0.03	.	123	.	123	123
brown shrimp	1	1	0.01	0.05	0.03	.	124	.	124	124
channel (smooth) whelk	1	1	0.01	0.05	0.03	.	.	.	.	.
mud crab spp	.	10	.	.	.	.	.	.	.	.
oyster, common	.	4	.	.	.	.	.	.	.	.
worm spp	.	3	.	.	.	.	.	.	.	.
soft-shell clam	.	3	.	.	.	.	.	.	.	.
bent mussel	.	3	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	7,808									

Table 98.

Month - September, 1998
 System - Rappahannock River
 No. of Random Trawls Made - 14
 No. of Fixed Trawls Made - 8
 No. of Species - 27

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	4,902	20	41.16	222.82	.	4,003	51	0.73	18	88
weakfish	1,921	19	16.13	87.32	29.94	1,778	93	1.78	25	466
spot	1,512	21	12.70	68.73	23.57	1,435	147	0.59	110	242
Atlantic croaker	1,158	21	9.72	52.64	18.05	629	110	2.76	11	310
blue catfish	1,073	4	9.01	48.77	16.72	0	229	2.96	170	372
hogchoker	591	20	4.96	26.86	.	0	96	0.67	55	145
white perch	187	8	1.57	8.50	2.91	0	168	1.61	122	218
white catfish	131	7	1.10	5.95	2.04	0	264	5.67	163	418
blue crab, male	92	16	0.77	4.18	1.43	.	66	4.85	17	169
kingfish spp	91	17	0.76	4.14	1.42	91	65	1.39	38	110
blue crab, juvenile female	71	20	0.60	3.23	1.11	.	39	2.95	16	113
harvestfish	37	10	0.31	1.68	0.58	36	42	3.58	19	129
striped anchovy	34	3	0.29	1.55	0.53	34	95	0.60	87	102
blue crab, adult female	24	10	0.20	1.09	0.37	.	146	2.53	128	171
summer flounder	21	11	0.18	0.95	0.33	11	273	13.74	209	471
channel catfish	12	3	0.10	0.55	0.19	0	283	16.82	223	434
mantis shrimp	11	2	0.09	0.50	0.17	.	51	1.66	40	60
inshore lizardfish	9	6	0.08	0.41	0.14	7	184	6.38	158	213
Atlantic spadefish	9	5	0.08	0.41	0.14	.	55	3.66	43	71
American eel	5	4	0.04	0.23	0.08	.	305	20.64	223	332
Atlantic menhaden	5	2	0.04	0.23	0.08	3	139	7.42	115	156
silver perch	4	3	0.03	0.18	0.06	0	207	5.95	192	220
blue crab, sex unknown	3	1	0.03	0.14	0.05	.	15	1.20	13	17
blackcheek tonguefish	2	2	0.02	0.09	0.03	1	93	45.50	47	138
Amphipod spp	2	1	0.02	0.09	0.03	.	.	.	.	.
butterfish	1	1	0.01	0.05	0.02	1	119	.	119	119
naked goby	1	1	0.01	0.05	0.02	.	45	.	45	45
mud crab spp	.	9	.	.	.	.	.	.	.	.
quahog clam	.	3	.	.	.	.	.	.	.	.
bent mussel	.	3	.	.	.	.	.	.	.	.
sand shrimp	.	2	.	.	.	.	.	.	.	.
macoma clam spp	.	2	.	.	.	.	.	.	.	.
grass shrimp spp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	11,909									

Table 99.

Month - September, 1998

System - York River

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 9

No. of Species - 38

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
weakfish	5,041	22	30.35	229.14	40.98	4,885	71	1.43	24	329
Atlantic croaker	4,729	22	28.47	214.95	38.44	1,949	118	3.09	14	347
hogchoker	2,510	20	15.11	114.09	.	27	91	0.98	30	158
bay anchovy	1,798	21	10.83	81.73	.	991	55	0.69	28	84
blue crab, male	807	21	4.86	36.68	6.56	.	56	1.55	10	161
blue crab, juvenile female	573	19	3.45	26.05	4.66	.	47	1.44	11	126
kingfish spp	212	19	1.28	9.64	1.72	212	65	1.55	27	132
blue crab, adult female	143	18	0.86	6.50	1.16	.	141	0.92	110	186
spot	133	15	0.80	6.05	1.08	83	170	3.56	88	240
striped anchovy	127	6	0.76	5.77	1.03	127	77	1.17	65	94
silver perch	115	11	0.69	5.23	0.93	92	112	4.11	39	203
blackcheek tonguefish	73	13	0.44	3.32	0.59	0	138	0.99	124	158
jellyfish spp	68	1	0.41	3.09	0.55	.	.	.	.	.
Atlantic spadefish	52	14	0.31	2.36	0.42	.	56	2.77	24	99
spotted seatrout	51	2	0.31	2.32	0.41	.	42	4.43	21	188
mantis shrimp	36	6	0.22	1.64	0.29	.	58	2.07	38	99
oyster toadfish	21	8	0.13	0.95	0.17	.	217	12.25	134	320
summer flounder	21	4	0.13	0.95	0.17	16	243	12.48	186	419
harvestfish	19	4	0.11	0.86	0.15	19	70	5.90	28	102
white catfish	11	5	0.07	0.50	0.09	1	254	25.46	87	364
white perch	10	2	0.06	0.45	0.08	0	156	11.80	107	225
inshore lizardfish	10	2	0.06	0.45	0.08	10	161	5.35	124	181
white shrimp	10	2	0.06	0.45	0.08	.	80	5.29	56	104
Atlantic thread herring	6	1	0.04	0.27	0.05	.	70	1.08	67	74
spottail shiner	5	1	0.03	0.23	0.04	.	62	3.61	53	74
American eel	4	3	0.02	0.18	0.03	.	318	69.50	209	520
squid spp	4	2	0.02	0.18	0.03	.	41	5.52	28	55
spider crab, 6 spine	4	2	0.02	0.18	0.03	.	.	.	.	.
striped searobin	3	2	0.02	0.14	0.02	.	73	44.03	26	161
channel catfish	3	1	0.02	0.14	0.02	3	68	5.29	60	78
channel (smooth) whelk	2	2	0.01	0.09	0.02	.	.	.	.	.
spider crab, common	2	1	0.01	0.09	0.02	.	.	.	.	.
black seabass	1	1	0.01	0.05	0.01	1	24	.	24	24
pigfish	1	1	0.01	0.05	0.01	.	52	.	52	52
naked goby	1	1	0.01	0.05	0.01	.	32	.	32	32
striped blenny	1	1	0.01	0.05	0.01	.	68	.	68	68
Atlantic stingray	1	1	0.01	0.05	0.01	.	390	.	390	390
smallmouth flounder	1	1	0.01	0.05	0.01	1	51	.	51	51
mud crab spp	.	12	.	.	.	.	.	.	.	.
grass shrimp spp	.	6	.	.	.	.	.	.	.	.
sand shrimp	.	3	.	.	.	.	.	.	.	.
macoma clam spp	.	3	.	.	.	.	.	.	.	.
whelk (conch) spp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	16,609									

Table 100.

Month - September, 1998
 System - Piankatank River
 No. of Random Trawls Made - 4
 No. of Fixed Trawls Made - 3
 No. of Species - 23
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	23,630	6	96.60	3375.71	.	23,600	39	0.32	25	61
spot	318	6	1.30	45.43	41.03	303	137	1.58	99	235
weakfish	137	5	0.56	19.57	17.68	123	93	5.04	33	275
Atlantic croaker	122	7	0.50	17.43	15.74	73	79	5.99	13	205
hogchoker	57	3	0.23	8.14	.	0	86	2.07	57	123
harvestfish	45	5	0.18	6.43	5.81	45	81	2.89	32	115
kingfish spp	33	3	0.13	4.71	4.26	33	67	1.88	49	89
summer flounder	32	6	0.13	4.57	4.13	15	275	11.37	178	438
blue crab, male	23	5	0.09	3.29	2.97	.	78	7.11	23	143
striped anchovy	19	6	0.08	2.71	2.45	19	73	2.14	63	100
blue crab, juvenile female	14	5	0.06	2.00	1.81	.	57	9.97	15	126
blue crab, adult female	7	3	0.03	1.00	0.90	.	136	3.56	116	145
silver perch	4	4	0.02	0.57	0.52	3	119	32.78	51	204
inshore lizardfish	4	3	0.02	0.57	0.52	3	168	18.30	125	214
Atlantic thread herring	3	2	0.01	0.43	0.39	.	76	28.01	47	132
striped searobin	3	2	0.01	0.43	0.39	.	90	8.74	73	101
white perch	3	1	0.01	0.43	0.39	0	213	2.19	210	217
blackcheek tonguefish	3	1	0.01	0.43	0.39	0	133	5.29	123	141
striped bass	1	1	0.00	0.14	0.13	0	222	.	222	222
spotted seatrout	1	1	0.00	0.14	0.13	.	53	.	53	53
seaboard goby	1	1	0.00	0.14	0.13	.	46	.	46	46
smallmouth flounder	1	1	0.00	0.14	0.13	1	66	.	66	66
spider crab, common	1	1	0.00	0.14	0.13	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	24,462									

Table 101.

Month - September, 1998
 System - Great Wicomico River
 No. of Random Trawls Made - 6
 No. of Fixed Trawls Made - 0
 No. of Species - 22
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	4,293	6	74.61	715.50	.	4,218	36	0.48	24	64
striped anchovy	499	4	8.67	83.17	34.34	499	55	1.81	43	85
spot	417	6	7.25	69.50	28.70	416	136	0.79	106	226
Atlantic croaker	277	5	4.81	46.17	19.06	203	68	5.92	21	201
weakfish	94	5	1.63	15.67	6.47	92	59	4.57	31	206
blue crab, male	63	6	1.09	10.50	4.34	.	68	4.99	18	141
blue crab, juvenile female	40	6	0.70	6.67	2.75	.	53	3.84	17	93
blue crab, adult female	12	4	0.21	2.00	0.83	.	140	2.67	128	156
blue crab, sex unknown	12	1	0.21	2.00	0.83	.	18	1.71	2	26
inshore lizardfish	9	4	0.16	1.50	0.62	3	204	7.58	156	230
summer flounder	8	4	0.14	1.33	0.55	7	253	36.59	194	506
hogchoker	8	2	0.14	1.33	.	0	108	3.19	98	122
Atlantic thread herring	5	1	0.09	0.83	0.34	.	69	1.54	64	72
naked goby	4	3	0.07	0.67	0.28	.	41	2.93	34	48
harvestfish	3	2	0.05	0.50	0.21	3	73	0.58	72	74
blackcheek tonguefish	3	2	0.05	0.50	0.21	1	93	26.54	40	122
kingfish spp	2	1	0.03	0.33	0.14	2	82	7.50	74	89
Atlantic spadefish	1	1	0.02	0.17	0.07	.	76	.	76	76
northern pipefish	1	1	0.02	0.17	0.07	.	73	.	73	73
striped blenny	1	1	0.02	0.17	0.07	.	60	.	60	60
oyster toadfish	1	1	0.02	0.17	0.07	.	142	.	142	142
mantis shrimp	1	1	0.02	0.17	0.07	.	41	.	41	41
mud crab spp	.	4	.	.	.	.	.	.	.	.
sand shrimp	.	4	.	.	.	.	.	.	.	.
worm spp	.	3	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	5,754									

Table 102.

Month - September, 1998

System - Pocomoke Sound

No. of Random Trawls Made - 11

No. of Fixed Trawls Made - 3

No. of Species - 29

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	7,301	13	61.02	521.50	.	4,197	56	0.79	27	86
Atlantic croaker	2,589	14	21.64	184.93	59.76	1,770	86	3.67	18	342
kingfish spp	568	14	4.75	40.57	13.11	540	84	1.20	41	181
weakfish	377	12	3.15	26.93	8.70	338	108	2.65	48	318
hogchoker	332	13	2.77	23.71	.	0	122	1.68	83	178
spot	222	10	1.86	15.86	5.12	209	153	1.35	121	237
blackcheek tonguefish	189	11	1.58	13.50	4.36	2	145	1.31	41	171
blue crab, juvenile female	147	10	1.23	10.50	3.39	.	38	1.74	11	111
blue crab, male	77	11	0.64	5.50	1.78	.	40	2.97	9	131
silver perch	30	6	0.25	2.14	0.69	24	133	6.17	99	217
mantis shrimp	21	7	0.18	1.50	0.48	.	74	3.23	44	102
jellyfish spp	17	1	0.14	1.21	0.39	.	.	.	.	.
spider crab, common	15	5	0.13	1.07	0.35	.	.	.	.	.
blue crab, adult female	14	5	0.12	1.00	0.32	.	134	2.05	125	149
summer flounder	13	5	0.11	0.93	0.30	1	335	12.63	247	423
oyster toadfish	13	3	0.11	0.93	0.30	.	231	17.02	152	312
harvestfish	7	2	0.06	0.50	0.16	7	90	2.62	83	104
northern pipefish	7	2	0.06	0.50	0.16	.	121	19.70	83	234
spider crab, 6 spine	5	2	0.04	0.36	0.12	.	.	.	.	.
Atlantic spadefish	4	3	0.03	0.29	0.09	.	57	1.71	52	60
inshore lizardfish	4	3	0.03	0.29	0.09	1	233	17.93	180	256
striped searobin	3	3	0.03	0.21	0.07	.	139	9.77	120	153
striped anchovy	2	2	0.02	0.14	0.05	2	95	7.00	88	102
American eel	2	1	0.02	0.14	0.05	.	388	88.50	299	476
roughneck shrimp	2	1	0.02	0.14	0.05	.	.	.	.	.
black seabass	1	1	0.01	0.07	0.02	0	210	.	210	210
butterfish	1	1	0.01	0.07	0.02	0	139	.	139	139
northern puffer	1	1	0.01	0.07	0.02	1	72	.	72	72
lined seahorse	1	1	0.01	0.07	0.02	.	49	.	49	49
mud crab spp	.	7	.	.	.	.	.	.	.	.
grass shrimp spp	.	5	.	.	.	.	.	.	.	.
worm spp	.	3	.	.	.	.	.	.	.	.
sand shrimp	.	2	.	.	.	.	.	.	.	.
soft-shell clam	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	11,965									

Table 103.

Month - September, 1998

System - All - Pooled

No. of Random Trawls Made - 62

No. of Fixed Trawls Made - 31

No. of Species - 63

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	44,515	85	56.70	478.66		39,323	48	0.33	17	88
Atlantic croaker	10,417	90	13.27	112.01	36.45	5,917	96	1.51	11	347
weakfish	7,859	82	10.01	84.51	27.50	7,500	86	0.98	24	466
hogchoker	5,410	76	6.89	58.17		36	92	0.51	24	178
spot	2,719	71	3.46	29.24	9.51	2,554	146	0.53	88	242
blue catfish	1,568	11	2.00	16.86	5.49	4	209	2.22	116	372
blue crab, male	1,165	76	1.48	12.53	4.08		57	1.27	8	169
blue crab, juvenile female	954	76	1.22	10.26	3.34		45	0.94	11	126
kingfish spp	915	60	1.17	9.84	3.20	887	74	0.88	27	181
striped anchovy	721	25	0.92	7.75	2.52	721	75	1.22	43	103
white perch	442	18	0.56	4.75	1.55	143	136	2.48	47	225
blackcheek tonguefish	289	35	0.37	3.11	1.01	5	141	1.09	40	171
blue crab, adult female	239	45	0.30	2.57	0.84		142	0.72	110	186
silver perch	189	30	0.24	2.03	0.66	152	121	3.08	39	220
white catfish	150	16	0.19	1.61	0.52	2	260	5.67	67	418
harvestfish	112	24	0.14	1.20	0.39	111	66	2.57	19	129
summer flounder	100	34	0.13	1.08	0.35	52	275	7.25	178	530
jellyfish spp	97	5	0.12	1.04	0.34					
Atlantic spadefish	74	27	0.09	0.80	0.26		60	2.37	24	104
mantis shrimp	69	16	0.09	0.74	0.24		62	1.82	38	102
wedge rangia clam	69	2	0.09	0.74	0.24					
threadfin shad	55	1	0.07	0.59	0.19		82	0.63	63	92
spotted seatrout	52	3	0.07	0.56	0.18		42	4.35	21	188
inshore lizardfish	46	20	0.06	0.49	0.16	33	174	5.89	108	256
oyster toadfish	45	17	0.06	0.48	0.16		218	9.70	85	320
spider crab, 6 spine	20	10	0.03	0.22	0.07					
American eel	19	11	0.02	0.20	0.07		277	23.07	147	520
spider crab, common	18	7	0.02	0.19	0.06					
channel catfish	16	5	0.02	0.17	0.06	3	246	25.51	60	434
Atlantic thread herring	15	5	0.02	0.16	0.05		72	5.02	47	132
blue crab, sex unknown	15	2	0.02	0.16	0.05		17	1.40	2	26
gizzard shad	14	5	0.02	0.15	0.05	2	246	17.02	116	332
smallmouth flounder	12	3	0.02	0.13	0.04	11	75	4.68	51	106
white shrimp	11	3	0.01	0.12	0.04		84	6.19	56	123
striped searobin	10	8	0.01	0.11	0.03		105	15.50	26	161
striped bass	10	3	0.01	0.11	0.03	9	110	13.04	67	222
black seabass	9	7	0.01	0.10	0.03	1	166	18.28	24	210
naked goby	9	7	0.01	0.10	0.03		43	3.72	32	70
northern pipefish	8	3	0.01	0.09	0.03		115	18.09	73	234
Atlantic menhaden	6	3	0.01	0.06	0.02	4	137	6.27	115	156
squid spp	5	3	0.01	0.05	0.02		41	4.30	28	55
spottail shiner	5	1	0.01	0.05	0.02		62	3.61	53	74
butterfish	3	3	0.00	0.03	0.01	1	130	5.93	119	139
channel (smooth) whelk	3	3	0.00	0.03	0.01					
grass shrimp spp	2	26	0.00	0.02	0.01					
sand shrimp	2	19	0.00	0.02	0.01					
pigfish	2	2	0.00	0.02	0.01		135	82.50	52	217
lined seahorse	2	2	0.00	0.02	0.01		91	41.50	49	132
striped blenny	2	2	0.00	0.02	0.01		64	4.00	60	68
Atlantic cutlassfish	2	2	0.00	0.02	0.01		597	13.50	583	610
northern stargazer	2	2	0.00	0.02	0.01		43	9.00	34	52
Amphipod spp	2	2	0.00	0.02	0.01					
roughneck shrimp	2	1	0.00	0.02	0.01					
river shrimp	1	3	0.00	0.01	0.00					
northern puffer	1	1	0.00	0.01	0.00	1	72		72	72
bluespotted cornetfish	1	1	0.00	0.01	0.00		446		446	446
seaboard goby	1	1	0.00	0.01	0.00		46		46	46
pipefish spp	1	1	0.00	0.01	0.00		324		324	324
Atlantic stingray	1	1	0.00	0.01	0.00		390		390	390
Atlantic sturgeon	1	1	0.00	0.01	0.00		586		586	586
spotfin butterflyfish	1	1	0.00	0.01	0.00		33		33	33
bluespotted sunfish	1	1	0.00	0.01	0.00		46		46	46
brown shrimp	1	1	0.00	0.01	0.00		124		124	124
mud crab spp		42								
worm spp		12								
soft-shell clam		7								
macoma clam spp		7								
bent mussel		7								
oyster, common		4								
quahog clam		4								
blood ark/clam		4								
right-hand hermit crab spp		3								
whelk (conch) spp		1								
big-clawed snapping shrimp		1								
skeleton shrimp spp		1								
blue mussel		1								

All Species Combined

78,507

Table 104.

Month - October, 1998
 System - James River
 No. of Random Trawls Made - 14
 No. of Fixed Trawls Made - 8
 No. of Species - 43
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	33,784	18	83.87	1535.64	.	33,101	48	0.72	25	86
hogchoker	3,180	14	7.89	144.55	.	577	75	1.08	26	123
Atlantic croaker	1,595	18	3.96	72.50	48.07	1,376	76	2.19	13	305
white perch	279	6	0.69	12.68	8.41	177	95	3.32	51	219
weakfish	252	16	0.63	11.45	7.59	250	115	1.93	57	362
spot	201	16	0.50	9.14	6.06	197	137	1.43	98	237
blue crab, juvenile female	163	19	0.40	7.41	4.91	.	45	1.70	14	125
blue catfish	163	5	0.40	7.41	4.91	5	196	2.68	115	300
blue crab, male	154	16	0.38	7.00	4.64	.	65	3.30	13	172
silver perch	126	7	0.31	5.73	3.80	101	140	2.54	87	204
striped anchovy	87	4	0.22	3.95	2.62	87	104	0.84	84	118
squid spp	65	6	0.16	2.95	1.96	.	33	1.23	19	61
oyster toadfish	43	4	0.11	1.95	1.30	.	212	8.13	45	286
kingfish spp	29	11	0.07	1.32	0.87	29	108	3.95	65	139
white catfish	20	2	0.05	0.91	0.60	0	246	10.22	162	363
blue crab, adult female	19	8	0.05	0.86	0.57	.	142	3.03	125	171
wedge rangia clam	18	6	0.04	0.82	0.54	.	.	.	.	.
blackcheek tonguefish	13	8	0.03	0.59	0.39	7	91	12.74	43	142
roughneck shrimp	11	4	0.03	0.50	0.33	.	.	.	.	.
Atlantic spadefish	9	4	0.02	0.41	0.27	.	83	7.14	54	118
summer flounder	8	4	0.02	0.36	0.24	4	291	30.46	220	484
pigfish	8	1	0.02	0.36	0.24	.	209	4.13	192	227
white shrimp	7	5	0.02	0.32	0.21	.	115	6.89	89	133
spider crab, common	7	4	0.02	0.32	0.21	.	.	.	.	.
black seabass	5	4	0.01	0.23	0.15	1	166	19.53	91	201
channel catfish	5	4	0.01	0.23	0.15	0	235	13.62	194	273
striped bass	5	2	0.01	0.23	0.15	5	89	6.31	77	112
naked goby	4	4	0.01	0.18	0.12	.	35	5.07	21	45
American eel	3	2	0.01	0.14	0.09	.	284	26.63	231	315
bluefish	2	2	0.00	0.09	0.06	.	195	6.50	188	201
harvestfish	2	2	0.00	0.09	0.06	2	86	3.00	83	89
inshore lizardfish	2	2	0.00	0.09	0.06	1	220	24.00	196	244
spotted hake	2	1	0.00	0.09	0.06	2	213	8.50	204	221
spider crab, 6 spine	2	1	0.00	0.09	0.06	.	.	.	.	.
Atlantic menhaden	1	1	0.00	0.05	0.03	1	118	.	118	118
windowpane	1	1	0.00	0.05	0.03	0	245	.	245	245
clearnose skate	1	1	0.00	0.05	0.03	.	488	.	488	488
Atlantic stingray	1	1	0.00	0.05	0.03	.	545	.	545	545
Atlantic moonfish	1	1	0.00	0.05	0.03	.	48	.	48	48
banded drum	1	1	0.00	0.05	0.03	.	45	.	45	45
smallmouth flounder	1	1	0.00	0.05	0.03	1	74	.	74	74
pink shrimp	1	1	0.00	0.05	0.03	.	64	.	64	64
brown shrimp	1	1	0.00	0.05	0.03	.	103	.	103	103
mud crab spp	.	11	.	.	.	.	.	.	.	.
sand shrimp	.	11	.	.	.	.	.	.	.	.
grass shrimp spp	.	8	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	2	.	.	.	.	.	.	.	.
macoma clam spp	.	2	.	.	.	.	.	.	.	.
quahog clam	.	2	.	.	.	.	.	.	.	.
bent mussel	.	2	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
slipper shell spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	40,282									

Table 105.

Month - October, 1998

System - Rappahannock River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 34

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Atlantic croaker	4,353	22	37.32	197.86	64.61	2,889	110	2.58	12	350
bay anchovy	3,730	18	31.98	169.55	.	3,312	48	0.79	25	83
hogchoker	1,198	21	10.27	54.45	.	11	96	0.64	55	161
weakfish	634	21	5.44	28.82	9.41	552	126	3.38	34	432
spot	504	15	4.32	22.91	7.48	467	153	1.18	121	262
blue crab, juvenile female	269	21	2.31	12.23	3.99	.	42	1.16	16	123
white perch	245	6	2.10	11.14	3.64	0	178	1.90	137	217
blue crab, male	235	21	2.01	10.68	3.49	.	50	2.33	16	182
blue catfish	166	3	1.42	7.55	2.46	0	228	2.48	150	333
white catfish	68	6	0.58	3.09	1.01	0	274	4.04	184	350
kingfish spp	51	13	0.44	2.32	0.76	51	93	2.13	72	137
blue crab, adult female	48	9	0.41	2.18	0.71	.	148	1.68	116	172
blackcheek tonguefish	38	14	0.33	1.73	0.56	14	113	6.98	40	162
silver perch	26	5	0.22	1.18	0.39	18	151	7.54	107	223
summer flounder	14	9	0.12	0.64	0.21	10	269	9.16	227	331
American eel	13	7	0.11	0.59	0.19	.	256	11.18	158	305
mantis shrimp	13	3	0.11	0.59	0.19	.	69	2.72	51	86
striped anchovy	11	4	0.09	0.50	0.16	11	85	3.63	65	105
Atlantic spadefish	10	3	0.09	0.45	0.15	.	71	5.37	52	116
harvestfish	8	2	0.07	0.36	0.12	8	93	5.77	64	115
jellyfish spp	8	1	0.07	0.36	0.12	.	.	.	.	.
inshore lizardfish	4	2	0.03	0.18	0.06	3	197	13.03	172	229
naked goby	3	3	0.03	0.14	0.04	.	49	1.15	47	51
channel catfish	3	2	0.03	0.14	0.04	0	249	24.91	200	280
white shrimp	2	2	0.02	0.09	0.03	.	134	2.00	132	136
butterfish	2	1	0.02	0.09	0.03	0	184	7.00	177	191
seaboard goby	2	1	0.02	0.09	0.03	.	42	2.00	40	44
black seabass	1	1	0.01	0.05	0.01	0	210	.	210	210
hickory shad	1	1	0.01	0.05	0.01	.	146	.	146	146
Atlantic menhaden	1	1	0.01	0.05	0.01	1	121	.	121	121
bluespotted cornetfish	1	1	0.01	0.05	0.01	.	510	.	510	510
northern pipefish	1	1	0.01	0.05	0.01	.	150	.	150	150
feather blenny	1	1	0.01	0.05	0.01	.	47	.	47	47
oyster toadfish	1	1	0.01	0.05	0.01	.	115	.	115	115
grass shrimp spp	.	14	.	.	.	.	.	.	.	.
macoma clam spp	.	7	.	.	.	.	.	.	.	.
sand shrimp	.	5	.	.	.	.	.	.	.	.
quahog clam	.	4	.	.	.	.	.	.	.	.
mud crab spp	.	3	.	.	.	.	.	.	.	.
wedge rangia clam	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	11,665									

Table 106.

Month - October, 1998
 System - York River
 No. of Random Trawls Made - 13
 No. of Fixed Trawls Made - 9
 No. of Species - 36
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Atlantic croaker	6,703	22	42.95	304.68	72.03	4,158	125	2.63	13	347
hogchoker	4,129	21	26.45	187.68	.	942	89	1.02	17	157
bay anchovy	2,173	17	13.92	98.77	.	1,900	52	0.68	23	91
weakfish	617	16	3.95	28.05	6.63	594	113	2.49	61	369
blue crab, male	535	22	3.43	24.32	5.75	.	61	1.69	9	177
blue crab, juvenile female	321	22	2.06	14.59	3.45	.	45	1.13	15	122
spot	306	17	1.96	13.91	3.29	292	155	1.23	109	232
blackcheek tonguefish	177	15	1.13	8.05	1.90	120	92	3.99	28	162
mantis shrimp	126	10	0.81	5.73	1.35	.	74	1.57	44	127
kingfish spp	107	19	0.69	4.86	1.15	107	102	2.35	48	163
striped anchovy	77	5	0.49	3.50	0.83	77	54	1.71	29	115
blue crab, adult female	73	12	0.47	3.32	0.78	.	141	1.47	110	170
silver perch	65	16	0.42	2.95	0.70	50	143	4.15	73	220
oyster toadfish	61	13	0.39	2.77	0.66	.	196	7.20	63	332
Atlantic spadefish	30	12	0.19	1.36	0.32	.	84	3.00	51	114
white shrimp	18	6	0.12	0.82	0.19	.	112	4.16	84	149
summer flounder	16	8	0.10	0.73	0.17	9	297	16.54	223	457
white catfish	14	5	0.09	0.64	0.15	2	253	28.48	77	422
spider crab, 6 spine	12	6	0.08	0.55	0.13	.	.	.	.	.
inshore lizardfish	7	3	0.04	0.32	0.08	5	198	12.54	142	243
channel (smooth) whelk	5	4	0.03	0.23	0.05	.	.	.	.	.
quahog clam	5	2	0.03	0.23	0.05	.	.	.	.	.
black seabass	4	2	0.03	0.18	0.04	0	188	14.74	166	230
American eel	4	1	0.03	0.18	0.04	.	302	15.27	267	341
roughneck shrimp	4	1	0.03	0.18	0.04	.	.	.	.	.
spider crab, common	3	3	0.02	0.14	0.03	.	.	.	.	.
white perch	3	2	0.02	0.14	0.03	0	165	16.27	133	187
naked goby	3	1	0.02	0.14	0.03	.	41	4.16	33	47
squid spp	2	2	0.01	0.09	0.02	.	45	17.00	28	62
smallmouth flounder	2	1	0.01	0.09	0.02	2	60	2.00	58	62
butterfish	1	1	0.01	0.05	0.01	0	142	.	142	142
bluefish	1	1	0.01	0.05	0.01	.	196	.	196	196
harvestfish	1	1	0.01	0.05	0.01	1	93	.	93	93
channel catfish	1	1	0.01	0.05	0.01	1	91	.	91	91
striped searobin	1	1	0.01	0.05	0.01	.	91	.	91	91
northern pipefish	1	1	0.01	0.05	0.01	.	114	.	114	114
mud crab spp	.	16	.	.	.	.	.	.	.	.
grass shrimp spp	.	12	.	.	.	.	.	.	.	.
sand shrimp	.	9	.	.	.	.	.	.	.	.
river shrimp	.	3	.	.	.	.	.	.	.	.
soft-shell clam	.	3	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
macoma clam spp	.	2	.	.	.	.	.	.	.	.
whelk (conch) spp	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
wedge rangia clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	15,608									

Table 107.

Month - October, 1998

System - Piankatank River

No. of Random Trawls Made - 4

No. of Fixed Trawls Made - 3

No. of Species - 20

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	2,540	6	47.56	362.86	.	1,892	55	0.95	29	79
Atlantic croaker	1,778	7	33.29	254.00	65.56	1,092	90	4.74	15	256
spot	534	6	10.00	76.29	19.69	527	141	0.94	111	237
weakfish	230	6	4.31	32.86	8.48	222	124	3.24	70	314
hogchoker	89	5	1.67	12.71	.	0	98	2.60	81	137
blue crab, male	34	5	0.64	4.86	1.25	.	59	6.57	18	160
blue crab, juvenile female	30	7	0.56	4.29	1.11	.	56	5.61	25	126
silver perch	24	3	0.45	3.43	0.88	24	112	1.09	101	122
striped anchovy	21	4	0.39	3.00	0.77	21	92	2.77	66	109
summer flounder	18	7	0.34	2.57	0.66	16	248	5.99	220	333
harvestfish	13	5	0.24	1.86	0.48	13	91	2.72	72	104
kingfish spp	8	2	0.15	1.14	0.29	8	88	7.88	49	125
inshore lizardfish	7	4	0.13	1.00	0.26	2	205	12.10	149	233
blue crab, adult female	5	3	0.09	0.71	0.18	.	137	4.46	123	150
Atlantic spadefish	4	4	0.07	0.57	0.15	.	73	6.54	60	85
striped searobin	2	1	0.04	0.29	0.07	.	155	7.50	147	162
white perch	1	1	0.02	0.14	0.04	0	195	.	195	195
black drum	1	1	0.02	0.14	0.04	.	204	.	204	204
bluespotted cometsfish	1	1	0.02	0.14	0.04	.	541	.	541	541
blackcheek tonguefish	1	1	0.02	0.14	0.04	0	162	.	162	162
macoma clam spp	.	3	.	.	.	.	.	.	.	.
sand shrimp	.	2	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	5,341									

Table 108.

Month - October, 1998

System - Great Wicomico River

No. of Random Trawls Made - 6

No. of Fixed Trawls Made - 0

No. of Species - 21

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	3,706	6	63.30	617.67	.	3,313	40	1.12	20	76
Atlantic croaker	1,296	6	22.13	216.00	62.01	1,119	61	3.38	21	217
spot	365	5	6.23	60.83	17.46	365	142	0.78	111	187
weakfish	154	4	2.63	25.67	7.37	148	100	5.95	51	303
blue crab, male	112	5	1.91	18.67	5.36	.	51	3.13	12	129
blue crab, juvenile female	106	5	1.81	17.67	5.07	.	38	2.36	16	116
hogchoker	59	3	1.01	9.83	.	0	93	1.86	65	135
blue crab, adult female	14	4	0.24	2.33	0.67	.	138	2.88	120	159
summer flounder	9	4	0.15	1.50	0.43	7	247	11.60	205	315
naked goby	6	2	0.10	1.00	0.29	.	38	2.49	28	44
silver perch	6	2	0.10	1.00	0.29	6	100	6.75	89	129
inshore lizardfish	5	4	0.09	0.83	0.24	1	227	9.53	199	248
striped blenny	5	2	0.09	0.83	0.24	.	63	7.43	46	86
striped anchovy	3	2	0.05	0.50	0.14	3	93	6.64	82	105
white shrimp	2	2	0.03	0.33	0.10	.	101	21.00	80	122
oyster toadfish	2	1	0.03	0.33	0.10	.	193	22.50	170	215
red drum	1	1	0.02	0.17	0.05	.	395	.	395	395
American eel	1	1	0.02	0.17	0.05	.	439	.	439	439
Atlantic spadefish	1	1	0.02	0.17	0.05	.	69	.	69	69
northern pipefish	1	1	0.02	0.17	0.05	.	84	.	84	84
blackcheek tonguefish	1	1	0.02	0.17	0.05	1	53	.	53	53
grass shrimp spp	.	3	.	.	.	.	.	.	.	.
mud crab spp	.	2	.	.	.	.	.	.	.	.
sand shrimp	.	2	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	5,855									

Table 109.

Month - October, 1998

System - All - Pooled

No. of Random Trawls Made - 51

No. of Fixed Trawls Made - 28

No. of Species - 57

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	45,933	65	58.33	581.43	.	43,518	49	0.38	20	91
Atlantic croaker	15,725	75	19.97	199.05	65.08	10,634	104	1.42	12	350
hogchoker	8,655	64	10.99	109.56	.	1,530	89	0.55	17	161
spot	1,910	59	2.43	24.18	7.90	1,848	147	0.54	98	262
weakfish	1,887	63	2.40	23.89	7.81	1,766	118	1.51	34	432
blue crab, male	1,070	69	1.36	13.54	4.43	.	58	1.17	9	182
blue crab, juvenile female	889	74	1.13	11.25	3.68	.	44	0.71	14	126
white perch	528	15	0.67	6.68	2.19	177	126	3.27	51	219
blue catfish	329	8	0.42	4.16	1.36	5	209	2.11	115	333
silver perch	247	33	0.31	3.13	1.02	199	138	2.00	73	223
blackcheek tonguefish	230	39	0.29	2.91	0.95	142	97	3.38	28	162
striped anchovy	199	19	0.25	2.52	0.82	199	78	1.99	29	118
kingfish spp	195	45	0.25	2.47	0.81	195	100	1.59	48	163
blue crab, adult female	159	36	0.20	2.01	0.66	.	143	0.99	110	172
mantis shrimp	139	13	0.18	1.76	0.58	.	74	1.43	44	127
oyster toadfish	107	19	0.14	1.35	0.44	.	202	5.35	45	332
white catfish	102	13	0.13	1.29	0.42	2	266	5.18	77	422
squid spp	67	8	0.09	0.85	0.28	.	34	1.27	19	62
summer flounder	65	32	0.08	0.82	0.27	46	270	6.63	205	484
Atlantic spadefish	54	24	0.07	0.68	0.22	.	80	2.39	51	118
white shrimp	29	15	0.04	0.37	0.12	.	113	3.40	80	149
inshore lizardfish	25	15	0.03	0.32	0.10	12	207	5.94	142	248
harvestfish	24	10	0.03	0.30	0.10	24	92	2.38	64	115
American eel	21	11	0.03	0.27	0.09	.	277	12.08	158	439
wedge rangia clam	18	9	0.02	0.23	0.07	.	.	.	.	.
naked goby	16	10	0.02	0.20	0.07	.	40	2.01	21	51
roughneck shrimp	15	5	0.02	0.19	0.06	.	.	.	.	.
spider crab, 6 spine	14	7	0.02	0.18	0.06	.	.	.	.	.
black seabass	10	7	0.01	0.13	0.04	1	179	11.72	91	230
spider crab, common	10	7	0.01	0.13	0.04	.	.	.	.	.
channel catfish	9	7	0.01	0.11	0.04	1	224	19.60	91	280
pigfish	8	1	0.01	0.10	0.03	.	209	4.13	192	227
jellyfish spp	8	1	0.01	0.10	0.03	.	.	.	.	.
quahog clam	5	9	0.01	0.06	0.02	.	.	.	.	.
channel (smooth) whelk	5	4	0.01	0.06	0.02	.	.	.	.	.
striped bass	5	2	0.01	0.06	0.02	5	89	6.31	77	112
striped blenny	5	2	0.01	0.06	0.02	.	63	7.43	46	86
bluefish	3	3	0.00	0.04	0.01	.	195	3.79	188	201
northern pipefish	3	3	0.00	0.04	0.01	.	116	19.08	84	150
butterfish	3	2	0.00	0.04	0.01	0	170	14.57	142	191
striped searobin	3	2	0.00	0.04	0.01	.	133	21.61	91	162
smallmouth flounder	3	2	0.00	0.04	0.01	3	65	4.81	58	74
Atlantic menhaden	2	2	0.00	0.03	0.01	2	120	1.50	118	121
bluespotted cornetfish	2	2	0.00	0.03	0.01	.	526	15.50	510	541
spotted hake	2	1	0.00	0.03	0.01	2	213	8.50	204	221
seaboard goby	2	1	0.00	0.03	0.01	.	42	2.00	40	44
hickory shad	1	1	0.00	0.01	0.00	.	146	.	146	146
black drum	1	1	0.00	0.01	0.00	.	204	.	204	204
red drum	1	1	0.00	0.01	0.00	.	395	.	395	395
windowpane	1	1	0.00	0.01	0.00	0	245	.	245	245
feather blenny	1	1	0.00	0.01	0.00	.	47	.	47	47
clearnose skate	1	1	0.00	0.01	0.00	.	488	.	488	488
Atlantic stingray	1	1	0.00	0.01	0.00	.	545	.	545	545
Atlantic moonfish	1	1	0.00	0.01	0.00	.	48	.	48	48
banded drum	1	1	0.00	0.01	0.00	.	45	.	45	45
pink shrimp	1	1	0.00	0.01	0.00	.	64	.	64	64
brown shrimp	1	1	0.00	0.01	0.00	.	103	.	103	103
grass shrimp spp	.	39	.	.	.	.	.	.	.	.
mud crab spp	.	32	.	.	.	.	.	.	.	.
sand shrimp	.	29	.	.	.	.	.	.	.	.
macoma clam spp	.	14	.	.	.	.	.	.	.	.
worm spp	.	4	.	.	.	.	.	.	.	.
soft-shell clam	.	4	.	.	.	.	.	.	.	.
oyster, common	.	4	.	.	.	.	.	.	.	.
river shrimp	.	3	.	.	.	.	.	.	.	.
bent mussel	.	3	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
whelk (conch) spp	.	1	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
slipper shell spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	78,751									

Table 110.

Month - November, 1998

System - James River

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 8

No. of Species - 49

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	27,453	23	82.50	1193.61	.	27,039	51	0.52	25	81
hogchoker	2,659	16	7.99	115.61	.	483	76	1.28	30	142
Atlantic croaker	881	20	2.65	38.30	27.85	788	70	1.53	19	284
spot	639	17	1.92	27.78	20.20	639	130	0.67	103	191
blue crab, juvenile female	323	22	0.97	14.04	10.21	.	47	1.11	16	134
blue crab, male	315	21	0.95	13.70	9.96	.	51	1.39	17	163
white perch	250	13	0.75	10.87	7.90	55	135	2.80	36	239
weakfish	147	13	0.44	6.39	4.65	147	130	1.70	88	192
blue catfish	89	4	0.27	3.87	2.81	1	206	4.47	139	335
blackcheek tonguefish	53	17	0.16	2.30	1.68	36	92	5.04	45	166
kingfish spp	37	10	0.11	1.61	1.17	37	130	3.25	95	200
squid spp	37	10	0.11	1.61	1.17	.	44	3.29	26	136
blueback herring	35	3	0.11	1.52	1.11	35	68	0.58	61	74
blue crab, adult female	33	12	0.10	1.43	1.04	.	143	2.06	122	167
mantis shrimp	33	2	0.10	1.43	1.04	.	83	2.66	54	117
oyster toadfish	31	7	0.09	1.35	0.98	.	188	12.13	47	329
naked goby	28	7	0.08	1.22	0.89	.	45	2.97	25	83
white catfish	28	5	0.08	1.22	0.89	0	196	8.60	113	285
threadfin shad	28	3	0.08	1.22	0.89	.	96	1.29	86	113
silver perch	27	8	0.08	1.17	0.85	18	143	6.97	90	203
channel catfish	24	3	0.07	1.04	0.76	0	317	10.33	229	419
Atlantic menhaden	17	8	0.05	0.74	0.54	17	145	2.85	110	163
roughneck shrimp	14	2	0.04	0.61	0.44	.	.	.	.	.
black seabass	13	4	0.04	0.57	0.41	2	179	14.57	78	255
gizzard shad	12	4	0.04	0.52	0.38	2	205	11.47	129	257
smallmouth flounder	10	3	0.03	0.43	0.32	10	87	5.00	63	109
white shrimp	8	6	0.02	0.35	0.25	.	108	12.39	65	156
brown shrimp	7	7	0.02	0.30	0.22	.	112	6.75	87	129
spider crab, common	7	2	0.02	0.30	0.22	.	.	.	.	.
summer flounder	5	3	0.02	0.22	0.16	3	280	16.83	247	335
alewife	5	2	0.02	0.22	0.16	5	106	1.72	103	113
spotted hake	3	3	0.01	0.13	0.09	0	256	4.58	250	265
American eel	3	2	0.01	0.13	0.09	.	241	29.87	181	273
black drum	3	1	0.01	0.13	0.09	.	231	13.45	205	250
feather blenny	2	2	0.01	0.09	0.06	.	65	11.50	53	76
pigfish	2	1	0.01	0.09	0.06	.	154	42.50	111	196
horseshoe crab	2	1	0.01	0.09	0.06	.	262	13.00	249	275
bluefish	1	1	0.00	0.04	0.03	.	141	.	141	141
striped bass	1	1	0.00	0.04	0.03	0	236	.	236	236
tautog	1	1	0.00	0.04	0.03	.	273	.	273	273
brown bullhead	1	1	0.00	0.04	0.03	.	198	.	198	198
northern pipefish	1	1	0.00	0.04	0.03	.	101	.	101	101
pumpkinseed	1	1	0.00	0.04	0.03	.	141	.	141	141
inshore lizardfish	1	1	0.00	0.04	0.03	1	175	.	175	175
Atlantic sturgeon	1	1	0.00	0.04	0.03	.	513	.	513	513
lookdown	1	1	0.00	0.04	0.03	.	111	.	111	111
spotfin butterflyfish	1	1	0.00	0.04	0.03	.	79	.	79	79
Atlantic cutlassfish	1	1	0.00	0.04	0.03	.	356	.	356	356
pink shrimp	1	1	0.00	0.04	0.03	.	113	.	113	113
sand shrimp	.	20	.	.	.	.	.	.	.	.
grass shrimp spp	.	14	.	.	.	.	.	.	.	.
mud crab spp	.	11	.	.	.	.	.	.	.	.
wedge rangia clam	.	5	.	.	.	.	.	.	.	.
bent mussel	.	3	.	.	.	.	.	.	.	.
river shrimp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	33,275									

Table 111.

Month - November, 1998

System - Rappahannock River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 29

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	8,355	22	69.48	379.77	.	7,703	53	0.77	23	82
Atlantic croaker	1,550	21	12.89	70.45	49.50	1,322	70	1.60	16	342
hogchoker	539	13	4.48	24.50	.	119	74	1.44	29	118
white perch	531	16	4.42	24.14	16.96	9	143	1.73	66	223
blueback herring	196	3	1.63	8.91	6.26	196	66	0.35	56	75
spot	172	10	1.43	7.82	5.49	172	134	0.78	111	173
blue crab, juvenile female	141	16	1.17	6.41	4.50	.	43	1.72	14	132
weakfish	141	11	1.17	6.41	4.50	138	125	3.28	53	387
blue catfish	126	5	1.05	5.73	4.02	0	297	2.88	242	379
blue crab, male	106	14	0.88	4.82	3.39	.	53	3.12	7	159
kingfish spp	40	10	0.33	1.82	1.28	40	113	2.22	77	143
Atlantic menhaden	30	7	0.25	1.36	0.96	30	130	2.14	87	149
alewife	24	5	0.20	1.09	0.77	24	101	2.11	86	128
silver perch	13	3	0.11	0.59	0.42	13	123	3.63	101	148
white catfish	12	5	0.10	0.55	0.38	0	304	12.24	237	376
blackcheek tonguefish	11	5	0.09	0.50	0.35	8	87	10.98	53	151
channel catfish	9	3	0.07	0.41	0.29	0	321	11.26	274	377
summer flounder	7	6	0.06	0.32	0.22	5	292	34.66	196	456
blue crab, adult female	5	5	0.04	0.23	0.16	.	150	5.57	131	165
American shad	5	3	0.04	0.23	0.16	5	112	5.92	100	133
striped bass	3	3	0.02	0.14	0.10	2	204	81.69	119	367
white shrimp	2	1	0.02	0.09	0.06	.	116	6.00	110	122
butterfish	1	1	0.01	0.05	0.03	0	205	.	205	205
black drum	1	1	0.01	0.05	0.03	.	248	.	248	248
common carp	1	1	0.01	0.05	0.03	.	644	.	644	644
spotted seatrout	1	1	0.01	0.05	0.03	.	131	.	131	131
northern pipefish	1	1	0.01	0.05	0.03	.	114	.	114	114
oyster toadfish	1	1	0.01	0.05	0.03	.	290	.	290	290
spider crab, common	1	1	0.01	0.05	0.03	.	.	.	.	.
sand shrimp	.	14	.	.	.	.	.	.	.	.
wedge rangia clam	.	6	.	.	.	.	.	.	.	.
grass shrimp spp	.	4	.	.	.	.	.	.	.	.
mud crab spp	.	2	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	12,025									

Table 112.

Month - November, 1998

System - York River

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 9

No. of Species - 33

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	4,060	19	39.25	184.55	.	3,157	58	0.75	27	81
Atlantic croaker	2,244	20	21.70	102.00	49.20	1,602	110	2.55	21	353
hogchoker	1,722	19	16.65	78.27	.	35	96	0.98	33	171
blue crab, male	755	20	7.30	34.32	16.55	.	60	1.76	17	181
blue crab, juvenile female	650	20	6.28	29.55	14.25	.	49	0.95	19	108
weakfish	206	20	1.99	9.36	4.52	194	139	2.87	91	340
spot	191	15	1.85	8.68	4.19	191	143	1.12	109	180
blackcheek tonguefish	123	17	1.19	5.59	2.70	79	101	3.45	51	173
white perch	107	4	1.03	4.86	2.35	0	192	2.23	143	255
silver perch	72	16	0.70	3.27	1.58	67	127	2.43	79	201
kingfish spp	58	12	0.56	2.64	1.27	58	129	2.51	91	199
oyster toadfish	33	11	0.32	1.50	0.72	.	185	10.07	66	314
blue crab, adult female	27	7	0.26	1.23	0.59	.	140	2.52	113	166
summer flounder	15	5	0.15	0.68	0.33	11	272	10.55	190	359
squid spp	14	2	0.14	0.64	0.31	.	42	2.52	31	67
naked goby	9	5	0.09	0.41	0.20	.	41	2.34	29	49
mantis shrimp	8	6	0.08	0.36	0.18	.	89	5.44	71	112
channel (smooth) whelk	8	4	0.08	0.36	0.18	.	.	.	.	.
spider crab, common	6	3	0.06	0.27	0.13	.	.	.	.	.
white catfish	5	2	0.05	0.23	0.11	1	257	50.69	93	373
white shrimp	4	4	0.04	0.18	0.09	.	120	12.48	93	145
spotted seatrout	3	3	0.03	0.14	0.07	.	173	29.51	142	232
gizzard shad	3	2	0.03	0.14	0.07	0	322	20.54	283	353
American shad	3	1	0.03	0.14	0.07	3	90	3.38	86	97
black drum	3	1	0.03	0.14	0.07	.	234	5.04	227	244
longnose gar	3	1	0.03	0.14	0.07	.	801	8.41	789	817
feather blenny	3	1	0.03	0.14	0.07	.	67	10.12	50	85
American eel	2	2	0.02	0.09	0.04	.	397	65.00	332	462
pink shrimp	2	1	0.02	0.09	0.04	.	102	4.50	97	106
bluefish	1	1	0.01	0.05	0.02	.	130	.	130	130
striped bass	1	1	0.01	0.05	0.02	0	333	.	333	333
green goby	1	1	0.01	0.05	0.02	.	44	.	44	44
Atlantic cutlassfish	1	1	0.01	0.05	0.02	.	760	.	760	760
mud crab spp	.	16	.	.	.	.	.	.	.	.
grass shrimp spp	.	15	.	.	.	.	.	.	.	.
sand shrimp	.	12	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
quahog clam	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	10,343									

Table 113.

Month - November, 1998
 System - Mobjack Bay & Tribs.
 No. of Random Trawls Made - 11
 No. of Fixed Trawls Made - 7
 No. of Species - 29
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	11,471	18	66.53	637.28	.	10,672	52	0.52	29	79
Atlantic croaker	4,674	18	27.11	259.67	81.27	4,458	66	2.01	20	237
spot	425	16	2.47	23.61	7.39	425	137	0.71	105	187
blue crab, juvenile female	162	18	0.94	9.00	2.82	.	47	1.35	22	119
blue crab, male	133	18	0.77	7.39	2.31	.	57	2.56	21	133
weakfish	125	13	0.73	6.94	2.17	125	145	2.22	80	200
silver perch	69	7	0.40	3.83	1.20	67	124	1.92	93	197
blackcheek tonguefish	24	13	0.14	1.33	0.42	12	106	8.34	51	165
seaboard goby	24	5	0.14	1.33	0.42	.	38	1.52	31	45
summer flounder	23	13	0.13	1.28	0.40	17	289	8.68	243	384
blue crab, adult female	22	8	0.13	1.22	0.38	.	131	2.99	111	154
hogchoker	19	10	0.11	1.06	.	0	109	3.30	91	141
kingfish spp	15	8	0.09	0.83	0.26	14	125	10.44	68	201
butterfish	14	7	0.08	0.78	0.24	9	147	5.24	122	189
naked goby	13	6	0.08	0.72	0.23	.	39	1.94	27	47
squid spp	5	2	0.03	0.28	0.09	.	76	6.38	55	95
bluefish	4	4	0.02	0.22	0.07	.	149	5.96	136	161
northern pipefish	4	3	0.02	0.22	0.07	.	133	14.35	95	162
spider crab, 6 spine	4	2	0.02	0.22	0.07	.	.	.	.	.
oyster toadfish	2	1	0.01	0.11	0.03	.	120	47.00	73	167
black seabass	1	1	0.01	0.06	0.02	0	194	.	194	194
red hake	1	1	0.01	0.06	0.02	.	57	.	57	57
northern searobin	1	1	0.01	0.06	0.02	1	85	.	85	85
lined seahorse	1	1	0.01	0.06	0.02	.	49	.	49	49
feather blenny	1	1	0.01	0.06	0.02	.	55	.	55	55
Atlantic moonfish	1	1	0.01	0.06	0.02	.	69	.	69	69
mantis shrimp	1	1	0.01	0.06	0.02	.	69	.	69	69
brown shrimp	1	1	0.01	0.06	0.02	.	119	.	119	119
channel (smooth) whelk	1	1	0.01	0.06	0.02	.	.	.	.	.
sand shrimp	.	11	.	.	.	.	.	.	.	.
grass shrimp spp	.	7	.	.	.	.	.	.	.	.
mud crab spp	.	6	.	.	.	.	.	.	.	.
soft-shell clam	.	4	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
All Species Combined	17,241									

Table 114.

Month - November, 1998

System - All - Pooled

No. of Random Trawls Made - 53

No. of Fixed Trawls Made - 32

No. of Species - 62

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	51,339	82	70.44	603.99		48,571	53	0.32	23	82
Atlantic croaker	9,349	79	12.83	109.99	56.30	8,170	82	1.12	16	353
hogchoker	4,939	58	6.78	58.11		637	87	0.79	29	171
spot	1,427	58	1.96	16.79	8.59	1,427	135	0.42	103	191
blue crab, male	1,309	73	1.80	15.40	7.88		55	1.00	7	181
blue crab, juvenile female	1,276	76	1.75	15.01	7.68		47	0.61	14	134
white perch	888	33	1.22	10.45	5.35	64	148	1.53	36	255
weakfish	619	57	0.85	7.28	3.73	604	135	1.38	53	387
blueback herring	231	6	0.32	2.72	1.39	231	67	0.30	56	75
blue catfish	215	9	0.29	2.53	1.29	1	247	4.48	139	379
blackcheek tonguefish	211	52	0.29	2.48	1.27	135	98	2.63	45	173
silver perch	181	34	0.25	2.13	1.09	165	128	1.67	79	203
kingfish spp	150	40	0.21	1.76	0.90	149	124	1.81	68	201
blue crab, adult female	87	32	0.12	1.02	0.52		139	1.48	111	167
oyster toadfish	67	20	0.09	0.79	0.40		186	7.79	47	329
squid spp	56	14	0.08	0.66	0.34		46	2.62	26	136
summer flounder	50	27	0.07	0.59	0.30	36	283	7.02	190	456
naked goby	50	18	0.07	0.59	0.30		43	1.82	25	83
Atlantic menhaden	47	15	0.06	0.55	0.28	47	135	1.98	87	163
white catfish	45	12	0.06	0.53	0.27	1	232	10.73	93	376
mantis shrimp	42	9	0.06	0.49	0.25		83	2.36	54	117
channel catfish	33	6	0.05	0.39	0.20	0	318	8.03	229	419
alewife	29	7	0.04	0.34	0.17	29	102	1.81	86	128
threadfin shad	28	3	0.04	0.33	0.17		96	1.29	86	113
seaboard goby	24	5	0.03	0.28	0.14		38	1.52	31	45
butterfish	15	8	0.02	0.18	0.09	9	151	6.21	122	205
gizzard shad	15	6	0.02	0.18	0.09	2	228	15.86	129	353
white shrimp	14	11	0.02	0.16	0.08		113	7.75	65	156
spider crab, common	14	6	0.02	0.16	0.08					
black seabass	14	5	0.02	0.16	0.08	2	180	13.53	78	255
roughneck shrimp	14	2	0.02	0.16	0.08					
smallmouth flounder	10	3	0.01	0.12	0.06	10	87	5.00	63	109
channel (smooth) whelk	9	5	0.01	0.11	0.05					
brown shrimp	8	8	0.01	0.09	0.05		113	5.90	87	129
American shad	8	4	0.01	0.09	0.05	8	104	5.48	86	133
black drum	7	3	0.01	0.08	0.04		235	5.89	205	250
bluefish	6	6	0.01	0.07	0.04		145	4.93	130	161
northern pipefish	6	5	0.01	0.07	0.04		125	10.68	95	162
feather blenny	6	4	0.01	0.07	0.04		64	5.74	50	85
striped bass	5	5	0.01	0.06	0.03	2	236	51.27	119	367
American eel	5	4	0.01	0.06	0.03		303	46.44	181	462
spotted seatrout	4	4	0.01	0.05	0.02		163	23.36	131	232
spider crab, 6 spine	4	2	0.01	0.05	0.02					
spotted hake	3	3	0.00	0.04	0.02	0	256	4.58	250	265
pink shrimp	3	2	0.00	0.04	0.02		105	4.63	97	113
longnose gar	3	1	0.00	0.04	0.02		801	8.41	789	817
Atlantic cutlassfish	2	2	0.00	0.02	0.01		558	202.00	356	760
pigfish	2	1	0.00	0.02	0.01		154	42.50	111	196
horseshoe crab	2	1	0.00	0.02	0.01		262	13.00	249	275
red hake	1	1	0.00	0.01	0.01		57		57	57
common carp	1	1	0.00	0.01	0.01		644		644	644
tautog	1	1	0.00	0.01	0.01		273		273	273
northern searobin	1	1	0.00	0.01	0.01	1	85		85	85
brown bullhead	1	1	0.00	0.01	0.01		198		198	198
lined seahorse	1	1	0.00	0.01	0.01		49		49	49
pumpkinseed	1	1	0.00	0.01	0.01		141		141	141
green goby	1	1	0.00	0.01	0.01		44		44	44
inshore lizardfish	1	1	0.00	0.01	0.01	1	175		175	175
Atlantic sturgeon	1	1	0.00	0.01	0.01		513		513	513
lookdown	1	1	0.00	0.01	0.01		111		111	111
Atlantic moonfish	1	1	0.00	0.01	0.01		69		69	69
spotfin butterflyfish	1	1	0.00	0.01	0.01		79		79	79
sand shrimp		57								
grass shrimp spp		40								
mud crab spp		35								
wedge rangia clam		11								
soft-shell clam		5								
right-hand hermit crab spp		4								
worm spp		3								
blood ark/clam		3								
bent mussel		3								
quahog clam		2								
sea cucumber spp		2								
big-clawed snapping shrimp		1								
river shrimp		1								
moon snail		1								
oyster, common		1								
All Species Combined	72,884									

Table 115.

Month - December, 1998

System - James River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 45

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
hogchoker	5,625	11	44.98	255.68	.	2,100	64	1.14	20	127
bay anchovy	4,376	18	34.99	198.91	.	4,340	53	0.54	31	82
Atlantic croaker	798	20	6.38	36.27	31.86	755	70	0.82	24	126
blue crab, juvenile female	326	18	2.61	14.82	13.01	.	48	1.41	11	127
blue crab, male	297	19	2.37	13.50	11.86	.	54	1.89	11	172
blueback herring	212	7	1.70	9.64	8.46	212	70	0.66	56	82
white perch	187	14	1.50	8.50	7.47	14	141	2.54	61	235
blue catfish	144	7	1.15	6.55	5.75	8	222	3.11	112	323
blackcheck tonguefish	108	11	0.86	4.91	4.31	106	69	1.94	46	134
spot	93	8	0.74	4.23	3.71	93	129	0.96	110	166
blue crab, adult female	63	7	0.50	2.86	2.51	.	146	1.53	120	174
weakfish	59	5	0.47	2.68	2.36	59	135	1.57	108	162
channel catfish	37	5	0.30	1.68	1.48	3	243	9.78	92	360
white catfish	25	6	0.20	1.14	1.00	0	218	10.67	134	346
spotted hake	22	3	0.18	1.00	0.88	0	256	5.24	183	289
oyster toadfish	16	3	0.13	0.73	0.64	.	229	16.88	38	321
kingfish spp	13	5	0.10	0.59	0.52	13	115	3.86	83	137
smallmouth flounder	12	4	0.10	0.55	0.48	12	80	3.59	68	105
summer flounder	9	6	0.07	0.41	0.36	4	309	27.45	228	462
American eel	9	3	0.07	0.41	0.36	.	231	12.61	206	320
naked goby	8	4	0.06	0.36	0.32	.	47	2.51	35	56
seaboard goby	7	4	0.06	0.32	0.28	.	39	2.33	29	46
spider crab, common	7	3	0.06	0.32	0.28	.	.	.	.	.
northern pipefish	5	4	0.04	0.23	0.20	.	137	19.22	101	190
squid spp	5	3	0.04	0.23	0.20	.	53	5.67	35	67
black seabass	5	2	0.04	0.23	0.20	0	210	9.67	177	229
gizzard shad	5	2	0.04	0.23	0.20	2	211	7.44	195	236
northern searobin	4	2	0.03	0.18	0.16	4	85	7.80	63	97
channel (smooth) whelk	4	2	0.03	0.18	0.16	.	.	.	.	.
striped bass	3	3	0.02	0.14	0.12	2	166	47.58	96	257
Atlantic menhaden	3	2	0.02	0.14	0.12	3	159	3.76	152	165
feather blenny	2	2	0.02	0.09	0.08	.	79	5.00	74	84
roughneck shrimp	2	2	0.02	0.09	0.08	.	.	.	.	.
pink shrimp	2	2	0.02	0.09	0.08	.	93	8.00	85	101
white shrimp	2	2	0.02	0.09	0.08	.	96	2.00	94	98
American shad	2	1	0.02	0.09	0.08	2	104	5.50	98	109
silver perch	2	1	0.02	0.09	0.08	2	107	11.00	96	118
butterfish	1	1	0.01	0.05	0.04	1	142	.	142	142
striped searobin	1	1	0.01	0.05	0.04	.	81	.	81	81
threadfin shad	1	1	0.01	0.05	0.04	.	84	.	84	84
spider crab, 6 spine	1	1	0.01	0.05	0.04	.	.	.	.	.
horseshoe crab	1	1	0.01	0.05	0.04	.	278	.	278	278
mantis shrimp	1	1	0.01	0.05	0.04	.	107	.	107	107
brown shrimp	1	1	0.01	0.05	0.04	.	99	.	99	99
right-hand hermit crab spp	0	1	0.00	0.00	0.00	.	.	.	.	.
sand shrimp	.	20	.	.	.	.	.	.	.	.
mud crab spp	.	7	.	.	.	.	.	.	.	.
wedge rangia clam	.	5	.	.	.	.	.	.	.	.
river shrimp	.	3	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
Atlantic oyster drill	.	1	.	.	.	.	.	.	.	.
All Species Combined	12,506									

Table 116.

Month - December, 1998

System - Rappahannock River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 24

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Atlantic croaker	9,586	20	52.62	435.73	88.24	8,290	71	1.52	19	334
bay anchovy	7,111	20	39.03	323.23	.	6,703	53	0.64	30	86
blue catfish	543	3	2.98	24.68	5.00	0	260	4.71	210	414
white perch	506	15	2.78	23.00	4.66	0	162	1.66	108	230
hogchoker	242	13	1.33	11.00	.	10	81	1.17	33	128
spot	43	5	0.24	1.95	0.40	43	140	1.95	124	192
alewife	38	6	0.21	1.73	0.35	38	115	1.58	87	136
blue crab, juvenile female	31	14	0.17	1.41	0.29	.	35	2.01	20	60
weakfish	28	9	0.15	1.27	0.26	28	123	4.72	82	176
blue crab, male	23	12	0.13	1.05	0.21	.	53	7.32	21	156
Atlantic menhaden	16	3	0.09	0.73	0.15	15	141	5.66	125	220
white catfish	13	5	0.07	0.59	0.12	0	295	7.35	241	334
American shad	10	7	0.05	0.45	0.09	10	115	4.45	94	134
blackcheek tonguefish	8	6	0.04	0.36	0.07	8	64	2.43	56	74
blueback herring	5	3	0.03	0.23	0.05	5	72	3.06	63	81
kingfish spp	3	3	0.02	0.14	0.03	3	116	2.33	111	118
striped bass	2	2	0.01	0.09	0.02	0	292	52.00	240	344
gizzard shad	2	2	0.01	0.09	0.02	1	245	77.50	167	322
spider crab, common	2	2	0.01	0.09	0.02	.	.	.	.	.
summer flounder	1	1	0.01	0.05	0.01	0	358	.	358	358
spotted seatrout	1	1	0.01	0.05	0.01	.	185	.	185	185
American eel	1	1	0.01	0.05	0.01	.	315	.	315	315
feather blenny	1	1	0.01	0.05	0.01	.	67	.	67	67
white shrimp	1	1	0.01	0.05	0.01	.	88	.	88	88
sand shrimp	.	20	.	.	.	.	.	.	.	.
mud crab spp	.	3	.	.	.	.	.	.	.	.
worm spp	.	3	.	.	.	.	.	.	.	.
blue mussel	.	2	.	.	.	.	.	.	.	.
grass shrimp spp	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
wedge rangia clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	18,217									

Table 117.

Month - December, 1998
 System - York River
 No. of Random Trawls Made - 13
 No. of Fixed Trawls Made - 9
 No. of Species - 38
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	3,900	19	46.38	177.27	.	3,021	62	0.60	31	86
Atlantic croaker	2,063	22	24.54	93.77	53.29	1,723	80	1.26	18	365
hogchoker	637	17	7.58	28.95	.	19	89	1.38	32	170
blue crab, male	370	20	4.40	16.82	9.56	.	54	1.73	14	139
spot	329	15	3.91	14.95	8.50	329	134	0.61	108	180
blue crab, juvenile female	313	19	3.72	14.23	8.09	.	48	1.26	15	127
white perch	179	12	2.13	8.14	4.62	0	174	2.53	110	266
blackcheek tonguefish	122	17	1.45	5.55	3.15	109	76	2.35	48	164
silver perch	122	7	1.45	5.55	3.15	121	121	1.20	97	163
weakfish	106	18	1.26	4.82	2.74	101	141	4.98	96	492
mantis shrimp	97	5	1.15	4.41	2.51	.	90	1.57	62	118
white catfish	54	3	0.64	2.45	1.39	2	217	9.06	86	348
naked goby	17	5	0.20	0.77	0.44	.	43	1.22	35	54
blue crab, adult female	16	3	0.19	0.73	0.41	.	139	2.96	121	155
oyster toadfish	15	6	0.18	0.68	0.39	.	174	20.32	68	336
spotted hake	11	2	0.13	0.50	0.28	0	256	3.86	239	279
white shrimp	9	6	0.11	0.41	0.23	.	114	3.39	102	129
kingfish spp	7	3	0.08	0.32	0.18	7	119	6.21	100	145
squid spp	6	3	0.07	0.27	0.15	.	45	1.69	40	52
American shad	5	3	0.06	0.23	0.13	5	100	4.93	93	119
summer flounder	4	4	0.05	0.18	0.10	3	290	16.89	269	340
striped bass	4	4	0.05	0.18	0.10	1	260	62.77	151	439
American eel	4	3	0.05	0.18	0.10	.	311	22.04	270	366
Atlantic menhaden	3	1	0.04	0.14	0.08	3	146	3.00	143	152
brown shrimp	2	2	0.02	0.09	0.05	.	119	0.00	119	119
butterfish	1	1	0.01	0.05	0.03	1	122	.	122	122
alewife	1	1	0.01	0.05	0.03	1	98	.	98	98
black drum	1	1	0.01	0.05	0.03	.	205	.	205	205
channel catfish	1	1	0.01	0.05	0.03	0	415	.	415	415
gizzard shad	1	1	0.01	0.05	0.03	0	248	.	248	248
lined seahorse	1	1	0.01	0.05	0.03	.	142	.	142	142
seaboard goby	1	1	0.01	0.05	0.03	.	46	.	46	46
feather blenny	1	1	0.01	0.05	0.03	.	34	.	34	34
conger eel	1	1	0.01	0.05	0.03	.	490	.	490	490
Atlantic moonfish	1	1	0.01	0.05	0.03	.	61	.	61	61
threadfin shad	1	1	0.01	0.05	0.03	.	114	.	114	114
horseshoe crab	1	1	0.01	0.05	0.03	.	225	.	225	225
spider crab, common	1	1	0.01	0.05	0.03	.	.	.	.	.
sand shrimp	.	18	.	.	.	.	.	.	.	.
mud crab spp	.	12	.	.	.	.	.	.	.	.
grass shrimp spp	.	3	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	2	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
Amphipod spp	.	2	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
channel (smooth) whelk	.	1	.	.	.	.	.	.	.	.
Atlantic oyster drill	.	1	.	.	.	.	.	.	.	.
All Species Combined	8,408									

Table 118.

Month - December, 1998
 System - Pocomoke Sound
 No. of Random Trawls Made - 11
 No. of Fixed Trawls Made - 3
 No. of Species - 22
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	24,159	12	69.71	1725.64	.	23,200	46	0.72	29	89
Atlantic croaker	10,416	12	30.06	744.00	99.25	9,850	61	2.28	26	340
silver perch	19	2	0.05	1.36	0.18	19	112	4.58	80	154
blue crab, juvenile female	11	6	0.03	0.79	0.10	.	57	7.98	18	118
weakfish	11	2	0.03	0.79	0.10	10	171	20.20	130	368
spot	7	2	0.02	0.50	0.07	7	133	5.63	114	153
blue crab, male	6	3	0.02	0.43	0.06	.	64	21.15	16	150
northern pipefish	4	3	0.01	0.29	0.04	.	132	17.00	102	175
Atlantic silverside	4	2	0.01	0.29	0.04	4	78	6.14	70	96
summer flounder	4	1	0.01	0.29	0.04	1	315	30.44	234	362
striped bass	3	2	0.01	0.21	0.03	0	424	44.80	335	475
blueback herring	1	1	0.00	0.07	0.01	1	66	.	66	66
black drum	1	1	0.00	0.07	0.01	.	231	.	231	231
Atlantic menhaden	1	1	0.00	0.07	0.01	0	333	.	333	333
gizzard shad	1	1	0.00	0.07	0.01	1	124	.	124	124
hogchoker	1	1	0.00	0.07	.	0	145	.	145	145
oyster toadfish	1	1	0.00	0.07	0.01	.	291	.	291	291
Atlantic cutlassfish	1	1	0.00	0.07	0.01	.	397	.	397	397
spider crab, 6 spine	1	1	0.00	0.07	0.01	.	.	.	.	.
mantis shrimp	1	1	0.00	0.07	0.01	.	64	.	64	64
channel (smooth) whelk	1	1	0.00	0.07	0.01	.	.	.	.	.
blue crab, adult female	1	1	0.00	0.07	0.01	.	126	.	126	126
sand shrimp	.	13	.	.	.	.	.	.	.	.
moon snail	.	3	.	.	.	.	.	.	.	.
mud crab spp	.	2	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	34,655									

Table 119.

Month - December, 1998

System - All - Pooled

No. of Random Trawls Made - 52

No. of Fixed Trawls Made - 28

No. of Species - 53

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	39,546	69	53.60	494.33	.	37,264	54	0.35	29	89
Atlantic croaker	22,863	74	30.99	285.79	82.43	20,618	72	0.70	18	365
hogchoker	6,505	42	8.82	81.31	.	2,129	75	0.84	20	170
white perch	872	41	1.18	10.90	3.14	14	159	1.34	61	266
blue crab, male	696	54	0.94	8.70	2.51	.	54	1.28	11	172
blue catfish	687	10	0.93	8.59	2.48	8	235	2.88	112	414
blue crab, juvenile female	681	57	0.92	8.51	2.46	.	48	0.91	11	127
spot	472	30	0.64	5.90	1.70	472	134	0.52	108	192
blackcheek tonguefish	238	34	0.32	2.98	0.86	223	73	1.61	46	164
blueback herring	218	11	0.30	2.73	0.79	218	70	0.65	56	82
weakfish	204	34	0.28	2.55	0.74	198	138	2.98	82	492
silver perch	143	10	0.19	1.79	0.52	142	119	1.31	80	163
mantis shrimp	99	7	0.13	1.24	0.36	.	90	1.60	62	118
white catfish	92	14	0.12	1.15	0.33	2	228	6.72	86	348
blue crab, adult female	80	11	0.11	1.00	0.29	.	144	1.39	120	174
alewife	39	7	0.05	0.49	0.14	39	114	1.59	87	136
channel catfish	38	6	0.05	0.48	0.14	3	247	10.54	92	415
spotted hake	33	5	0.04	0.41	0.12	0	256	3.68	183	289
oyster toadfish	32	10	0.04	0.40	0.12	.	205	13.69	38	336
naked goby	25	9	0.03	0.31	0.09	.	45	1.19	35	56
kingfish spp	23	11	0.03	0.29	0.08	23	117	2.83	83	145
Atlantic menhaden	23	7	0.03	0.29	0.08	21	152	9.20	125	333
summer flounder	18	12	0.02	0.23	0.06	8	309	15.43	228	462
American shad	17	11	0.02	0.21	0.06	17	109	3.40	93	134
American eel	14	7	0.02	0.18	0.05	.	260	14.51	206	366
striped bass	12	11	0.02	0.15	0.04	3	283	37.07	96	475
white shrimp	12	9	0.02	0.15	0.04	.	109	3.73	88	129
smallmouth flounder	12	4	0.02	0.15	0.04	12	80	3.59	68	105
squid spp	11	6	0.01	0.14	0.04	.	48	2.90	35	67
spider crab, common	10	6	0.01	0.13	0.04	.	.	.	.	.
northern pipefish	9	7	0.01	0.11	0.03	.	135	12.31	101	190
gizzard shad	9	6	0.01	0.11	0.03	4	213	18.36	124	322
seaboard goby	8	5	0.01	0.10	0.03	.	40	2.18	29	46
channel (smooth) whelk	5	4	0.01	0.06	0.02	.	.	.	.	.
black seabass	5	2	0.01	0.06	0.02	0	210	9.67	177	229
feather blenny	4	4	0.01	0.05	0.01	.	65	10.83	34	84
northern searobin	4	2	0.01	0.05	0.01	4	85	7.80	63	97
Atlantic silverside	4	2	0.01	0.05	0.01	4	78	6.14	70	96
brown shrimp	3	3	0.00	0.04	0.01	.	112	6.67	99	119
butterfish	2	2	0.00	0.03	0.01	2	132	10.00	122	142
black drum	2	2	0.00	0.03	0.01	.	218	13.00	205	231
threadfin shad	2	2	0.00	0.03	0.01	.	99	15.00	84	114
spider crab, 6 spine	2	2	0.00	0.03	0.01	.	.	.	.	.
roughneck shrimp	2	2	0.00	0.03	0.01	.	.	.	.	.
pink shrimp	2	2	0.00	0.03	0.01	.	.	.	.	.
horseshoe crab	2	2	0.00	0.03	0.01	.	93	8.00	85	101
spotted seatrout	1	1	0.00	0.01	0.00	.	252	26.50	225	278
striped searobin	1	1	0.00	0.01	0.00	.	185	.	185	185
lined seahorse	1	1	0.00	0.01	0.00	.	81	.	81	81
conger eel	1	1	0.00	0.01	0.00	.	142	.	142	142
Atlantic moonfish	1	1	0.00	0.01	0.00	.	490	.	490	490
Atlantic cutlassfish	1	1	0.00	0.01	0.00	.	61	.	61	61
right-hand hermit crab spp	0	4	0.00	0.00	0.00	.	397	.	397	397
sand shrimp	.	71	.	.	.	.	.	.	.	.
mud crab spp	.	24	.	.	.	.	.	.	.	.
worm spp	.	7	.	.	.	.	.	.	.	.
grass shrimp spp	.	6	.	.	.	.	.	.	.	.
wedge rangia clam	.	6	.	.	.	.	.	.	.	.
moon snail	.	5	.	.	.	.	.	.	.	.
river shrimp	.	3	.	.	.	.	.	.	.	.
oyster, common	.	3	.	.	.	.	.	.	.	.
blue mussel	.	2	.	.	.	.	.	.	.	.
quahog clam	.	2	.	.	.	.	.	.	.	.
Atlantic oyster drill	.	2	.	.	.	.	.	.	.	.
Amphipod spp	.	2	.	.	.	.	.	.	.	.
All Species Combined	73,786									

Table 120-161. Species composition, number caught, catch per trawl, and length statistics for by **month and geographic segment** for the Chesapeake Bay trawl survey. No sampling was performed in January and March.

- A. The ‘Number of Species’ notation in the table header includes each of four categories of blue crabs (male, juvenile female, adult female, and unclassified) as unique species.
- B. Catch per trawl for species other than blue crabs is based on the value ‘Number of Fish Trawls Made’ while the catch per trawl for blue crabs is based on the sum of ‘Number of Fish Trawls made’ and ‘Number of Additional Crab Trawls Made’.
- C. ‘Adjusted Percent of Catch’ excludes bay anchovy and hogchoker due to the low biomass estimates in relation to total number of fish caught.
- D. ‘Frequency’ is the number of samples in which a species is captured.
- E. Tables pooled for all rivers for each month appear as follows:

January	N/A	Page n/a
February	Table 124	Page 138
March	N/A	Page n/a
April	Table 129	Page 141
May	Table 133	Page 145
June	Table 137	Page 149
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August	Table 145	Page 155
September	Table 149	Page 159
October	Table 153	Page 163
November	Table 157	Page 167
December	Table 161	Page 170

Table 120.

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Month - January, 1998										
Segment - Ches. Bay - All Pooled										
No. of Random Trawls Made - 0										
No. of Fixed Trawls Made - 0										
No. of Species - 0										
Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker										
NODATA.										
All Species Combined	0									

Table 121.

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Month - February, 1998										
Segment - Ches. Bay - Bottom										
No. of Random Trawls Made - 13										
No. of Fixed Trawls Made - 0										
No. of Species - 20										
Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker										
spider crab, common	729	4	59.51	56.08	69.30	.	63	2.79	52	80
bay anchovy	167	9	13.63	12.85	.	166	46	0.75	32	86
spotted hake	105	8	8.57	8.08	9.98	100	82	3.61	41	279
rock crab	85	8	6.94	6.54	8.08	.	69	3.81	19	125
blackcheek tonguefish	25	3	2.04	1.92	2.38	9	114	7.96	34	169
summer flounder	24	7	1.96	1.85	2.28	21	228	9.87	152	352
lady crab	23	3	1.88	1.77	2.19	.	53	1.53	40	68
Atlantic silverside	16	3	1.31	1.23	1.52	16	85	3.75	59	108
red hake	12	3	0.98	0.92	1.14	.	66	5.52	44	122
northern pipefish	10	6	0.82	0.77	0.95	.	134	5.90	104	166
smallmouth flounder	8	4	0.65	0.62	0.76	8	65	5.83	48	89
hogchoker	6	3	0.49	0.46	.	0	117	10.97	90	158
windowpane	5	4	0.41	0.38	0.48	1	205	41.59	50	301
blue crab, adult female	3	3	0.24	0.23	0.29	.	133	12.13	112	154
silver hake	2	2	0.16	0.15	0.19	.	98	4.00	94	102
alewife	1	1	0.08	0.08	0.10	1	118	.	118	118
blueback herring	1	1	0.08	0.08	0.10	0	164	.	164	164
Atlantic herring	1	1	0.08	0.08	0.10	.	275	.	275	275
striped bass	1	1	0.08	0.08	0.10	0	397	.	397	397
winter skate	1	1	0.08	0.08	0.10	.	416	.	416	416
horseshoe crab	.	1	.	.	.	.	.	.	.	.
sand shrimp	.	1	.	.	.	.	.	.	.	.
mantis shrimp	.	1	.	.	.	.	.	.	.	.
forbes common sea star	.	1	.	.	.	.	.	.	.	.
All Species Combined	1,225									

Table 122.

Month - February, 1998

Segment - Ches. Bay - Lower

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 0

No. of Species - 21

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	2,423	7	83.24	186.38		2,416	50	0.70	34	84
sand shrimp	250	3	8.59	19.23	52.30					
spotted hake	101	9	3.47	7.77	21.13	101	81	1.43	45	133
northern pipefish	27	6	0.93	2.08	5.65		116	3.70	75	169
blackcheek tonguefish	18	4	0.62	1.38	3.77	15	79	6.84	45	148
rock crab	17	2	0.58	1.31	3.56		92	5.67	59	135
red hake	11	1	0.38	0.85	2.30		89	4.27	73	127
hogchoker	10	3	0.34	0.77		0	113	3.60	99	138
Atlantic croaker	9	4	0.31	0.69	1.88		44	3.57	30	63
alewife	8	4	0.27	0.62	1.67	7	130	16.43	109	245
blue crab, adult female	7	1	0.24	0.54	1.46		144	3.87	133	164
Atlantic silverside	6	2	0.21	0.46	1.26	6	80	4.43	62	95
summer flounder	5	3	0.17	0.38	1.05	4	226	29.01	181	339
American shad	3	3	0.10	0.23	0.63	3	110	12.17	97	134
blue crab, male	3	3	0.10	0.23	0.63		61	37.30	18	135
blueback herring	3	2	0.10	0.23	0.63	1	114	23.97	73	156
striped bass	3	2	0.10	0.23	0.63	0	413	62.69	295	509
forbes common sea star	2	2	0.07	0.15	0.42					
northern sand lance	2	1	0.07	0.15	0.42		126	6.00	120	132
blue crab, juvenile female	2	1	0.07	0.15	0.42		17	0.00	17	17
Atlantic herring	1	1	0.03	0.08	0.21		284		284	284
mantis shrimp	.	1	.	.	.		.	.	.	.
right-hand hermit crab spp	.	1	.	.	.		.	.	.	.
commensal crab spp	.	1	.	.	.		.	.	.	.
All Species Combined	2,911									

Table 123.

Month - February, 1998

Segment - Ches. Bay - Upper

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 0

No. of Species - 26

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	644	11	52.15	49.54		641	44	0.74	24	88
sand shrimp	332	9	26.88	25.54	56.18					
spotted hake	74	7	5.99	5.69	12.52	74	77	1.58	43	124
Atlantic croaker	71	4	5.75	5.46	12.01	71	41	1.52	21	75
blueback herring	36	4	2.91	2.77	6.09	33	85	2.87	70	156
northern pipefish	10	3	0.81	0.77	1.69		110	6.17	76	136
mysid shrimp	10	1	0.81	0.77	1.69					
alewife	9	5	0.73	0.69	1.52	8	131	6.37	112	172
American shad	7	3	0.57	0.54	1.18	6	136	13.77	103	214
moon snail	7	3	0.57	0.54	1.18					
Atlantic silverside	6	5	0.49	0.46	1.02	6	95	4.19	79	105
blackcheek tonguefish	5	1	0.40	0.38	0.85	4	82	16.22	44	141
red hake	4	1	0.32	0.31	0.68		67	6.03	49	75
right-hand hermit crab spp	3	4	0.24	0.23	0.51					
Atlantic herring	3	2	0.24	0.23	0.51		118	19.01	95	156
striped bass	2	2	0.16	0.15	0.34	0	431	132.00	299	563
spot	2	2	0.16	0.15	0.34	2	110	4.50	105	114
grass shrimp spp	2	1	0.16	0.15	0.34					
winter flounder	1	1	0.08	0.08	0.17		192		192	192
American eel	1	1	0.08	0.08	0.17		347		347	347
naked goby	1	1	0.08	0.08	0.17		38		38	38
conger eel	1	1	0.08	0.08	0.17		310		310	310
roughneck shrimp	1	1	0.08	0.08	0.17					
mantis shrimp	1	1	0.08	0.08	0.17					
blue crab, male	1	1	0.08	0.08	0.17		18		18	18
blue crab, juvenile female	1	1	0.08	0.08	0.17		38		38	38
skeleton shrimp spp	.	2	.	.	.					
All Species Combined	1,235									

Table 124.

Month - February, 1998

Segment - All - Pooled

No. of Random Trawls Made - 39

No. of Fixed Trawls Made - 0

No. of Species - 38

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	3,234	27	60.21	82.92	.	3,223	46	0.44	24	88
spider crab, common	729	4	13.57	18.69	34.37	.	63	2.79	52	80
sand shrimp	582	13	10.84	14.92	27.44	.	.	.	.	.
spotted hake	280	24	5.21	7.18	13.20	275	80	1.38	41	279
rock crab	102	10	1.90	2.62	4.81	.	74	3.38	19	135
Atlantic croaker	80	8	1.49	2.05	3.77	80	41	1.40	21	75
blackcheek tonguefish	48	8	0.89	1.23	2.26	28	98	5.66	34	169
northern pipefish	47	15	0.88	1.21	2.22	.	118	3.02	75	169
blueback herring	40	7	0.74	1.03	1.89	34	89	3.75	70	164
summer flounder	29	10	0.54	0.74	1.37	25	228	9.33	152	352
Atlantic silverside	28	10	0.52	0.72	1.32	28	86	2.62	59	108
red hake	27	5	0.50	0.69	1.27	.	75	3.77	44	127
lady crab	23	3	0.43	0.59	1.08	.	53	1.53	40	68
alewife	18	10	0.34	0.46	0.85	16	130	7.71	109	245
hogchoker	16	6	0.30	0.41	.	0	114	4.50	90	158
American shad	10	6	0.19	0.26	0.47	9	128	10.71	97	214
blue crab, adult female	10	4	0.19	0.26	0.47	.	141	4.38	112	164
mysid shrimp	10	1	0.19	0.26	0.47	.	.	.	.	.
smallmouth flounder	8	4	0.15	0.21	0.38	8	65	5.83	48	89
moon snail	7	3	0.13	0.18	0.33	.	.	.	.	.
striped bass	6	5	0.11	0.15	0.28	0	416	44.45	295	563
Atlantic herring	5	4	0.09	0.13	0.24	.	183	40.85	95	284
windowpane	5	4	0.09	0.13	0.24	1	205	41.59	50	301
blue crab, male	4	4	0.07	0.10	0.19	.	50	28.45	18	135
right-hand hermit crab spp	3	5	0.06	0.08	0.14	.	.	.	.	.
blue crab, juvenile female	3	2	0.06	0.08	0.14	.	24	7.00	17	38
forbes common sea star	2	3	0.04	0.05	0.09	.	.	.	.	.
silver hake	2	2	0.04	0.05	0.09	.	98	4.00	94	102
spot	2	2	0.04	0.05	0.09	2	110	4.50	105	114
northern sand lance	2	1	0.04	0.05	0.09	.	126	6.00	120	132
grass shrimp spp	2	1	0.04	0.05	0.09	.	.	.	.	.
mantis shrimp	1	3	0.02	0.03	0.05	.	.	.	.	.
winter flounder	1	1	0.02	0.03	0.05	.	192	.	192	192
American eel	1	1	0.02	0.03	0.05	.	347	.	347	347
naked goby	1	1	0.02	0.03	0.05	.	38	.	38	38
winter skate	1	1	0.02	0.03	0.05	.	416	.	416	416
conger eel	1	1	0.02	0.03	0.05	.	310	.	310	310
roughneck shrimp	1	1	0.02	0.03	0.05	.	.	.	.	.
skeleton shrimp spp	.	2	.	.	.	.	.	.	.	.
horseshoe crab	.	1	.	.	.	.	.	.	.	.
commensal crab spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	5,371									

Table 125.

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Month - March, 1998										
Segment - All - Pooled										
No. of Random Trawls Made - 0										
No. of Fixed Trawls Made - 0										
No. of Species - 0										
Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker										
NODATA.										
All Species Combined		0								

Table 126.

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Month - April, 1998										
Segment - Ches. Bay - Bottom										
No. of Random Trawls Made - 13										
No. of Fixed Trawls Made - 0										
No. of Species - 31										
Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker										
bay anchovy	1,256	8	73.97	96.62	.	1,213	63	0.85	40	90
spotted hake	174	8	10.25	13.38	39.64	170	114	2.65	58	320
red hake	43	5	2.53	3.31	9.79	.	142	6.63	84	255
spider crab, common	40	3	2.36	3.08	9.11	.	.	.	.	.
rock crab	26	3	1.53	2.00	5.92	.	65	5.55	25	148
lady crab	23	3	1.35	1.77	5.24	.	50	1.24	37	60
blackcheek tonguefish	19	3	1.12	1.46	4.33	1	143	4.14	104	190
blue crab, adult female	17	6	1.00	1.31	3.87	.	138	2.98	112	156
clearnose skate	17	5	1.00	1.31	3.87	.	396	11.81	279	445
horseshoe crab	16	2	0.94	1.23	3.64	.	218	9.82	122	276
summer flounder	12	5	0.71	0.92	2.73	0	302	20.14	199	416
northern searobin	8	6	0.47	0.62	1.82	8	57	5.17	38	78
Atlantic croaker	8	1	0.47	0.62	1.82	0	269	6.58	250	307
spot	7	3	0.41	0.54	1.59	0	182	4.90	164	200
American shad	4	3	0.24	0.31	0.91	4	142	9.70	122	163
butterfish	4	2	0.24	0.31	0.91	3	125	13.94	96	161
black seabass	3	2	0.18	0.23	0.68	3	57	6.77	48	70
northern pipefish	3	2	0.18	0.23	0.68	.	117	33.23	53	165
hogchoker	3	1	0.18	0.23	.	0	109	4.73	100	116
windowpane	2	2	0.12	0.15	0.46	0	231	9.00	222	240
smallmouth flounder	2	2	0.12	0.15	0.46	2	81	14.50	66	95
little skate	2	1	0.12	0.15	0.46	.	250	2.00	248	252
silver hake	1	1	0.06	0.08	0.23	.	160	.	160	160
weakfish	1	1	0.06	0.08	0.23	0	284	.	284	284
white hake	1	1	0.06	0.08	0.23	.	418	.	418	418
squid spp	1	1	0.06	0.08	0.23	.	38	.	38	38
blueback herring	1	1	0.06	0.08	0.23	0	222	.	222	222
Atlantic herring	1	1	0.06	0.08	0.23	.	39	.	39	39
Atlantic menhaden	1	1	0.06	0.08	0.23	1	44	.	44	44
silver perch	1	1	0.06	0.08	0.23	0	190	.	190	190
blue crab, male	1	1	0.06	0.08	0.23	.	111	.	111	111
All Species Combined	1,698									

Table 127.

Month - April, 1998
 Segment - Ches. Bay - Lower
 No. of Random Trawls Made - 13
 No. of Fixed Trawls Made - 0
 No. of Species - 22
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	367	6	40.24	28.23	.	353	59	1.09	45	84
spotted hake	287	13	31.47	22.08	53.35	279	111	1.83	55	326
Atlantic croaker	81	4	8.88	6.23	15.06	0	246	2.71	198	330
blue crab, adult female	46	10	5.04	3.54	8.55	.	139	1.84	107	174
blackcheek tonguefish	39	6	4.28	3.00	7.25	20	102	6.27	40	156
red hake	21	4	2.30	1.62	3.90	.	116	3.16	90	154
northern searobin	17	6	1.86	1.31	3.16	17	59	3.66	42	98
summer flounder	10	4	1.10	0.77	1.86	0	235	15.21	150	286
black seabass	9	6	0.99	0.69	1.67	9	51	2.85	37	63
hogchoker	7	3	0.77	0.54	.	0	104	1.90	99	112
Atlantic herring	5	3	0.55	0.38	0.93	.	85	36.10	41	229
American shad	4	4	0.44	0.31	0.74	4	129	4.85	116	137
spot	3	2	0.33	0.23	0.56	0	190	1.67	188	193
smallmouth flounder	3	2	0.33	0.23	0.56	3	66	18.52	38	101
northern pipefish	3	1	0.33	0.23	0.56	.	139	10.97	120	158
windowpane	2	2	0.22	0.15	0.37	2	63	17.00	46	80
blue crab, male	2	2	0.22	0.15	0.37	.	117	8.50	108	125
blue crab, juvenile female	2	2	0.22	0.15	0.37	.	76	2.50	73	78
lined seahorse	1	1	0.11	0.08	0.19	.	42	.	42	42
skilletfish	1	1	0.11	0.08	0.19	.	24	.	24	24
horseshoe crab	1	1	0.11	0.08	0.19	.	238	.	238	238
rock crab	1	1	0.11	0.08	0.19	.	46	.	46	46
All Species Combined	912									

Table 128.

Month - April, 1998
 Segment - Ches. Bay - Upper
 No. of Random Trawls Made - 13
 No. of Fixed Trawls Made - 0
 No. of Species - 17
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	2,145	12	91.35	165.00	.	2,087	58	0.86	29	88
spotted hake	114	10	4.86	8.77	56.16	114	106	1.11	79	142
Atlantic croaker	22	3	0.94	1.69	10.84	13	143	24.15	38	344
blue crab, adult female	15	2	0.64	1.15	7.39	.	145	3.73	124	180
northern pipefish	13	3	0.55	1.00	6.40	.	119	7.39	86	192
blackcheek tonguefish	7	4	0.30	0.54	3.45	7	73	3.87	63	89
red hake	7	1	0.30	0.54	3.45	.	129	3.68	117	142
Atlantic herring	4	3	0.17	0.31	1.97	.	49	0.00	49	49
black seabass	3	2	0.13	0.23	1.48	3	52	4.67	47	61
alewife	3	2	0.13	0.23	1.48	1	156	28.81	99	190
northern searobin	3	2	0.13	0.23	1.48	3	60	3.71	53	65
striped bass	3	1	0.13	0.23	1.48	0	261	10.07	241	273
summer flounder	2	2	0.09	0.15	0.99	0	250	35.00	215	285
blueback herring	2	1	0.09	0.15	0.99	0	250	6.50	243	256
American shad	2	1	0.09	0.15	0.99	2	146	8.50	137	154
blue crab, male	2	1	0.09	0.15	0.99	.	69	22.50	46	91
striped cusk-eel	1	1	0.04	0.08	0.49	.	59	.	59	59
All Species Combined	2,348									

Table 129.

Month - April, 1998

Segment - All - Pooled

No. of Random Trawls Made - 39

No. of Fixed Trawls Made - 0

No. of Species - 37

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	3,768	26	76.00	96.62		3,653	60	0.55	29	90
spotted hake	575	31	11.60	14.74	48.73	563	111	1.23	55	326
Atlantic croaker	111	8	2.24	2.85	9.41	13	228	6.52	38	344
blue crab, adult female	78	18	1.57	2.00	6.61	.	140	1.46	107	180
red hake	71	10	1.43	1.82	6.02	.	133	4.34	84	255
blackcheek tonguefish	65	13	1.31	1.67	5.51	28	111	4.85	40	190
spider crab, common	40	3	0.81	1.03	3.39	.	.	.	.	.
northern searobin	28	14	0.56	0.72	2.37	28	59	2.64	38	98
rock crab	27	4	0.54	0.69	2.29	.	64	5.39	25	148
summer flounder	24	11	0.48	0.62	2.03	0	270	13.59	150	416
lady crab	23	3	0.46	0.59	1.95	.	50	1.24	37	60
northern pipefish	19	6	0.38	0.49	1.61	.	122	7.04	53	192
cleamose skate	17	5	0.34	0.44	1.44	.	396	11.81	279	445
horseshoe crab	17	3	0.34	0.44	1.44	.	219	9.30	122	276
black seabass	15	10	0.30	0.38	1.27	15	52	2.24	37	70
American shad	10	8	0.20	0.26	0.85	10	138	4.77	116	163
Atlantic herring	10	7	0.20	0.26	0.85	.	66	18.18	39	229
spot	10	5	0.20	0.26	0.85	0	184	3.57	164	200
hogchoker	10	4	0.20	0.26	0.85	0	106	1.94	99	116
smallmouth flounder	5	4	0.10	0.13	0.42	5	72	11.69	38	101
blue crab, male	5	4	0.10	0.13	0.42	.	96	13.67	46	125
windowpane	4	4	0.08	0.10	0.34	2	147	49.13	46	240
butterfish	4	2	0.08	0.10	0.34	3	125	13.94	96	161
alewife	3	2	0.06	0.08	0.25	1	156	28.81	99	190
blueback herring	3	2	0.06	0.08	0.25	0	240	9.91	222	256
striped bass	3	1	0.06	0.08	0.25	0	261	10.07	241	273
blue crab, juvenile female	2	2	0.04	0.05	0.17	.	76	2.50	73	78
little skate	2	1	0.04	0.05	0.17	.	250	2.00	248	252
silver hake	1	1	0.02	0.03	0.08	.	160	.	160	160
weakfish	1	1	0.02	0.03	0.08	0	284	.	284	284
white hake	1	1	0.02	0.03	0.08	.	418	.	418	418
squid spp	1	1	0.02	0.03	0.08	.	38	.	38	38
Atlantic menhaden	1	1	0.02	0.03	0.08	1	44	.	44	44
lined seahorse	1	1	0.02	0.03	0.08	.	42	.	42	42
skilletfish	1	1	0.02	0.03	0.08	.	24	.	24	24
silver perch	1	1	0.02	0.03	0.08	0	190	.	190	190
striped cusk-eel	1	1	0.02	0.03	0.08	.	59	.	59	59
All Species Combined	4,958									

Table 130.

Month - May, 1998

Segment - Ches. Bay - Bottom

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 37

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
Atlantic croaker	645	10	34.29	43.00	55.32	2	205	1.92	30	311
bay anchovy	628	15	33.39	41.87	.	621	62	0.53	40	92
spot	95	7	5.05	6.33	8.15	2	156	2.00	28	178
hogchoker	87	9	4.63	5.80	.	0	120	3.12	72	201
spotted hake	71	13	3.77	4.73	6.09	70	164	4.55	42	301
blackcheek tonguefish	59	8	3.14	3.93	5.06	4	144	2.62	66	211
clearnose skate	48	4	2.55	3.20	4.12	.	370	6.72	248	472
weakfish	42	9	2.23	2.80	3.60	22	233	5.93	147	310
northern searobin	35	9	1.86	2.33	3.00	35	65	2.26	38	88
blue crab, adult female	27	7	1.44	1.80	2.32	.	131	2.94	91	164
mantis shrimp	15	4	0.80	1.00	1.29	.	129	4.67	122	138
roughneck shrimp	12	8	0.64	0.80	1.03	.	54	1.78	42	64
spider crab, common	12	8	0.64	0.80	1.03	.	.	.	.	.
summer flounder	12	7	0.64	0.80	1.03	0	306	14.77	222	368
lined seahorse	12	3	0.64	0.80	1.03	.	73	2.57	56	88
whelk (conch) spp	11	5	0.58	0.73	0.94	.	.	.	.	.
sand shrimp	10	12	0.53	0.67	0.86	.	.	.	.	.
red hake	10	4	0.53	0.67	0.86	.	154	2.38	138	165
lady crab	8	6	0.43	0.53	0.69	.	.	.	.	.
rock crab	8	6	0.43	0.53	0.69	.	37	6.52	20	76
northern pipefish	6	3	0.32	0.40	0.51	.	141	6.46	120	155
Atlantic herring	5	4	0.27	0.33	0.43	.	78	2.54	73	84
windowpane	5	2	0.27	0.33	0.43	4	131	26.29	93	234
kingfish spp	4	3	0.21	0.27	0.34	1	245	23.16	176	277
black seabass	2	1	0.11	0.13	0.17	2	66	4.00	62	70
scup	1	1	0.05	0.07	0.09	0	97	.	97	97
butterfish	1	1	0.05	0.07	0.09	1	143	.	143	143
squid spp	1	1	0.05	0.07	0.09	.	26	.	26	26
Atlantic menhaden	1	1	0.05	0.07	0.09	0	152	.	152	152
northern puffer	1	1	0.05	0.07	0.09	1	121	.	121	121
feather blenny	1	1	0.05	0.07	0.09	.	54	.	54	54
bluntnose stingray	1	1	0.05	0.07	0.09	.	745	.	745	745
silver perch	1	1	0.05	0.07	0.09	1	157	.	157	157
banded drum	1	1	0.05	0.07	0.09	.	183	.	183	183
fawn cusk-eel	1	1	0.05	0.07	0.09	.	179	.	179	179
smallmouth flounder	1	1	0.05	0.07	0.09	1	62	.	62	62
striped burrfish	1	1	0.05	0.07	0.09	.	188	.	188	188
right-hand hermit crab spp	.	6	.	.	.	.	.	.	.	.
mud crab spp	.	4	.	.	.	.	.	.	.	.
blood ark/clam	.	4	.	.	.	.	.	.	.	.
worm spp	.	3	.	.	.	.	.	.	.	.
blue mussel	.	3	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
alfonsin spp	.	1	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	1	.	.	.	.	.	.	.	.
sand dollar	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
hippolyte shrimp spp	.	1	.	.	.	.	.	.	.	.
yoldias clam spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	1,881									

Table 131.

Month - May, 1998

Segment - Ches. Bay - Lower

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 30

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	3,692	8	93.04	246.13	.	3,679	58	0.56	44	90
Atlantic croaker	43	6	1.08	2.87	15.64	0	222	4.87	175	293
jellyfish spp	38	4	0.96	2.53	13.82	.	.	.	.	.
spotted hake	30	9	0.76	2.00	10.91	29	170	6.73	120	313
spot	23	7	0.58	1.53	8.36	0	155	2.36	134	180
blue crab, adult female	23	6	0.58	1.53	8.36	.	.	.	.	.
northern searobin	20	8	0.50	1.33	7.27	20	137	2.54	115	160
weakfish	17	5	0.43	1.13	6.18	20	72	3.38	50	97
sand shrimp	10	12	0.25	0.67	3.64	13	218	10.92	180	327
black seabass	10	4	0.25	0.67	3.64	10	76	6.12	46	106
blackcheek tonguefish	8	4	0.20	0.53	2.91	0	141	5.12	116	160
summer flounder	6	5	0.15	0.40	2.18	0	262	5.66	244	275
northern pipefish	6	4	0.15	0.40	2.18	.	135	6.52	119	163
red hake	6	3	0.15	0.40	2.18	.	172	7.91	138	190
silver perch	5	3	0.13	0.33	1.82	1	180	8.84	153	200
roughneck shrimp	4	6	0.10	0.27	1.45	.	53	2.72	48	60
smallmouth flounder	4	3	0.10	0.27	1.45	4	55	13.82	30	90
mantis shrimp	3	3	0.08	0.20	1.09	.	119	14.62	90	138
lined seahorse	3	2	0.08	0.20	1.09	.	72	5.36	62	80
blue crab, juvenile female	3	2	0.08	0.20	1.09	.	23	3.53	18	30
spider crab, common	2	4	0.05	0.13	0.73	.	.	.	.	.
rock crab	2	4	0.05	0.13	0.73	.	24	4.00	20	28
blood ark/clam	2	4	0.05	0.13	0.73	.	.	.	.	.
whelk (conch) spp	2	3	0.05	0.13	0.73	.	.	.	.	.
butterfish	1	1	0.03	0.07	0.36	1	116	.	116	116
alewife	1	1	0.03	0.07	0.36	1	133	.	133	133
Atlantic herring	1	1	0.03	0.07	0.36	.	283	.	283	283
naked goby	1	1	0.03	0.07	0.36	.	44	.	44	44
hogchoker	1	1	0.03	0.07	0.36	0	156	.	156	156
blue crab, male	1	1	0.03	0.07	0.36	.	43	.	43	43
blue mussel	.	7	.	.	.	.	.	.	.	.
grass shrimp spp	.	3	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
mud crab spp	.	2	.	.	.	.	.	.	.	.
lady crab	.	2	.	.	.	.	.	.	.	.
All Species Combined	3,968									

Table 132.

Month - May, 1998

Segment - Ches. Bay - Upper

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 22

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	316	12	49.14	21.07	.	304	63	0.80	42	82
spotted hake	71	14	11.04	4.73	23.13	71	144	1.70	103	179
Atlantic croaker	41	5	6.38	2.73	13.36	1	245	6.86	69	329
northern searobin	35	11	5.44	2.33	11.40	35	66	2.06	47	97
spot	32	3	4.98	2.13	10.42	0	169	2.49	134	193
jellyfish spp	27	8	4.20	1.80	8.79	.	.	.	.	.
blue crab, adult female	21	6	3.27	1.40	6.84	.	135	2.13	122	162
hogchoker	20	7	3.11	1.33	.	0	110	4.75	87	151
black seabass	12	7	1.87	0.80	3.91	12	62	1.38	51	71
Atlantic herring	12	3	1.87	0.80	3.91	.	59	2.94	43	75
weakfish	10	5	1.56	0.67	3.26	3	245	10.14	187	280
blue crab, juvenile female	7	6	1.09	0.47	2.28	.	41	9.91	12	95
northern pipefish	6	5	0.93	0.40	1.95	.	135	9.95	105	169
summer flounder	6	4	0.93	0.40	1.95	0	343	29.26	265	459
blue crab, male	6	4	0.93	0.40	1.95	.	60	21.78	16	143
blackcheek tonguefish	6	3	0.93	0.40	1.95	6	80	3.14	73	95
smallmouth flounder	5	2	0.78	0.33	1.63	5	45	3.49	37	57
red hake	3	3	0.47	0.20	0.98	.	151	2.33	147	155
windowpane	3	3	0.47	0.20	0.98	2	160	43.37	114	247
lined seahorse	2	1	0.31	0.13	0.65	.	65	22.50	42	87
blueback herring	1	1	0.16	0.07	0.33	0	111	.	111	111
mantis shrimp	1	1	0.16	0.07	0.33	.	.	.	.	.
sand shrimp	.	14	.	.	.	.	.	.	.	.
blue mussel	.	4	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
mud crab spp	.	2	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
grass shrimp spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
long-clawed hermit crab	.	1	.	.	.	.	.	.	.	.
All Species Combined	643									

Table 133.

Month - May, 1998

Segment - All - Pooled

No. of Random Trawls Made - 45

No. of Fixed Trawls Made - 0

No. of Species - 44

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	4,636	35	71.41	103.02	.	4,604	61	0.36	40	92
Atlantic croaker	729	21	11.23	16.20	41.70	3	211	1.83	30	329
spotted hake	172	36	2.65	3.82	9.84	170	157	2.45	42	313
spot	150	17	2.31	3.33	8.58	2	158	1.49	28	193
hogchoker	108	17	1.66	2.40	.	0	118	2.68	72	201
northern searobin	90	28	1.39	2.00	5.15	90	67	1.41	38	97
blackcheek tonguefish	73	15	1.12	1.62	4.18	10	138	2.99	66	211
blue crab, adult female	71	19	1.09	1.58	4.06	.	134	1.53	91	164
weakfish	69	19	1.06	1.53	3.95	38	231	4.77	147	327
jellyfish spp	65	12	1.00	1.44	3.72	.	.	.	.	.
cleamose skate	48	4	0.74	1.07	2.75	.	370	6.72	248	472
summer flounder	24	16	0.37	0.53	1.37	0	304	11.66	222	459
black seabass	24	12	0.37	0.53	1.37	24	68	2.92	46	106
sand shrimp	20	38	0.31	0.44	1.14	.	.	.	.	.
red hake	19	10	0.29	0.42	1.09	.	159	3.36	138	190
mantis shrimp	19	8	0.29	0.42	1.09	.	124	7.27	90	138
northern pipefish	18	12	0.28	0.40	1.03	.	137	4.29	105	169
Atlantic herring	18	8	0.28	0.40	1.03	.	77	12.46	43	283
lined seahorse	17	6	0.26	0.38	0.97	.	72	2.83	42	88
roughneck shrimp	16	14	0.25	0.36	0.92	.	54	1.46	42	64
spider crab, common	14	12	0.22	0.31	0.80	.	.	.	.	.
whelk (conch) spp	13	8	0.20	0.29	0.74	.	.	.	.	.
rock crab	10	10	0.15	0.22	0.57	.	34	5.45	20	76
blue crab, juvenile female	10	8	0.15	0.22	0.57	.	36	7.37	12	95
smallmouth flounder	10	6	0.15	0.22	0.57	10	51	5.65	30	90
lady crab	8	8	0.12	0.18	0.46	.	.	.	.	.
windowpane	8	5	0.12	0.18	0.46	6	142	21.86	93	247
blue crab, male	7	5	0.11	0.16	0.40	.	58	18.57	16	143
silver perch	6	4	0.09	0.13	0.34	2	176	8.17	153	200
kingfish spp	4	3	0.06	0.09	0.23	1	245	23.16	176	277
blood ark/clam	2	8	0.03	0.04	0.11	.	.	.	.	.
butterfish	2	2	0.03	0.04	0.11	2	130	13.50	116	143
scup	1	1	0.02	0.02	0.06	0	97	.	97	97
squid spp	1	1	0.02	0.02	0.06	.	26	.	26	26
alewife	1	1	0.02	0.02	0.06	1	133	.	133	133
blueback herring	1	1	0.02	0.02	0.06	0	111	.	111	111
Atlantic menhaden	1	1	0.02	0.02	0.06	0	152	.	152	152
northern puffer	1	1	0.02	0.02	0.06	1	121	.	121	121
naked goby	1	1	0.02	0.02	0.06	.	44	.	44	44
feather blenny	1	1	0.02	0.02	0.06	.	54	.	54	54
bluntnose stingray	1	1	0.02	0.02	0.06	.	745	.	745	745
banded drum	1	1	0.02	0.02	0.06	.	183	.	183	183
fawn cusk-eel	1	1	0.02	0.02	0.06	.	179	.	179	179
striped burrfish	1	1	0.02	0.02	0.06	.	188	.	188	188
blue mussel	.	14	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	12	.	.	.	.	.	.	.	.
mud crab spp	.	8	.	.	.	.	.	.	.	.
grass shrimp spp	.	6	.	.	.	.	.	.	.	.
worm spp	.	5	.	.	.	.	.	.	.	.
alfonsin spp	.	1	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	1	.	.	.	.	.	.	.	.
sand dollar	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
hippolyte shrimp spp	.	1	.	.	.	.	.	.	.	.
yoldias clam spp	.	1	.	.	.	.	.	.	.	.
long-clawed hermit crab	.	1	.	.	.	.	.	.	.	.
All Species Combined	6,492									

Table 134.

Month - June, 1998

Segment - Ches. Bay - Bottom

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 41

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	3,564	12	83.29	237.60	.	3,551	63	0.43	46	84
jellyfish spp	390	14	9.11	26.00	55.71	.	.	.	.	.
spotted hake	54	9	1.26	3.60	7.71	54	131	8.23	56	235
northern searobin	48	11	1.12	3.20	6.86	48	81	2.44	44	127
blackcheek tonguefish	31	6	0.72	2.07	4.43	4	148	3.92	89	205
smallmouth flounder	23	7	0.54	1.53	3.29	23	86	3.67	48	110
Atlantic croaker	22	2	0.51	1.47	3.14	2	184	6.66	127	303
blue crab, adult female	18	7	0.42	1.20	2.57	.	130	3.02	109	156
hogchoker	15	5	0.35	1.00	.	0	121	4.73	93	157
spot	14	3	0.33	0.93	2.00	5	131	10.91	74	174
Atlantic herring	13	2	0.30	0.87	1.86	.	85	1.21	74	91
summer flounder	10	5	0.23	0.67	1.43	1	295	19.35	163	376
weakfish	10	2	0.23	0.67	1.43	0	218	16.09	164	318
spider crab, common	7	4	0.16	0.47	1.00	.	.	.	.	.
windowpane	6	3	0.14	0.40	0.86	5	113	34.03	37	250
black seabass	5	2	0.12	0.33	0.71	5	79	4.32	65	89
squid spp	4	4	0.09	0.27	0.57	.	38	7.59	17	53
scup	4	3	0.09	0.27	0.57	3	86	10.74	55	102
lady crab	4	3	0.09	0.27	0.57	.	.	.	.	.
rock crab	4	3	0.09	0.27	0.57	.	40	3.61	31	46
clearnose skate	4	2	0.09	0.27	0.57	.	423	7.72	411	444
Portunid spp	3	1	0.07	0.20	0.43	.	.	.	.	.
butterfish	2	2	0.05	0.13	0.29	2	49	0.50	48	49
lined seahorse	2	2	0.05	0.13	0.29	.	120	12.50	107	132
northern pipefish	2	2	0.05	0.13	0.29	.	104	21.50	82	125
spider crab, 6 spine	2	2	0.05	0.13	0.29	.	.	.	.	.
blue crab, male	2	2	0.05	0.13	0.29	.	34	16.50	17	50
feather blenny	2	1	0.05	0.13	0.29	1	58	11.50	46	69
silver perch	2	1	0.05	0.13	0.29	2	154	6.50	147	160
moon snail	1	2	0.02	0.07	0.14	.	.	.	.	.
bluefish	1	1	0.02	0.07	0.14	.	271	.	271	271
red hake	1	1	0.02	0.07	0.14	.	208	.	208	208
Atlantic menhaden	1	1	0.02	0.07	0.14	1	69	.	69	69
round herring	1	1	0.02	0.07	0.14	.	58	.	58	58
oyster toadfish	1	1	0.02	0.07	0.14	.	95	.	95	95
smooth dogfish	1	1	0.02	0.07	0.14	.	305	.	305	305
roughneck shrimp	1	1	0.02	0.07	0.14	.	.	.	.	.
Irresedcent swimming crab	1	1	0.02	0.07	0.14	.	.	.	.	.
mantis shrimp	1	1	0.02	0.07	0.14	.	123	.	123	123
knobbed whelk	1	1	0.02	0.07	0.14	.	.	.	.	.
blue crab, juvenile female	1	1	0.02	0.07	0.14	.	76	.	76	76
sand shrimp	.	10	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
blue mussel	.	3	.	.	.	.	.	.	.	.
sand dollar	.	2	.	.	.	.	.	.	.	.
mud crab spp	.	1	.	.	.	.	.	.	.	.
grass shrimp spp	.	1	.	.	.	.	.	.	.	.
sea star spp	.	1	.	.	.	.	.	.	.	.
common razor clam	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
hippolyte shrimp spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	4,279									

Table 135.

Month - June, 1998

Segment - Ches. Bay - Lower

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 30

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
jellyfish spp	343	12	30.93	22.87	46.16	.	.	.	.	.
bay anchovy	341	13	30.75	22.73	.	338	61	0.63	46	85
Atlantic croaker	239	8	21.55	15.93	32.17	0	221	3.04	164	305
weakfish	31	4	2.80	2.07	4.17	0	250	8.45	182	342
hogchoker	25	8	2.25	1.67	.	0	96	2.11	72	119
spotted hake	16	6	1.44	1.07	2.15	16	183	4.04	158	215
spot	16	5	1.44	1.07	2.15	2	152	6.42	90	179
northern searobin	15	6	1.35	1.00	2.02	15	90	4.06	69	121
black seabass	11	4	0.99	0.73	1.48	10	92	9.29	64	177
summer flounder	10	4	0.90	0.67	1.35	2	267	32.60	98	462
blue crab, male	9	2	0.81	0.60	1.21	.	42	7.05	21	84
blue crab, juvenile female	9	2	0.81	0.60	1.21	.	39	4.19	18	52
blackcheek tonguefish	8	4	0.72	0.53	1.08	3	128	9.40	83	156
blue crab, adult female	6	3	0.54	0.40	0.81	.	144	2.96	135	154
northern pipefish	4	2	0.36	0.27	0.54	.	168	8.70	146	188
lined seahorse	3	2	0.27	0.20	0.40	.	82	8.21	66	92
Atlantic thread herring	3	1	0.27	0.20	0.40	.	165	3.71	158	170
Atlantic herring	2	2	0.18	0.13	0.27	.	75	1.00	74	76
spider crab, common	2	2	0.18	0.13	0.27	.	.	.	.	.
mantis shrimp	2	2	0.18	0.13	0.27	.	92	12.50	79	104
Portunid spp	2	2	0.18	0.13	0.27	.	.	.	.	.
scup	2	1	0.18	0.13	0.27	1	102	10.00	92	112
windowpane	2	1	0.18	0.13	0.27	2	144	7.00	137	151
conger eel	2	1	0.18	0.13	0.27	.	389	0.50	388	389
blue mussel	1	10	0.09	0.07	0.13	.	.	.	.	.
squid spp	1	1	0.09	0.07	0.13	.	43	.	43	43
clearnose skate	1	1	0.09	0.07	0.13	.	408	.	408	408
spider crab, 6 spine	1	1	0.09	0.07	0.13	.	.	.	.	.
lady crab	1	1	0.09	0.07	0.13	.	.	.	.	.
knobbed whelk	1	1	0.09	0.07	0.13	.	.	.	.	.
sand shrimp	.	8	.	.	.	.	.	.	.	.
mud crab spp	.	2	.	.	.	.	.	.	.	.
grass shrimp spp	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	1,109									

Table 136.

Month - June, 1998

Segment - Ches. Bay - Upper

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 21

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	1,207	14	66.94	80.47	.	1,190	59	0.37	41	86
jellyfish spp	320	10	17.75	21.33	58.08	.	.	.	.	.
Atlantic croaker	51	6	2.83	3.40	9.26	2	230	7.81	82	353
hogchoker	45	7	2.50	3.00	.	2	103	2.57	70	134
spot	38	6	2.11	2.53	6.90	3	166	4.97	59	204
spotted hake	20	6	1.11	1.33	3.63	20	184	3.44	155	212
black seabass	18	3	1.00	1.20	3.27	17	88	6.42	53	179
blue crab, male	17	6	0.94	1.13	3.09	.	57	9.93	11	128
blue crab, juvenile female	16	3	0.89	1.07	2.90	.	32	3.64	14	64
northern scarobin	15	6	0.83	1.00	2.72	15	83	5.18	55	122
blue crab, adult female	15	4	0.83	1.00	2.72	.	138	4.12	107	157
weakfish	14	4	0.78	0.93	2.54	0	206	15.20	167	399
summer flounder	10	5	0.55	0.67	1.81	1	269	21.70	105	344
sand shrimp	5	9	0.28	0.33	0.91	.	.	.	.	.
northern pipefish	3	1	0.17	0.20	0.54	.	153	3.28	148	159
winter flounder	2	2	0.11	0.13	0.36	.	64	9.50	54	73
spider crab, 6 spine	2	2	0.11	0.13	0.36	.	.	.	.	.
blackcheek tonguefish	2	1	0.11	0.13	0.36	0	140	1.00	139	141
Atlantic herring	1	1	0.06	0.07	0.18	.	79	.	79	79
lined seahorse	1	1	0.06	0.07	0.18	.	88	.	88	88
oyster toadfish	1	1	0.06	0.07	0.18	.	141	.	141	141
blue mussel	.	4	.	.	.	.	.	.	.	.
grass shrimp spp	.	3	.	.	.	.	.	.	.	.
mud crab spp	.	2	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	1,803									

Table 137.

Month - June, 1998

Segment - All - Pooled

No. of Random Trawls Made - 45

No. of Fixed Trawls Made - 0

No. of Species - 46

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	5,112	39	71.09	113.60	.	5,079	61	0.26	41	86
jellyfish spp	1,053	36	14.64	23.40	52.81	.	.	.	.	.
Atlantic croaker	312	16	4.34	6.93	15.65	4	219	2.96	82	353
spotted hake	90	21	1.25	2.00	4.51	90	152	5.72	56	235
hogchoker	85	20	1.18	1.89	.	2	104	1.94	70	157
northern searobin	78	23	1.08	1.73	3.91	78	83	1.98	44	127
spot	68	14	0.95	1.51	3.41	10	156	4.18	59	204
weakfish	55	10	0.76	1.22	2.76	0	233	7.17	164	399
blackcheek tonguefish	41	11	0.57	0.91	2.06	7	144	3.66	83	205
blue crab, adult female	39	14	0.54	0.87	1.96	.	135	2.27	107	157
black seabass	34	9	0.47	0.76	1.71	32	88	4.53	53	179
summer flounder	30	14	0.42	0.67	1.50	4	277	14.25	98	462
blue crab, male	28	10	0.39	0.62	1.40	.	51	6.59	11	128
blue crab, juvenile female	26	6	0.36	0.58	1.30	.	36	3.14	14	76
smallmouth flounder	23	7	0.32	0.51	1.15	23	86	3.67	48	110
Atlantic herring	16	5	0.22	0.36	0.80	.	83	1.31	74	91
spider crab, common	9	6	0.13	0.20	0.45	.	.	.	.	.
northern pipefish	9	5	0.13	0.20	0.45	.	148	10.19	82	188
windowpane	8	4	0.11	0.18	0.40	7	121	25.44	37	250
lined seahorse	6	5	0.08	0.13	0.30	.	96	9.03	66	132
scup	6	4	0.08	0.13	0.30	4	91	8.06	55	112
sand shrimp	5	27	0.07	0.11	0.25	.	.	.	.	.
squid spp	5	5	0.07	0.11	0.25	.	39	5.95	17	53
spider crab, 6 spine	5	5	0.07	0.11	0.25	.	.	.	.	.
lady crab	5	4	0.07	0.11	0.25	.	.	.	.	.
clearnose skate	5	3	0.07	0.11	0.25	.	420	6.71	408	444
Portunid spp	5	3	0.07	0.11	0.25	.	.	.	.	.
rock crab	4	3	0.06	0.09	0.20	.	40	3.61	31	46
mantis shrimp	3	3	0.04	0.07	0.15	.	102	12.74	79	123
Atlantic thread herring	3	1	0.04	0.07	0.15	.	165	3.71	158	170
butterfish	2	2	0.03	0.04	0.10	2	49	0.50	48	49
winter flounder	2	2	0.03	0.04	0.10	.	64	9.50	54	73
oyster toadfish	2	2	0.03	0.04	0.10	.	118	23.00	95	141
knobbed whelk	2	2	0.03	0.04	0.10	.	.	.	.	.
feather blenny	2	1	0.03	0.04	0.10	.	58	11.50	46	69
conger eel	2	1	0.03	0.04	0.10	.	389	0.50	388	389
silver perch	2	1	0.03	0.04	0.10	2	154	6.50	147	160
blue mussel	1	17	0.01	0.02	0.05	.	.	.	.	.
moon snail	1	3	0.01	0.02	0.05	.	.	.	.	.
bluefish	1	1	0.01	0.02	0.05	.	271	.	271	271
red hake	1	1	0.01	0.02	0.05	.	208	.	208	208
Atlantic menhaden	1	1	0.01	0.02	0.05	1	69	.	69	69
round herring	1	1	0.01	0.02	0.05	.	58	.	58	58
smooth dogfish	1	1	0.01	0.02	0.05	.	305	.	305	305
roughneck shrimp	1	1	0.01	0.02	0.05	.	.	.	.	.
iridescent swimming crab	1	1	0.01	0.02	0.05	.	.	.	.	.
mud crab spp	.	5	.	.	.	.	.	.	.	.
grass shrimp spp	.	5	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
sand dollar	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
sea star spp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
common razor clam	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
hippolyte shrimp spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	7,191									

Table 138.

Month - July, 1998
 Segment - Ches. Bay - Bottom
 No. of Random Trawls Made - 15
 No. of Fixed Trawls Made - 0
 No. of Species - 39
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	1,471	12	55.28	98.07	.	0	63	0.41	48	78
jellyfish spp	309	12	11.61	20.60	26.55	.	.	.	.	.
spot	119	3	4.47	7.93	10.22	16	167	1.09	93	190
northern searobin	114	14	4.28	7.60	9.79	111	108	2.06	43	170
butterfish	109	9	4.10	7.27	9.36	104	43	1.17	28	83
squid spp	90	3	3.38	6.00	7.73	.	35	1.68	16	66
scup	64	12	2.41	4.27	5.50	61	90	2.44	46	134
spotted hake	53	5	1.99	3.53	4.55	53	152	6.79	89	246
summer flounder	42	12	1.58	2.80	3.61	11	284	12.07	150	441
blackcheek tonguefish	42	8	1.58	2.80	3.61	6	146	2.55	105	195
clearnose skate	34	5	1.28	2.27	2.92	.	398	5.95	305	475
smallmouth flounder	30	11	1.13	2.00	2.58	2	96	2.51	55	119
Atlantic croaker	29	1	1.09	1.93	2.49	27	173	1.24	156	182
hogchoker	26	5	0.98	1.73	.	4	108	4.20	71	145
rock crab	19	3	0.71	1.27	1.63	.	37	3.80	16	74
spider crab, common	17	9	0.64	1.13	1.46	.	.	.	.	.
kingfish spp	13	3	0.49	0.87	1.12	3	190	38.58	41	273
blue crab, adult female	12	7	0.45	0.80	1.03	.	134	4.14	113	161
black seabass	10	3	0.38	0.67	0.86	10	104	7.54	73	140
windowpane	9	6	0.34	0.60	0.77	8	129	16.13	77	194
blue crab, juvenile female	9	4	0.34	0.60	0.77	.	69	6.25	36	95
northern pipefish	8	6	0.30	0.53	0.69	.	137	13.15	95	216
blue crab, male	8	2	0.30	0.53	0.69	.	75	10.18	30	127
channel (smooth) whelk	4	2	0.15	0.27	0.34	.	.	.	.	.
northern puffer	3	2	0.11	0.20	0.26	0	120	5.46	109	127
lined seahorse	3	2	0.11	0.20	0.26	.	98	5.36	88	106
lady crab	2	3	0.08	0.13	0.17	.	.	.	.	.
weakfish	1	1	0.04	0.07	0.09	0	206	.	206	206
blueback herring	1	1	0.04	0.07	0.09	0	104	.	104	104
striped searobin	1	1	0.04	0.07	0.09	.	165	.	165	165
striped anchovy	1	1	0.04	0.07	0.09	1	54	.	54	54
feather blenny	1	1	0.04	0.07	0.09	.	94	.	94	94
Atlantic stingray	1	1	0.04	0.07	0.09	.	452	.	452	452
spiny butterfly ray	1	1	0.04	0.07	0.09	.	436	.	436	436
inshore lizardfish	1	1	0.04	0.07	0.09	1	76	.	76	76
spider crab, 6 spine	1	1	0.04	0.07	0.09	.	.	.	.	.
roughneck shrimp	1	1	0.04	0.07	0.09	.	.	.	.	.
brown shrimp	1	1	0.04	0.07	0.09	.	100	.	100	100
knobbed whelk	1	1	0.04	0.07	0.09	.	.	.	.	.
right-hand hermit crab spp	.	11	.	.	.	.	.	.	.	.
sand shrimp	.	9	.	.	.	.	.	.	.	.
mud crab spp	.	7	.	.	.	.	.	.	.	.
sand dollar	.	4	.	.	.	.	.	.	.	.
forbes common sea star	.	2	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	2	.	.	.	.	.	.	.	.
blue mussel	.	2	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
common razor clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	2,661									

Table 139.

Month - July, 1998
 Segment - Ches. Bay - Lower

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 30

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	7,125	13	87.51	475.00	.	1	58	0.32	46	84
jellyfish spp	574	14	7.05	38.27	58.27	.	.	.	.	.
northern searobin	70	13	0.86	4.67	7.11	69	113	1.64	82	155
butterfish	70	9	0.86	4.67	7.11	61	60	3.26	23	147
spot	67	6	0.82	4.47	6.80	7	172	2.52	94	210
weakfish	41	4	0.50	2.73	4.16	0	237	4.21	182	297
Atlantic croaker	33	5	0.41	2.20	3.35	2	241	7.09	157	329
hogchoker	32	6	0.39	2.13	.	1	101	2.07	75	120
summer flounder	27	12	0.33	1.80	2.74	12	280	22.07	144	534
blue crab, juvenile female	21	4	0.26	1.40	2.13	.	81	3.45	52	107
scup	15	5	0.18	1.00	1.52	13	100	5.35	66	130
blue crab, adult female	14	8	0.17	0.93	1.42	.	133	4.43	107	157
blackcheck tonguefish	10	6	0.12	0.67	1.02	7	125	7.92	103	168
black seabass	9	7	0.11	0.60	0.91	9	115	4.41	94	138
blue crab, male	8	4	0.10	0.53	0.81	.	86	7.42	65	126
smallmouth flounder	5	3	0.06	0.33	0.51	0	101	4.74	87	113
spider crab, common	5	3	0.06	0.33	0.51	.	.	.	.	.
inshore lizardfish	3	3	0.04	0.20	0.30	2	142	58.08	72	257
silver perch	2	2	0.02	0.13	0.20	0	177	26.50	150	203
kingfish spp	1	1	0.01	0.07	0.10	0	284	.	284	284
squid spp	1	1	0.01	0.07	0.10	.	66	.	66	66
Atlantic thread herring	1	1	0.01	0.07	0.10	.	162	.	162	162
windowpane	1	1	0.01	0.07	0.10	1	127	.	127	127
spotted hake	1	1	0.01	0.07	0.10	1	192	.	192	192
lined seahorse	1	1	0.01	0.07	0.10	.	109	.	109	109
northern pipefish	1	1	0.01	0.07	0.10	.	106	.	106	106
feather blenny	1	1	0.01	0.07	0.10	.	74	.	74	74
clearnose skate	1	1	0.01	0.07	0.10	.	418	.	418	418
bluntnose stingray	1	1	0.01	0.07	0.10	.	327	.	327	327
Atlantic cutlassfish	1	1	0.01	0.07	0.10	.	169	.	169	169
mud crab spp	.	3	.	.	.	.	.	.	.	.
sand shrimp	.	3	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	2	.	.	.	.	.	.	.	.
blue mussel	.	2	.	.	.	.	.	.	.	.
sand dollar	.	1	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
common razor clam	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	8,142									

Table 140.

Month - July, 1998

Segment - Ches. Bay - Upper

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 23

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	4,870	11	88.42	324.67	.	0	59	0.35	47	82
jellyfish spp	255	14	4.63	17.00	42.86	.	.	.	.	.
spot	125	3	2.27	8.33	21.01	89	145	4.77	94	209
Atlantic croaker	88	4	1.60	5.87	14.79	0	244	5.06	200	318
hogchoker	43	8	0.78	2.87	.	0	107	2.48	83	147
summer flounder	32	6	0.58	2.13	5.38	25	186	10.90	130	434
northern searobin	17	7	0.31	1.13	2.86	17	109	4.40	74	136
butterfish	11	4	0.20	0.73	1.85	11	45	2.55	31	60
inshore lizardfish	11	1	0.20	0.73	1.85	11	105	5.51	82	137
black seabass	10	5	0.18	0.67	1.68	10	110	5.33	91	149
blackcheck tonguefish	10	4	0.18	0.67	1.68	10	95	6.22	60	129
blue crab, adult female	8	4	0.15	0.53	1.34	.	140	3.96	124	154
blue crab, juvenile female	8	3	0.15	0.53	1.34	.	71	7.39	41	108
blue crab, male	4	3	0.07	0.27	0.67	.	87	25.26	40	158
scup	3	2	0.05	0.20	0.50	3	82	14.05	60	108
weakfish	3	2	0.05	0.20	0.50	0	242	24.44	214	291
Atlantic thread herring	3	1	0.05	0.20	0.50	.	166	13.35	152	193
mantis shrimp	2	1	0.04	0.13	0.34	.	95	7.00	88	102
northern puffer	1	1	0.02	0.07	0.17	0	108	.	108	108
striped searobin	1	1	0.02	0.07	0.17	.	45	.	45	45
northern pipefish	1	1	0.02	0.07	0.17	.	112	.	112	112
sandbar shark	1	1	0.02	0.07	0.17	.	456	.	456	456
spider crab, common	1	1	0.02	0.07	0.17	.	.	.	.	.
sea cucumber spp	.	2	.	.	.	.	.	.	.	.
river shrimp	.	1	.	.	.	.	.	.	.	.
mud crab spp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	5,508									

Table 141.

Month - July, 1998

Segment - All - Pooled

No. of Random Trawls Made - 45

No. of Fixed Trawls Made - 0

No. of Species - 45

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	13,466	36	82.56	299.24	.	1	60	0.22	46	84
jellyfish spp	1,138	40	6.98	25.29	41.47	.	.	.	.	.
spot	311	12	1.91	6.91	11.33	112	163	1.56	93	210
northern searobin	201	34	1.23	4.47	7.33	197	110	1.36	43	170
butterfish	190	22	1.16	4.22	6.92	176	50	1.60	23	147
Atlantic croaker	150	10	0.92	3.33	5.47	29	224	4.29	156	329
summer flounder	101	30	0.62	2.24	3.68	48	252	9.52	130	534
hogchoker	101	19	0.62	2.24	.	5	105	1.66	71	147
squid spp	91	4	0.56	2.02	3.32	.	35	1.81	16	66
scup	82	19	0.50	1.82	2.99	77	92	2.22	46	134
blackcheek tonguefish	62	18	0.38	1.38	2.26	23	134	3.36	60	195
spotted hake	54	6	0.33	1.20	1.97	54	152	6.70	89	246
weakfish	45	7	0.28	1.00	1.64	0	236	4.12	182	297
blue crab, juvenile female	38	11	0.23	0.84	1.38	.	76	2.93	36	108
smallmouth flounder	35	14	0.21	0.78	1.28	2	97	2.26	55	119
clearnose skate	35	6	0.21	0.78	1.28	.	398	5.80	305	475
blue crab, adult female	34	19	0.21	0.76	1.24	.	135	2.49	107	161
black seabass	29	15	0.18	0.64	1.06	29	109	3.44	73	149
spider crab, common	23	13	0.14	0.51	0.84	.	.	.	.	.
blue crab, male	20	9	0.12	0.44	0.73	.	82	6.73	30	158
rock crab	19	3	0.12	0.42	0.69	.	37	3.80	16	74
inshore lizardfish	15	5	0.09	0.33	0.55	14	110	11.56	72	257
kingfish spp	14	4	0.09	0.31	0.51	3	202	35.42	41	284
northern pipefish	10	8	0.06	0.22	0.36	.	131	11.02	95	216
windowpane	10	7	0.06	0.22	0.36	9	129	14.43	77	194
northern puffer	4	3	0.02	0.09	0.15	0	117	4.84	108	127
lined seahorse	4	3	0.02	0.09	0.15	.	101	4.64	88	109
Atlantic thread herring	4	2	0.02	0.09	0.15	.	165	9.50	152	193
channel (smooth) whelk	4	2	0.02	0.09	0.15	.	.	.	.	.
lady crab	2	3	0.01	0.04	0.07	.	.	.	.	.
striped searobin	2	2	0.01	0.04	0.07	.	105	60.00	45	165
feather blenny	2	2	0.01	0.04	0.07	.	84	10.00	74	94
silver perch	2	2	0.01	0.04	0.07	0	177	26.50	150	203
mantis shrimp	2	1	0.01	0.04	0.07	.	95	7.00	88	102
blueback herring	1	1	0.01	0.02	0.04	0	104	.	104	104
striped anchovy	1	1	0.01	0.02	0.04	1	54	.	54	54
sandbar shark	1	1	0.01	0.02	0.04	.	456	.	456	456
Atlantic stingray	1	1	0.01	0.02	0.04	.	452	.	452	452
bluntnose stingray	1	1	0.01	0.02	0.04	.	327	.	327	327
spiny butterfly ray	1	1	0.01	0.02	0.04	.	436	.	436	436
Atlantic cutlassfish	1	1	0.01	0.02	0.04	.	169	.	169	169
spider crab, 6 spine	1	1	0.01	0.02	0.04	.	.	.	.	.
roughneck shrimp	1	1	0.01	0.02	0.04	.	.	.	.	.
brown shrimp	1	1	0.01	0.02	0.04	.	100	.	100	100
knobbed whelk	1	1	0.01	0.02	0.04	.	.	.	.	.
right-hand hermit crab spp	.	14	.	.	.	.	.	.	.	.
sand shrimp	.	12	.	.	.	.	.	.	.	.
mud crab spp	.	11	.	.	.	.	.	.	.	.
sand dollar	.	5	.	.	.	.	.	.	.	.
blue mussel	.	4	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	3	.	.	.	.	.	.	.	.
forbes common sea star	.	2	.	.	.	.	.	.	.	.
common razor clam	.	2	.	.	.	.	.	.	.	.
sea cucumber spp	.	2	.	.	.	.	.	.	.	.
river shrimp	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	16,311									

Table 142. Sampling not completed due to vessel failure.

Month - August, 1998
 Segment - Ches. Bay - Bottom
 No. of Random Trawls Made - 1
 No. of Fixed Trawls Made - 0
 No. of Species - 11
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
jellyfish spp	51	1	71.83	51.00	73.91	.	.	.	.	.
kingfish spp	6	1	8.45	6.00	8.70	6	58	8.00	39	94
inshore lizardfish	3	1	4.23	3.00	4.35	2	159	21.83	116	187
scup	2	1	2.82	2.00	2.90	2	116	28.00	88	144
black seabass	2	1	2.82	2.00	2.90	0	135	34.00	101	169
hogchoker	2	1	2.82	2.00	.	0	84	5.50	78	89
weakfish	1	1	1.41	1.00	1.45	1	46	.	46	46
feather blenny	1	1	1.41	1.00	1.45	.	94	.	94	94
oyster toadfish	1	1	1.41	1.00	1.45	.	179	.	179	179
blue crab, juvenile female	1	1	1.41	1.00	1.45	.	117	.	117	117
blue crab, adult female	1	1	1.41	1.00	1.45	.	104	.	104	104
mud crab spp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	71									

Table 143. Sampling not conducted due to vessel failure.

Month - August, 1998
 Segment - Ches. Bay - Lower
 No. of Random Trawls Made - .
 No. of Fixed Trawls Made - .
 No. of Species - 0
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
NODATA.										
All Species Combined	0									

Table 144. Sampling not conducted due to vessel failure.

Month - August, 1998
 Segment - Ches. Bay - Upper
 No. of Random Trawls Made - .
 No. of Fixed Trawls Made - .
 No. of Species - 0
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
NODATA.										
All Species Combined	0									

Table 145. Sampling not completed due to vessel failure.

Month - August, 1998

Segment - All - Pooled

No. of Random Trawls Made - 1

No. of Fixed Trawls Made - 0

No. of Species - 11

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
jellyfish spp	51	1	71.83	51.00	73.91	.	.	.	.	.
kingfish spp	6	1	8.45	6.00	8.70	6	58	8.00	39	94
inshore lizardfish	3	1	4.23	3.00	4.35	2	159	21.83	116	187
scup	2	1	2.82	2.00	2.90	2	116	28.00	88	144
black seabass	2	1	2.82	2.00	2.90	0	135	34.00	101	169
hogchoker	2	1	2.82	2.00	.	0	84	5.50	78	89
weakfish	1	1	1.41	1.00	1.45	1	46	.	46	46
feather blenny	1	1	1.41	1.00	1.45	.	94	.	94	94
oyster toadfish	1	1	1.41	1.00	1.45	.	179	.	179	179
blue crab, juvenile female	1	1	1.41	1.00	1.45	.	117	.	117	117
blue crab, adult female	1	1	1.41	1.00	1.45	.	104	.	104	104
mud crab spp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	71									

Table 146.

Month - September, 1998

Segment - Ches. Bay - Bottom

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 41

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	18,131	14	87.93	1208.73		15,269	48	0.42	29	73
weakfish	901	8	4.37	60.07	36.23	728	98	2.93	35	327
kingfish spp	350	14	1.70	23.33	14.07	346	75	1.60	27	267
striped anchovy	324	12	1.57	21.60	13.03	323	81	1.10	44	127
squid spp	314	12	1.52	20.93	12.63		33	0.90	16	151
Atlantic croaker	228	7	1.11	15.20	9.17	16	172	3.47	18	222
spot	96	8	0.47	6.40	3.86	96	161	1.42	127	196
Atlantic thread herring	54	9	0.26	3.60	2.17		54	2.05	33	91
smallmouth flounder	46	9	0.22	3.07	1.85	46	69	1.63	50	95
blue crab, adult female	27	3	0.13	1.80	1.09		128	2.00	106	149
summer flounder	20	10	0.10	1.33	0.80	6	304	18.59	171	496
inshore lizardfish	15	8	0.07	1.00	0.60	8	187	9.58	97	228
butterfish	15	5	0.07	1.00	0.60	14	98	3.51	84	128
blackcheek tonguefish	12	4	0.06	0.80	0.48	0	145	4.23	115	161
Atlantic spadefish	11	5	0.05	0.73	0.44		95	41.55	25	440
spider crab, common	11	5	0.05	0.73	0.44					
scup	10	3	0.05	0.67	0.40	10	124	2.77	108	135
clearnose skate	7	5	0.03	0.47	0.28		391	52.38	79	464
lined seahorse	5	3	0.02	0.33	0.20		78	16.41	45	137
spotted hake	5	1	0.02	0.33	0.20	5	221	13.90	202	276
silver perch	4	1	0.02	0.27	0.16	4	112	2.50	108	119
striped searobin	3	2	0.01	0.20	0.12		111	41.20	33	173
bluntnose stingray	3	2	0.01	0.20	0.12		239	17.80	215	274
banded drum	3	2	0.01	0.20	0.12		31	2.33	26	33
windowpane	2	2	0.01	0.13	0.08	2	174	19.00	155	193
cownose ray	2	2	0.01	0.13	0.08		570	2.50	567	572
Portunid spp	2	2	0.01	0.13	0.08					
blue crab, male	2	2	0.01	0.13	0.08		38	13.50	24	51
blue crab, juvenile female	2	2	0.01	0.13	0.08		53	26.00	27	79
hogchoker	2	1	0.01	0.13	0.08	0	159	28.00	131	187
mantis shrimp	2	1	0.01	0.13	0.08		103	38.00	65	141
knobbed whelk	2	1	0.01	0.13	0.08					
harvestfish	1	1	0.00	0.07	0.04	1	35		35	35
northern searobin	1	1	0.00	0.07	0.04	1	42		42	42
northern pipefish	1	1	0.00	0.07	0.04		128		128	128
feather blenny	1	1	0.00	0.07	0.04		53		53	53
skilletfish	1	1	0.00	0.07	0.04		41		41	41
spotfin mojarra	1	1	0.00	0.07	0.04		73		73	73
lady crab	1	1	0.00	0.07	0.04					
brown shrimp	1	1	0.00	0.07	0.04		78		78	78
channel (smooth) whelk	1	1	0.00	0.07	0.04					
mud crab spp		9								
right-hand hermit crab spp		6								
sand dollar		5								
grass shrimp spp		3								
sand shrimp		2								
moon snail		2								
All Species Combined	20,620									

Table 147.

Month - September, 1998

Segment - Ches. Bay - Lower

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 39

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	33,789	14	93.19	2252.60	.	30,863	45	0.44	29	78
weakfish	465	11	1.28	31.00	20.56	402	104	3.26	30	268
Atlantic croaker	435	14	1.20	29.00	19.23	83	156	4.38	11	248
squid spp	286	12	0.79	19.07	12.64	.	35	1.42	11	86
striped anchovy	244	10	0.67	16.27	10.79	244	81	1.23	48	119
hogchoker	206	9	0.57	13.73	.	0	119	1.99	92	161
kingfish spp	188	14	0.52	12.53	8.31	178	79	2.40	28	166
Atlantic thread herring	148	7	0.41	9.87	6.54	.	48	0.83	36	102
spot	121	14	0.33	8.07	5.35	106	170	1.94	134	258
inshore lizardfish	69	8	0.19	4.60	3.05	37	184	4.69	79	238
mantis shrimp	54	4	0.15	3.60	2.39	.	68	2.29	30	118
smallmouth flounder	47	9	0.13	3.13	2.08	46	71	1.72	53	106
summer flounder	42	12	0.12	2.80	1.86	24	271	11.72	196	579
blackcheek tonguefish	35	7	0.10	2.33	1.55	0	133	2.17	111	172
silver perch	17	4	0.05	1.13	0.75	15	125	7.44	79	198
blue crab, male	14	8	0.04	0.93	0.62	.	66	11.23	18	126
blue crab, juvenile female	14	7	0.04	0.93	0.62	.	64	7.89	26	112
butterfish	12	5	0.03	0.80	0.53	12	95	2.02	80	104
spider crab, 6 spine	10	4	0.03	0.67	0.44	.	.	.	.	.
harvestfish	10	3	0.03	0.67	0.44	10	57	6.65	22	89
scup	10	2	0.03	0.67	0.44	10	127	1.85	119	140
Atlantic spadefish	6	4	0.02	0.40	0.27	.	71	11.08	50	122
northern puffer	5	4	0.01	0.33	0.22	5	42	4.50	32	53
northern searobin	5	4	0.01	0.33	0.22	0	149	3.31	139	157
northern pipefish	4	4	0.01	0.27	0.18	.	100	5.90	90	117
striped searobin	3	3	0.01	0.20	0.13	.	153	20.79	117	189
lined seahorse	2	2	0.01	0.13	0.09	.	85	28.50	56	113
black seabass	2	1	0.01	0.13	0.09	0	155	7.00	148	162
bluespotted cornetfish	2	1	0.01	0.13	0.09	.	358	4.00	354	362
northern stargazer	2	1	0.01	0.13	0.09	.	29	3.00	26	32
blue crab, adult female	2	1	0.01	0.13	0.09	.	120	4.00	116	124
Florida pompano	1	1	0.00	0.07	0.04	.	196	.	196	196
oyster toadfish	1	1	0.00	0.07	0.04	.	134	.	134	134
bluntnose stingray	1	1	0.00	0.07	0.04	.	237	.	237	237
banded drum	1	1	0.00	0.07	0.04	.	25	.	25	25
spotfin mojarra	1	1	0.00	0.07	0.04	.	39	.	39	39
spider crab, common	1	1	0.00	0.07	0.04	.	.	.	.	.
brown shrimp	1	1	0.00	0.07	0.04	.	97	.	97	97
Portunid spp	1	1	0.00	0.07	0.04	.	.	.	.	.
sand shrimp	.	5	.	.	.	.	.	.	.	.
mud crab spp	.	3	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
sand dollar	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	36,257									

Table 148.

Month - September, 1998

Segment - Ches. Bay - Upper

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 32

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	28,315	15	92.22	1887.67	.	26,694	41	0.44	17	73
weakfish	1,151	12	3.75	76.73	49.63	1,062	94	2.23	38	318
Atlantic croaker	471	13	1.53	31.40	20.31	142	161	4.12	12	329
kingfish spp	189	16	0.62	12.60	8.15	185	75	2.46	14	316
spot	158	13	0.51	10.53	6.81	104	178	2.89	19	242
hogchoker	69	9	0.22	4.60	.	0	114	1.65	89	148
striped anchovy	53	7	0.17	3.53	2.29	53	72	1.80	53	102
squid spp	31	7	0.10	2.07	1.34	.	34	2.59	8	72
inshore lizardfish	28	10	0.09	1.87	1.21	20	159	10.08	78	241
mantis shrimp	25	7	0.08	1.67	1.08	.	74	5.62	44	124
blue crab, juvenile female	25	4	0.08	1.67	1.08	.	28	2.39	14	59
blackcheek tonguefish	23	7	0.07	1.53	0.99	0	133	2.37	107	153
blue crab, male	22	5	0.07	1.47	0.95	.	37	6.10	13	137
summer flounder	21	9	0.07	1.40	0.91	15	270	20.36	205	544
silver perch	20	3	0.07	1.33	0.86	19	116	4.58	79	152
harvestfish	19	6	0.06	1.27	0.82	19	60	4.49	32	101
butterfish	16	5	0.05	1.07	0.69	14	101	3.08	87	133
Atlantic thread herring	14	4	0.05	0.93	0.60	.	67	4.01	46	108
northern pipefish	10	2	0.03	0.67	0.43	.	107	6.40	85	157
spider crab, 6 spine	9	5	0.03	0.60	0.39	.	.	.	.	.
smallmouth flounder	7	3	0.02	0.47	0.30	7	62	3.27	45	72
blue crab, sex unknown	5	1	0.02	0.33	0.22	.	7	0.75	5	9
black seabass	4	2	0.01	0.27	0.17	0	147	3.47	140	155
blue crab, adult female	4	1	0.01	0.27	0.17	.	145	5.05	132	153
northern puffer	3	3	0.01	0.20	0.13	3	68	13.69	46	93
northern searobin	3	3	0.01	0.20	0.13	2	84	40.54	37	165
Atlantic spadefish	2	2	0.01	0.13	0.09	.	62	31.00	31	93
brown shrimp	2	2	0.01	0.13	0.09	.	91	8.50	82	99
lined seahorse	1	1	0.00	0.07	0.04	.	52	.	52	52
feather blenny	1	1	0.00	0.07	0.04	.	37	.	37	37
pipefish spp	1	1	0.00	0.07	0.04	.	133	.	133	133
northern stargazer	1	1	0.00	0.07	0.04	.	40	.	40	40
mud crab spp	.	6	.	.	.	.	.	.	.	.
sand shrimp	.	4	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
sea cucumber spp	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	30,703									

Table 149.

Month - September, 1998

Segment - All - Pooled

No. of Random Trawls Made - 45

No. of Fixed Trawls Made - 0

No. of Species - 50

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	80,235	43	91.61	1783.00		72,826	45	0.26	17	78
weakfish	2,517	31	2.87	55.93	35.61	2,192	97	1.56	30	327
Atlantic croaker	1,134	34	1.29	25.20	16.04	241	162	2.50	11	329
kingfish spp	727	44	0.83	16.16	10.29	709	76	1.17	14	316
squid spp	631	31	0.72	14.02	8.93	.	34	0.73	8	151
striped anchovy	621	29	0.71	13.80	8.79	620	80	0.78	44	127
spot	375	35	0.43	8.33	5.31	306	171	1.46	19	258
hogchoker	277	19	0.32	6.16	.	0	117	1.44	89	187
Atlantic thread herring	216	20	0.25	4.80	3.06	.	51	0.92	33	108
inshore lizardfish	112	26	0.13	2.49	1.58	65	178	4.14	78	241
smallmouth flounder	100	21	0.11	2.22	1.41	99	69	1.14	45	106
summer flounder	83	31	0.09	1.84	1.17	45	279	9.06	171	579
mantis shrimp	81	12	0.09	1.80	1.15	.	71	2.43	30	141
blackcheek tonguefish	70	18	0.08	1.56	0.99	0	135	1.59	107	172
butterfish	43	15	0.05	0.96	0.61	40	98	1.76	80	133
blue crab, juvenile female	41	13	0.05	0.91	0.58	.	42	4.13	14	112
silver perch	41	8	0.05	0.91	0.58	38	120	3.83	79	198
blue crab, male	38	15	0.04	0.84	0.54	.	48	5.84	13	137
blue crab, adult female	33	5	0.04	0.73	0.47	.	130	2.03	106	153
harvestfish	30	10	0.03	0.67	0.42	30	58	3.63	22	101
scup	20	5	0.02	0.44	0.28	20	126	1.66	108	140
Atlantic spadefish	19	11	0.02	0.42	0.27	.	84	24.11	25	440
spider crab, 6 spine	19	9	0.02	0.42	0.27	.	.	.	.	.
northern pipefish	15	7	0.02	0.33	0.21	.	107	4.75	85	157
spider crab, common	12	6	0.01	0.27	0.17	.	.	.	.	.
northern searobin	9	8	0.01	0.20	0.13	3	115	18.21	37	165
northern puffer	8	7	0.01	0.18	0.11	8	51	7.08	32	93
lined seahorse	8	6	0.01	0.18	0.11	.	76	11.76	45	137
clearnose skate	7	5	0.01	0.16	0.10	.	391	52.38	79	464
striped searobin	6	5	0.01	0.13	0.08	.	132	22.64	33	189
black seabass	6	3	0.01	0.13	0.08	0	150	3.28	140	162
spotted hake	5	1	0.01	0.11	0.07	5	221	13.90	202	276
blue crab, sex unknown	5	1	0.01	0.11	0.07	.	7	0.75	5	9
brown shrimp	4	4	0.00	0.09	0.06	.	89	5.28	78	99
bluntnose stingray	4	3	0.00	0.09	0.06	.	239	12.60	215	274
banded drum	4	3	0.00	0.09	0.06	.	29	2.17	25	33
Portunid spp	3	3	0.00	0.07	0.04	.	.	.	.	.
northern stargazer	3	2	0.00	0.07	0.04	.	33	4.06	26	40
windowpane	2	2	0.00	0.04	0.03	2	174	19.00	155	193
feather blenny	2	2	0.00	0.04	0.03	.	45	8.00	37	53
cownose ray	2	2	0.00	0.04	0.03	.	570	2.50	567	572
spotfin mojarra	2	2	0.00	0.04	0.03	.	56	17.00	39	73
bluespotted cornetfish	2	1	0.00	0.04	0.03	.	358	4.00	354	362
knobbed whelk	2	1	0.00	0.04	0.03	.	.	.	.	.
Florida pompano	1	1	0.00	0.02	0.01	.	196	.	196	196
skilletfish	1	1	0.00	0.02	0.01	.	41	.	41	41
oyster toadfish	1	1	0.00	0.02	0.01	.	134	.	134	134
pipefish spp	1	1	0.00	0.02	0.01	.	133	.	133	133
lady crab	1	1	0.00	0.02	0.01	.	.	.	.	.
channel (smooth) whelk	1	1	0.00	0.02	0.01	.	.	.	.	.
mud crab spp	.	18	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	12	.	.	.	.	.	.	.	.
sand shrimp	.	11	.	.	.	.	.	.	.	.
grass shrimp spp	.	7	.	.	.	.	.	.	.	.
sand dollar	.	6	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
sea cucumber spp	.	2	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	87,580									

Table 150.

Month - October, 1998

Segment - Ches. Bay - Bottom

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 44

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	2,966	9	63.46	197.73		2,421	53	0.81	32	80
squid spp	737	14	15.77	49.13	43.76		28	0.51	12	60
Atlantic croaker	174	11	3.72	11.60	10.33	94	127	7.70	9	279
kingfish spp	174	11	3.72	11.60	10.33	171	116	3.09	19	186
weakfish	133	4	2.85	8.87	7.90	132	125	2.35	29	260
smallmouth flounder	98	11	2.10	6.53	5.82	97	83	1.25	43	113
spot	47	4	1.01	3.13	2.79	40	180	2.99	147	232
butterfish	43	7	0.92	2.87	2.55	40	112	2.63	60	164
summer flounder	35	11	0.75	2.33	2.08	21	284	8.30	233	463
blackcheek tonguefish	32	3	0.68	2.13	1.90	0	156	2.25	126	173
northern puffer	25	5	0.53	1.67	1.48	25	79	2.22	65	123
hogchoker	24	3	0.51	1.60		0	121	4.43	85	167
spider crab, common	22	5	0.47	1.47	1.31					
inshore lizardfish	21	11	0.45	1.40	1.25	10	217	11.79	134	321
northern searobin	16	6	0.34	1.07	0.95	16	68	4.67	41	110
striped anchovy	16	4	0.34	1.07	0.95	15	100	4.10	74	136
northern pipefish	16	3	0.34	1.07	0.95		116	5.72	70	152
striped searobin	13	8	0.28	0.87	0.77		108	8.16	72	168
roughneck shrimp	9	7	0.19	0.60	0.53					
Atlantic spadefish	8	5	0.17	0.53	0.48		81	1.86	74	88
blue crab, adult female	8	3	0.17	0.53	0.48		128	5.21	103	148
clearnose skate	7	3	0.15	0.47	0.42		383	34.95	178	437
windowpane	6	4	0.13	0.40	0.36	6	193	2.96	180	201
blue crab, juvenile female	6	3	0.13	0.40	0.36		52	12.02	29	108
banded drum	4	4	0.09	0.27	0.24		41	6.61	22	50
lady crab	4	3	0.09	0.27	0.24					
spotted hake	3	2	0.06	0.20	0.18	3	223	6.03	211	230
sargassum swimming crab	3	2	0.06	0.20	0.18					
spider crab, 6 spine	3	1	0.06	0.20	0.18					
right-hand hermit crab spp	2	12	0.04	0.13	0.12					
Atlantic cutlassfish	2	2	0.04	0.13	0.12		306	39.00	267	345
mantis shrimp	2	2	0.04	0.13	0.12		80	13.50	66	93
shelligs blue crab	2	2	0.04	0.13	0.12					
blue crab, male	2	2	0.04	0.13	0.12		91	46.00	45	137
Florida pompano	2	1	0.04	0.13	0.12		177	2.50	174	179
bluefish	1	1	0.02	0.07	0.06		174		174	174
tautog	1	1	0.02	0.07	0.06		201		201	201
pigfish	1	1	0.02	0.07	0.06		129		129	129
lined seahorse	1	1	0.02	0.07	0.06		63		63	63
Atlantic moonfish	1	1	0.02	0.07	0.06		110		110	110
silver jenny	1	1	0.02	0.07	0.06		80		80	80
Irresdescent swimming crab	1	1	0.02	0.07	0.06					
Portunid spp	1	1	0.02	0.07	0.06					
purple sea urchin	1	1	0.02	0.07	0.06					
mud crab spp		6								
sand shrimp		6								
grass shrimp spp		4								
soft-shell clam		3								
sand dollar		2								
moon snail		2								
quahog clam		2								
whelk (conch) spp		1								
big-clawed snapping shrimp		1								
skeleton shrimp spp		1								
forbes common sea star		1								
Amphipod spp		1								
jellyfish spp		1								
All Species Combined	4,674									

Table 151.

Month - October, 1998

Segment - Ches. Bay - Lower

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 39

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	3,417	11	79.86	227.80	.	3,151	51	0.45	32	73
Atlantic croaker	207	10	4.84	13.80	24.50	125	103	6.56	9	353
squid spp	137	13	3.20	9.13	16.21	.	28	1.23	12	63
weakfish	112	7	2.62	7.47	13.25	98	144	4.10	81	284
spot	79	8	1.85	5.27	9.35	70	171	2.10	135	229
kingfish spp	64	13	1.50	4.27	7.37	64	96	4.43	15	158
smallmouth flounder	60	9	1.40	4.00	7.10	60	71	1.71	43	109
summer flounder	38	11	0.89	2.53	4.50	27	277	8.01	231	467
inshore lizardfish	22	8	0.51	1.47	2.60	18	176	7.56	130	273
hogchoker	17	7	0.40	1.13	.	0	109	4.94	63	163
northern pipefish	13	3	0.30	0.87	1.54	.	116	7.13	79	162
striped anchovy	12	5	0.28	0.80	1.42	12	95	2.68	79	109
blue crab, juvenile female	11	6	0.26	0.73	1.30	.	34	3.18	13	49
shelligs blue crab	11	2	0.26	0.73	1.30	.	.	.	.	.
blackcheek tonguefish	10	7	0.23	0.67	1.18	0	146	2.63	131	164
silver perch	8	2	0.19	0.53	0.95	8	141	2.85	131	150
northern puffer	7	5	0.16	0.47	0.83	7	78	6.84	60	112
spider crab, common	5	5	0.12	0.33	0.59	.	.	.	.	.
butterfish	5	3	0.12	0.33	0.59	5	110	4.76	96	123
Atlantic spadefish	5	3	0.12	0.33	0.59	.	81	3.85	71	91
roughneck shrimp	4	4	0.09	0.27	0.47	.	.	.	.	.
fringed flounder	4	3	0.09	0.27	0.47	.	105	5.89	89	117
northern searobin	4	2	0.09	0.27	0.47	4	84	10.56	62	110
black seabass	3	3	0.07	0.20	0.36	1	166	42.29	85	228
brown shrimp	3	2	0.07	0.20	0.36	.	107	11.10	86	124
blue crab, male	3	2	0.07	0.20	0.36	.	51	33.34	17	118
striped searobin	2	2	0.05	0.13	0.24	.	78	1.00	77	79
spider crab, 6 spine	2	2	0.05	0.13	0.24	.	.	.	.	.
pink shrimp	2	2	0.05	0.13	0.24	.	115	5.00	110	120
blue crab, adult female	2	2	0.05	0.13	0.24	.	137	0.50	136	137
mantis shrimp	2	1	0.05	0.13	0.24	.	92	41.00	51	133
bluefish	1	1	0.02	0.07	0.12	.	294	.	294	294
lined seahorse	1	1	0.02	0.07	0.12	.	66	.	66	66
naked goby	1	1	0.02	0.07	0.12	.	27	.	27	27
sandbar shark	1	1	0.02	0.07	0.12	.	613	.	613	613
clearnose skate	1	1	0.02	0.07	0.12	.	356	.	356	356
blue runner	1	1	0.02	0.07	0.12	.	155	.	155	155
Irresdescent swimming crab	1	1	0.02	0.07	0.12	.	.	.	.	.
Portunid spp	1	1	0.02	0.07	0.12	.	.	.	.	.
sand shrimp	.	7	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	7	.	.	.	.	.	.	.	.
mud crab spp	.	6	.	.	.	.	.	.	.	.
grass shrimp spp	.	3	.	.	.	.	.	.	.	.
macoma clam spp	.	2	.	.	.	.	.	.	.	.
whelk (conch) spp	.	1	.	.	.	.	.	.	.	.
forbes common sea star	.	1	.	.	.	.	.	.	.	.
sand dollar	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
purple sea urchin	.	1	.	.	.	.	.	.	.	.
All Species Combined	4,279									

Table 152.

Month - October, 1998

Segment - Ches. Bay - Upper

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 29

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	9,466	15	84.60	631.07	.	9,018	46	0.52	20	76
Atlantic croaker	753	13	6.73	50.20	44.74	427	119	4.52	6	289
weakfish	466	9	4.16	31.07	27.69	413	142	2.41	57	293
spot	124	9	1.11	8.27	7.37	107	170	2.14	130	241
squid spp	84	7	0.75	5.60	4.99	.	22	1.38	6	66
silver perch	54	4	0.48	3.60	3.21	43	152	2.71	111	212
kingfish spp	46	14	0.41	3.07	2.73	46	91	3.04	43	157
hogchoker	40	3	0.36	2.67	.	0	114	1.10	103	136
summer flounder	21	10	0.19	1.40	1.25	11	288	9.85	233	391
inshore lizardfish	21	10	0.19	1.40	1.25	16	190	7.29	133	265
striped anchovy	19	6	0.17	1.27	1.13	19	90	3.07	68	113
blackcheek tonguefish	16	6	0.14	1.07	0.95	3	122	7.68	60	153
blue crab, juvenile female	15	10	0.13	1.00	0.89	.	49	7.66	18	127
harvestfish	12	3	0.11	0.80	0.71	12	91	2.64	81	115
mantis shrimp	9	5	0.08	0.60	0.53	.	61	6.35	35	87
blue crab, male	9	5	0.08	0.60	0.53	.	70	17.26	10	135
Atlantic spadefish	8	3	0.07	0.53	0.48	.	90	5.17	71	106
butterfish	3	3	0.03	0.20	0.18	2	135	19.86	109	174
blue crab, adult female	3	3	0.03	0.20	0.18	.	142	3.51	138	149
smallmouth flounder	3	2	0.03	0.20	0.18	3	51	6.49	39	61
spider crab, common	3	2	0.03	0.20	0.18	.	.	.	.	.
bluefish	3	1	0.03	0.20	0.18	.	215	12.60	196	239
striped searobin	2	2	0.02	0.13	0.12	.	153	64.50	88	217
northern pipefish	2	2	0.02	0.13	0.12	.	105	13.50	91	118
roughneck shrimp	2	2	0.02	0.13	0.12	.	130	.	130	130
brown shrimp	2	2	0.02	0.13	0.12	.	99	5.00	94	104
black seabass	1	1	0.01	0.07	0.06	1	68	.	68	68
striped bass	1	1	0.01	0.07	0.06	0	450	.	450	450
Atlantic moonfish	1	1	0.01	0.07	0.06	.	95	.	95	95
grass shrimp spp	.	3	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
mud crab spp	.	2	.	.	.	.	.	.	.	.
sand shrimp	.	2	.	.	.	.	.	.	.	.
sea cucumber spp	.	2	.	.	.	.	.	.	.	.
whelk (conch) spp	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	11,189									

Table 153.

Month - October, 1998

Segment - All - Pooled

No. of Random Trawls Made - 45

No. of Fixed Trawls Made - 0

No. of Species - 54

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	15,849	35	78.69	352.20	.	14,590	50	0.34	20	80
Atlantic croaker	1,134	34	5.63	25.20	26.92	646	116	3.36	6	353
squid spp	958	34	4.76	21.29	22.74	.	27	0.47	6	66
weakfish	711	20	3.53	15.80	16.88	643	139	1.72	29	293
kingfish spp	284	38	1.41	6.31	6.74	281	106	2.25	15	186
spot	250	21	1.24	5.56	5.94	217	172	1.39	130	241
smallmouth flounder	161	22	0.80	3.58	3.82	160	78	1.13	39	113
summer flounder	94	32	0.47	2.09	2.23	59	282	4.96	231	467
hogchoker	81	13	0.40	1.80	.	0	115	1.79	63	167
inshore lizardfish	64	29	0.32	1.42	1.52	44	194	5.59	130	321
silver perch	62	6	0.31	1.38	1.47	51	151	2.43	111	212
blackcheek tonguefish	58	16	0.29	1.29	1.38	3	145	3.12	60	173
butterfish	51	13	0.25	1.13	1.21	47	113	2.57	60	174
striped anchovy	47	15	0.23	1.04	1.12	46	95	2.04	68	136
blue crab, juvenile female	32	19	0.16	0.71	0.76	.	44	4.46	13	127
northern puffer	32	10	0.16	0.71	0.76	32	79	2.23	60	123
northern pipefish	31	8	0.15	0.69	0.74	.	115	4.20	70	162
spider crab, common	30	12	0.15	0.67	0.71	.	.	.	.	.
Atlantic spadefish	21	11	0.10	0.47	0.50	.	84	2.37	71	106
northern searobin	20	8	0.10	0.44	0.47	20	71	4.39	41	110
striped searobin	17	12	0.08	0.38	0.40	.	110	9.47	72	217
roughneck shrimp	15	13	0.07	0.33	0.36	.	130	.	130	130
blue crab, male	14	9	0.07	0.31	0.33	.	69	13.72	10	137
mantis shrimp	13	8	0.06	0.29	0.31	.	69	7.35	35	133
blue crab, adult female	13	8	0.06	0.29	0.31	.	132	3.66	103	149
shelligs blue crab	13	4	0.06	0.29	0.31	.	.	.	.	.
harvestfish	12	3	0.06	0.27	0.28	12	91	2.64	81	115
cleamose skate	8	4	0.04	0.18	0.19	.	380	30.45	178	437
windowpane	6	4	0.03	0.13	0.14	6	193	2.96	180	201
brown shrimp	5	4	0.02	0.11	0.12	.	104	6.55	86	124
bluefish	5	3	0.02	0.11	0.12	.	223	20.70	174	294
spider crab, 6 spine	5	3	0.02	0.11	0.12	.	.	.	.	.
black seabass	4	4	0.02	0.09	0.09	2	141	38.60	68	228
banded drum	4	4	0.02	0.09	0.09	.	41	6.61	22	50
fringed flounder	4	3	0.02	0.09	0.09	.	105	5.89	89	117
lady crab	4	3	0.02	0.09	0.09	.	.	.	.	.
spotted hake	3	2	0.01	0.07	0.07	3	223	6.03	211	230
sargassum swimming crab	3	2	0.01	0.07	0.07	.	.	.	.	.
right-hand hermit crab spp	2	22	0.01	0.04	0.05	.	.	.	.	.
lined seahorse	2	2	0.01	0.04	0.05	.	65	1.50	63	66
Atlantic moonfish	2	2	0.01	0.04	0.05	.	103	7.50	95	110
Atlantic cutlassfish	2	2	0.01	0.04	0.05	.	306	39.00	267	345
pink shrimp	2	2	0.01	0.04	0.05	.	115	5.00	110	120
irresidescent swimming crab	2	2	0.01	0.04	0.05	.	.	.	.	.
Portunid spp	2	2	0.01	0.04	0.05	.	.	.	.	.
Florida pompano	2	1	0.01	0.04	0.05	.	177	2.50	174	179
purple sea urchin	1	2	0.00	0.02	0.02	.	.	.	.	.
striped bass	1	1	0.00	0.02	0.02	0	450	.	450	450
tautog	1	1	0.00	0.02	0.02	.	201	.	201	201
pigfish	1	1	0.00	0.02	0.02	.	129	.	129	129
naked goby	1	1	0.00	0.02	0.02	.	27	.	27	27
sandbar shark	1	1	0.00	0.02	0.02	.	613	.	613	613
blue runner	1	1	0.00	0.02	0.02	.	155	.	155	155
silver jenny	1	1	0.00	0.02	0.02	.	80	.	80	80
sand shrimp	.	15	.	.	.	.	.	.	.	.
mud crab spp	.	14	.	.	.	.	.	.	.	.
grass shrimp spp	.	10	.	.	.	.	.	.	.	.
soft-shell clam	.	4	.	.	.	.	.	.	.	.
whelk (conch) spp	.	3	.	.	.	.	.	.	.	.
sand dollar	.	3	.	.	.	.	.	.	.	.
macoma clam spp	.	3	.	.	.	.	.	.	.	.
sea cucumber spp	.	3	.	.	.	.	.	.	.	.
forbes common sea star	.	2	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
quahog clam	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
jellyfish spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	20,142									

Table 154.

Month - November, 1998

Segment - Ches. Bay - Bottom

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 38

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	871	10	54.64	58.07	.	741	57	0.56	36	75
squid spp	156	13	9.79	10.40	22.07	.	29	0.90	5	67
kingfish spp	129	12	8.09	8.60	18.25	125	136	2.90	37	215
smallmouth flounder	126	12	7.90	8.40	17.82	125	80	1.70	38	123
summer flounder	100	11	6.27	6.67	14.14	90	270	3.06	219	453
blackcheek tonguefish	29	6	1.82	1.93	4.10	0	152	2.45	122	173
Atlantic croaker	19	6	1.19	1.27	2.69	6	181	19.63	47	280
spot	19	6	1.19	1.27	2.69	19	145	6.34	118	197
blue crab, adult female	19	6	1.19	1.27	2.69	.	133	3.57	97	162
hogchoker	16	4	1.00	1.07	.	0	151	4.39	117	173
spider crab, common	14	4	0.88	0.93	1.98	.	.	.	.	.
lady crab	10	6	0.63	0.67	1.41	.	.	.	.	.
roughneck shrimp	9	4	0.56	0.60	1.27	.	.	.	.	.
northern searobin	8	5	0.50	0.53	1.13	7	84	7.79	66	131
weakfish	6	4	0.38	0.40	0.85	6	97	19.75	35	143
striped searobin	6	4	0.38	0.40	0.85	.	125	5.10	103	139
northern puffer	6	2	0.38	0.40	0.85	1	182	18.38	94	218
inshore lizardfish	5	3	0.31	0.33	0.71	3	214	13.88	187	252
windowpane	5	2	0.31	0.33	0.71	0	203	5.76	182	217
spotted hake	5	2	0.31	0.33	0.71	3	108	47.18	25	239
horseshoe crab	5	2	0.31	0.33	0.71	.	231	15.20	201	275
knobbed whelk	4	1	0.25	0.27	0.57	.	.	.	.	.
mud crab spp	3	5	0.19	0.20	0.42	.	.	.	.	.
butterfish	3	1	0.19	0.20	0.42	0	167	2.33	162	169
northern pipefish	3	1	0.19	0.20	0.42	.	92	13.78	65	111
black seabass	2	2	0.13	0.13	0.28	0	158	40.50	117	198
lined seahorse	2	2	0.13	0.13	0.28	.	47	0.50	46	47
bluefish	2	1	0.13	0.13	0.28	.	28	3.00	25	31
pigfish	2	1	0.13	0.13	0.28	.	130	27.00	103	157
striped burrfish	2	1	0.13	0.13	0.28	.	110	1.00	109	111
whelk (conch) spp	1	1	0.06	0.07	0.14	.	.	.	.	.
naked goby	1	1	0.06	0.07	0.14	.	41	.	41	41
clearnose skate	1	1	0.06	0.07	0.14	.	376	.	376	376
spider crab, 6 spine	1	1	0.06	0.07	0.14	.	.	.	.	.
mantis shrimp	1	1	0.06	0.07	0.14	.	78	.	78	78
channel (smooth) whelk	1	1	0.06	0.07	0.14	.	.	.	.	.
blue crab, male	1	1	0.06	0.07	0.14	.	23	.	23	23
blue crab, juvenile female	1	1	0.06	0.07	0.14	.	23	.	23	23
right-hand hermit crab spp	.	11	.	.	.	.	.	.	.	.
sand shrimp	.	10	.	.	.	.	.	.	.	.
moon snail	.	4	.	.	.	.	.	.	.	.
sand dollar	.	3	.	.	.	.	.	.	.	.
razor clam spp	.	2	.	.	.	.	.	.	.	.
soft-shell clam	.	2	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	1,594									

Table 155.

Month - November, 1998

Segment - Ches. Bay - Lower

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 43

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	7,341	10	90.58	489.40		7,019	53	0.51	35	75
squid spp	318	7	3.92	21.20	41.79		30	0.58	8	55
smallmouth flounder	65	10	0.80	4.33	8.54	65	85	1.92	45	118
kingfish spp	59	9	0.73	3.93	7.75	59	123	3.10	37	176
Atlantic croaker	59	8	0.73	3.93	7.75	56	55	4.80	25	244
weakfish	43	5	0.53	2.87	5.65	43	145	2.78	92	182
summer flounder	42	11	0.52	2.80	5.52	33	279	5.26	228	391
spot	29	4	0.36	1.93	3.81	29	162	2.49	128	189
silver perch	14	2	0.17	0.93	1.84	11	145	8.09	108	214
blue crab, adult female	13	5	0.16	0.87	1.71		148	4.14	118	170
spider crab, common	12	5	0.15	0.80	1.58					
striped searobin	11	7	0.14	0.73	1.45		100	7.95	61	138
blackcheek tonguefish	11	4	0.14	0.73	1.45	0	144	2.82	133	163
striped anchovy	11	1	0.14	0.73	1.45	9	119	2.03	107	131
northern searobin	9	7	0.11	0.60	1.18	8	76	7.84	53	127
inshore lizardfish	8	3	0.10	0.53	1.05	8	186	6.97	159	215
blue crab, juvenile female	7	3	0.09	0.47	0.92		45	9.82	25	95
knobbed whelk	5	5	0.06	0.33	0.66					
northern pipefish	5	2	0.06	0.33	0.66		114	3.07	107	124
roughneck shrimp	4	3	0.05	0.27	0.53					
spider crab, 6 spine	4	2	0.05	0.27	0.53					
naked goby	3	3	0.04	0.20	0.39		43	3.06	39	49
mantis shrimp	3	2	0.04	0.20	0.39		118	28.83	60	147
butterfish	2	2	0.02	0.13	0.26	1	139	29.50	109	168
northern puffer	2	2	0.02	0.13	0.26	1	121	35.00	86	156
lined seahorse	2	2	0.02	0.13	0.26		50	3.00	47	53
oyster toadfish	2	2	0.02	0.13	0.26		174	100.50	73	274
clearnose skate	2	2	0.02	0.13	0.26		413	14.00	399	427
blue crab, male	2	2	0.02	0.13	0.26		44	27.50	16	71
hogchoker	2	1	0.02	0.13	0.26	0	125	6.50	118	131
brown shrimp	2	1	0.02	0.13	0.26		85	7.50	77	92
black seabass	1	1	0.01	0.07	0.13	1	101		101	101
bluefish	1	1	0.01	0.07	0.13		287		287	287
tautog	1	1	0.01	0.07	0.13		229		229	229
spotted seatrout	1	1	0.01	0.07	0.13		204		204	204
pigfish	1	1	0.01	0.07	0.13		129		129	129
spotted hake	1	1	0.01	0.07	0.13	1	37		37	37
surf clam	1	1	0.01	0.07	0.13					
skilletfish	1	1	0.01	0.07	0.13		36		36	36
Atlantic moonfish	1	1	0.01	0.07	0.13		60		60	60
fringed flounder	1	1	0.01	0.07	0.13		147		147	147
silver jenny	1	1	0.01	0.07	0.13		69		69	69
white shrimp	1	1	0.01	0.07	0.13		91		91	91
right-hand hermit crab spp		8								
mud crab spp		7								
sand shrimp		7								
quahog clam		3								
grass shrimp spp		2								
sand dollar		2								
Amphipod spp		2								
skeleton shrimp spp		1								
worm spp		1								
blood ark/clam		1								
All Species Combined	8,104									

Table 156.

Month - November, 1998

Segment - Ches. Bay - Upper

No. of Random Trawls Made - 15

No. of Fixed Trawls Made - 0

No. of Species - 30

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	16,071	14	96.65	1071.40	.	15,775	49	0.48	25	75
Atlantic croaker	393	11	2.36	26.20	70.94	377	74	3.79	24	277
weakfish	20	4	0.12	1.33	3.61	20	143	5.80	92	187
Atlantic silverside	19	2	0.11	1.27	3.43	19	83	2.20	69	103
kingfish spp	17	7	0.10	1.13	3.07	17	117	3.06	97	141
summer flounder	14	8	0.08	0.93	2.53	7	304	10.69	256	401
blue crab, male	12	8	0.07	0.80	2.17	.	50	4.40	35	85
blue crab, juvenile female	11	8	0.07	0.73	1.99	.	56	6.31	34	105
blackcheek tonguefish	9	3	0.05	0.60	1.62	0	145	4.41	121	162
smallmouth flounder	8	3	0.05	0.53	1.44	8	98	4.14	77	113
spot	8	1	0.05	0.53	1.44	8	159	3.37	146	172
blue crab, adult female	6	4	0.04	0.40	1.08	.	145	5.30	126	159
squid spp	5	2	0.03	0.33	0.90	.	56	8.83	30	83
northern searobin	4	2	0.02	0.27	0.72	4	93	10.48	77	124
mantis shrimp	4	1	0.02	0.27	0.72	.	122	8.87	96	134
hogchoker	3	3	0.02	0.20	.	0	114	6.69	103	126
butterfish	3	1	0.02	0.20	0.54	0	213	6.74	200	223
spider crab, common	3	1	0.02	0.20	0.54	.	.	.	.	.
northern pipefish	2	2	0.01	0.13	0.36	.	116	3.00	113	119
naked goby	2	2	0.01	0.13	0.36	.	37	1.50	35	38
feather blenny	2	2	0.01	0.13	0.36	.	51	12.00	39	63
inshore lizardfish	2	2	0.01	0.13	0.36	2	193	10.00	183	203
silver perch	2	1	0.01	0.13	0.36	2	135	1.50	133	136
knobbed whelk	2	1	0.01	0.13	0.36	.	.	.	.	.
black seabass	1	1	0.01	0.07	0.18	0	184	.	184	184
blueback herring	1	1	0.01	0.07	0.18	1	73	.	73	73
pigfish	1	1	0.01	0.07	0.18	.	106	.	106	106
Atlantic spadefish	1	1	0.01	0.07	0.18	.	86	.	86	86
oyster toadfish	1	1	0.01	0.07	0.18	.	346	.	346	346
clearnose skate	1	1	0.01	0.07	0.18	.	459	.	459	459
sand shrimp	.	8	.	.	.	.	.	.	.	.
mud crab spp	.	2	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	2	.	.	.	.	.	.	.	.
grass shrimp spp	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
wedge rangia clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	16,628									

Table 157.

Month - November, 1998

Segment - All - Pooled

No. of Random Trawls Made - 45

No. of Fixed Trawls Made - 0

No. of Species - 54

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	24,283	34	92.24	539.62	.	23,535	53	0.32	25	75
squid spp	479	22	1.82	10.64	23.69	.	30	0.53	5	83
Atlantic croaker	471	25	1.79	10.47	23.29	439	78	3.82	24	280
kingfish spp	205	28	0.78	4.56	10.14	201	131	2.10	37	215
smallmouth flounder	199	25	0.76	4.42	9.84	198	82	1.28	38	123
summer flounder	156	30	0.59	3.47	7.72	130	276	2.70	219	453
weakfish	69	13	0.26	1.53	3.41	69	140	3.30	35	187
spot	56	11	0.21	1.24	2.77	56	156	2.71	118	197
blackcheek tonguefish	49	13	0.19	1.09	2.42	0	149	1.83	121	173
blue crab, adult female	38	15	0.14	0.84	1.88	.	140	2.63	97	170
spider crab, common	29	10	0.11	0.64	1.43	.	.	.	.	.
northern searobin	21	14	0.08	0.47	1.04	19	82	4.89	53	131
hogchoker	21	8	0.08	0.47	.	0	143	4.72	103	173
blue crab, juvenile female	19	12	0.07	0.42	0.94	.	50	5.35	23	105
Atlantic silverside	19	2	0.07	0.42	0.94	19	83	2.20	69	103
striped searobin	17	11	0.06	0.38	0.84	.	109	6.12	61	139
silver perch	16	3	0.06	0.36	0.79	13	143	7.10	108	214
blue crab, male	15	11	0.06	0.33	0.74	.	47	4.76	16	85
inshore lizardfish	15	8	0.06	0.33	0.74	13	196	6.59	159	252
roughneck shrimp	13	7	0.05	0.29	0.64	.	.	.	.	.
knobbed whelk	11	7	0.04	0.24	0.54	.	.	.	.	.
striped anchovy	11	1	0.04	0.24	0.54	9	119	2.03	107	131
lady crab	10	6	0.04	0.22	0.49	.	.	.	.	.
northern pipefish	10	5	0.04	0.22	0.49	.	108	5.21	65	124
butterfish	8	4	0.03	0.18	0.40	1	177	12.78	109	223
northern puffer	8	4	0.03	0.18	0.40	2	167	18.04	86	218
mantis shrimp	8	4	0.03	0.18	0.40	.	115	11.60	60	147
naked goby	6	6	0.02	0.13	0.30	.	41	1.93	35	49
spotted hake	6	3	0.02	0.13	0.30	4	96	40.31	25	239
spider crab, 6 spine	5	3	0.02	0.11	0.25	.	.	.	.	.
windowpane	5	2	0.02	0.11	0.25	0	203	5.76	182	217
horseshoe crab	5	2	0.02	0.11	0.25	.	231	15.20	201	275
black seabass	4	4	0.02	0.09	0.20	1	150	24.07	101	198
lined seahorse	4	4	0.02	0.09	0.20	.	48	1.60	46	53
clearnose skate	4	4	0.02	0.09	0.20	.	415	17.93	376	459
pigfish	4	3	0.02	0.09	0.20	.	124	12.51	103	157
mud crab spp	3	14	0.01	0.07	0.15	.	.	.	.	.
oyster toadfish	3	3	0.01	0.07	0.15	.	231	81.69	73	346
bluefish	3	2	0.01	0.07	0.15	.	114	86.35	25	287
feather blenny	2	2	0.01	0.04	0.10	.	51	12.00	39	63
striped burrfish	2	1	0.01	0.04	0.10	.	110	1.00	109	111
brown shrimp	2	1	0.01	0.04	0.10	.	85	7.50	77	92
blueback herring	1	1	0.00	0.02	0.05	1	73	.	73	73
whelk (conch) spp	1	1	0.00	0.02	0.05	.	.	.	.	.
tautog	1	1	0.00	0.02	0.05	.	229	.	229	229
spotted seatrout	1	1	0.00	0.02	0.05	.	204	.	204	204
Atlantic spadefish	1	1	0.00	0.02	0.05	.	86	.	86	86
surf clam	1	1	0.00	0.02	0.05	.	.	.	.	.
skilletfish	1	1	0.00	0.02	0.05	.	36	.	36	36
Atlantic moonfish	1	1	0.00	0.02	0.05	.	60	.	60	60
fringed flounder	1	1	0.00	0.02	0.05	.	147	.	147	147
silver jenny	1	1	0.00	0.02	0.05	.	69	.	69	69
white shrimp	1	1	0.00	0.02	0.05	.	91	.	91	91
channel (smooth) whelk	1	1	0.00	0.02	0.05	.	.	.	.	.
sand shrimp	.	25	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	21	.	.	.	.	.	.	.	.
sand dollar	.	5	.	.	.	.	.	.	.	.
moon snail	.	5	.	.	.	.	.	.	.	.
quahog clam	.	4	.	.	.	.	.	.	.	.
grass shrimp spp	.	3	.	.	.	.	.	.	.	.
razor clam spp	.	2	.	.	.	.	.	.	.	.
soft-shell clam	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
Amphipod spp	.	2	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
wedge rangia clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	26,326									

Table 158.

Month - December, 1998
 Segment - Ches. Bay - Bottom
 No. of Random Trawls Made - 13
 No. of Fixed Trawls Made - 0
 No. of Species - 34
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	736	11	64.00	56.62	.	716	47	0.56	31	78
Atlantic croaker	126	8	10.96	9.69	30.58	105	76	3.86	13	310
moon snail	69	3	6.00	5.31	16.75	.	.	.	.	.
blue crab, adult female	40	6	3.48	3.08	9.71	.	139	2.10	111	162
blackcheek tonguefish	35	8	3.04	2.69	8.50	1	151	3.33	73	197
smallmouth flounder	32	8	2.78	2.46	7.77	30	93	3.34	51	128
summer flounder	16	4	1.39	1.23	3.88	12	281	7.04	249	363
weakfish	15	4	1.30	1.15	3.64	14	153	10.28	121	289
spotted hake	9	6	0.78	0.69	2.18	9	68	3.00	49	81
spider crab, common	8	6	0.70	0.62	1.94	.	.	.	.	.
northern searobin	8	4	0.70	0.62	1.94	8	81	7.87	53	109
northern pipefish	6	4	0.52	0.46	1.46	.	120	18.14	84	207
striped searobin	5	4	0.43	0.38	1.21	.	128	37.59	85	278
naked goby	5	1	0.43	0.38	1.21	.	34	2.89	27	44
squid spp	4	3	0.35	0.31	0.97	.	40	8.18	17	55
lady crab	4	3	0.35	0.31	0.97	.	.	.	.	.
mantis shrimp	4	2	0.35	0.31	0.97	.	93	17.55	70	145
lined seahorse	3	3	0.26	0.23	0.73	.	78	8.19	67	94
spot	3	2	0.26	0.23	0.73	3	146	7.06	135	159
Atlantic spadefish	3	2	0.26	0.23	0.73	.	159	64.26	37	255
Atlantic cutlassfish	3	1	0.26	0.23	0.73	.	334	28.39	277	365
hogchoker	2	2	0.17	0.15	.	0	147	16.00	131	163
channel (smooth) whelk	2	2	0.17	0.15	0.49	.	.	.	.	.
blue crab, male	2	2	0.17	0.15	0.49	.	117	0.00	117	117
black seabass	1	1	0.09	0.08	0.24	1	103	.	103	103
butterfish	1	1	0.09	0.08	0.24	1	93	.	93	93
kingfish spp	1	1	0.09	0.08	0.24	1	117	.	117	117
pigfish	1	1	0.09	0.08	0.24	1	61	.	61	61
Atlantic silverside	1	1	0.09	0.08	0.24	1	73	.	73	73
skilletfish	1	1	0.09	0.08	0.24	1	21	.	21	21
silver perch	1	1	0.09	0.08	0.24	1	139	.	139	139
roughneck shrimp	1	1	0.09	0.08	0.24	.	.	.	.	.
Iridescent swimming crab	1	1	0.09	0.08	0.24	.	.	.	.	.
shelligs blue crab	1	1	0.09	0.08	0.24	.	.	.	.	.
sand shrimp	.	10	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	10	.	.	.	.	.	.	.	.
mud crab spp	.	6	.	.	.	.	.	.	.	.
Atlantic oyster drill	.	4	.	.	.	.	.	.	.	.
Amphipod spp	.	4	.	.	.	.	.	.	.	.
sand dollar	.	3	.	.	.	.	.	.	.	.
grass shrimp spp	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	1,150									

Table 159.

Month - December, 1998

Segment - Ches. Bay - Lower

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 0

No. of Species - 27

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	18,119	13	98.04	1393.77		18,060	47	0.38	33	80
Atlantic croaker	199	7	1.08	15.31	57.51	142	99	4.26	16	352
blue crab, adult female	24	6	0.13	1.85	6.94		140	2.19	124	162
weakfish	22	3	0.12	1.69	6.36	22	154	4.02	92	179
summer flounder	17	5	0.09	1.31	4.91	7	293	17.56	106	427
hogchoker	17	2	0.09	1.31		0	112	2.96	89	141
spotted hake	14	6	0.08	1.08	4.05	8	155	27.41	59	311
smallmouth flounder	12	4	0.06	0.92	3.47	12	84	5.91	27	101
blackcheek tonguefish	11	4	0.06	0.85	3.18	2	138	8.37	78	169
mantis shrimp	10	3	0.05	0.77	2.89		92	8.57	48	140
kingfish spp	6	3	0.03	0.46	1.73	6	114	10.65	85	159
northern searobin	5	4	0.03	0.38	1.45	5	81	6.78	61	94
blue crab, male	3	3	0.02	0.23	0.87		99	36.64	26	141
spot	3	2	0.02	0.23	0.87	3	140	9.68	129	159
squid spp	3	1	0.02	0.23	0.87		24	3.71	19	31
horseshoe crab	3	1	0.02	0.23	0.87		254	11.85	237	277
spider crab, common	2	1	0.01	0.15	0.58					
channel (smooth) whelk	2	1	0.01	0.15	0.58					
blue crab, juvenile female	2	1	0.01	0.15	0.58		72	44.00	28	116
black seabass	1	1	0.01	0.08	0.29	1	98		98	98
striped searobin	1	1	0.01	0.08	0.29		69		69	69
bighead searobin	1	1	0.01	0.08	0.29		107		107	107
lined seahorse	1	1	0.01	0.08	0.29		53		53	53
skilletfish	1	1	0.01	0.08	0.29		27		27	27
oyster toadfish	1	1	0.01	0.08	0.29		346		346	346
clearnose skate	1	1	0.01	0.08	0.29		393		393	393
pink shrimp	1	1	0.01	0.08	0.29		126		126	126
sand shrimp		5								
mud crab spp		2								
grass shrimp spp		2								
right-hand hermit crab spp		2								
Atlantic oyster drill		1								
All Species Combined	18,482									

Table 160.

Month - December, 1998

Segment - Ches. Bay - Upper

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 0

No. of Species - 22

Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	2,732	12	88.30	210.15		2,723	46	0.74	24	78
Atlantic croaker	303	11	9.79	23.31	84.40	294	62	1.54	15	114
weakfish	6	2	0.19	0.46	1.67	6	139	6.43	124	166
northern pipefish	5	4	0.16	0.38	1.39		126	15.82	89	181
blue crab, juvenile female	5	4	0.16	0.38	1.39		59	12.98	16	87
blue crab, male	5	3	0.16	0.38	1.39		77	25.19	26	146
blue crab, adult female	5	3	0.16	0.38	1.39		133	5.45	119	152
channel (smooth) whelk	4	3	0.13	0.31	1.11					
blackcheek tonguefish	4	2	0.13	0.31	1.11	1	130	8.83	104	142
mantis shrimp	4	1	0.13	0.31	1.11		70	5.68	58	82
spotted hake	3	2	0.10	0.23	0.84	3	82	3.38	78	89
hogchoker	3	2	0.10	0.23		0	126	16.46	97	154
summer flounder	2	2	0.06	0.15	0.56	1	270	23.50	246	293
smallmouth flounder	2	2	0.06	0.15	0.56	1	109	15.00	94	124
blueback herring	2	1	0.06	0.15	0.56		82	2.00	80	84
seaboard goby	2	1	0.06	0.15	0.56		47	0.50	46	47
horseshoe crab	2	1	0.06	0.15	0.56		240	32.00	208	272
kingfish spp	1	1	0.03	0.08	0.28	1	92		92	92
squid spp	1	1	0.03	0.08	0.28		22		22	22
black drum	1	1	0.03	0.08	0.28		62		62	62
northern searobin	1	1	0.03	0.08	0.28	1	63		63	63
bighead searobin	1	1	0.03	0.08	0.28		41		41	41
sand shrimp		10								
worm spp		4								
mud crab spp		3								
right-hand hermit crab spp		3								
Atlantic oyster drill		2								
grass shrimp spp		1								
All Species Combined	3,094									

Table 161.

Month - December, 1998
 Segment - All - Pooled
 No. of Random Trawls Made - 39
 No. of Fixed Trawls Made - 0
 No. of Species - 43
 Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker

Species	Number of Fish (All)	Frequency	Percent of Catch	Catch Per Trawl	Adjusted Percent of Catch	Number of Fish YOY	Average Length (mm)	Standard Error (length)	Minimum Length (mm)	Maximum Length (mm)
bay anchovy	21,587	36	94.99	553.51		21,499	47	0.32	24	80
Atlantic croaker	628	26	2.76	16.10	56.22	541	77	1.89	13	352
blue crab, adult female	69	15	0.30	1.77	6.18	.	139	1.49	111	162
moon snail	69	3	0.30	1.77	6.18	.	.	.	.	.
blackcheek tonguefish	50	14	0.22	1.28	4.48	4	147	3.16	73	197
smallmouth flounder	46	14	0.20	1.18	4.12	43	91	2.91	27	128
weakfish	43	9	0.19	1.10	3.85	42	151	4.21	92	289
summer flounder	35	11	0.15	0.90	3.13	20	286	9.10	106	427
spotted hake	26	14	0.11	0.67	2.33	20	116	16.78	49	311
hogchoker	22	6	0.10	0.56	.	0	117	3.86	89	163
mantis shrimp	18	6	0.08	0.46	1.61	.	87	6.35	48	145
northern searobin	14	9	0.06	0.36	1.25	14	79	5.07	53	109
northern pipefish	11	8	0.05	0.28	0.98	.	122	11.67	84	207
blue crab, male	10	8	0.04	0.26	0.90	.	92	16.07	26	146
spider crab, common	10	7	0.04	0.26	0.90	.	.	.	.	.
channel (smooth) whelk	8	6	0.04	0.21	0.72	.	.	.	.	.
kingfish spp	8	5	0.04	0.21	0.72	8	111	8.28	85	159
squid spp	8	5	0.04	0.21	0.72	.	32	5.06	17	55
blue crab, juvenile female	7	5	0.03	0.18	0.63	.	63	13.33	16	116
striped searobin	6	5	0.03	0.15	0.54	.	118	32.24	69	278
spot	6	4	0.03	0.15	0.54	6	143	5.52	129	159
horseshoe crab	5	2	0.02	0.13	0.45	.	249	12.52	208	277
naked goby	5	1	0.02	0.13	0.45	.	34	2.89	27	44
lined seahorse	4	4	0.02	0.10	0.36	.	72	8.52	53	94
lady crab	4	3	0.02	0.10	0.36	.	.	.	.	.
Atlantic spadefish	3	2	0.01	0.08	0.27	.	159	64.26	37	255
Atlantic cutlassfish	3	1	0.01	0.08	0.27	.	334	28.39	277	365
black seabass	2	2	0.01	0.05	0.18	2	101	2.50	98	103
bighead searobin	2	2	0.01	0.05	0.18	.	74	33.00	41	107
skilletfish	2	2	0.01	0.05	0.18	.	24	3.00	21	27
blueback herring	2	1	0.01	0.05	0.18	2	82	2.00	80	84
seaboard goby	2	1	0.01	0.05	0.18	.	47	0.50	46	47
butterfish	1	1	0.00	0.03	0.09	1	93	.	93	93
black drum	1	1	0.00	0.03	0.09	.	62	.	62	62
pigfish	1	1	0.00	0.03	0.09	.	61	.	61	61
Atlantic silverside	1	1	0.00	0.03	0.09	1	73	.	73	73
oyster toadfish	1	1	0.00	0.03	0.09	.	346	.	346	346
clearnose skate	1	1	0.00	0.03	0.09	.	393	.	393	393
silver perch	1	1	0.00	0.03	0.09	1	139	.	139	139
roughneck shrimp	1	1	0.00	0.03	0.09	.	.	.	.	.
pink shrimp	1	1	0.00	0.03	0.09	.	126	.	126	126
iridescent swimming crab	1	1	0.00	0.03	0.09	.	.	.	.	.
shellligns blue crab	1	1	0.00	0.03	0.09	.	.	.	.	.
sand shrimp	.	25	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	15	.	.	.	.	.	.	.	.
mud crab spp	.	12	.	.	.	.	.	.	.	.
Atlantic oyster drill	.	7	.	.	.	.	.	.	.	.
grass shrimp spp	.	4	.	.	.	.	.	.	.	.
worm spp	.	4	.	.	.	.	.	.	.	.
Amphipod spp	.	4	.	.	.	.	.	.	.	.
sand dollar	.	3	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	22,726									

Tables 162-173:

Station comments for the Chesapeake Bay, tributary, and secondary water systems sampling **by month**. Comments are used to note unusual circumstances, concerns which may have occurred, or other items of interest which cannot be placed in some pre-defined variable. No attempt has been made to correct grammatical mistakes.

- A. The 'Stat. # or River Mile' refers to the actual station number if a random station, or river and river mile if a fixed station. The 'Record Number' indicates a consecutive number of comments for a given station. Due to the limited variable length, many comments may be placed on more than one line (ie., multiple record numbers). Records pertaining to vessel speed over ground were removed since they are now incorporated into the database.

Table 162.
January 1998

System & Cruise No.	Stat# or River Mile	Record Number	Comment
JA980112	2	1	CAUGHT A LOT OF BLUEBACKS (800 PLUS) .
JA980112	4	1	CAUGHT TWO POLES .
JA980112	5	1	AVERAGED DEPTH STARTED 47 FEET TO 35 FEET. .
JA980112	7	1	BROKE TICKLER CHAIN .
JA980112	19	1	NO ENDING LAT OR LONGS FOR THIS STATION .
JA980112	19	2	THIS STATION WAS A RETOW AND HAD TO AVERAGED SCOPE 130-155 FT. .
JA980112	19	3	FIRST TOW HUNG AT 4:00 MINUTES .
JA980113	20	1	HAD TO AVERAGED BOTH DEPTH AND SCOPE. DEPTH STARTED OUT 36 DOWN TO 32 .
JA980113	20	2	FEET. SCOPE STARTED AT 130 FT DOWN TO 110 FT. .
JA980113	21	1	THIS STATION WAS A RETOW. FIRST TOW HUNG ON BOTTOM .
JA980112	J01	1	THIS STATION WAS A RETOW. STATION DONE 3 TIMES .
RA980115	7	1	CRABPOT ON THE TICKLER CHAIN .
RA980115	9	1	CAUGHT A CRAB POT IN THE NET .
RA980114	14	1	NO VESSEL SPEED AND NO ENDING LAT AND/OR LONGS FOR THIS STATION .
RA980114	21	1	1 MENHADEN CAUGHT AT THIS STATION....NO LESION .
RA980114	R25	1	NO INDIVIDUAL MEASUREMENTS FOR SPECIES CODE 614, ONLY SUBSAMPLE .
RA980114	R25	2	NO INDIVIDUAL MEASUREMENTS FOR SPECIES CODE 103, ONLY SUBSAMPLE .
RA980114	R30	1	NO BEGINNING LAT OR LONG COLLECTED FOR THIS STATION .
RA980114	R35	1	NO INDIVIDUAL MEASUREMENTS FOR SPECIES CODE 103, ONLY SUBSAMPLE .
YK980109	8	1	CAUGHT A CRABPOT AT END OF TOW. .
YK980109	8	2	HICKORY SHAD (SPECIES CODE 28) WAS IDENTIFIED BACK AT LAB BY JIM GOINS .
YK980108	10	1	ONLY BOTTOM HYDRO COLLECTED FOR THIS STATION DUE TO DEPTH OF 6 FEET. .
YK980108	15	1	ONLY BOTTOM HYDRO COLLECTED FOR THIS STATION DUE TO DEPTH OF 5 FEET .
YK980108	16	1	ONLY BOTTOM HYDRO COLLECTED FOR THIS STATION DUE TO DEPTH OF 8 FEET. .
YK980108	20	1	BROKE TICKLER CHAIN AND CAUGHT A LOG IN THE NET .
YK980109	Y02	1	THIS STATION WAS A RETOW. .
YK980108	Y10	1	NO VESSEL SPEED RECORDED FOR THIS STATION .
YK980108	Y25	1	CAUGHT PART OF A CRAB POT IN NET .

Table 163.
February 1998

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL980202	4	1	THIS STATION WAS A RETOW .
CL980202	6	1	TWO VERY SMALL TONGUEFISH .
CL980202	9	1	NET WAY OFF TO STARBOARD SIDE .
CL980202	10	1	CANCER CRABS MEASURED .
CL980202	13	1	SPIDER CRABS TOTAL LENGTH .
CL980202	13	2	CATCH TOO BIG TO BOARD BOAT...RELEASED...TORE NET...REPLACED WITH A04 .
CL980202	14	1	WEATHER STATION NOT WORKING. SPIDER CRABS COUNTED (2 SPECIES) .
CL980202	14	2	SMALL SUMMER FLOUNDER. LOTS OF STARFISH ABOUT 200 (COUNTED)..
CL980202	14	3	LIMULUS AND SQUILLA .
CL980218	20	1	A FEW CRANGON .
CL980202	22	1	CAUGHT POLYONYX GIBBESI, PAGURUS SP., 2 SANDLANCES CAUGHT- ID IN LAB .
CL980202	22	2	AS AMMOCLYTES DUBIUS. D HATA .
CL980218	24	1	1 STARFISH .
CL980202	25	1	SQUILLA CAUGHT .
CL980210	28	1	AVERAGED DEPTH 41 TO 45 FT (USED 43.1 FEET AVG.) .
CL980218	29	1	750 CRANGON .
CL980218	30	1	1 STARFISH, 7200 CRANGON .
CL980210	35	1	AVERAGED DEPTH WENT FROM 20 TO 16 FEET (USED 18.6 AS THE AVG) .
CL980211	36	1	DOOR CAME UP FLIPPED .
CL980202	72	1	MOVED STATION TO GET CORRECT DEPTH.* .
CL980202	78	1	METAL PIPE ON CHAIN .
JA980209	17	1	AVERAGED SCOPE 50 TO 55 FT. 52.5 FT DEPTH .
JA980210	19	1	HIT SNAG 1:30 MIN INTO TOW, ANOTHER SNAG 3:00 INTO THE TOW .
JA980210	20	1	1:09 MIN INTO TOW BUMP....AVERAGED DEPTH 46 TO 51 FT (USED 48.5 FT) .
JA980209	J27	1	HEAVY RAIN LAST WEEK....ALL SALINITIES ARE LOW .
RA980212	9	1	DEPTH WAS AVERAGED STARTED IN 5 FEET 16, 10.9, 6.4, 7.2,.....(USED 11.4 .
RA980212	9	2	ONLY BOTTOM HYDRO DATA COLLECTED FOR THIS STATION DUE TO DEPTH OF 6 FT .
RA980213	14	1	THIS STATION WAS 3 TIMES. FIRST TOW NET RIPPED, SECOND TOW CAUGHT .
RA980213	14	2	POUND NET POLE. .
RA980213	14	3	AVERAGED BOTH DEPTH AND SCOPE (USED 42.0 FT FOR DEPTH AND 142.5 FOR .
RA980213	14	4	SCOPE) .
RA980213	16	1	AVERAGED DEPTH STARTED 53 FT TO 48.4 (USED 50.7 FEET) .
RA980212	21	1	HUNG 1 SECONDS OF TOW....THIS STATION WAS A RETOW .
RA980213	R10	1	VESSEL SPEED WAS NOT RECORDED FOR THIS STATION .
RA980213	R20	1	AVERAGED BOTH DEPTH AND SCOPE (USED 60.9 FOR DEPTH AND 192.5 FOR .
RA980213	R20	2	SCOPE) .
YK980203	3	1	CRABPOT ON THE TICKLER CHAIN .
YK980203	8	1	NO VESSEL SPEED DATA COLLECTED FOR THIS STATION .
YK980203	19	1	SPOT WERE CAUGHT AT THIS STATION .
YK980203	20	1	GLASS EEL/ELVER CAUGHT .
YK980203	20	2	EEL POT CAUGHT AT THIS STATION .
YK980203	Y15	1	CAUGHT SPOT AT THIS STATION .
YK980203	Y20	1	TICKLER CHAIN BROKE...2 1/2 MINUTES .

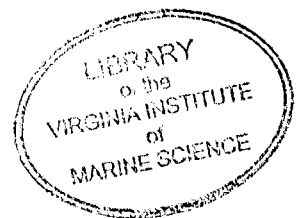


Table 164.

March 1998

System & Cruise No.	Stat# or River Mile	Record Number	Comment
JA980303	8	1	AVERAGED BOTH DEPTH AND SCOPE...50.4 FT (DEPTH) AND SCOPE 167.5. .
JA980304	12	1	THIS STATION WAS DONE 3 TIMES. FIRST AND SECOND TOW HUNG .
JA980304	12	2	THIRD TOW DONE 1/2 MILE FROM FIRST TOW .
JA980304	14	1	THIS STATION WAS A RETOW. TORE NET ON FIRST TOW .
JA980303	20	1	TICKLER CHAIN BROKE .
JA980303	J05	1	VESSEL SPEED WAS NOT RECORDED FOR THIS STATION .
JA980304	J13	1	AVERAGED SCOPE TO 135 FEET. 130-140 FT.... .
JA980304	J17	1	THIS STATION WAS A RETOW. CHAIN MESSED UP .
JA980303	J35	1	ONE CHANNEL CATFISH WITH A LESION .
JA980303	J40	1	CAUGHT A NET FULL OF CATFISH .
RA980306	1	1	THIS STATION...NO FISH CAUGHT .
RA980305	19	1	BUMP....15 SECONDS INTO TOW .
RA980305	R20	1	AVERAGED DEPTH TO 48 FEET. STARTED OUT IN 36 FT. AND ENDED WITH 60 FT .
RA980305	R25	1	TICKLER CHAIN BROKE .
YK980303	6	1	THIS STATION WAS A RETOW...TICKLER CHAIN BROKE. SNAGGED 45 SECONDS .
YK980303	6	2	INTO TOW. .
YK980302	7	1	SPOTTED HAKE WITH LESION .
YK980302	10	1	ONE TOADFISH WITH LESION 232MM .
YK980302	11	1	BROKE TICKLER CHAIN .
YK980302	13	1	CAUGHT ALOT OF CRABS .
YK980302	13	2	NO ENDING LAT OR LONGS RECORDED FOR THIS STATION .
YK980302	Y35	1	AVERAGED SCOPE 60 TO 70 FEET. USED 65 FT. .

Table 165.

April 1998

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL980406	4	1	NO ENDING LAT OR LONGS WRITTEN DOWN ON DATA SHEET .
CL980407	13	1	BROKE TICKLER CHAIN .
CL980407	14	1	WHITE HAKE CONFIRMED BY JACK MUSICK..BROUGHT BACK TO LAB. .
CL980402	18	1	DEPTH HAD TO BE AVERAGED WENT FROM 20 TO 25 FT .
CL980406	27	1	ENDING LAT/LONGS WERE WRITTEN DOWN INCORRECTLY. HAD TO DELETED. .
CL980406	27	2	DISTANCE LESS THAT 99 METERS .
CL980407	28	1	2 SMALL SUMMER FLOUNDER AROUND 150 MM .
CL980407	31	1	DOOR FLIPPED.... .
CL980402	47	1	5 GALLONS OF JELLIES .
CL980402	48	1	2 GALLONS OF JELLIES .
CL980407	65	1	STATION LOCATION SELECTED ARBITRARILY...TOO MANY CRAB POTS CAN NOT .
CL980407	65	2	GET RIGHT DEPTH.... ALSO BROKE TICKLER CHAIN .
CL980407	69	1	VESSEL SPEED WAS NOT RECORDED FOR THIS STATION .
CL980402	85	1	ONLY BOTTOM HYDRO DATA COLLECTED DUE TO DEPTH OF 6 FT .
JA980408	J17	1	THIS STATION WAS A RETOW. LOST NET (A01) ON THE BOTTOM OF THE JAMES .
JA980408	J17	2	RIVER. TAG LINE CAME UNTIED FROM NET .
RA980406	6	1	1 GALLON OF JELLIES .
RA980406	12	1	2 GALLONS OF JELLIES .
RA980403	14	1	THIS STATION WAS A RETOW .
RA980403	22	1	BACK UP STATION. COULD NOT FIND DEPTH AT ORIGINAL -PJG .
RA980403	22	2	BROKE TICKLER CHAIN .
RA980406	R02	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
RA980406	R10	1	2 GALLONS OF JELLIES .
RA980403	R20	1	SCOPE WAS AVERAGED DUE TO DEPTH CHANGE 135FT TO 145 FT...USED 140FT .
RA980403	R30	1	DEPTH WAS NOT WRITTEN DOWN. USED DEPTH FROM THE MAP .
YK980401	6	1	NO ENDING LAT OR LONGS .....NO VESSEL SPEED RECORDED .
YK980401	7	1	NO VESSEL SPEED AND SECCHI DATA COLLECTED FOR THIS STATION .
YK980401	8	1	NO VESSEL SPEED RECORDED FOR THIS STATION .
YK980401	15	1	ONLY BOTTOM HYDRO DATA COLLECTED DUE TO DEPTH OF ONLY 4 FT. .
YK980401	15	2	BROKE TICKLER CHAIN .
YK980401	16	1	USED BACKUP STATION 16....BUMP WITH 1 MINUTE LEFT INTO TOW .
YK980401	19	1	3 DEAD OYSTER TOADS AND 6 DEAD CRABS .
YK980402	Y05	1	1 QUART OF JELLIES. SMALL CATCH....DOORS WERE SCRAPPED, ASSUME NET .
YK980402	Y05	2	WAS ON THE BOTTOM .

Table 166.

May 1998

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL980515	4	2	ENDING POSITION DELETED. DID NOT MAKE SENSE .
CL980515	6	1	THIS STATION WAS A RETOW .
CL980515	10	1	TAG LINE SLIPPED OVER COD END .
CL980515	10	3	NO SECCHI DATA COLLECTED FOR THIS STATION .
CL980518	18	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
CL980518	24	2	ENDING POSITION DELETED. DID NOT MAKE SENSE .
CL980518	28	2	ENDING POSITION DELETED. DID NOT MAKE SENSE .
CL980518	32	2	ENDING POSITION DELETED. DID NOT MAKE SENSE .
CL980506	35	1	THIS STATION WAS A RETOW. RIPPED NET (2:11 INTO TOW ROCKS IN NET .
CL980506	35	2	TORE LARGE HOLES IN THE NEW NET) .
CL980506	48	1	TICKLER CHAIN BROKE .
CL980506	48	3	ENDING POSITION DELETED. DID NOT MAKE SENSE .
CL980506	81	1	ONLY BOTTOM HYDRO DATA COLLECTED FOR THIS STATION DUE TO DEPTH OF 6FT. .
JA980511	5	1	1 BIN OF HYDROIDS/SQUIRTS .
JA980511	8	1	MOVED STATION .
JA980511	11	1	HIT SOMETHING WITH 3 MIN 20 SECONDS LEFT IN TOW. BROKE TICKLER CHAIN .
JA980511	J05	1	1/2 BIN OF HYDROIDS, TICKLER CHAIN .
JA980508	J17	1	1 WHITE PERCH WITH LESIONS .
JA980508	J24	1	2 YOY SPOT .
RA980505	3	1	THIS STATION WAS A RETOW. NOT SURE THAT NET WAS ON BOTTOM. .
RA980505	3	2	WHITE PERCH CAUGHT AT THIS STATION CONFIRMED .
RA980505	8	1	VESSEL SPEED NOT RECORDED FOR THIS STATION .
RA980505	10	1	ONLY SURFACE HYDRO DATA COLLECTED FOR THIS STATION DUE TO DEPTH OF 4FT .
RA980505	10	2	DEPTH WENT FROM 9.8 TO 3.6 FT OF WATER. HAD TO AVERAGE DEPTH .
RA980505	16	1	HAD TO AVERAGE DEPTH AND SCOPE. .
RA980507	18	1	VESSEL SPEED NOT RECORDED FOR THIS STATION .
RA980507	22	1	MOVED STATION TO FIND PROPER DEPTH .
RA980507	24	1	VESSEL SPEED NOT RECORDED FOR THIS STATION .
RA980505	R02	1	VESSEL SPEED NOT RECORDED FOR THIS STATION .
RA980507	R40	1	VESSEL SPEED NOT RECORDED FOR THIS STATION .

Table 167.

June 1998

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL980609	1	1	USED BACKUP MAP FOR ALL STATIONS IN THE BAY .
CL980604	3	1	VESSEL SPEED WAS NOT RECORDED FOR THIS STATION .
CL980604	3	2	BACKUP MAP WAS USED FOR ALL STATIONS IN BAY THIS MONTH .
CL980609	9	1	SPECIES CODE 76 CONFIRMED. BROUGHT BACK TO THE LAB. (ROUND HERRING) .
CL980609	14	1	MISS TYE(VA BEACH) CAME ALONG SIDE WHILE WE WERE TRAWLING AND WANTED .
CL980609	14	2	TO KNOW WHAT WE WERE SAMPLING FOR. .
CL980601	20	1	STATION MAPS WERE WRONG....USING BACKUP MAP FOR THE ENTIRE BAY .
CL980604	21	1	NO AIR TEMPERATURE RECORDED FOR THIS STATION .
CL980601	28	1	NO ENDING LAT OR LONGS FOR THIS STATION .
CL980601	28	2	COORDINATES WRITTEN DOWN WRONG .
CL980603	34	1	CAUGHT A CRAB POT .
CL980601	41	1	NO ENDING LAT OR LONGS FOR THIS STATION .
CL980601	41	2	COORDINATES WRITTEN DOWN WRONG .
CL980604	47	1	CAUGHT CRABPOT AND LARGE BALAST ROCK .
CL980603	83	1	THIS STATION WAS A RETOW. CAUGHT CRABPOT .
JA980605	15	1	1 CHANNEL CATFISH WITH LESION .
JA980605	18	1	BROKE TICKLER CHAIN .
JA980605	J01	1	THIS STATION WAS A RETOW....FISHERMAN IN THE WAY .
JA980605	J05	1	NO ENDING LAT OR LONGS FOR THIS STATION .
JA980605	J24	1	THIS STATION WAS A RETOW...KNOT CAME UNDONE .
RA980601	2	1	CAUGHT MANY SMALL FLOWNDERS .
RA980602	16	1	THIS STATION WAS A RETOW. TAGLINE CAME OFF AT THE END OF THE TOW .
RA980602	21	1	LARGE STRIPER HAD MICROBACTERIOSIS ON CAUDEL FIN .
RA980602	23	1	ONLY BOTTOM HYDRO COLLECTED FOR THIS STATION DUE TO DEPTH OF 5 FEET .
YK980610	10	1	ONLY BOTTOM HYDRO DATA COLLECTED FOR THIS STATION DUE TO DEPTH OF 8 FT .
YK980610	15	1	THIS STATION WAS A RETOW...TAG LINE SLIPPED .
YK980610	18	1	THIS STATION WAS A RETOW. DONE 3 TIMES.(CAUGHT CRAB POT AND POLE) .

Table 168.
July 1998

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL980706	3	1	DEPTH WAS NOT WRITTEN DOWN. USED DEPTH FROM MAP .
CL980707	24	1	THIS STATION WAS A RETOW. WIND AND TIDE....BOAT OFF COURSE. .
CL980709	48	1	VESSEL SPEED WAS NOT RECORDED FOR THIS STATION .
CL980706	65	1	NO VESSEL SPEED WRITTEN DOWN FOR THIS STATION .
CL980706	70	1	NO ENDING LAT OR LONGS FOR THIS STATION. NOT WRITTEN DOWN ON DATA .
CL980706	70	2	SHEET .
JA980714	20	1	SCOPE AND DEPTH WERE AVERAGED. VESSEL SPEED WAS ALSO AVERAGED .
JA980713	21	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
MB980715	15	1	TAG LINE KNOT SLIPPED OVER CODEND LINER .
MB980715	MB4	1	RETOW - TAG LINE CAME UNTIED .
RA980708	18	1	BROKE TICKLER CHAIN .
RA980708	19	1	NO SALINITY FOR SURFACE OR BOTTOM. NUMBERS WRITTEN DOWN WRONG .
RA980708	21	1	NO SALINITY FOR SURFACE OR BOTTOM. NUMBERS WERE WRITTEN DOWN WRONG .
RA980708	22	1	CAUGHT CRAB POT ON TICKLER CHAIN .
RA980708	22	2	NO SALINITY FOR SURFACE AND BOTTOM. NUMBERS WRITTEN DOWN WRONG .
RA980708	24	1	NO SALINITY FOR SURFACE AND BOTTOM. NUMBERS WRITTEN DOWN WRONG .
RA980708	26	1	NO SALINITY FOR SURFACE AND BOTTOM. NUMBERS WRITTEN DOWN WRONG .
RA980708	R15	1	NO SALINITY FOR SURFACE AND BOTTOM. NUMBERS WRITTEN DOWN WRONG .
RA980708	R20	1	NO SALINITY FOR SURFACE AND BOTTOM. NUMBERS WRITTEN DOWN WRONG .
RA980708	R25	1	NO SALINITY FOR SURFACE AND BOTTOM. NUMBERS WRITTEN DOWN WRONG .
RA980708	R30	1	NO SALINITY FOR SURFACE AND BOTTOM. NUMBERS WRITTEN DOWN WRONG .
RA980708	R35	1	NO SALINITY FOR SURFACE AND BOTTOM. NUMBERS WRITTEN DOWN WRONG .
RA980708	R40	1	NO READING BATTERY DIED...COLLECTED ON SURFACE READINGS .
RA980708	R40	2	NO SURFACE SALINITY FOR THIS STATION. NUMBER WRITTEN DOWN WRONG .
YK980702	15	1	VESSEL SPEED WAS NOT RECORDED FOR THIS STATION. .
YK980702	15	2	BROKE TICKLER CHAIN. .
YK980702	16	1	USED BACKUP STATION. BROKE TICKLER CHAIN .
YK980701	Y05	1	LATE START DUE TO ENGINE PROBLEMS .
YK980702	Y25	1	MOVED STATION 3/10 OF A MILE FROM BOATS .
YK980702	Y35	1	1 WHITE PERCH WITH FIN ROT .

Table 169.
August 1998

System & Cruise No.	Stat# or River Mile	Record Number	Comment
JA980804	4	1	THIS STATION WAS A RETOW. HUNG 4 MINUTES INTO TOW. SECOND TOW BROKE .
JA980804	4	2	TICKLER CHAIN. .
JA980804	7	1	MOVED STATION DUE TO LARGE VESSEL ANCHORED IN THE MIDDLE OF THE .
JA980804	7	2	STATION. .
JA980804	8	1	TICKLER CHAIN BROKE .
JA980805	19	1	THIS STATION WAS A RETOW. NO ENDING LAT OR LONGS RECORDED FOR THIS .
JA980805	19	2	STATION .
JA980805	22	1	WHITE PERCH WITH RED SKIN ABRASION .
JA980805	24	1	BUMP AT 2:30 INTO TOW .
RA980807	11	1	THIS STATION WAS A RETOW .
RA980807	14	1	NO FISH LOW DO .
RA980807	16	1	NO FISH CAUGHT AT THIS STATION. LOW DO READINGS ON THE BOTTOM .
RA980811	20	1	ONLY 2 STATIONS DONE TO DUE MAJOR ENGINE PROBLEMS. HAD TO GO BACK TO .
RA980811	20	2	THE DOCK. .
RA980807	R10	1	NO FISH CAUGHT AT THIS STATION. LOW DO READINGS .
RA980807	R20	1	NO FISH CAUGHT AT THIS STATION. LOW DO READINGS ON THE BOTTOM .
YK980803	12	1	32 DEAD ADULT BLUE CRABS...ASSUME A DUMPED COMMERCIAL CATCH. -PJG .
YK980803	12	2	1 WEAKFISH WITH FIN ROT .
YK980803	13	1	1 WEAKFISH AND 1 CROAKER WITH FIN ROT .
YK980803	17	1	TICKLER CHAIN BROKE .
YK980804	Y05	1	POUND NET POLE IN NET .
YK980803	Y25	1	THIS STATION WAS A RETOW. .
YK980803	Y25	2	1 CROAKER WITH FIN ROT .

Table 170.

September 1998

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL980914	9	1	1 DEAD HORSESHOE CRAB .
CL980914	13	1	NO VESSEL SPEED RECORDED FOR THIS STATION .
CL980914	16	1	NO VESSEL SPEED RECORDED FOR THIS STATION .
CL980914	16	2	1 DEAD HORSESHOE CRAB .
CL980914	25	1	NO INDIVIDUAL LENGTHS FOR ANCHOVIES(SPECIES CODE 103) ONLY SUBSAMPLE .
CL980914	25	2	COUNT .
CL980917	36	1	2 CROAKER WITH FIN ROT .
CL980915	46	1	NO INDIVIDUAL LENGTHS FOR ANCHOVIES (SPECIES CODE 103) ONLY SUBSAMPLE .
CL980915	46	2	TAKEN .
CL980915	87	1	ONLY BOTTOM HYDRO COLLECTED FOR THIS STATION DUE TO DEPTH .
CP980928	1	1	NO VESSEL SPEED WRITTEN DOWN FOR THIS STATION .
CP980928	4	1	NO VESSEL SPEED WRITTEN DOWN FOR THIS STATION .
CP980928	CP1	1	NO VESSEL SPEED WRITTEN DOWN FOR THIS STATION .
GW980918	1	1	DELETED ENDING LAT AND LONGS. WRITTEN DOWN WRONG. .
GW980918	3	1	NO ENDING LAT OR LONGS, NO SURFACE DO, AND/OR AIR TEMPERATURE RECORDED .
GW980918	3	2	FOR THIS STATION .
GW980918	8	1	NO AIR TEMPERATURE RECORDED FOR THIS STATION .
PK980917	1	1	STATION MOVED SLIGHTLY DUE TO CRAB POTS .
PK980917	6	1	2 CROAKER WITH FIN ROT .
PK980917	PK3	1	STATION MOVED SLIGHTLY DUE TO RECREATIONAL FISHERMEN .
RA980917	2	1	COULD NOT DO STATION 10 DUE TO CRAB POTS. DID BACKUP STATION 9 -PJG .
RA980917	2	2	NO VESSEL SPEED AND SCOPE RECORDED FOR THIS STATION .
RA980916	20	1	NO INDIVIDUAL LENGTHS FOR B. ANCHOVIES. ONLY SUBSAMPLE COUNTED .
RA980916	21	1	NO DEPTH IN EXCESS OF 30 FT. TRAWL DONE ON STATION TO 28 FT. .
RA980916	26	1	THIS STATION WAS RETOW. KNOT CAME OFF... .
YK980911	4	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
YK980911	5	1	NO VESSEL SPEED WAS RECORDED FOR THIS STATION .
YK980910	19	1	THIS STATION WAS A RETOW. HUNG 4 MINUTES INTO TOW .
YK980910	Y20	1	TICKLER CHAIN BROKE .

Table 171.

October 1998

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL981014	3	1	THIS STATION WAS A RETOW. CAUGHT A CRABPOT. CAUGHT ALOT OF .
CL981014	3	2	CUTLASSFISH (22) IN THE FIRST TOW. .
CL981016	6	1	NO ENDING LAT OR LONGS FOR THIS STATION. .
CL981016	8	1	NO ENDING LAT OR LONGS FOR THIS STATION .
CL981013	30	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
CL981016	70	1	THIS STATION WAS A RETOW. RIPPED NET IN THE FIRST STATION .
CL981016	79	1	NO SURFACE HYDRO DATA COLLECTED FOR THIS STATION DUE TO DEPTH. .
GW981007	2	1	CAUGHT A CRAB POT .
GW981007	8	1	THIS STATION WAS A RETOW. PIECES OF CRAB POT WIRE IN THE NET. NET .
GW981007	8	2	GOT TANGLED UP. .
JA981015	17	1	SPECIES CODE 103 ONLY HAS A SUBSAMPLE COUNTED. NO INDIVIDUAL LENGTHS .
JA981015	19	1	BUMP 30 SECONDS TO GO INTO THE TOW .
JA981015	20	1	TICKLER CHAIN BROKE .
JA981015	22	1	THIS STATION WAS A RETOW .
PK981008	1	1	DEPTH ROSE TO 3 FT IN THE END OF THE TOW. .
PK981008	1	2	ONLY BOTTOM HYDRO WAS COLLECTED FOR THIS STATION DUE TO DEPTH .
PK981008	1	3	THIS STATION WAS DONE INSTEAD OF STATION 3. STATION 3 WAS NOT DONE .
PK981008	1	4	DUE TO THE WIND .
PK981008	PK4	1	SPECIES CODE 5 SHOULD HAVE A PAN MEASURED OF 104. NO INDIVIDUAL .
PK981008	PK4	2	LENGTHS ONLY A SUBSAMPLE .
RA981005	19	1	WEAKFISH WITH GRANULES ALONG FIN (2 WEAKFISH) .
RA981005	24	1	2 FISHING RODS IN THE NET .
YK981009	3	1	NO ENDING LAT OR LONGS FOR THIS STATION. DISTANCE TOO GREAT .
YK981012	10	1	NO INDIVIDUAL LENGTHS FOR SPECIES CODE 103 ONLY SUBSAMPLE TAKEN .
YK981012	18	1	CRAB POT ON CHAIN .
YK981012	Y15	1	NO INDIVIDUAL LENGTHS FOR SPECIES CODE 151. ONLY SUBSAMPLE TAKEN. .
YK981012	Y25	1	NO SECCHI DATA COLLECTED FOR THIS STATION .

Table 172.
November 1998

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL981109	4	1	BOARD NOT WORKING HAD TO MEASURE THIS STATION BY HAND .
CL981110	28	1	1 SILVER PERCH WITH LESION AND 1 SPOT WITH LESIONS .
CL981110	33	1	BROKE TICKLER CHAIN .
CL981109	68	1	MEASURING BOARD WORKING AGAIN .
CL981110	81	1	BROKE TICKLER CHAIN .
JA981105	2	1	CAUGHT AN ANCHOR ON TICKLER CHAIN .
JA981109	10	1	2 MENHADEN WITH LESIONS .
JA981106	13	1	NO ENDING LAT OR LONGS FOR THIS STATION .
JA981106	13	2	STURGEON DORSAL TAGGED #13017 .
JA981106	13	3	NO AIR TEMP RECORDED. .
JA981106	18	1	3 MENHADEN WITH LESIONS .
JA981106	20	1	THIS STATION WAS A RETOW. FERRY COMING STOPPED TOW CAUGHT .
JA981106	20	2	AND MEASURED STURGEON. DORSAL TAG #13014 .
JA981106	20	3	5 OF 6 MENHADEN WITH LESIONS .
JA981106	22	1	1 MENHADEN WITH LESION .
JA981109	J13	1	ONE MENHADEN WITH LESION .
JA981106	J24	1	ONE MENHADEN WITH LESIONS .
JA981106	J27	1	2 OF 2 MENHADEN WITH LESIONS .
JA981106	J27	2	SPECIES CODE 151 ONLY A SUBSAMPLE NO INDIVIDUAL LENGTHS. .
JA981106	J40	1	SPECIES CODE 151 ONLY A SUBSAMPLE NO INDIVIDUAL LENGTHS .
RA981112	10	1	SPECIES CODE 37 (MENHADEN) 13 FISH DEAD IN THE TOW. .
RA981110	15	1	2 OUT OF 3 MENHADEN WITH LESIONS .
RA981112	21	1	SPECIES CODE 5 (CROAKER) ONLY SUBSAMPLE TAKEN. NO INDIVIDUAL LENGTHS* .
RA981112	22	1	9 OUT OF 10 MENHADEN WITH LESIONS .
RA981112	24	1	NO SURFACE HYDRO DATA COLLECTED FOR THIS STATION DUE TO DEPTH OF 5 FT. .
RA981112	26	1	1 OUT OF 1 MENHADEN WITH LESIONS .
RA981112	R20	1	6 OUT OF 6 MENHADEN WITH LESIONS .
RA981112	R25	1	2 MENHADEN WITH LESIONS .
RA981112	R35	1	7 OUT OF 7 MENHADEN WITH LESIONS .
YK981105	8	1	MOVED ORIGINAL LOCATION OF THE STATION DUE TO THE STATION WAS LOCATED .
YK981105	8	2	UNDER THE BRIDGE. .
YK981104	10	1	NO BOTTOM HYDRO DATA COLLECTED FROM THIS STATION DUE TO DEPTH .
YK981104	15	1	NO BOTTOM HYDRO COLLECTED FOR THIS STATION DUE TO DEPTH .
YK981104	18	1	BUMP AT 3 MIN INTO TOW. TICKLER CHAIN BROKE .

Table 173.
December 1998

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL981202	5	1	VESSEL SPEED SEEMS TO BE HIGH .
CL981202	9	1	NO BOTTOM HYDRO COLLECTED DUE TO BATTERIES WERE REPLACED .
CL981202	10	1	VESSEL SPEED IS QUESTIONABLE TOO HIGH .
CL981202	67	1	NO BOTTOM HYDRO COLLECTED FOR THIS STATION DUE TO DEPTH .
CL981202	70	1	NO BOTTOM HYDRO COLLECTED FOR THIS STATION DUE TO DEPTH .
CL981208	80	1	ONLY BOTTOM HYDRO DATA COLLECTED FOR THIS STATION DUE TO DEPTH. .
CP981215	2	1	MOVED STATION....ONLY BOTTOM HYDRO TAKEN AT THIS STATION DUE TO DEPTH .
CP981215	4	1	ONLY BOTTOM HYDRO TAKEN AT THIS STATION DUE TO DEPTH. .
CP981215	4	2	TICKLER CHAIN BROKE. .
CP981215	5	1	TORE NET (A08) REPLACED NET WITH A11 .
CP981215	15	1	THIS STATION WAS A RETOW. NOT ENOUGH CABLE OUT ON FIRST TOW .
CP981215	CP3	1	THIS STATION WAS A RETOW. NET PUT ON WRONG...UPSIDE DOWN. .
JA981203	7	1	THIS STATION WAS A RETOW. FIRST TOW WAS A HANG BROKE TICKER CHAIN .
JA981204	15	1	2 OUT OF 2 MENHADEN WITH LESIONS .
JA981204	19	1	NO ENDING LAT OR LONGS FOR THIS STATION. .
JA981204	J40	1	NO HYDRO FOR THIS STATION .
RA981207	6	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
RA981210	22	1	MOVED STATION TO FIND DEPTH .
RA981210	24	1	CAUGHT A CRABPOT .
RA981207	R10	1	ENDING LAT OR LONGS NOT COLLECTED FOR THIS STATION .
RA981210	R25	1	7 OUT 7 MENHADEN WITH LESIONS .
RA981210	R35	1	2 OF 2 MENHADEN WITH LESIONS .
YK981201	6	1	THIS TOW WAS DONE 3 TIMES. NOT ENOUGH SCOPE ON FIRST AND SECOND TOW .
YK981201	6	2	COULD NOT GET TOW ON BOARD BOAT .
YK981201	9	1	THIS STATION WAS A RETOW .
YK981201	14	1	BUMP 30 SECONDS INTO TOW .
YK981201	18	1	TICKLER CHAIN BROKE .
YK981201	18	2	ONE OUT OF 3 MENHADEN WITH LESIONS .
YK981201	Y25	1	STATION 130, 135, AND 140 WERE NOT DONE DUE TO BRIDGE CLOSED FOR .
YK981201	Y25	2	REPAIRS .

FIGURES

VIMS Juvenile Fish Trawl Survey

Sampling Changes 1955 - 1999

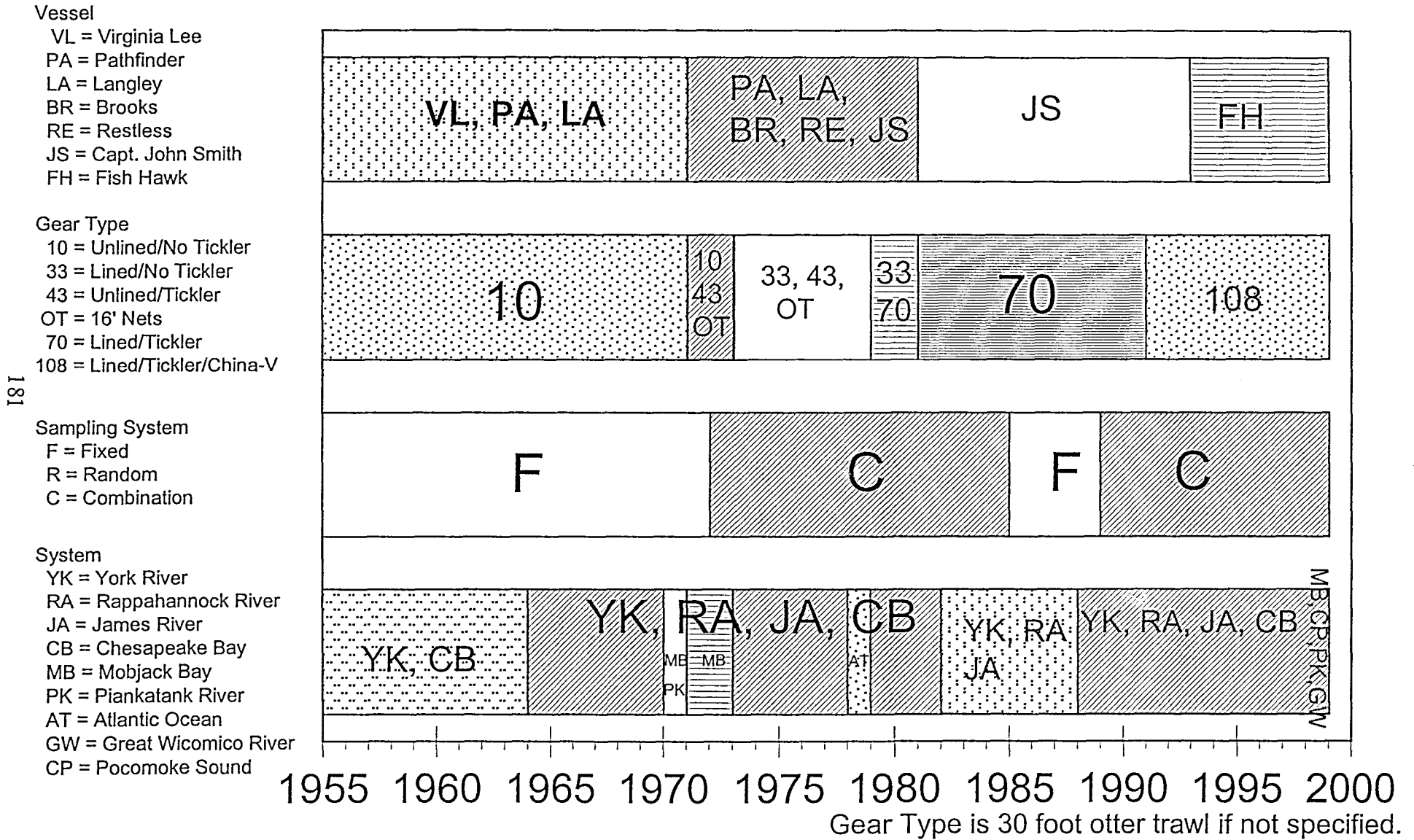


Figure 1. Sampling system, design, and gear changes for the VIMS trawl survey, 1955-1999.

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Figures 2-14 Stations sampled in 1998 by month.

- Notes: A. Due to LORAN distortion at upriver stations and to computer software control of the placement of figures on these maps, the locations shown may vary slightly from the actual stations occupied. For exact coordinates refer to Tables 2-13 (rivers) and 14-25 (bay).
- B. A single winter survey was conducted in February for the Chesapeake Bay to represent the period from January through March 1998.
- C. The Squares represent the non-random fixed locations. Figure 14 shows the relative position of these stations.

Figure 2.

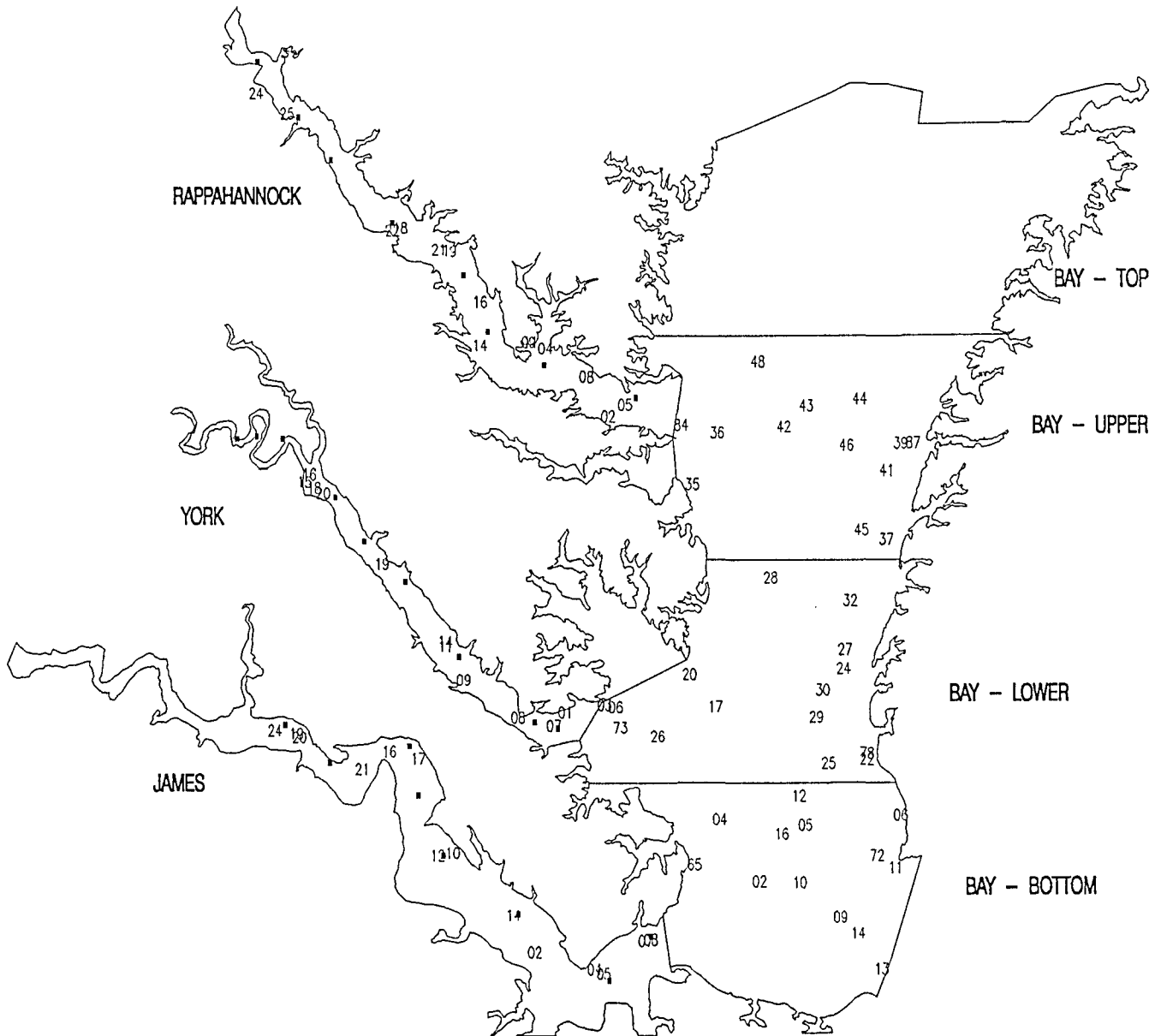
TRAWL SURVEY STATION LOCATIONS JANUARY, 1998



NOTE: BOXES INDICATE FIXED RIVER MILE STATIONS,
NUMBERS INDICATE RANDOM STATIONS

Figure 3.

TRAWL SURVEY STATION LOCATIONS FEBRUARY, 1998



NOTE: BOXES INDICATE FIXED RIVER MILE STATIONS,
NUMBERS INDICATE RANDOM STATIONS

Figure 4.

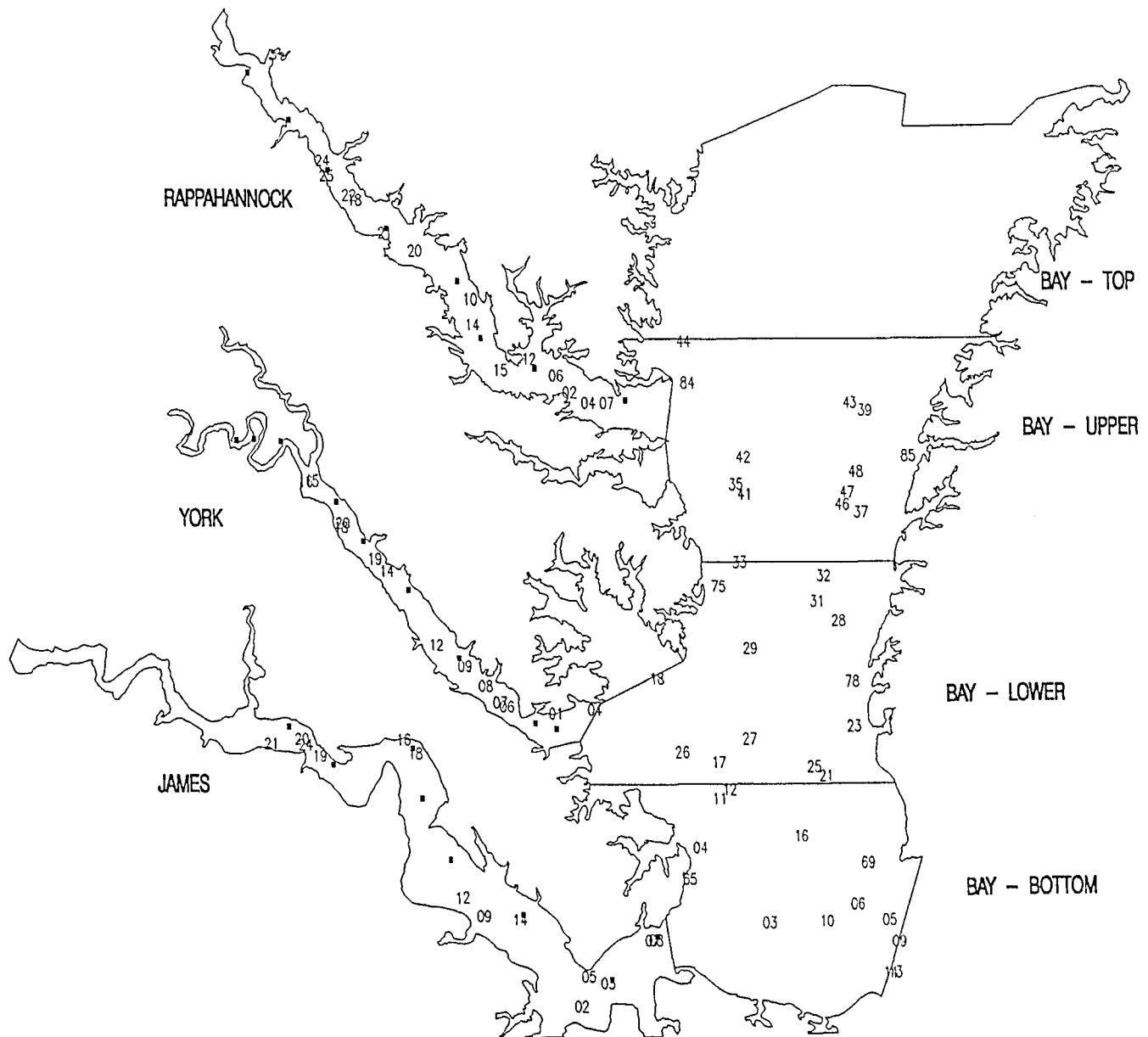
TRAWL SURVEY STATION LOCATIONS MARCH, 1998



NOTE: BOXES INDICATE FIXED RIVER MILE STATIONS,
NUMBERS INDICATE RANDOM STATIONS

Figure 5.

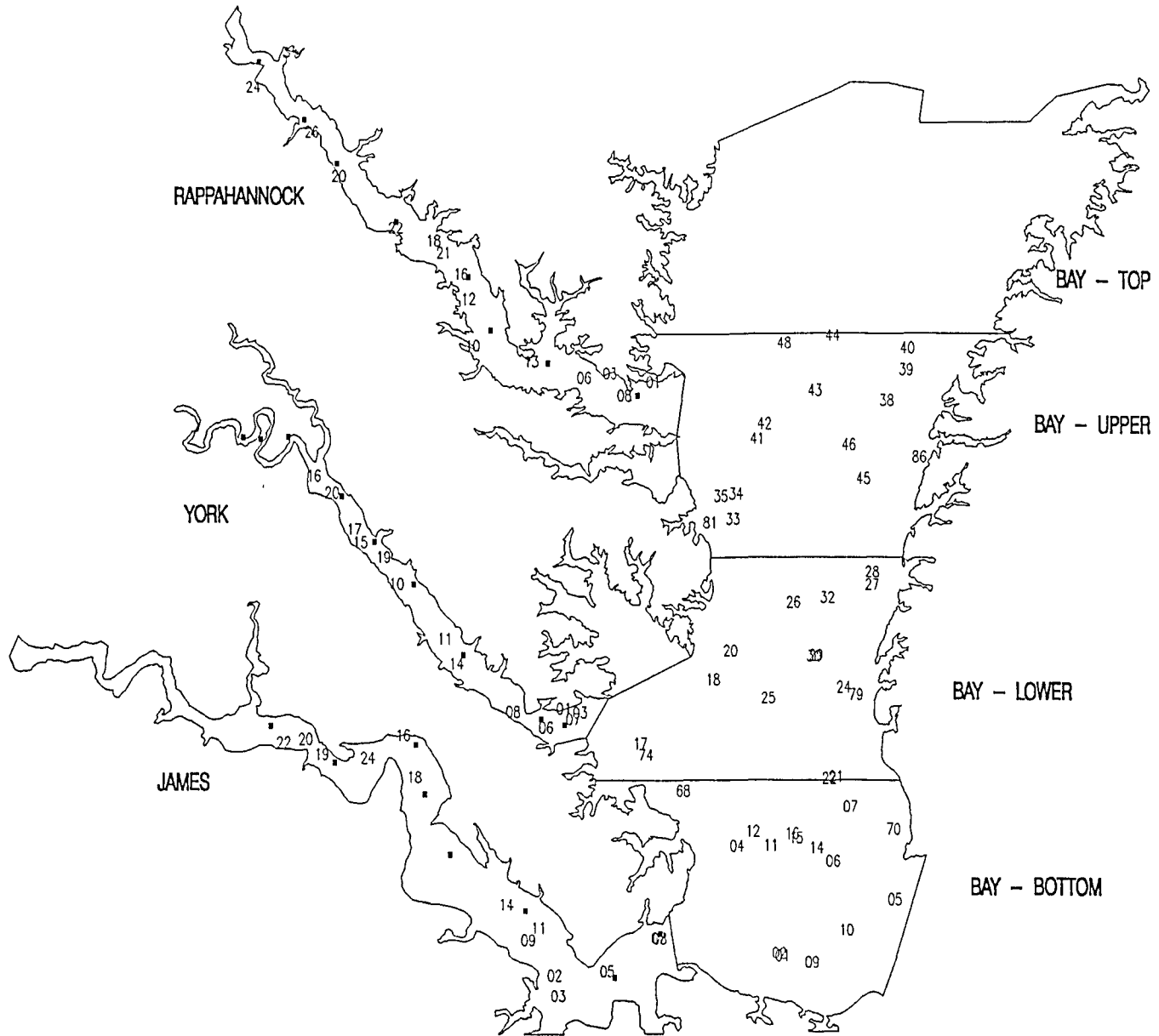
TRAWL SURVEY STATION LOCATIONS APRIL, 1998



NOTE: BOXES INDICATE FIXED RIVER MILE STATIONS,
NUMBERS INDICATE RANDOM STATIONS

Figure 6.

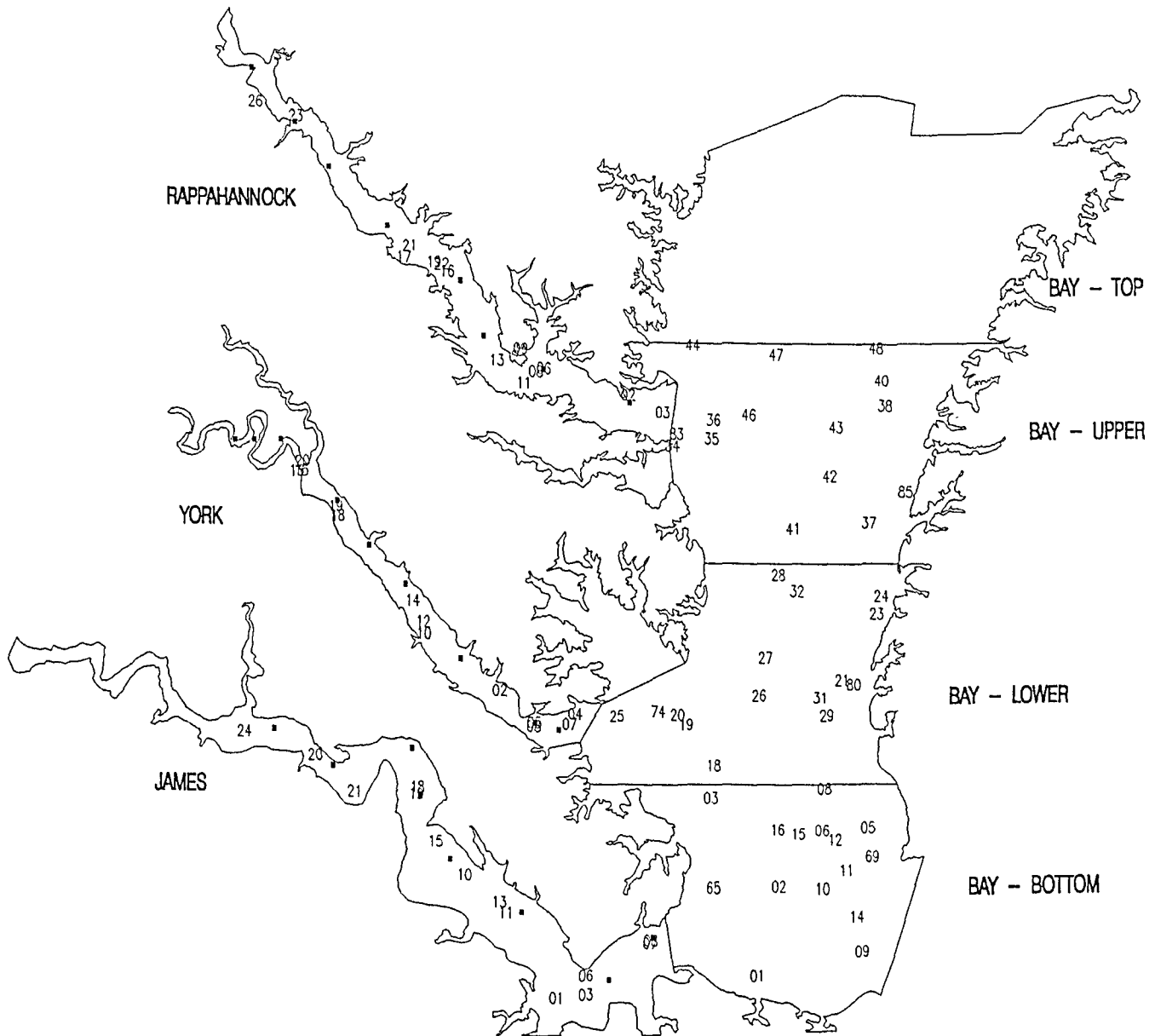
TRAWL SURVEY STATION LOCATIONS MAY, 1998



NOTE: BOXES INDICATE FIXED RIVER MILE STATIONS,
NUMBERS INDICATE RANDOM STATIONS

Figure 7.

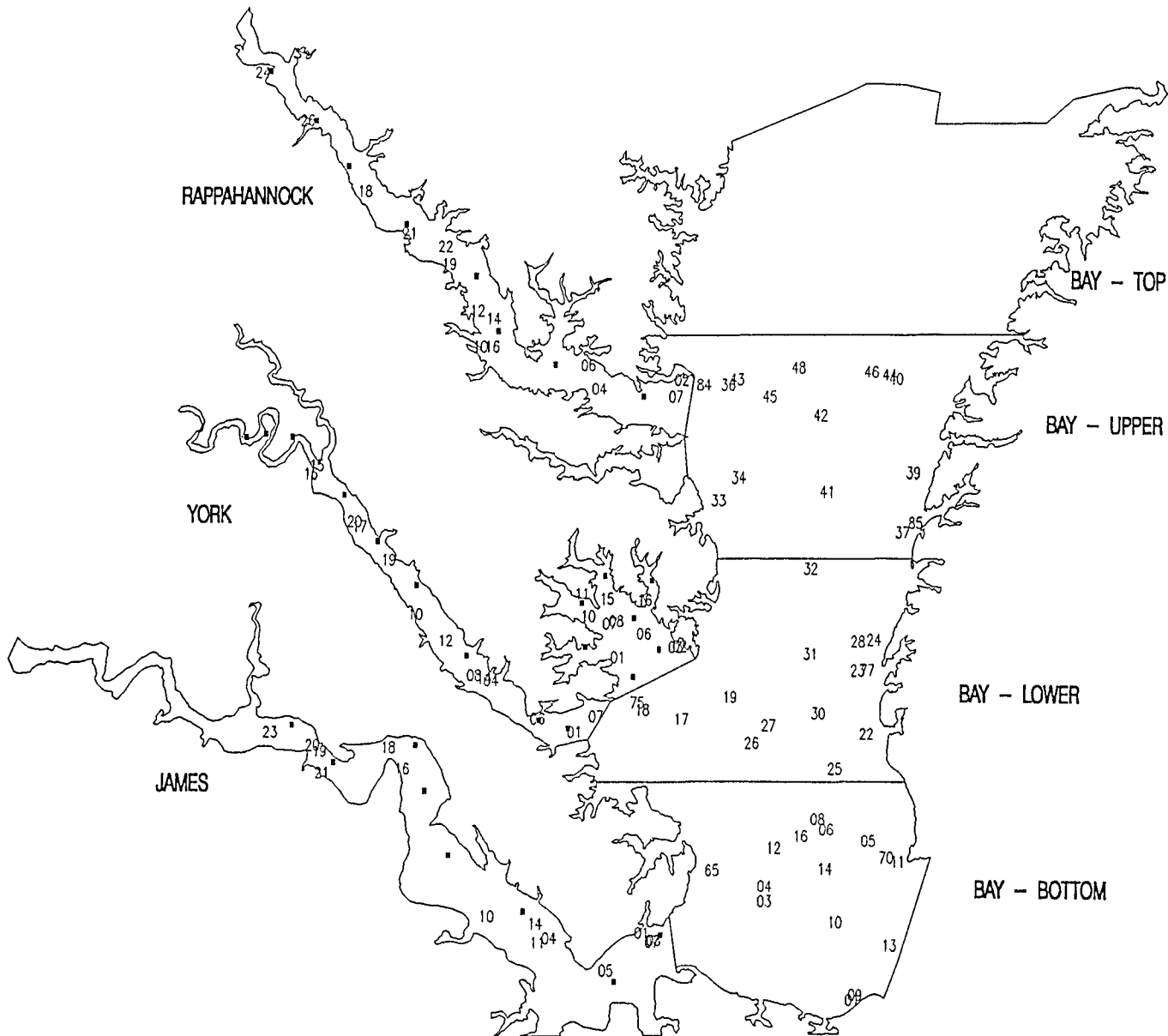
TRAWL SURVEY STATION LOCATIONS JUNE, 1998



NOTE: BOXES INDICATE FIXED RIVER MILE STATIONS,
NUMBERS INDICATE RANDOM STATIONS

Figure 8.

TRAWL SURVEY STATION LOCATIONS JULY, 1998



NOTE: BOXES INDICATE FIXED RIVER MILE STATIONS,
NUMBERS INDICATE RANDOM STATIONS

Figure 9.

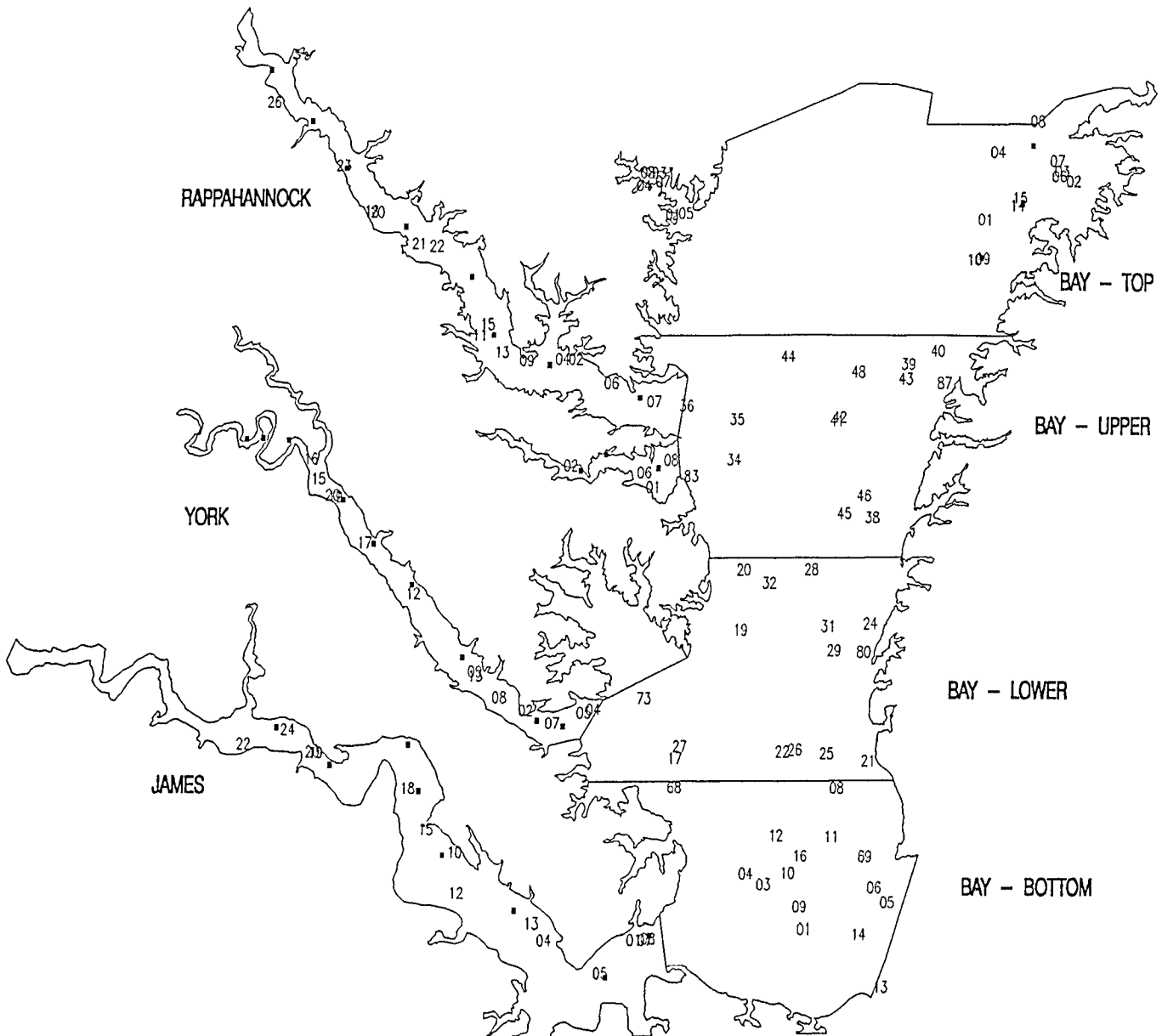
TRAWL SURVEY STATION LOCATIONS AUGUST, 1998



NOTE: BOXES INDICATE FIXED RIVER MILE STATIONS,
NUMBERS INDICATE RANDOM STATIONS

Figure 10.

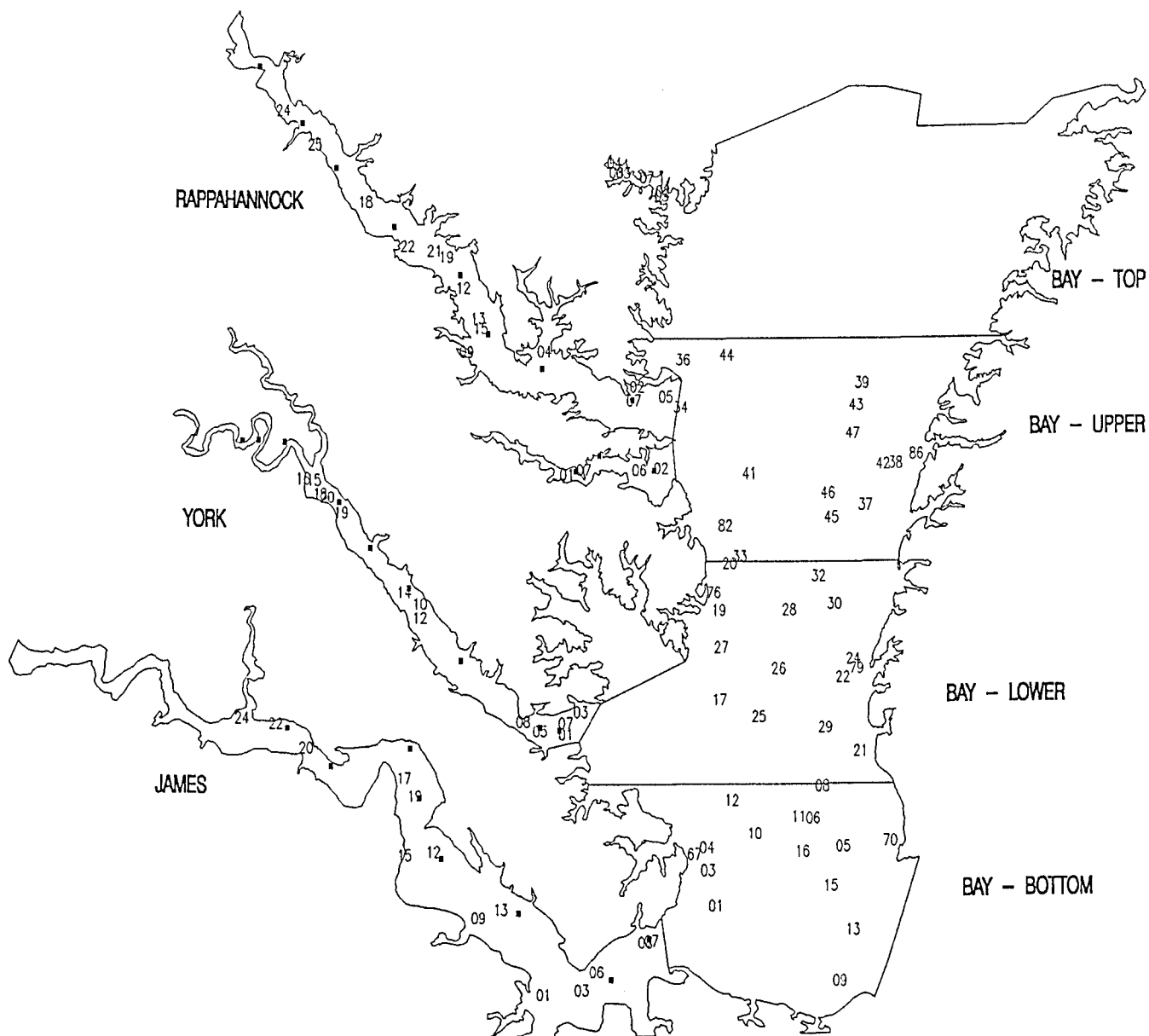
TRAWL SURVEY STATION LOCATIONS SEPTEMBER, 1998



NOTE: BOXES INDICATE FIXED RIVER MILE STATIONS,
NUMBERS INDICATE RANDOM STATIONS

Figure 11.

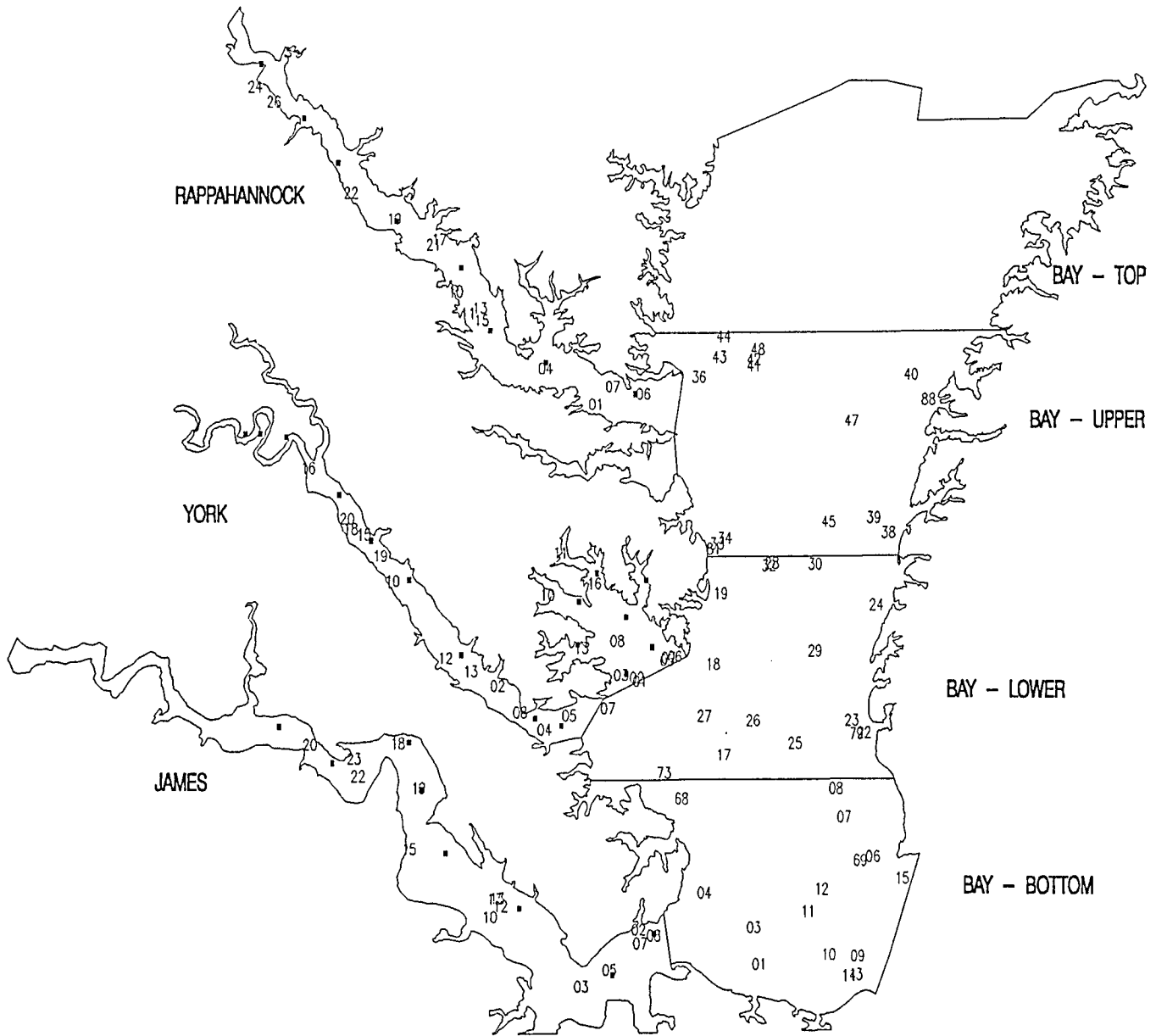
TRAWL SURVEY STATION LOCATIONS OCTOBER, 1998



NOTE: BOXES INDICATE FIXED RIVER MILE STATIONS,
NUMBERS INDICATE RANDOM STATIONS

Figure 12.

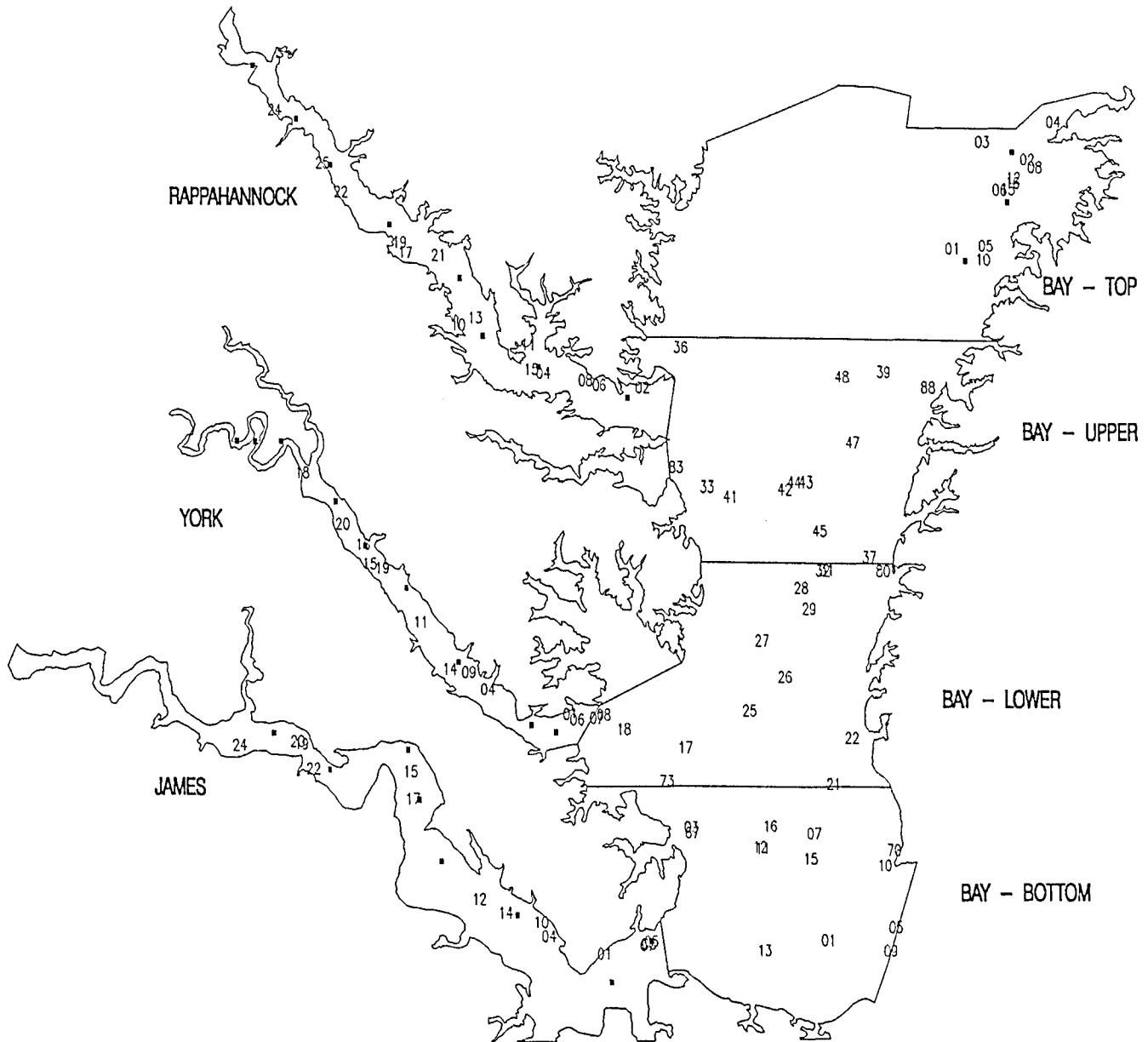
TRAWL SURVEY STATION LOCATIONS NOVEMBER, 1998



NOTE: BOXES INDICATE FIXED RIVER MILE STATIONS,
NUMBERS INDICATE RANDOM STATIONS

Figure 13.

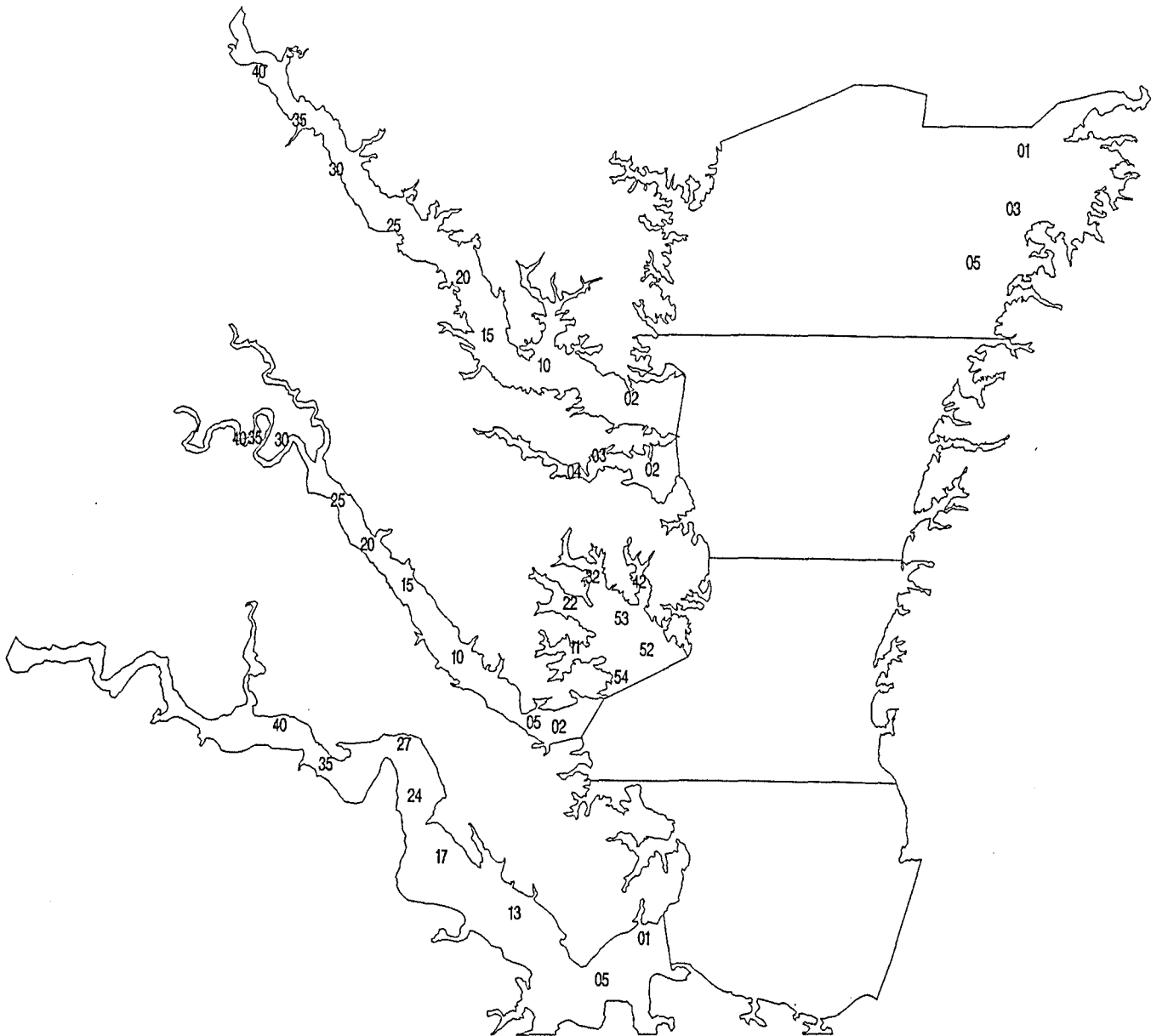
TRAWL SURVEY STATION LOCATIONS DECEMBER, 1998



NOTE: BOXES INDICATE FIXED RIVER MILE STATIONS,
NUMBERS INDICATE RANDOM STATIONS

Figure 14.

TRAWL SURVEY FIXED STATION LOCATIONS 1998



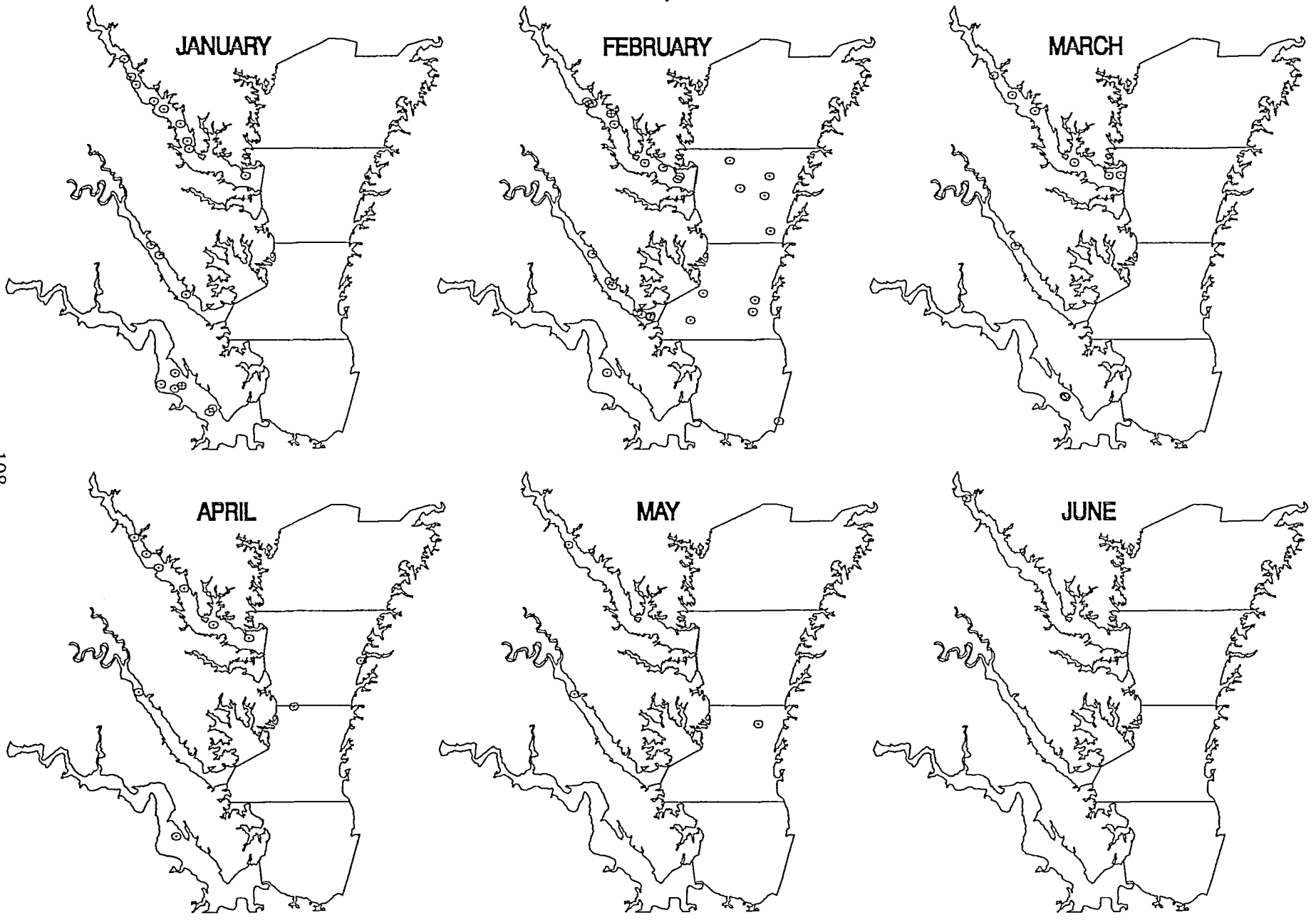
NOTE: Fixed Stations are Non-Random, Located at Selected River Miles, They are Sampled Each Month.

Figures 15-49. Geographic distribution, by month, of selected species. Density values represent total number of specimens caught.

- Notes:
- A. Due to LORAN distortion at upriver stations and to computer software control of the placement of figures on these maps, the locations shown may vary slightly from the actual stations occupied. For exact latitude and longitude refer to Tables 2-25.
 - B. A single winter cruise was conducted in February for the Chesapeake Bay during the period from January through March 1998.
 - C. For purposes of clarity, if a second tow was performed at a given station, the second tow will be offset two minutes north and two minutes east from the original coordinates.
 - D. The brief and long-fin squid are presented under one heading as "Squid Species". The three species of penaeid shrimp are also combined. Three of the blue crab categories (male, juvenile female, and adult female) are shown independently, as well as summed, "All Crabs".

Figure 15.

Alewife, 1998



NUMBER CAUGHT:

⊙ = 1 to 9

⊕ = 10 to 99

⊗ = 100 to 999

● = ≥ 1,000

198



Alewife, 1998

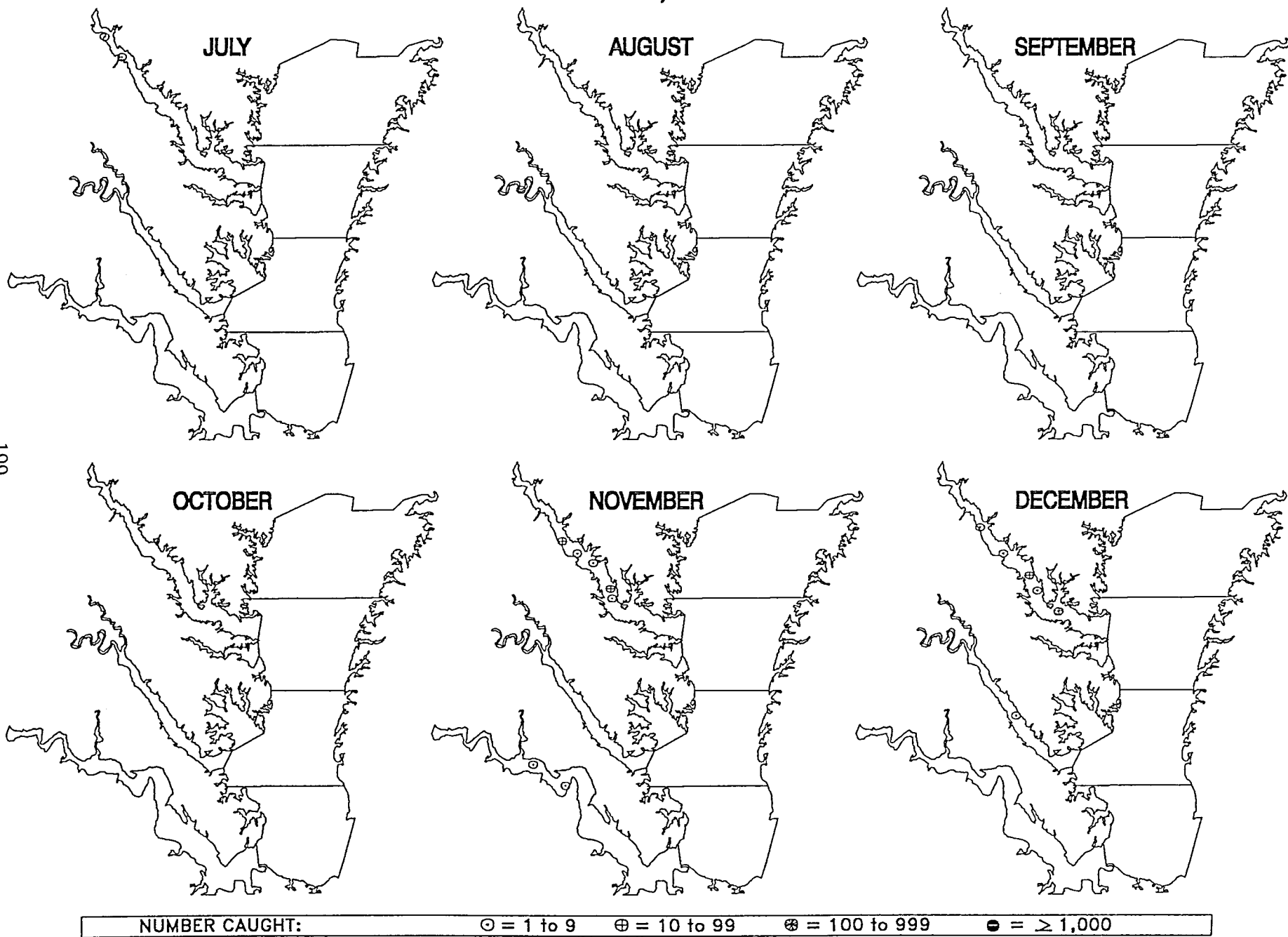
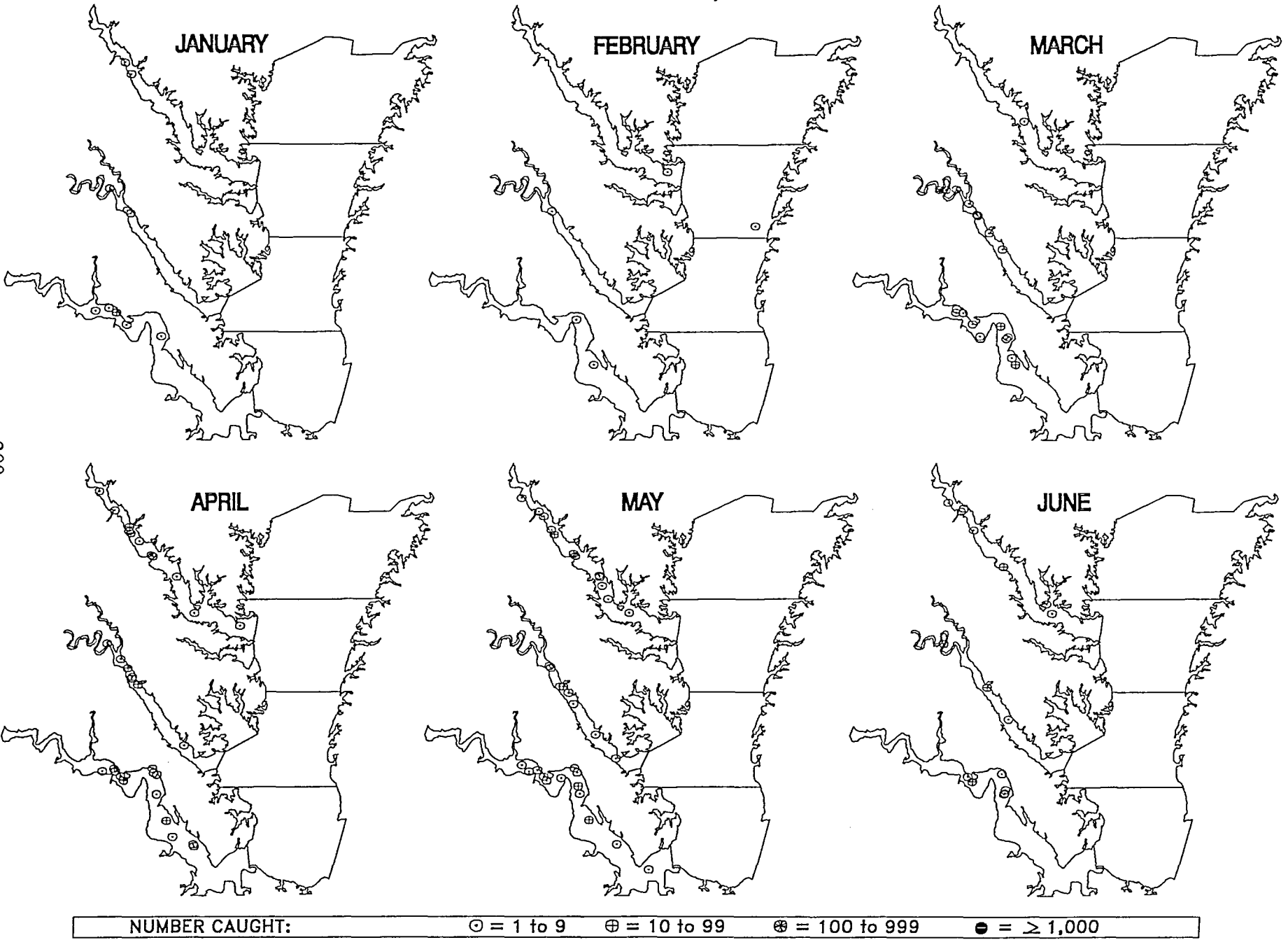


Figure 16.

American Eel, 1998



200

American Eel, 1998

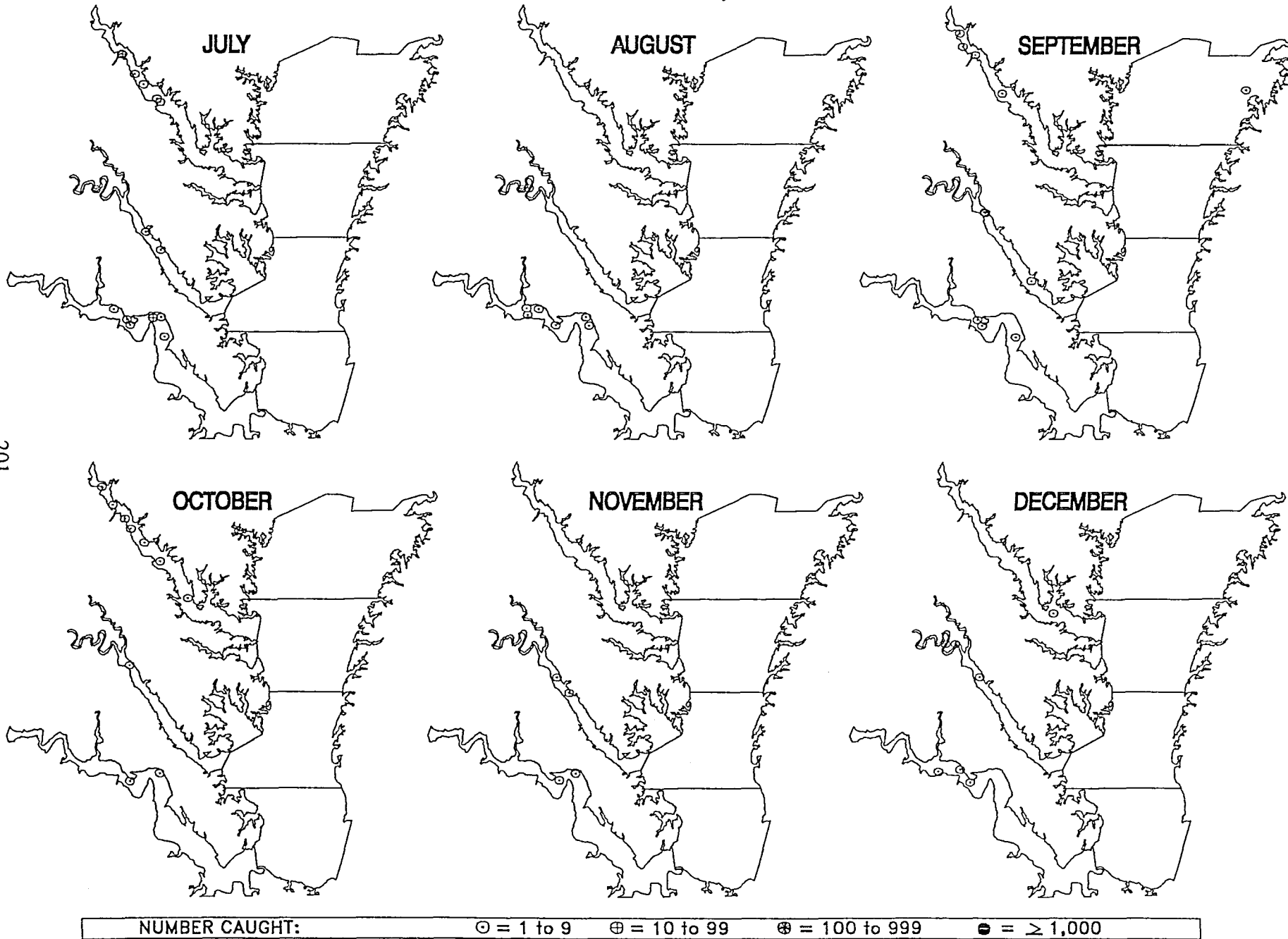
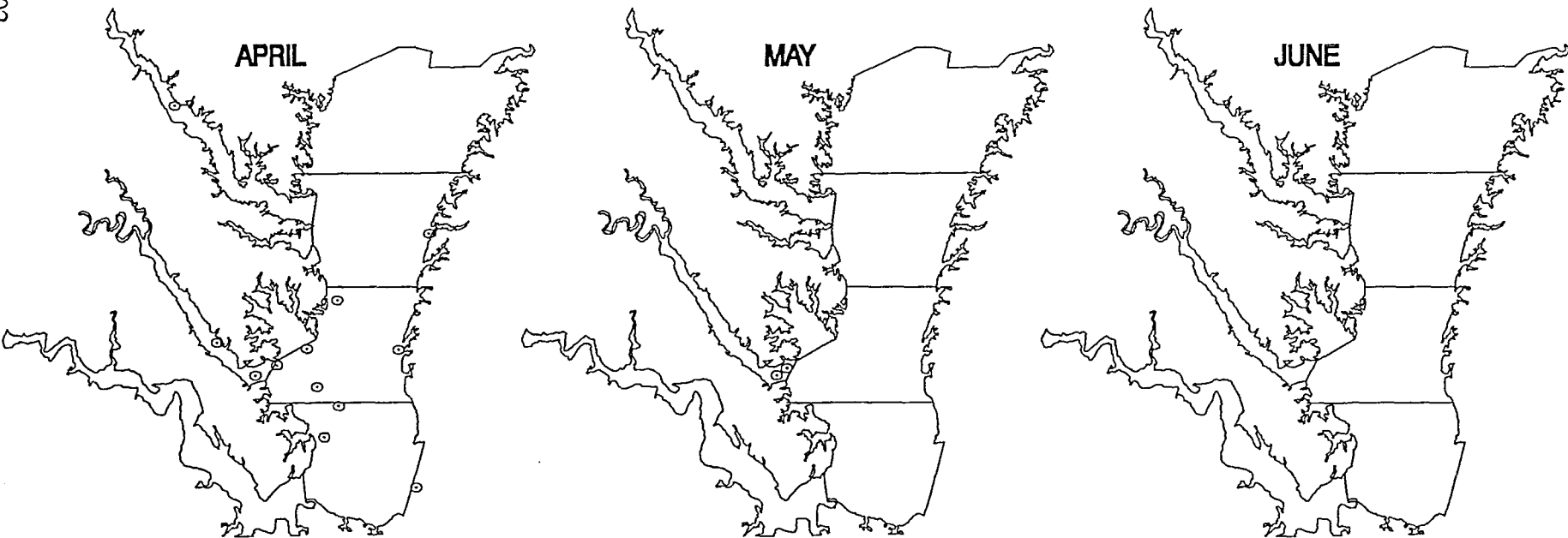
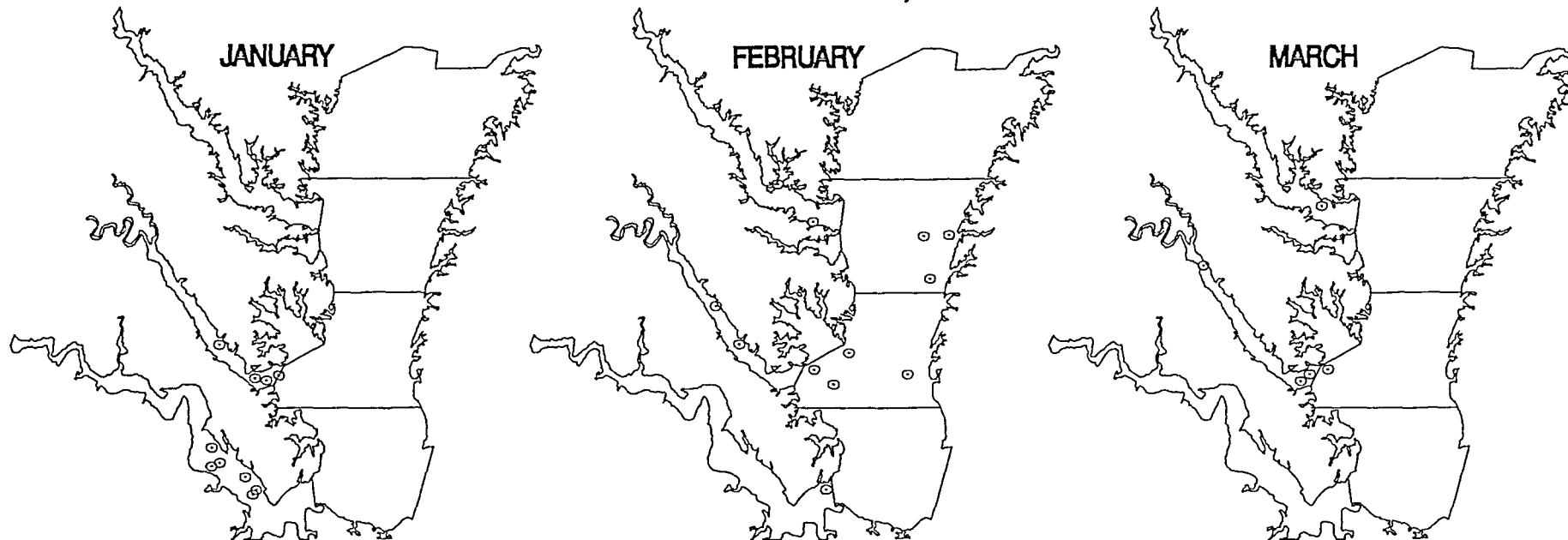


Figure 16. (cont.)

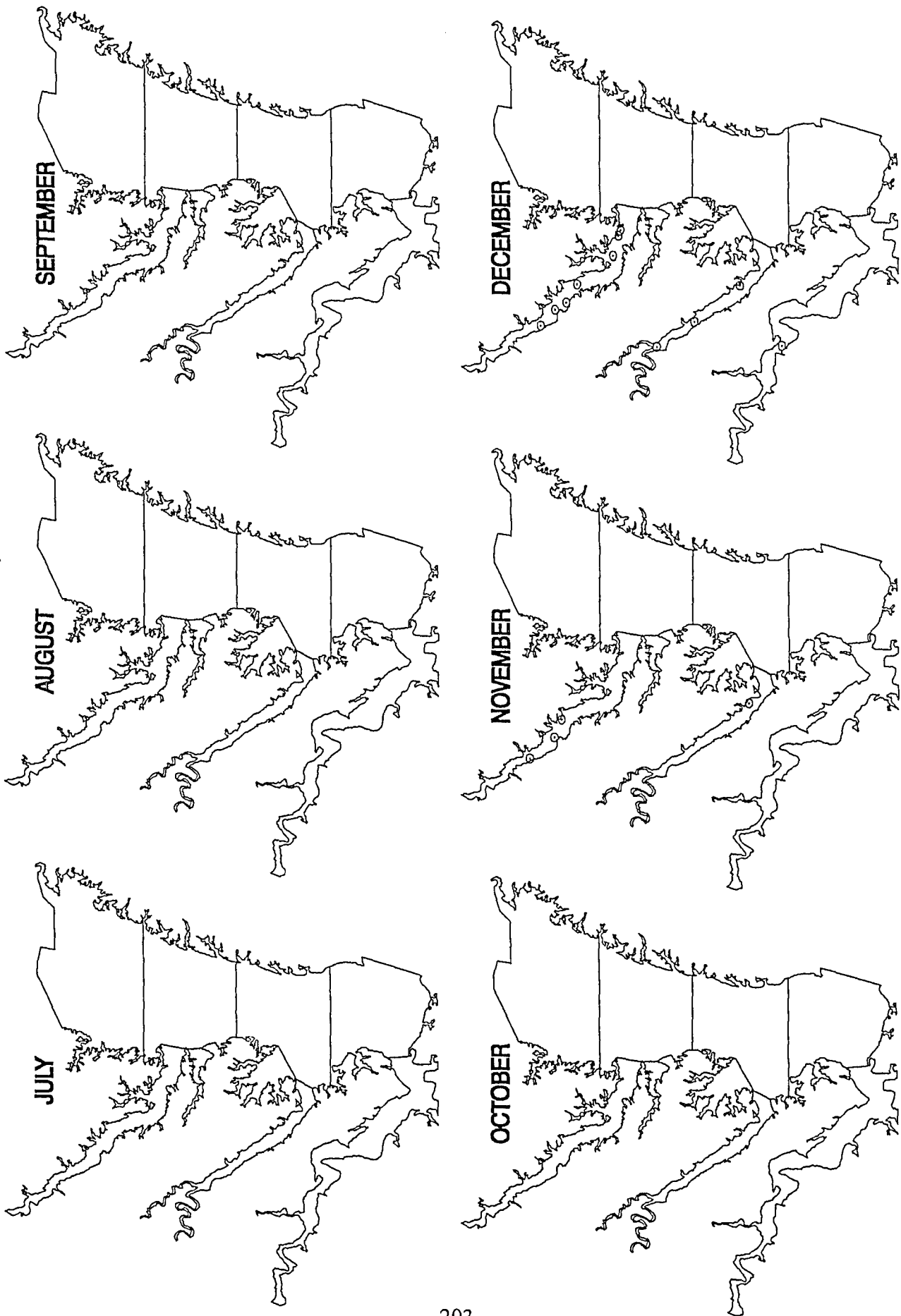
American Shad, 1998



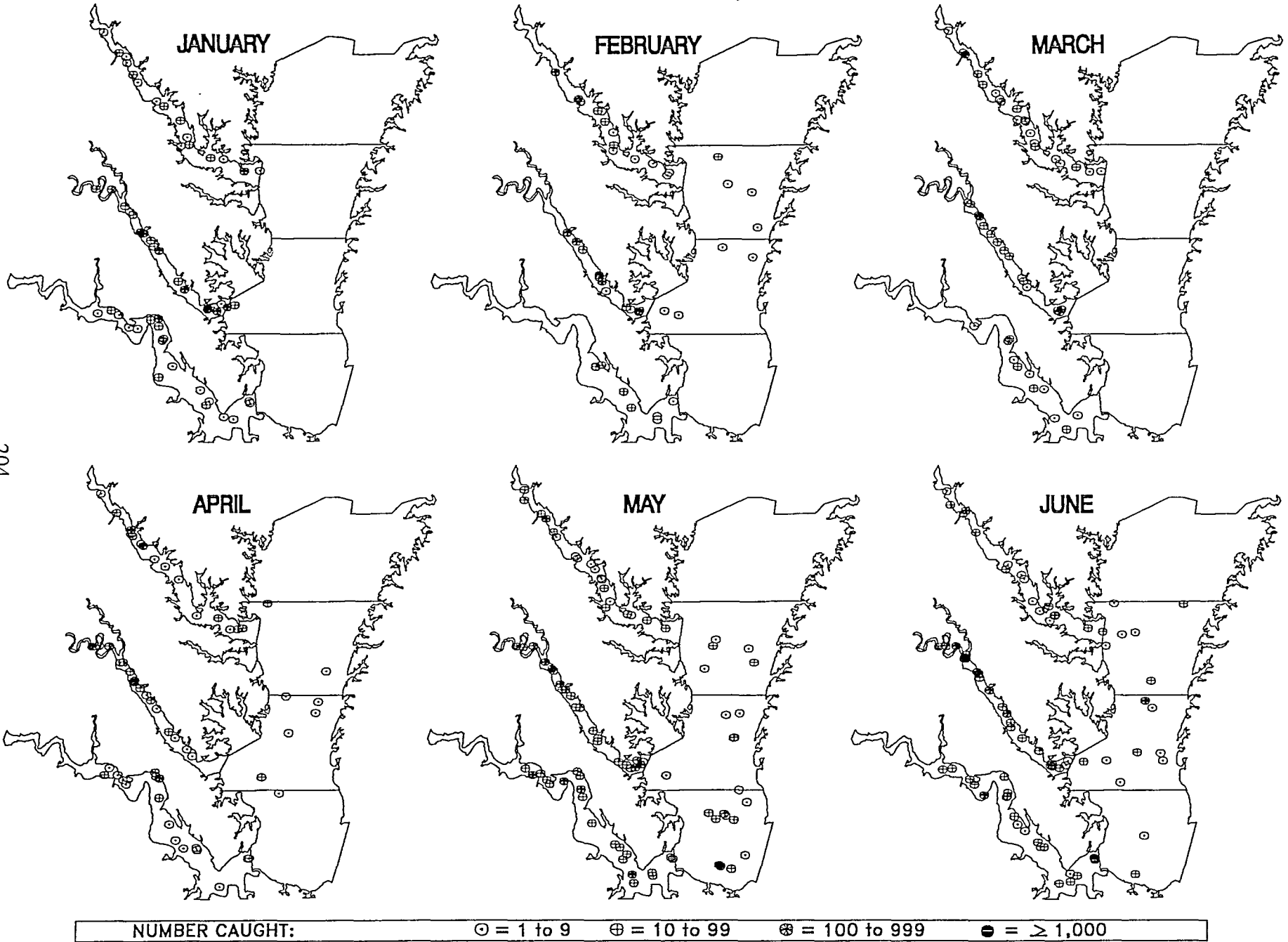
NUMBER CAUGHT: ⊙ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = ≥ 1,000



American Shad, 1998



Atlantic Croaker, 1998



Atlantic Croaker, 1998

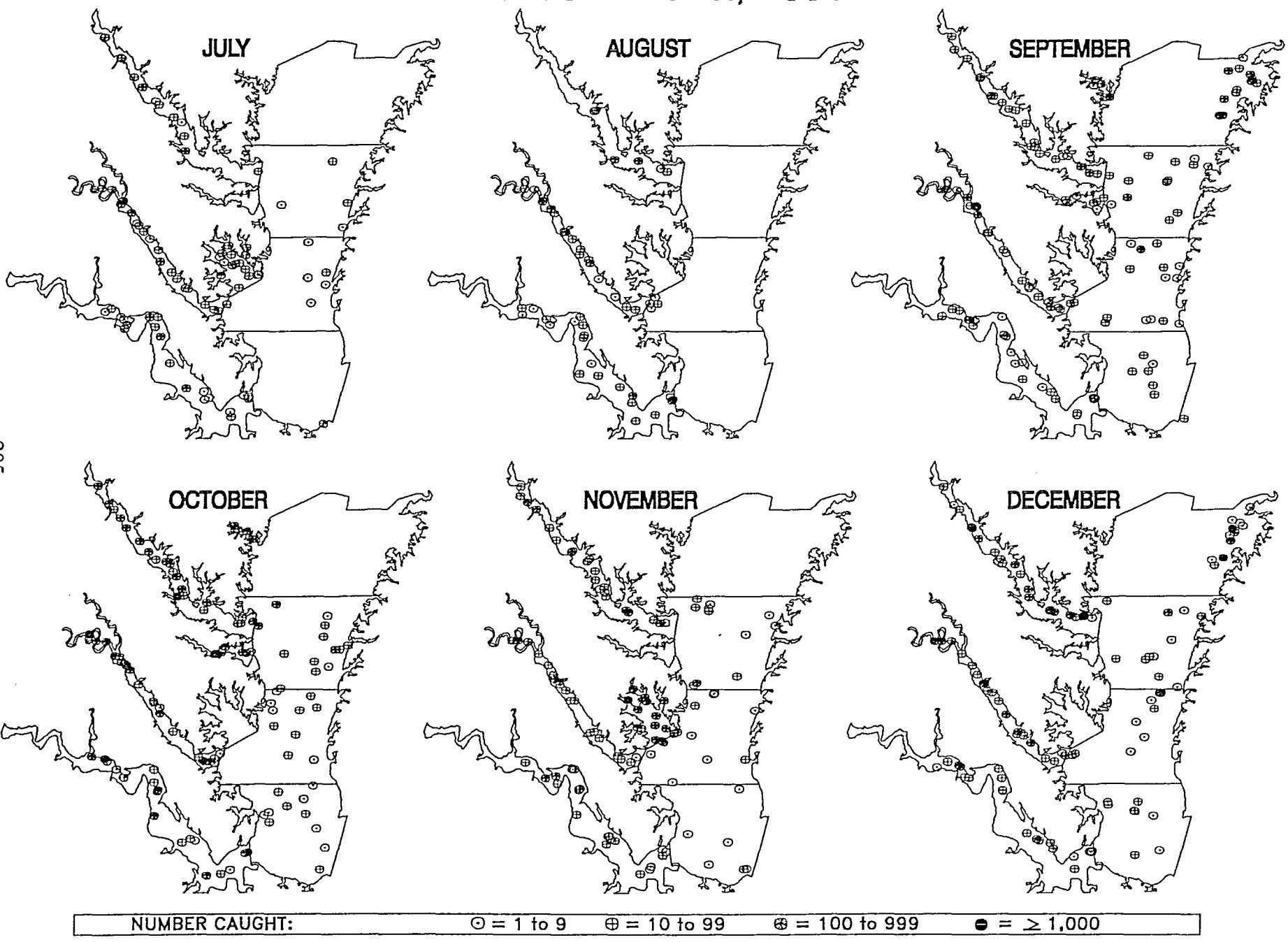


Figure 18. (cont.)

Atlantic Menhaden, 1998

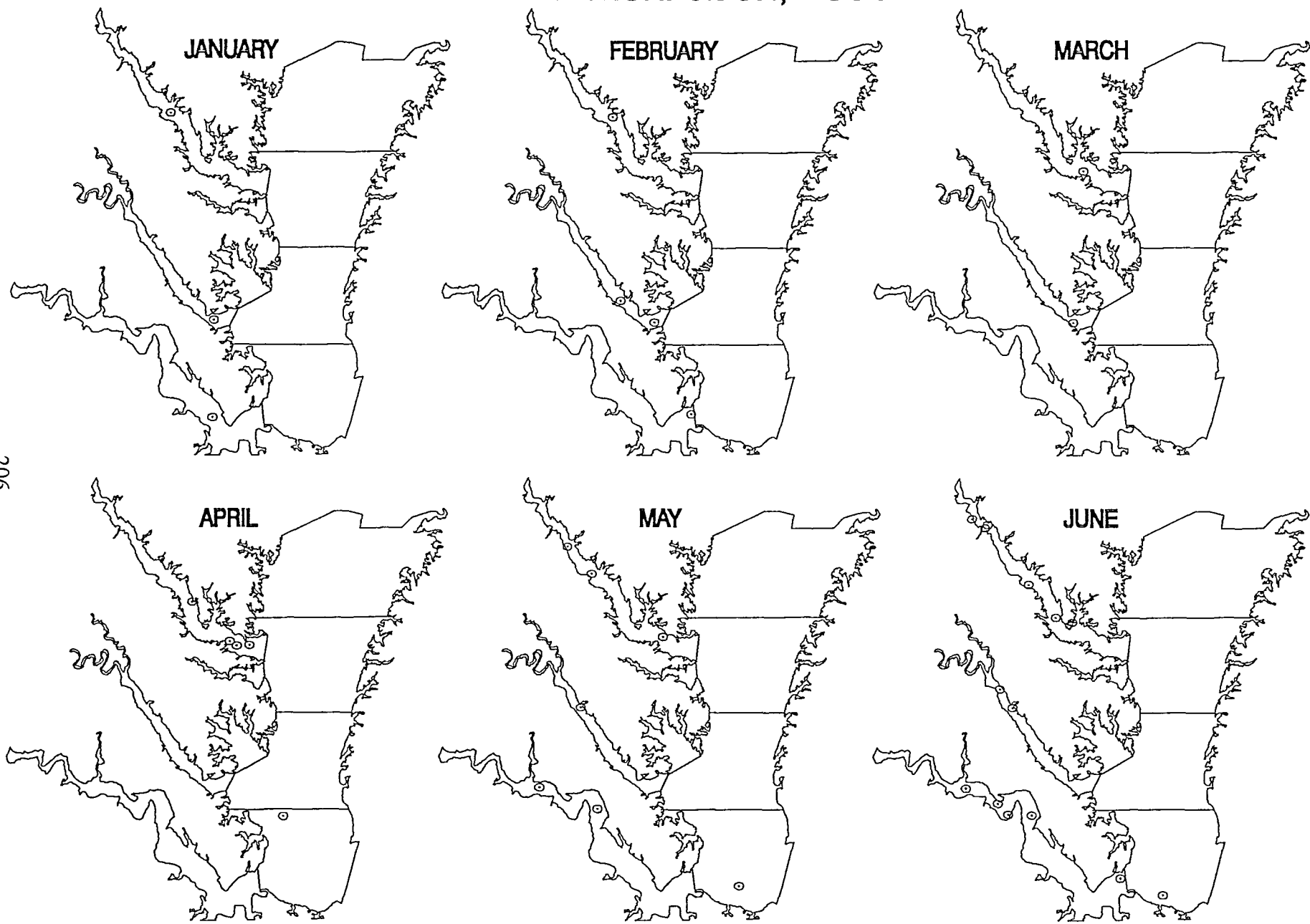


Figure 19.

NUMBER CAUGHT:

○ = 1 to 9

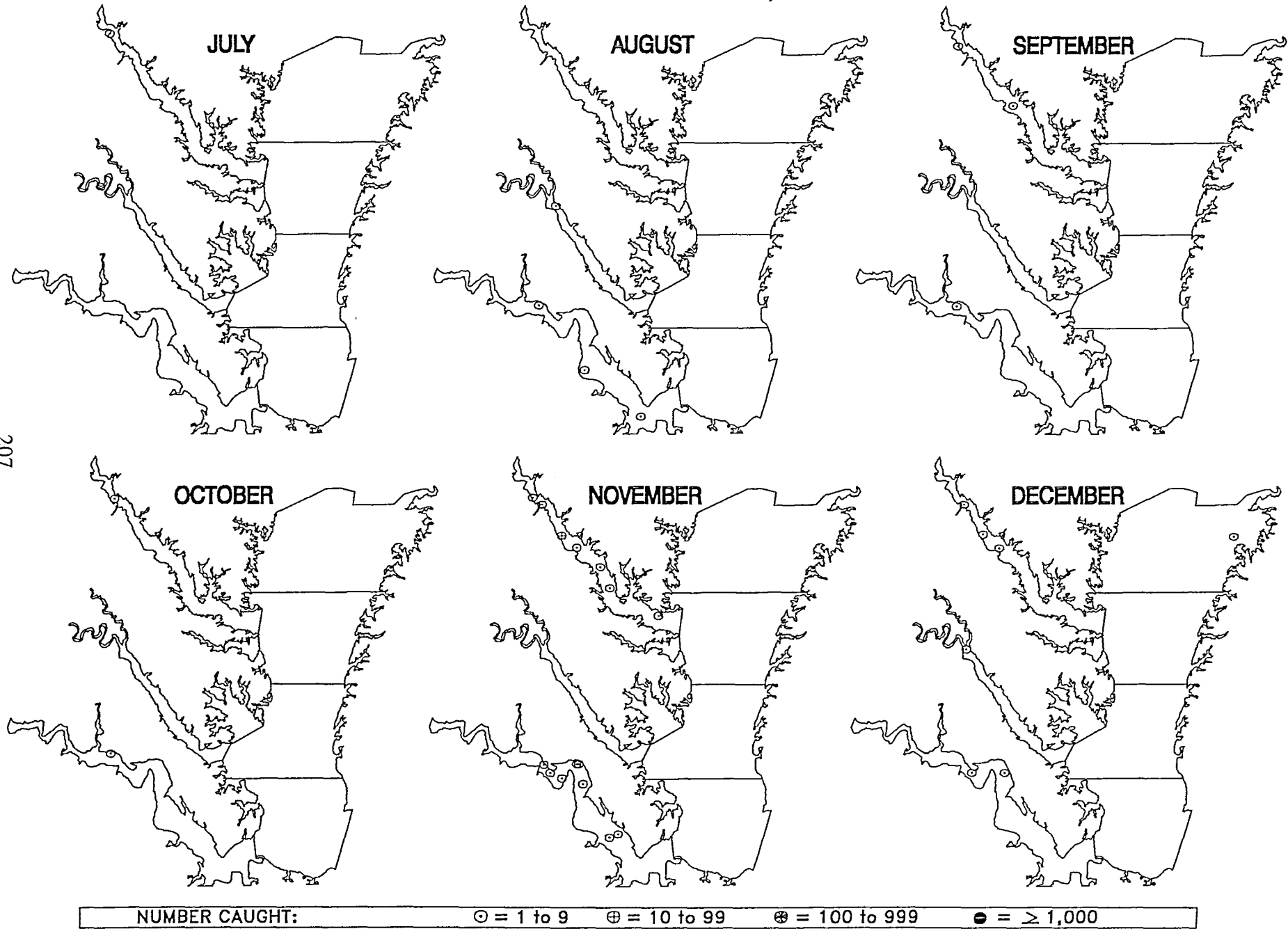
⊕ = 10 to 99

⊗ = 100 to 999

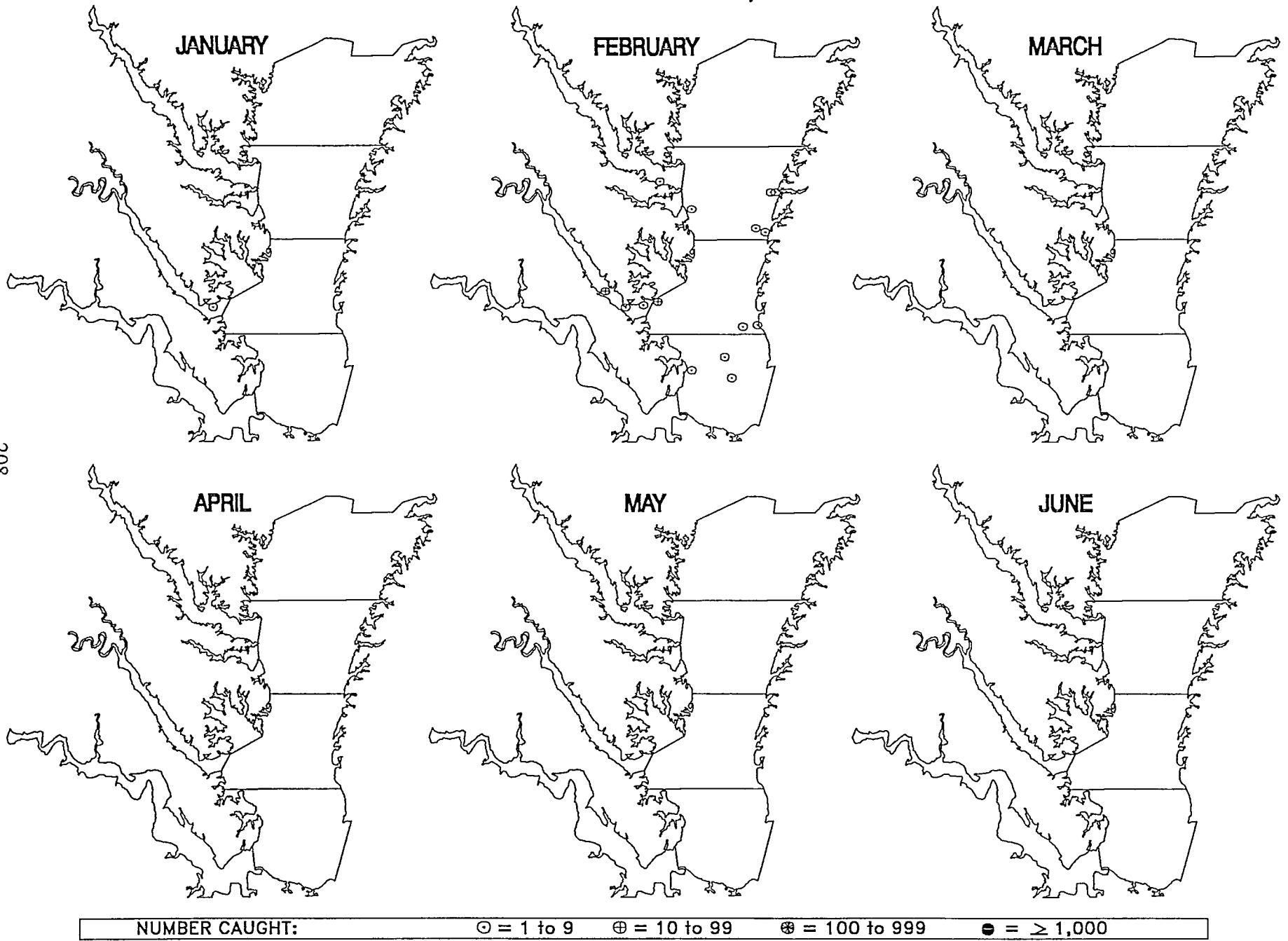
● = ≥ 1,000



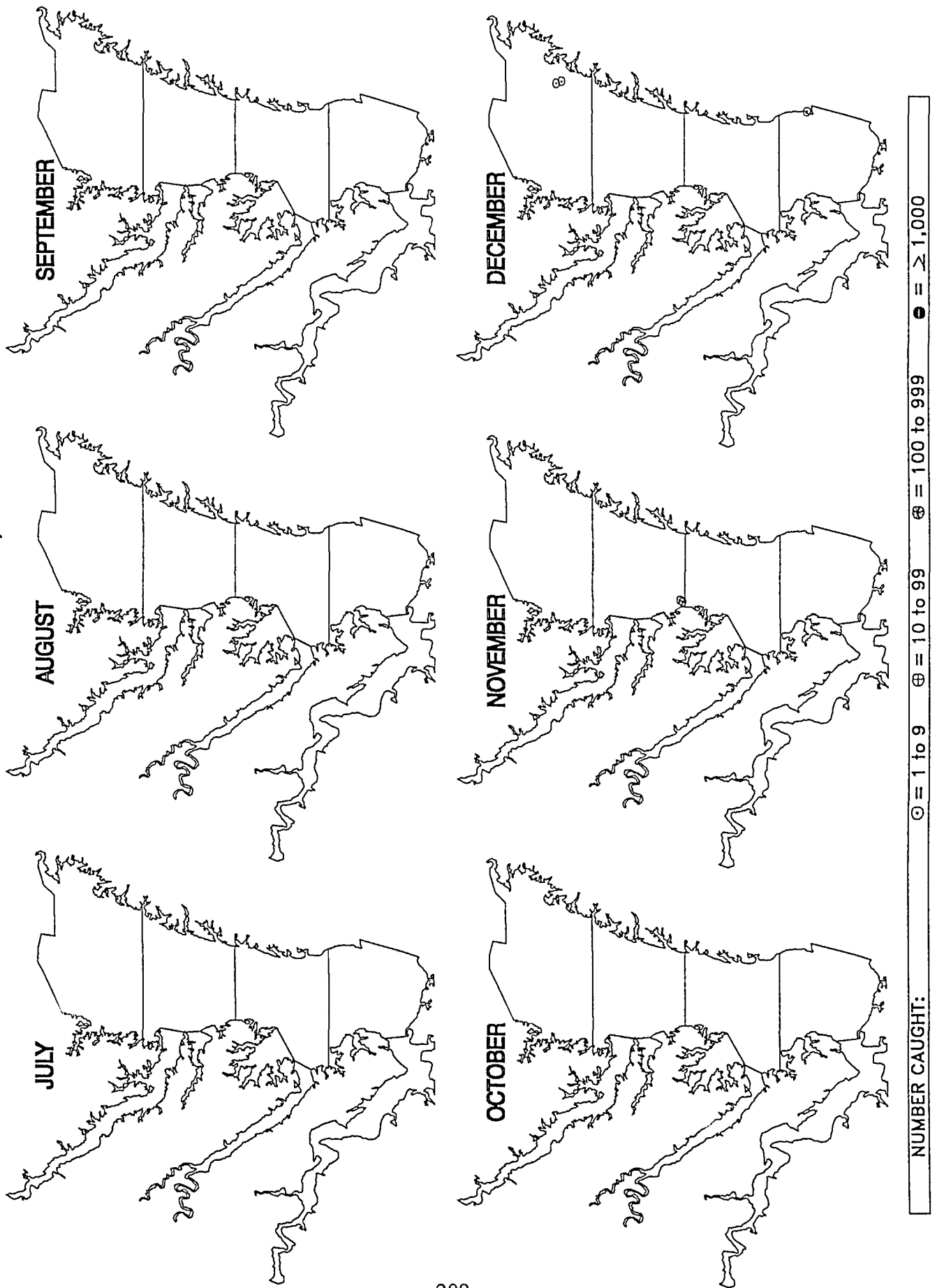
Atlantic Menhaden, 1998



Atlantic Silverside, 1998



Atlantic Silverside, 1998



Atlantic Thread Herring, 1998

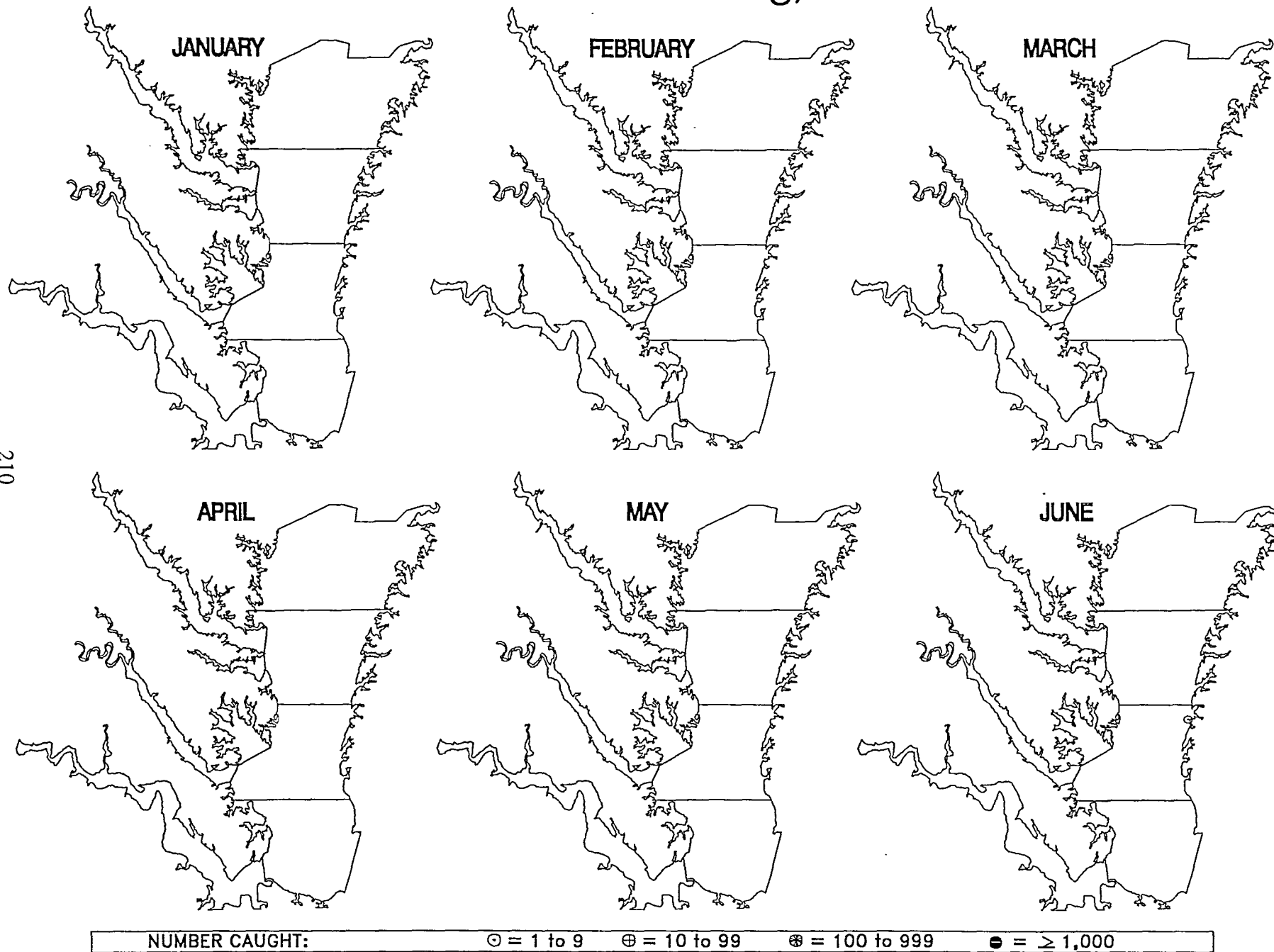


Figure 21.

Atlantic Thread Herring, 1998

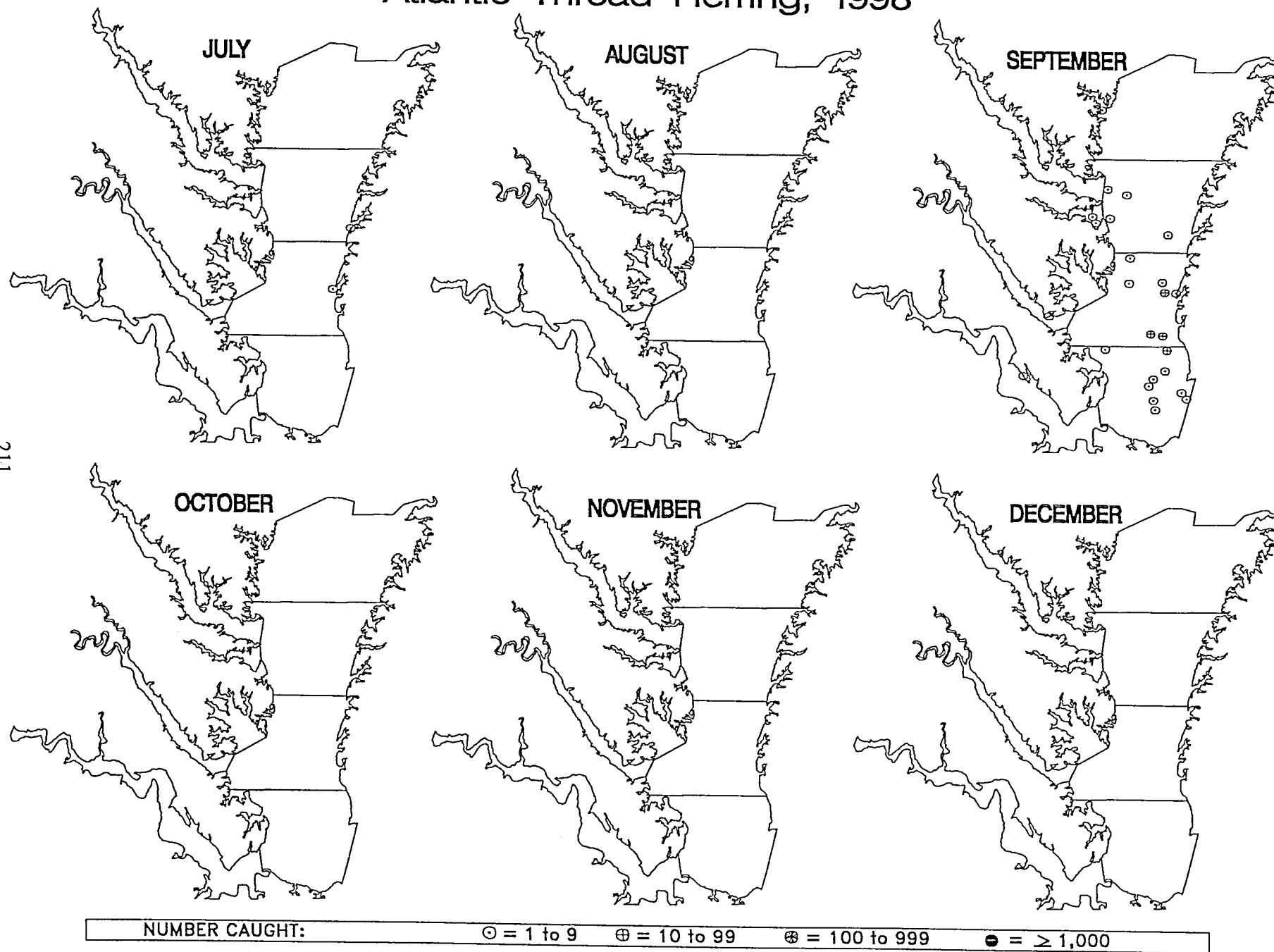
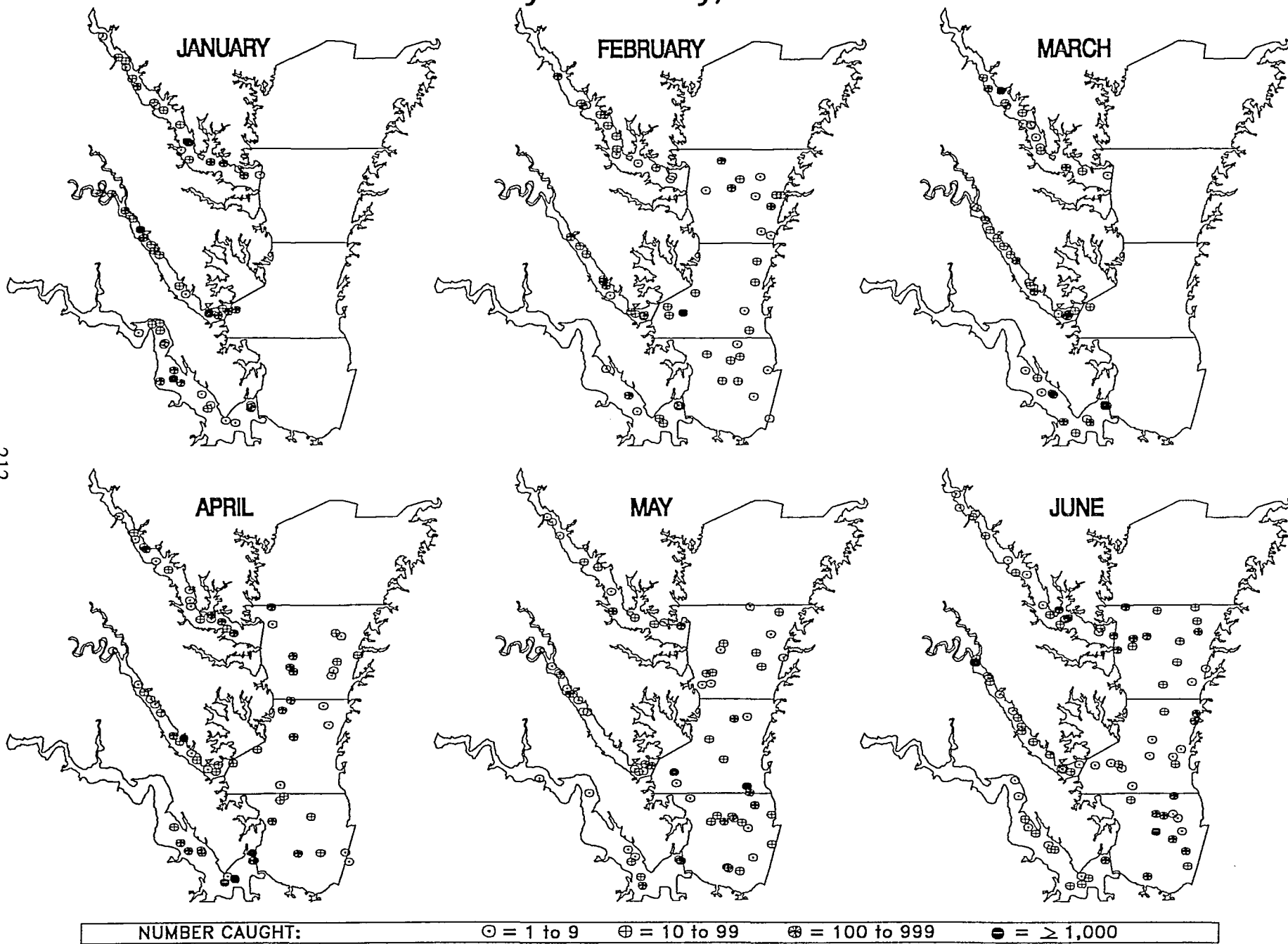
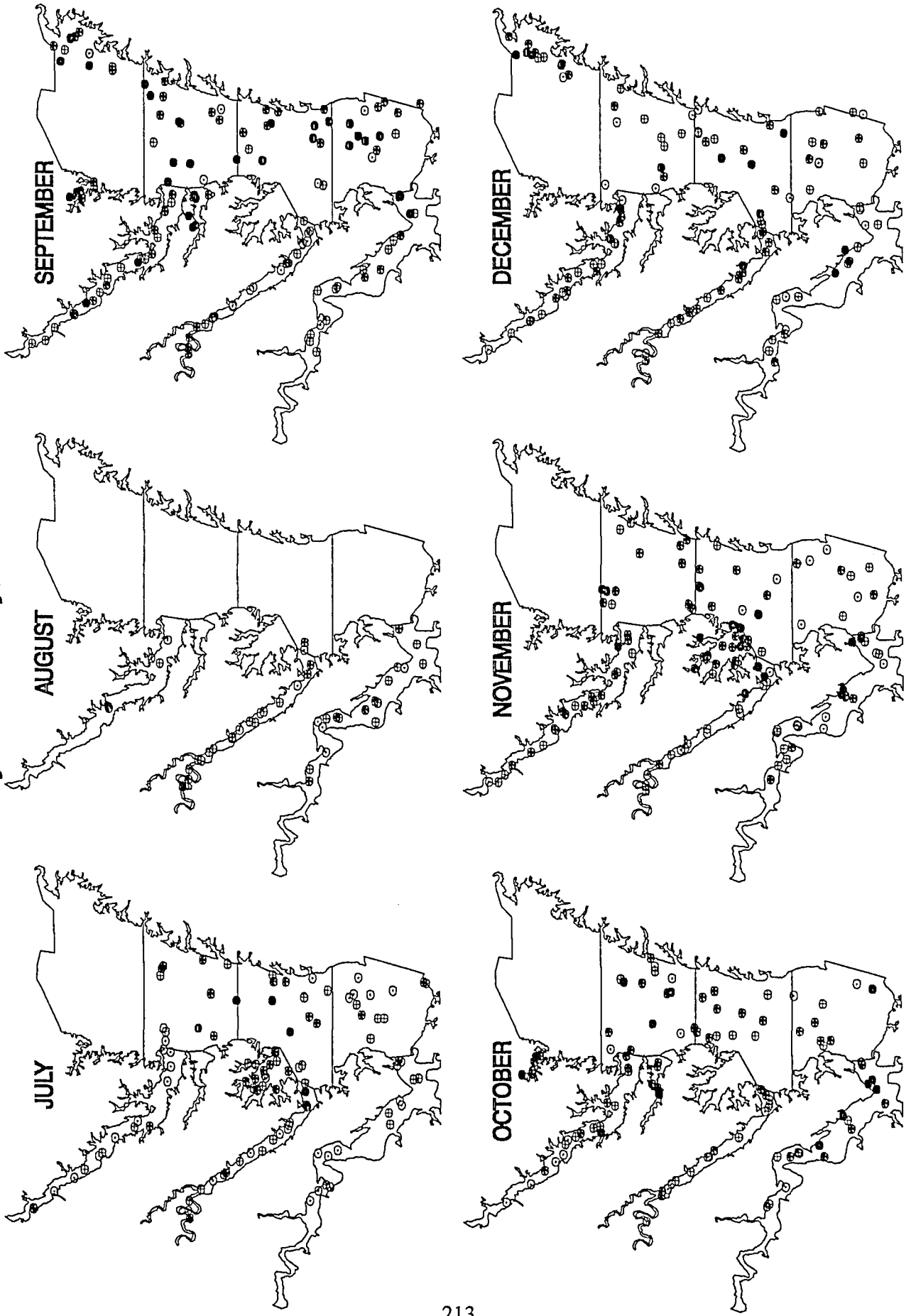


Figure 22.

Bay Anchovy, 1998



Bay Anchovy, 1998



Blackcheek Tonguefish, 1998

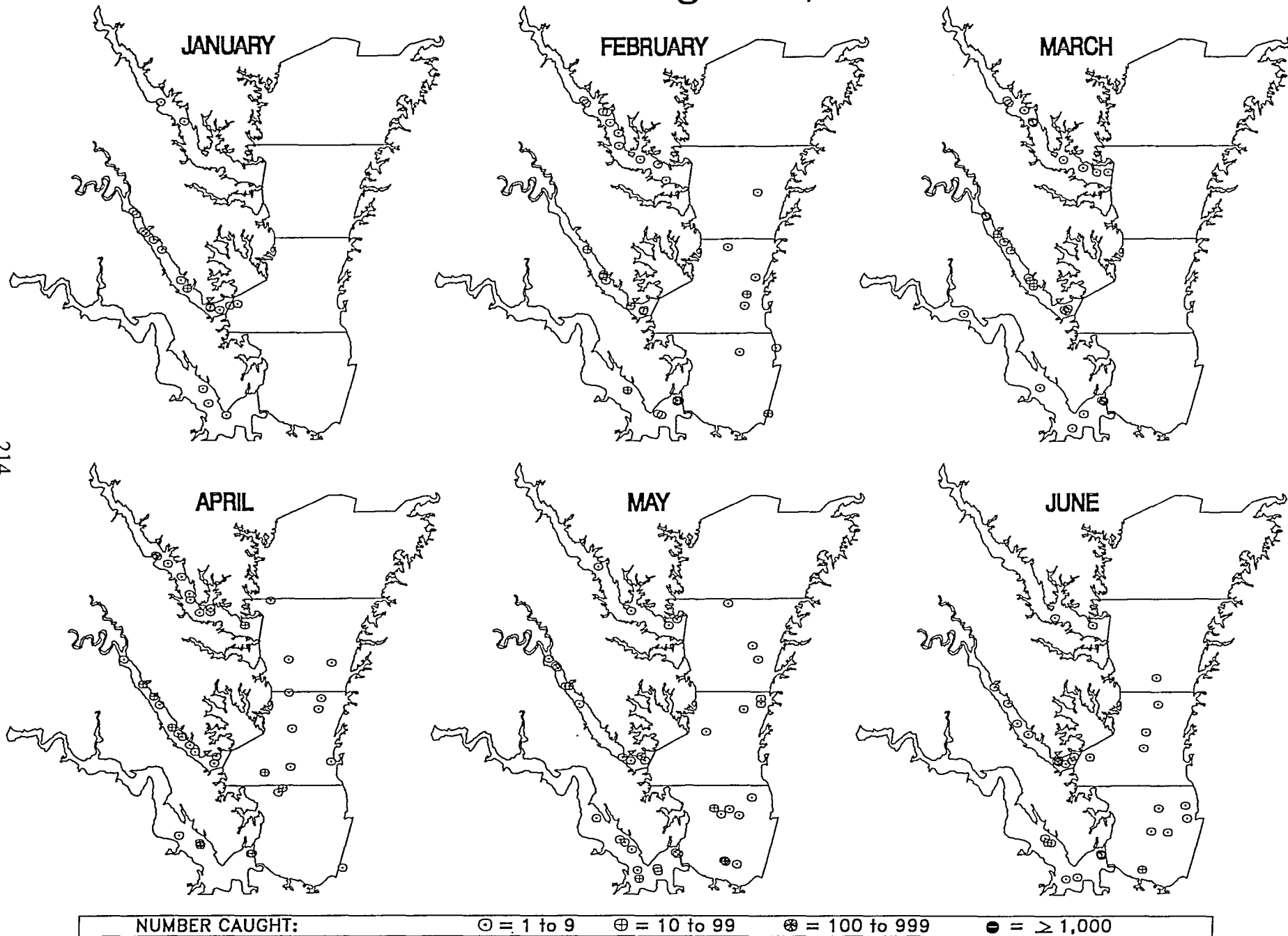
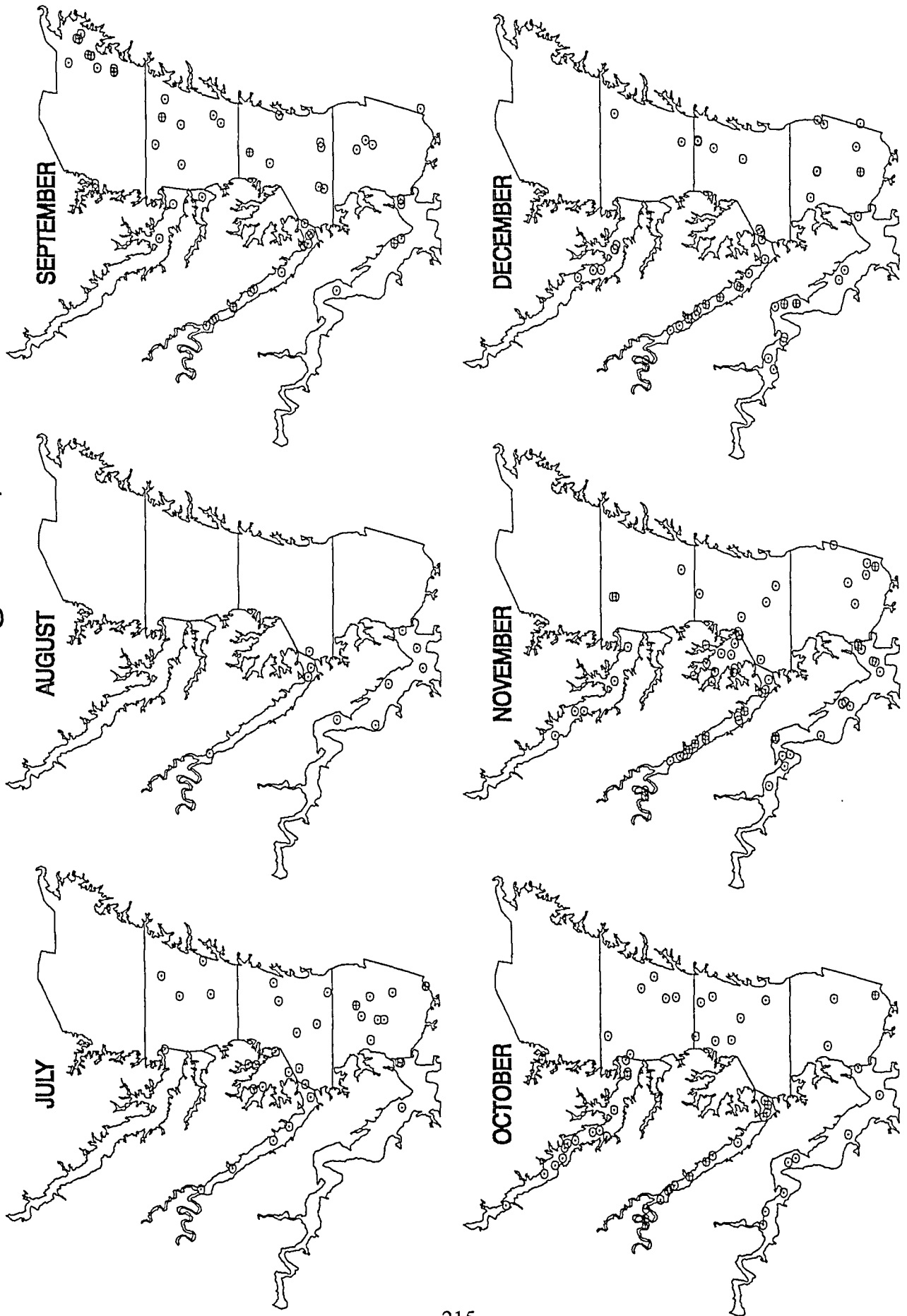


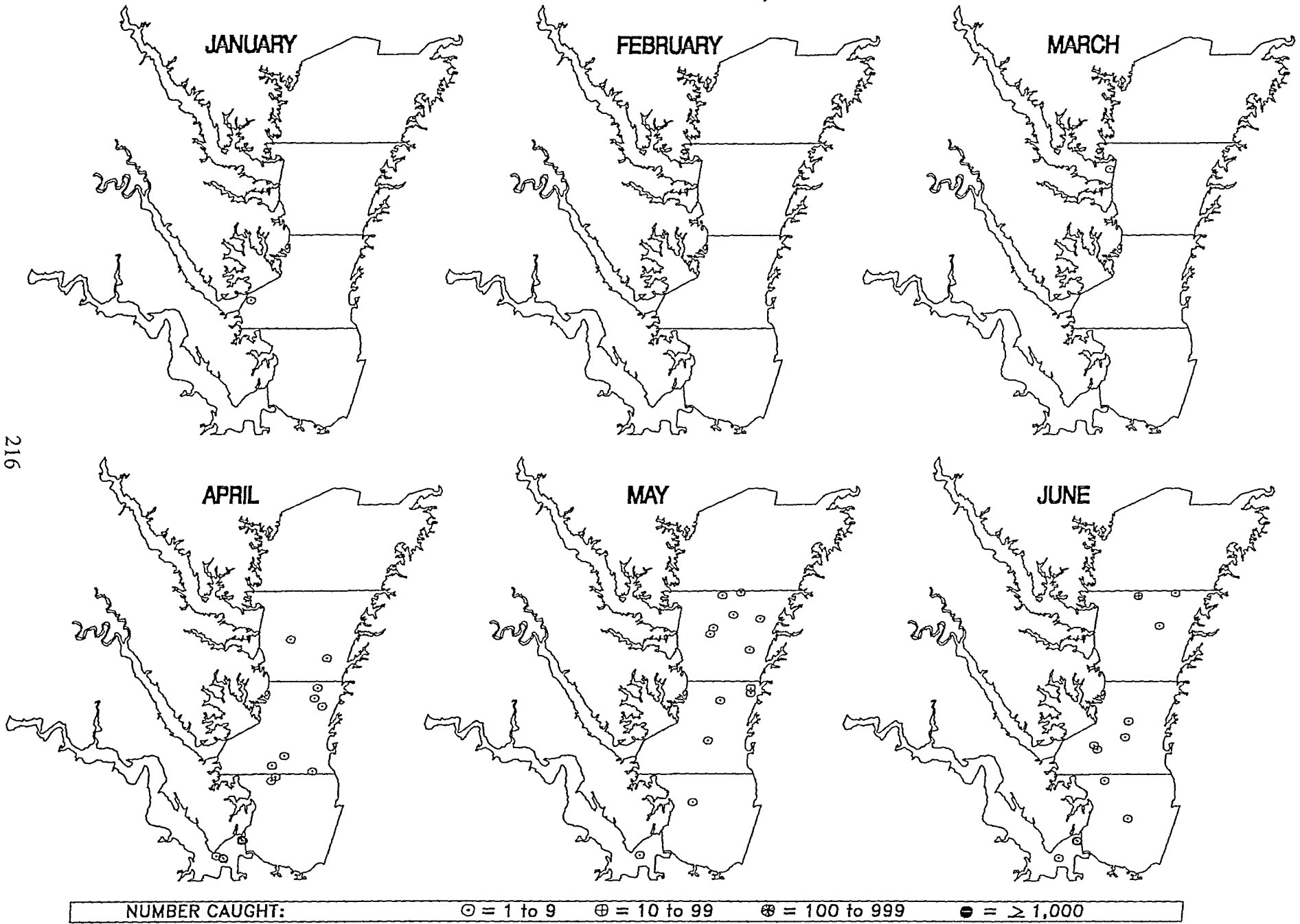
Figure 23.

Blackcheek Tonguefish, 1998

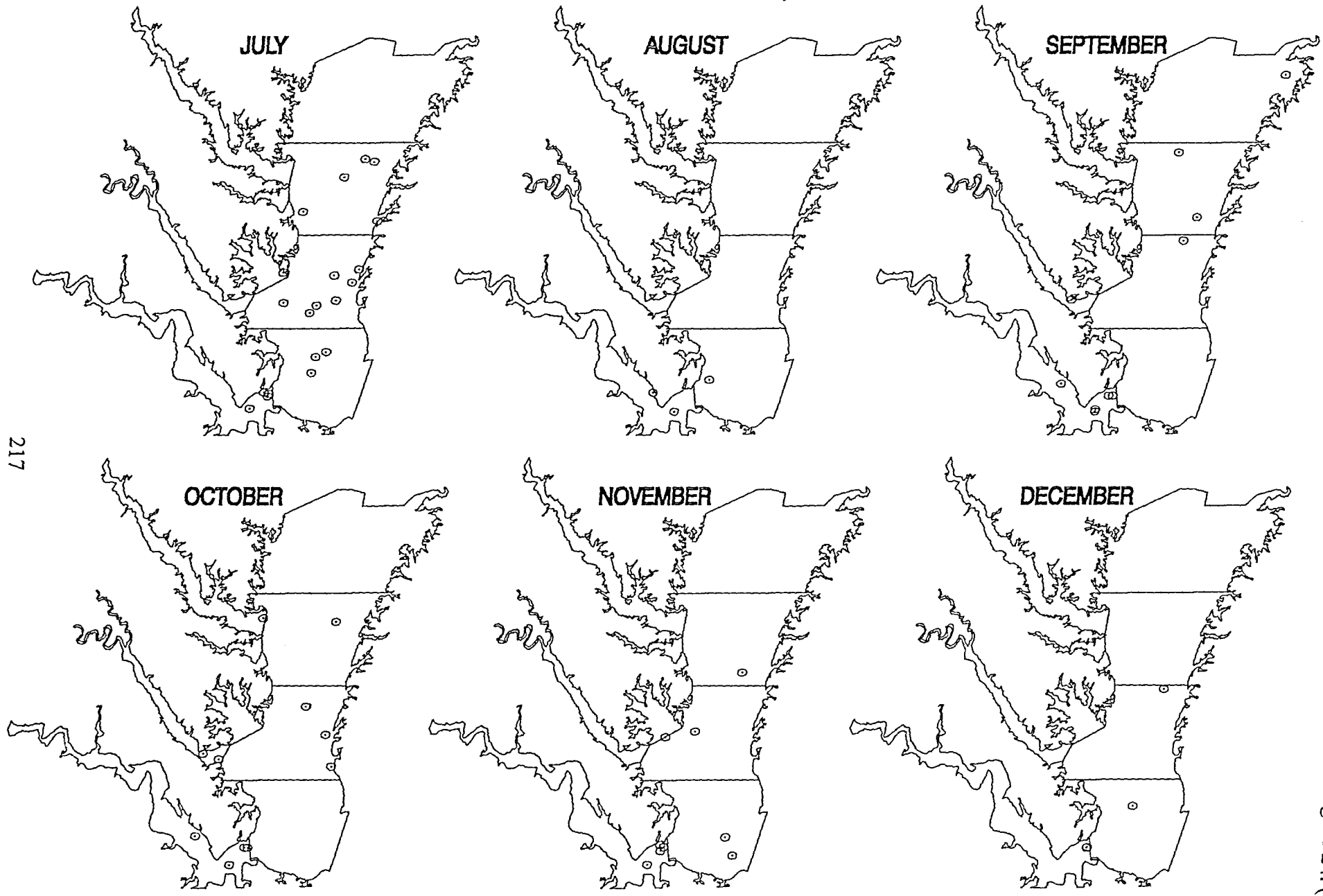


NUMBER CAUGHT:

Black Sea Bass, 1998



Black Sea Bass, 1998

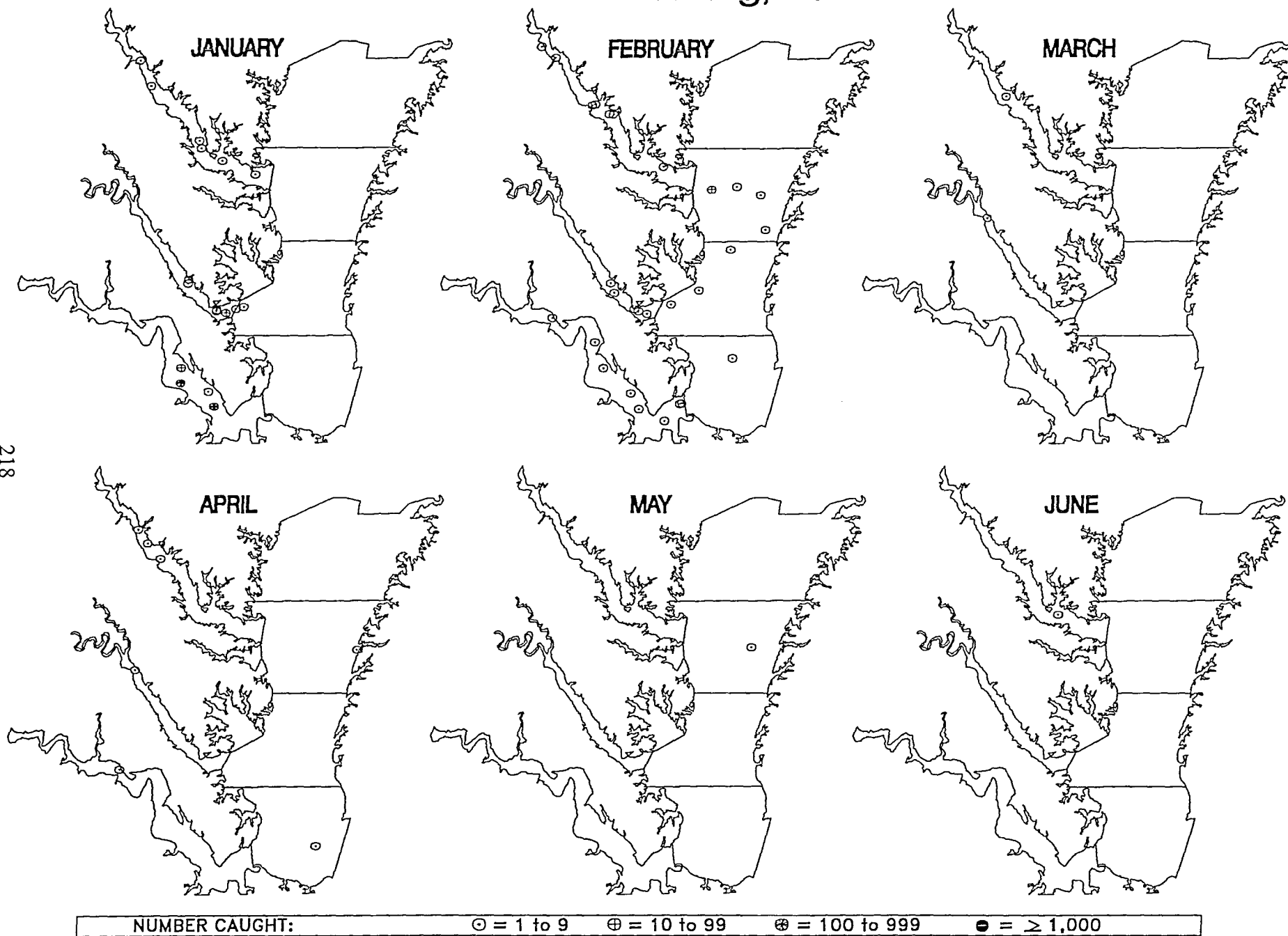


217

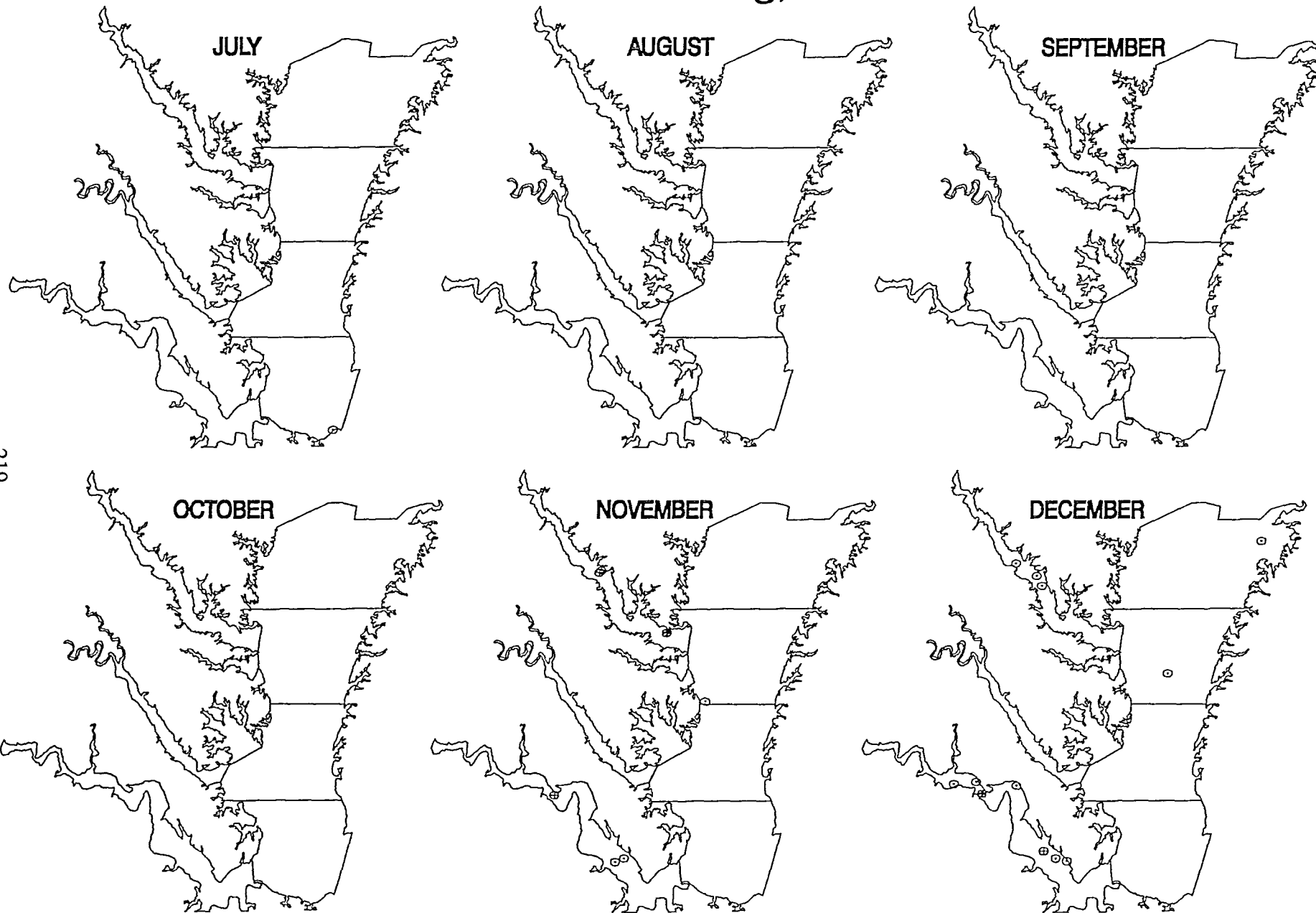
NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = ≥ 1,000

Figure 24. (cont.)

Blueback Herring, 1998



Blueback Herring, 1998



NUMBER CAUGHT:

○ = 1 to 9

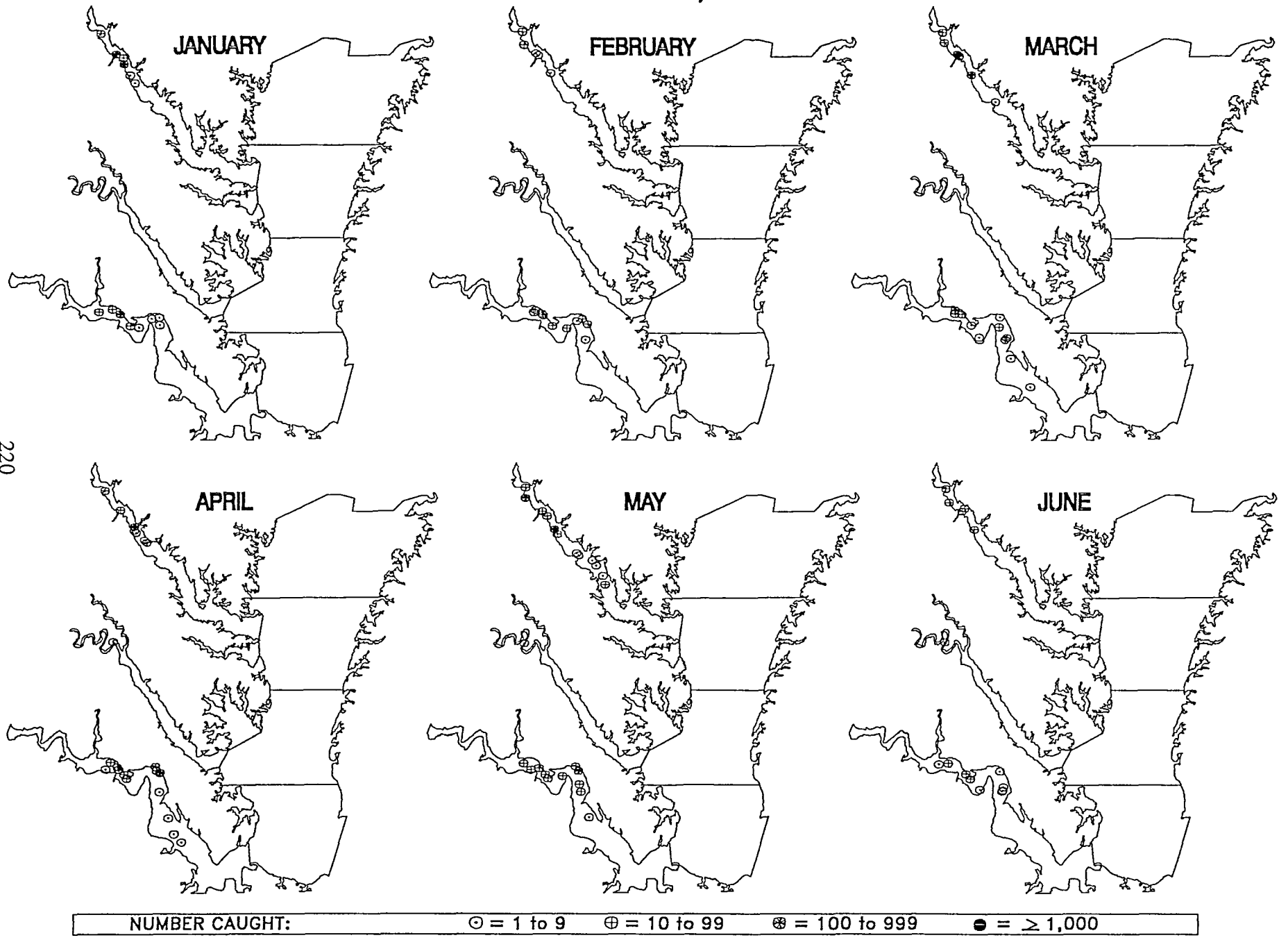
⊕ = 10 to 99

⊗ = 100 to 999

● = ≥ 1,000

Figure 26.

Blue Catfish, 1998



Blue Catfish, 1998

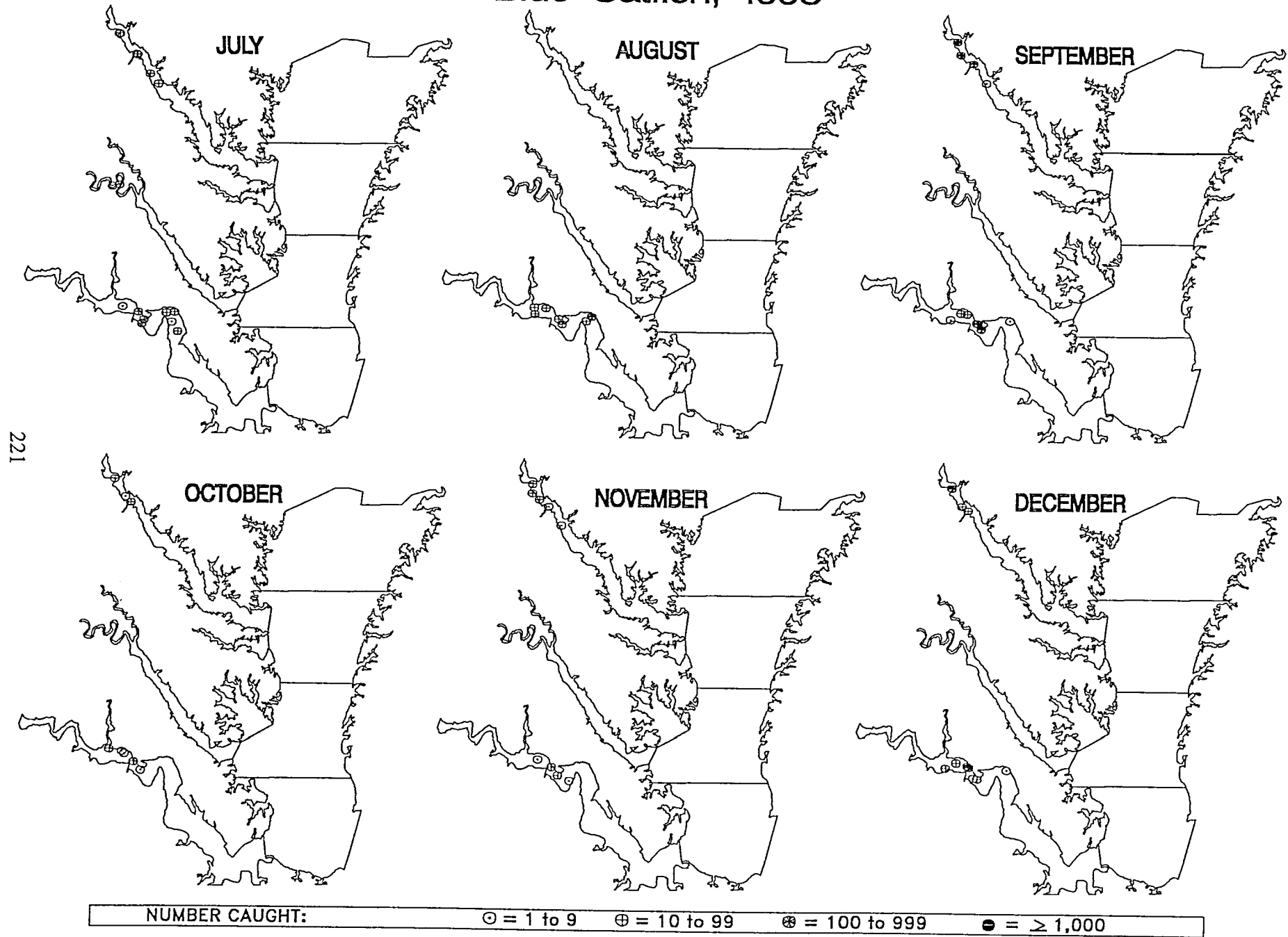
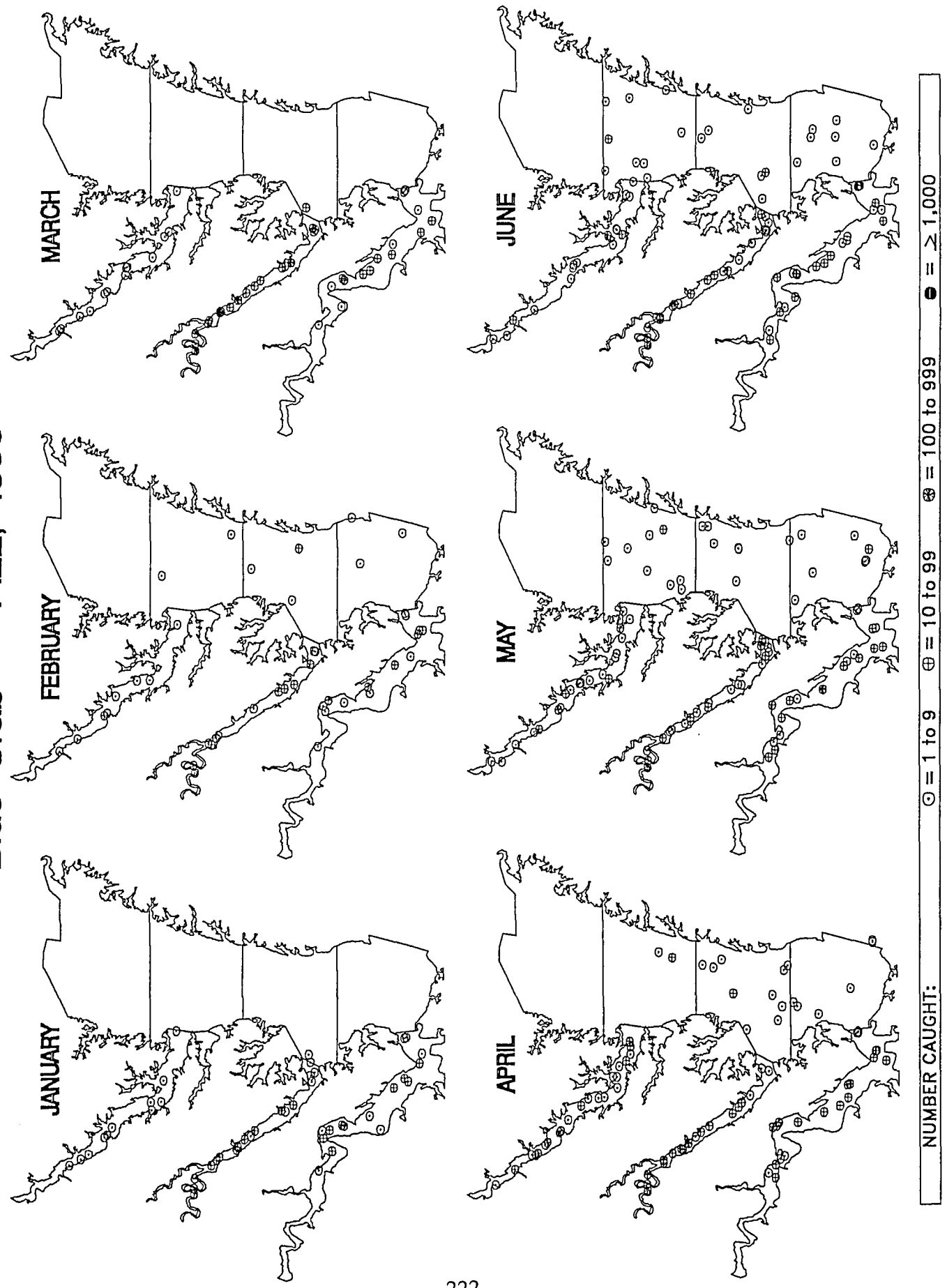
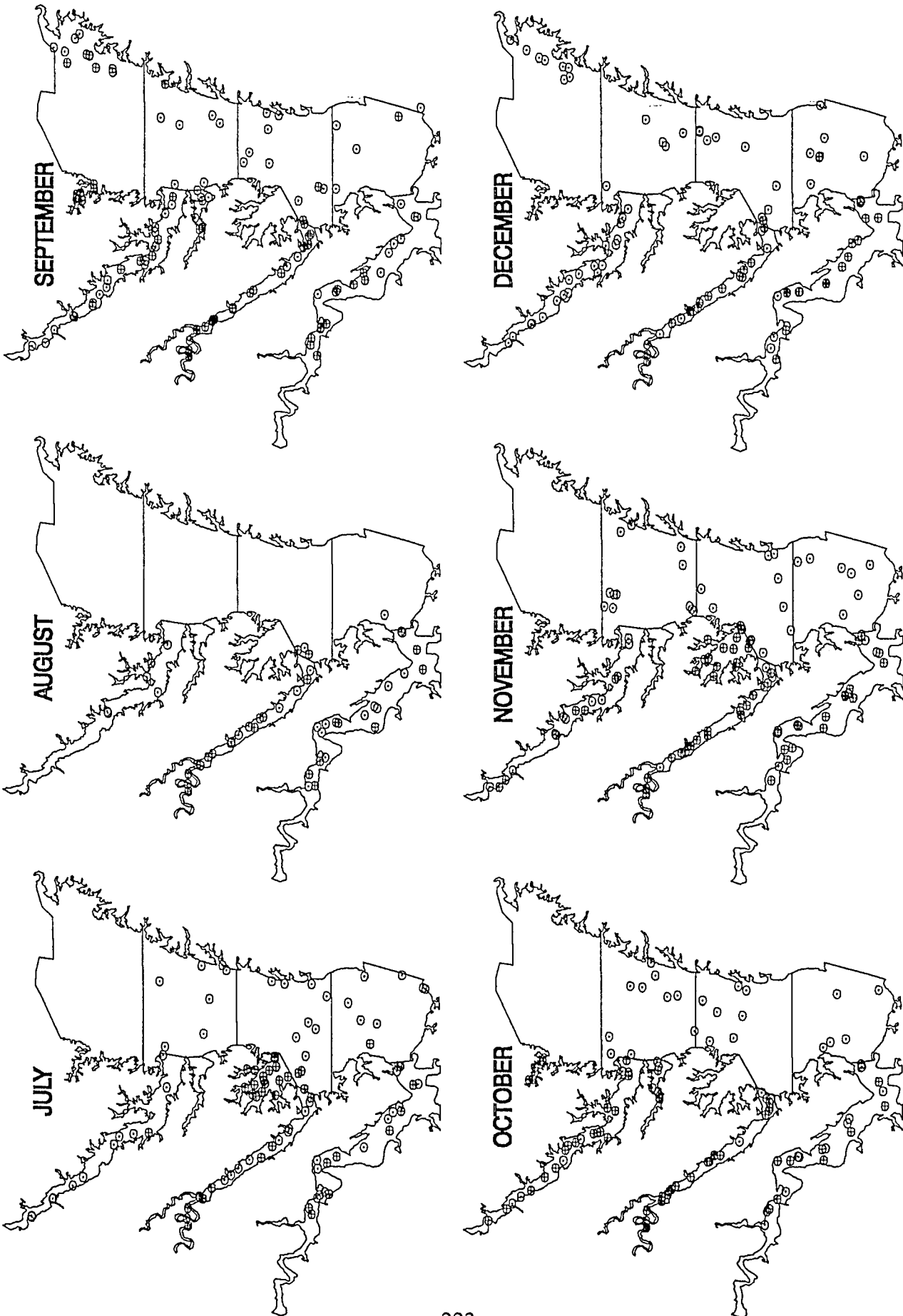


Figure 27.

Blue Crab -- ALL, 1998



Blue Crab - ALL, 1998



NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = ≥ 1,000

Blue Crab — Adult Female, 1998

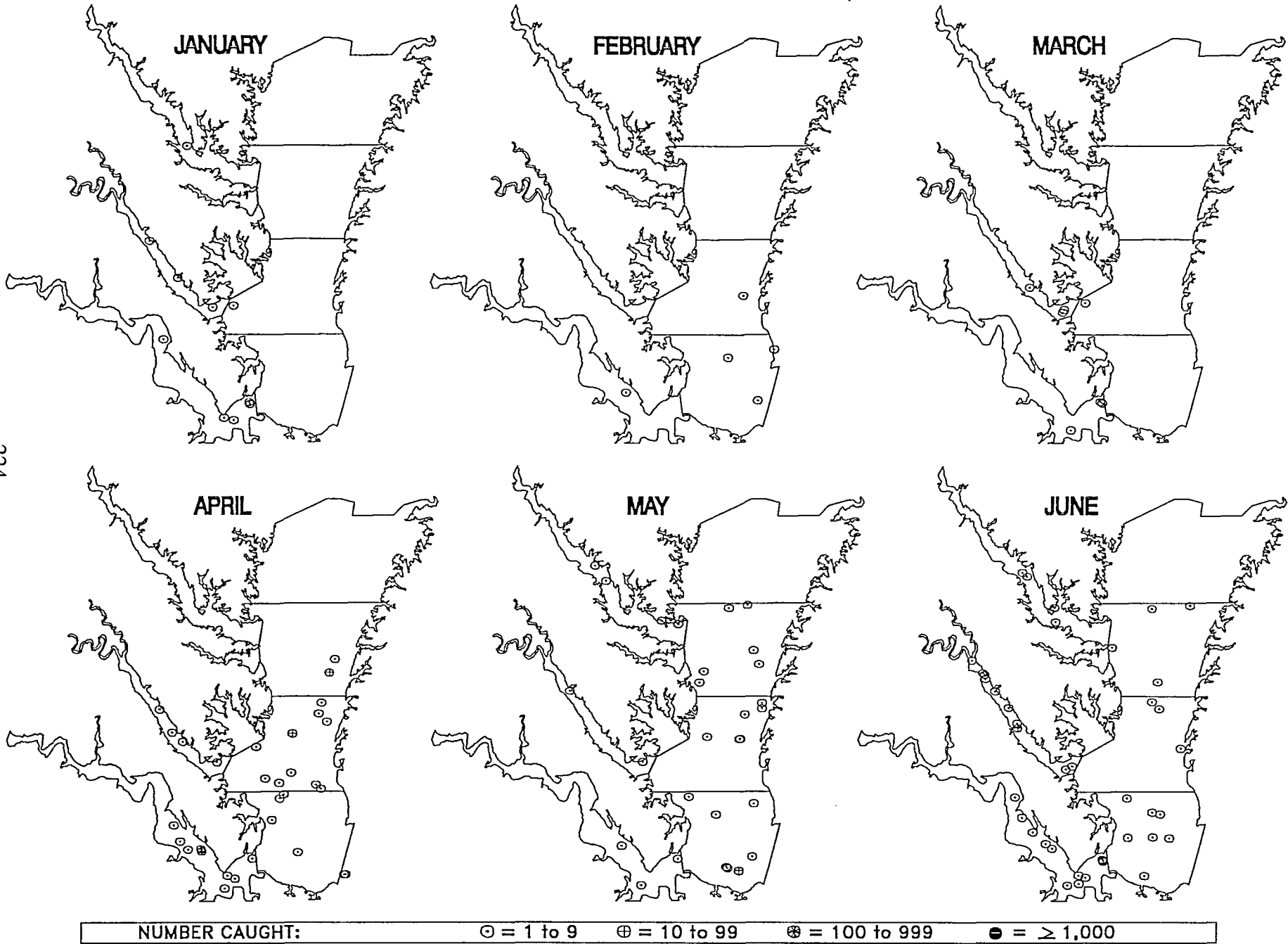
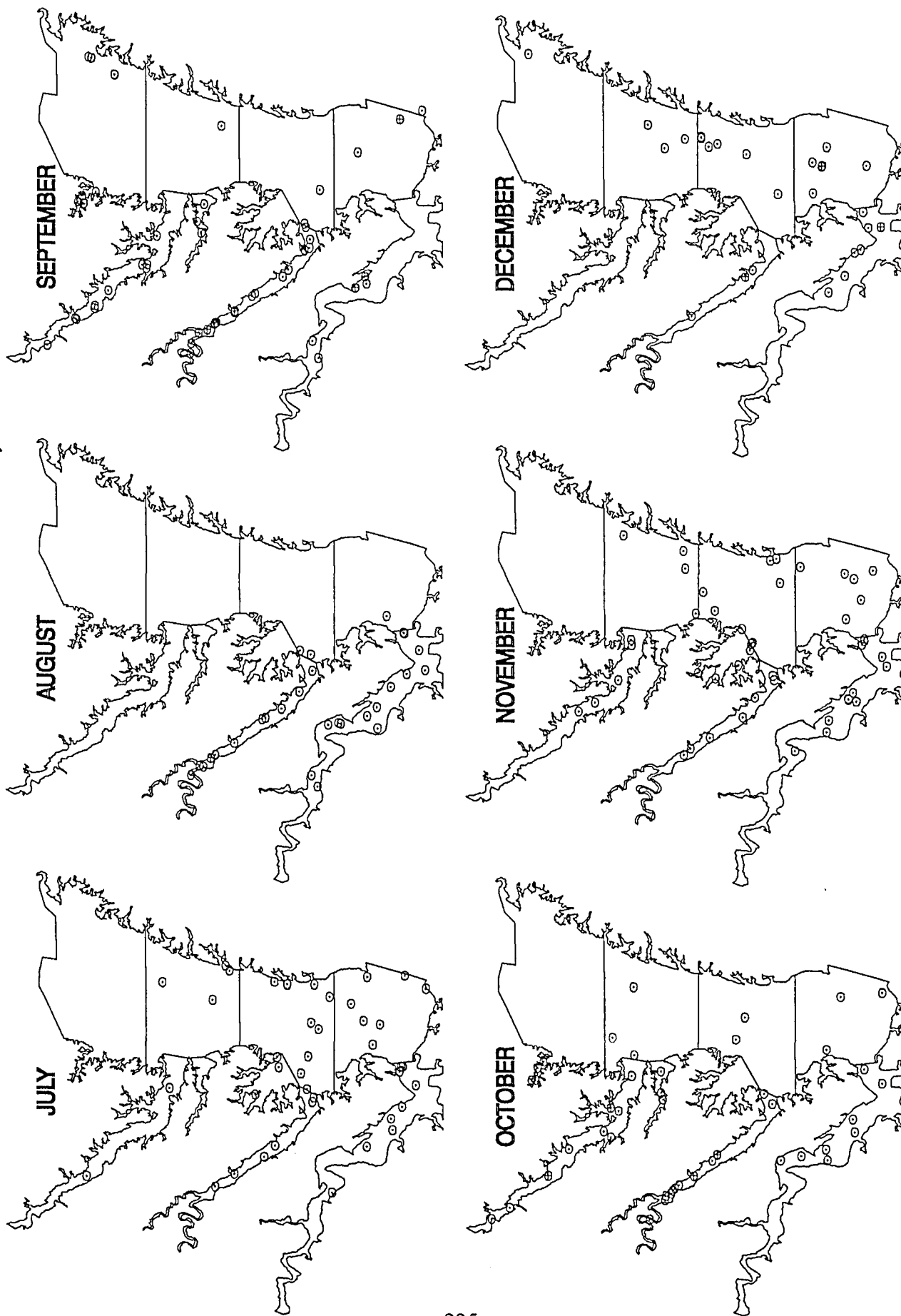


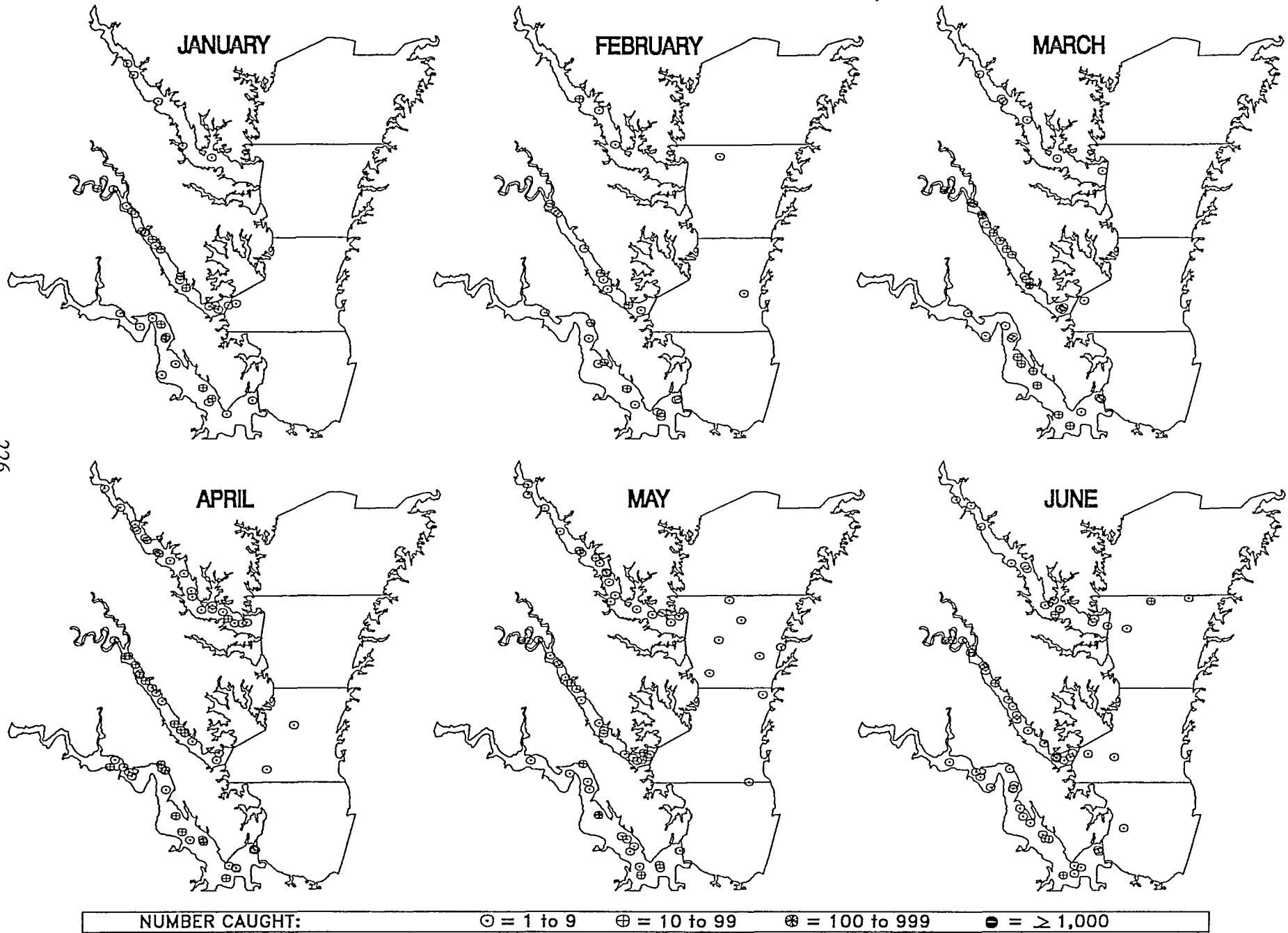
Figure 28.

Blue Crab — Adult Female, 1998

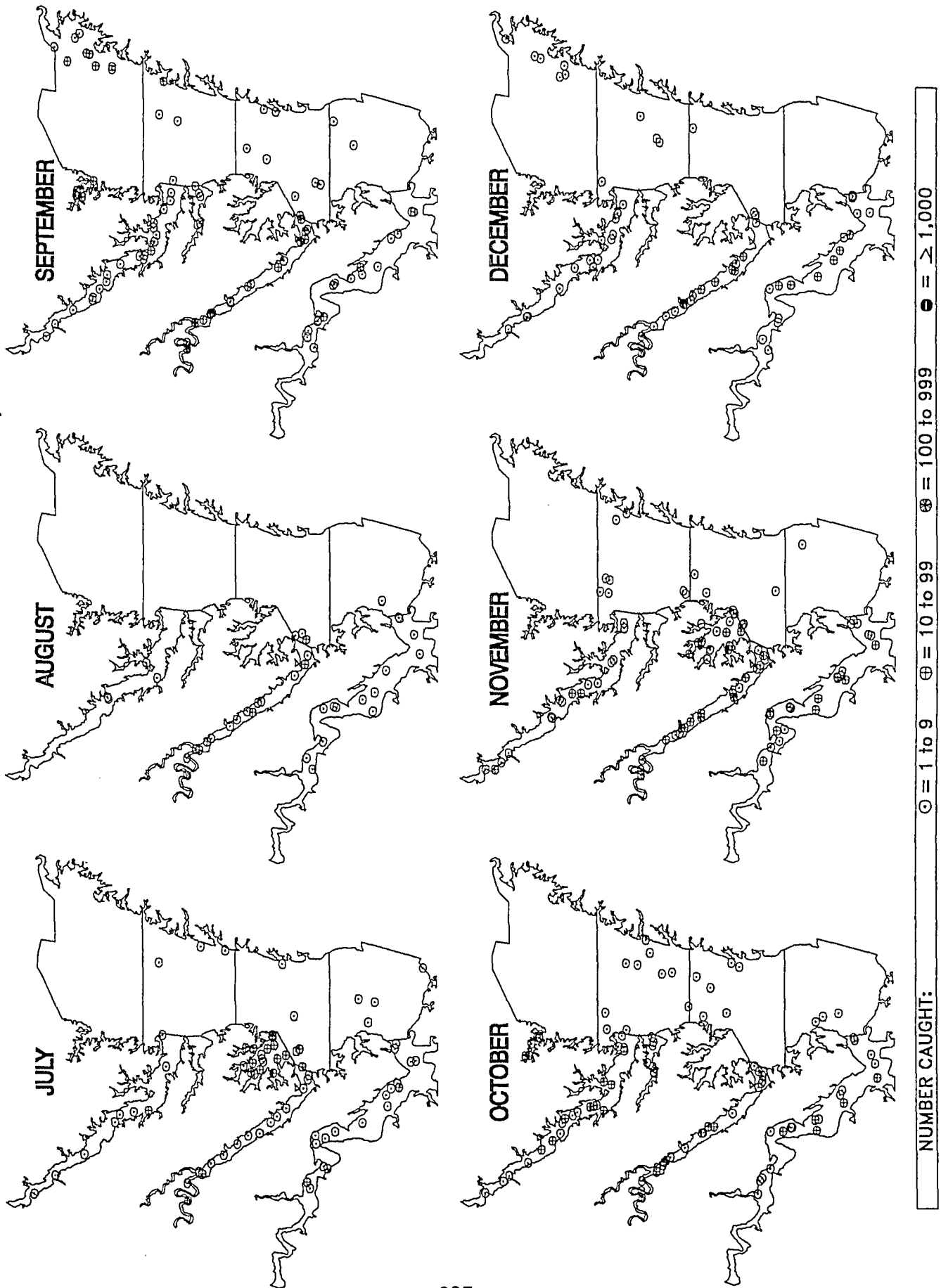


Blue Crab — Juvenile Female, 1998

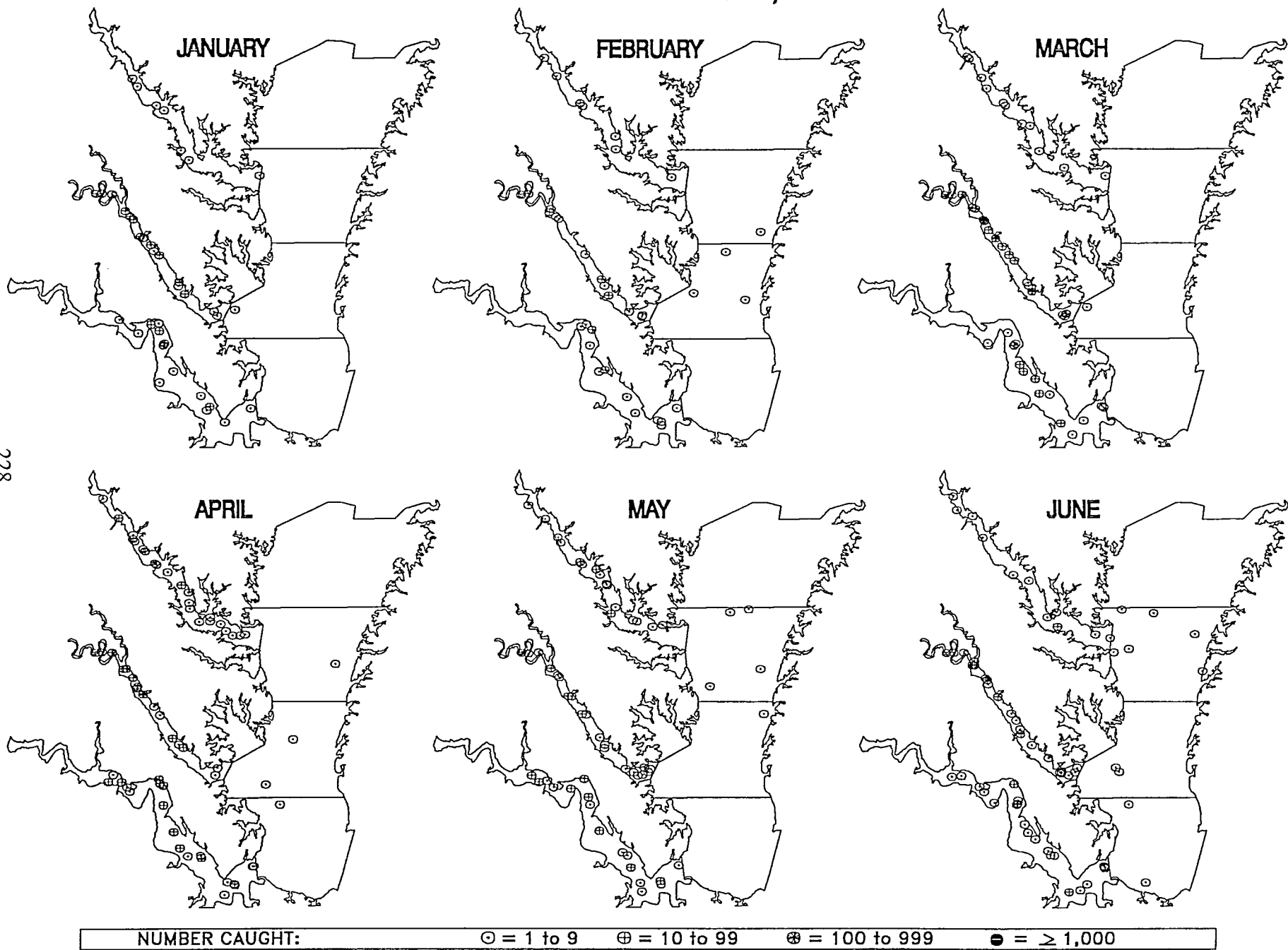
Figure 29.



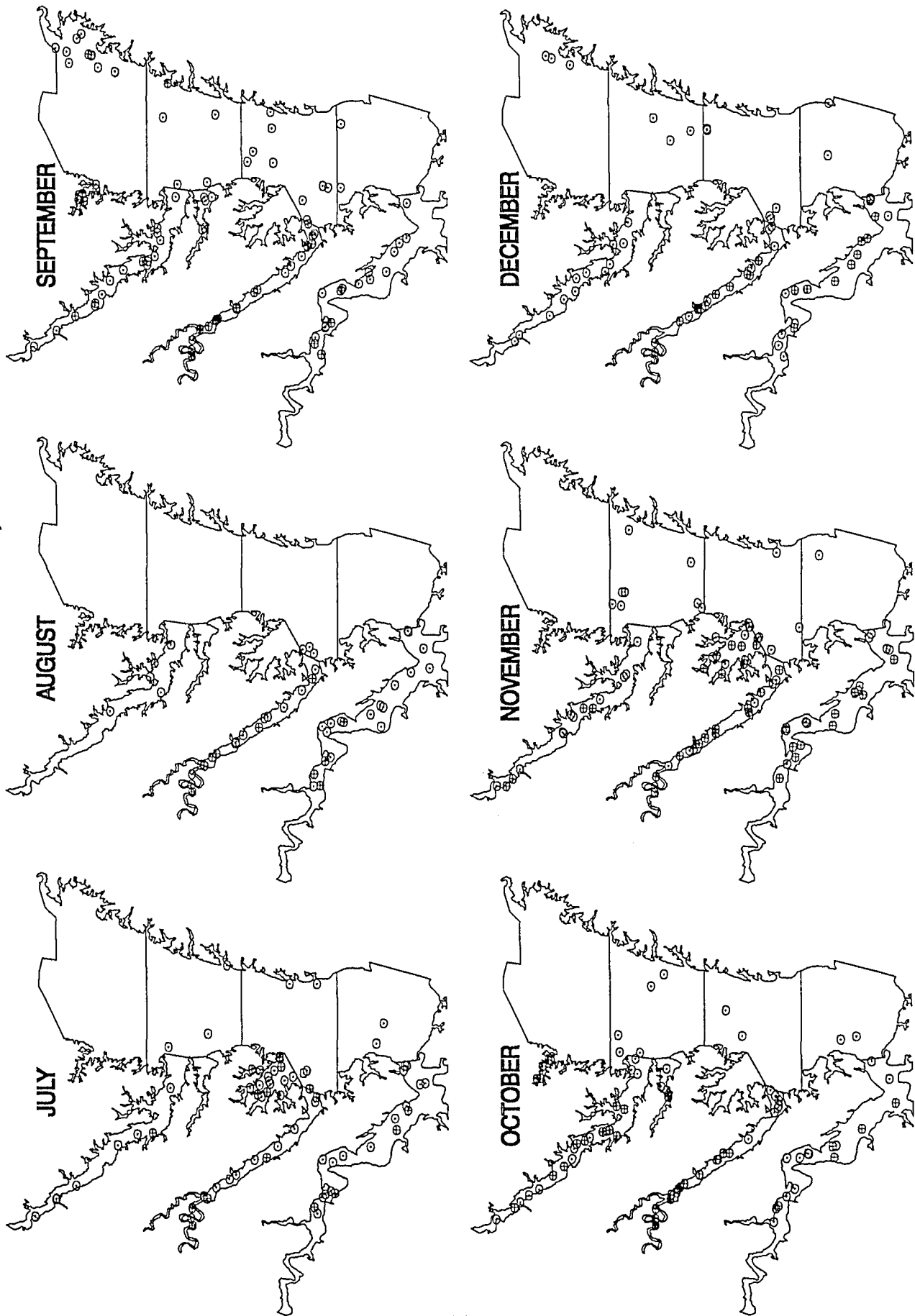
Blue Crab — Juvenile Female, 1998



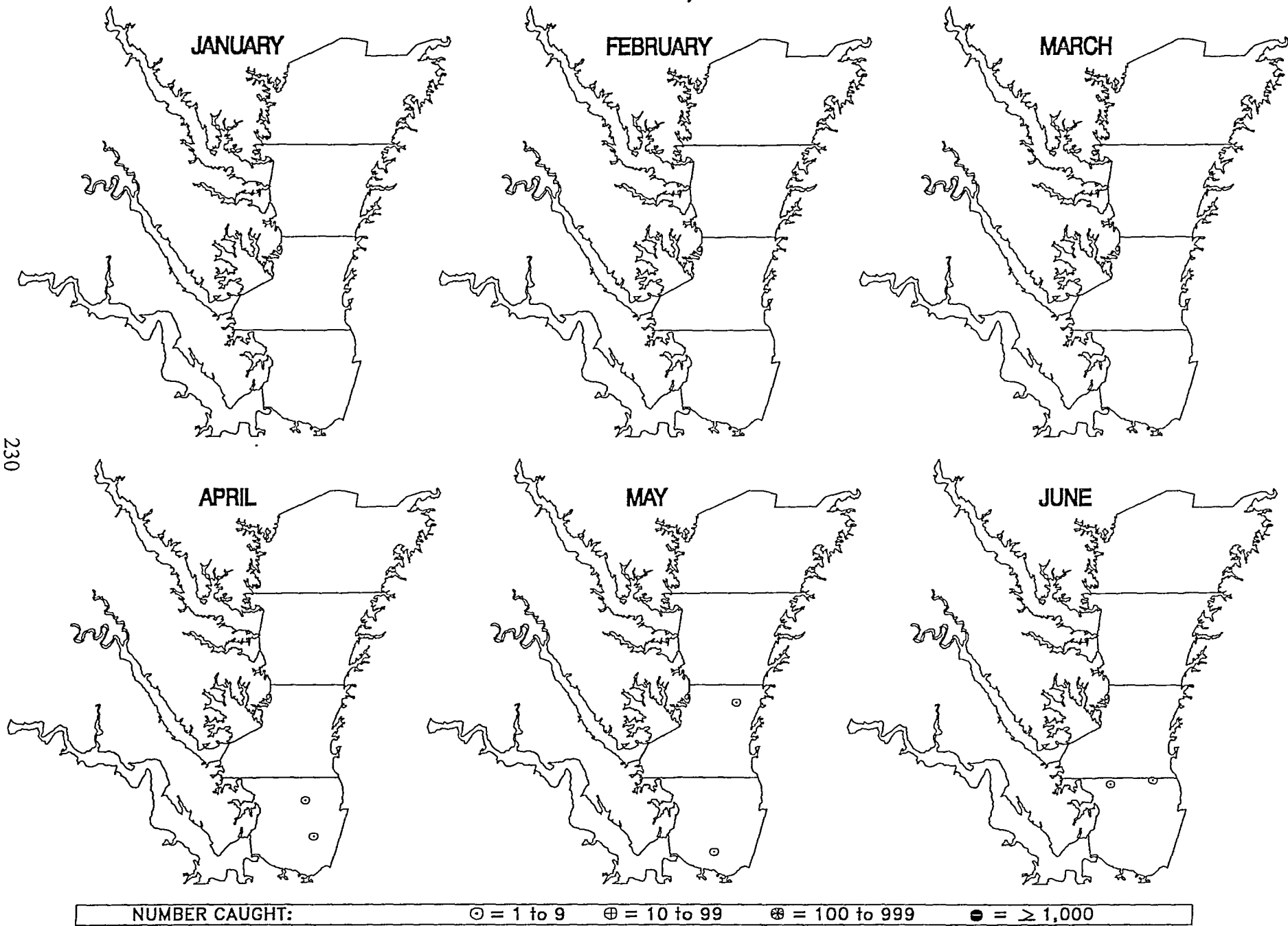
Blue Crab — Male, 1998



Blue Crab — Male, 1998



Butterfish, 1998



Butterfish, 1998

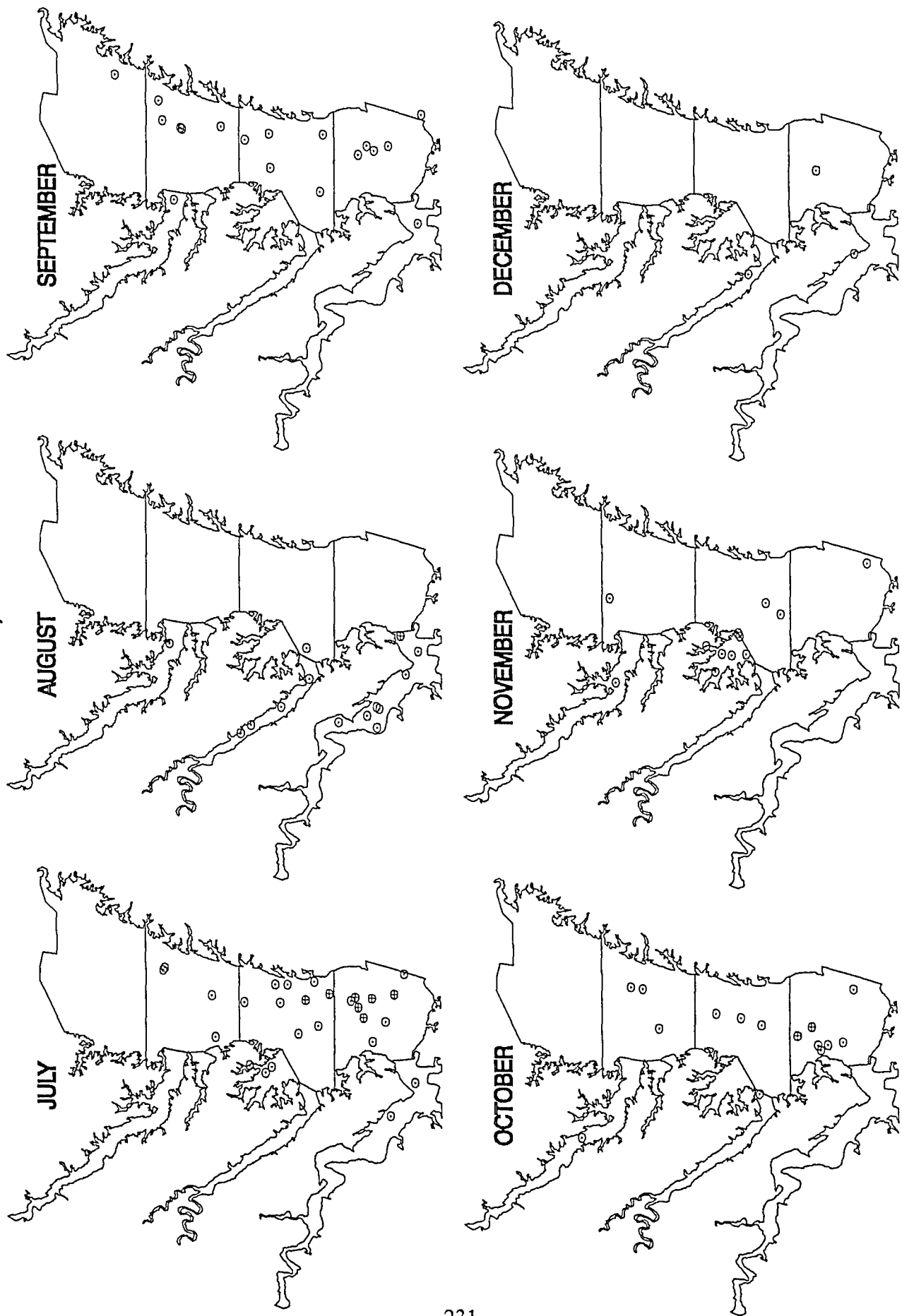
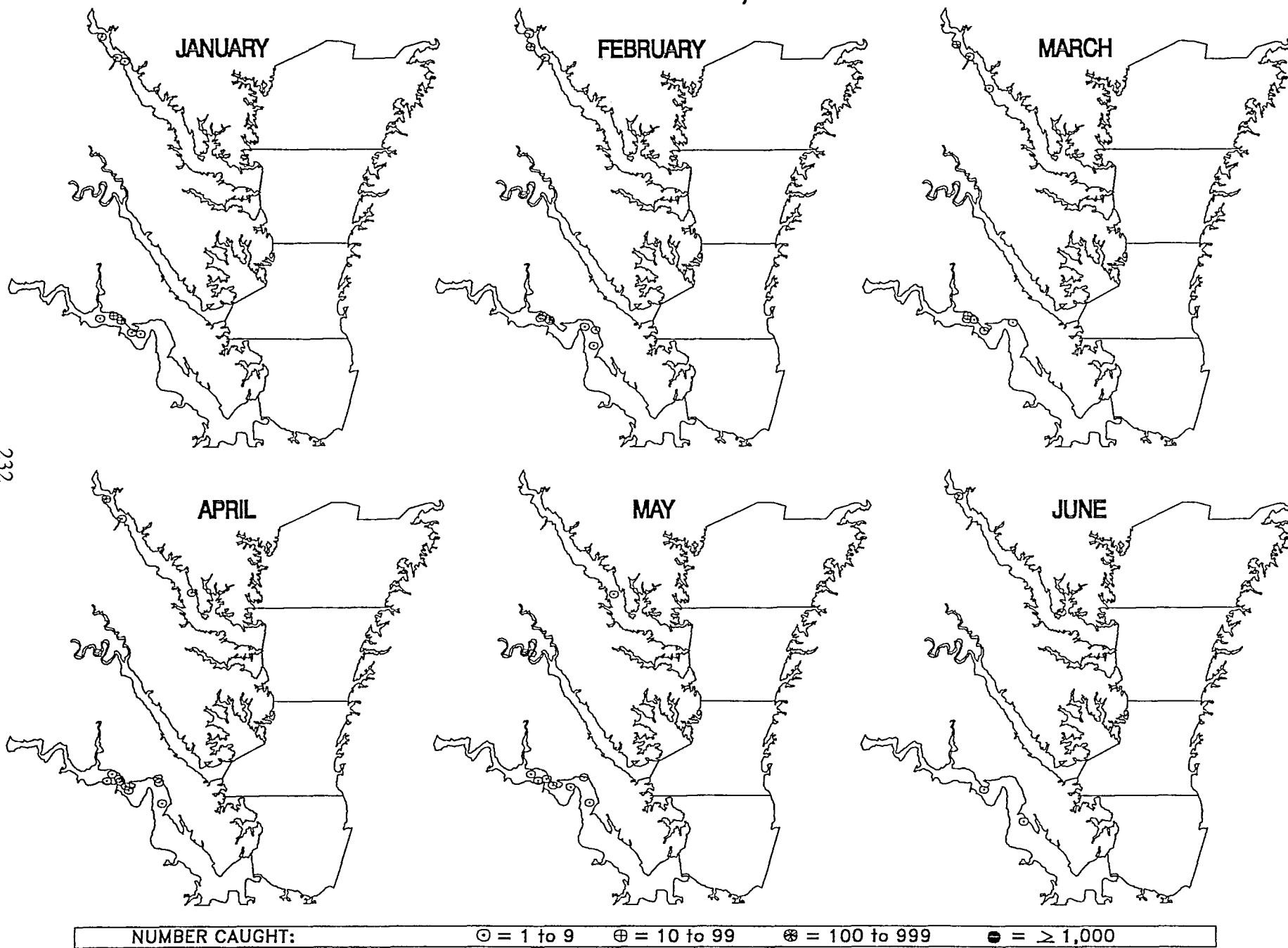
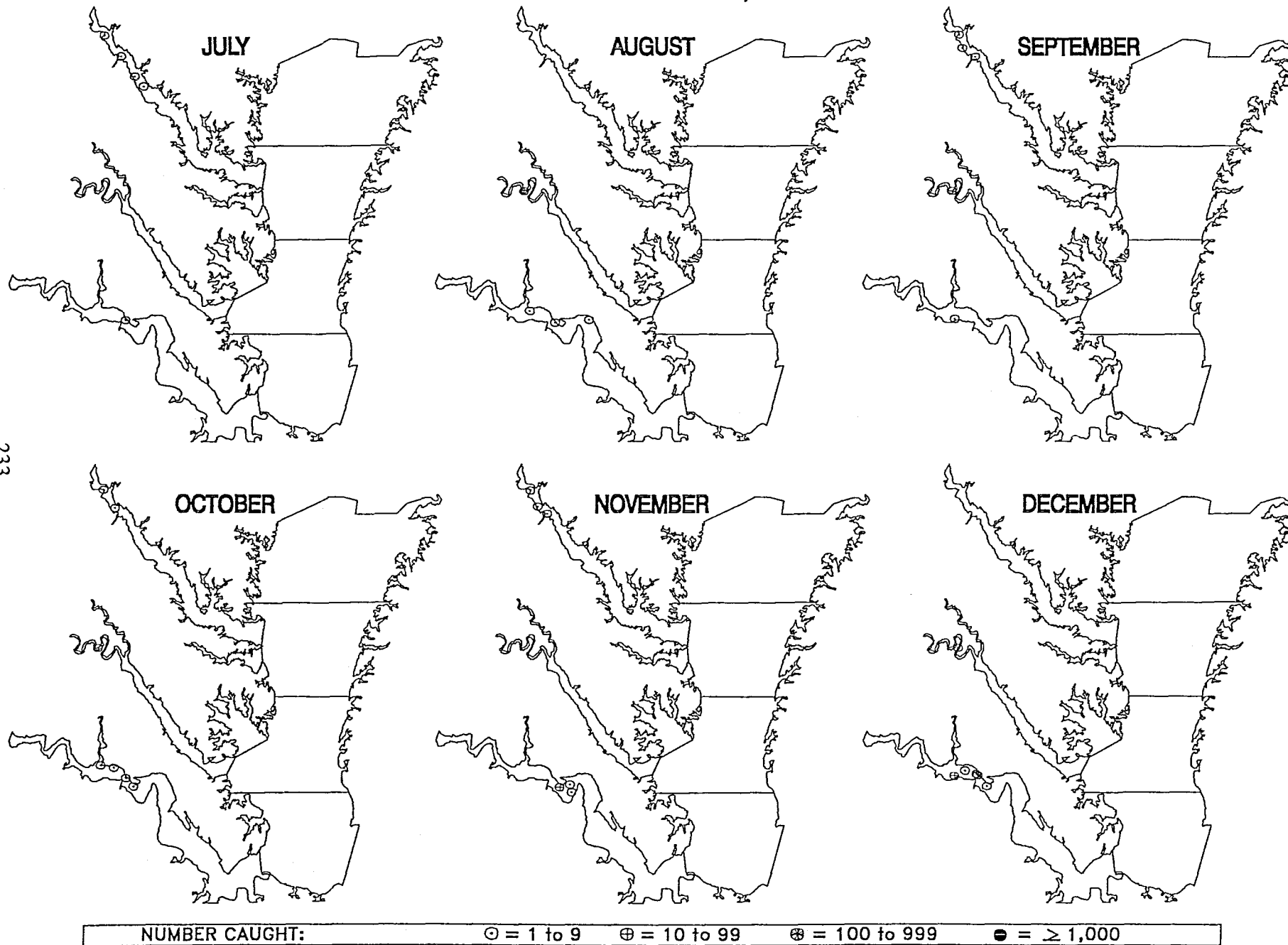


Figure 32.

Channel Catfish, 1998



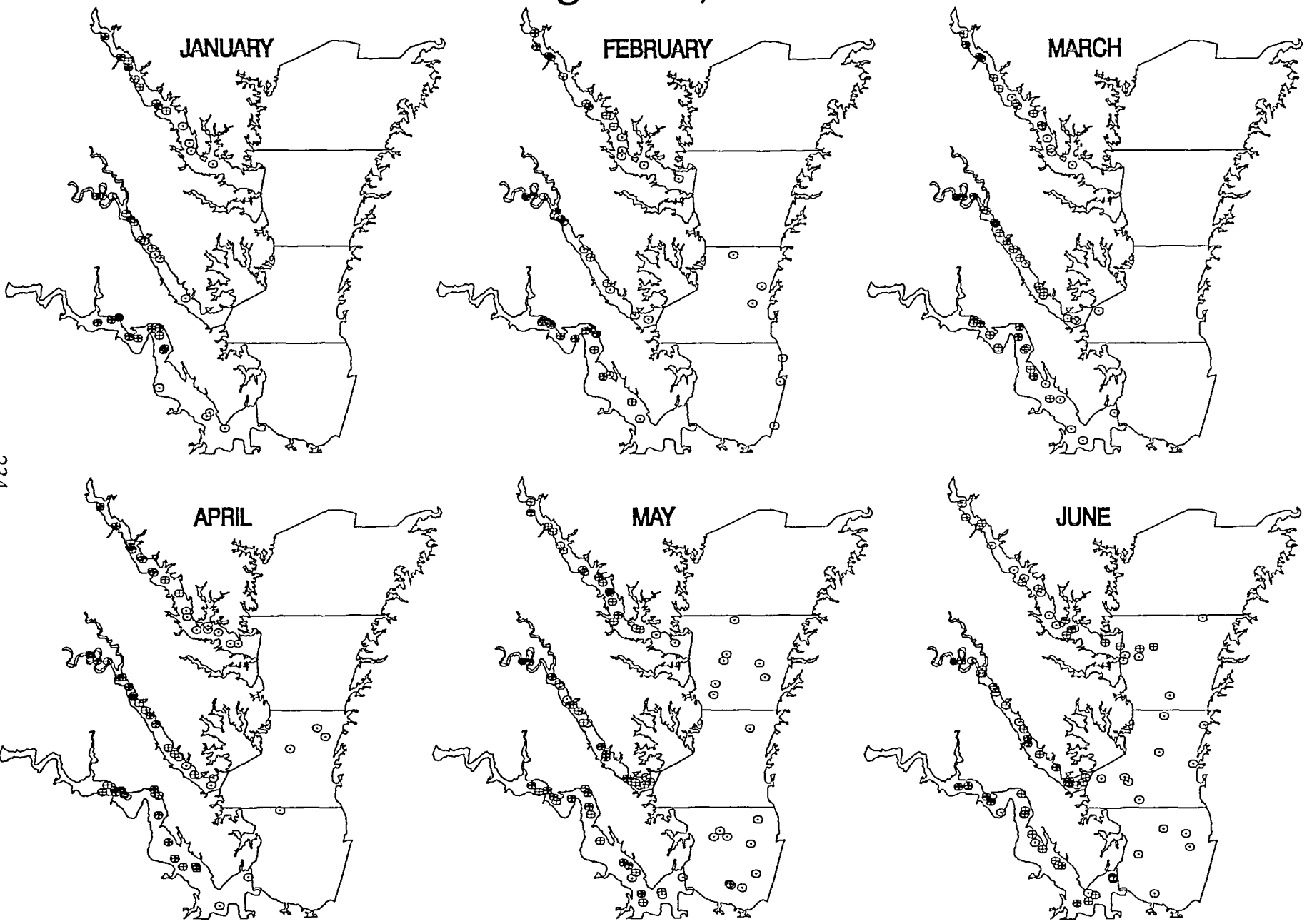
Channel Catfish, 1998



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Figure 32. (cont.)

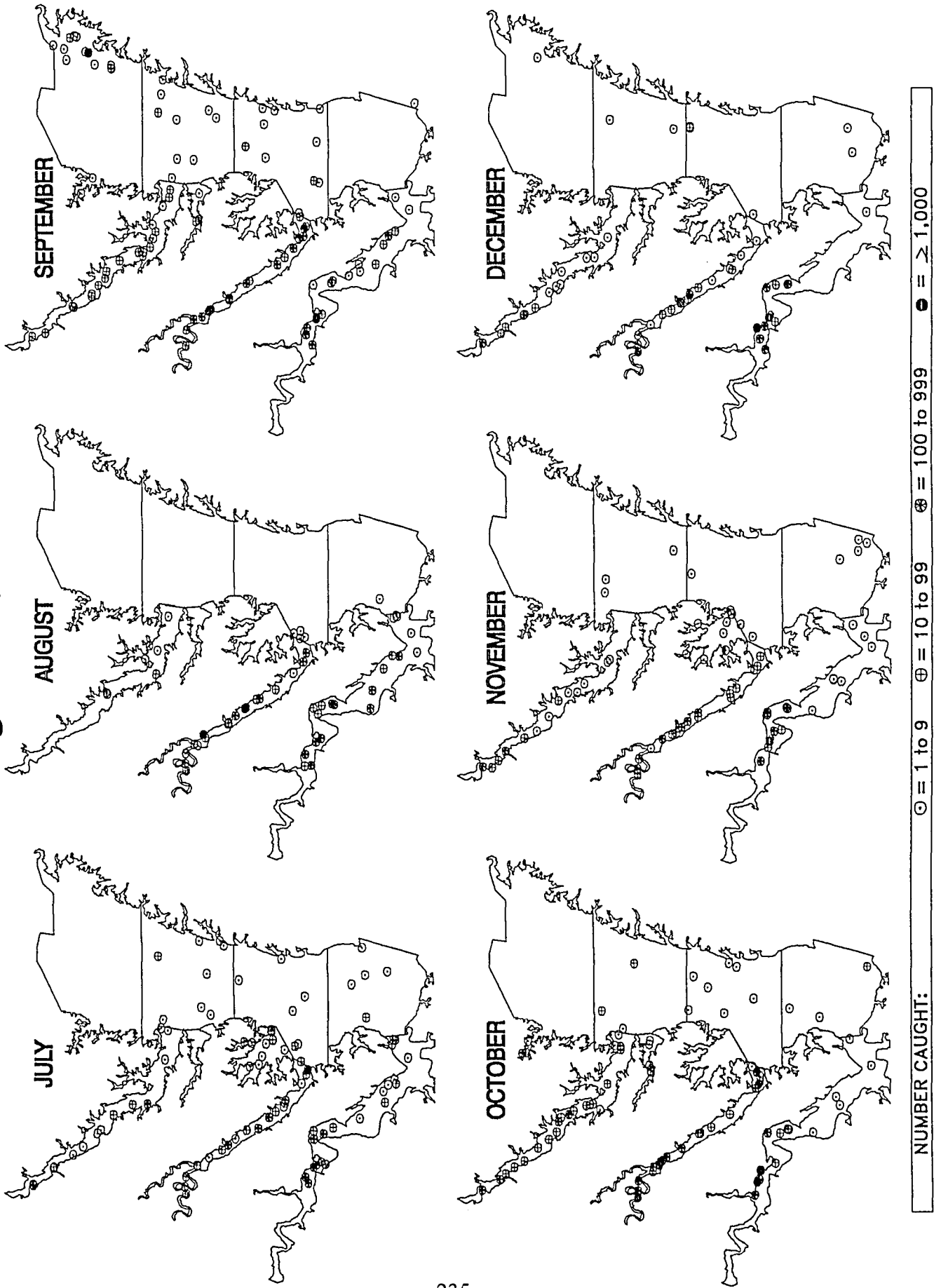
Hogchoker, 1998



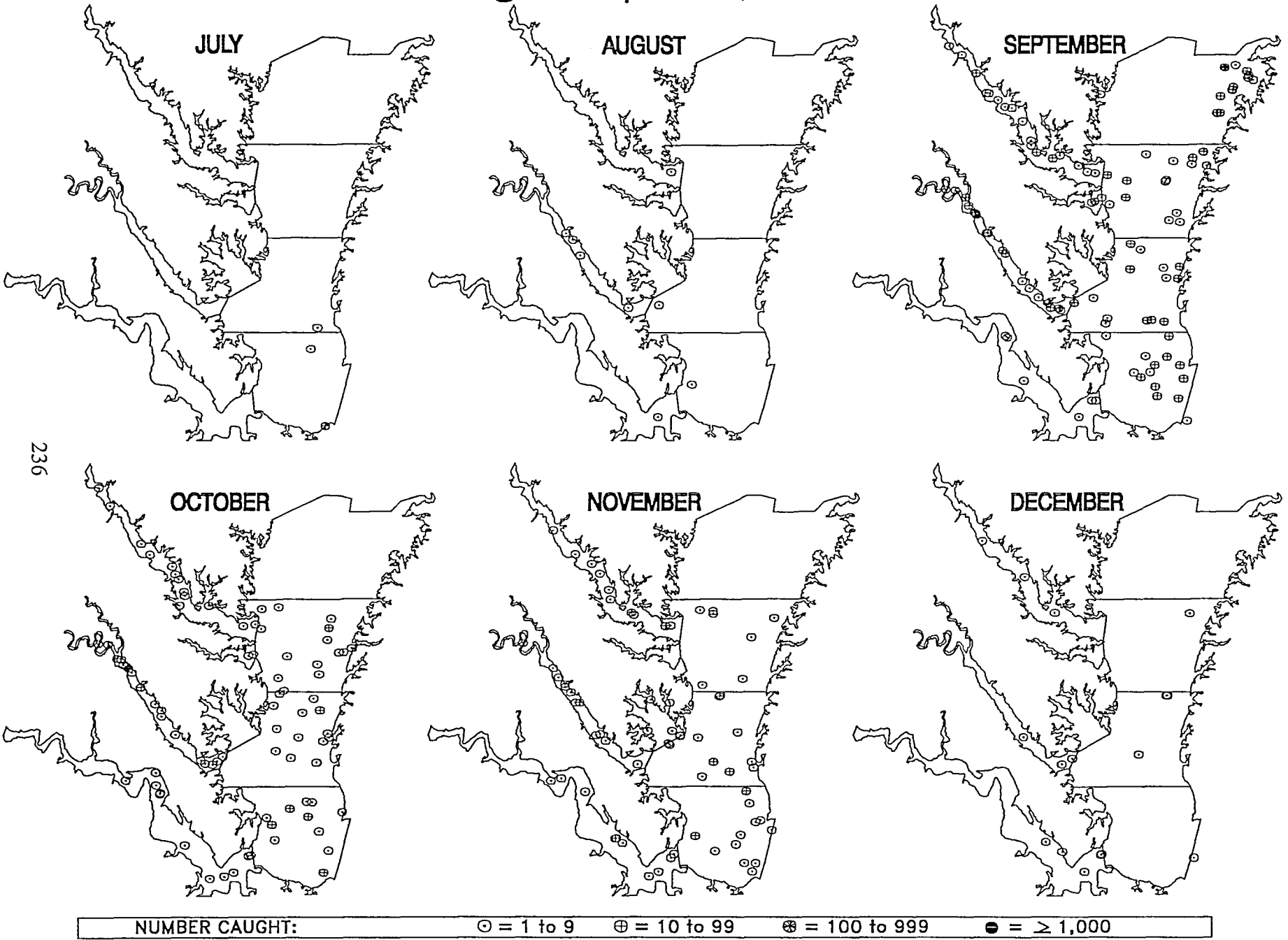
NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = ≥ 1,000



Hogchoker, 1998

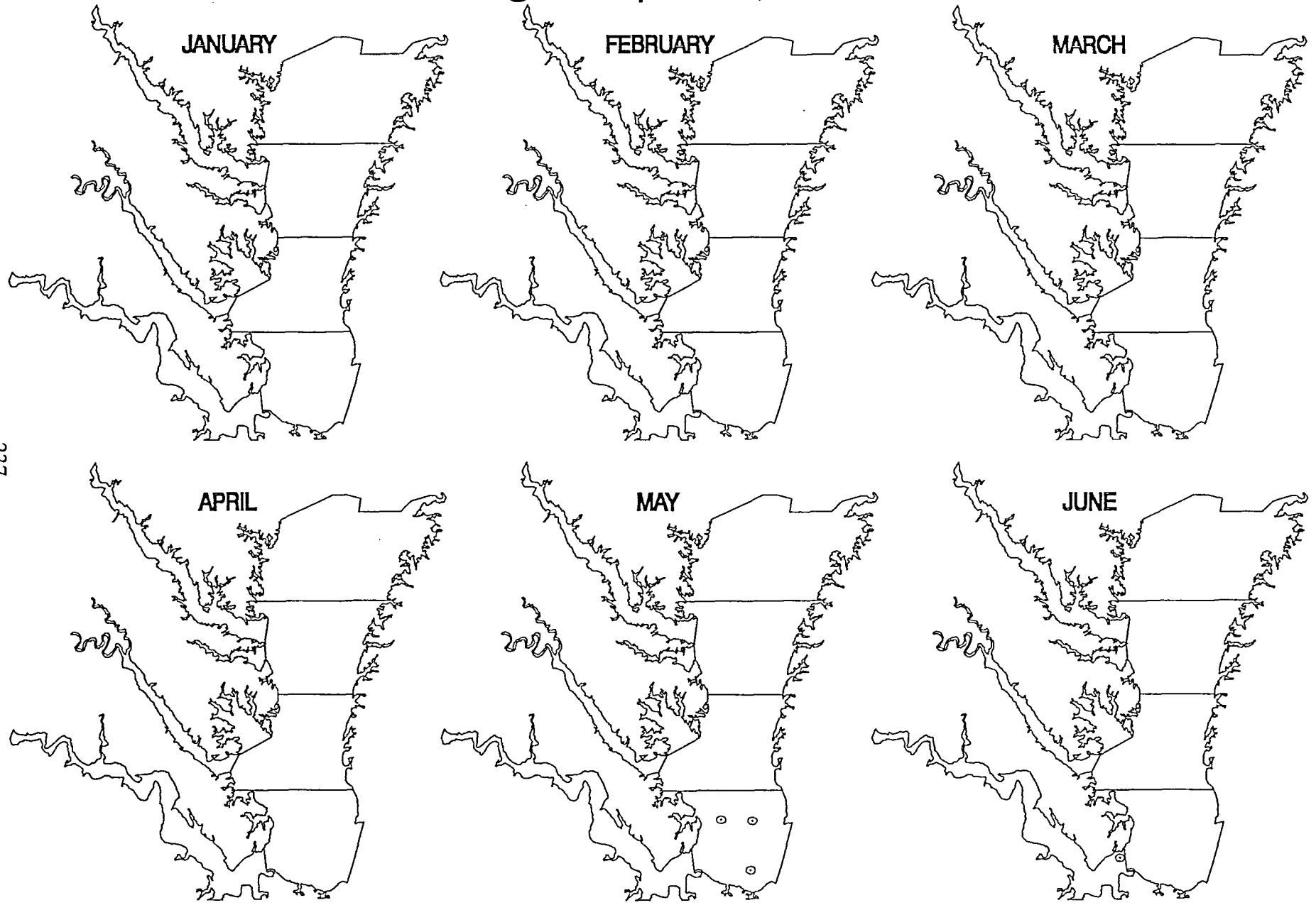


Kingfish Species, 1998





Kingfish Species, 1998

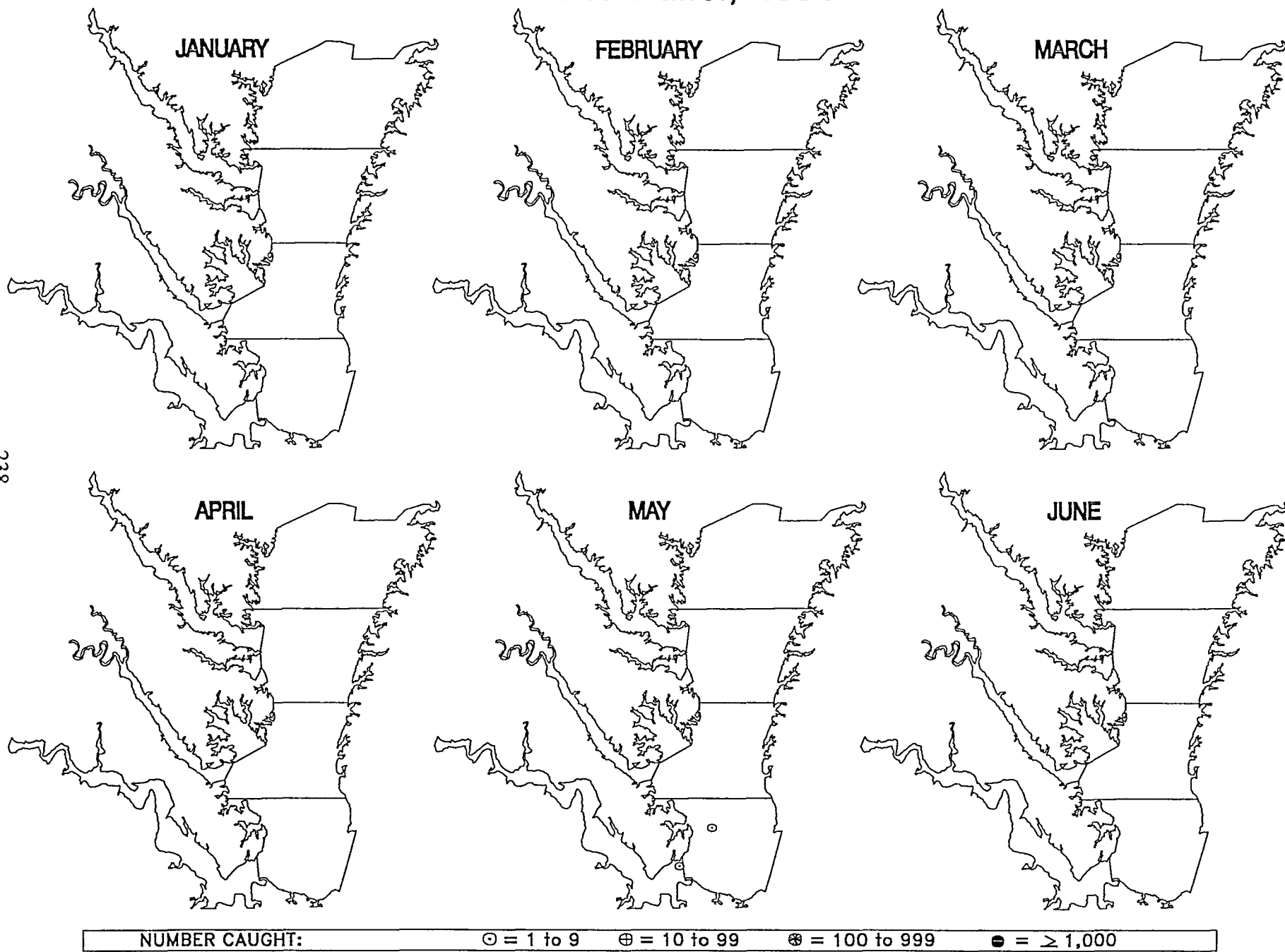


NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = ≥ 1,000

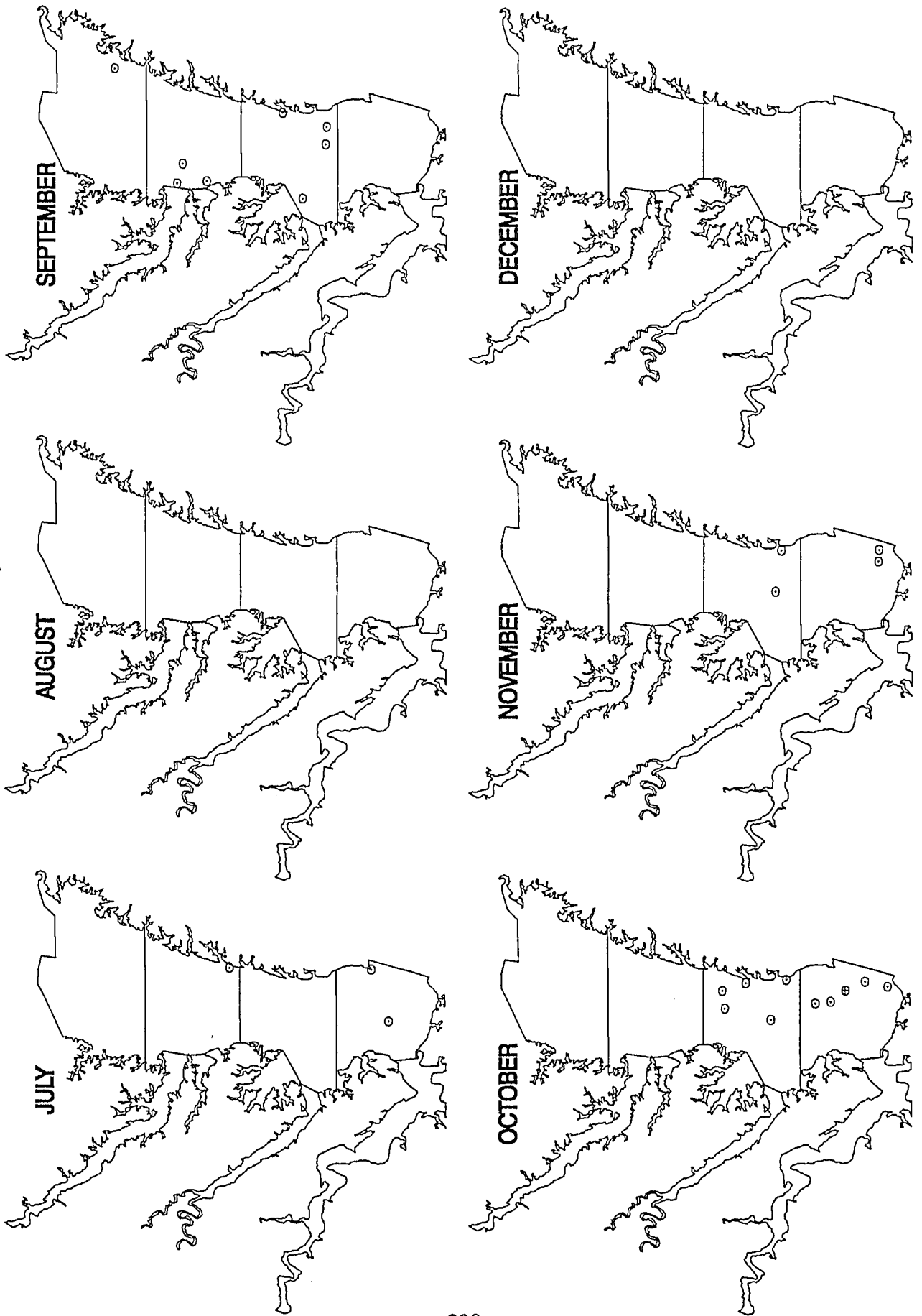
237

Figure 34. (cont.)

Northern Puffer, 1998



Northern Puffer, 1998



Northern Searobin, 1998

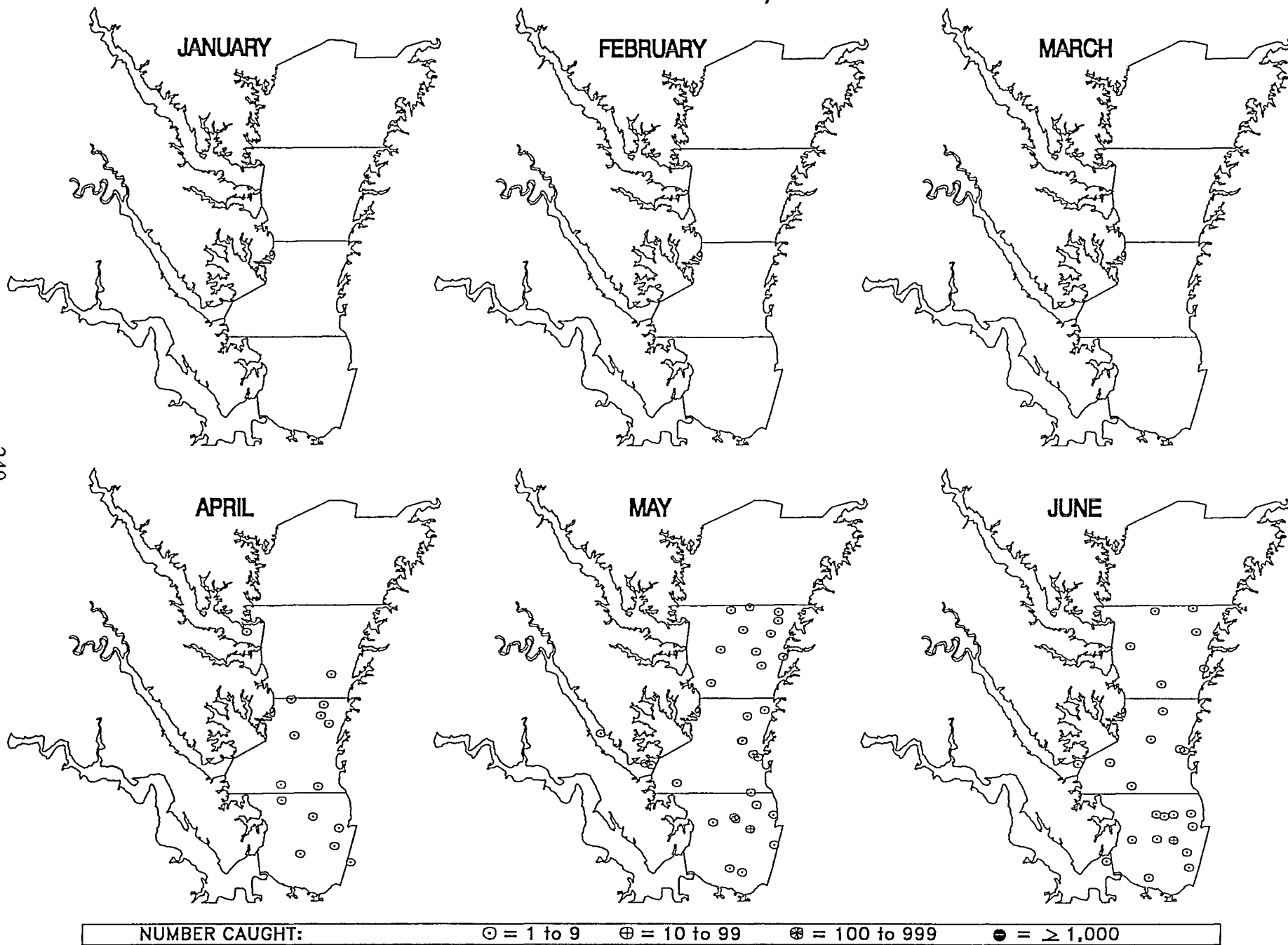


Figure 36.

Northern Searobin, 1998

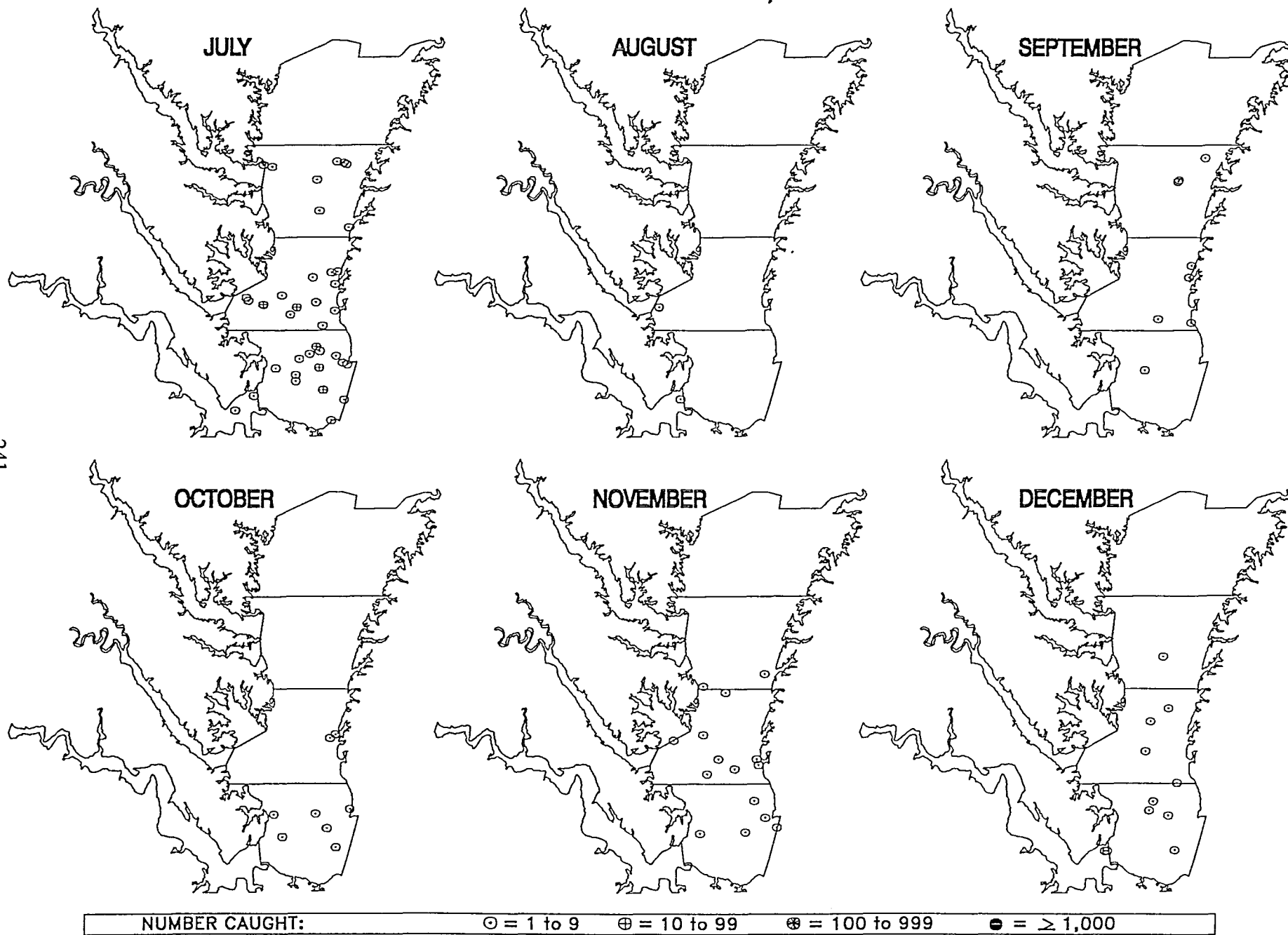
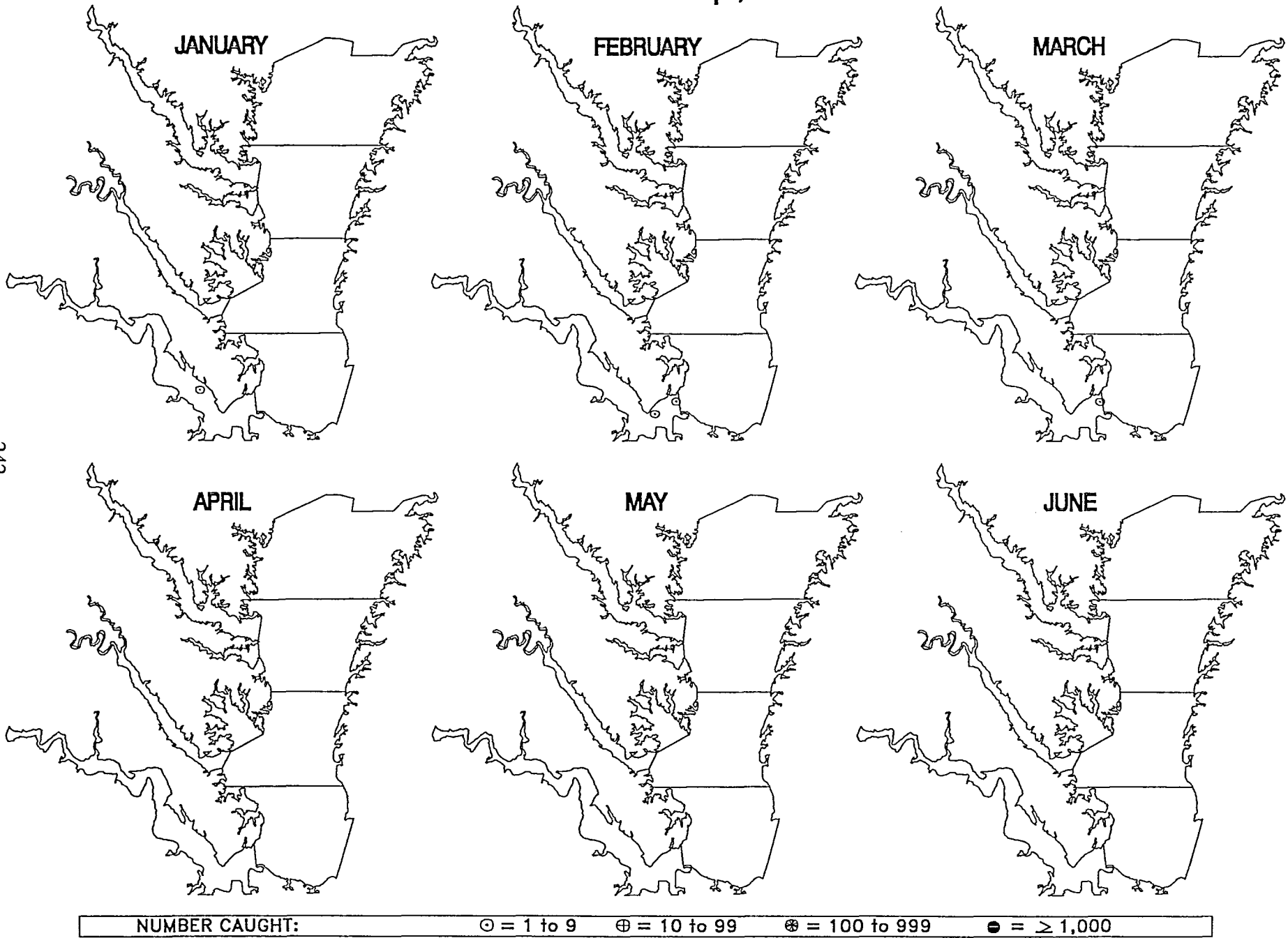


Figure 37.

Penaeid Shrimp, 1998



Penaeid Shrimp, 1998

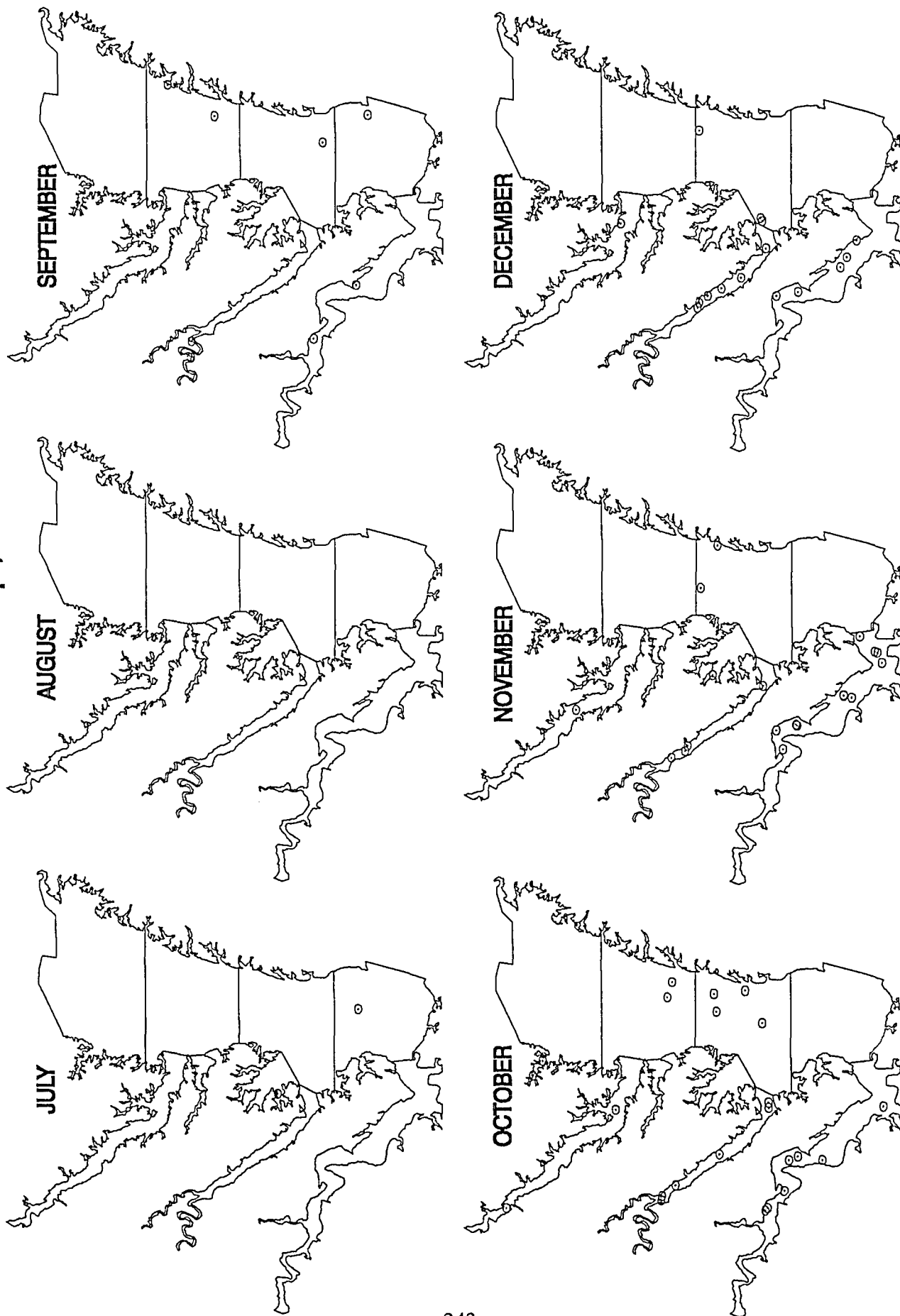
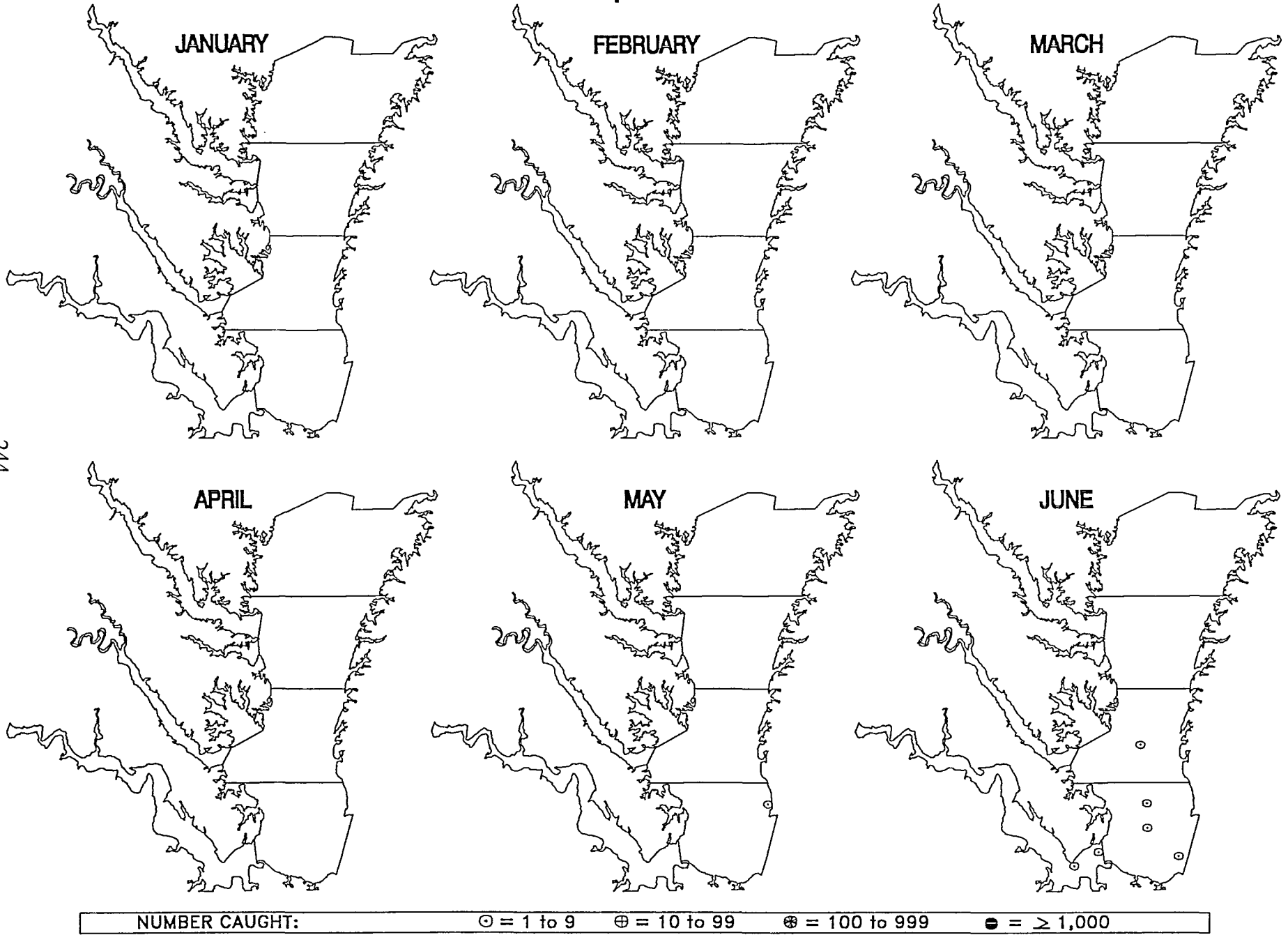
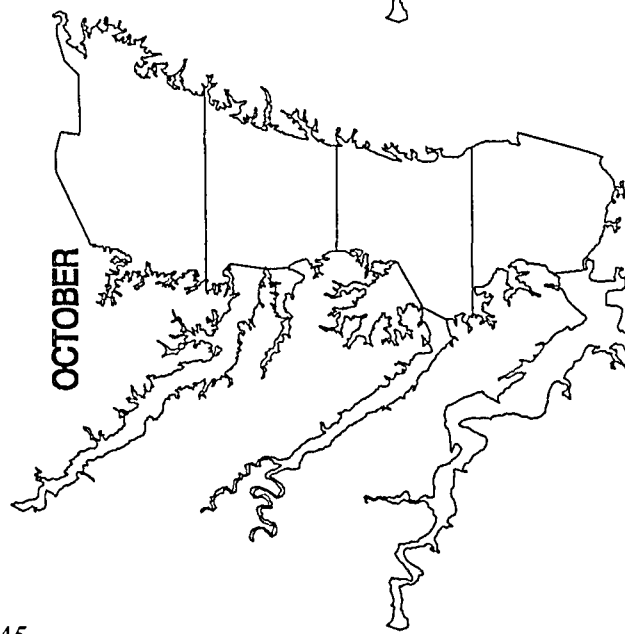
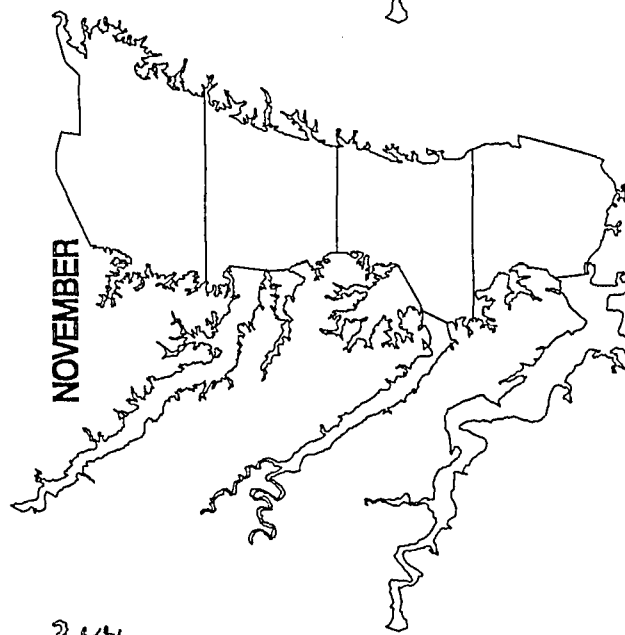
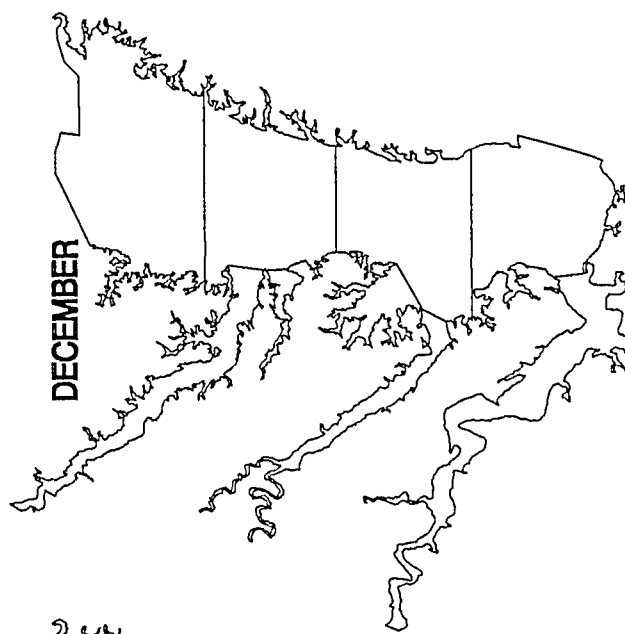
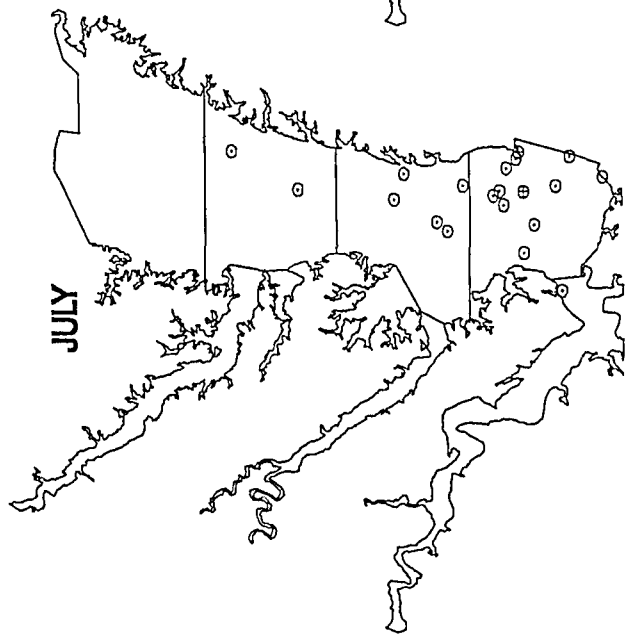
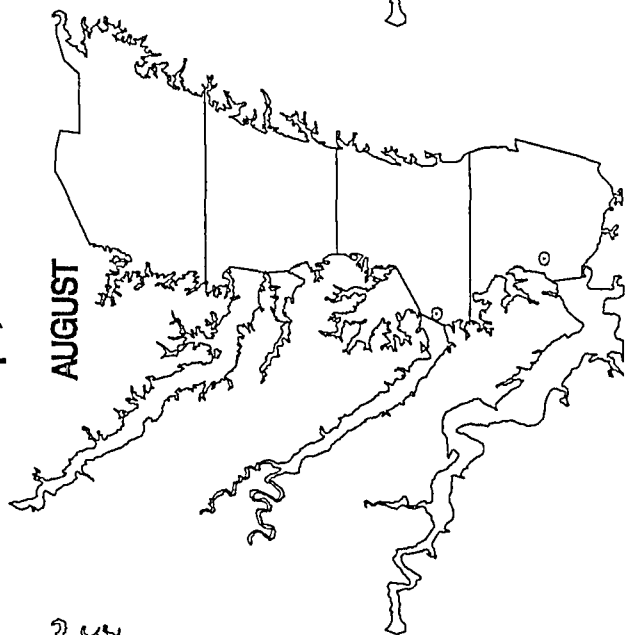
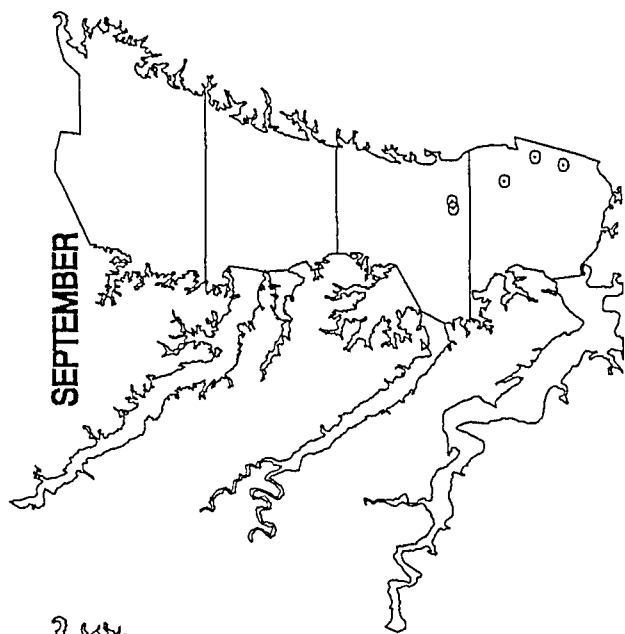


Figure 38.

Scup, 1998



Scup, 1998



Silver Perch, 1998

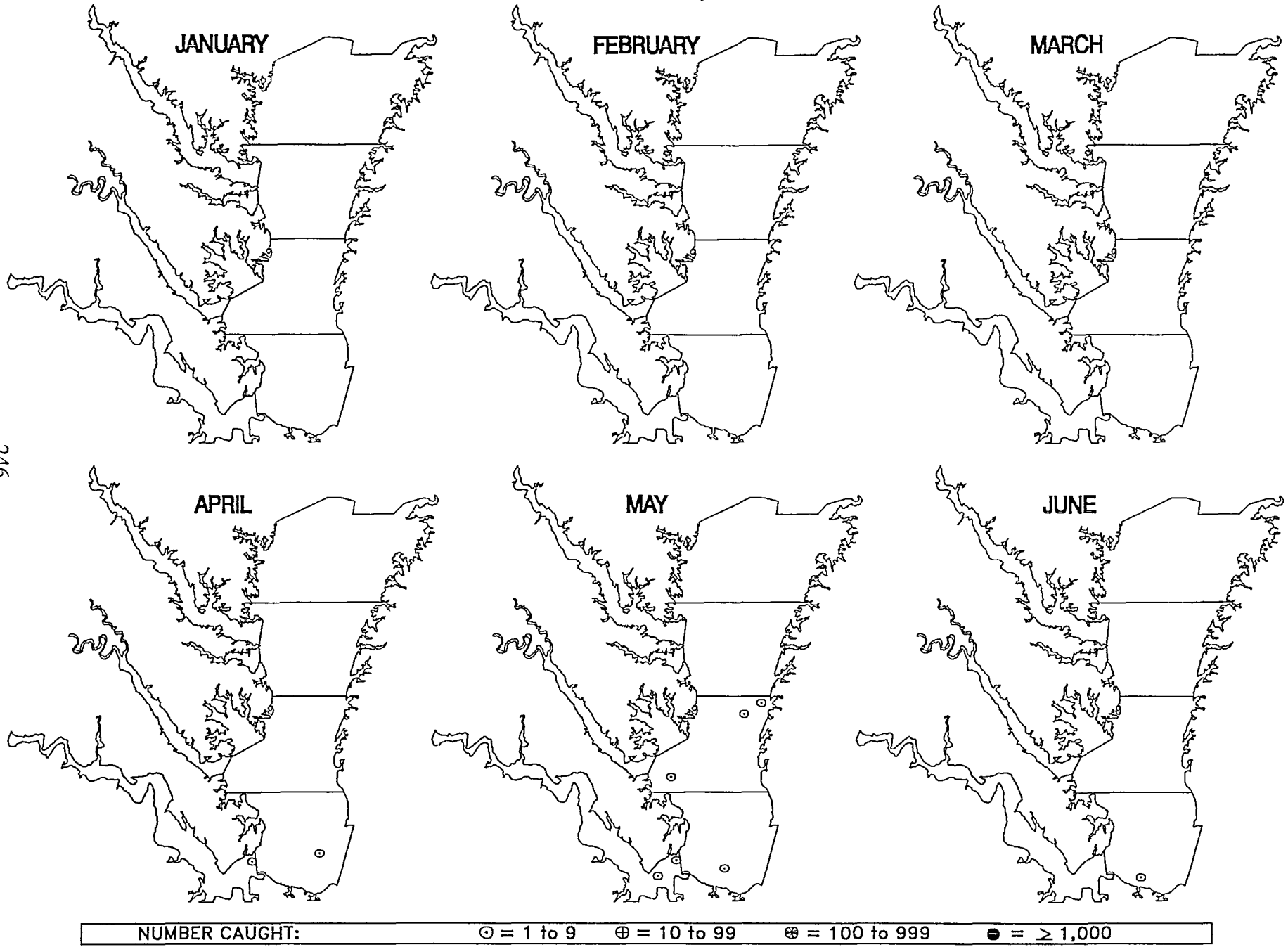
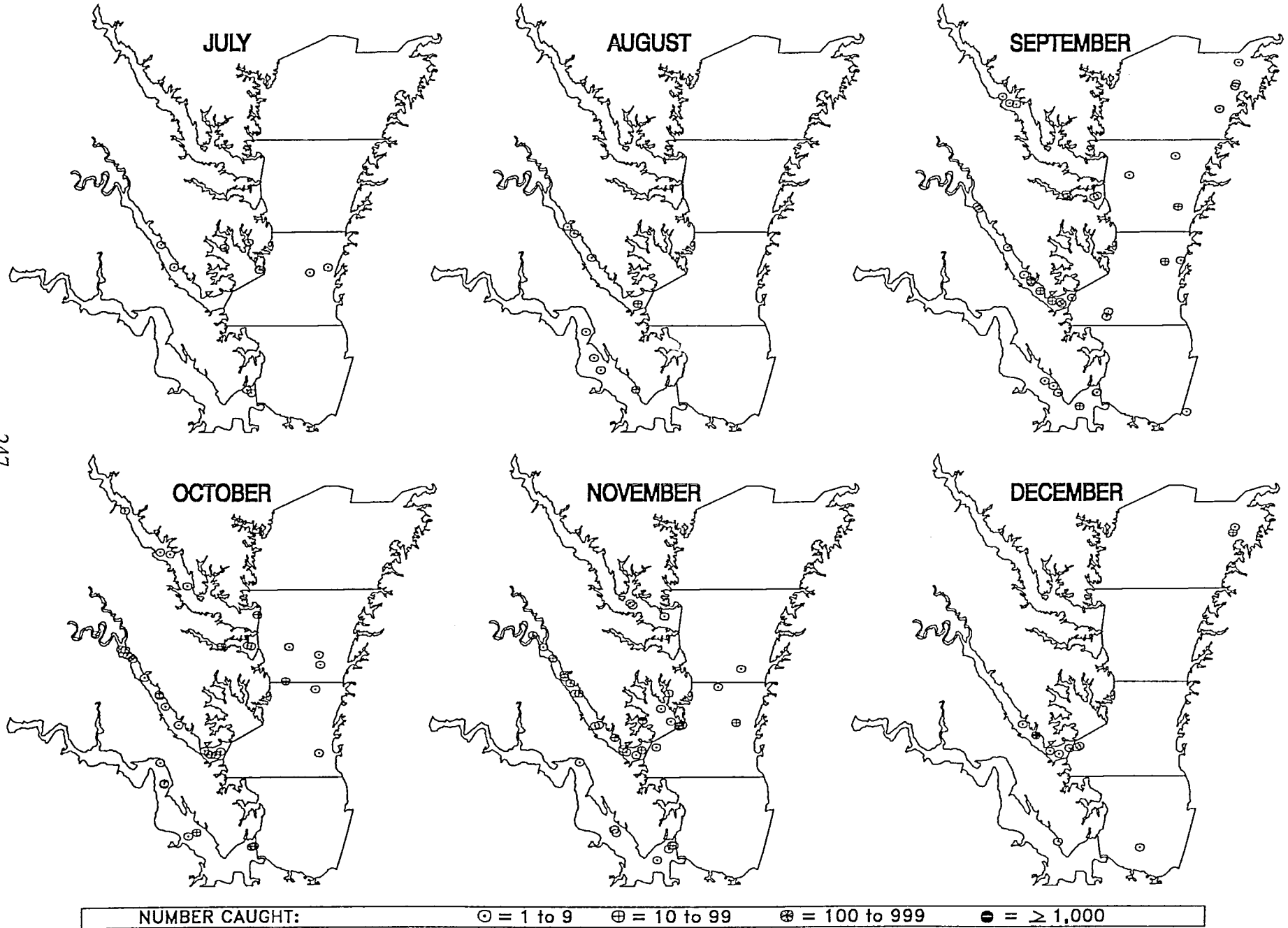


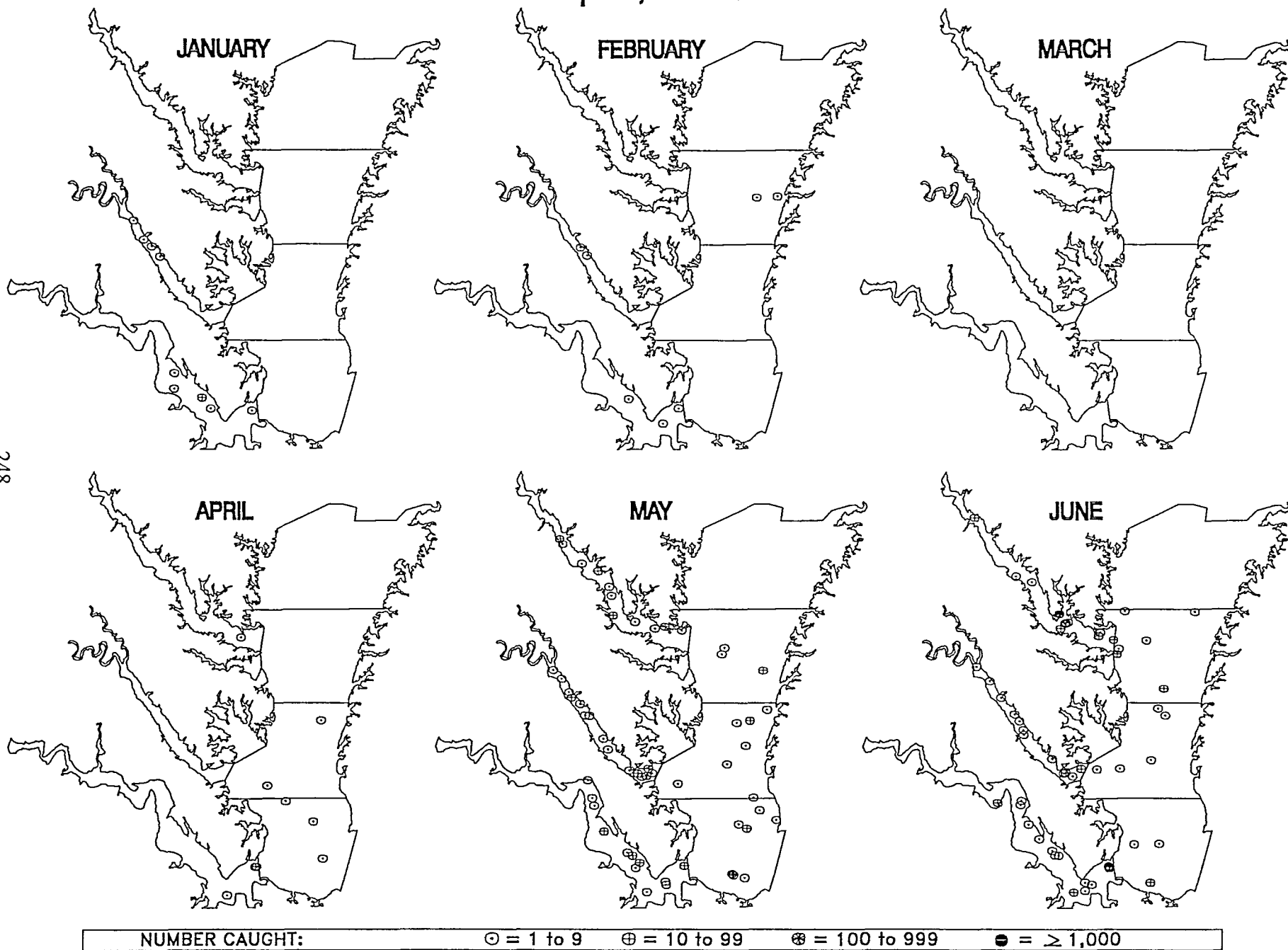
Figure 39.



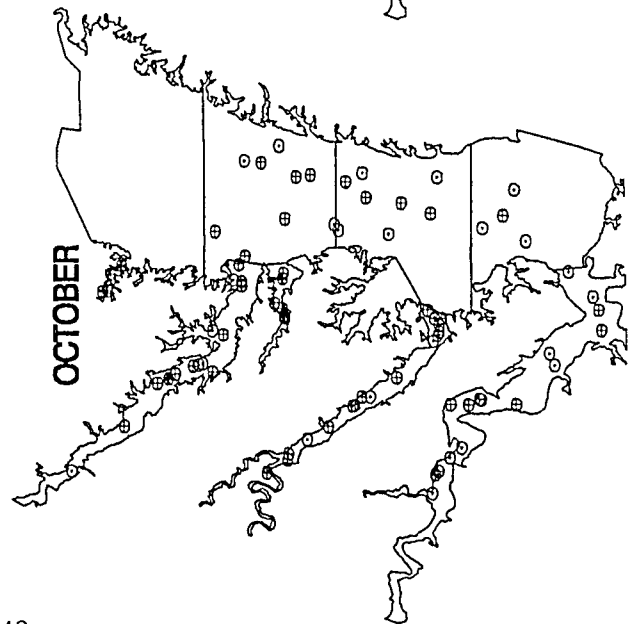
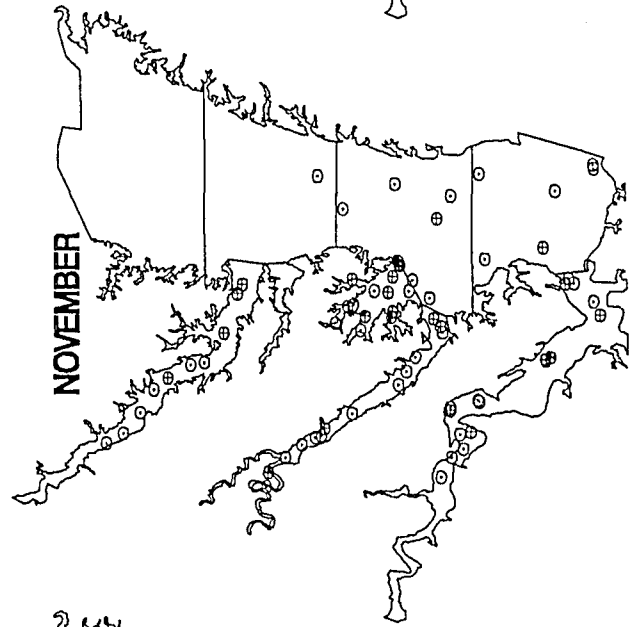
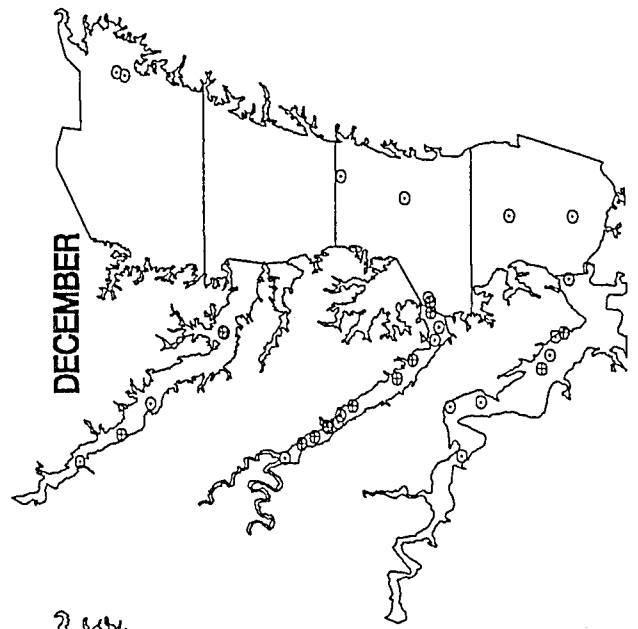
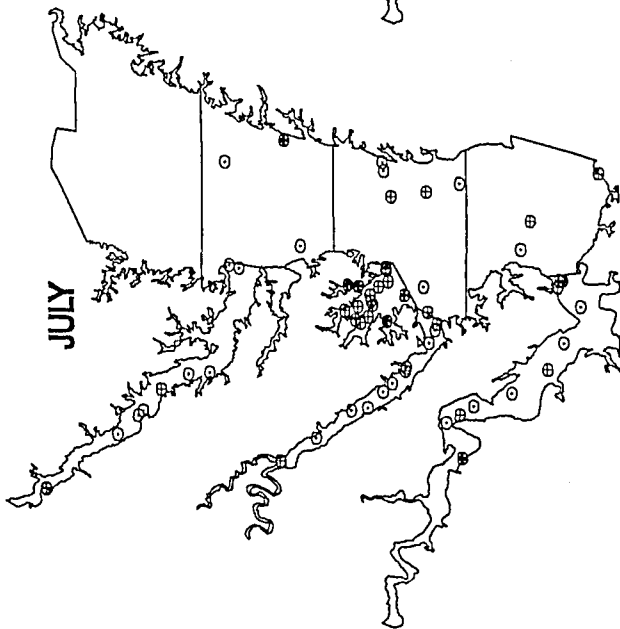
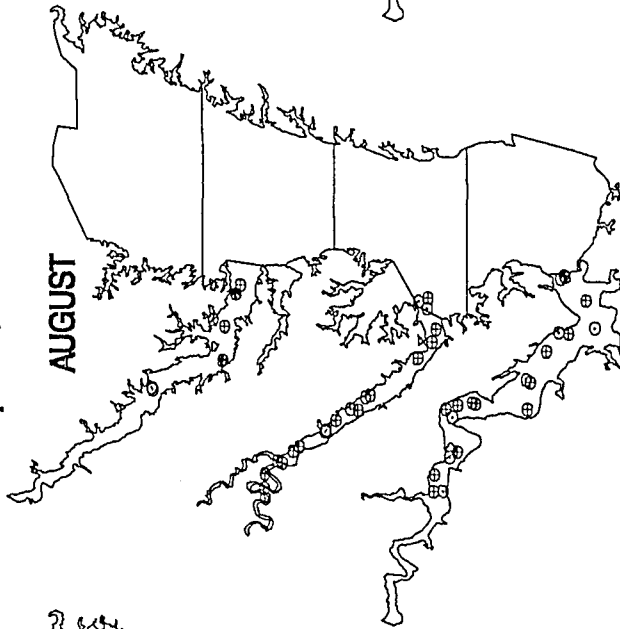
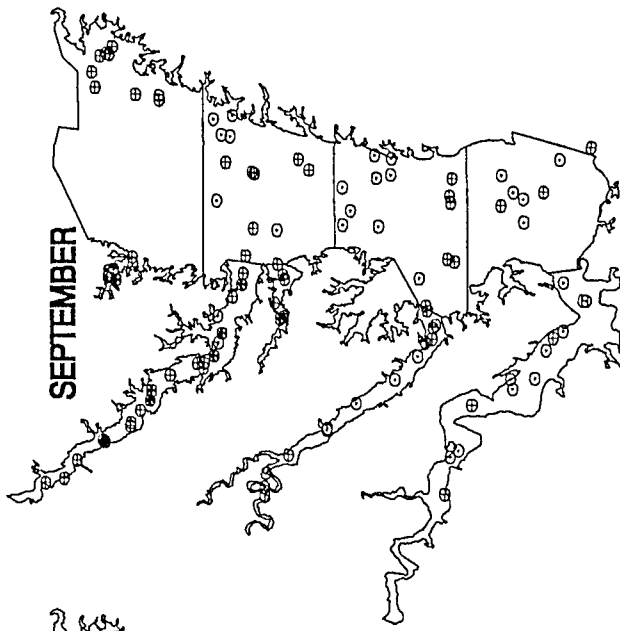
Silver Perch, 1998



Spot, 1998



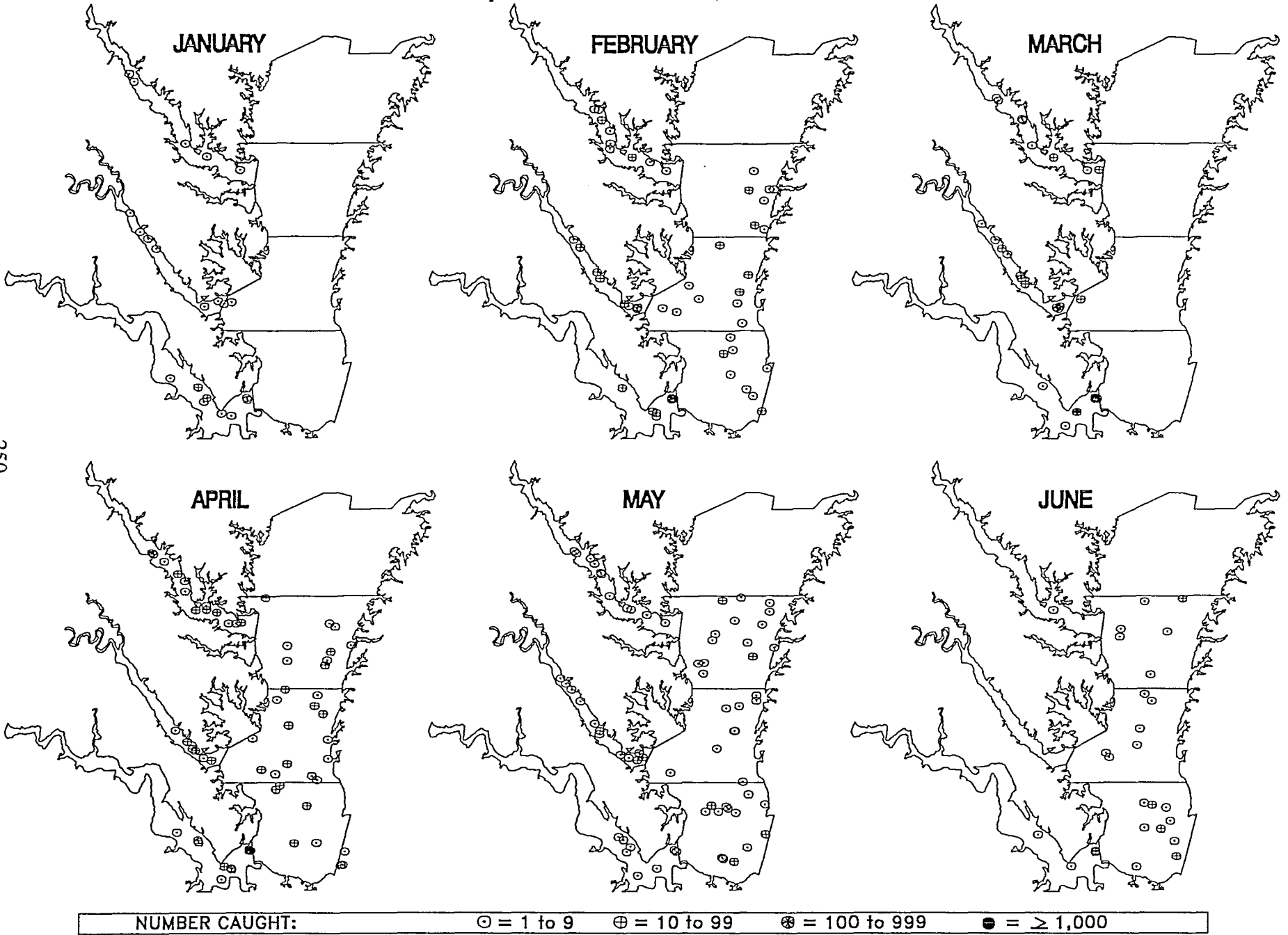
Spot, 1998



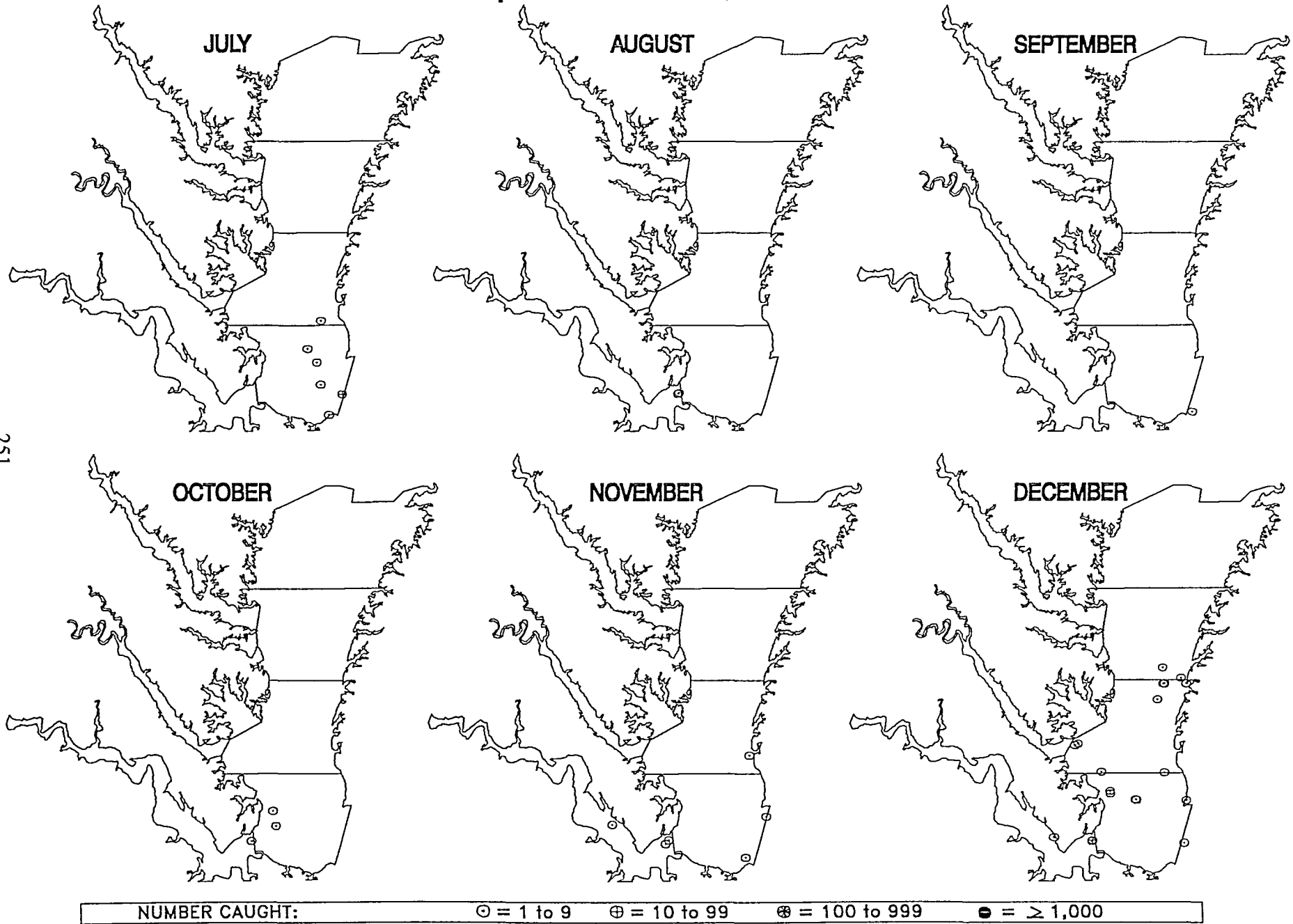
NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = ≥ 1,000

Figure 41.

Spotted Hake, 1998



Spotted Hake, 1998



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Figure 41. (cont.)

Figure 42.

Squid Species, 1998

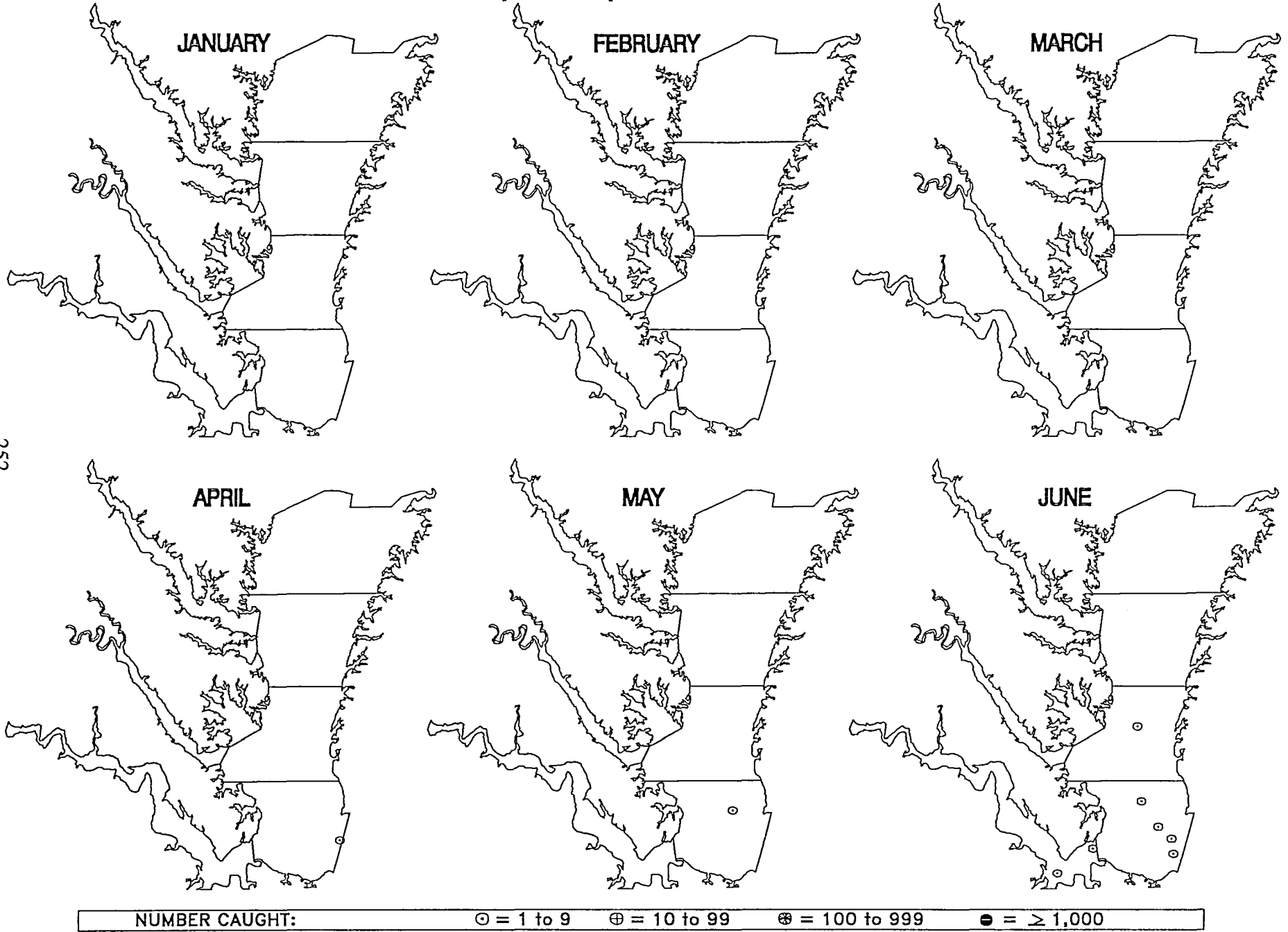




Figure 42. (cont.)

Squid Species, 1998

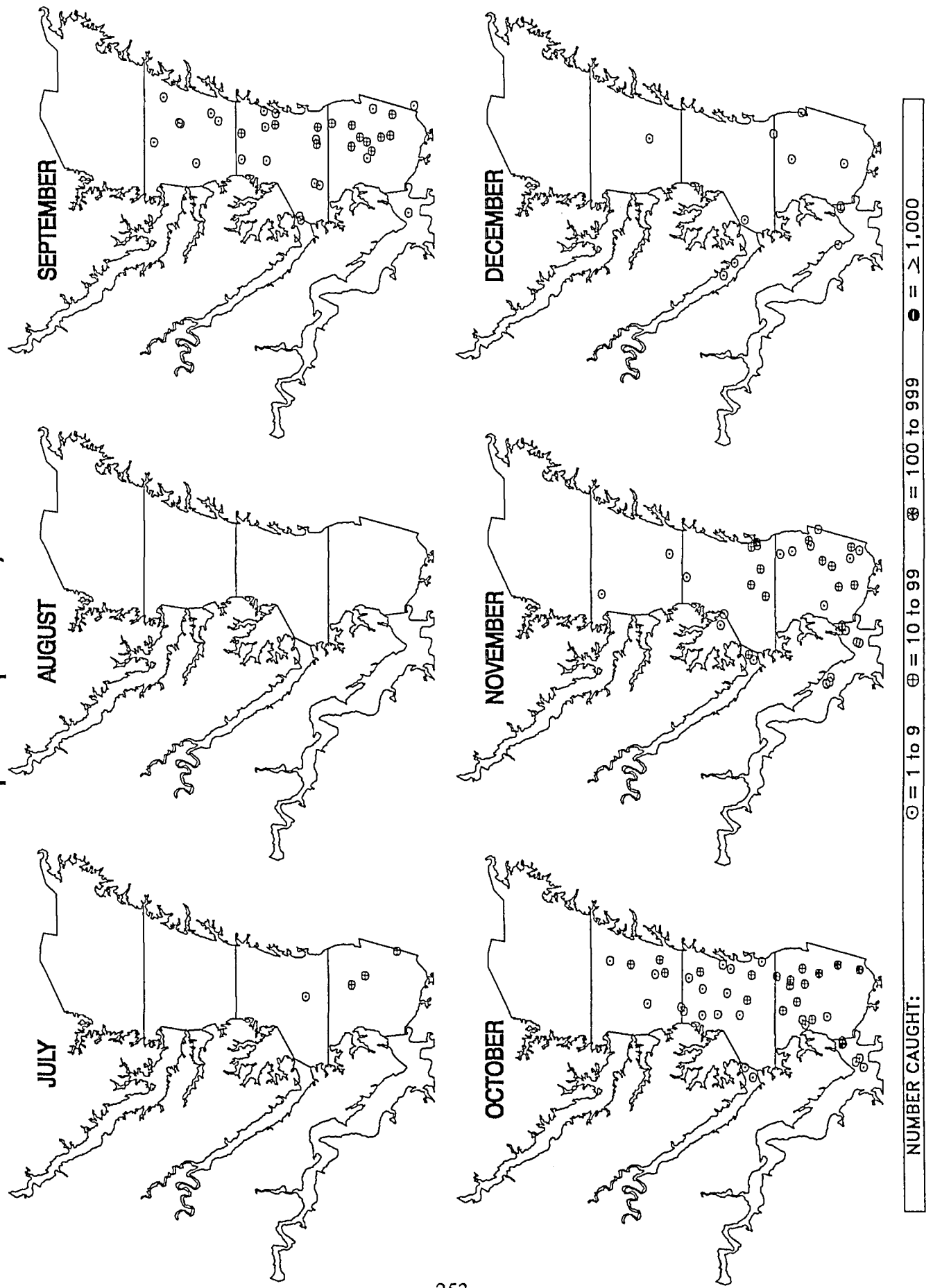
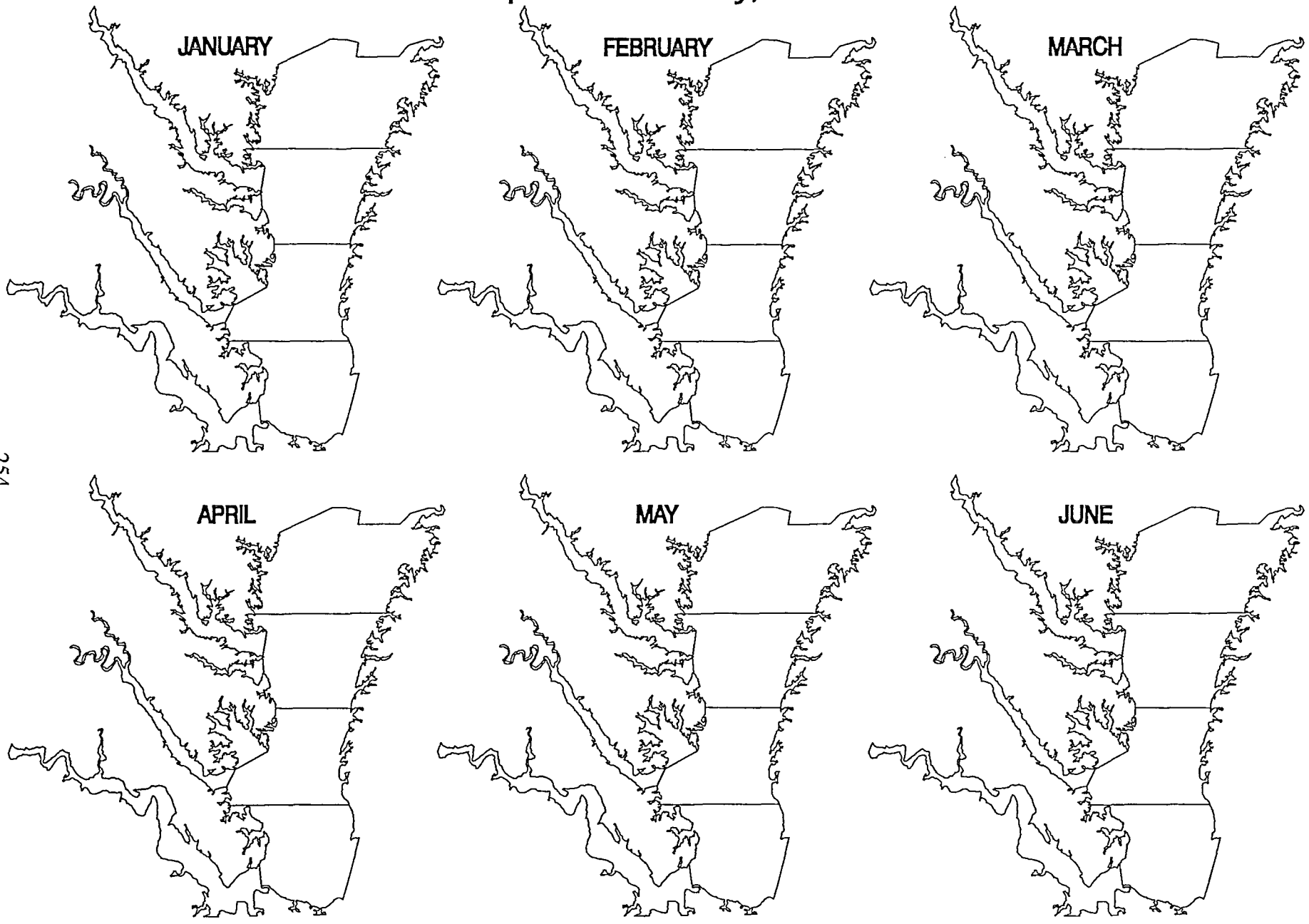


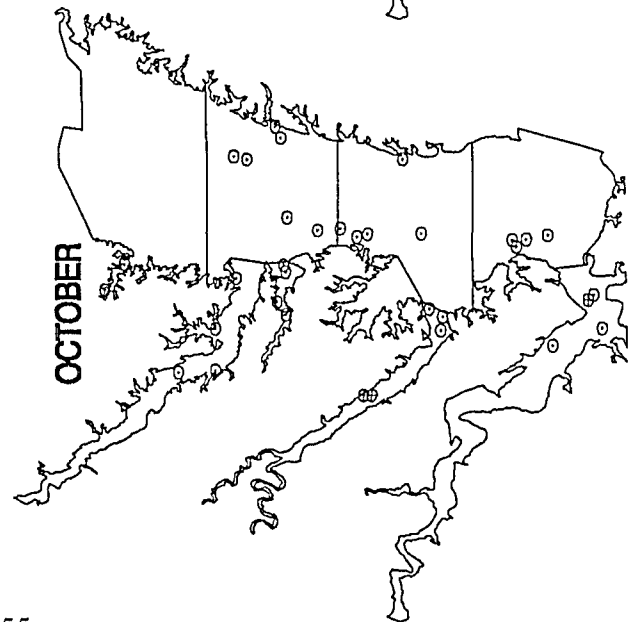
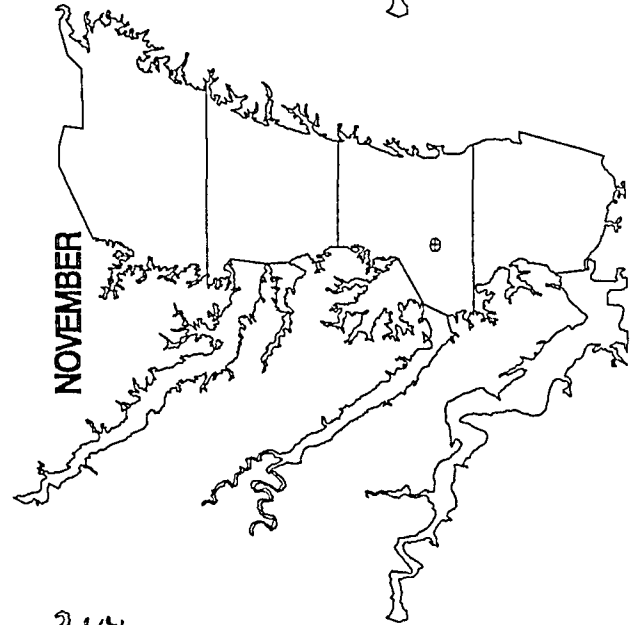
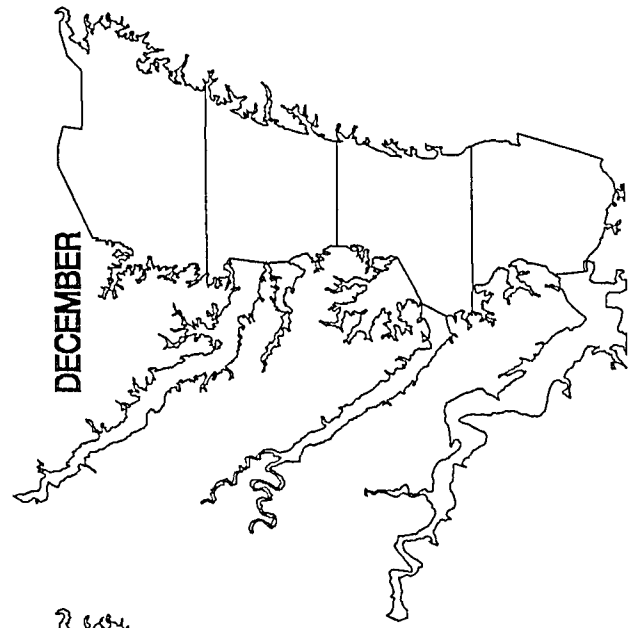
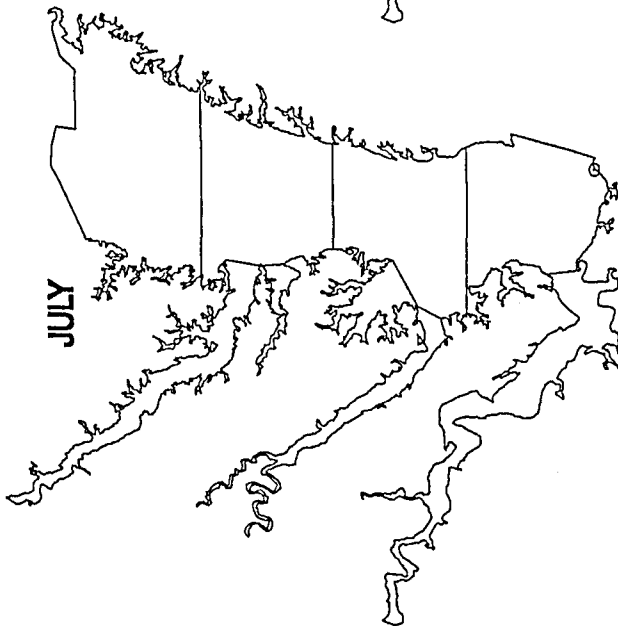
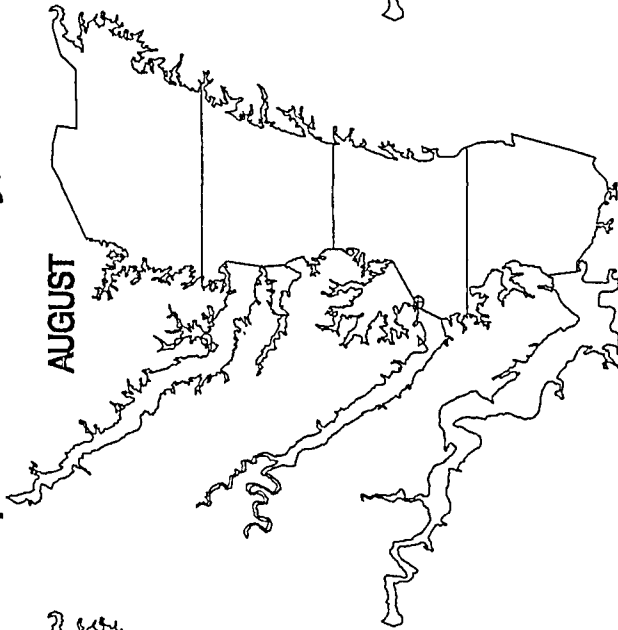
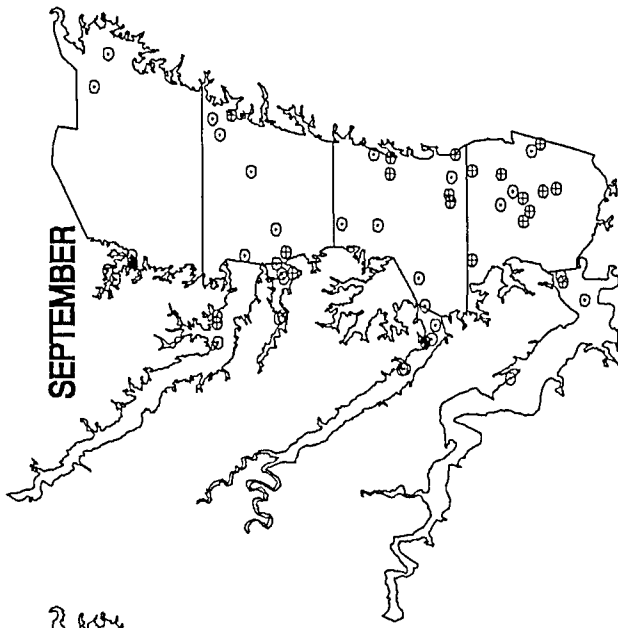
Figure 43.

Striped Anchovy, 1998



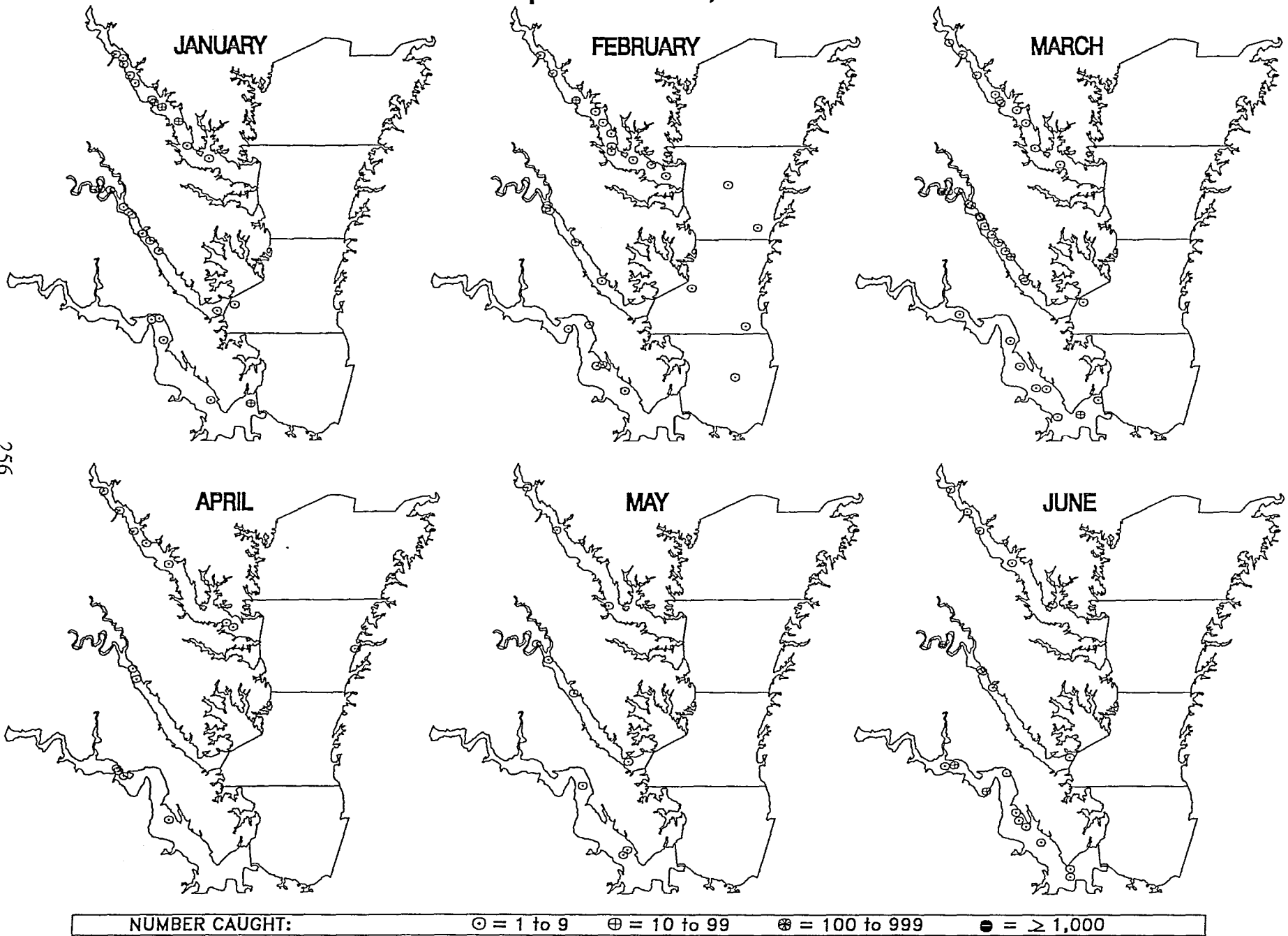
NUMBER CAUGHT: ⊙ = 1 to 9 ⊕ = 10 to 99 ⊛ = 100 to 999 ● = ≥ 1,000

Striped Anchovy, 1998



NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = ≥ 1,000

Striped Bass, 1998



Striped Bass, 1998

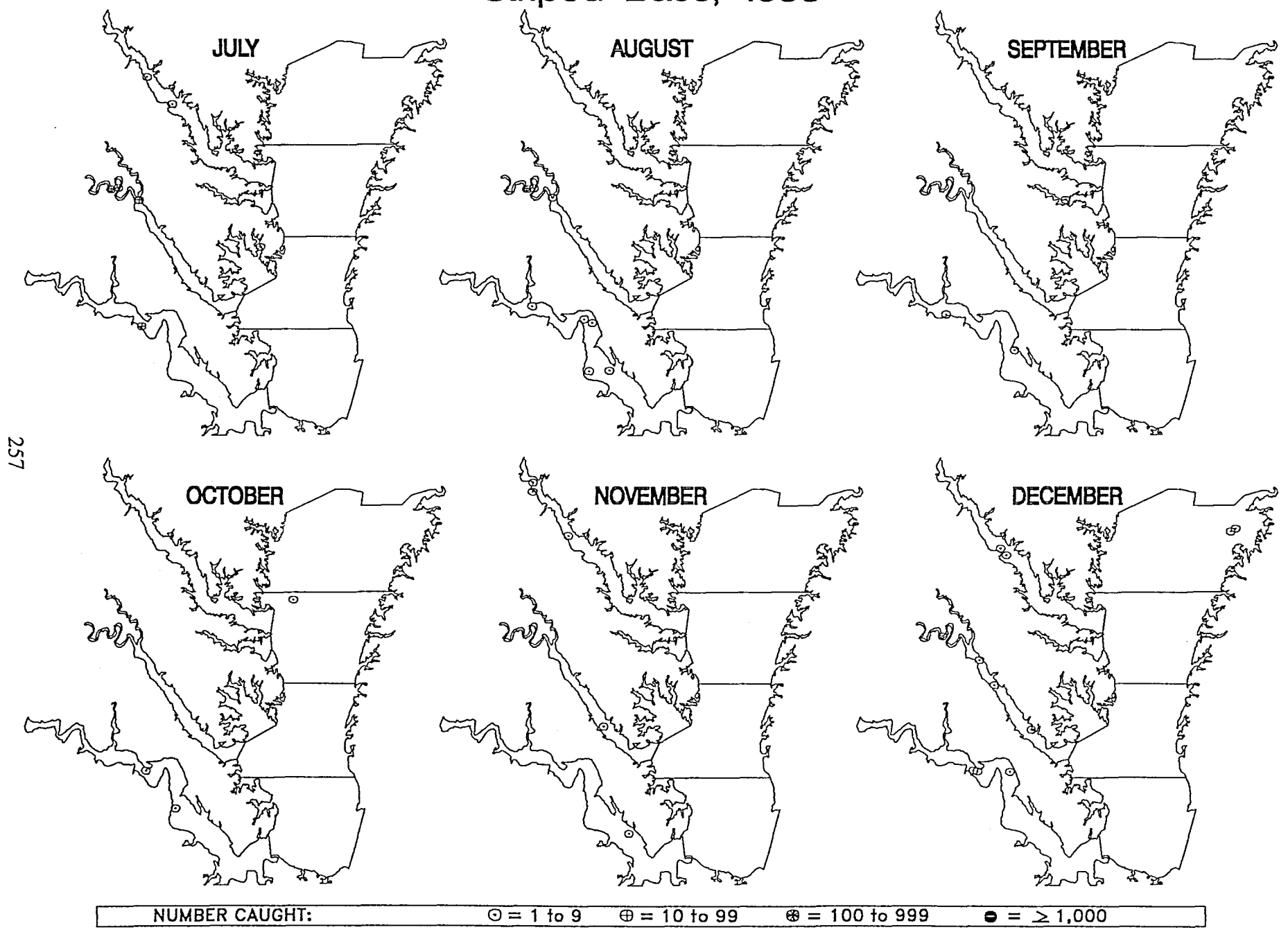
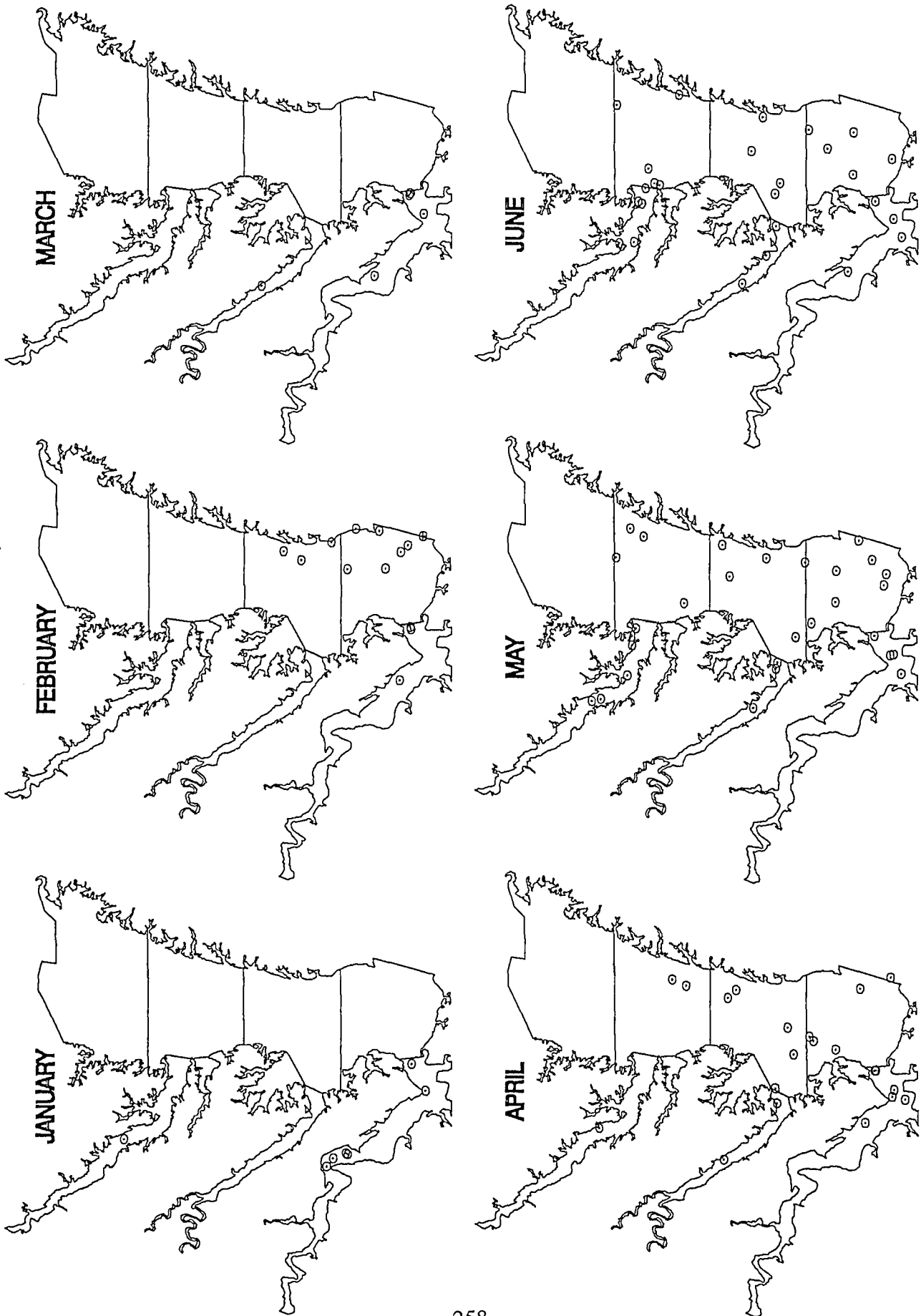


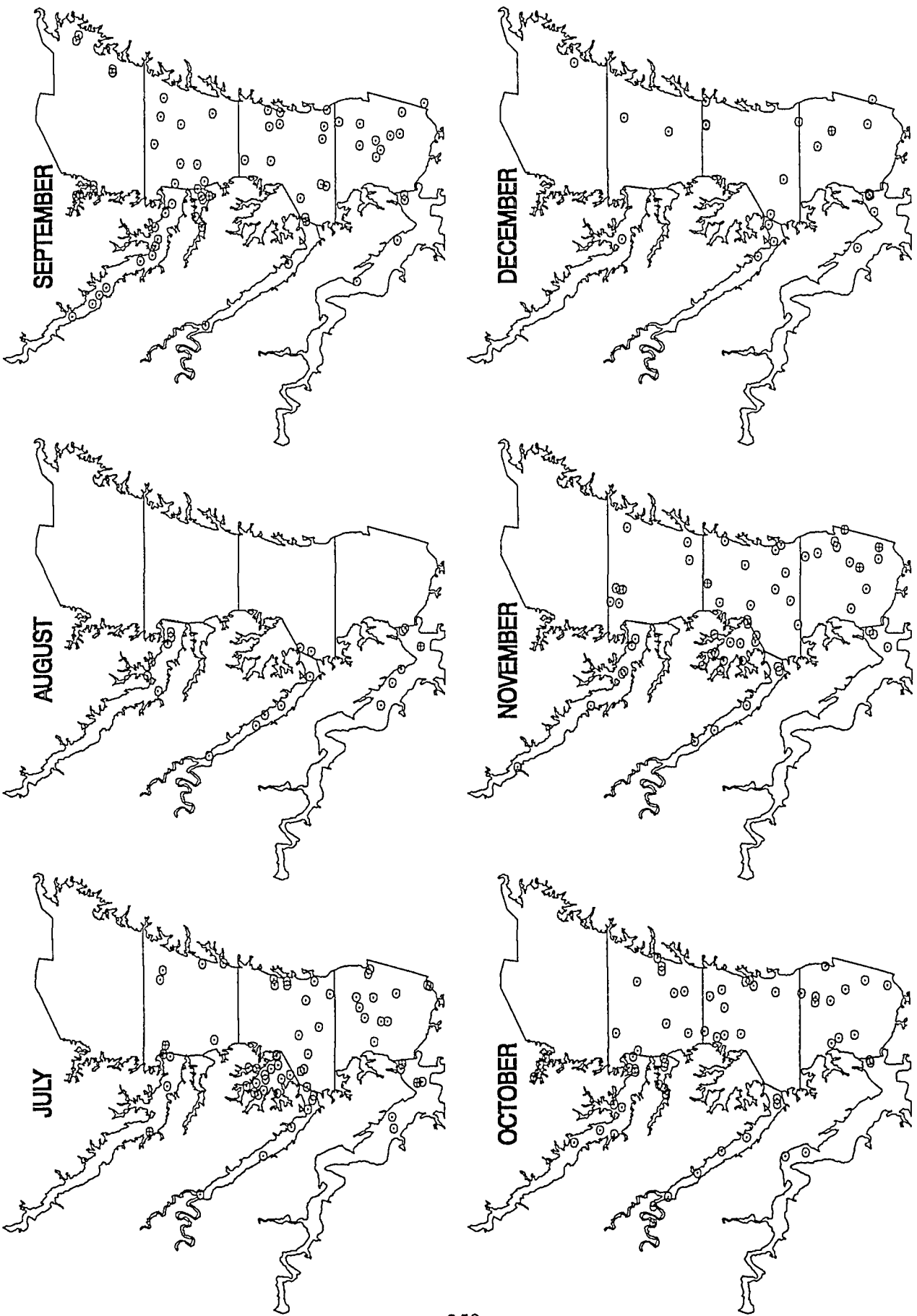
Figure 44. (cont.)

Figure 45.

Summer Flounder, 1998

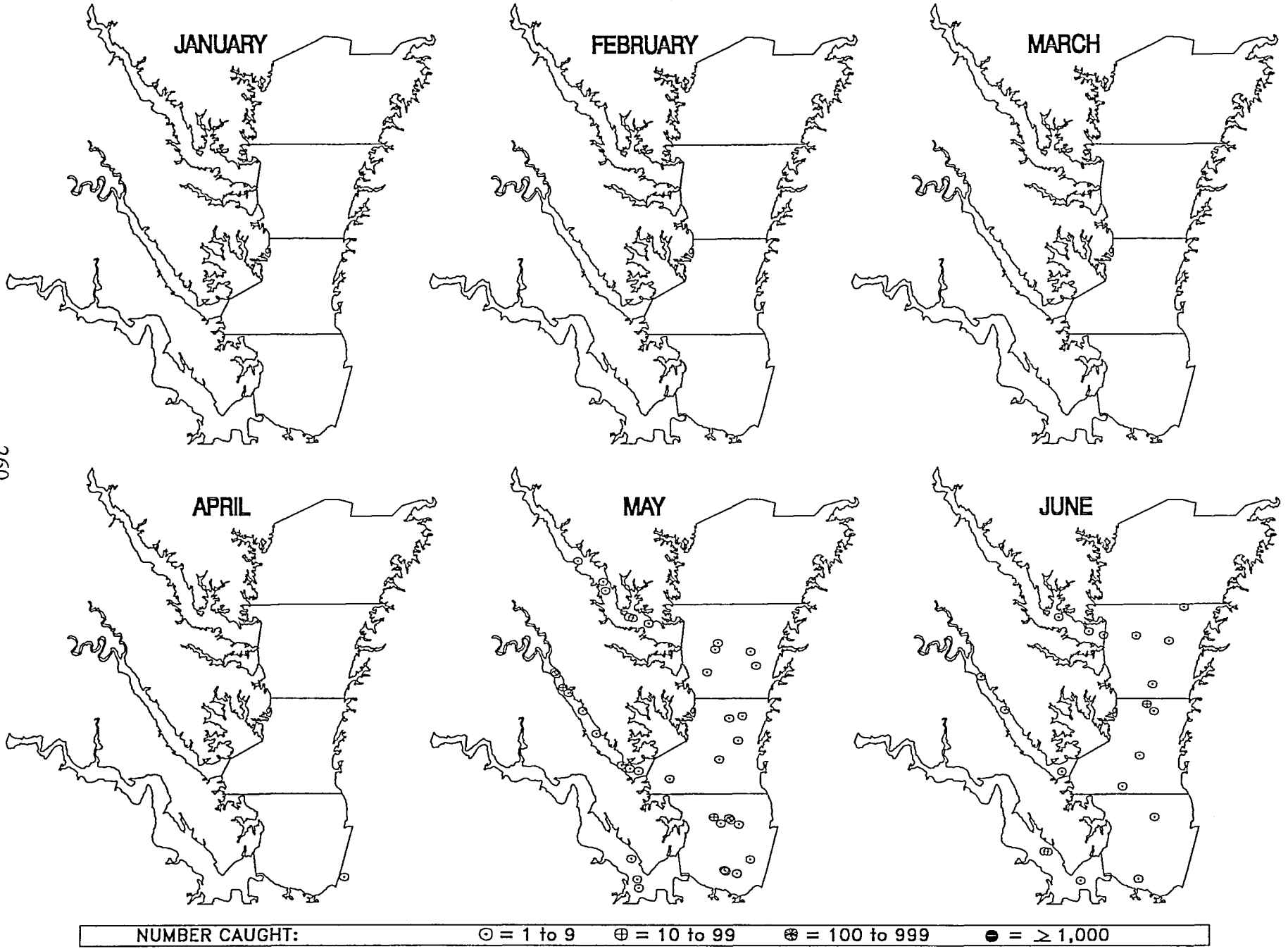


Summer Flounder, 1998



NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = > 1,000

Weakfish, 1998



Weakfish, 1998

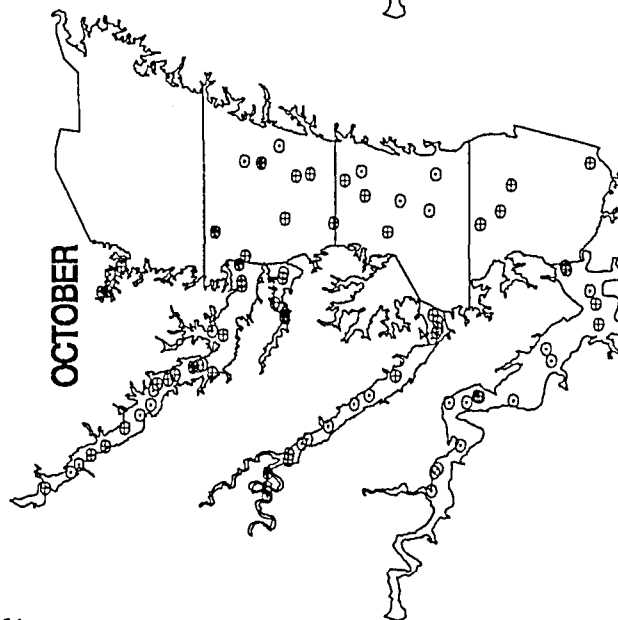
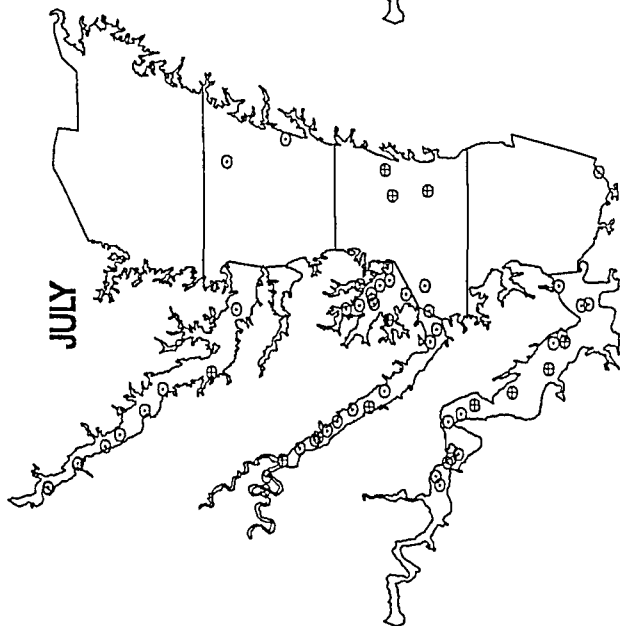
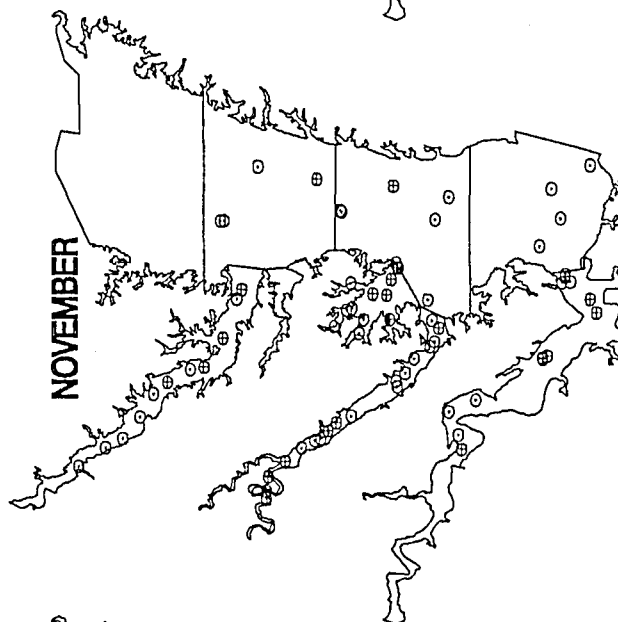
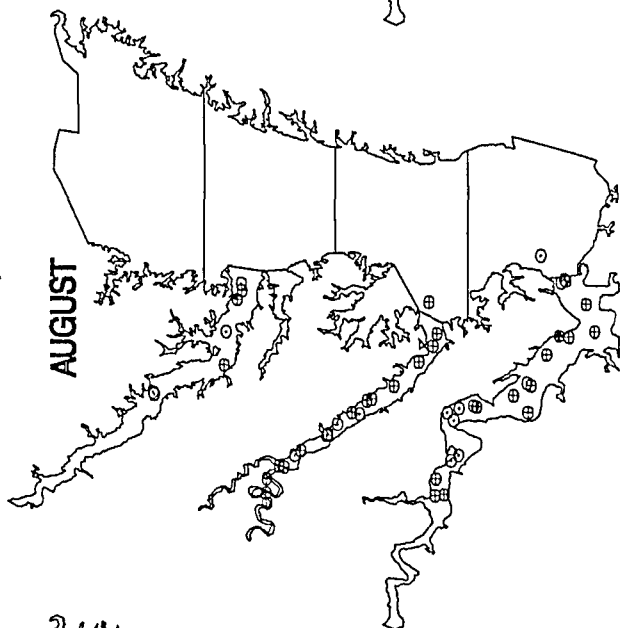
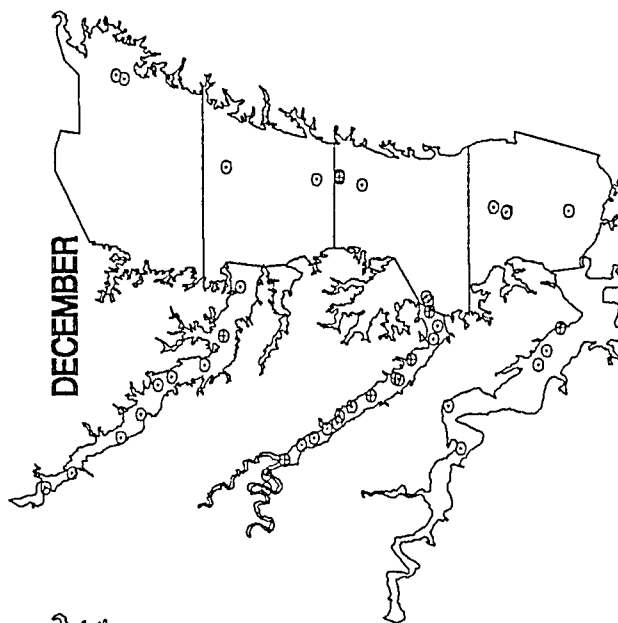
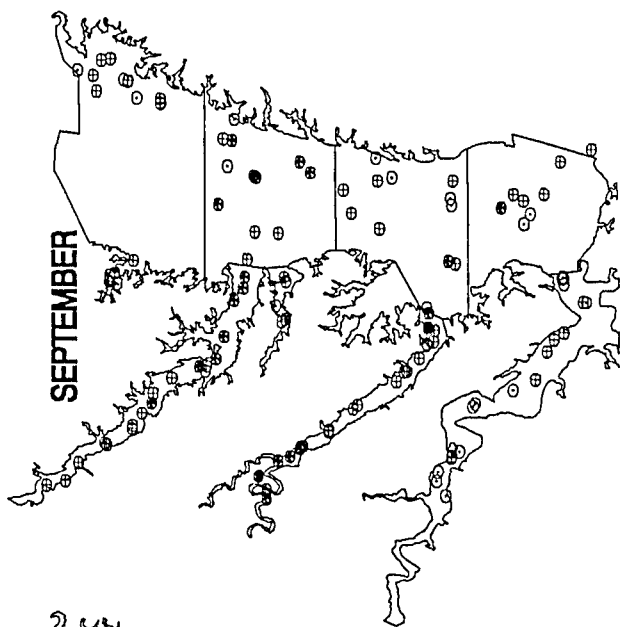
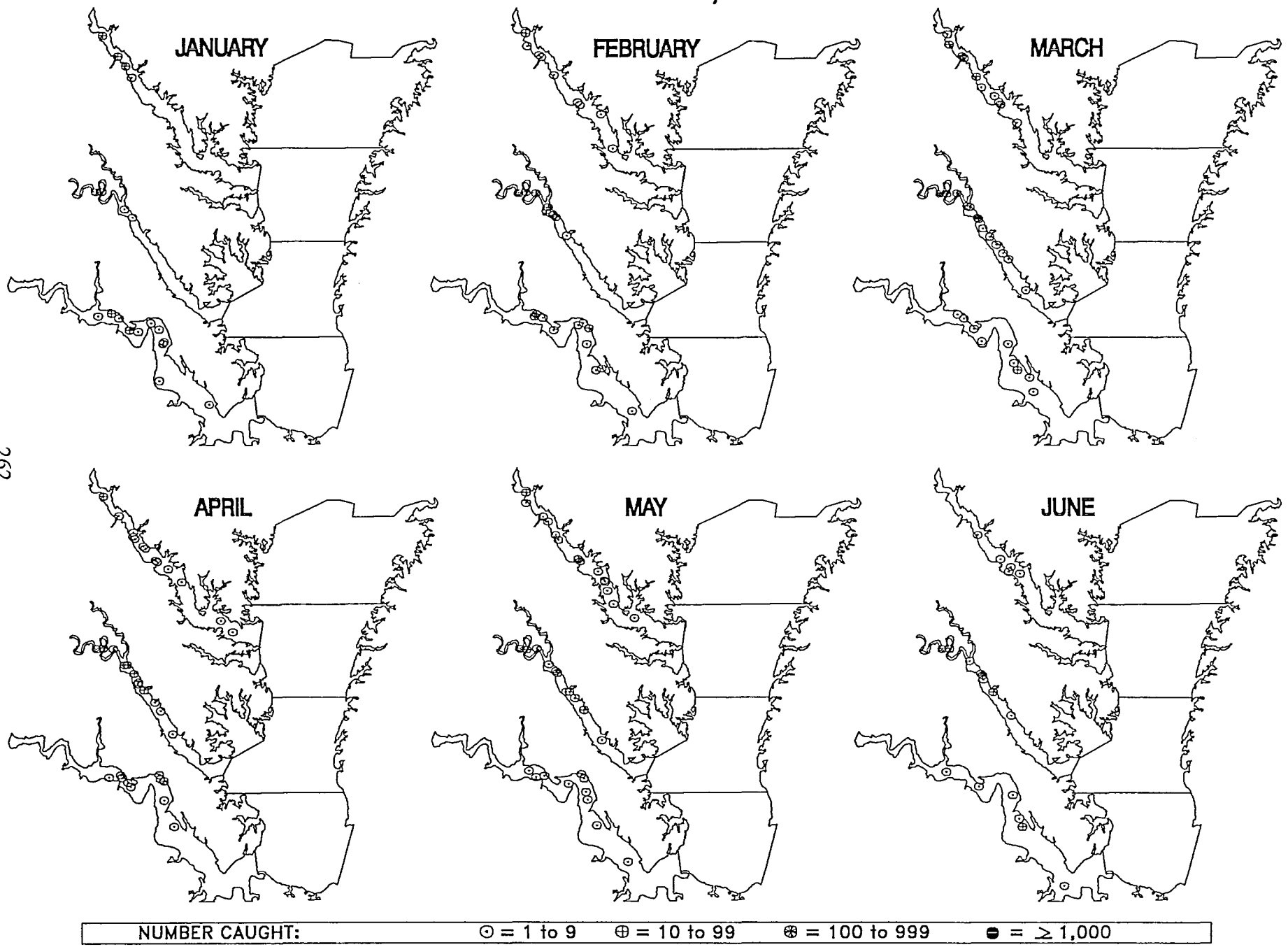


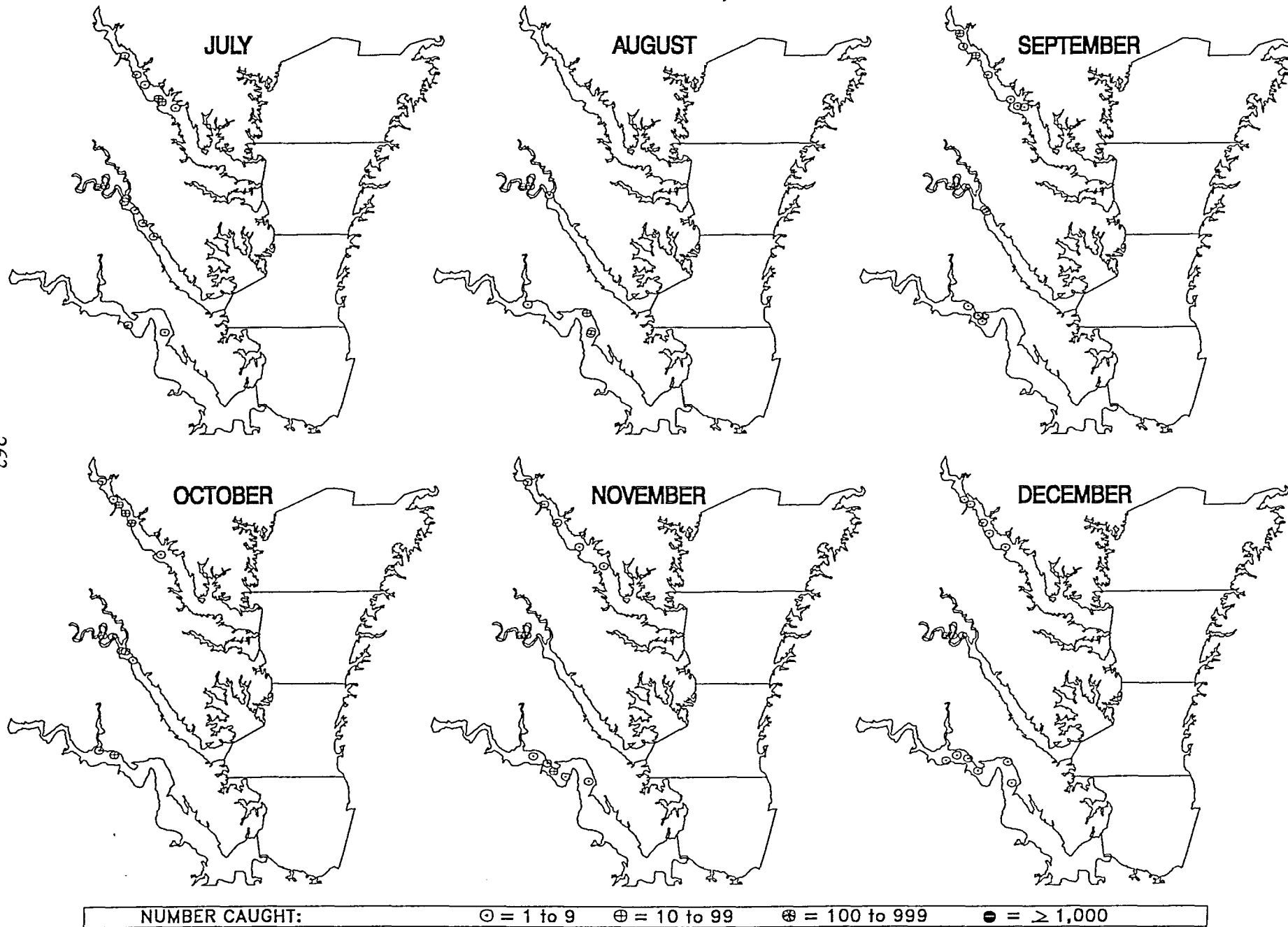
Figure 47.

White Catfish, 1998





White Catfish, 1998

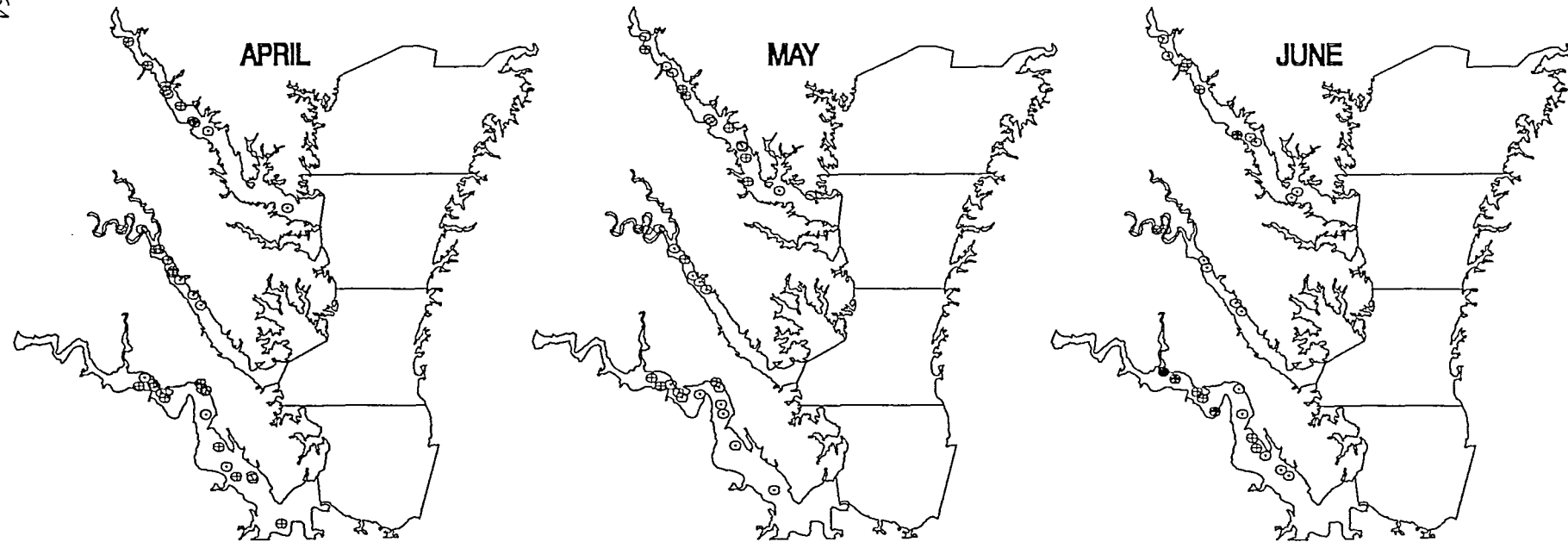
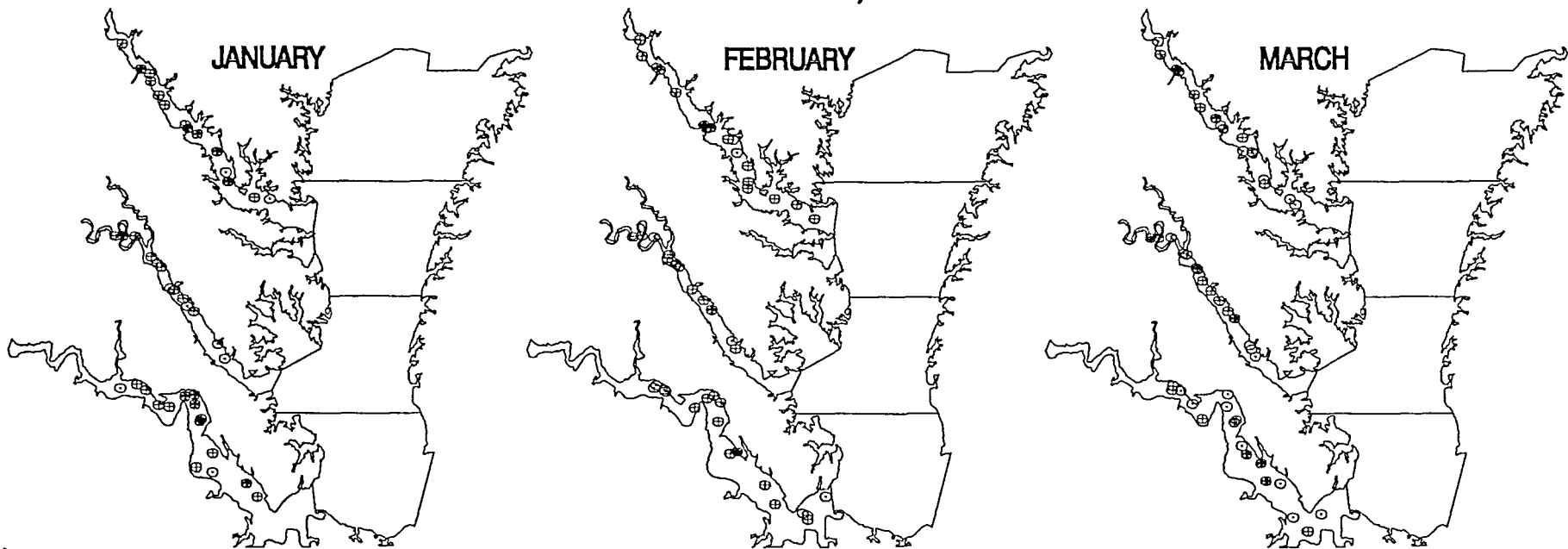


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Figure 47. (cont.)

Figure 48.

White Perch, 1998



NUMBER CAUGHT:

○ = 1 to 9

⊕ = 10 to 99

⊗ = 100 to 999

● = ≥ 1,000



White Perch, 1998

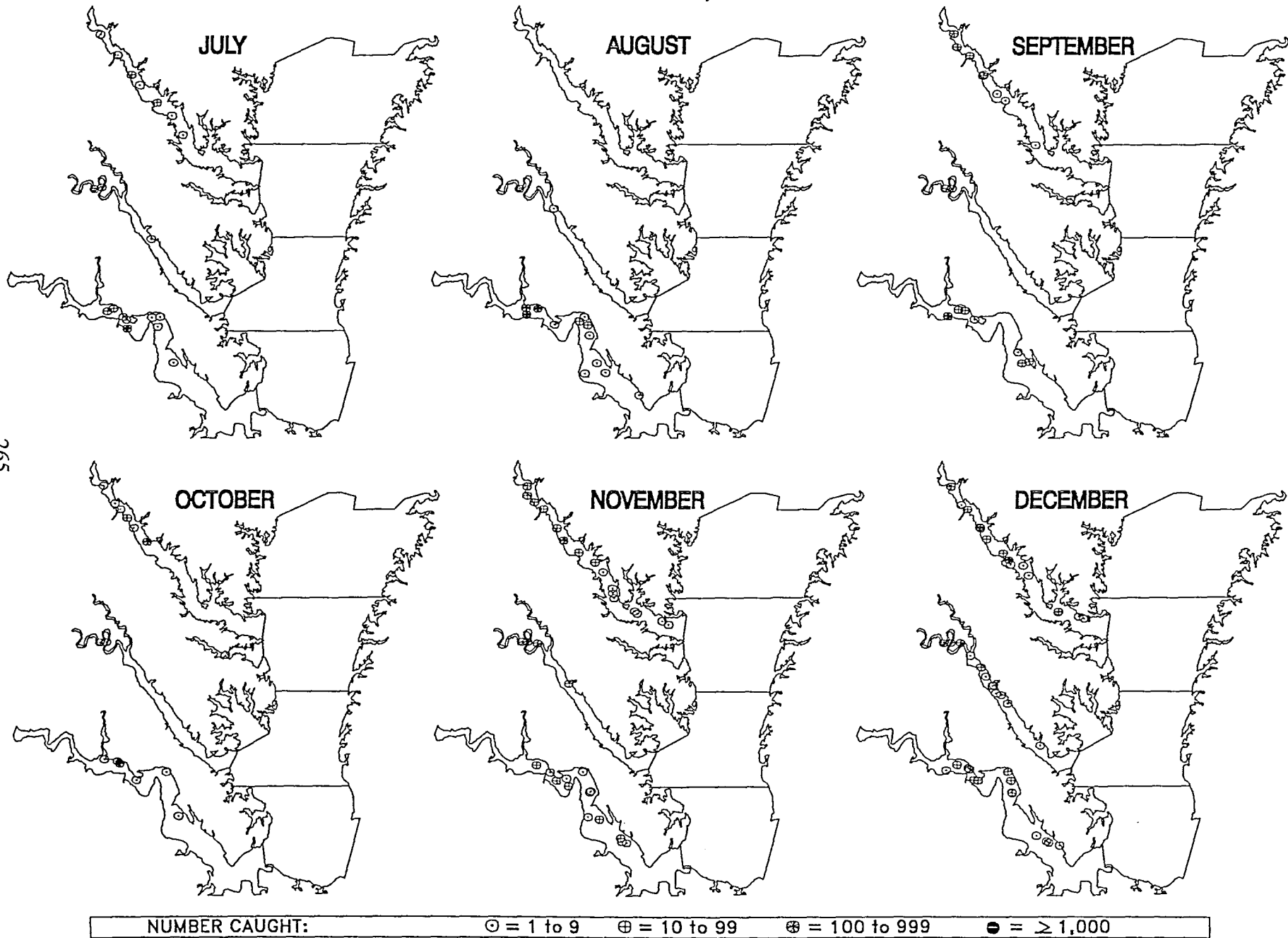
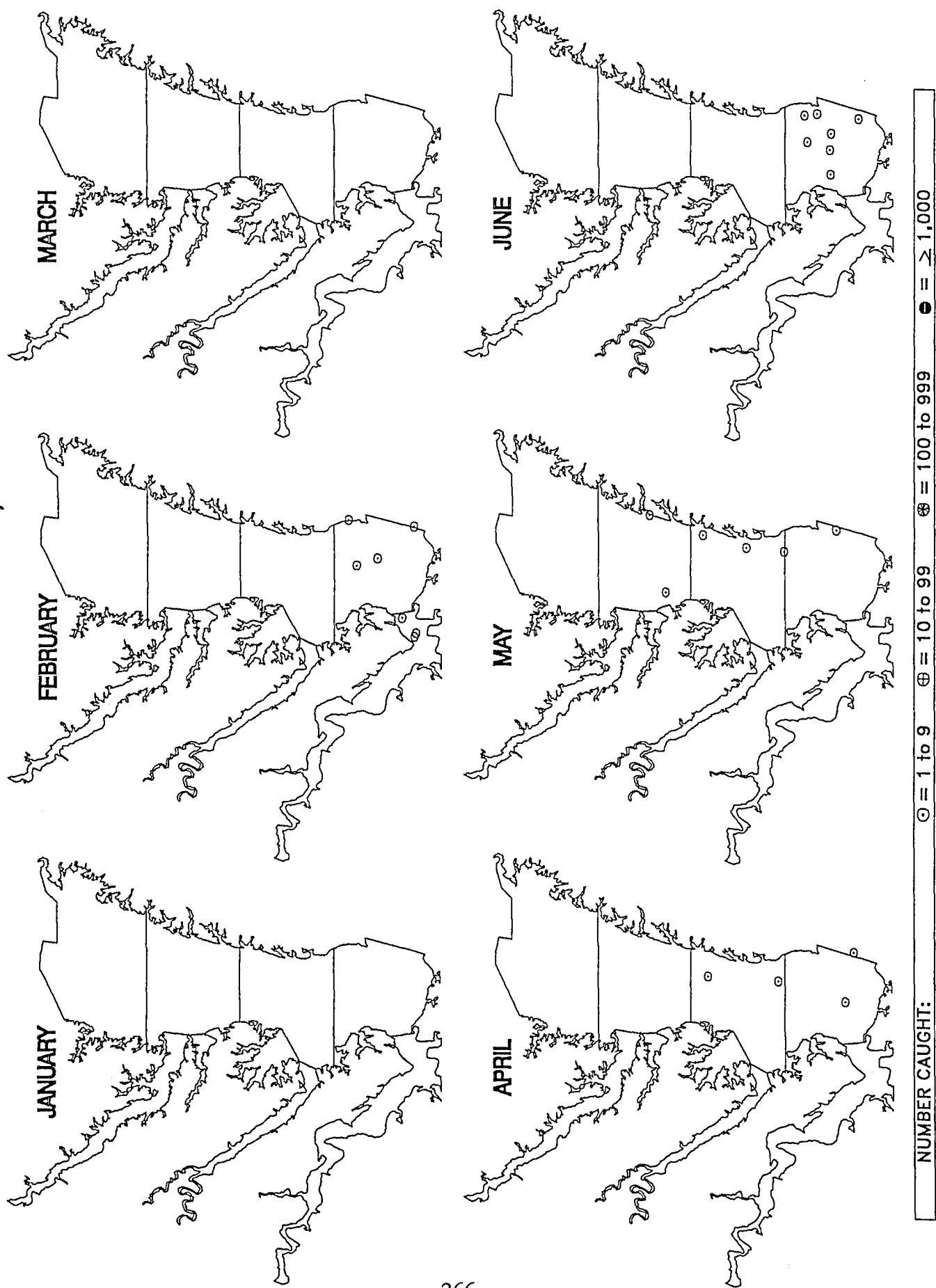
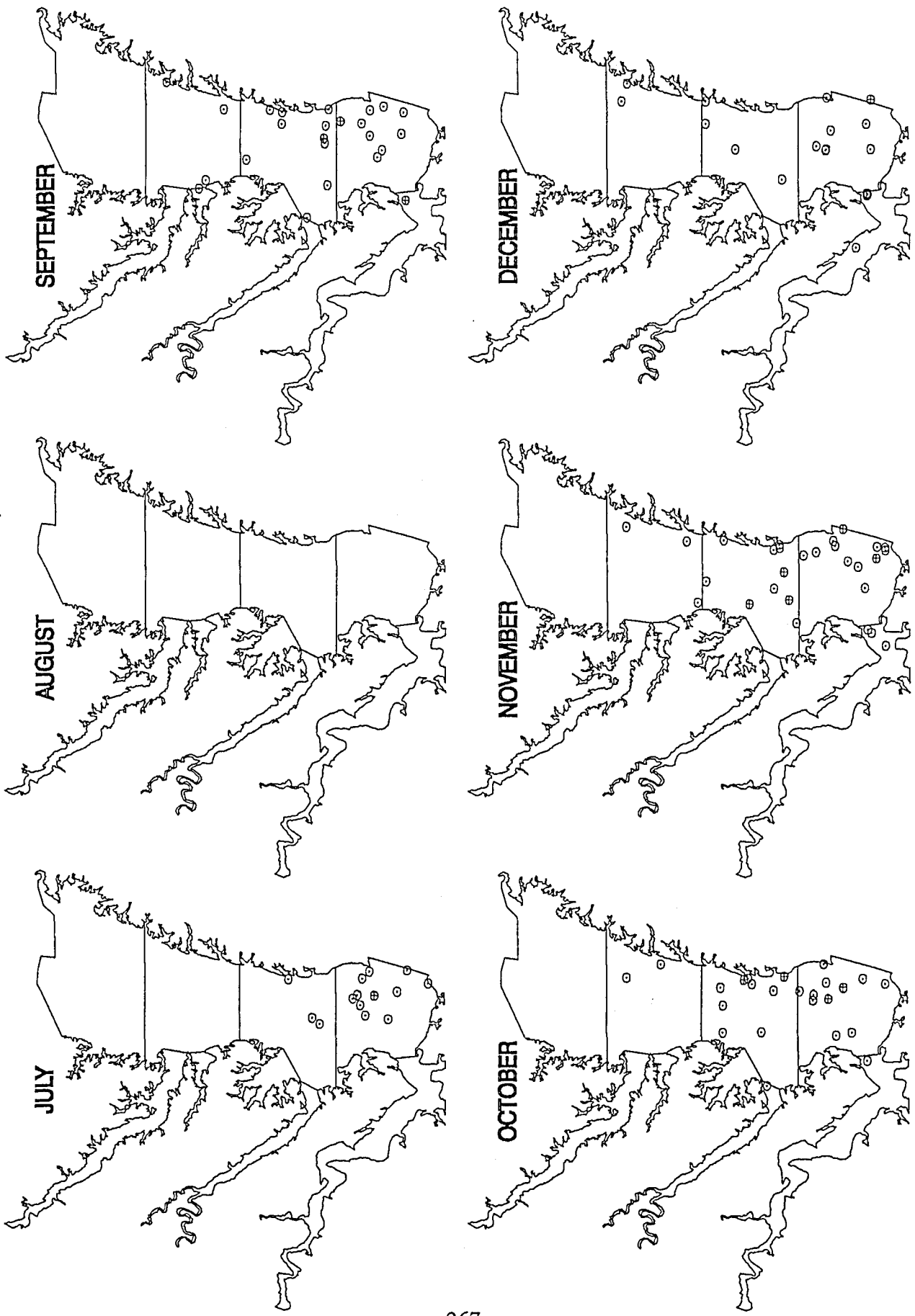


Figure 49. Smallmouth flounder - out of sequence.

Smallmouth Flounder, 1998



Smallmouth Flounder, 1998



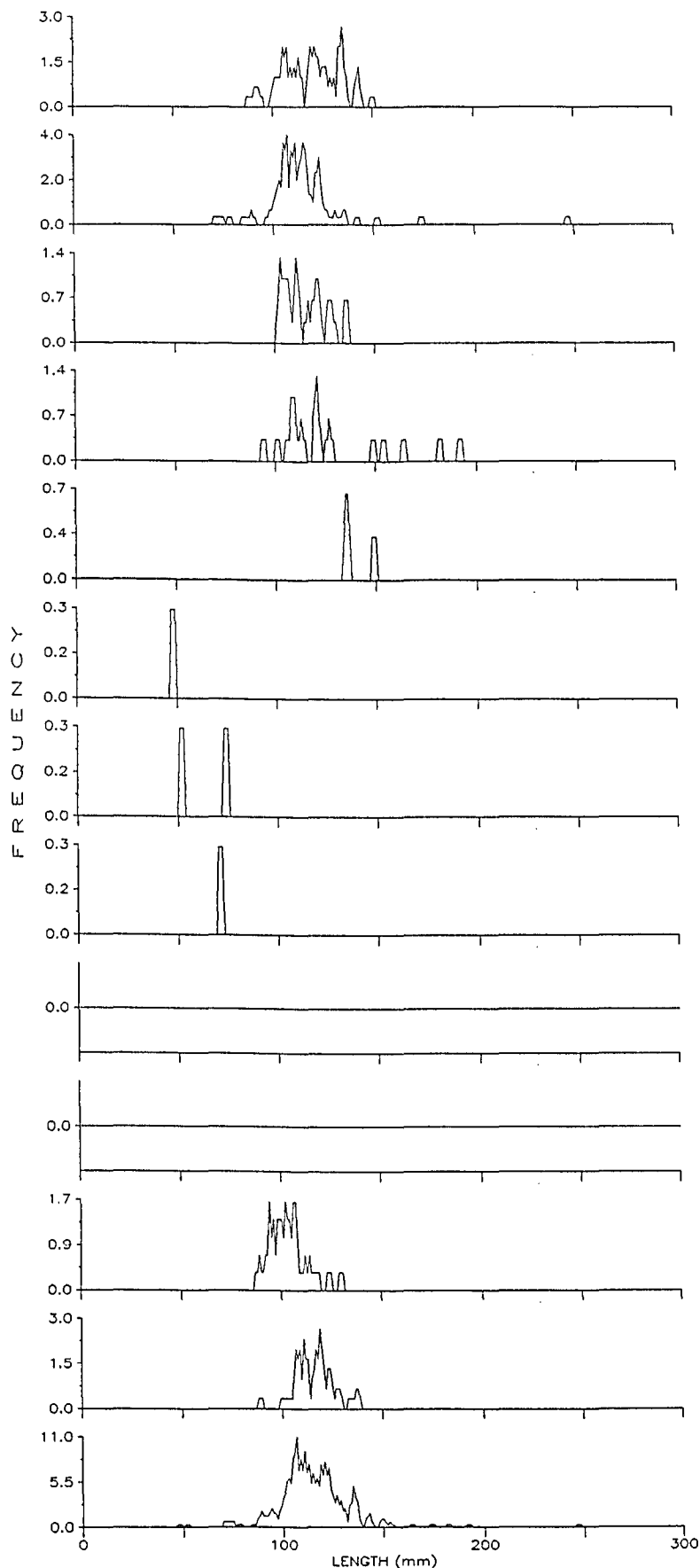
NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ● = 100 to 999 ⊕ = > 1,000

Figures 50-84. Monthly length frequency summaries for selected species.

- Explanations:
- A. These figures represent all specimens of each species sampled in 1998.
 - B. The y axis represents the total number caught for each size class (in mm).
 - C. For curve smoothing, the values plotted are a moving average of three of the number of fish caught at each millimeter length group; therefore fractional values can occur.
 - D. The bottom plot on each page is a summary of all fish for the entire year.
 - E. The values to the right of the month name on each plot represent the inclusive dates of the cruises during the month, in format year-month-day.
 - F. The catch per haul data presented here should not be used as a young-of-year (YOY) index. No distinction has been made in these calculations between YOY and older fish.
 - G. The brief and long-fin squid are presented under one heading as "Squid Species". The three species of penaeid shrimp are also combined. Three of the blue crab categories (male, juvenile female, and adult female) are shown independently, as well as summed, "All Crabs".

Figure 50.

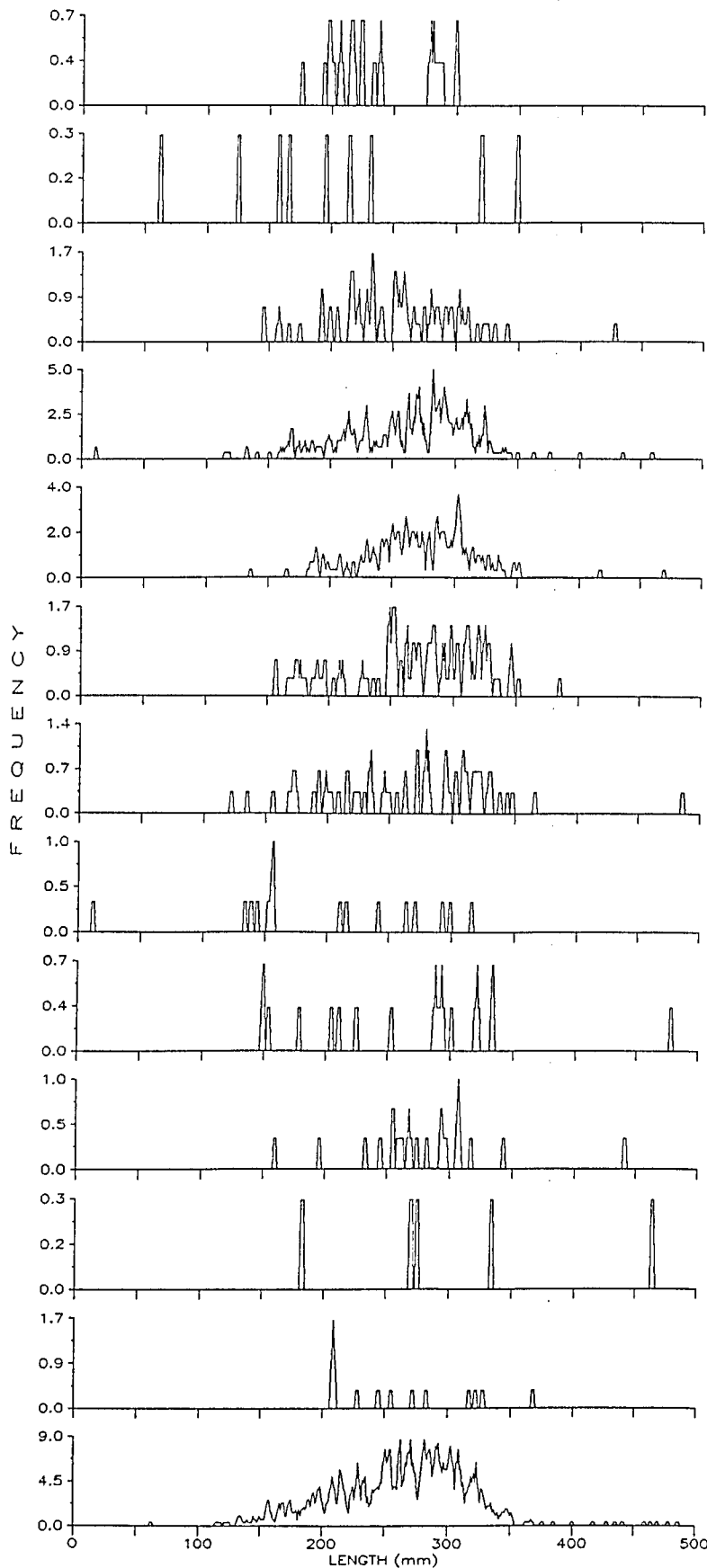
Alewife, 1998



JANUARY	980108	-	980115		
NO. CGHT.	58		MEAN SIZE	-	117.4
NO. MEAS.	58		S.E. SIZE	-	1.9
NO. HAULS	66		MIN. SIZE	-	86
CAT./HAUL	0.9		MAX. SIZE	-	148
FEBRUARY	980202	-	980218		
NO. CGHT.	79		MEAN SIZE	-	112.2
NO. MEAS.	79		S.E. SIZE	-	2.4
NO. HAULS	105		MIN. SIZE	-	69
CAT./HAUL	0.8		MAX. SIZE	-	245
MARCH	980302	-	980306		
NO. CGHT.	22		MEAN SIZE	-	114.1
NO. MEAS.	22		S.E. SIZE	-	2.3
NO. HAULS	66		MIN. SIZE	-	100
CAT./HAUL	0.3		MAX. SIZE	-	134
APRIL	980401	-	980414		
NO. CGHT.	19		MEAN SIZE	-	126
NO. MEAS.	19		S.E. SIZE	-	6.3
NO. HAULS	105		MIN. SIZE	-	92
CAT./HAUL	0.2		MAX. SIZE	-	190
MAY	980504	-	980518		
NO. CGHT.	3		MEAN SIZE	-	138
NO. MEAS.	3		S.E. SIZE	-	4.5
NO. HAULS	111		MIN. SIZE	-	133
CAT./HAUL	0		MAX. SIZE	-	147
JUNE	980601	-	980611		
NO. CGHT.	1		MEAN SIZE	-	46
NO. MEAS.	1		S.E. SIZE	-	.
NO. HAULS	111		MIN. SIZE	-	46
CAT./HAUL	0		MAX. SIZE	-	46
JULY	980701	-	980715		
NO. CGHT.	2		MEAN SIZE	-	61
NO. MEAS.	2		S.E. SIZE	-	11
NO. HAULS	128		MIN. SIZE	-	50
CAT./HAUL	0		MAX. SIZE	-	72
AUGUST	980803	-	980811		
NO. CGHT.	1		MEAN SIZE	-	69
NO. MEAS.	1		S.E. SIZE	-	.
NO. HAULS	59		MIN. SIZE	-	69
CAT./HAUL	0		MAX. SIZE	-	69
SEPTEMBER	980910	-	980928		
NO. CGHT.	0		MEAN SIZE	-	.
NO. MEAS.	0		S.E. SIZE	-	.
NO. HAULS	138		MIN. SIZE	-	.
CAT./HAUL	0		MAX. SIZE	-	.
OCTOBER	981005	-	981016		
NO. CGHT.	0		MEAN SIZE	-	.
NO. MEAS.	0		S.E. SIZE	-	.
NO. HAULS	124		MIN. SIZE	-	.
CAT./HAUL	0		MAX. SIZE	-	.
NOVEMBER	981102	-	981113		
NO. CGHT.	29		MEAN SIZE	-	101.6
NO. MEAS.	29		S.E. SIZE	-	1.8
NO. HAULS	130		MIN. SIZE	-	86
CAT./HAUL	0.2		MAX. SIZE	-	128
DECEMBER	981201	-	981216		
NO. CGHT.	39		MEAN SIZE	-	114.2
NO. MEAS.	39		S.E. SIZE	-	1.6
NO. HAULS	119		MIN. SIZE	-	87
CAT./HAUL	0.3		MAX. SIZE	-	136
JAN - DEC	980108	-	981216		
NO. CGHT.	253		MEAN SIZE	-	113.2
NO. MEAS.	253		S.E. SIZE	-	1.2
NO. HAULS	1262		MIN. SIZE	-	46
CAT./HAUL	0.2		MAX. SIZE	-	245

Figure 51.

American Eel, 1998



JANUARY	980108	980115	
NO. CGHT.	23	MEAN SIZE	248.1
NO. MEAS.	23	S.E. SIZE	15.8
NO. HAULS	66	MIN. SIZE	174
CAT./HAUL	0.3	MAX. SIZE	549

FEBRUARY	980202	980218	
NO. CGHT.	9	MEAN SIZE	200.6
NO. MEAS.	9	S.E. SIZE	30.1
NO. HAULS	105	MIN. SIZE	60
CAT./HAUL	0.1	MAX. SIZE	347

MARCH	980302	980306	
NO. CGHT.	73	MEAN SIZE	249.6
NO. MEAS.	73	S.E. SIZE	5.9
NO. HAULS	66	MIN. SIZE	144
CAT./HAUL	1.1	MAX. SIZE	426

APRIL	980401	980414	
NO. CGHT.	264	MEAN SIZE	259.8
NO. MEAS.	264	S.E. SIZE	3.2
NO. HAULS	105	MIN. SIZE	113
CAT./HAUL	2.5	MAX. SIZE	457

MAY	980504	980518	
NO. CGHT.	187	MEAN SIZE	271.7
NO. MEAS.	186	S.E. SIZE	3.7
NO. HAULS	111	MIN. SIZE	134
CAT./HAUL	1.7	MAX. SIZE	514

JUNE	980601	980611	
NO. CGHT.	100	MEAN SIZE	267.4
NO. MEAS.	100	S.E. SIZE	5.1
NO. HAULS	111	MIN. SIZE	155
CAT./HAUL	0.9	MAX. SIZE	383

JULY	980701	980715	
NO. CGHT.	61	MEAN SIZE	262.9
NO. MEAS.	61	S.E. SIZE	8.3
NO. HAULS	128	MIN. SIZE	120
CAT./HAUL	0.5	MAX. SIZE	484

AUGUST	980803	980811	
NO. CGHT.	15	MEAN SIZE	208.1
NO. MEAS.	15	S.E. SIZE	17
NO. HAULS	59	MIN. SIZE	132
CAT./HAUL	0.3	MAX. SIZE	314

SEPTEMBER	980910	980928	
NO. CGHT.	19	MEAN SIZE	276.8
NO. MEAS.	19	S.E. SIZE	23.1
NO. HAULS	138	MIN. SIZE	147
CAT./HAUL	0.1	MAX. SIZE	520

OCTOBER	981005	981016	
NO. CGHT.	21	MEAN SIZE	277.2
NO. MEAS.	21	S.E. SIZE	12.1
NO. HAULS	124	MIN. SIZE	158
CAT./HAUL	0.2	MAX. SIZE	439

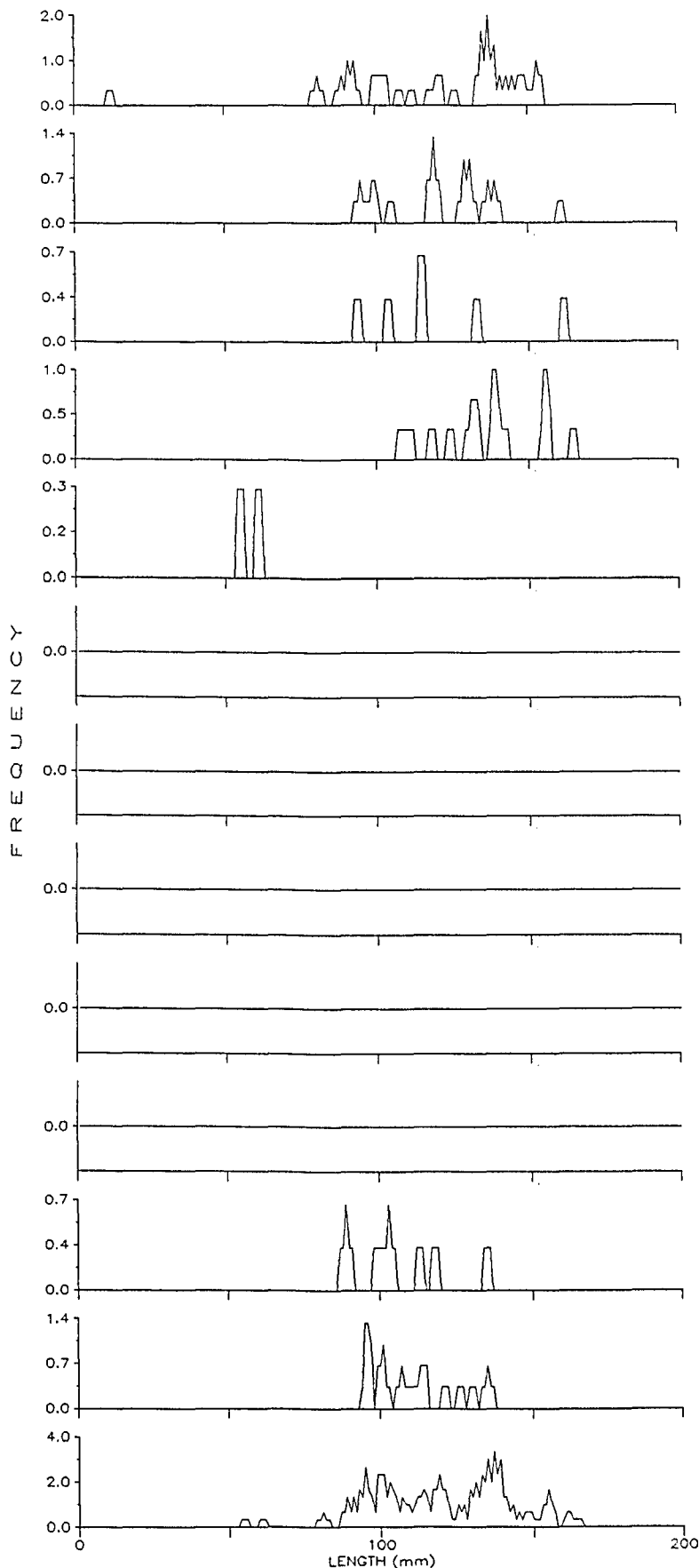
NOVEMBER	981102	981113	
NO. CGHT.	5	MEAN SIZE	303.2
NO. MEAS.	5	S.E. SIZE	46.4
NO. HAULS	130	MIN. SIZE	181
CAT./HAUL	0	MAX. SIZE	462

DECEMBER	981201	981216	
NO. CGHT.	14	MEAN SIZE	259.6
NO. MEAS.	14	S.E. SIZE	14.5
NO. HAULS	119	MIN. SIZE	206
CAT./HAUL	0.1	MAX. SIZE	366

JAN - DEC	980108	981216	
NO. CGHT.	791	MEAN SIZE	262
NO. MEAS.	790	S.E. SIZE	2
NO. HAULS	1262	MIN. SIZE	60
CAT./HAUL	0.6	MAX. SIZE	549

Figure 52.

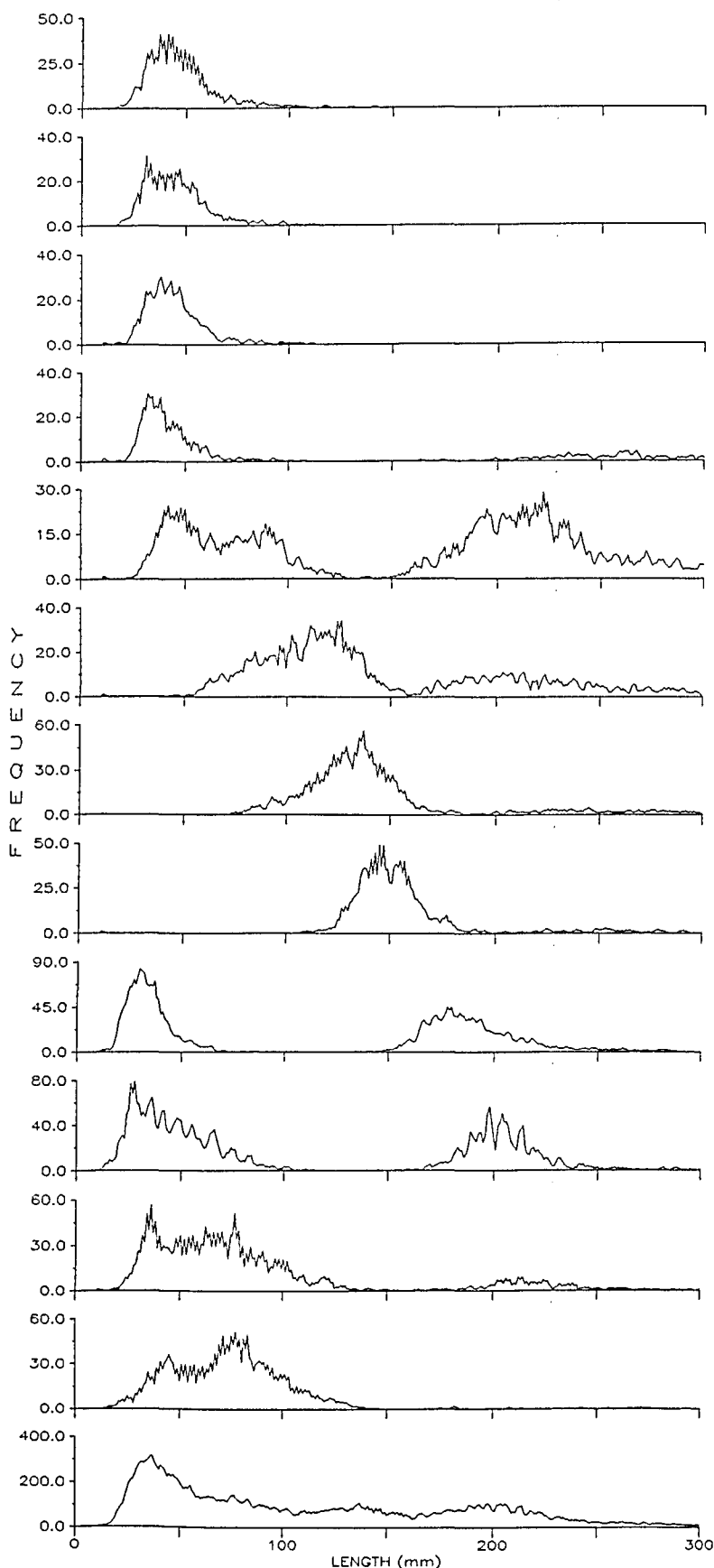
American Shad, 1998



JANUARY	980108	-	980115		
NO. CGHT.	-	34	MEAN SIZE	-	120
NO. MEAS.	-	34	S.E. SIZE	-	4
NO. HAULS	-	66	MIN. SIZE	-	78
CAT./HAUL	-	0.5	MAX. SIZE	-	152
FEBRUARY	980202	-	980218		
NO. CGHT.	-	18	MEAN SIZE	-	124.7
NO. MEAS.	-	18	S.E. SIZE	-	6.7
NO. HAULS	-	105	MIN. SIZE	-	92
CAT./HAUL	-	0.2	MAX. SIZE	-	214
MARCH	980302	-	980306		
NO. CGHT.	-	6	MEAN SIZE	-	118.5
NO. MEAS.	-	6	S.E. SIZE	-	9.9
NO. HAULS	-	66	MIN. SIZE	-	92
CAT./HAUL	-	0.1	MAX. SIZE	-	160
APRIL	980401	-	980414		
NO. CGHT.	-	15	MEAN SIZE	-	134.4
NO. MEAS.	-	15	S.E. SIZE	-	4.4
NO. HAULS	-	105	MIN. SIZE	-	106
CAT./HAUL	-	0.1	MAX. SIZE	-	163
MAY	980504	-	980518		
NO. CGHT.	-	2	MEAN SIZE	-	56
NO. MEAS.	-	2	S.E. SIZE	-	3
NO. HAULS	-	111	MIN. SIZE	-	53
CAT./HAUL	-	0	MAX. SIZE	-	59
JUNE	980601	-	980611		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	111	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
JULY	980701	-	980715		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	128	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
AUGUST	980803	-	980811		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	59	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
SEPTEMBER	980910	-	980928		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	138	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
OCTOBER	981005	-	981016		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	124	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
NOVEMBER	981102	-	981113		
NO. CGHT.	-	8	MEAN SIZE	-	104.1
NO. MEAS.	-	8	S.E. SIZE	-	5.5
NO. HAULS	-	130	MIN. SIZE	-	86
CAT./HAUL	-	0.1	MAX. SIZE	-	133
DECEMBER	981201	-	981216		
NO. CGHT.	-	17	MEAN SIZE	-	108.9
NO. MEAS.	-	17	S.E. SIZE	-	3.4
NO. HAULS	-	119	MIN. SIZE	-	93
CAT./HAUL	-	0.1	MAX. SIZE	-	134
JAN - DEC	980108	-	981216		
NO. CGHT.	-	100	MEAN SIZE	-	118.5
NO. MEAS.	-	100	S.E. SIZE	-	2.4
NO. HAULS	-	1262	MIN. SIZE	-	53
CAT./HAUL	-	0.1	MAX. SIZE	-	214

Figure 53.

Atlantic Croaker, 1998



JANUARY	980108	-	980115	
NO. CGHT.	- 2552	MEAN SIZE	-	44.5
NO. MEAS.	- 1065	S.E. SIZE	-	0.5
NO. HAULS	- 66	MIN. SIZE	-	15
CAT./HAUL	- 38.7	MAX. SIZE	-	139

FEBRUARY	980202	-	980218	
NO. CGHT.	- 2145	MEAN SIZE	-	43.4
NO. MEAS.	- 775	S.E. SIZE	-	0.6
NO. HAULS	- 105	MIN. SIZE	-	16
CAT./HAUL	- 20.4	MAX. SIZE	-	117

MARCH	980302	-	980306	
NO. CGHT.	- 1155	MEAN SIZE	-	42.3
NO. MEAS.	- 737	S.E. SIZE	-	0.5
NO. HAULS	- 66	MIN. SIZE	-	15
CAT./HAUL	- 17.5	MAX. SIZE	-	109

APRIL	980401	-	980414	
NO. CGHT.	- 1845	MEAN SIZE	-	95
NO. MEAS.	- 814	S.E. SIZE	-	3.5
NO. HAULS	- 105	MIN. SIZE	-	16
CAT./HAUL	- 17.6	MAX. SIZE	-	357

MAY	980504	-	980518	
NO. CGHT.	- 4651	MEAN SIZE	-	159.6
NO. MEAS.	- 2748	S.E. SIZE	-	1.6
NO. HAULS	- 111	MIN. SIZE	-	21
CAT./HAUL	- 41.9	MAX. SIZE	-	378

JUNE	980601	-	980611	
NO. CGHT.	- 4297	MEAN SIZE	-	143.3
NO. MEAS.	- 2324	S.E. SIZE	-	1.3
NO. HAULS	- 111	MIN. SIZE	-	37
CAT./HAUL	- 38.7	MAX. SIZE	-	353

JULY	980701	-	980715	
NO. CGHT.	- 3462	MEAN SIZE	-	144.4
NO. MEAS.	- 2175	S.E. SIZE	-	1
NO. HAULS	- 128	MIN. SIZE	-	44
CAT./HAUL	- 27	MAX. SIZE	-	369

AUGUST	980803	-	980811	
NO. CGHT.	- 3068	MEAN SIZE	-	155.7
NO. MEAS.	- 1477	S.E. SIZE	-	0.9
NO. HAULS	- 59	MIN. SIZE	-	32
CAT./HAUL	- 52	MAX. SIZE	-	376

SEPTEMBER	980910	-	980928	
NO. CGHT.	- 11551	MEAN SIZE	-	113.2
NO. MEAS.	- 3462	S.E. SIZE	-	1.4
NO. HAULS	- 138	MIN. SIZE	-	11
CAT./HAUL	- 83.7	MAX. SIZE	-	347

OCTOBER	981005	-	981016	
NO. CGHT.	- 16859	MEAN SIZE	-	106.7
NO. MEAS.	- 3920	S.E. SIZE	-	1.3
NO. HAULS	- 124	MIN. SIZE	-	6
CAT./HAUL	- 136	MAX. SIZE	-	353

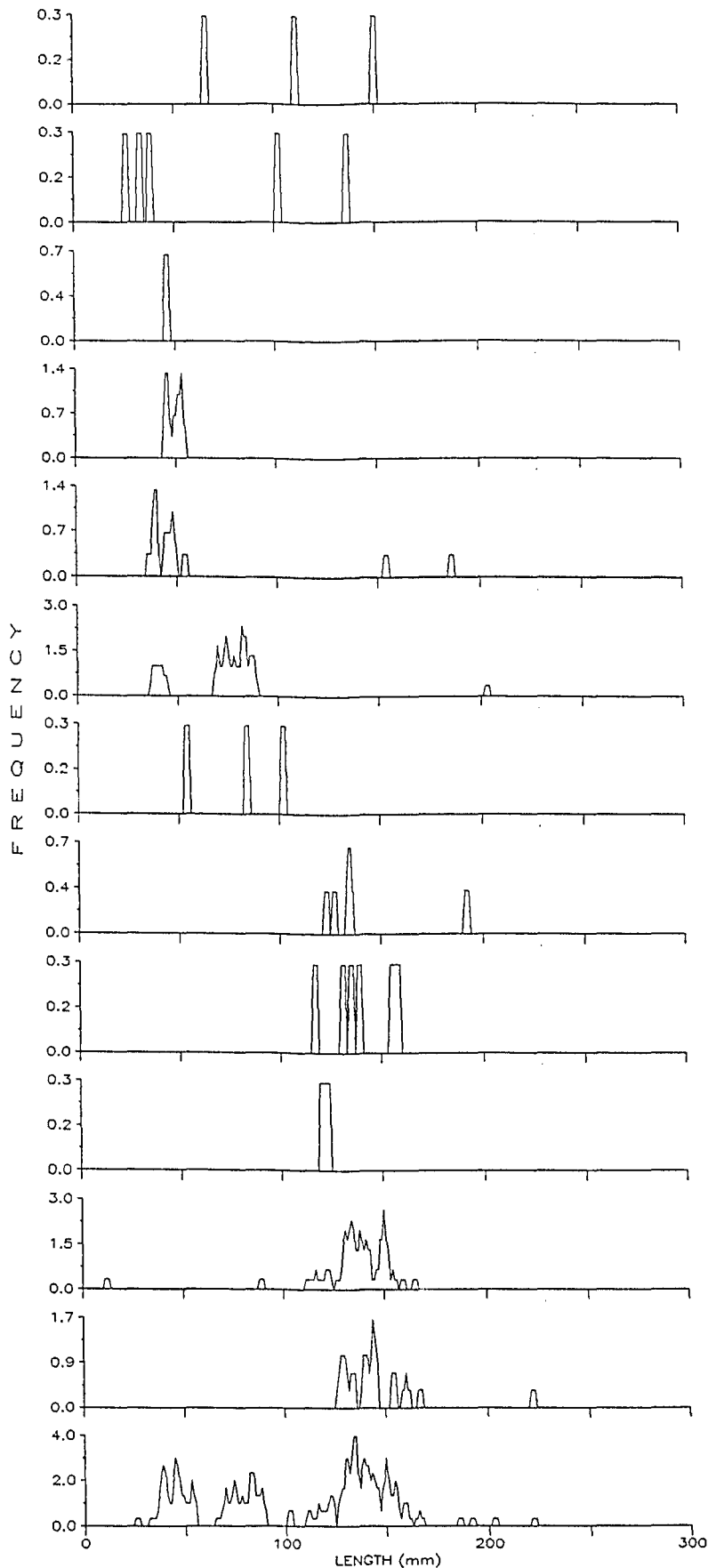
NOVEMBER	981102	-	981113	
NO. CGHT.	- 9820	MEAN SIZE	-	81.6
NO. MEAS.	- 2744	S.E. SIZE	-	1.1
NO. HAULS	- 130	MIN. SIZE	-	16
CAT./HAUL	- 75.5	MAX. SIZE	-	353

DECEMBER	981201	-	981216	
NO. CGHT.	- 23491	MEAN SIZE	-	73.2
NO. MEAS.	- 2493	S.E. SIZE	-	0.7
NO. HAULS	- 119	MIN. SIZE	-	13
CAT./HAUL	- 197.4	MAX. SIZE	-	365

JAN - DEC	980108	-	981216	
NO. CGHT.	- 84896	MEAN SIZE	-	110
NO. MEAS.	- 24734	S.E. SIZE	-	0.5
NO. HAULS	- 1262	MIN. SIZE	-	6
CAT./HAUL	- 67.3	MAX. SIZE	-	378

Figure 54.

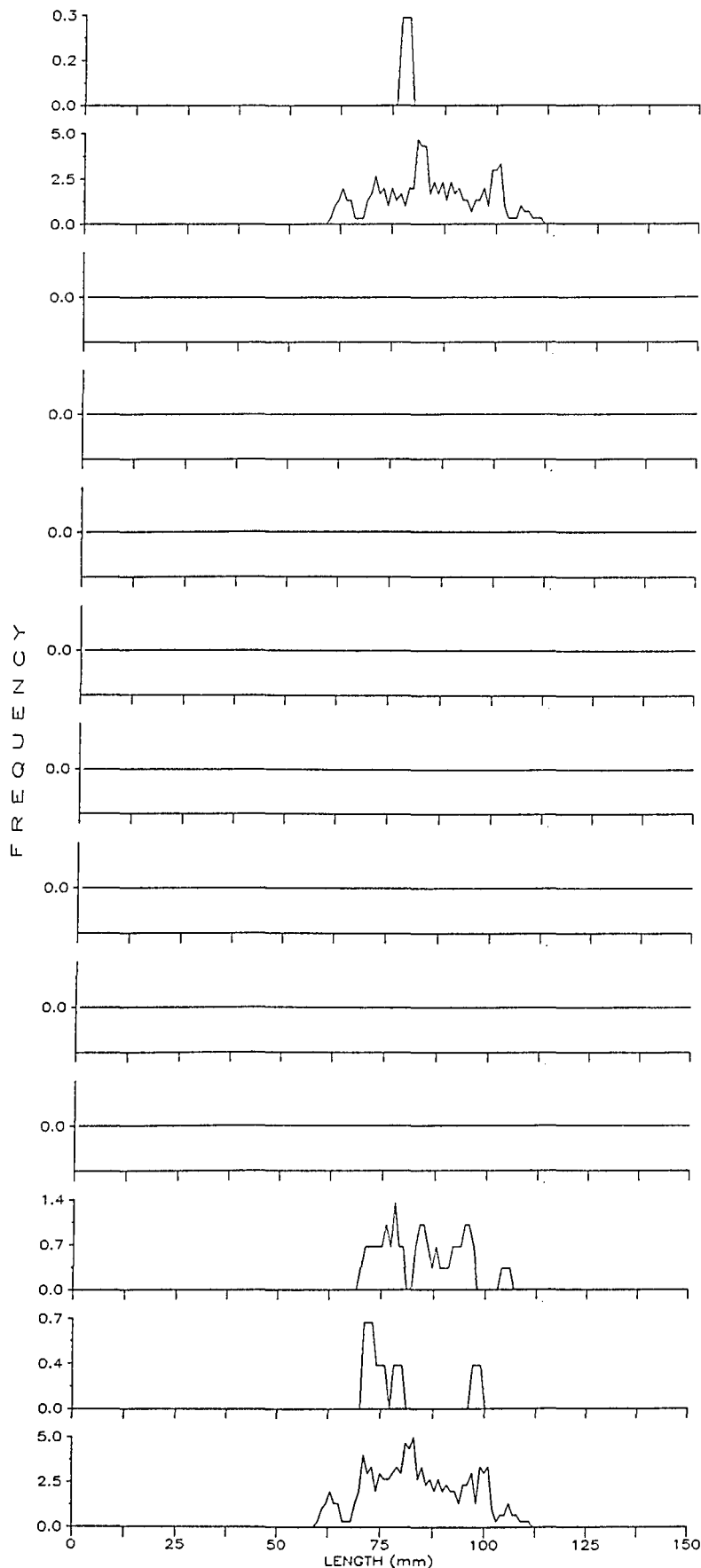
Atlantic Menhaden, 1998



JANUARY	980108	-	980115		
NO. CGHT.	-	3	MEAN SIZE	-	107
NO. MEAS.	-	3	S.E. SIZE	-	24.3
NO. HAULS	-	66	MIN. SIZE	-	64
CAT./HAUL	-	0	MAX. SIZE	-	148
FEBRUARY	980202	-	980218		
NO. CGHT.	-	5	MEAN SIZE	-	65
NO. MEAS.	-	5	S.E. SIZE	-	22
NO. HAULS	-	105	MIN. SIZE	-	24
CAT./HAUL	-	0	MAX. SIZE	-	134
MARCH	980302	-	980306		
NO. CGHT.	-	2	MEAN SIZE	-	44
NO. MEAS.	-	2	S.E. SIZE	-	0
NO. HAULS	-	66	MIN. SIZE	-	44
CAT./HAUL	-	0	MAX. SIZE	-	44
APRIL	980401	-	980414		
NO. CGHT.	-	10	MEAN SIZE	-	47.2
NO. MEAS.	-	10	S.E. SIZE	-	1.1
NO. HAULS	-	105	MIN. SIZE	-	43
CAT./HAUL	-	0.1	MAX. SIZE	-	52
MAY	980504	-	980518		
NO. CGHT.	-	13	MEAN SIZE	-	61.1
NO. MEAS.	-	13	S.E. SIZE	-	13.4
NO. HAULS	-	111	MIN. SIZE	-	34
CAT./HAUL	-	0.1	MAX. SIZE	-	184
JUNE	980601	-	980611		
NO. CGHT.	-	53	MEAN SIZE	-	72.1
NO. MEAS.	-	38	S.E. SIZE	-	4.4
NO. HAULS	-	111	MIN. SIZE	-	35
CAT./HAUL	-	0.5	MAX. SIZE	-	201
JULY	980701	-	980715		
NO. CGHT.	-	3	MEAN SIZE	-	78
NO. MEAS.	-	3	S.E. SIZE	-	14
NO. HAULS	-	128	MIN. SIZE	-	52
CAT./HAUL	-	0	MAX. SIZE	-	100
AUGUST	980803	-	980811		
NO. CGHT.	-	5	MEAN SIZE	-	140.2
NO. MEAS.	-	5	S.E. SIZE	-	12.6
NO. HAULS	-	59	MIN. SIZE	-	121
CAT./HAUL	-	0.1	MAX. SIZE	-	190
SEPTEMBER	980910	-	980928		
NO. CGHT.	-	6	MEAN SIZE	-	137.2
NO. MEAS.	-	6	S.E. SIZE	-	6.3
NO. HAULS	-	138	MIN. SIZE	-	115
CAT./HAUL	-	0	MAX. SIZE	-	156
OCTOBER	981005	-	981016		
NO. CGHT.	-	2	MEAN SIZE	-	119.5
NO. MEAS.	-	2	S.E. SIZE	-	1.5
NO. HAULS	-	124	MIN. SIZE	-	118
CAT./HAUL	-	0	MAX. SIZE	-	121
NOVEMBER	981102	-	981113		
NO. CGHT.	-	47	MEAN SIZE	-	135.3
NO. MEAS.	-	47	S.E. SIZE	-	2
NO. HAULS	-	130	MIN. SIZE	-	87
CAT./HAUL	-	0.4	MAX. SIZE	-	163
DECEMBER	981201	-	981216		
NO. CGHT.	-	23	MEAN SIZE	-	152.3
NO. MEAS.	-	23	S.E. SIZE	-	9.2
NO. HAULS	-	119	MIN. SIZE	-	125
CAT./HAUL	-	0.2	MAX. SIZE	-	333
JAN - DEC	980108	-	981216		
NO. CGHT.	-	172	MEAN SIZE	-	105.7
NO. MEAS.	-	157	S.E. SIZE	-	3.8
NO. HAULS	-	1262	MIN. SIZE	-	24
CAT./HAUL	-	0.1	MAX. SIZE	-	333

Figure 55.

Atlantic Silverside, 1998



JANUARY	980108	-	980115	
NO. CGHT.	-	1	MEAN SIZE	-
NO. MEAS.	-	1	S.E. SIZE	-
NO. HAULS	-	66	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
				76

FEBRUARY	980202	-	980218	
NO. CGHT.	-	81	MEAN SIZE	-
NO. MEAS.	-	81	S.E. SIZE	-
NO. HAULS	-	105	MIN. SIZE	-
CAT./HAUL	-	0.8	MAX. SIZE	-
				82.3
				1.4
				59
				108

MARCH	980302	-	980306	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	66	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
				.

APRIL	980401	-	980414	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	105	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
				.

MAY	980504	-	980518	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	111	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
				.

JUNE	980601	-	980611	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	111	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
				.

JULY	980701	-	980715	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	128	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
				.

AUGUST	980803	-	980811	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	59	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
				.

SEPTEMBER	980910	-	980928	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	138	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
				.

OCTOBER	981005	-	981016	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	124	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
				.

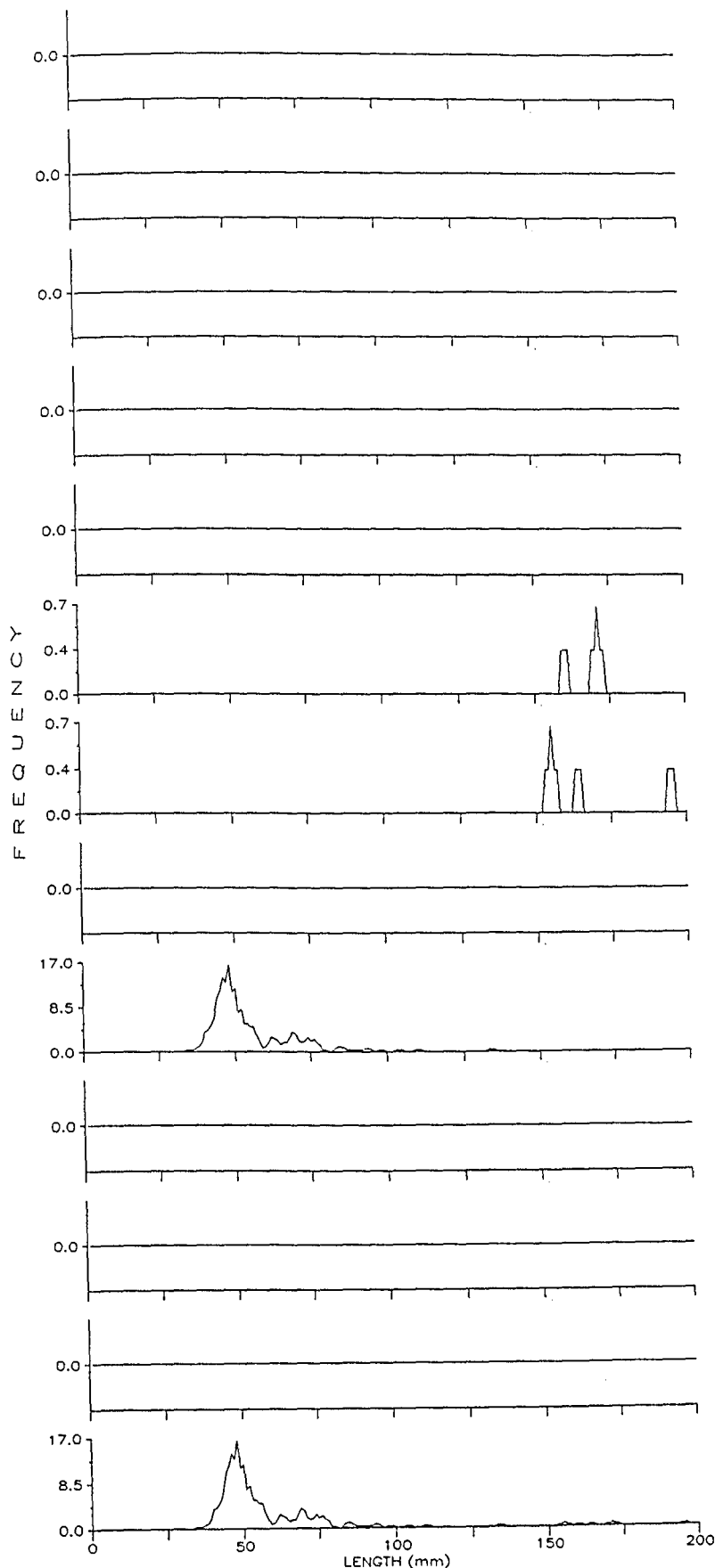
NOVEMBER	981102	-	981113	
NO. CGHT.	-	19	MEAN SIZE	-
NO. MEAS.	-	19	S.E. SIZE	-
NO. HAULS	-	130	MIN. SIZE	-
CAT./HAUL	-	0.1	MAX. SIZE	-
				82.7
				2.2
				69
				103

DECEMBER	981201	-	981216	
NO. CGHT.	-	5	MEAN SIZE	-
NO. MEAS.	-	5	S.E. SIZE	-
NO. HAULS	-	119	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
				77.2
				4.9
				70
				96

JAN - DEC	980108	-	981216	
NO. CGHT.	-	106	MEAN SIZE	-
NO. MEAS.	-	106	S.E. SIZE	-
NO. HAULS	-	1262	MIN. SIZE	-
CAT./HAUL	-	0.1	MAX. SIZE	-
				82.1
				1.1
				59
				108

Figure 56.

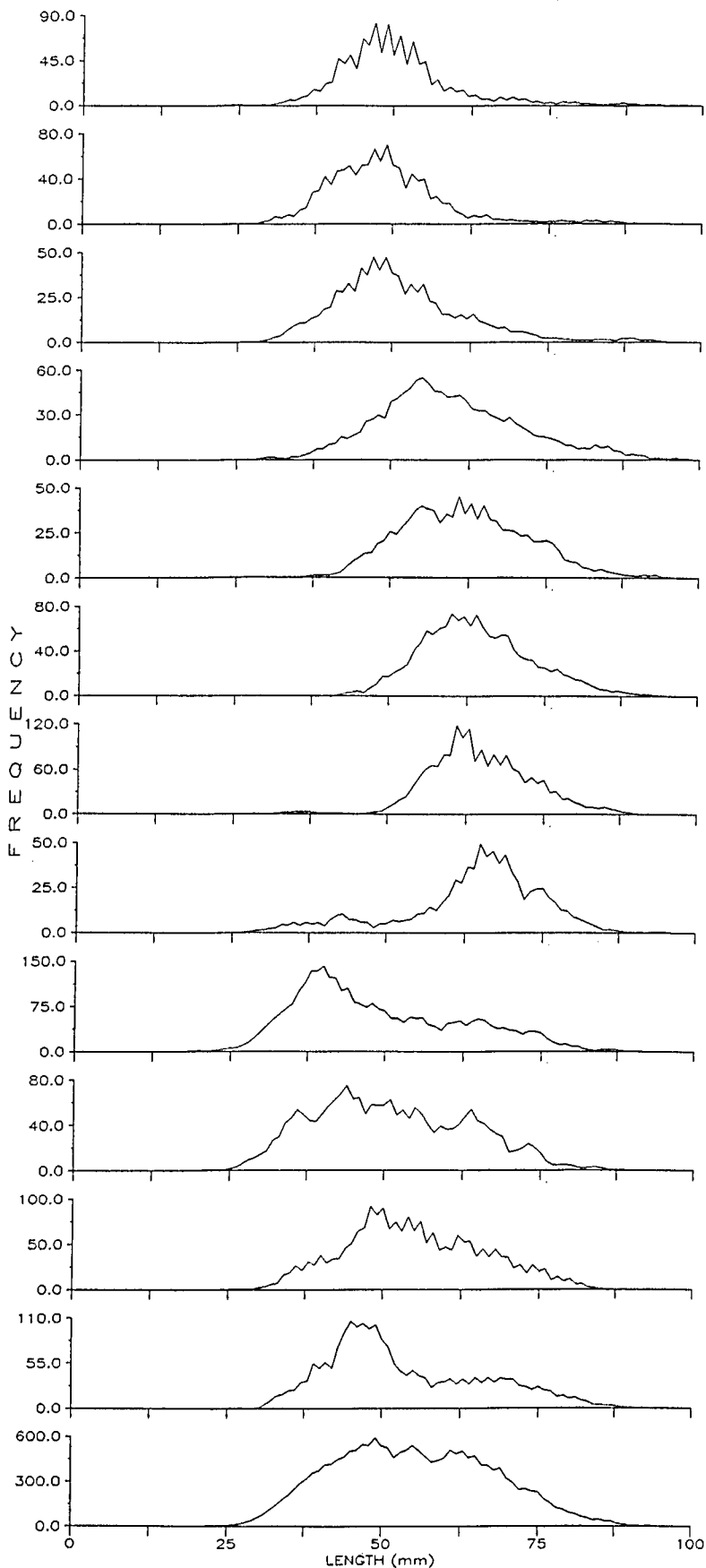
Atlantic Thread Herring, 1998



JANUARY	980108 - 980115		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	66	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
FEBRUARY	980202 - 980218		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	105	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
MARCH	980302 - 980306		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	66	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
APRIL	980401 - 980414		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	105	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
MAY	980504 - 980518		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	111	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
JUNE	980601 - 980611		
NO. CGHT.	3	MEAN SIZE	165.3
NO. MEAS.	3	S.E. SIZE	3.7
NO. HAULS	111	MIN. SIZE	158
CAT./HAUL	0	MAX. SIZE	170
JULY	980701 - 980715		
NO. CGHT.	4	MEAN SIZE	165.3
NO. MEAS.	4	S.E. SIZE	9.5
NO. HAULS	128	MIN. SIZE	152
CAT./HAUL	0	MAX. SIZE	193
AUGUST	980803 - 980811		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	59	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
SEPTEMBER	980910 - 980928		
NO. CGHT.	231	MEAN SIZE	52.8
NO. MEAS.	204	S.E. SIZE	1
NO. HAULS	138	MIN. SIZE	33
CAT./HAUL	1.7	MAX. SIZE	132
OCTOBER	981005 - 981016		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	124	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
NOVEMBER	981102 - 981113		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	130	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
DECEMBER	981201 - 981216		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	119	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
JAN - DEC	980108 - 981216		
NO. CGHT.	238	MEAN SIZE	56.5
NO. MEAS.	211	S.E. SIZE	1.7
NO. HAULS	1262	MIN. SIZE	33
CAT./HAUL	0.2	MAX. SIZE	193

Figure 57.

Bay Anchovy, 1998



JANUARY	980108	-	980115	
NO. CGHT.	- 13588		MEAN SIZE	- 48.4
NO. MEAS.	- 1176		S.E. SIZE	- 0.3
NO. HAULS	- 66		MIN. SIZE	- 22
CAT./HAUL	- 205.9		MAX. SIZE	- 96

FEBRUARY	980202	-	980218	
NO. CGHT.	- 5624		MEAN SIZE	- 46.7
NO. MEAS.	- 1137		S.E. SIZE	- 0.3
NO. HAULS	- 105		MIN. SIZE	- 24
CAT./HAUL	- 53.6		MAX. SIZE	- 88

MARCH	980302	-	980306	
NO. CGHT.	- 5517		MEAN SIZE	- 49.1
NO. MEAS.	- 877		S.E. SIZE	- 0.4
NO. HAULS	- 66		MIN. SIZE	- 19
CAT./HAUL	- 83.6		MAX. SIZE	- 91

APRIL	980401	-	980414	
NO. CGHT.	- 16227		MEAN SIZE	- 57.5
NO. MEAS.	- 1258		S.E. SIZE	- 0.3
NO. HAULS	- 105		MIN. SIZE	- 28
CAT./HAUL	- 154.5		MAX. SIZE	- 95

MAY	980504	-	980518	
NO. CGHT.	- 5888		MEAN SIZE	- 60
NO. MEAS.	- 1005		S.E. SIZE	- 0.3
NO. HAULS	- 111		MIN. SIZE	- 35
CAT./HAUL	- 53		MAX. SIZE	- 92

JUNE	980601	-	980611	
NO. CGHT.	- 6693		MEAN SIZE	- 62
NO. MEAS.	- 1429		S.E. SIZE	- 0.2
NO. HAULS	- 111		MIN. SIZE	- 41
CAT./HAUL	- 60.3		MAX. SIZE	- 91

JULY	980701	-	980715	
NO. CGHT.	- 20395		MEAN SIZE	- 62.7
NO. MEAS.	- 1824		S.E. SIZE	- 0.2
NO. HAULS	- 128		MIN. SIZE	- 30
CAT./HAUL	- 159.3		MAX. SIZE	- 94

AUGUST	980803	-	980811	
NO. CGHT.	- 5808		MEAN SIZE	- 61.7
NO. MEAS.	- 838		S.E. SIZE	- 0.4
NO. HAULS	- 59		MIN. SIZE	- 26
CAT./HAUL	- 98.4		MAX. SIZE	- 92

SEPTEMBER	980910	-	980928	
NO. CGHT.	- 124750		MEAN SIZE	- 46.9
NO. MEAS.	- 3174		S.E. SIZE	- 0.2
NO. HAULS	- 138		MIN. SIZE	- 17
CAT./HAUL	- 904		MAX. SIZE	- 88

OCTOBER	981005	-	981016	
NO. CGHT.	- 61782		MEAN SIZE	- 49.1
NO. MEAS.	- 2044		S.E. SIZE	- 0.3
NO. HAULS	- 124		MIN. SIZE	- 20
CAT./HAUL	- 498.2		MAX. SIZE	- 91

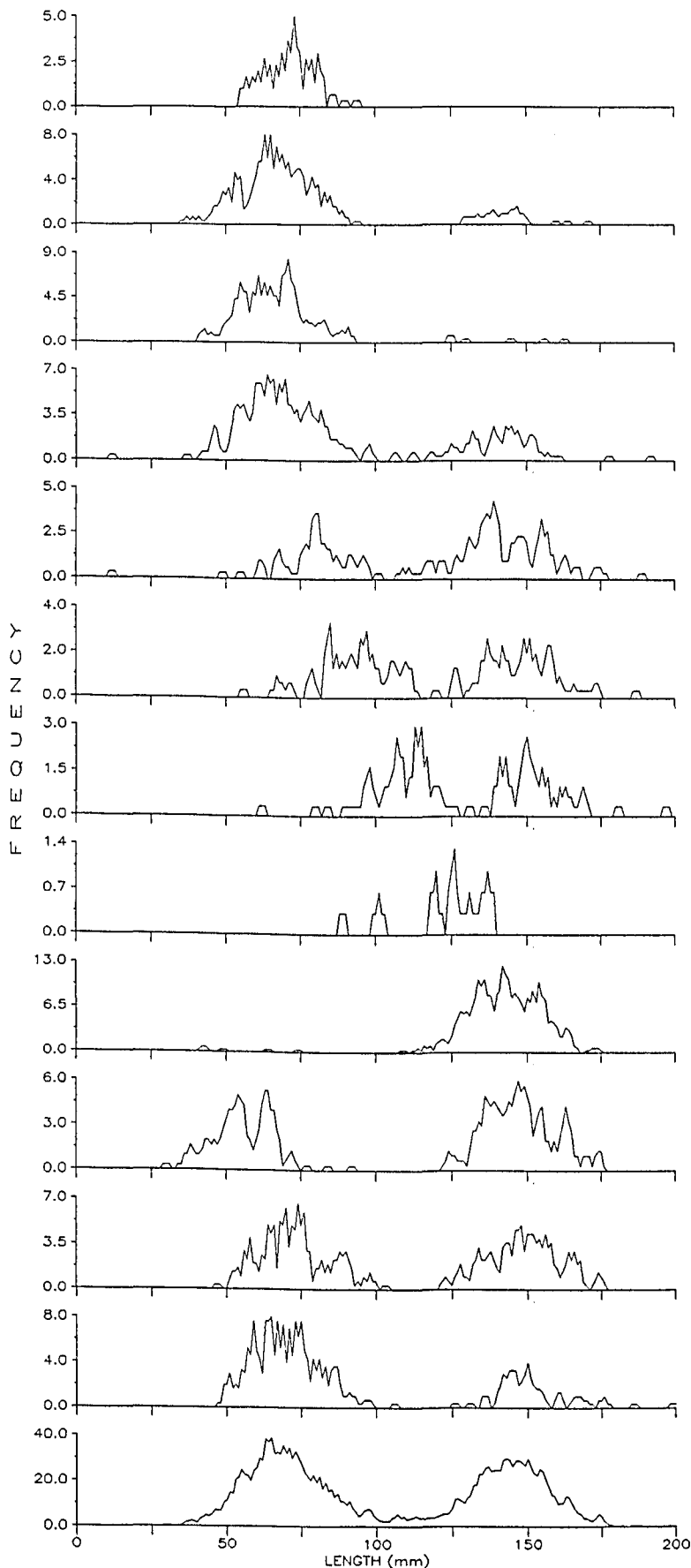
NOVEMBER	981102	-	981113	
NO. CGHT.	- 75622		MEAN SIZE	- 53
NO. MEAS.	- 2061		S.E. SIZE	- 0.2
NO. HAULS	- 130		MIN. SIZE	- 23
CAT./HAUL	- 581.7		MAX. SIZE	- 82

DECEMBER	981201	-	981216	
NO. CGHT.	- 61133		MEAN SIZE	- 51.5
NO. MEAS.	- 2154		S.E. SIZE	- 0.3
NO. HAULS	- 119		MIN. SIZE	- 24
CAT./HAUL	- 513.7		MAX. SIZE	- 89

JAN - DEC	980108	-	981216	
NO. CGHT.	- 403027		MEAN SIZE	- 53.2
NO. MEAS.	- 18977		S.E. SIZE	- 0.1
NO. HAULS	- 1262		MIN. SIZE	- 17
CAT./HAUL	- 319.4		MAX. SIZE	- 96

Figure 58.

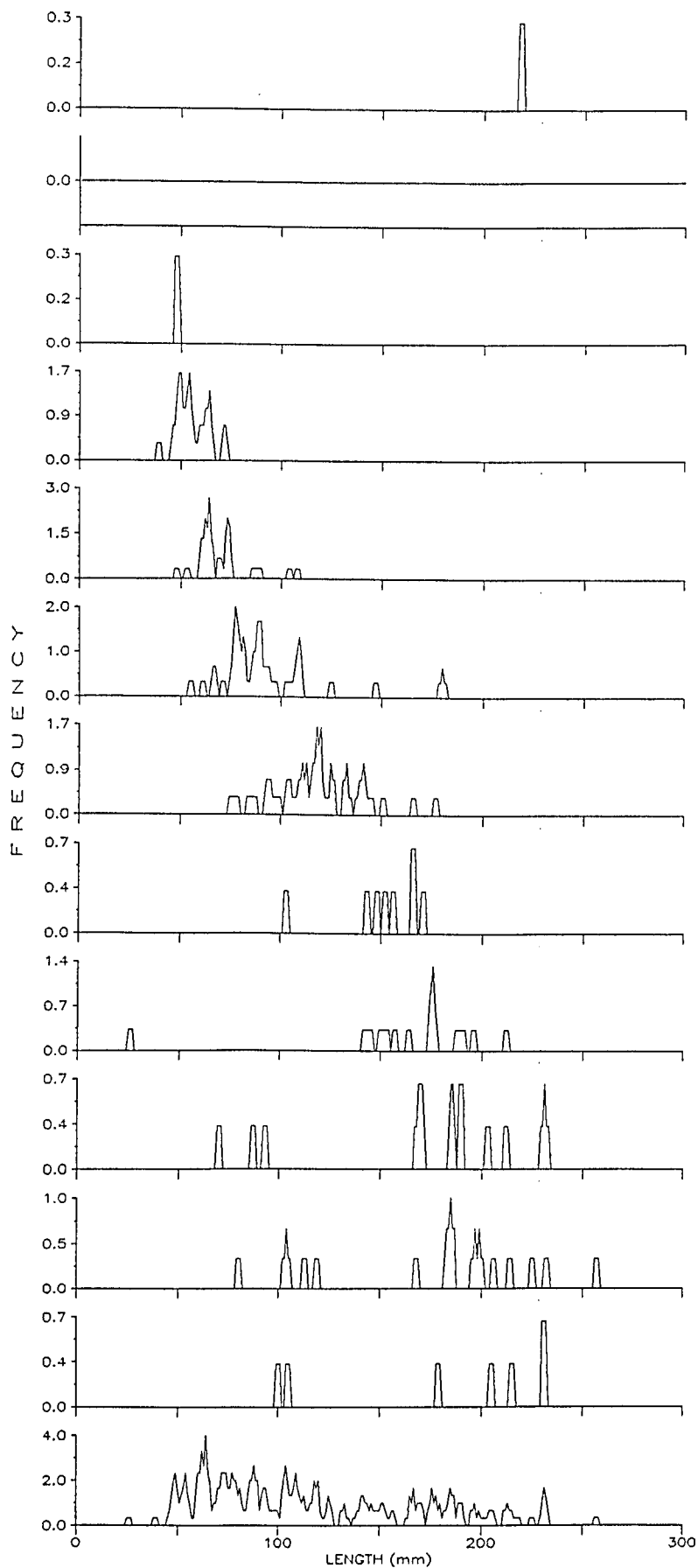
Blackcheek Tonguefish, 1998



JANUARY	980108	-	980115	
NO. CGHT.	-	66	MEAN SIZE	- 69.6
NO. MEAS.	-	66	S.E. SIZE	- 1.1
NO. HAULS	-	66	MIN. SIZE	- 54
CAT./HAUL	-	1	MAX. SIZE	- 92
FEBRUARY	980202	-	980218	
NO. CGHT.	-	198	MEAN SIZE	- 73.8
NO. MEAS.	-	198	S.E. SIZE	- 2
NO. HAULS	-	105	MIN. SIZE	- 34
CAT./HAUL	-	1.9	MAX. SIZE	- 169
MARCH	980302	-	980306	
NO. CGHT.	-	167	MEAN SIZE	- 66.5
NO. MEAS.	-	167	S.E. SIZE	- 1.4
NO. HAULS	-	66	MIN. SIZE	- 40
CAT./HAUL	-	2.5	MAX. SIZE	- 161
APRIL	980401	-	980414	
NO. CGHT.	-	280	MEAN SIZE	- 84.2
NO. MEAS.	-	234	S.E. SIZE	- 2.2
NO. HAULS	-	105	MIN. SIZE	- 35
CAT./HAUL	-	2.7	MAX. SIZE	- 190
MAY	980504	-	980518	
NO. CGHT.	-	145	MEAN SIZE	- 118.9
NO. MEAS.	-	145	S.E. SIZE	- 2.8
NO. HAULS	-	111	MIN. SIZE	- 47
CAT./HAUL	-	1.3	MAX. SIZE	- 211
JUNE	980601	-	980611	
NO. CGHT.	-	123	MEAN SIZE	- 118.7
NO. MEAS.	-	123	S.E. SIZE	- 2.8
NO. HAULS	-	111	MIN. SIZE	- 54
CAT./HAUL	-	1.1	MAX. SIZE	- 205
JULY	980701	-	980715	
NO. CGHT.	-	85	MEAN SIZE	- 126.7
NO. MEAS.	-	85	S.E. SIZE	- 2.8
NO. HAULS	-	128	MIN. SIZE	- 60
CAT./HAUL	-	0.7	MAX. SIZE	- 195
AUGUST	980803	-	980811	
NO. CGHT.	-	16	MEAN SIZE	- 120.6
NO. MEAS.	-	16	S.E. SIZE	- 3.6
NO. HAULS	-	59	MIN. SIZE	- 87
CAT./HAUL	-	0.3	MAX. SIZE	- 136
SEPTEMBER	980910	-	980928	
NO. CGHT.	-	359	MEAN SIZE	- 139.6
NO. MEAS.	-	306	S.E. SIZE	- 0.9
NO. HAULS	-	138	MIN. SIZE	- 40
CAT./HAUL	-	2.6	MAX. SIZE	- 172
OCTOBER	981005	-	981016	
NO. CGHT.	-	288	MEAN SIZE	- 108.3
NO. MEAS.	-	242	S.E. SIZE	- 3
NO. HAULS	-	124	MIN. SIZE	- 28
CAT./HAUL	-	2.3	MAX. SIZE	- 173
NOVEMBER	981102	-	981113	
NO. CGHT.	-	260	MEAN SIZE	- 108
NO. MEAS.	-	256	S.E. SIZE	- 2.5
NO. HAULS	-	130	MIN. SIZE	- 45
CAT./HAUL	-	2	MAX. SIZE	- 173
DECEMBER	981201	-	981216	
NO. CGHT.	-	288	MEAN SIZE	- 87.9
NO. MEAS.	-	250	S.E. SIZE	- 2.3
NO. HAULS	-	119	MIN. SIZE	- 46
CAT./HAUL	-	2.4	MAX. SIZE	- 197
JAN - DEC	980108	-	981216	
NO. CGHT.	-	2275	MEAN SIZE	- 102.1
NO. MEAS.	-	2088	S.E. SIZE	- 0.9
NO. HAULS	-	1262	MIN. SIZE	- 28
CAT./HAUL	-	1.8	MAX. SIZE	- 211

Figure 59.

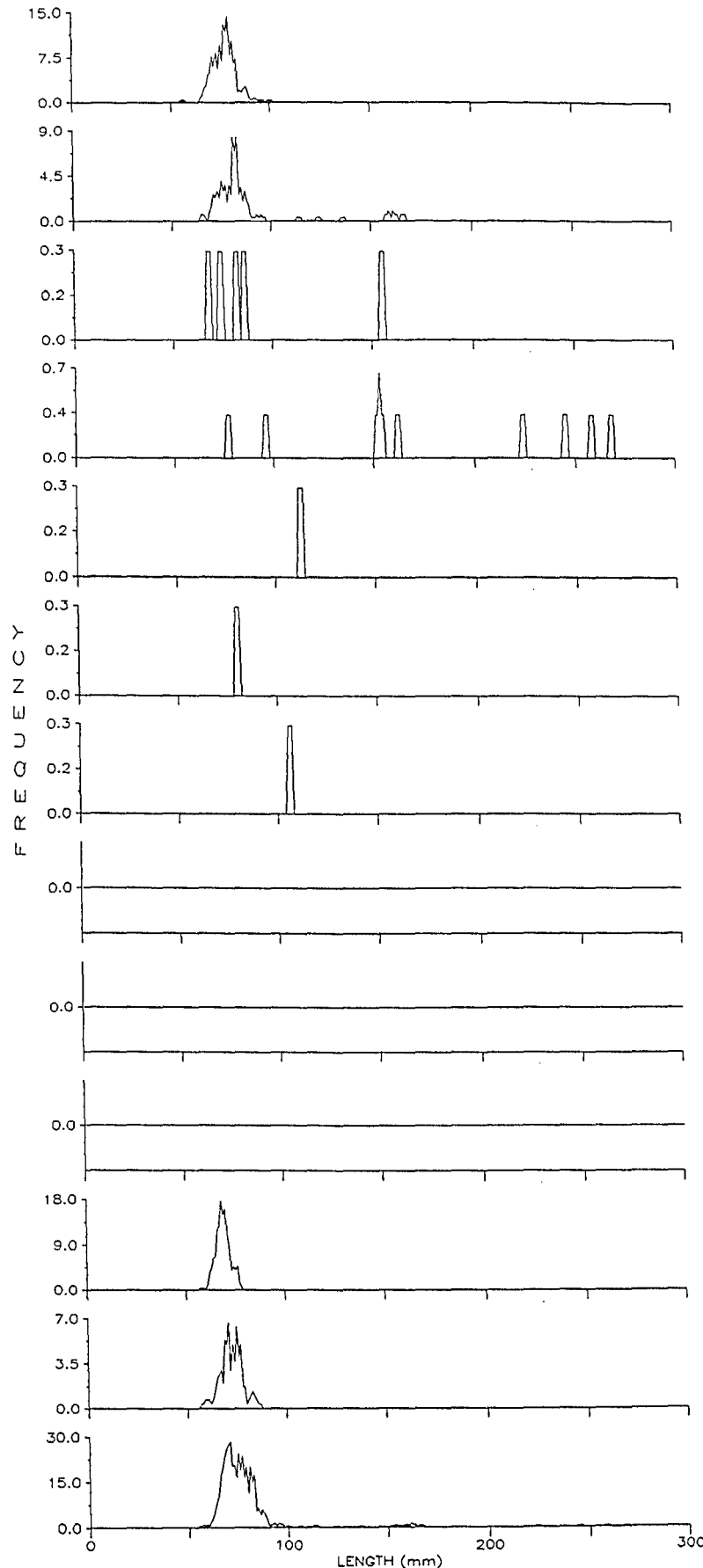
Black Sea Bass, 1998



JANUARY	980108	-	980115		
NO. CGHT.	-	1	MEAN SIZE	-	216
NO. MEAS.	-	1	S.E. SIZE	-	.
NO. HAULS	-	66	MIN. SIZE	-	216
CAT./HAUL	-	0	MAX. SIZE	-	216
FEBRUARY	980202	-	980218		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	105	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
MARCH	980302	-	980306		
NO. CGHT.	-	1	MEAN SIZE	-	46
NO. MEAS.	-	1	S.E. SIZE	-	.
NO. HAULS	-	66	MIN. SIZE	-	46
CAT./HAUL	-	0	MAX. SIZE	-	46
APRIL	980401	-	980414		
NO. CGHT.	-	23	MEAN SIZE	-	53.6
NO. MEAS.	-	23	S.E. SIZE	-	1.7
NO. HAULS	-	105	MIN. SIZE	-	37
CAT./HAUL	-	0.2	MAX. SIZE	-	70
MAY	980504	-	980518		
NO. CGHT.	-	26	MEAN SIZE	-	67.9
NO. MEAS.	-	26	S.E. SIZE	-	2.7
NO. HAULS	-	111	MIN. SIZE	-	46
CAT./HAUL	-	0.2	MAX. SIZE	-	106
JUNE	980601	-	980611		
NO. CGHT.	-	38	MEAN SIZE	-	91.1
NO. MEAS.	-	38	S.E. SIZE	-	4.4
NO. HAULS	-	111	MIN. SIZE	-	53
CAT./HAUL	-	0.3	MAX. SIZE	-	179
JULY	980701	-	980715		
NO. CGHT.	-	38	MEAN SIZE	-	116.4
NO. MEAS.	-	38	S.E. SIZE	-	3.7
NO. HAULS	-	128	MIN. SIZE	-	73
CAT./HAUL	-	0.3	MAX. SIZE	-	175
AUGUST	980803	-	980811		
NO. CGHT.	-	8	MEAN SIZE	-	148.6
NO. MEAS.	-	8	S.E. SIZE	-	7.6
NO. HAULS	-	59	MIN. SIZE	-	101
CAT./HAUL	-	0.1	MAX. SIZE	-	169
SEPTEMBER	980910	-	980928		
NO. CGHT.	-	15	MEAN SIZE	-	159.8
NO. MEAS.	-	15	S.E. SIZE	-	11
NO. HAULS	-	138	MIN. SIZE	-	24
CAT./HAUL	-	0.1	MAX. SIZE	-	210
OCTOBER	981005	-	981016		
NO. CGHT.	-	14	MEAN SIZE	-	168.5
NO. MEAS.	-	14	S.E. SIZE	-	13.7
NO. HAULS	-	124	MIN. SIZE	-	68
CAT./HAUL	-	0.1	MAX. SIZE	-	230
NOVEMBER	981102	-	981113		
NO. CGHT.	-	18	MEAN SIZE	-	173.3
NO. MEAS.	-	18	S.E. SIZE	-	11.9
NO. HAULS	-	130	MIN. SIZE	-	78
CAT./HAUL	-	0.1	MAX. SIZE	-	255
DECEMBER	981201	-	981216		
NO. CGHT.	-	7	MEAN SIZE	-	178.9
NO. MEAS.	-	7	S.E. SIZE	-	21.3
NO. HAULS	-	119	MIN. SIZE	-	98
CAT./HAUL	-	0.1	MAX. SIZE	-	229
JAN - DEC	980108	-	981216		
NO. CGHT.	-	189	MEAN SIZE	-	113.5
NO. MEAS.	-	189	S.E. SIZE	-	3.9
NO. HAULS	-	1262	MIN. SIZE	-	24
CAT./HAUL	-	0.1	MAX. SIZE	-	255

Figure 60.

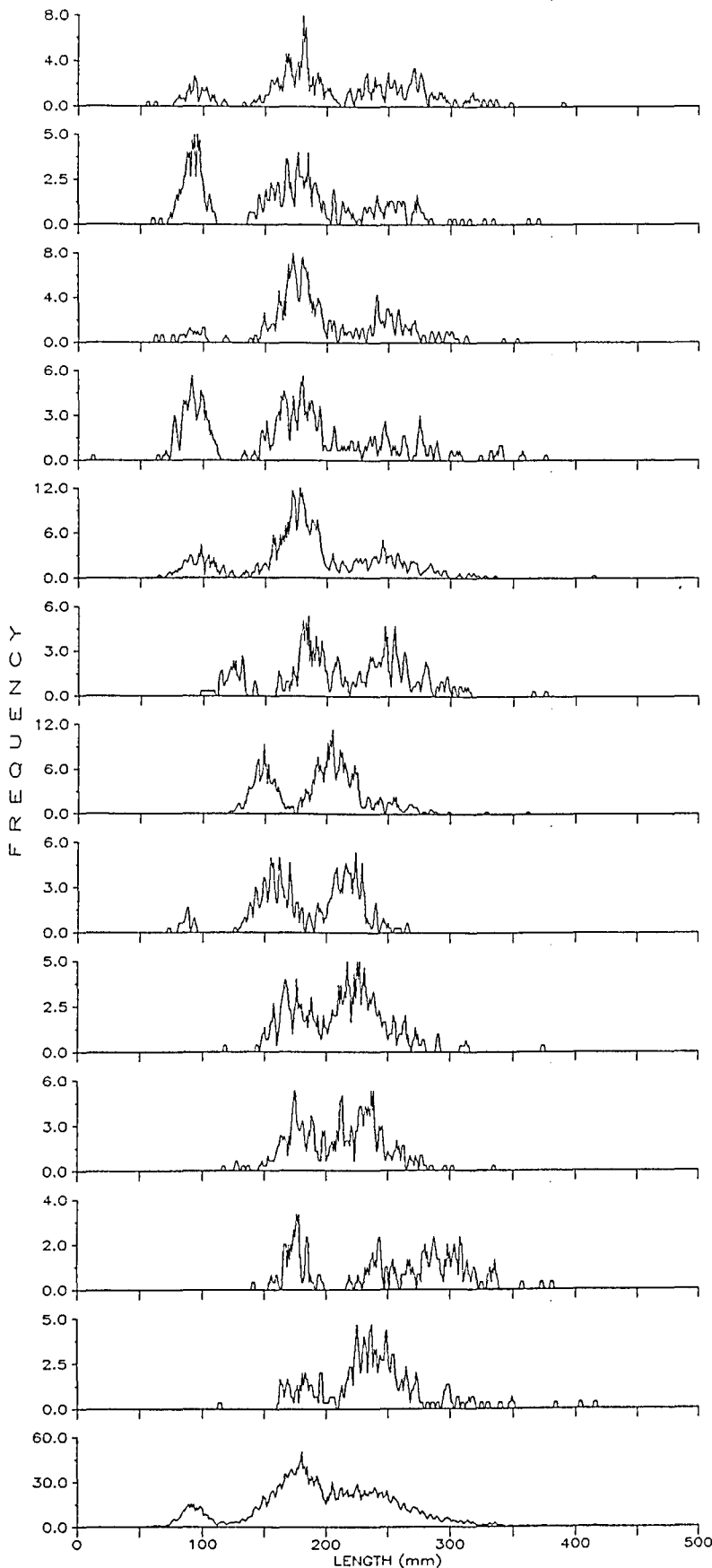
Blueback Herring, 1998



JANUARY	980108	980115		
NO. CGHT.	1158	MEAN SIZE	75.5	
NO. MEAS.	150	S.E. SIZE	0.5	
NO. HAULS	66	MIN. SIZE	54	
CAT./HAUL	17.5	MAX. SIZE	98	
FEBRUARY	980202	980218		
NO. CGHT.	85	MEAN SIZE	86.4	
NO. MEAS.	85	S.E. SIZE	2.6	
NO. HAULS	105	MIN. SIZE	63	
CAT./HAUL	0.8	MAX. SIZE	164	
MARCH	980302	980306		
NO. CGHT.	5	MEAN SIZE	91	
NO. MEAS.	5	S.E. SIZE	15.8	
NO. HAULS	66	MIN. SIZE	66	
CAT./HAUL	0.1	MAX. SIZE	153	
APRIL	980401	980414		
NO. CGHT.	9	MEAN SIZE	179.8	
NO. MEAS.	9	S.E. SIZE	23.4	
NO. HAULS	105	MIN. SIZE	75	
CAT./HAUL	0.1	MAX. SIZE	266	
MAY	980504	980518		
NO. CGHT.	1	MEAN SIZE	111	
NO. MEAS.	1	S.E. SIZE	.	
NO. HAULS	111	MIN. SIZE	111	
CAT./HAUL	0	MAX. SIZE	111	
JUNE	980601	980611		
NO. CGHT.	1	MEAN SIZE	78	
NO. MEAS.	1	S.E. SIZE	.	
NO. HAULS	111	MIN. SIZE	78	
CAT./HAUL	0	MAX. SIZE	78	
JULY	980701	980715		
NO. CGHT.	1	MEAN SIZE	104	
NO. MEAS.	1	S.E. SIZE	.	
NO. HAULS	128	MIN. SIZE	104	
CAT./HAUL	0	MAX. SIZE	104	
AUGUST	980803	980811		
NO. CGHT.	0	MEAN SIZE	.	
NO. MEAS.	0	S.E. SIZE	.	
NO. HAULS	59	MIN. SIZE	.	
CAT./HAUL	0	MAX. SIZE	.	
SEPTEMBER	980910	980928		
NO. CGHT.	0	MEAN SIZE	.	
NO. MEAS.	0	S.E. SIZE	.	
NO. HAULS	138	MIN. SIZE	.	
CAT./HAUL	0	MAX. SIZE	.	
OCTOBER	981005	981016		
NO. CGHT.	0	MEAN SIZE	.	
NO. MEAS.	0	S.E. SIZE	.	
NO. HAULS	124	MIN. SIZE	.	
CAT./HAUL	0	MAX. SIZE	.	
NOVEMBER	981102	981113		
NO. CGHT.	232	MEAN SIZE	66.8	
NO. MEAS.	137	S.E. SIZE	0.3	
NO. HAULS	130	MIN. SIZE	56	
CAT./HAUL	1.8	MAX. SIZE	75	
DECEMBER	981201	981216		
NO. CGHT.	220	MEAN SIZE	70.2	
NO. MEAS.	68	S.E. SIZE	0.7	
NO. HAULS	119	MIN. SIZE	56	
CAT./HAUL	1.8	MAX. SIZE	84	
JAN - DEC	980108	981216		
NO. CGHT.	1712	MEAN SIZE	76.5	
NO. MEAS.	457	S.E. SIZE	1	
NO. HAULS	1262	MIN. SIZE	54	
CAT./HAUL	1.4	MAX. SIZE	266	

Figure 61.

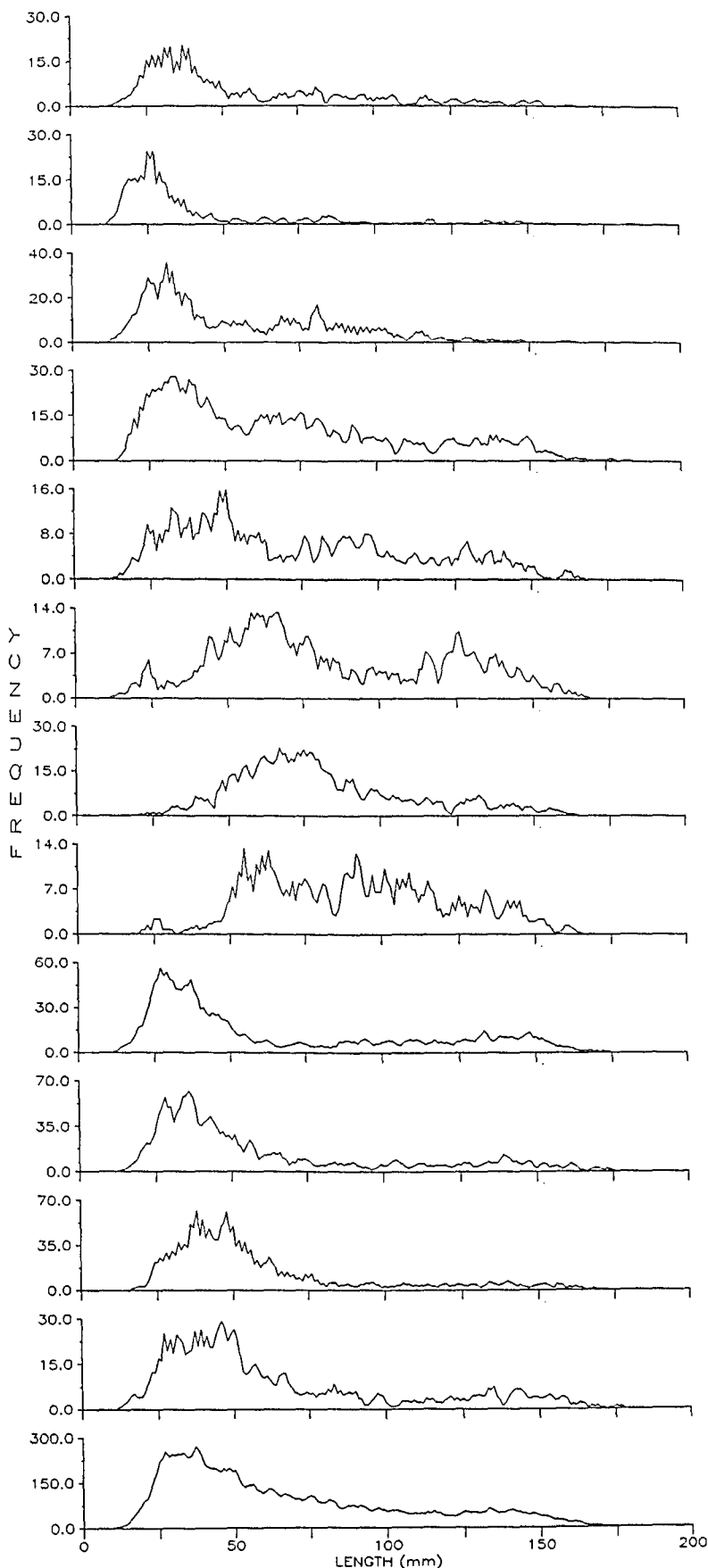
Blue Catfish, 1998



JANUARY	980108 - 980115		
NO. CGHT.	- 815	MEAN SIZE	- 201.8
NO. MEAS.	- 329	S.E. SIZE	- 3.5
NO. HAULS	- 66	MIN. SIZE	- 54
CAT./HAUL	- 12.3	MAX. SIZE	- 388
FEBRUARY	980202 - 980218		
NO. CGHT.	- 338	MEAN SIZE	- 165.3
NO. MEAS.	- 270	S.E. SIZE	- 3.9
NO. HAULS	- 105	MIN. SIZE	- 58
CAT./HAUL	- 3.2	MAX. SIZE	- 368
MARCH	980302 - 980306		
NO. CGHT.	- 1360	MEAN SIZE	- 192.9
NO. MEAS.	- 354	S.E. SIZE	- 2.7
NO. HAULS	- 66	MIN. SIZE	- 60
CAT./HAUL	- 20.6	MAX. SIZE	- 351
APRIL	980401 - 980414		
NO. CGHT.	- 602	MEAN SIZE	- 170.6
NO. MEAS.	- 370	S.E. SIZE	- 3.5
NO. HAULS	- 105	MIN. SIZE	- 62
CAT./HAUL	- 5.7	MAX. SIZE	- 374
MAY	980504 - 980518		
NO. CGHT.	- 1144	MEAN SIZE	- 185.6
NO. MEAS.	- 592	S.E. SIZE	- 2.3
NO. HAULS	- 111	MIN. SIZE	- 63
CAT./HAUL	- 10.3	MAX. SIZE	- 501
JUNE	980601 - 980611		
NO. CGHT.	- 408	MEAN SIZE	- 210.6
NO. MEAS.	- 291	S.E. SIZE	- 3.1
NO. HAULS	- 111	MIN. SIZE	- 97
CAT./HAUL	- 3.7	MAX. SIZE	- 374
JULY	980701 - 980715		
NO. CGHT.	- 570	MEAN SIZE	- 191.5
NO. MEAS.	- 486	S.E. SIZE	- 1.7
NO. HAULS	- 128	MIN. SIZE	- 120
CAT./HAUL	- 4.5	MAX. SIZE	- 360
AUGUST	980803 - 980811		
NO. CGHT.	- 561	MEAN SIZE	- 182.3
NO. MEAS.	- 276	S.E. SIZE	- 2.4
NO. HAULS	- 59	MIN. SIZE	- 71
CAT./HAUL	- 9.5	MAX. SIZE	- 264
SEPTEMBER	980910 - 980928		
NO. CGHT.	- 1568	MEAN SIZE	- 209.4
NO. MEAS.	- 273	S.E. SIZE	- 2.2
NO. HAULS	- 138	MIN. SIZE	- 116
CAT./HAUL	- 11.4	MAX. SIZE	- 372
OCTOBER	981005 - 981016		
NO. CGHT.	- 329	MEAN SIZE	- 208.8
NO. MEAS.	- 274	S.E. SIZE	- 2.1
NO. HAULS	- 124	MIN. SIZE	- 115
CAT./HAUL	- 2.7	MAX. SIZE	- 333
NOVEMBER	981102 - 981113		
NO. CGHT.	- 215	MEAN SIZE	- 247.3
NO. MEAS.	- 163	S.E. SIZE	- 4.5
NO. HAULS	- 130	MIN. SIZE	- 139
CAT./HAUL	- 1.7	MAX. SIZE	- 379
DECEMBER	981201 - 981216		
NO. CGHT.	- 687	MEAN SIZE	- 235.3
NO. MEAS.	- 224	S.E. SIZE	- 2.9
NO. HAULS	- 119	MIN. SIZE	- 112
CAT./HAUL	- 5.8	MAX. SIZE	- 414
JAN - DEC	980108 - 981216		
NO. CGHT.	- 8597	MEAN SIZE	- 195.9
NO. MEAS.	- 3902	S.E. SIZE	- 0.9
NO. HAULS	- 1262	MIN. SIZE	- 54
CAT./HAUL	- 6.8	MAX. SIZE	- 501

Figure 62.

Blue Crab -- ALL, 1998



JANUARY	980108 - 980115		
NO. CGHT.	781	MEAN SIZE	53.7
NO. MEAS.	619	S.E. SIZE	1.3
NO. HAULS	66	MIN. SIZE	12
CAT./HAUL	11.8	MAX. SIZE	162
FEBRUARY	980202 - 980218		
NO. CGHT.	433	MEAN SIZE	37
NO. MEAS.	433	S.E. SIZE	1.4
NO. HAULS	105	MIN. SIZE	10
CAT./HAUL	4.1	MAX. SIZE	182
MARCH	980302 - 980306		
NO. CGHT.	1560	MEAN SIZE	52.1
NO. MEAS.	1052	S.E. SIZE	0.9
NO. HAULS	66	MIN. SIZE	10
CAT./HAUL	23.6	MAX. SIZE	162
APRIL	980401 - 980414		
NO. CGHT.	1651	MEAN SIZE	66.5
NO. MEAS.	1559	S.E. SIZE	1
NO. HAULS	105	MIN. SIZE	13
CAT./HAUL	15.7	MAX. SIZE	180
MAY	980504 - 980518		
NO. CGHT.	903	MEAN SIZE	71
NO. MEAS.	788	S.E. SIZE	1.3
NO. HAULS	111	MIN. SIZE	12
CAT./HAUL	8.1	MAX. SIZE	164
JUNE	980601 - 980611		
NO. CGHT.	815	MEAN SIZE	82.4
NO. MEAS.	815	S.E. SIZE	1.3
NO. HAULS	111	MIN. SIZE	11
CAT./HAUL	7.3	MAX. SIZE	165
JULY	980701 - 980715		
NO. CGHT.	1148	MEAN SIZE	78.5
NO. MEAS.	1100	S.E. SIZE	0.9
NO. HAULS	128	MIN. SIZE	14
CAT./HAUL	9	MAX. SIZE	161
AUGUST	980803 - 980811		
NO. CGHT.	713	MEAN SIZE	89
NO. MEAS.	713	S.E. SIZE	1.1
NO. HAULS	59	MIN. SIZE	20
CAT./HAUL	12.1	MAX. SIZE	162
SEPTEMBER	980910 - 980928		
NO. CGHT.	2490	MEAN SIZE	63.2
NO. MEAS.	1990	S.E. SIZE	1
NO. HAULS	138	MIN. SIZE	2
CAT./HAUL	18	MAX. SIZE	186
OCTOBER	981005 - 981016		
NO. CGHT.	2177	MEAN SIZE	58.8
NO. MEAS.	2122	S.E. SIZE	0.9
NO. HAULS	124	MIN. SIZE	9
CAT./HAUL	17.6	MAX. SIZE	182
NOVEMBER	981102 - 981113		
NO. CGHT.	2744	MEAN SIZE	56.7
NO. MEAS.	1973	S.E. SIZE	0.7
NO. HAULS	130	MIN. SIZE	7
CAT./HAUL	21.1	MAX. SIZE	181
DECEMBER	981201 - 981216		
NO. CGHT.	1543	MEAN SIZE	61.9
NO. MEAS.	1266	S.E. SIZE	1.1
NO. HAULS	119	MIN. SIZE	11
CAT./HAUL	13	MAX. SIZE	174
JAN - DEC	980108 - 981216		
NO. CGHT.	16958	MEAN SIZE	63.9
NO. MEAS.	14430	S.E. SIZE	0.3
NO. HAULS	1262	MIN. SIZE	2
CAT./HAUL	13.4	MAX. SIZE	186

Blue Crab – Adult Female, 1998

Figure 63.

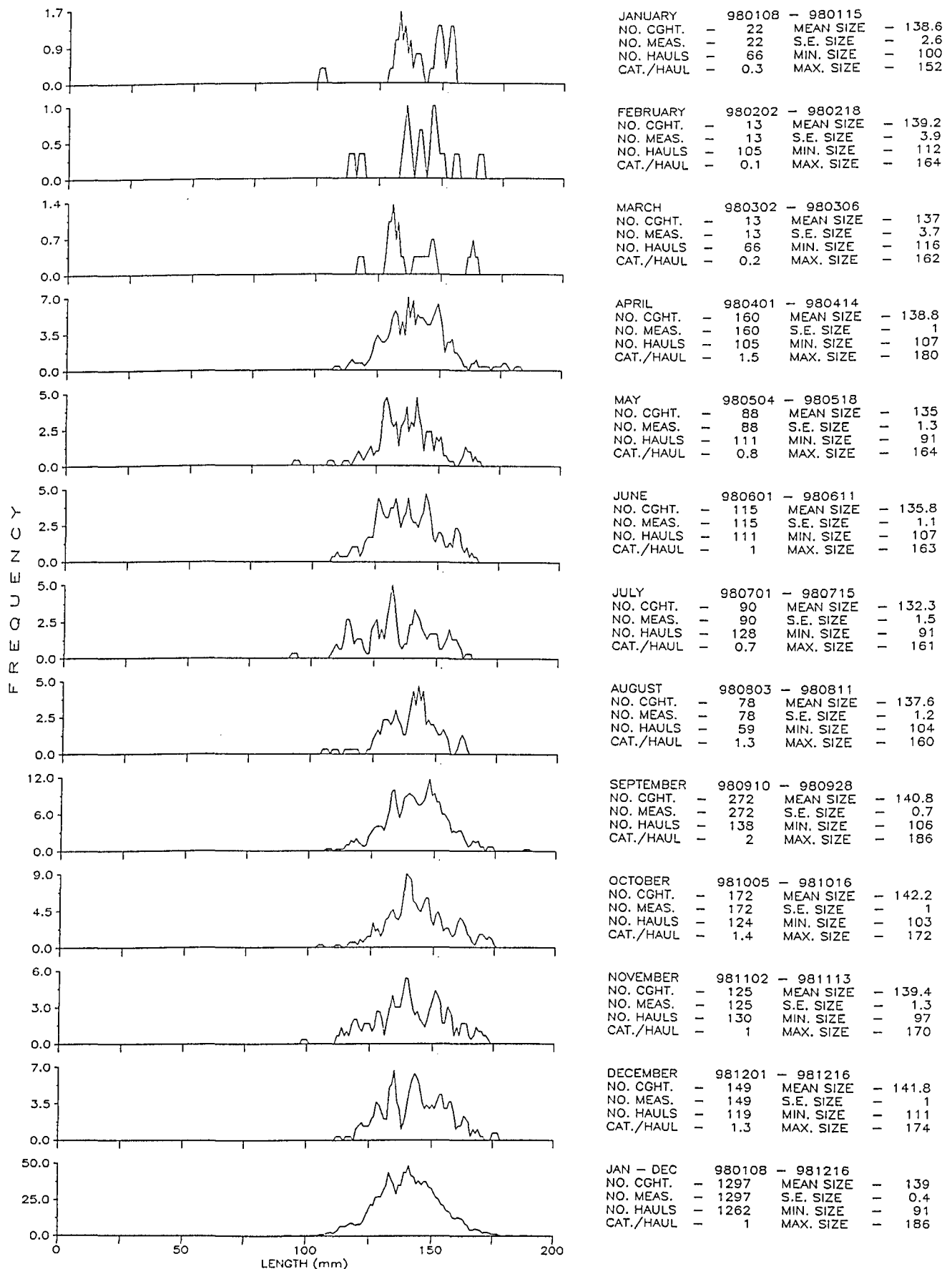
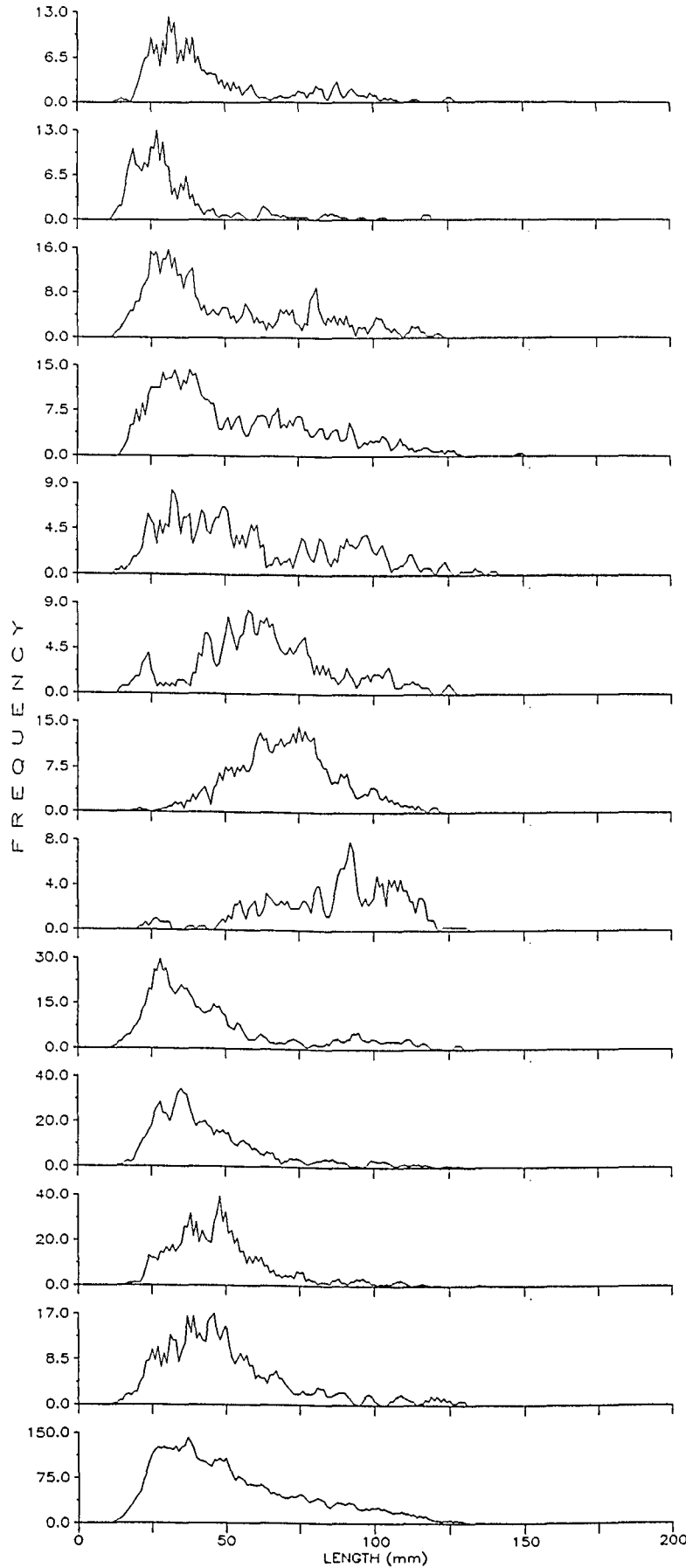


Figure 64.

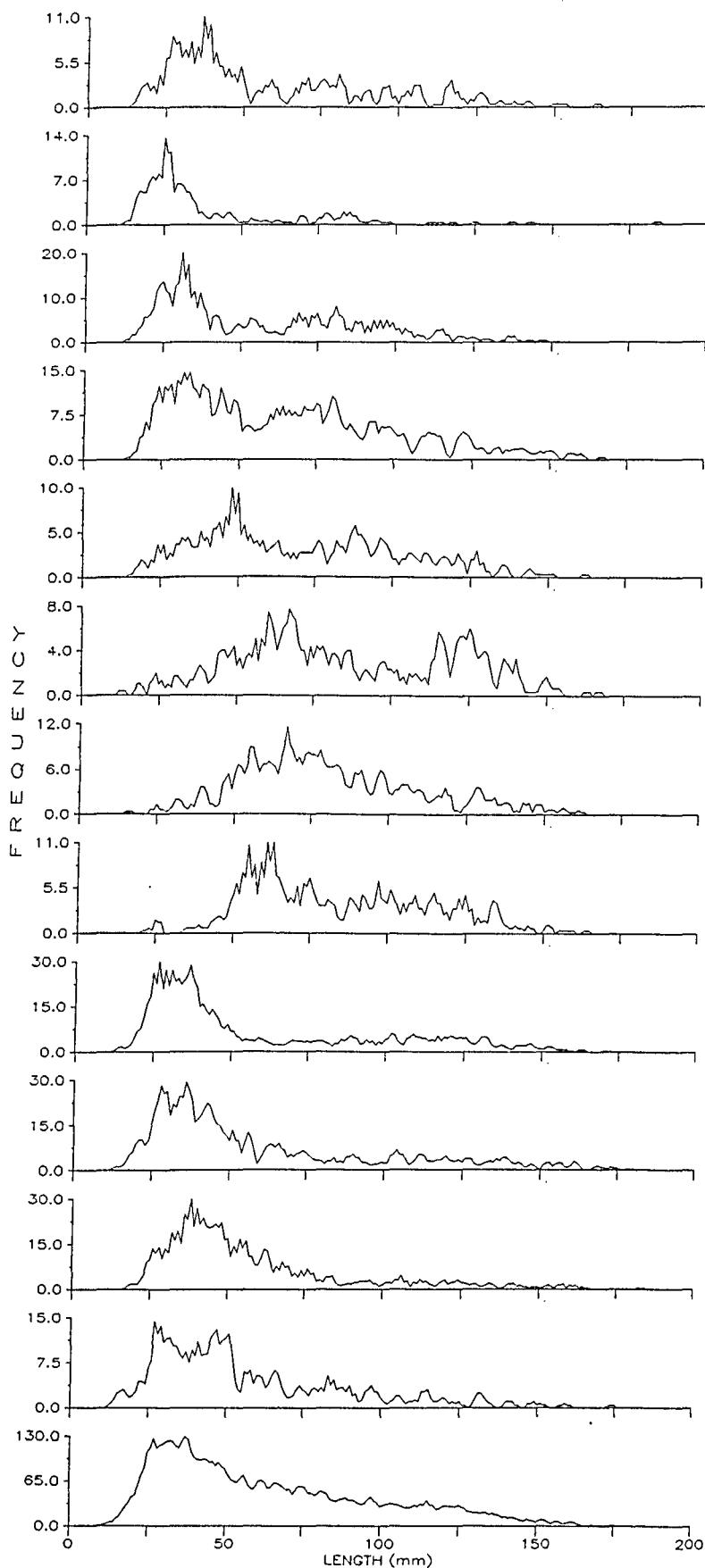
Blue Crab — Juvenile Female, 1998



JANUARY	980108	—	980115	
NO. CGHT.	—	318	MEAN SIZE	— 43.6
NO. MEAS.	—	271	S.E. SIZE	— 1.4
NO. HAULS	—	66	MIN. SIZE	— 12
CAT./HAUL	—	4.8	MAX. SIZE	— 124
FEBRUARY	980202	—	980218	
NO. CGHT.	—	218	MEAN SIZE	— 31
NO. MEAS.	—	218	S.E. SIZE	— 1.3
NO. HAULS	—	105	MIN. SIZE	— 11
CAT./HAUL	—	2.1	MAX. SIZE	— 116
MARCH	980302	—	980306	
NO. CGHT.	—	639	MEAN SIZE	— 47.9
NO. MEAS.	—	511	S.E. SIZE	— 1.2
NO. HAULS	—	66	MIN. SIZE	— 10
CAT./HAUL	—	9.7	MAX. SIZE	— 120
APRIL	980401	—	980414	
NO. CGHT.	—	637	MEAN SIZE	— 51.6
NO. MEAS.	—	605	S.E. SIZE	— 1.1
NO. HAULS	—	105	MIN. SIZE	— 14
CAT./HAUL	—	6.1	MAX. SIZE	— 147
MAY	980504	—	980518	
NO. CGHT.	—	424	MEAN SIZE	— 57.3
NO. MEAS.	—	327	S.E. SIZE	— 1.6
NO. HAULS	—	111	MIN. SIZE	— 12
CAT./HAUL	—	3.8	MAX. SIZE	— 138
JUNE	980601	—	980611	
NO. CGHT.	—	314	MEAN SIZE	— 61.8
NO. MEAS.	—	314	S.E. SIZE	— 1.3
NO. HAULS	—	111	MIN. SIZE	— 13
CAT./HAUL	—	2.8	MAX. SIZE	— 124
JULY	980701	—	980715	
NO. CGHT.	—	532	MEAN SIZE	— 69.1
NO. MEAS.	—	521	S.E. SIZE	— 0.8
NO. HAULS	—	128	MIN. SIZE	— 18
CAT./HAUL	—	4.2	MAX. SIZE	— 119
AUGUST	980803	—	980811	
NO. CGHT.	—	222	MEAN SIZE	— 84.2
NO. MEAS.	—	222	S.E. SIZE	— 1.5
NO. HAULS	—	59	MIN. SIZE	— 20
CAT./HAUL	—	3.8	MAX. SIZE	— 128
SEPTEMBER	980910	—	980928	
NO. CGHT.	—	995	MEAN SIZE	— 44.6
NO. MEAS.	—	771	S.E. SIZE	— 0.9
NO. HAULS	—	138	MIN. SIZE	— 11
CAT./HAUL	—	7.2	MAX. SIZE	— 126
OCTOBER	981005	—	981016	
NO. CGHT.	—	921	MEAN SIZE	— 43.7
NO. MEAS.	—	913	S.E. SIZE	— 0.7
NO. HAULS	—	124	MIN. SIZE	— 13
CAT./HAUL	—	7.4	MAX. SIZE	— 127
NOVEMBER	981102	—	981113	
NO. CGHT.	—	1295	MEAN SIZE	— 47.1
NO. MEAS.	—	928	S.E. SIZE	— 0.6
NO. HAULS	—	130	MIN. SIZE	— 14
CAT./HAUL	—	10	MAX. SIZE	— 134
DECEMBER	981201	—	981216	
NO. CGHT.	—	688	MEAN SIZE	— 47.8
NO. MEAS.	—	571	S.E. SIZE	— 0.9
NO. HAULS	—	119	MIN. SIZE	— 11
CAT./HAUL	—	5.8	MAX. SIZE	— 127
JAN — DEC	980108	—	981216	
NO. CGHT.	—	7203	MEAN SIZE	— 50.6
NO. MEAS.	—	6172	S.E. SIZE	— 0.3
NO. HAULS	—	1262	MIN. SIZE	— 10
CAT./HAUL	—	5.7	MAX. SIZE	— 147

Figure 65.

Blue Crab – Male, 1998



JANUARY	980108	–	980115	
NO. CGHT.	– 433	MEAN SIZE	–	56.4
NO. MEAS.	– 326	S.E. SIZE	–	1.8
NO. HAULS	– 66	MIN. SIZE	–	13
CAT./HAUL	– 6.6	MAX. SIZE	–	162

FEBRUARY	980202	–	980218	
NO. CGHT.	– 202	MEAN SIZE	–	37
NO. MEAS.	– 202	S.E. SIZE	–	1.9
NO. HAULS	– 105	MIN. SIZE	–	10
CAT./HAUL	– 1.9	MAX. SIZE	–	182

MARCH	980302	–	980306	
NO. CGHT.	– 908	MEAN SIZE	–	54.1
NO. MEAS.	– 528	S.E. SIZE	–	1.3
NO. HAULS	– 66	MIN. SIZE	–	10
CAT./HAUL	– 13.8	MAX. SIZE	–	145

APRIL	980401	–	980414	
NO. CGHT.	– 854	MEAN SIZE	–	63.3
NO. MEAS.	– 794	S.E. SIZE	–	1.2
NO. HAULS	– 105	MIN. SIZE	–	13
CAT./HAUL	– 8.1	MAX. SIZE	–	165

MAY	980504	–	980518	
NO. CGHT.	– 391	MEAN SIZE	–	68
NO. MEAS.	– 373	S.E. SIZE	–	1.6
NO. HAULS	– 111	MIN. SIZE	–	14
CAT./HAUL	– 3.5	MAX. SIZE	–	160

JUNE	980601	–	980611	
NO. CGHT.	– 386	MEAN SIZE	–	83.2
NO. MEAS.	– 386	S.E. SIZE	–	1.7
NO. HAULS	– 111	MIN. SIZE	–	11
CAT./HAUL	– 3.5	MAX. SIZE	–	165

JULY	980701	–	980715	
NO. CGHT.	– 526	MEAN SIZE	–	78.7
NO. MEAS.	– 489	S.E. SIZE	–	1.3
NO. HAULS	– 128	MIN. SIZE	–	14
CAT./HAUL	– 4.1	MAX. SIZE	–	160

AUGUST	980803	–	980811	
NO. CGHT.	– 413	MEAN SIZE	–	82.3
NO. MEAS.	– 413	S.E. SIZE	–	1.4
NO. HAULS	– 59	MIN. SIZE	–	20
CAT./HAUL	– 7	MAX. SIZE	–	162

SEPTEMBER	980910	–	980928	
NO. CGHT.	– 1203	MEAN SIZE	–	57.1
NO. MEAS.	– 927	S.E. SIZE	–	1.2
NO. HAULS	– 138	MIN. SIZE	–	8
CAT./HAUL	– 8.7	MAX. SIZE	–	169

OCTOBER	981005	–	981016	
NO. CGHT.	– 1084	MEAN SIZE	–	58.3
NO. MEAS.	– 1037	S.E. SIZE	–	1.2
NO. HAULS	– 124	MIN. SIZE	–	9
CAT./HAUL	– 8.7	MAX. SIZE	–	182

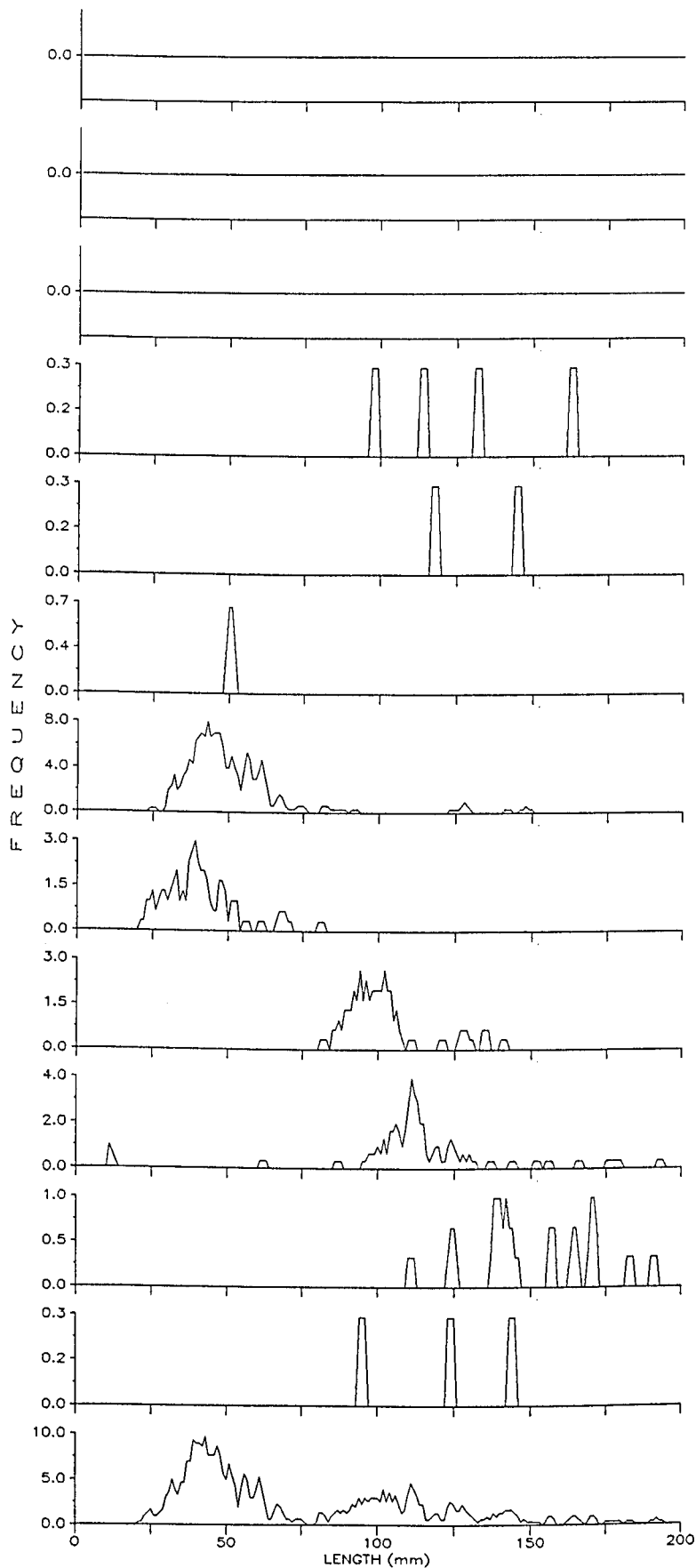
NOVEMBER	981102	–	981113	
NO. CGHT.	– 1324	MEAN SIZE	–	55.2
NO. MEAS.	– 920	S.E. SIZE	–	1
NO. HAULS	– 130	MIN. SIZE	–	7
CAT./HAUL	– 10.2	MAX. SIZE	–	181

DECEMBER	981201	–	981216	
NO. CGHT.	– 706	MEAN SIZE	–	54.8
NO. MEAS.	– 546	S.E. SIZE	–	1.3
NO. HAULS	– 119	MIN. SIZE	–	11
CAT./HAUL	– 5.9	MAX. SIZE	–	172

JAN – DEC	980108	–	981216	
NO. CGHT.	– 8430	MEAN SIZE	–	61.8
NO. MEAS.	– 6941	S.E. SIZE	–	0.4
NO. HAULS	– 1262	MIN. SIZE	–	7
CAT./HAUL	– 6.7	MAX. SIZE	–	182

Figure 66.

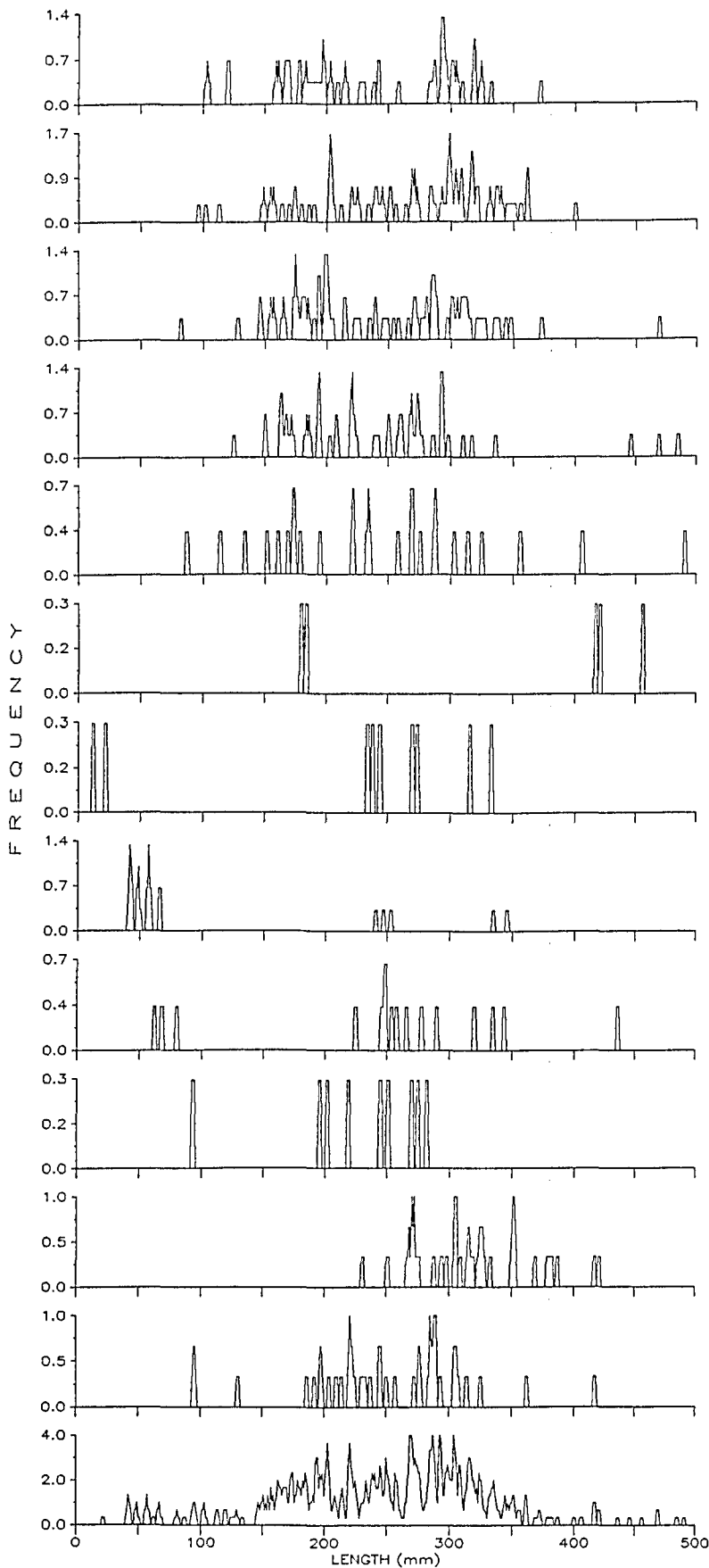
Butterfish, 1998



JANUARY	980108 - 980115		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	66	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
FEBRUARY	980202 - 980218		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	105	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
MARCH	980302 - 980306		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	66	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
APRIL	980401 - 980414		
NO. CGHT.	4	MEAN SIZE	- 124.8
NO. MEAS.	4	S.E. SIZE	- 13.9
NO. HAULS	105	MIN. SIZE	- 96
CAT./HAUL	0	MAX. SIZE	- 161
MAY	980504 - 980518		
NO. CGHT.	2	MEAN SIZE	- 129.5
NO. MEAS.	2	S.E. SIZE	- 13.5
NO. HAULS	111	MIN. SIZE	- 116
CAT./HAUL	0	MAX. SIZE	- 143
JUNE	980601 - 980611		
NO. CGHT.	2	MEAN SIZE	- 48.5
NO. MEAS.	2	S.E. SIZE	- 0.5
NO. HAULS	111	MIN. SIZE	- 48
CAT./HAUL	0	MAX. SIZE	- 49
JULY	980701 - 980715		
NO. CGHT.	195	MEAN SIZE	- 50.1
NO. MEAS.	175	S.E. SIZE	- 1.6
NO. HAULS	128	MIN. SIZE	- 23
CAT./HAUL	1.5	MAX. SIZE	- 147
AUGUST	980803 - 980811		
NO. CGHT.	50	MEAN SIZE	- 39.2
NO. MEAS.	50	S.E. SIZE	- 1.8
NO. HAULS	59	MIN. SIZE	- 20
CAT./HAUL	0.8	MAX. SIZE	- 79
SEPTEMBER	980910 - 980928		
NO. CGHT.	46	MEAN SIZE	- 100.2
NO. MEAS.	46	S.E. SIZE	- 2.1
NO. HAULS	138	MIN. SIZE	- 80
CAT./HAUL	0.3	MAX. SIZE	- 139
OCTOBER	981005 - 981016		
NO. CGHT.	54	MEAN SIZE	- 116.1
NO. MEAS.	54	S.E. SIZE	- 3.1
NO. HAULS	124	MIN. SIZE	- 60
CAT./HAUL	0.4	MAX. SIZE	- 191
NOVEMBER	981102 - 981113		
NO. CGHT.	23	MEAN SIZE	- 160
NO. MEAS.	23	S.E. SIZE	- 6.4
NO. HAULS	130	MIN. SIZE	- 109
CAT./HAUL	0.2	MAX. SIZE	- 223
DECEMBER	981201 - 981216		
NO. CGHT.	3	MEAN SIZE	- 119
NO. MEAS.	3	S.E. SIZE	- 14.2
NO. HAULS	119	MIN. SIZE	- 93
CAT./HAUL	0	MAX. SIZE	- 142
JAN - DEC	980108 - 981216		
NO. CGHT.	379	MEAN SIZE	- 73.8
NO. MEAS.	359	S.E. SIZE	- 2.2
NO. HAULS	1262	MIN. SIZE	- 20
CAT./HAUL	0.3	MAX. SIZE	- 223

Figure 67.

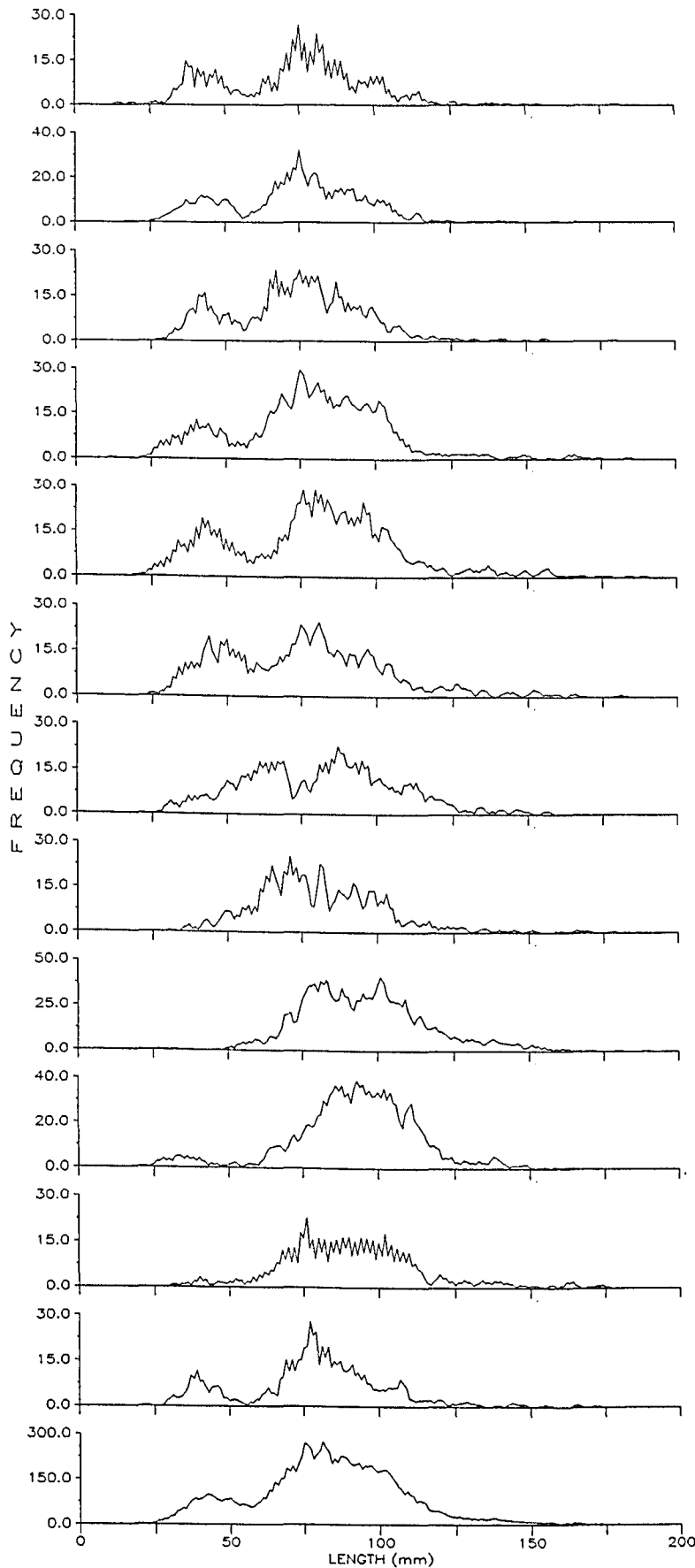
Channel Catfish, 1998



JANUARY	980108	—	980115	
NO. CGHT.	—	53	MEAN SIZE	— 232.1
NO. MEAS.	—	53	S.E. SIZE	— 9.3
NO. HAULS	—	66	MIN. SIZE	— 100
CAT./HAUL	—	0.8	MAX. SIZE	— 370
FEBRUARY	980202	—	980218	
NO. CGHT.	—	79	MEAN SIZE	— 259.5
NO. MEAS.	—	79	S.E. SIZE	— 7.8
NO. HAULS	—	105	MIN. SIZE	— 94
CAT./HAUL	—	0.8	MAX. SIZE	— 398
MARCH	980302	—	980306	
NO. CGHT.	—	78	MEAN SIZE	— 241.5
NO. MEAS.	—	71	S.E. SIZE	— 8.3
NO. HAULS	—	66	MIN. SIZE	— 80
CAT./HAUL	—	1.2	MAX. SIZE	— 467
APRIL	980401	—	980414	
NO. CGHT.	—	51	MEAN SIZE	— 241.9
NO. MEAS.	—	51	S.E. SIZE	— 10.6
NO. HAULS	—	105	MIN. SIZE	— 123
CAT./HAUL	—	0.5	MAX. SIZE	— 483
MAY	980504	—	980518	
NO. CGHT.	—	26	MEAN SIZE	— 240
NO. MEAS.	—	26	S.E. SIZE	— 18.1
NO. HAULS	—	111	MIN. SIZE	— 85
CAT./HAUL	—	0.2	MAX. SIZE	— 489
JUNE	980601	—	980611	
NO. CGHT.	—	5	MEAN SIZE	— 329.6
NO. MEAS.	—	5	S.E. SIZE	— 61.5
NO. HAULS	—	111	MIN. SIZE	— 178
CAT./HAUL	—	0	MAX. SIZE	— 454
JULY	980701	—	980715	
NO. CGHT.	—	8	MEAN SIZE	— 239.4
NO. MEAS.	—	8	S.E. SIZE	— 33.8
NO. HAULS	—	128	MIN. SIZE	— 20
CAT./HAUL	—	0.1	MAX. SIZE	— 331
AUGUST	980803	—	980811	
NO. CGHT.	—	19	MEAN SIZE	— 135.7
NO. MEAS.	—	19	S.E. SIZE	— 32.5
NO. HAULS	—	59	MIN. SIZE	— 39
CAT./HAUL	—	0.3	MAX. SIZE	— 518
SEPTEMBER	980910	—	980928	
NO. CGHT.	—	16	MEAN SIZE	— 245.5
NO. MEAS.	—	16	S.E. SIZE	— 25.5
NO. HAULS	—	138	MIN. SIZE	— 60
CAT./HAUL	—	0.1	MAX. SIZE	— 434
OCTOBER	981005	—	981016	
NO. CGHT.	—	9	MEAN SIZE	— 223.9
NO. MEAS.	—	9	S.E. SIZE	— 19.6
NO. HAULS	—	124	MIN. SIZE	— 91
CAT./HAUL	—	0.1	MAX. SIZE	— 280
NOVEMBER	981102	—	981113	
NO. CGHT.	—	33	MEAN SIZE	— 318
NO. MEAS.	—	33	S.E. SIZE	— 8
NO. HAULS	—	130	MIN. SIZE	— 229
CAT./HAUL	—	0.3	MAX. SIZE	— 419
DECEMBER	981201	—	981216	
NO. CGHT.	—	38	MEAN SIZE	— 247.4
NO. MEAS.	—	38	S.E. SIZE	— 10.5
NO. HAULS	—	119	MIN. SIZE	— 92
CAT./HAUL	—	0.3	MAX. SIZE	— 415
JAN - DEC	980108	—	981216	
NO. CGHT.	—	415	MEAN SIZE	— 246.3
NO. MEAS.	—	408	S.E. SIZE	— 4.1
NO. HAULS	—	1262	MIN. SIZE	— 20
CAT./HAUL	—	0.3	MAX. SIZE	— 518

Figure 68.

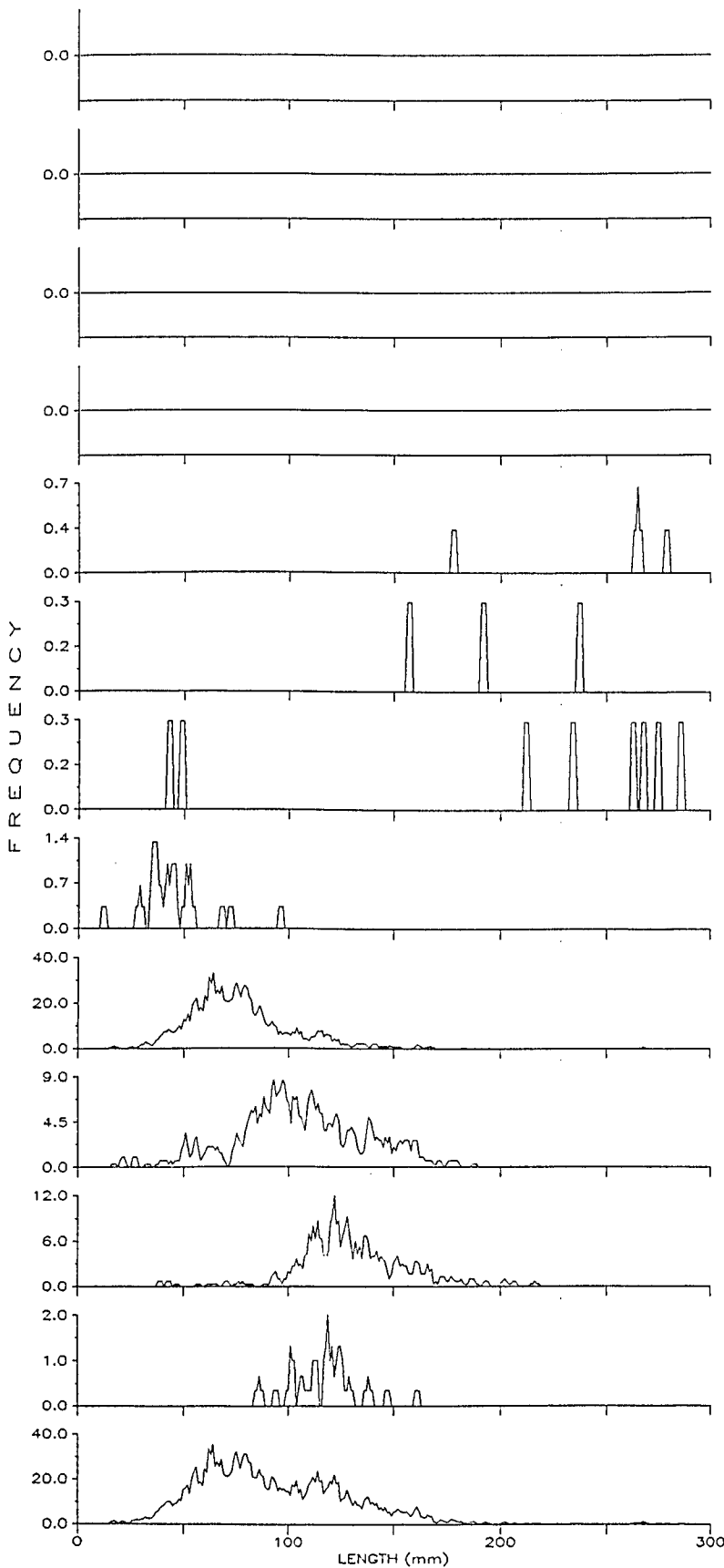
Hogchoker, 1998



JANUARY	980108	-	980115		
NO. CGHT.	- 5767	MEAN SIZE	-	71.1	
NO. MEAS.	- 760	S.E. SIZE	-	0.8	
NO. HAULS	- 66	MIN. SIZE	-	12	
CAT./HAUL	- 87.4	MAX. SIZE	-	178	
FEBRUARY	980202	-	980218		
NO. CGHT.	- 4771	MEAN SIZE	-	72.1	
NO. MEAS.	- 930	S.E. SIZE	-	0.7	
NO. HAULS	- 105	MIN. SIZE	-	16	
CAT./HAUL	- 45.4	MAX. SIZE	-	164	
MARCH	980302	-	980306		
NO. CGHT.	- 4462	MEAN SIZE	-	71.6	
NO. MEAS.	- 912	S.E. SIZE	-	0.7	
NO. HAULS	- 66	MIN. SIZE	-	26	
CAT./HAUL	- 67.6	MAX. SIZE	-	177	
APRIL	980401	-	980414		
NO. CGHT.	- 9918	MEAN SIZE	-	76.4	
NO. MEAS.	- 1188	S.E. SIZE	-	0.7	
NO. HAULS	- 105	MIN. SIZE	-	21	
CAT./HAUL	- 94.5	MAX. SIZE	-	182	
MAY	980504	-	980518		
NO. CGHT.	- 7254	MEAN SIZE	-	77.4	
NO. MEAS.	- 1313	S.E. SIZE	-	0.8	
NO. HAULS	- 111	MIN. SIZE	-	18	
CAT./HAUL	- 65.4	MAX. SIZE	-	201	
JUNE	980601	-	980611		
NO. CGHT.	- 4087	MEAN SIZE	-	74.2	
NO. MEAS.	- 1138	S.E. SIZE	-	0.8	
NO. HAULS	- 111	MIN. SIZE	-	23	
CAT./HAUL	- 36.8	MAX. SIZE	-	180	
JULY	980701	-	980715		
NO. CGHT.	- 3629	MEAN SIZE	-	79.6	
NO. MEAS.	- 1058	S.E. SIZE	-	0.8	
NO. HAULS	- 128	MIN. SIZE	-	19	
CAT./HAUL	- 28.4	MAX. SIZE	-	162	
AUGUST	980803	-	980811		
NO. CGHT.	- 5984	MEAN SIZE	-	79.1	
NO. MEAS.	- 861	S.E. SIZE	-	0.7	
NO. HAULS	- 59	MIN. SIZE	-	29	
CAT./HAUL	- 101.4	MAX. SIZE	-	176	
SEPTEMBER	980910	-	980928		
NO. CGHT.	- 5687	MEAN SIZE	-	93.9	
NO. MEAS.	- 1687	S.E. SIZE	-	0.5	
NO. HAULS	- 138	MIN. SIZE	-	24	
CAT./HAUL	- 41.2	MAX. SIZE	-	187	
OCTOBER	981005	-	981016		
NO. CGHT.	- 8736	MEAN SIZE	-	90.5	
NO. MEAS.	- 1550	S.E. SIZE	-	0.5	
NO. HAULS	- 124	MIN. SIZE	-	17	
CAT./HAUL	- 70.5	MAX. SIZE	-	167	
NOVEMBER	981102	-	981113		
NO. CGHT.	- 4960	MEAN SIZE	-	89	
NO. MEAS.	- 765	S.E. SIZE	-	0.8	
NO. HAULS	- 130	MIN. SIZE	-	29	
CAT./HAUL	- 38.2	MAX. SIZE	-	173	
DECEMBER	981201	-	981216		
NO. CGHT.	- 6527	MEAN SIZE	-	76.7	
NO. MEAS.	- 733	S.E. SIZE	-	0.9	
NO. HAULS	- 119	MIN. SIZE	-	20	
CAT./HAUL	- 54.8	MAX. SIZE	-	170	
JAN - DEC	980108	-	981216		
NO. CGHT.	- 71782	MEAN SIZE	-	80.5	
NO. MEAS.	- 12895	S.E. SIZE	-	0.2	
NO. HAULS	- 1262	MIN. SIZE	-	12	
CAT./HAUL	- 56.9	MAX. SIZE	-	201	

Figure 69.

Kingfish Species, 1998



JANUARY	980108	980115	
NO. CGHT.	0	MEAN SIZE	--
NO. MEAS.	0	S.E. SIZE	--
NO. HAULS	66	MIN. SIZE	--
CAT./HAUL	0	MAX. SIZE	--
FEBRUARY	980202	980218	
NO. CGHT.	0	MEAN SIZE	--
NO. MEAS.	0	S.E. SIZE	--
NO. HAULS	105	MIN. SIZE	--
CAT./HAUL	0	MAX. SIZE	--
MARCH	980302	980306	
NO. CGHT.	0	MEAN SIZE	--
NO. MEAS.	0	S.E. SIZE	--
NO. HAULS	66	MIN. SIZE	--
CAT./HAUL	0	MAX. SIZE	--
APRIL	980401	980414	
NO. CGHT.	0	MEAN SIZE	--
NO. MEAS.	0	S.E. SIZE	--
NO. HAULS	105	MIN. SIZE	--
CAT./HAUL	0	MAX. SIZE	--
MAY	980504	980518	
NO. CGHT.	4	MEAN SIZE	-- 244.8
NO. MEAS.	4	S.E. SIZE	-- 23.2
NO. HAULS	111	MIN. SIZE	-- 176
CAT./HAUL	0	MAX. SIZE	-- 277
JUNE	980601	980611	
NO. CGHT.	3	MEAN SIZE	-- 193.3
NO. MEAS.	3	S.E. SIZE	-- 23.2
NO. HAULS	111	MIN. SIZE	-- 155
CAT./HAUL	0	MAX. SIZE	-- 235
JULY	980701	980715	
NO. CGHT.	14	MEAN SIZE	-- 201.8
NO. MEAS.	8	S.E. SIZE	-- 35.4
NO. HAULS	128	MIN. SIZE	-- 41
CAT./HAUL	0.1	MAX. SIZE	-- 284
AUGUST	980803	980811	
NO. CGHT.	21	MEAN SIZE	-- 44.8
NO. MEAS.	21	S.E. SIZE	-- 3.5
NO. HAULS	59	MIN. SIZE	-- 26
CAT./HAUL	0.4	MAX. SIZE	-- 94
SEPTEMBER	980910	980928	
NO. CGHT.	1642	MEAN SIZE	-- 74.9
NO. MEAS.	1225	S.E. SIZE	-- 0.7
NO. HAULS	138	MIN. SIZE	-- 14
CAT./HAUL	11.9	MAX. SIZE	-- 316
OCTOBER	981005	981016	
NO. CGHT.	479	MEAN SIZE	-- 103.5
NO. MEAS.	444	S.E. SIZE	-- 1.5
NO. HAULS	124	MIN. SIZE	-- 15
CAT./HAUL	3.9	MAX. SIZE	-- 186
NOVEMBER	981102	981113	
NO. CGHT.	355	MEAN SIZE	-- 128
NO. MEAS.	355	S.E. SIZE	-- 1.4
NO. HAULS	130	MIN. SIZE	-- 37
CAT./HAUL	2.7	MAX. SIZE	-- 215
DECEMBER	981201	981216	
NO. CGHT.	31	MEAN SIZE	-- 115.2
NO. MEAS.	31	S.E. SIZE	-- 2.9
NO. HAULS	119	MIN. SIZE	-- 83
CAT./HAUL	0.3	MAX. SIZE	-- 159
JAN - DEC	980108	981216	
NO. CGHT.	2549	MEAN SIZE	-- 91.3
NO. MEAS.	2091	S.E. SIZE	-- 0.8
NO. HAULS	1262	MIN. SIZE	-- 14
CAT./HAUL	2	MAX. SIZE	-- 316

Figure 70.

Northern Puffer, 1998

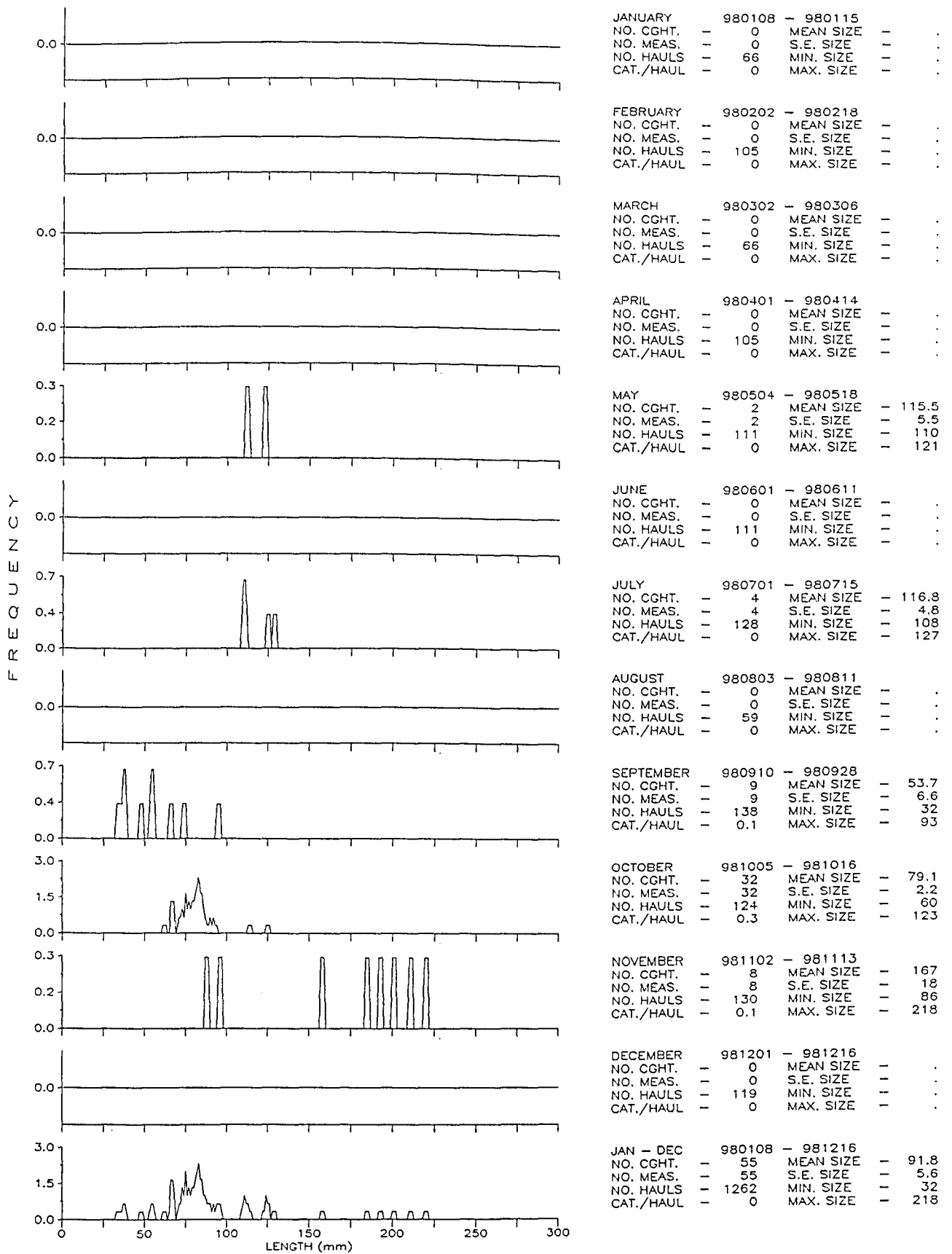
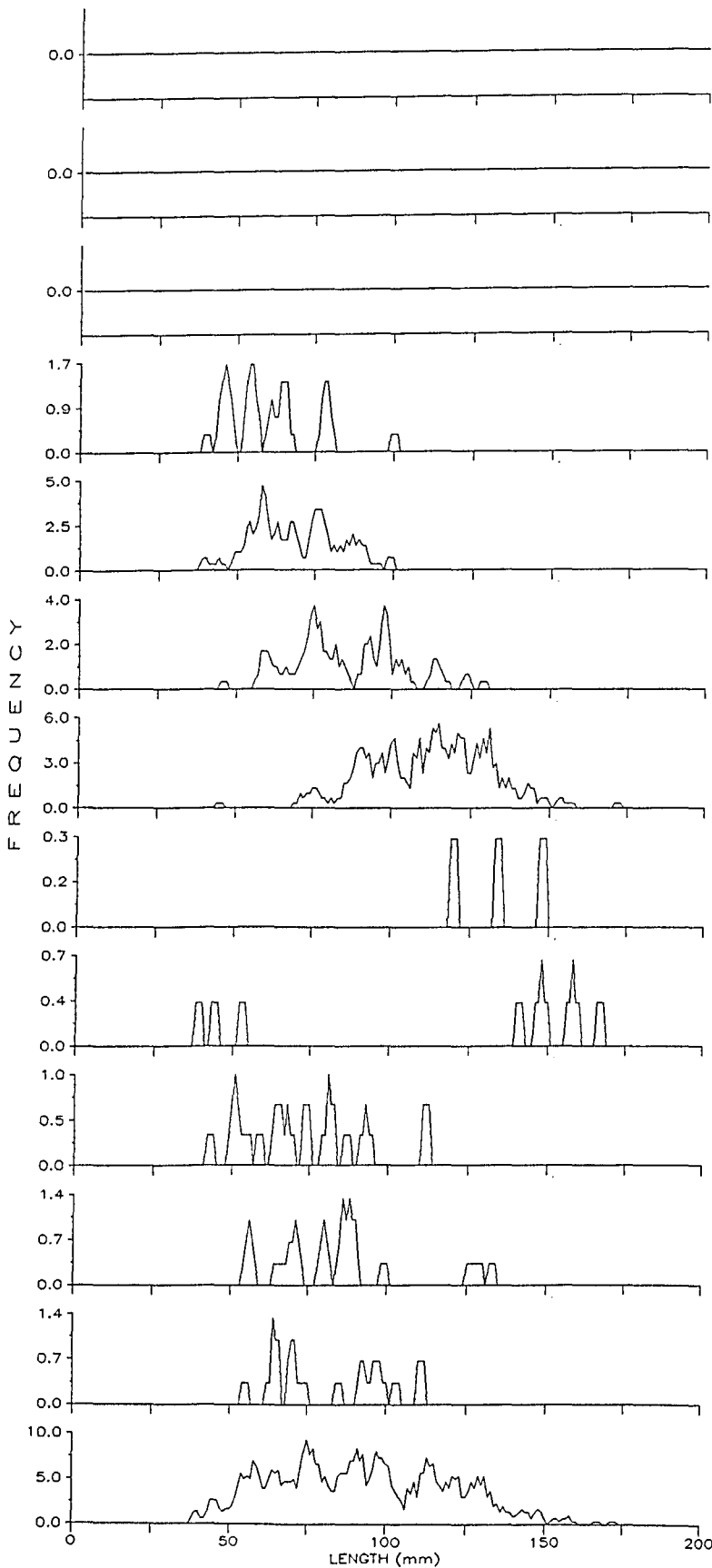


Figure 71.

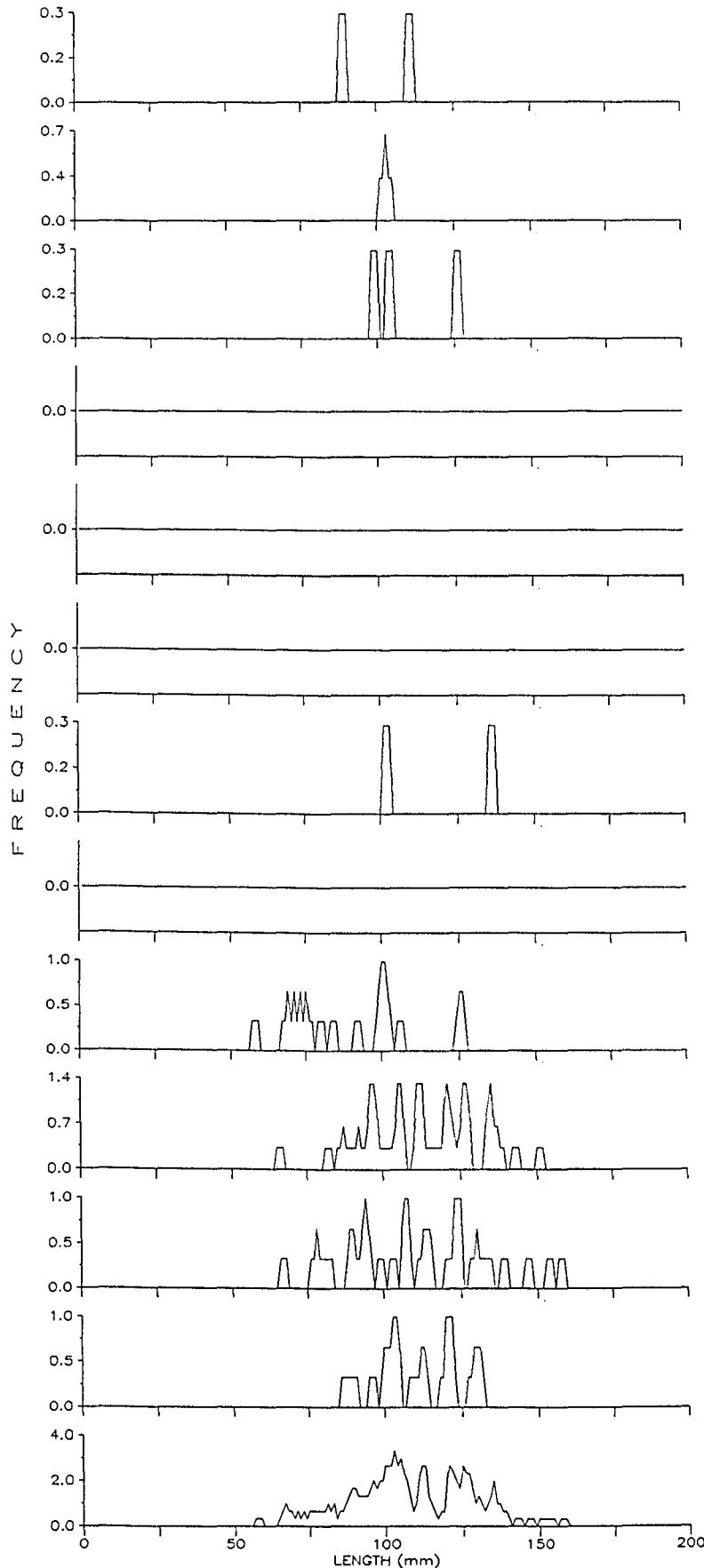
Northern Searobin, 1998



JANUARY	980108	-	980115		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	66	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
FEBRUARY	980202	-	980218		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	105	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
MARCH	980302	-	980306		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	66	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
APRIL	980401	-	980414		
NO. CGHT.	-	29	MEAN SIZE	-	58.1
NO. MEAS.	-	29	S.E. SIZE	-	2.6
NO. HAULS	-	105	MIN. SIZE	-	38
CAT./HAUL	-	0.3	MAX. SIZE	-	98
MAY	980504	-	980518		
NO. CGHT.	-	93	MEAN SIZE	-	66.7
NO. MEAS.	-	93	S.E. SIZE	-	1.4
NO. HAULS	-	111	MIN. SIZE	-	37
CAT./HAUL	-	0.8	MAX. SIZE	-	97
JUNE	980601	-	980611		
NO. CGHT.	-	83	MEAN SIZE	-	83.3
NO. MEAS.	-	83	S.E. SIZE	-	2
NO. HAULS	-	111	MIN. SIZE	-	44
CAT./HAUL	-	0.7	MAX. SIZE	-	127
JULY	980701	-	980715		
NO. CGHT.	-	205	MEAN SIZE	-	110
NO. MEAS.	-	205	S.E. SIZE	-	1.4
NO. HAULS	-	128	MIN. SIZE	-	43
CAT./HAUL	-	1.6	MAX. SIZE	-	170
AUGUST	980803	-	980811		
NO. CGHT.	-	3	MEAN SIZE	-	132
NO. MEAS.	-	3	S.E. SIZE	-	8.1
NO. HAULS	-	59	MIN. SIZE	-	118
CAT./HAUL	-	0.1	MAX. SIZE	-	146
SEPTEMBER	980910	-	980928		
NO. CGHT.	-	9	MEAN SIZE	-	115.3
NO. MEAS.	-	9	S.E. SIZE	-	18.2
NO. HAULS	-	138	MIN. SIZE	-	37
CAT./HAUL	-	0.1	MAX. SIZE	-	165
OCTOBER	981005	-	981016		
NO. CGHT.	-	20	MEAN SIZE	-	71.2
NO. MEAS.	-	20	S.E. SIZE	-	4.4
NO. HAULS	-	124	MIN. SIZE	-	41
CAT./HAUL	-	0.2	MAX. SIZE	-	110
NOVEMBER	981102	-	981113		
NO. CGHT.	-	22	MEAN SIZE	-	82.3
NO. MEAS.	-	22	S.E. SIZE	-	4.7
NO. HAULS	-	130	MIN. SIZE	-	53
CAT./HAUL	-	0.2	MAX. SIZE	-	131
DECEMBER	981201	-	981216		
NO. CGHT.	-	18	MEAN SIZE	-	80.5
NO. MEAS.	-	18	S.E. SIZE	-	4.2
NO. HAULS	-	119	MIN. SIZE	-	53
CAT./HAUL	-	0.2	MAX. SIZE	-	109
JAN - DEC	980108	-	981216		
NO. CGHT.	-	482	MEAN SIZE	-	90.2
NO. MEAS.	-	482	S.E. SIZE	-	1.2
NO. HAULS	-	1262	MIN. SIZE	-	37
CAT./HAUL	-	0.4	MAX. SIZE	-	170

Figure 72.

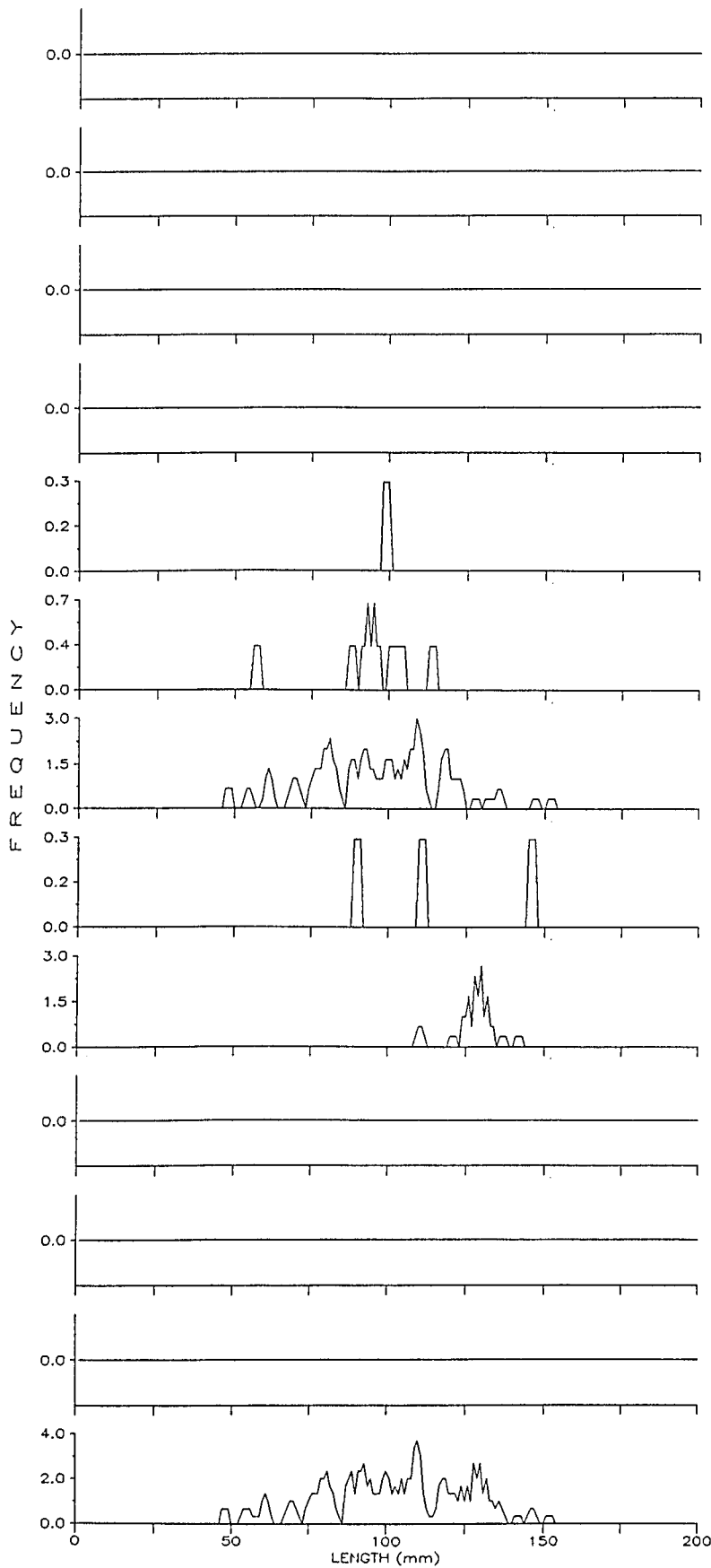
Penaeid Shrimp, 1998



JANUARY	980108	980115		
NO. CGHT.	2	MEAN SIZE	98	
NO. MEAS.	2	S.E. SIZE	11	
NO. HAULS	66	MIN. SIZE	87	
CAT./HAUL	0	MAX. SIZE	109	
FEBRUARY	980202	980218		
NO. CGHT.	2	MEAN SIZE	101	
NO. MEAS.	2	S.E. SIZE	1	
NO. HAULS	105	MIN. SIZE	100	
CAT./HAUL	0	MAX. SIZE	102	
MARCH	980302	980306		
NO. CGHT.	3	MEAN SIZE	107.7	
NO. MEAS.	3	S.E. SIZE	8.3	
NO. HAULS	66	MIN. SIZE	97	
CAT./HAUL	0	MAX. SIZE	124	
APRIL	980401	980414		
NO. CGHT.	0	MEAN SIZE	.	
NO. MEAS.	0	S.E. SIZE	.	
NO. HAULS	105	MIN. SIZE	.	
CAT./HAUL	0	MAX. SIZE	.	
MAY	980504	980518		
NO. CGHT.	0	MEAN SIZE	.	
NO. MEAS.	0	S.E. SIZE	.	
NO. HAULS	111	MIN. SIZE	.	
CAT./HAUL	0	MAX. SIZE	.	
JUNE	980601	980611		
NO. CGHT.	0	MEAN SIZE	.	
NO. MEAS.	0	S.E. SIZE	.	
NO. HAULS	111	MIN. SIZE	.	
CAT./HAUL	0	MAX. SIZE	.	
JULY	980701	980715		
NO. CGHT.	2	MEAN SIZE	117	
NO. MEAS.	2	S.E. SIZE	17	
NO. HAULS	128	MIN. SIZE	100	
CAT./HAUL	0	MAX. SIZE	134	
AUGUST	980803	980811		
NO. CGHT.	0	MEAN SIZE	.	
NO. MEAS.	0	S.E. SIZE	.	
NO. HAULS	59	MIN. SIZE	.	
CAT./HAUL	0	MAX. SIZE	.	
SEPTEMBER	980910	980928		
NO. CGHT.	16	MEAN SIZE	87.6	
NO. MEAS.	16	S.E. SIZE	5	
NO. HAULS	138	MIN. SIZE	56	
CAT./HAUL	0.1	MAX. SIZE	124	
OCTOBER	981005	981016		
NO. CGHT.	38	MEAN SIZE	110.6	
NO. MEAS.	38	S.E. SIZE	3	
NO. HAULS	124	MIN. SIZE	64	
CAT./HAUL	0.3	MAX. SIZE	149	
NOVEMBER	981102	981113		
NO. CGHT.	28	MEAN SIZE	109.3	
NO. MEAS.	28	S.E. SIZE	4.5	
NO. HAULS	130	MIN. SIZE	65	
CAT./HAUL	0.2	MAX. SIZE	156	
DECEMBER	981201	981216		
NO. CGHT.	18	MEAN SIZE	108.6	
NO. MEAS.	18	S.E. SIZE	3.2	
NO. HAULS	119	MIN. SIZE	85	
CAT./HAUL	0.2	MAX. SIZE	129	
JAN - DEC	980108	981216		
NO. CGHT.	109	MEAN SIZE	106.2	
NO. MEAS.	109	S.E. SIZE	2	
NO. HAULS	1262	MIN. SIZE	56	
CAT./HAUL	0.1	MAX. SIZE	156	

Figure 73.

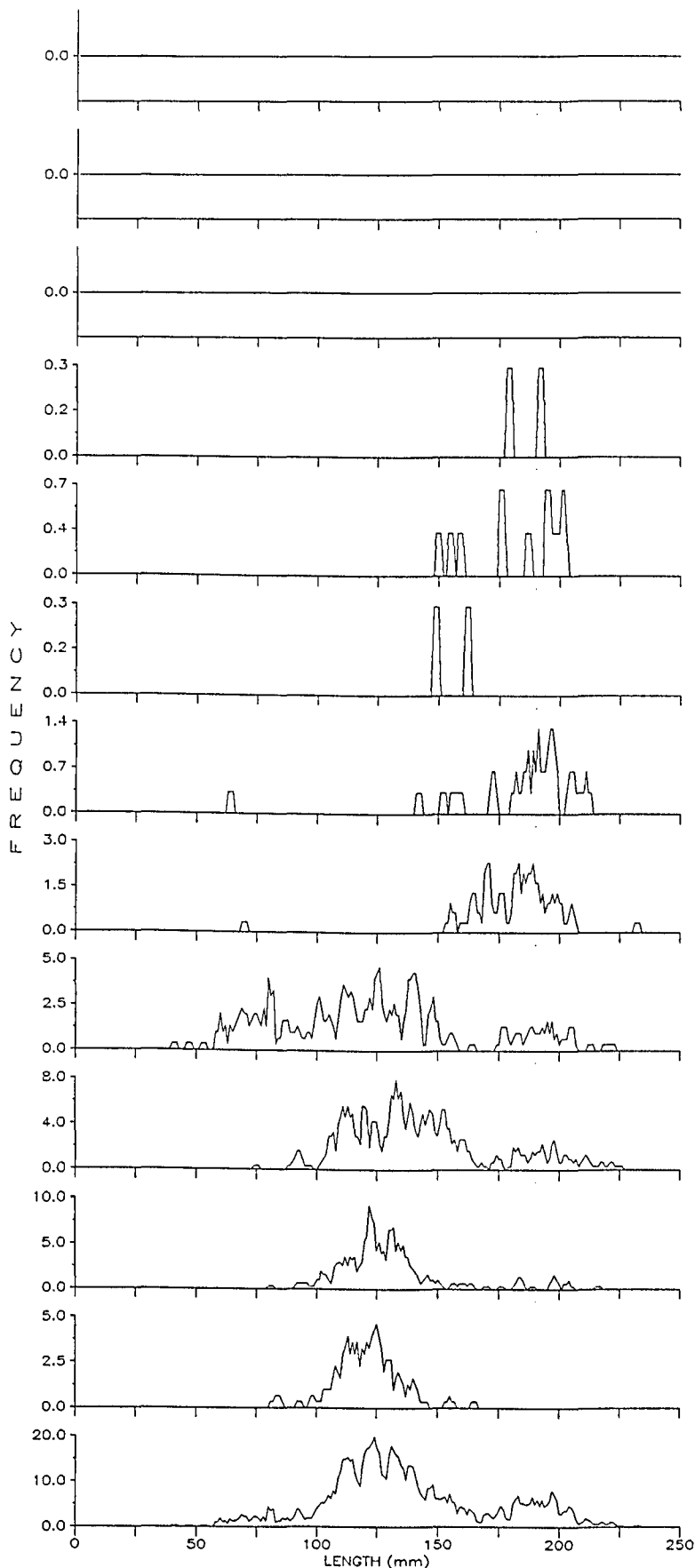
Scup, 1998



JANUARY	980108	—	980115		
NO. CGHT.	—	0	MEAN SIZE	—	.
NO. MEAS.	—	0	S.E. SIZE	—	.
NO. HAULS	—	66	MIN. SIZE	—	.
CAT./HAUL	—	0	MAX. SIZE	—	.
FEBRUARY	980202	—	980218		
NO. CGHT.	—	0	MEAN SIZE	—	.
NO. MEAS.	—	0	S.E. SIZE	—	.
NO. HAULS	—	105	MIN. SIZE	—	.
CAT./HAUL	—	0	MAX. SIZE	—	.
MARCH	980302	—	980306		
NO. CGHT.	—	0	MEAN SIZE	—	.
NO. MEAS.	—	0	S.E. SIZE	—	.
NO. HAULS	—	66	MIN. SIZE	—	.
CAT./HAUL	—	0	MAX. SIZE	—	.
APRIL	980401	—	980414		
NO. CGHT.	—	0	MEAN SIZE	—	.
NO. MEAS.	—	0	S.E. SIZE	—	.
NO. HAULS	—	105	MIN. SIZE	—	.
CAT./HAUL	—	0	MAX. SIZE	—	.
MAY	980504	—	980518		
NO. CGHT.	—	1	MEAN SIZE	—	97
NO. MEAS.	—	1	S.E. SIZE	—	.
NO. HAULS	—	111	MIN. SIZE	—	97
CAT./HAUL	—	0	MAX. SIZE	—	97
JUNE	980601	—	980611		
NO. CGHT.	—	8	MEAN SIZE	—	91.3
NO. MEAS.	—	8	S.E. SIZE	—	5.9
NO. HAULS	—	111	MIN. SIZE	—	55
CAT./HAUL	—	0.1	MAX. SIZE	—	112
JULY	980701	—	980715		
NO. CGHT.	—	86	MEAN SIZE	—	94
NO. MEAS.	—	86	S.E. SIZE	—	2.4
NO. HAULS	—	128	MIN. SIZE	—	46
CAT./HAUL	—	0.7	MAX. SIZE	—	150
AUGUST	980803	—	980811		
NO. CGHT.	—	3	MEAN SIZE	—	113.7
NO. MEAS.	—	3	S.E. SIZE	—	16.3
NO. HAULS	—	59	MIN. SIZE	—	88
CAT./HAUL	—	0.1	MAX. SIZE	—	144
SEPTEMBER	980910	—	980928		
NO. CGHT.	—	20	MEAN SIZE	—	125.7
NO. MEAS.	—	20	S.E. SIZE	—	1.7
NO. HAULS	—	138	MIN. SIZE	—	108
CAT./HAUL	—	0.1	MAX. SIZE	—	140
OCTOBER	981005	—	981016		
NO. CGHT.	—	0	MEAN SIZE	—	.
NO. MEAS.	—	0	S.E. SIZE	—	.
NO. HAULS	—	124	MIN. SIZE	—	.
CAT./HAUL	—	0	MAX. SIZE	—	.
NOVEMBER	981102	—	981113		
NO. CGHT.	—	0	MEAN SIZE	—	.
NO. MEAS.	—	0	S.E. SIZE	—	.
NO. HAULS	—	130	MIN. SIZE	—	.
CAT./HAUL	—	0	MAX. SIZE	—	.
DECEMBER	981201	—	981216		
NO. CGHT.	—	0	MEAN SIZE	—	.
NO. MEAS.	—	0	S.E. SIZE	—	.
NO. HAULS	—	119	MIN. SIZE	—	.
CAT./HAUL	—	0	MAX. SIZE	—	.
JAN — DEC	980108	—	981216		
NO. CGHT.	—	118	MEAN SIZE	—	99.7
NO. MEAS.	—	118	S.E. SIZE	—	2.1
NO. HAULS	—	1262	MIN. SIZE	—	46
CAT./HAUL	—	0.1	MAX. SIZE	—	150

Figure 74.

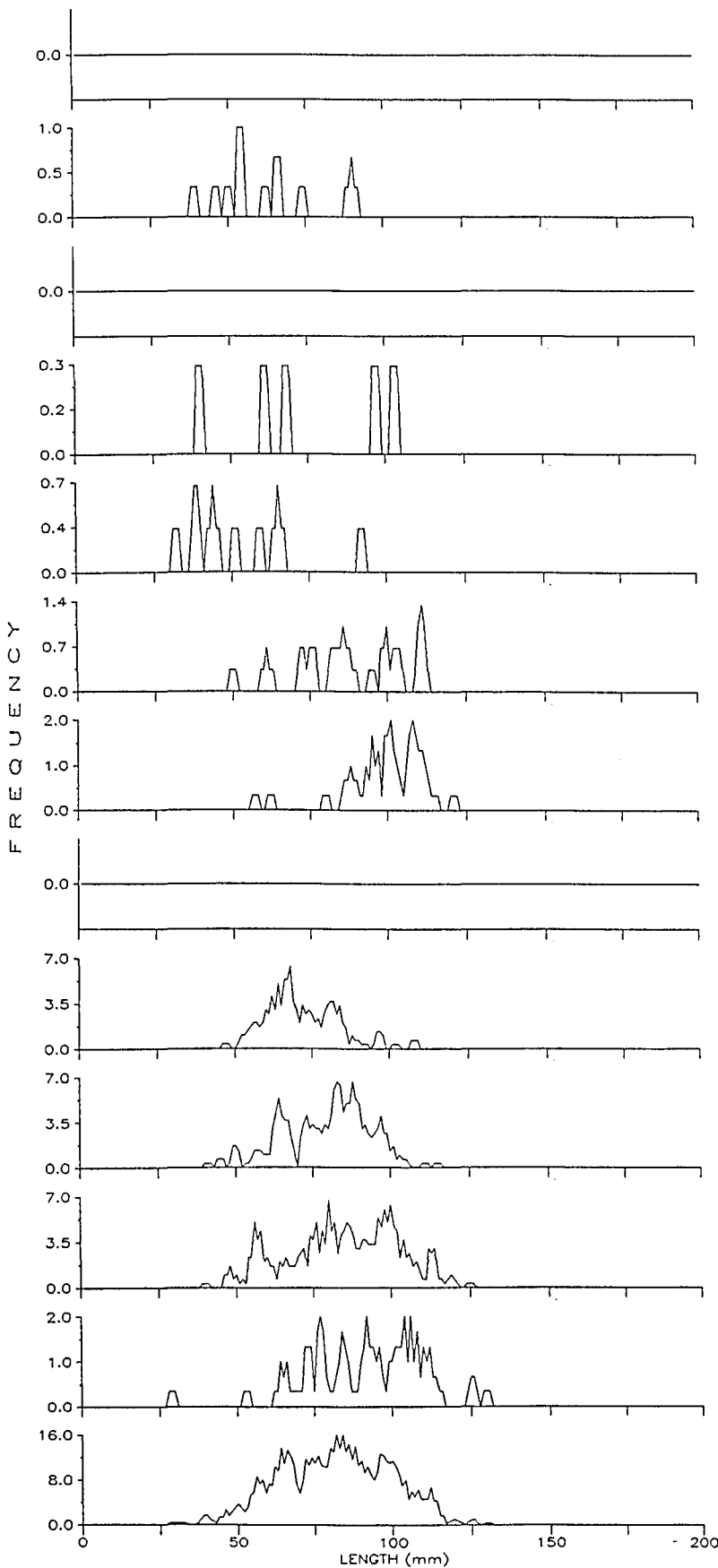
Silver Perch, 1998



JANUARY	980108	-	980115	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	66	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
FEBRUARY	980202	-	980218	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	105	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
MARCH	980302	-	980306	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	66	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
APRIL	980401	-	980414	
NO. CGHT.	-	2	MEAN SIZE	- 183.5
NO. MEAS.	-	2	S.E. SIZE	- 6.5
NO. HAULS	-	105	MIN. SIZE	- 177
CAT./HAUL	-	0	MAX. SIZE	- 190
MAY	980504	-	980518	
NO. CGHT.	-	11	MEAN SIZE	- 179.3
NO. MEAS.	-	11	S.E. SIZE	- 5.8
NO. HAULS	-	111	MIN. SIZE	- 148
CAT./HAUL	-	0.1	MAX. SIZE	- 200
JUNE	980601	-	980611	
NO. CGHT.	-	2	MEAN SIZE	- 153.5
NO. MEAS.	-	2	S.E. SIZE	- 6.5
NO. HAULS	-	111	MIN. SIZE	- 147
CAT./HAUL	-	0	MAX. SIZE	- 160
JULY	980701	-	980715	
NO. CGHT.	-	27	MEAN SIZE	- 180.3
NO. MEAS.	-	27	S.E. SIZE	- 5.7
NO. HAULS	-	128	MIN. SIZE	- 62
CAT./HAUL	-	0.2	MAX. SIZE	- 210
AUGUST	980803	-	980811	
NO. CGHT.	-	61	MEAN SIZE	- 178.7
NO. MEAS.	-	61	S.E. SIZE	- 2.6
NO. HAULS	-	59	MIN. SIZE	- 68
CAT./HAUL	-	1	MAX. SIZE	- 230
SEPTEMBER	980910	-	980928	
NO. CGHT.	-	230	MEAN SIZE	- 120.4
NO. MEAS.	-	230	S.E. SIZE	- 2.6
NO. HAULS	-	138	MIN. SIZE	- 39
CAT./HAUL	-	1.7	MAX. SIZE	- 220
OCTOBER	981005	-	981016	
NO. CGHT.	-	309	MEAN SIZE	- 140.7
NO. MEAS.	-	309	S.E. SIZE	- 1.7
NO. HAULS	-	124	MIN. SIZE	- 73
CAT./HAUL	-	2.5	MAX. SIZE	- 223
NOVEMBER	981102	-	981113	
NO. CGHT.	-	197	MEAN SIZE	- 129
NO. MEAS.	-	197	S.E. SIZE	- 1.7
NO. HAULS	-	130	MIN. SIZE	- 79
CAT./HAUL	-	1.5	MAX. SIZE	- 214
DECEMBER	981201	-	981216	
NO. CGHT.	-	144	MEAN SIZE	- 119
NO. MEAS.	-	107	S.E. SIZE	- 1.3
NO. HAULS	-	119	MIN. SIZE	- 80
CAT./HAUL	-	1.2	MAX. SIZE	- 163
JAN - DEC	980108	-	981216	
NO. CGHT.	-	983	MEAN SIZE	- 135
NO. MEAS.	-	946	S.E. SIZE	- 1.1
NO. HAULS	-	1262	MIN. SIZE	- 39
CAT./HAUL	-	0.8	MAX. SIZE	- 230

Figure 75.

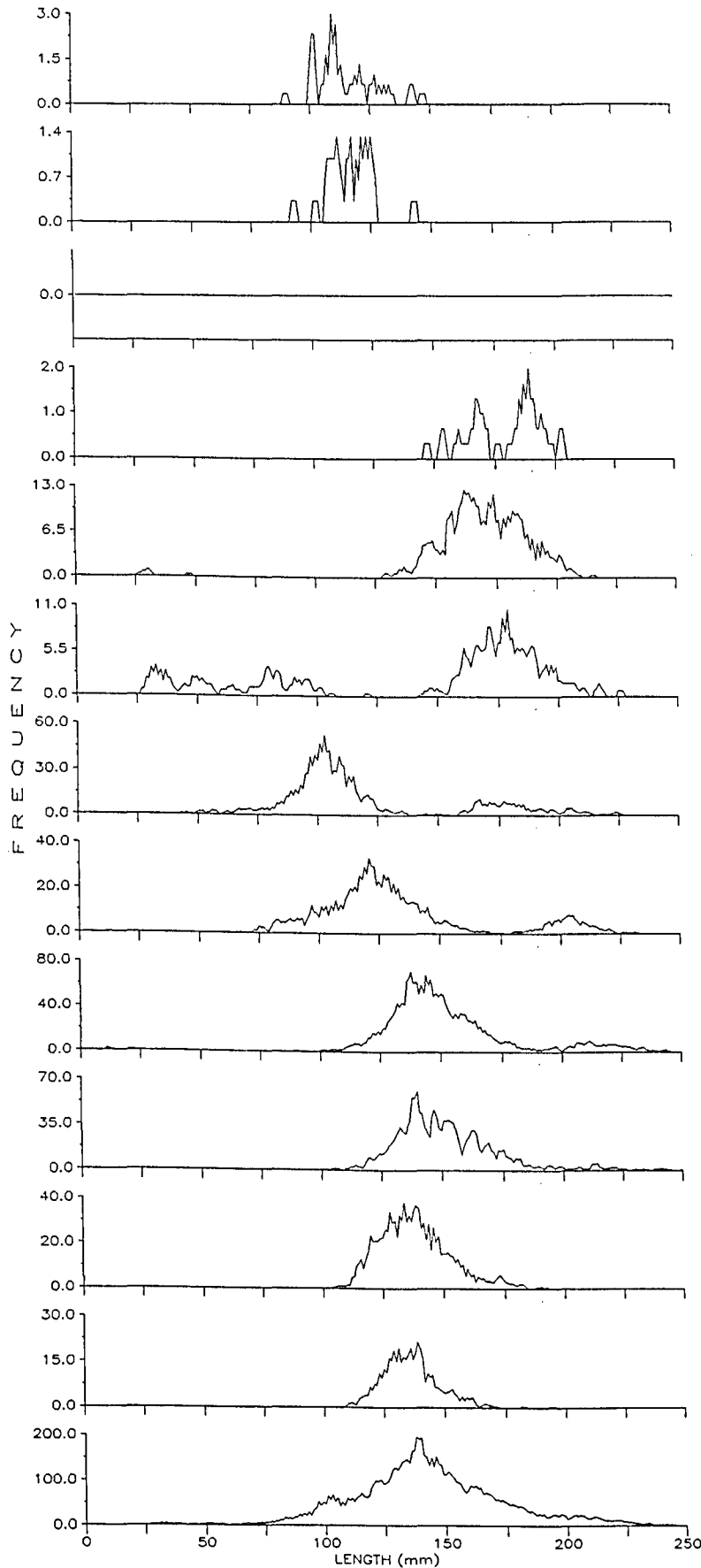
Smallmouth Flounder, 1998



JANUARY	980108	-	980115		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	66	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
FEBRUARY	980202	-	980218		
NO. CGHT.	-	12	MEAN SIZE	-	60.1
NO. MEAS.	-	12	S.E. SIZE	-	4.7
NO. HAULS	-	105	MIN. SIZE	-	37
CAT./HAUL	-	0.1	MAX. SIZE	-	89
MARCH	980302	-	980306		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	66	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
APRIL	980401	-	980414		
NO. CGHT.	-	5	MEAN SIZE	-	71.8
NO. MEAS.	-	5	S.E. SIZE	-	11.7
NO. HAULS	-	105	MIN. SIZE	-	38
CAT./HAUL	-	0	MAX. SIZE	-	101
MAY	980504	-	980518		
NO. CGHT.	-	10	MEAN SIZE	-	50.9
NO. MEAS.	-	10	S.E. SIZE	-	5.7
NO. HAULS	-	111	MIN. SIZE	-	30
CAT./HAUL	-	0.1	MAX. SIZE	-	90
JUNE	980601	-	980611		
NO. CGHT.	-	23	MEAN SIZE	-	86.1
NO. MEAS.	-	23	S.E. SIZE	-	3.7
NO. HAULS	-	111	MIN. SIZE	-	48
CAT./HAUL	-	0.2	MAX. SIZE	-	110
JULY	980701	-	980715		
NO. CGHT.	-	35	MEAN SIZE	-	96.9
NO. MEAS.	-	35	S.E. SIZE	-	2.3
NO. HAULS	-	128	MIN. SIZE	-	55
CAT./HAUL	-	0.3	MAX. SIZE	-	119
AUGUST	980803	-	980811		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	59	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
SEPTEMBER	980910	-	980928		
NO. CGHT.	-	112	MEAN SIZE	-	70.1
NO. MEAS.	-	112	S.E. SIZE	-	1.1
NO. HAULS	-	138	MIN. SIZE	-	45
CAT./HAUL	-	0.8	MAX. SIZE	-	106
OCTOBER	981005	-	981016		
NO. CGHT.	-	164	MEAN SIZE	-	77.4
NO. MEAS.	-	164	S.E. SIZE	-	1.1
NO. HAULS	-	124	MIN. SIZE	-	39
CAT./HAUL	-	1.3	MAX. SIZE	-	113
NOVEMBER	981102	-	981113		
NO. CGHT.	-	209	MEAN SIZE	-	82.4
NO. MEAS.	-	209	S.E. SIZE	-	1.2
NO. HAULS	-	130	MIN. SIZE	-	38
CAT./HAUL	-	1.6	MAX. SIZE	-	123
DECEMBER	981201	-	981216		
NO. CGHT.	-	58	MEAN SIZE	-	89.1
NO. MEAS.	-	58	S.E. SIZE	-	2.5
NO. HAULS	-	119	MIN. SIZE	-	27
CAT./HAUL	-	0.5	MAX. SIZE	-	128
JAN - DEC	980108	-	981216		
NO. CGHT.	-	628	MEAN SIZE	-	79.5
NO. MEAS.	-	628	S.E. SIZE	-	0.7
NO. HAULS	-	1262	MIN. SIZE	-	27
CAT./HAUL	-	0.5	MAX. SIZE	-	128

Figure 76.

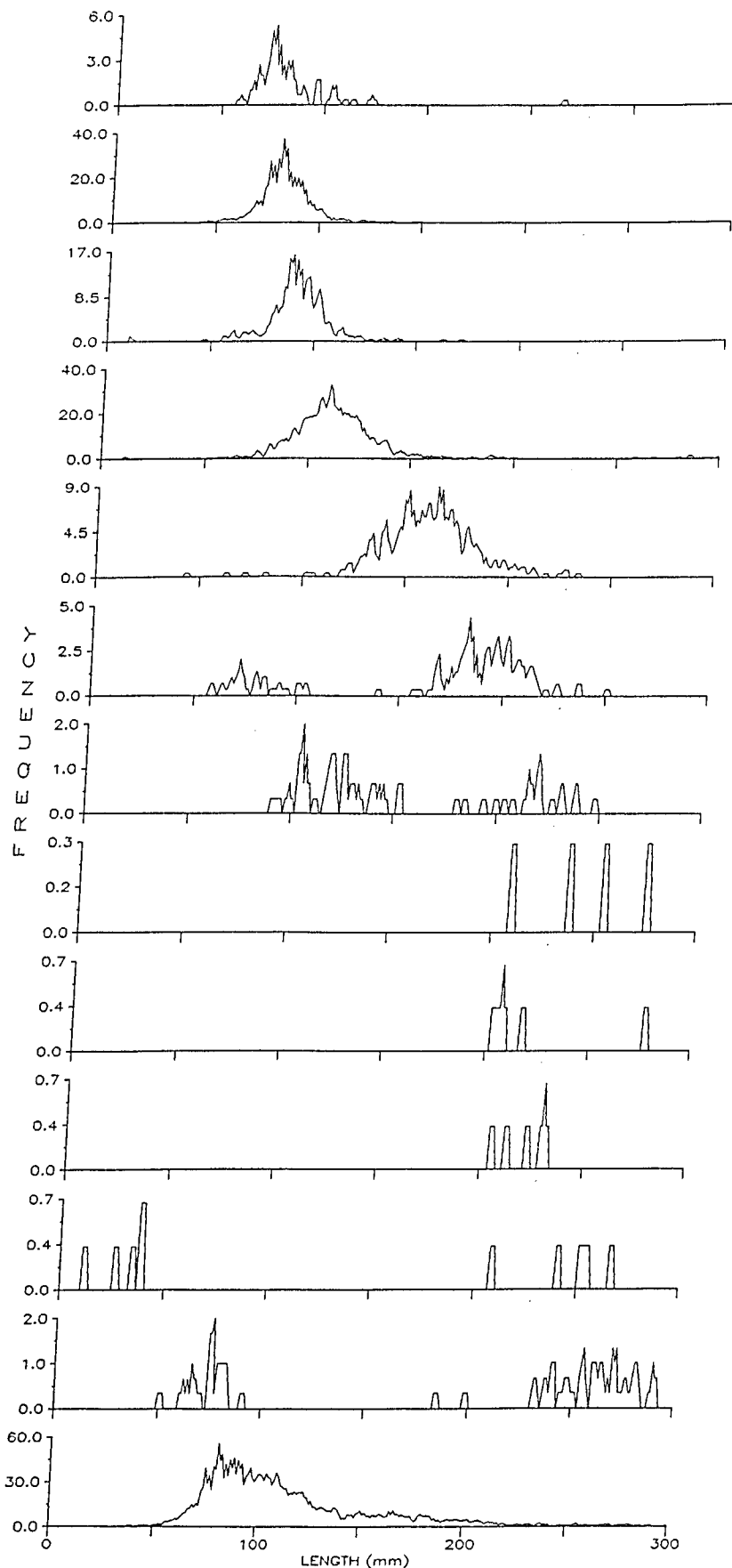
Spot, 1998



JANUARY	980108 - 980115		
NO. CGHT.	- 38	MEAN SIZE	- 113.1
NO. MEAS.	- 38	S.E. SIZE	- 2.1
NO. HAULS	- 66	MIN. SIZE	- 88
CAT./HAUL	- 0.6	MAX. SIZE	- 145
FEBRUARY	980202 - 980218		
NO. CGHT.	- 24	MEAN SIZE	- 114.3
NO. MEAS.	- 24	S.E. SIZE	- 2
NO. HAULS	- 105	MIN. SIZE	- 91
CAT./HAUL	- 0.2	MAX. SIZE	- 141
MARCH	980302 - 980306		
NO. CGHT.	- 0	MEAN SIZE	- .
NO. MEAS.	- 0	S.E. SIZE	- .
NO. HAULS	- 66	MIN. SIZE	- .
CAT./HAUL	- 0	MAX. SIZE	- .
APRIL	980401 - 980414		
NO. CGHT.	- 33	MEAN SIZE	- 177.2
NO. MEAS.	- 33	S.E. SIZE	- 2.6
NO. HAULS	- 105	MIN. SIZE	- 145
CAT./HAUL	- 0.3	MAX. SIZE	- 201
MAY	980504 - 980518		
NO. CGHT.	- 439	MEAN SIZE	- 167.1
NO. MEAS.	- 438	S.E. SIZE	- 1
NO. HAULS	- 111	MIN. SIZE	- 25
CAT./HAUL	- 4	MAX. SIZE	- 213
JUNE	980601 - 980611		
NO. CGHT.	- 483	MEAN SIZE	- 142.8
NO. MEAS.	- 385	S.E. SIZE	- 2.8
NO. HAULS	- 111	MIN. SIZE	- 26
CAT./HAUL	- 4.4	MAX. SIZE	- 224
JULY	980701 - 980715		
NO. CGHT.	- 2137	MEAN SIZE	- 117.7
NO. MEAS.	- 1443	S.E. SIZE	- 1
NO. HAULS	- 128	MIN. SIZE	- 37
CAT./HAUL	- 16.7	MAX. SIZE	- 236
AUGUST	980803 - 980811		
NO. CGHT.	- 1331	MEAN SIZE	- 130.1
NO. MEAS.	- 1202	S.E. SIZE	- 1
NO. HAULS	- 59	MIN. SIZE	- 59
CAT./HAUL	- 22.6	MAX. SIZE	- 229
SEPTEMBER	980910 - 980928		
NO. CGHT.	- 3094	MEAN SIZE	- 150.3
NO. MEAS.	- 2342	S.E. SIZE	- 0.5
NO. HAULS	- 138	MIN. SIZE	- 19
CAT./HAUL	- 22.4	MAX. SIZE	- 258
OCTOBER	981005 - 981016		
NO. CGHT.	- 2160	MEAN SIZE	- 150.4
NO. MEAS.	- 1781	S.E. SIZE	- 0.5
NO. HAULS	- 124	MIN. SIZE	- 98
CAT./HAUL	- 17.4	MAX. SIZE	- 262
NOVEMBER	981102 - 981113		
NO. CGHT.	- 1483	MEAN SIZE	- 136.2
NO. MEAS.	- 1131	S.E. SIZE	- 0.4
NO. HAULS	- 130	MIN. SIZE	- 103
CAT./HAUL	- 11.4	MAX. SIZE	- 197
DECEMBER	981201 - 981216		
NO. CGHT.	- 478	MEAN SIZE	- 133.9
NO. MEAS.	- 478	S.E. SIZE	- 0.5
NO. HAULS	- 119	MIN. SIZE	- 108
CAT./HAUL	- 4	MAX. SIZE	- 192
JAN - DEC	980108 - 981216		
NO. CGHT.	- 11700	MEAN SIZE	- 140.4
NO. MEAS.	- 9295	S.E. SIZE	- 0.3
NO. HAULS	- 1262	MIN. SIZE	- 19
CAT./HAUL	- 9.3	MAX. SIZE	- 262

Figure 77.

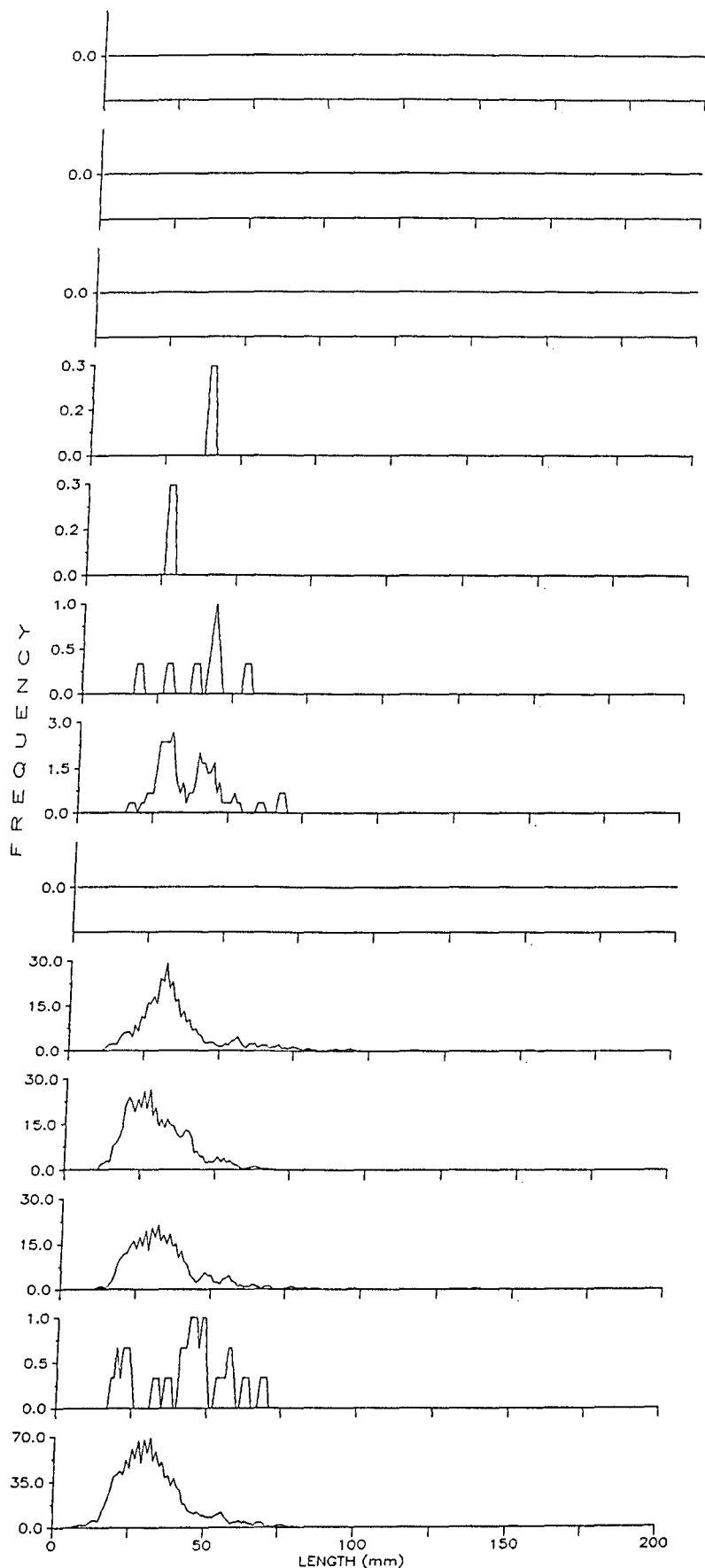
Spotted Hake, 1998



JANUARY	980108 - 980115		
NO. CGHT.	79	MEAN SIZE	80.4
NO. MEAS.	79	S.E. SIZE	2.3
NO. HAULS	66	MIN. SIZE	56
CAT./HAUL	1.2	MAX. SIZE	214
FEBRUARY	980202 - 980218		
NO. CGHT.	729	MEAN SIZE	82.3
NO. MEAS.	635	S.E. SIZE	0.7
NO. HAULS	105	MIN. SIZE	41
CAT./HAUL	6.9	MAX. SIZE	279
MARCH	980302 - 980306		
NO. CGHT.	457	MEAN SIZE	90.5
NO. MEAS.	331	S.E. SIZE	0.8
NO. HAULS	66	MIN. SIZE	45
CAT./HAUL	6.9	MAX. SIZE	170
APRIL	980401 - 980414		
NO. CGHT.	1154	MEAN SIZE	112.9
NO. MEAS.	973	S.E. SIZE	0.9
NO. HAULS	105	MIN. SIZE	55
CAT./HAUL	11	MAX. SIZE	326
MAY	980504 - 980518		
NO. CGHT.	337	MEAN SIZE	159.6
NO. MEAS.	337	S.E. SIZE	1.4
NO. HAULS	111	MIN. SIZE	42
CAT./HAUL	3	MAX. SIZE	313
JUNE	980601 - 980611		
NO. CGHT.	135	MEAN SIZE	166.8
NO. MEAS.	135	S.E. SIZE	4.3
NO. HAULS	111	MIN. SIZE	56
CAT./HAUL	1.2	MAX. SIZE	249
JULY	980701 - 980715		
NO. CGHT.	54	MEAN SIZE	152.4
NO. MEAS.	54	S.E. SIZE	6.7
NO. HAULS	128	MIN. SIZE	89
CAT./HAUL	0.4	MAX. SIZE	246
AUGUST	980803 - 980811		
NO. CGHT.	4	MEAN SIZE	242.8
NO. MEAS.	4	S.E. SIZE	13.9
NO. HAULS	59	MIN. SIZE	208
CAT./HAUL	0.1	MAX. SIZE	274
SEPTEMBER	980910 - 980928		
NO. CGHT.	5	MEAN SIZE	221.2
NO. MEAS.	5	S.E. SIZE	13.9
NO. HAULS	138	MIN. SIZE	202
CAT./HAUL	0	MAX. SIZE	276
OCTOBER	981005 - 981016		
NO. CGHT.	5	MEAN SIZE	218.8
NO. MEAS.	5	S.E. SIZE	5
NO. HAULS	124	MIN. SIZE	204
CAT./HAUL	0	MAX. SIZE	230
NOVEMBER	981102 - 981113		
NO. CGHT.	9	MEAN SIZE	149.6
NO. MEAS.	9	S.E. SIZE	37.2
NO. HAULS	130	MIN. SIZE	25
CAT./HAUL	0.1	MAX. SIZE	265
DECEMBER	981201 - 981216		
NO. CGHT.	59	MEAN SIZE	194.5
NO. MEAS.	59	S.E. SIZE	11.9
NO. HAULS	119	MIN. SIZE	49
CAT./HAUL	0.5	MAX. SIZE	311
JAN - DEC	980108 - 981216		
NO. CGHT.	3027	MEAN SIZE	113.8
NO. MEAS.	2626	S.E. SIZE	0.9
NO. HAULS	1262	MIN. SIZE	25
CAT./HAUL	2.4	MAX. SIZE	326

Figure 78.

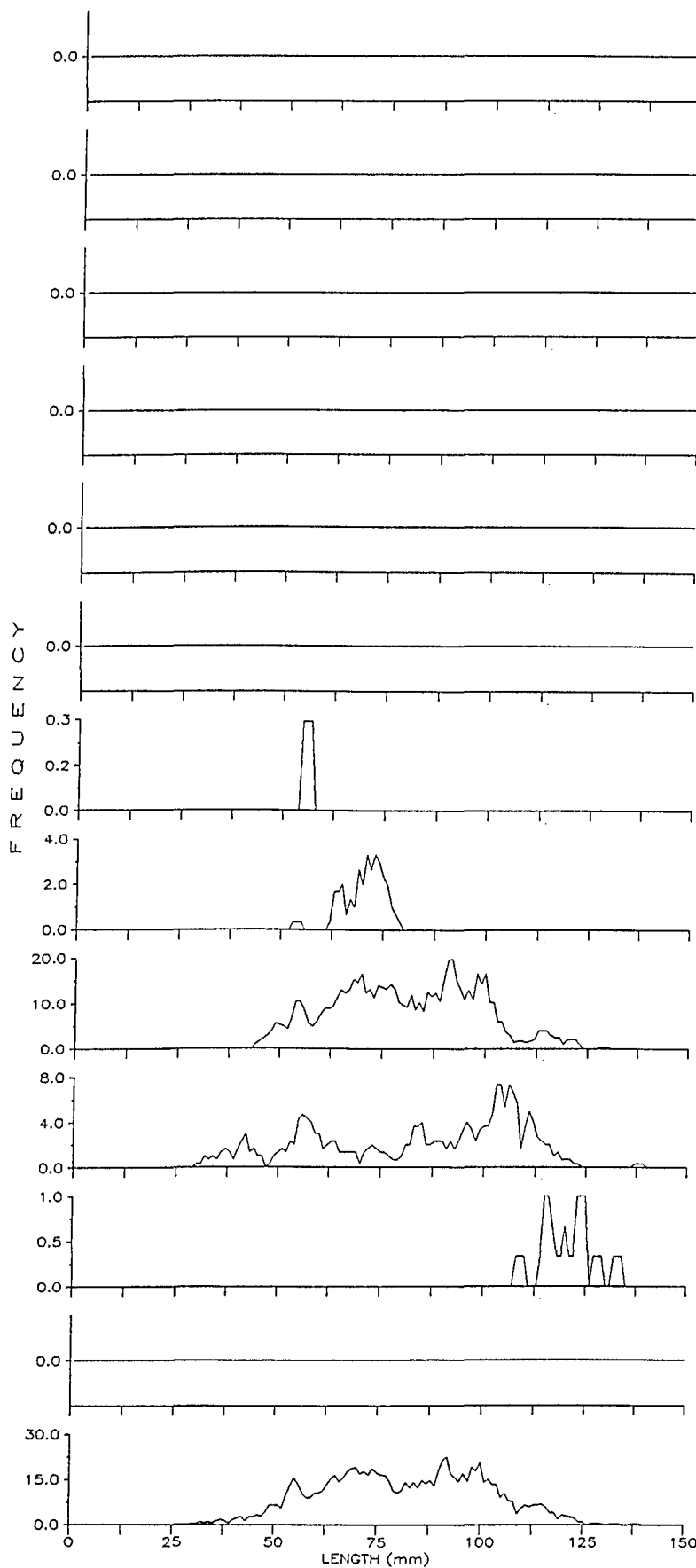
Squid Species, 1998



JANUARY	980108 - 980115		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	66	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
FEBRUARY	980202 - 980218		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	105	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
MARCH	980302 - 980306		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	66	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
APRIL	980401 - 980414		
NO. CGHT.	1	MEAN SIZE	38
NO. MEAS.	1	S.E. SIZE	-
NO. HAULS	105	MIN. SIZE	38
CAT./HAUL	0	MAX. SIZE	38
MAY	980504 - 980518		
NO. CGHT.	1	MEAN SIZE	26
NO. MEAS.	1	S.E. SIZE	-
NO. HAULS	111	MIN. SIZE	26
CAT./HAUL	0	MAX. SIZE	26
JUNE	980601 - 980611		
NO. CGHT.	7	MEAN SIZE	37
NO. MEAS.	7	S.E. SIZE	4.5
NO. HAULS	111	MIN. SIZE	17
CAT./HAUL	0.1	MAX. SIZE	53
JULY	980701 - 980715		
NO. CGHT.	91	MEAN SIZE	35.3
NO. MEAS.	41	S.E. SIZE	1.8
NO. HAULS	128	MIN. SIZE	16
CAT./HAUL	0.7	MAX. SIZE	66
AUGUST	980803 - 980811		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	59	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
SEPTEMBER	980910 - 980928		
NO. CGHT.	636	MEAN SIZE	33.8
NO. MEAS.	428	S.E. SIZE	0.7
NO. HAULS	138	MIN. SIZE	8
CAT./HAUL	4.6	MAX. SIZE	151
OCTOBER	981005 - 981016		
NO. CGHT.	1025	MEAN SIZE	28.3
NO. MEAS.	518	S.E. SIZE	0.5
NO. HAULS	124	MIN. SIZE	6
CAT./HAUL	8.3	MAX. SIZE	66
NOVEMBER	981102 - 981113		
NO. CGHT.	535	MEAN SIZE	32.3
NO. MEAS.	434	S.E. SIZE	0.6
NO. HAULS	130	MIN. SIZE	5
CAT./HAUL	4.1	MAX. SIZE	136
DECEMBER	981201 - 981216		
NO. CGHT.	19	MEAN SIZE	41.3
NO. MEAS.	19	S.E. SIZE	3.3
NO. HAULS	119	MIN. SIZE	17
CAT./HAUL	0.2	MAX. SIZE	67
JAN - DEC	980108 - 981216		
NO. CGHT.	2315	MEAN SIZE	31.6
NO. MEAS.	1449	S.E. SIZE	0.3
NO. HAULS	1262	MIN. SIZE	5
CAT./HAUL	1.8	MAX. SIZE	151

Figure 79.

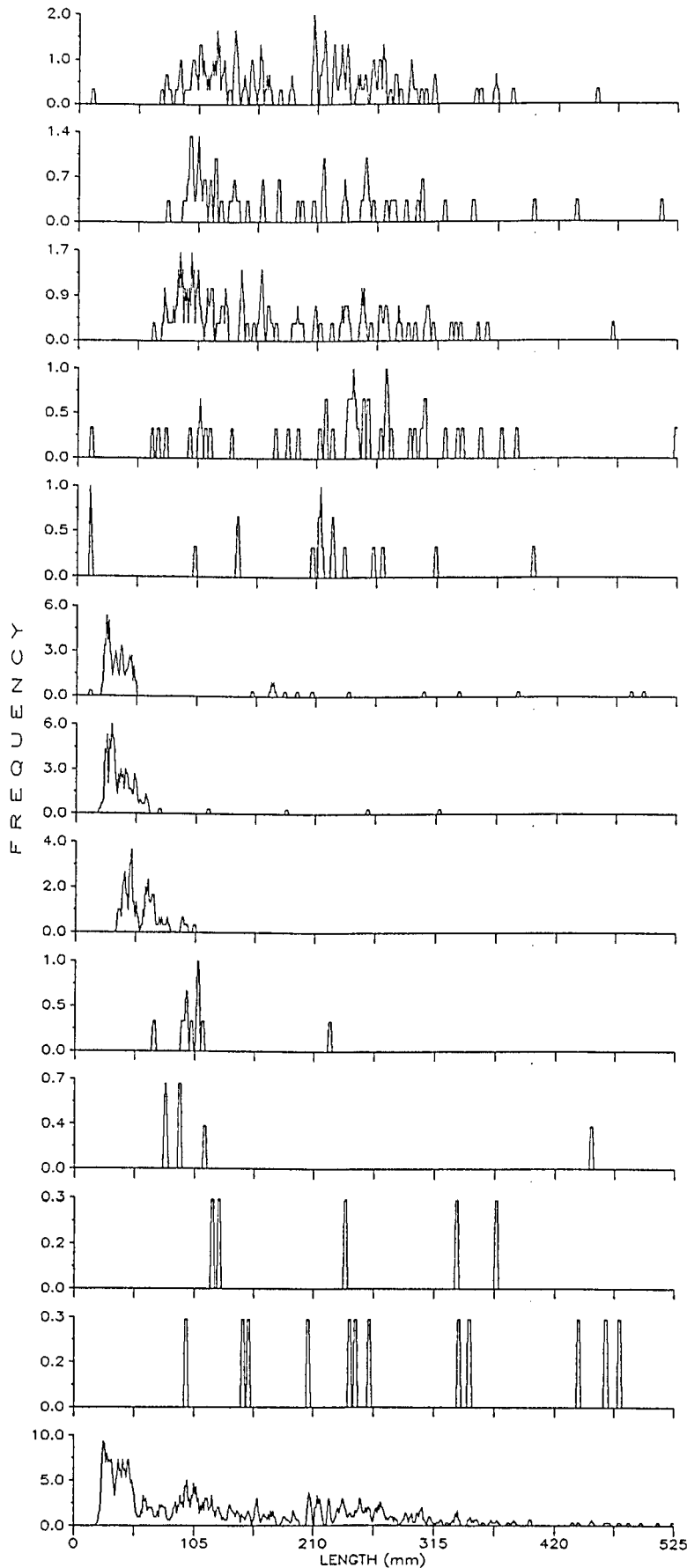
Striped Anchovy, 1998



JANUARY	980108	980115		
NO. CGHT.	0	MEAN SIZE		
NO. MEAS.	0	S.E. SIZE		
NO. HAULS	66	MIN. SIZE		
CAT./HAUL	0	MAX. SIZE		
FEBRUARY	980202	980218		
NO. CGHT.	0	MEAN SIZE		
NO. MEAS.	0	S.E. SIZE		
NO. HAULS	105	MIN. SIZE		
CAT./HAUL	0	MAX. SIZE		
MARCH	980302	980306		
NO. CGHT.	0	MEAN SIZE		
NO. MEAS.	0	S.E. SIZE		
NO. HAULS	66	MIN. SIZE		
CAT./HAUL	0	MAX. SIZE		
APRIL	980401	980414		
NO. CGHT.	0	MEAN SIZE		
NO. MEAS.	0	S.E. SIZE		
NO. HAULS	105	MIN. SIZE		
CAT./HAUL	0	MAX. SIZE		
MAY	980504	980518		
NO. CGHT.	0	MEAN SIZE		
NO. MEAS.	0	S.E. SIZE		
NO. HAULS	111	MIN. SIZE		
CAT./HAUL	0	MAX. SIZE		
JUNE	980601	980611		
NO. CGHT.	0	MEAN SIZE		
NO. MEAS.	0	S.E. SIZE		
NO. HAULS	111	MIN. SIZE		
CAT./HAUL	0	MAX. SIZE		
JULY	980701	980715		
NO. CGHT.	1	MEAN SIZE	54	
NO. MEAS.	1	S.E. SIZE		
NO. HAULS	128	MIN. SIZE	54	
CAT./HAUL	0	MAX. SIZE	54	
AUGUST	980803	980811		
NO. CGHT.	33	MEAN SIZE	68.2	
NO. MEAS.	33	S.E. SIZE	0.9	
NO. HAULS	59	MIN. SIZE	52	
CAT./HAUL	0.6	MAX. SIZE	76	
SEPTEMBER	980910	980928		
NO. CGHT.	1342	MEAN SIZE	78.6	
NO. MEAS.	683	S.E. SIZE	0.7	
NO. HAULS	138	MIN. SIZE	43	
CAT./HAUL	9.7	MAX. SIZE	127	
OCTOBER	981005	981016		
NO. CGHT.	246	MEAN SIZE	81.8	
NO. MEAS.	214	S.E. SIZE	1.7	
NO. HAULS	124	MIN. SIZE	29	
CAT./HAUL	2	MAX. SIZE	136	
NOVEMBER	981102	981113		
NO. CGHT.	11	MEAN SIZE	118.8	
NO. MEAS.	11	S.E. SIZE	2	
NO. HAULS	130	MIN. SIZE	107	
CAT./HAUL	0.1	MAX. SIZE	131	
DECEMBER	981201	981216		
NO. CGHT.	0	MEAN SIZE		
NO. MEAS.	0	S.E. SIZE		
NO. HAULS	119	MIN. SIZE		
CAT./HAUL	0	MAX. SIZE		
JAN - DEC	980108	981216		
NO. CGHT.	1633	MEAN SIZE	79.4	
NO. MEAS.	942	S.E. SIZE	0.6	
NO. HAULS	1262	MIN. SIZE	29	
CAT./HAUL	1.3	MAX. SIZE	136	

Figure 80.

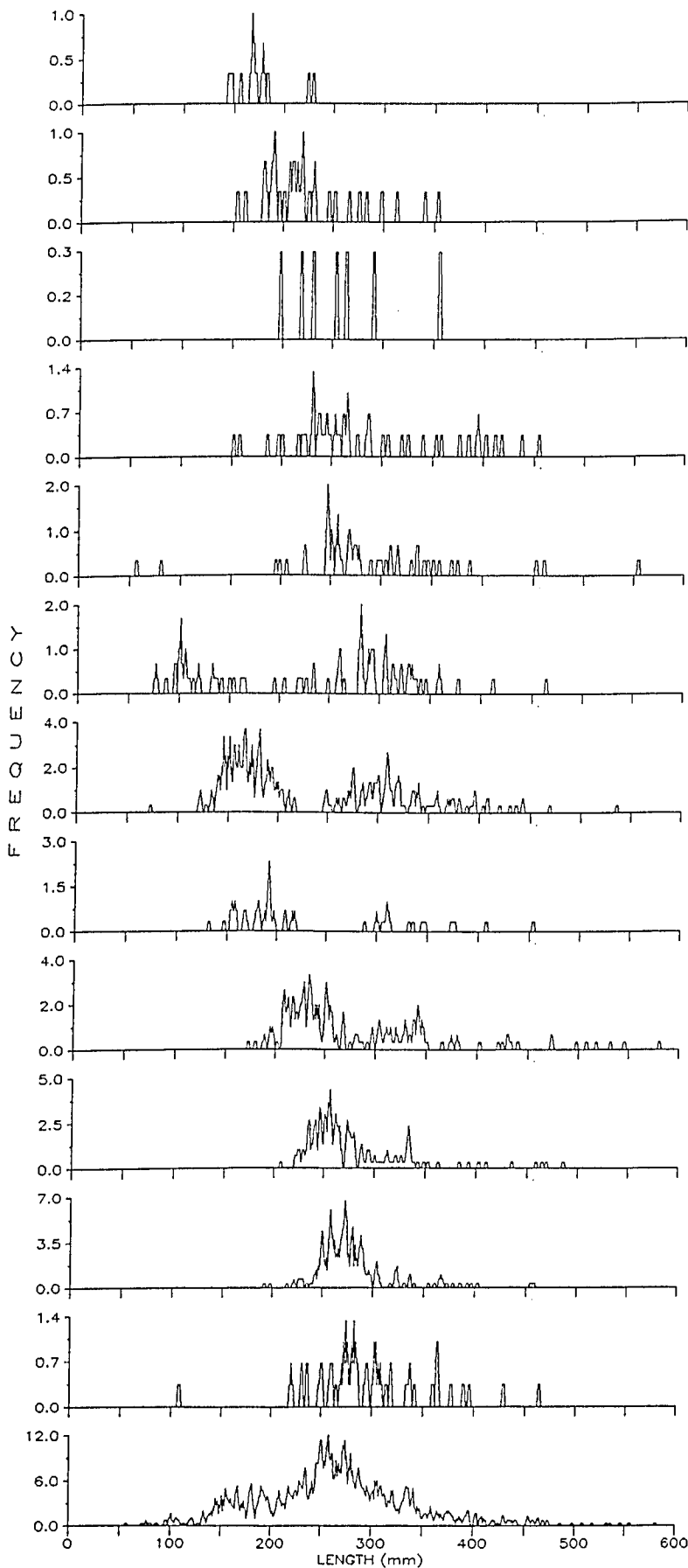
Striped Bass, 1998



JANUARY	980108 - 980115		
NO. CGHT.	- 119	MEAN SIZE	- 191.1
NO. MEAS.	- 119	S.E. SIZE	- 7.3
NO. HAULS	- 66	MIN. SIZE	- 70
CAT./HAUL	- 1.8	MAX. SIZE	- 452
FEBRUARY	980202 - 980218		
NO. CGHT.	- 58	MEAN SIZE	- 196.3
NO. MEAS.	- 58	S.E. SIZE	- 14.1
NO. HAULS	- 105	MIN. SIZE	- 76
CAT./HAUL	- 0.6	MAX. SIZE	- 563
MARCH	980302 - 980306		
NO. CGHT.	- 93	MEAN SIZE	- 174.4
NO. MEAS.	- 93	S.E. SIZE	- 9
NO. HAULS	- 66	MIN. SIZE	- 64
CAT./HAUL	- 1.4	MAX. SIZE	- 466
APRIL	980401 - 980414		
NO. CGHT.	- 44	MEAN SIZE	- 236.3
NO. MEAS.	- 44	S.E. SIZE	- 14.1
NO. HAULS	- 105	MIN. SIZE	- 63
CAT./HAUL	- 0.4	MAX. SIZE	- 522
MAY	980504 - 980518		
NO. CGHT.	- 15	MEAN SIZE	- 247.1
NO. MEAS.	- 15	S.E. SIZE	- 30
NO. HAULS	- 111	MIN. SIZE	- 101
CAT./HAUL	- 0.1	MAX. SIZE	- 578
JUNE	980601 - 980611		
NO. CGHT.	- 109	MEAN SIZE	- 89.3
NO. MEAS.	- 89	S.E. SIZE	- 14.9
NO. HAULS	- 111	MIN. SIZE	- 21
CAT./HAUL	- 1	MAX. SIZE	- 754
JULY	980701 - 980715		
NO. CGHT.	- 183	MEAN SIZE	- 48.1
NO. MEAS.	- 102	S.E. SIZE	- 6.2
NO. HAULS	- 128	MIN. SIZE	- 19
CAT./HAUL	- 1.4	MAX. SIZE	- 529
AUGUST	980803 - 980811		
NO. CGHT.	- 57	MEAN SIZE	- 55.5
NO. MEAS.	- 57	S.E. SIZE	- 2.1
NO. HAULS	- 59	MIN. SIZE	- 35
CAT./HAUL	- 1	MAX. SIZE	- 102
SEPTEMBER	980910 - 980928		
NO. CGHT.	- 10	MEAN SIZE	- 109.9
NO. MEAS.	- 10	S.E. SIZE	- 13
NO. HAULS	- 138	MIN. SIZE	- 67
CAT./HAUL	- 0.1	MAX. SIZE	- 222
OCTOBER	981005 - 981016		
NO. CGHT.	- 6	MEAN SIZE	- 149.5
NO. MEAS.	- 6	S.E. SIZE	- 60.3
NO. HAULS	- 124	MIN. SIZE	- 77
CAT./HAUL	- 0	MAX. SIZE	- 450
NOVEMBER	981102 - 981113		
NO. CGHT.	- 5	MEAN SIZE	- 236
NO. MEAS.	- 5	S.E. SIZE	- 51.3
NO. HAULS	- 130	MIN. SIZE	- 119
CAT./HAUL	- 0	MAX. SIZE	- 367
DECEMBER	981201 - 981216		
NO. CGHT.	- 12	MEAN SIZE	- 282.9
NO. MEAS.	- 12	S.E. SIZE	- 37.1
NO. HAULS	- 119	MIN. SIZE	- 96
CAT./HAUL	- 0.1	MAX. SIZE	- 475
JAN - DEC	980108 - 981216		
NO. CGHT.	- 711	MEAN SIZE	- 142.7
NO. MEAS.	- 610	S.E. SIZE	- 4.7
NO. HAULS	- 1262	MIN. SIZE	- 19
CAT./HAUL	- 0.6	MAX. SIZE	- 754

Figure 81.

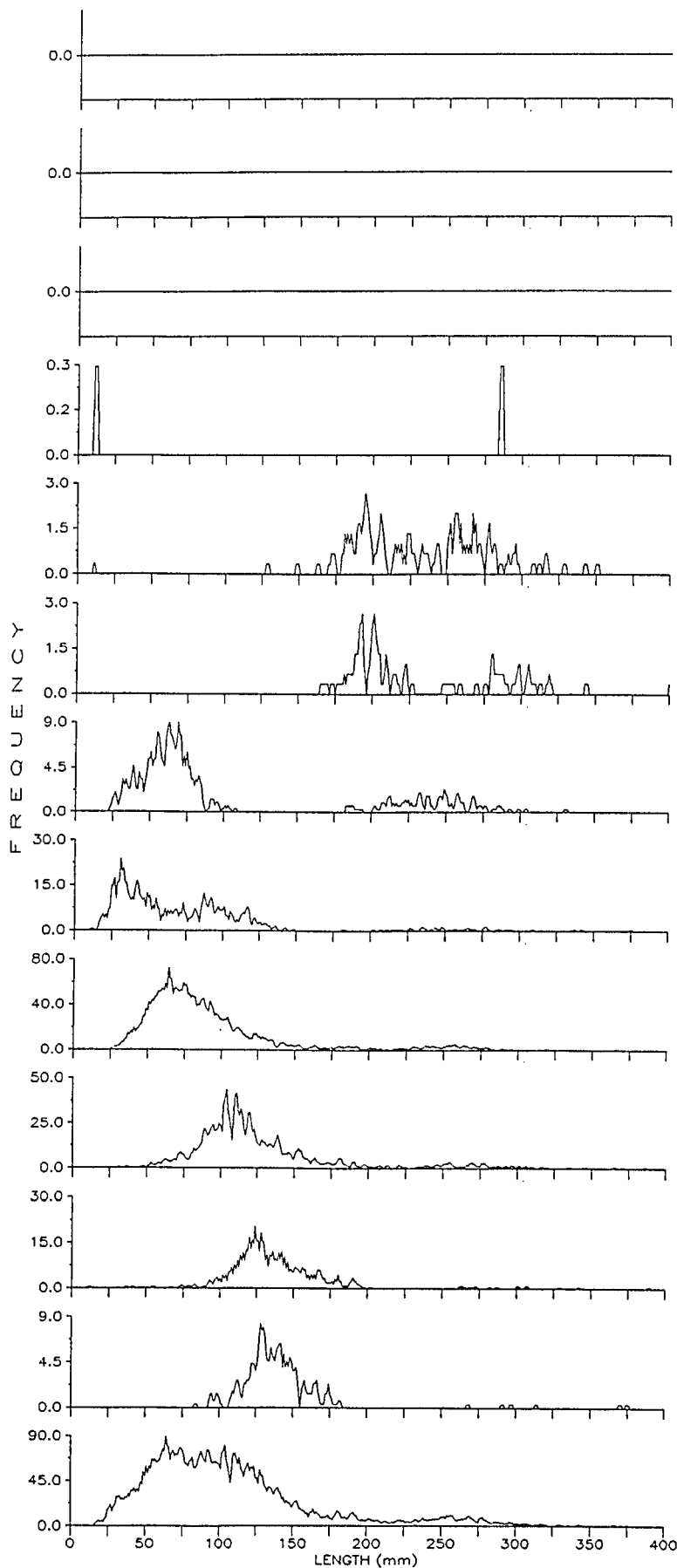
Summer Flounder, 1998



JANUARY	980108	-	980115		
NO. CGHT.	-	12	MEAN SIZE	-	174
NO. MEAS.	-	12	S.E. SIZE	-	7.6
NO. HAULS	-	66	MIN. SIZE	-	142
CAT./HAUL	-	0.2	MAX. SIZE	-	227
FEBRUARY	980202	-	980218		
NO. CGHT.	-	33	MEAN SIZE	-	223.5
NO. MEAS.	-	33	S.E. SIZE	-	8.5
NO. HAULS	-	105	MIN. SIZE	-	152
CAT./HAUL	-	0.3	MAX. SIZE	-	352
MARCH	980302	-	980306		
NO. CGHT.	-	7	MEAN SIZE	-	257
NO. MEAS.	-	7	S.E. SIZE	-	19.9
NO. HAULS	-	66	MIN. SIZE	-	196
CAT./HAUL	-	0.1	MAX. SIZE	-	354
APRIL	980401	-	980414		
NO. CGHT.	-	47	MEAN SIZE	-	282.8
NO. MEAS.	-	47	S.E. SIZE	-	11
NO. HAULS	-	105	MIN. SIZE	-	150
CAT./HAUL	-	0.4	MAX. SIZE	-	453
MAY	980504	-	980518		
NO. CGHT.	-	51	MEAN SIZE	-	284.5
NO. MEAS.	-	51	S.E. SIZE	-	11.3
NO. HAULS	-	111	MIN. SIZE	-	55
CAT./HAUL	-	0.5	MAX. SIZE	-	553
JUNE	980601	-	980611		
NO. CGHT.	-	73	MEAN SIZE	-	232.5
NO. MEAS.	-	73	S.E. SIZE	-	11.3
NO. HAULS	-	111	MIN. SIZE	-	74
CAT./HAUL	-	0.7	MAX. SIZE	-	462
JULY	980701	-	980715		
NO. CGHT.	-	249	MEAN SIZE	-	232.2
NO. MEAS.	-	249	S.E. SIZE	-	5.5
NO. HAULS	-	128	MIN. SIZE	-	71
CAT./HAUL	-	1.9	MAX. SIZE	-	534
AUGUST	980803	-	980811		
NO. CGHT.	-	48	MEAN SIZE	-	231.8
NO. MEAS.	-	48	S.E. SIZE	-	11.7
NO. HAULS	-	59	MIN. SIZE	-	130
CAT./HAUL	-	0.8	MAX. SIZE	-	452
SEPTEMBER	980910	-	980928		
NO. CGHT.	-	183	MEAN SIZE	-	276.7
NO. MEAS.	-	183	S.E. SIZE	-	5.7
NO. HAULS	-	138	MIN. SIZE	-	171
CAT./HAUL	-	1.3	MAX. SIZE	-	579
OCTOBER	981005	-	981016		
NO. CGHT.	-	159	MEAN SIZE	-	277.1
NO. MEAS.	-	159	S.E. SIZE	-	4
NO. HAULS	-	124	MIN. SIZE	-	205
CAT./HAUL	-	1.3	MAX. SIZE	-	484
NOVEMBER	981102	-	981113		
NO. CGHT.	-	206	MEAN SIZE	-	277.5
NO. MEAS.	-	206	S.E. SIZE	-	2.7
NO. HAULS	-	130	MIN. SIZE	-	190
CAT./HAUL	-	1.6	MAX. SIZE	-	456
DECEMBER	981201	-	981216		
NO. CGHT.	-	53	MEAN SIZE	-	294
NO. MEAS.	-	53	S.E. SIZE	-	8
NO. HAULS	-	119	MIN. SIZE	-	106
CAT./HAUL	-	0.4	MAX. SIZE	-	462
JAN - DEC	980108	-	981216		
NO. CGHT.	-	1121	MEAN SIZE	-	260.9
NO. MEAS.	-	1121	S.E. SIZE	-	2.2
NO. HAULS	-	1262	MIN. SIZE	-	55
CAT./HAUL	-	0.9	MAX. SIZE	-	579

Figure 82.

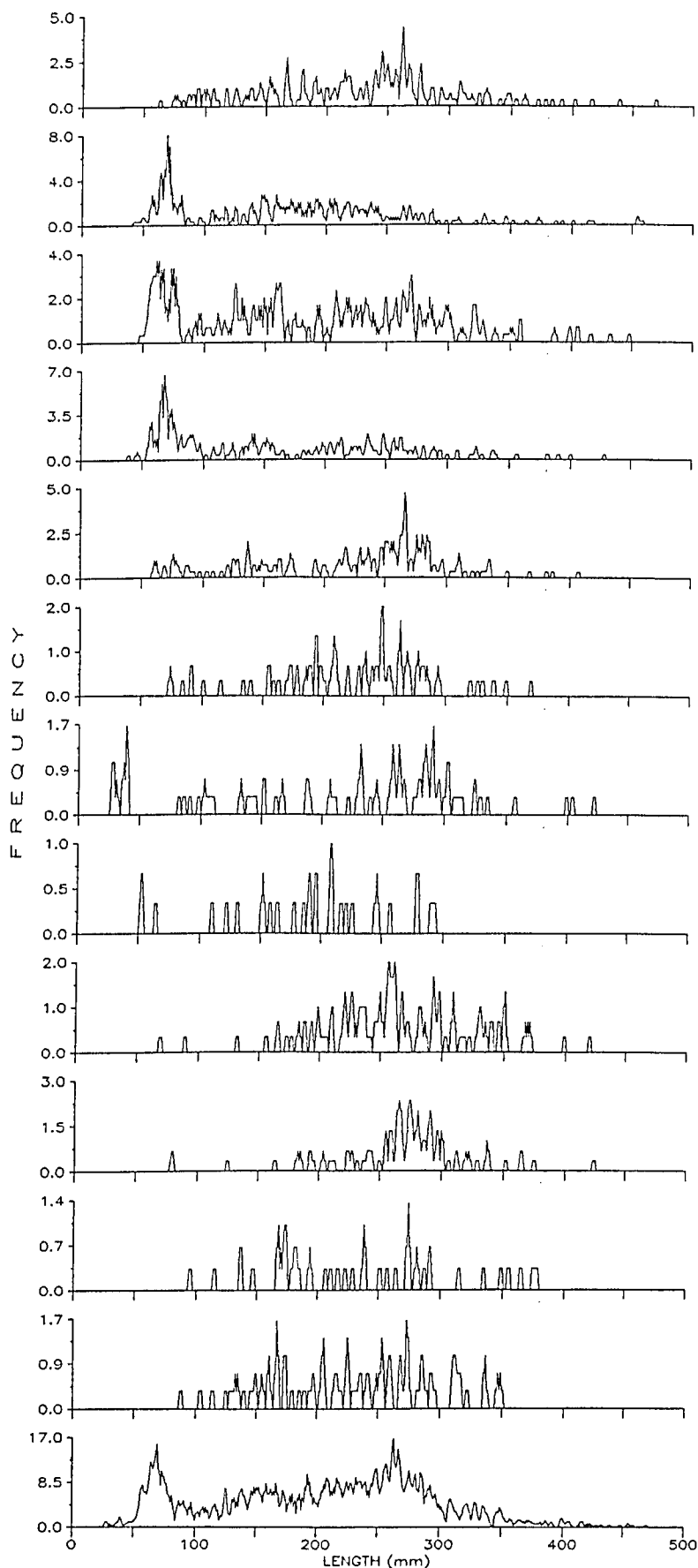
Weakfish, 1998



JANUARY	980108	980115	
NO. CGHT.	0	MEAN SIZE	
NO. MEAS.	0	S.E. SIZE	
NO. HAULS	66	MIN. SIZE	
CAT./HAUL	0	MAX. SIZE	
FEBRUARY	980202	980218	
NO. CGHT.	0	MEAN SIZE	
NO. MEAS.	0	S.E. SIZE	
NO. HAULS	105	MIN. SIZE	
CAT./HAUL	0	MAX. SIZE	
MARCH	980302	980306	
NO. CGHT.	0	MEAN SIZE	
NO. MEAS.	0	S.E. SIZE	
NO. HAULS	66	MIN. SIZE	
CAT./HAUL	0	MAX. SIZE	
APRIL	980401	980414	
NO. CGHT.	1	MEAN SIZE	284
NO. MEAS.	1	S.E. SIZE	
NO. HAULS	105	MIN. SIZE	284
CAT./HAUL	0	MAX. SIZE	284
MAY	980504	980518	
NO. CGHT.	118	MEAN SIZE	233.5
NO. MEAS.	118	S.E. SIZE	4.3
NO. HAULS	111	MIN. SIZE	127
CAT./HAUL	1.1	MAX. SIZE	408
JUNE	980601	980611	
NO. CGHT.	76	MEAN SIZE	231
NO. MEAS.	76	S.E. SIZE	5.9
NO. HAULS	111	MIN. SIZE	164
CAT./HAUL	0.7	MAX. SIZE	399
JULY	980701	980715	
NO. CGHT.	376	MEAN SIZE	101.2
NO. MEAS.	376	S.E. SIZE	4.1
NO. HAULS	128	MIN. SIZE	22
CAT./HAUL	2.9	MAX. SIZE	329
AUGUST	980803	980811	
NO. CGHT.	1225	MEAN SIZE	71.2
NO. MEAS.	930	S.E. SIZE	1.7
NO. HAULS	59	MIN. SIZE	15
CAT./HAUL	20.8	MAX. SIZE	373
SEPTEMBER	980910	980928	
NO. CGHT.	10376	MEAN SIZE	89.4
NO. MEAS.	3593	S.E. SIZE	0.8
NO. HAULS	138	MIN. SIZE	24
CAT./HAUL	75.2	MAX. SIZE	466
OCTOBER	981005	981016	
NO. CGHT.	2598	MEAN SIZE	125
NO. MEAS.	1806	S.E. SIZE	1.2
NO. HAULS	124	MIN. SIZE	29
CAT./HAUL	21	MAX. SIZE	432
NOVEMBER	981102	981113	
NO. CGHT.	688	MEAN SIZE	135.2
NO. MEAS.	688	S.E. SIZE	1.3
NO. HAULS	130	MIN. SIZE	35
CAT./HAUL	5.3	MAX. SIZE	387
DECEMBER	981201	981216	
NO. CGHT.	247	MEAN SIZE	140.6
NO. MEAS.	247	S.E. SIZE	2.6
NO. HAULS	119	MIN. SIZE	82
CAT./HAUL	2.1	MAX. SIZE	492
JAN - DEC	980108	981216	
NO. CGHT.	15705	MEAN SIZE	105.2
NO. MEAS.	7835	S.E. SIZE	0.7
NO. HAULS	1262	MIN. SIZE	15
CAT./HAUL	12.4	MAX. SIZE	492

Figure 83.

White Catfish, 1998



JANUARY	980108	-	980115	
NO. CGHT.	- 223	MEAN SIZE	- 223.1	
NO. MEAS.	- 219	S.E. SIZE	- 5.2	
NO. HAULS	- 66	MIN. SIZE	- 61	
CAT./HAUL	- 3.4	MAX. SIZE	- 467	

FEBRUARY	980202	-	980218	
NO. CGHT.	- 322	MEAN SIZE	- 168.3	
NO. MEAS.	- 322	S.E. SIZE	- 4.9	
NO. HAULS	- 105	MIN. SIZE	- 41	
CAT./HAUL	- 3.1	MAX. SIZE	- 456	

MARCH	980302	-	980306	
NO. CGHT.	- 331	MEAN SIZE	- 186.4	
NO. MEAS.	- 331	S.E. SIZE	- 5.1	
NO. HAULS	- 66	MIN. SIZE	- 46	
CAT./HAUL	- 5	MAX. SIZE	- 446	

APRIL	980401	-	980414	
NO. CGHT.	- 293	MEAN SIZE	- 156.3	
NO. MEAS.	- 257	S.E. SIZE	- 5.5	
NO. HAULS	- 105	MIN. SIZE	- 37	
CAT./HAUL	- 2.8	MAX. SIZE	- 426	

MAY	980504	-	980518	
NO. CGHT.	- 192	MEAN SIZE	- 220.9	
NO. MEAS.	- 192	S.E. SIZE	- 5.4	
NO. HAULS	- 111	MIN. SIZE	- 57	
CAT./HAUL	- 1.7	MAX. SIZE	- 405	

JUNE	980601	-	980611	
NO. CGHT.	- 80	MEAN SIZE	- 221	
NO. MEAS.	- 80	S.E. SIZE	- 7.1	
NO. HAULS	- 111	MIN. SIZE	- 71	
CAT./HAUL	- 0.7	MAX. SIZE	- 367	

JULY	980701	-	980715	
NO. CGHT.	- 87	MEAN SIZE	- 210.5	
NO. MEAS.	- 87	S.E. SIZE	- 11	
NO. HAULS	- 128	MIN. SIZE	- 25	
CAT./HAUL	- 0.7	MAX. SIZE	- 420	

AUGUST	980803	-	980811	
NO. CGHT.	- 29	MEAN SIZE	- 186.8	
NO. MEAS.	- 29	S.E. SIZE	- 12.4	
NO. HAULS	- 59	MIN. SIZE	- 50	
CAT./HAUL	- 0.5	MAX. SIZE	- 291	

SEPTEMBER	980910	-	980928	
NO. CGHT.	- 150	MEAN SIZE	- 260.2	
NO. MEAS.	- 115	S.E. SIZE	- 5.7	
NO. HAULS	- 138	MIN. SIZE	- 67	
CAT./HAUL	- 1.1	MAX. SIZE	- 418	

OCTOBER	981005	-	981016	
NO. CGHT.	- 102	MEAN SIZE	- 265.6	
NO. MEAS.	- 102	S.E. SIZE	- 5.2	
NO. HAULS	- 124	MIN. SIZE	- 77	
CAT./HAUL	- 0.8	MAX. SIZE	- 422	

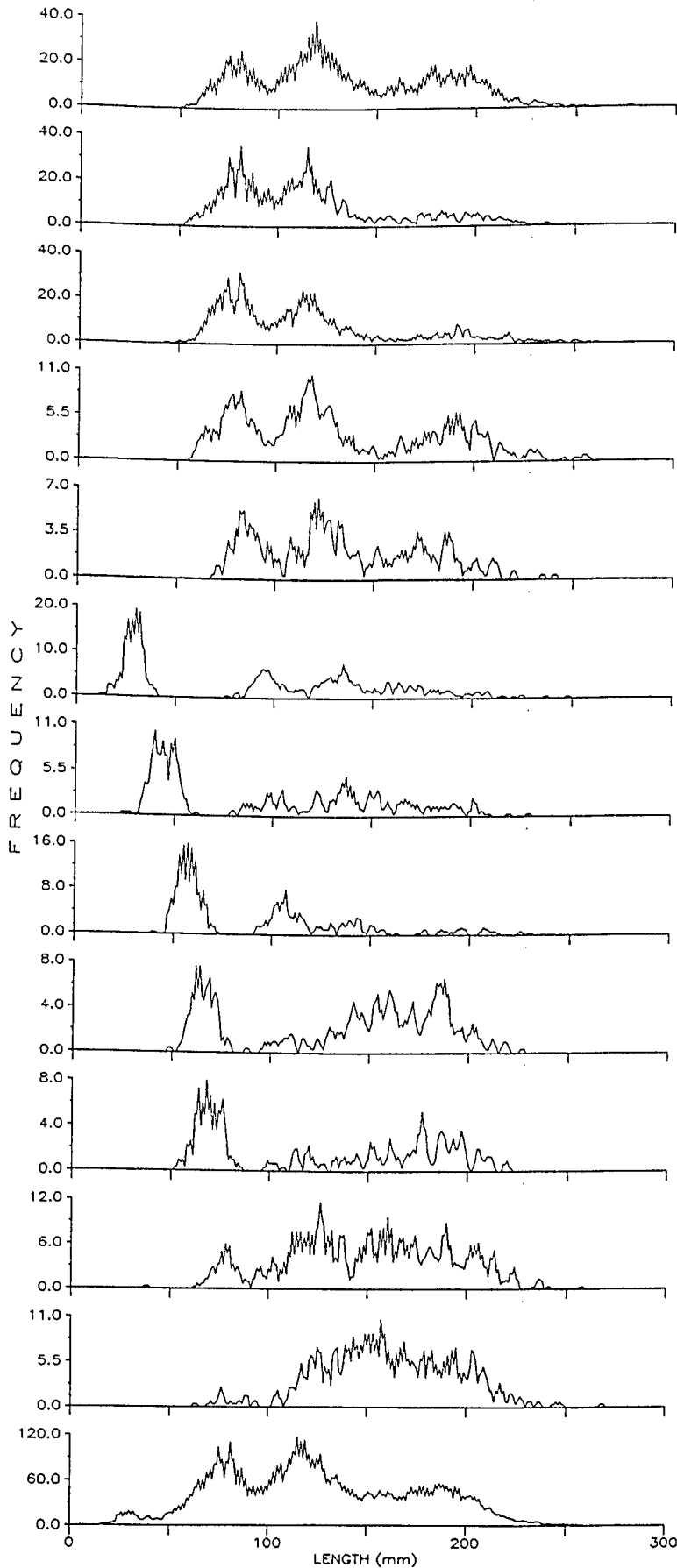
NOVEMBER	981102	-	981113	
NO. CGHT.	- 45	MEAN SIZE	- 231.7	
NO. MEAS.	- 45	S.E. SIZE	- 10.7	
NO. HAULS	- 130	MIN. SIZE	- 93	
CAT./HAUL	- 0.3	MAX. SIZE	- 376	

DECEMBER	981201	-	981216	
NO. CGHT.	- 92	MEAN SIZE	- 228.1	
NO. MEAS.	- 92	S.E. SIZE	- 6.7	
NO. HAULS	- 119	MIN. SIZE	- 86	
CAT./HAUL	- 0.8	MAX. SIZE	- 348	

JAN - DEC	980108	-	981216	
NO. CGHT.	- 1946	MEAN SIZE	- 201.6	
NO. MEAS.	- 1871	S.E. SIZE	- 2	
NO. HAULS	- 1262	MIN. SIZE	- 25	
CAT./HAUL	- 1.5	MAX. SIZE	- 467	

Figure 84.

White Perch, 1998



JANUARY	980108	-	980115	
NO. CGHT.	- 2748	MEAN SIZE	-	132.1
NO. MEAS.	- 2206	S.E. SIZE	-	1
NO. HAULS	- 66	MIN. SIZE	-	50
CAT./HAUL	- 41.6	MAX. SIZE	-	275

FEBRUARY	980202	-	980218	
NO. CGHT.	- 2206	MEAN SIZE	-	113.2
NO. MEAS.	- 1592	S.E. SIZE	-	1
NO. HAULS	- 105	MIN. SIZE	-	44
CAT./HAUL	- 21	MAX. SIZE	-	252

MARCH	980302	-	980306	
NO. CGHT.	- 1816	MEAN SIZE	-	112.5
NO. MEAS.	- 1431	S.E. SIZE	-	1.1
NO. HAULS	- 66	MIN. SIZE	-	42
CAT./HAUL	- 27.5	MAX. SIZE	-	258

APRIL	980401	-	980414	
NO. CGHT.	- 614	MEAN SIZE	-	128.2
NO. MEAS.	- 614	S.E. SIZE	-	1.9
NO. HAULS	- 105	MIN. SIZE	-	55
CAT./HAUL	- 5.8	MAX. SIZE	-	255

MAY	980504	-	980518	
NO. CGHT.	- 328	MEAN SIZE	-	131.9
NO. MEAS.	- 328	S.E. SIZE	-	2.2
NO. HAULS	- 111	MIN. SIZE	-	67
CAT./HAUL	- 3	MAX. SIZE	-	239

JUNE	980601	-	980611	
NO. CGHT.	- 2765	MEAN SIZE	-	93.3
NO. MEAS.	- 524	S.E. SIZE	-	2.6
NO. HAULS	- 111	MIN. SIZE	-	11
CAT./HAUL	- 24.9	MAX. SIZE	-	246

JULY	980701	-	980715	
NO. CGHT.	- 697	MEAN SIZE	-	98.7
NO. MEAS.	- 347	S.E. SIZE	-	2.9
NO. HAULS	- 128	MIN. SIZE	-	22
CAT./HAUL	- 5.4	MAX. SIZE	-	227

AUGUST	980803	-	980811	
NO. CGHT.	- 724	MEAN SIZE	-	90.7
NO. MEAS.	- 373	S.E. SIZE	-	2.3
NO. HAULS	- 59	MIN. SIZE	-	38
CAT./HAUL	- 12.3	MAX. SIZE	-	228

SEPTEMBER	980910	-	980928	
NO. CGHT.	- 442	MEAN SIZE	-	136
NO. MEAS.	- 391	S.E. SIZE	-	2.5
NO. HAULS	- 138	MIN. SIZE	-	47
CAT./HAUL	- 3.2	MAX. SIZE	-	225

OCTOBER	981005	-	981016	
NO. CGHT.	- 528	MEAN SIZE	-	126.1
NO. MEAS.	- 271	S.E. SIZE	-	3.3
NO. HAULS	- 124	MIN. SIZE	-	51
CAT./HAUL	- 4.3	MAX. SIZE	-	219

NOVEMBER	981102	-	981113	
NO. CGHT.	- 888	MEAN SIZE	-	147.6
NO. MEAS.	- 703	S.E. SIZE	-	1.5
NO. HAULS	- 130	MIN. SIZE	-	36
CAT./HAUL	- 6.8	MAX. SIZE	-	255

DECEMBER	981201	-	981216	
NO. CGHT.	- 872	MEAN SIZE	-	158.8
NO. MEAS.	- 621	S.E. SIZE	-	1.3
NO. HAULS	- 119	MIN. SIZE	-	61
CAT./HAUL	- 7.3	MAX. SIZE	-	266

JAN - DEC	980108	-	981216	
NO. CGHT.	- 14628	MEAN SIZE	-	123.5
NO. MEAS.	- 9401	S.E. SIZE	-	0.5
NO. HAULS	- 1262	MIN. SIZE	-	11
CAT./HAUL	- 11.6	MAX. SIZE	-	275

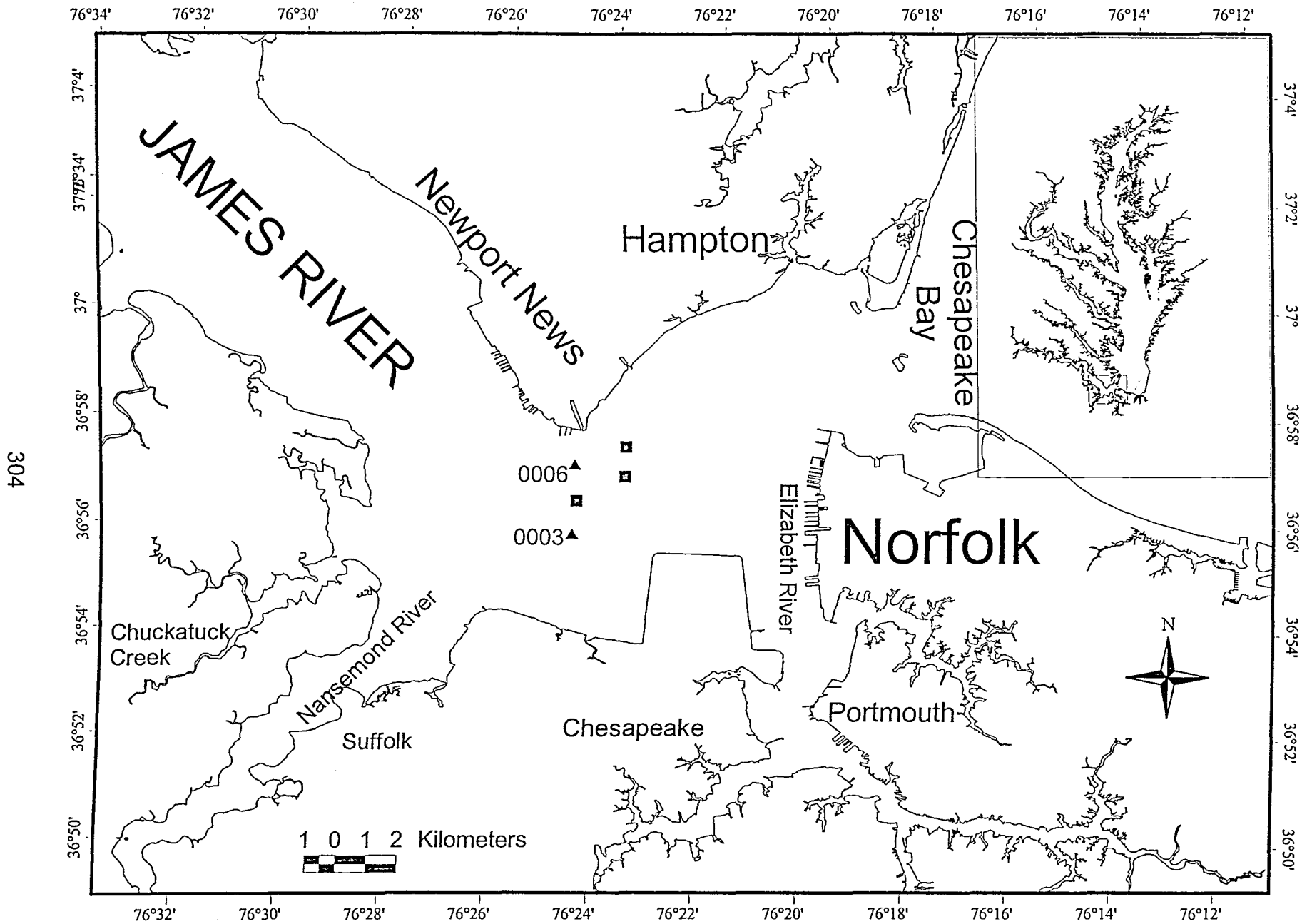


Figure 85. Trawl sites where the veined rapa whelk were first captured in 1998. Diamonds indicate adults (June 5th), squares indicate egg cases (August 24th). Tables 7 and 31 have station and hydrographic information for adult sites.



APPENDICES



Appendix A. Common and scientific names of species captured in 1998, with reference to the appropriate sampling protocol for each species.

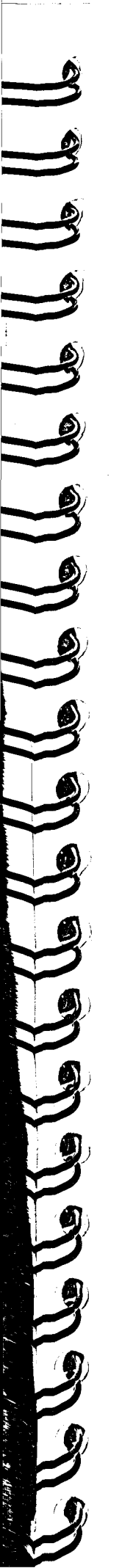
Species Names - Common Name Order		Species Names - Latin Name Order	
Common Name	Latin Name	Latin Name	Common Name
Sampling Key: P = Presence/Absence typically recorded, C = Counts taken, Nothing = Lengths taken			
alewife	<i>Alosa pseudoharengus</i>	<i>Acipenser oxyrhynchus</i>	Atlantic sturgeon
American eel	<i>Anguilla rostrata</i>	<i>Alosa aestivalis</i>	blueback herring
American shad	<i>Alosa sapidissima</i>	<i>Alosa mediocris</i>	hickory shad
Amphipod spp (P)	<i>Amphipoda sp.</i>	<i>Alosa pseudoharengus</i>	alewife
Atlantic croaker	<i>Micropogonias undulatus</i>	<i>Alosa sapidissima</i>	American shad
Atlantic cutlassfish	<i>Trichiurus lepturus</i>	<i>Ammodytes dubius</i>	northern sand lance
Atlantic herring	<i>Clupea harengus</i>	<i>Amphipoda sp. (P)</i>	Amphipod spp
Atlantic menhaden	<i>Brevoortia tyrannus</i>	<i>Anadara ovalis (P)</i>	blood ark/clam
Atlantic moonfish	<i>Selene setapinnis</i>	<i>Anchoa hepsetus</i>	striped anchovy
Atlantic oyster drill (P)	<i>Urosalpinx cinerea</i>	<i>Anchoa mitchilli</i>	bay anchovy
Atlantic silverside	<i>Menidia menidia</i>	<i>Anguilla rostrata</i>	American eel
Atlantic spadefish	<i>Chaetodipterus faber</i>	<i>Arbacia punctulata (P)</i>	purple sea urchin
Atlantic stingray	<i>Dasyatis sabina</i>	<i>Asterias forbesi (P)</i>	forbes common sea star
Atlantic sturgeon	<i>Acipenser oxyrhynchus</i>	<i>Astroscopus guttatus</i>	northern stargazer
Atlantic thread herring	<i>Opisthonema oglinum</i>	<i>Bairdiella chrysoura</i>	silver perch
banded drum	<i>Larimus fasciatus</i>	<i>Brevoortia tyrannus</i>	Atlantic menhaden
bay anchovy	<i>Anchoa mitchilli</i>	<i>Busycon canaliculatum (C)</i>	channel (smooth) whelk
bighead searobin	<i>Prionotus tribulus</i>	<i>Busycon carica (C)</i>	knobbed whelk
black drum	<i>Pogonius cromis</i>	<i>Busycon spp. (C)</i>	whelk (conch) spp
black seabass	<i>Centropristis striata</i>	<i>Callinectes ornatus (C)</i>	shelligs blue crab
blackcheek tonguefish	<i>Symphurus plagiusa</i>	<i>Callinectes sapidus</i>	blue crab, sex unknown
blood ark/clam (P)	<i>Anadara ovalis</i>	<i>Callinectes sapidus, adult fem</i>	blue crab, adult female
blue catfish	<i>Ictalurus furcatus</i>	<i>Callinectes sapidus, juv fem</i>	blue crab, juvenile female
blue crab, adult female	<i>Callinectes sapidus, adult fem</i>	<i>Callinectes sapidus, male</i>	blue crab, male
blue crab, juvenile female	<i>Callinectes sapidus, juv fem</i>	<i>Cancer irroratus</i>	rock crab
blue crab, male	<i>Callinectes sapidus, male</i>	<i>Caranx crysos</i>	blue runner
blue crab, sex unknown	<i>Callinectes sapidus</i>	<i>Carcharhinus plumbeus</i>	sandbar shark
blue mussel (P)	<i>Mytilus edulis</i>	<i>Centropristis striata</i>	black seabass
blue runner	<i>Caranx crysos</i>	<i>Chaetodipterus faber</i>	Atlantic spadefish

Species Names - Common Name Order		Species Names - Latin Name Order	
Common Name	Latin Name	Latin Name	Common Name
Sampling Key: P = Presence/Absence typically recorded, C = Counts taken, Nothing = Lengths taken			
bluefish	<i>Pomatomus saltatrix</i>	<i>Chasmodes bosquianus</i>	striped blenny
bluespotted cornetfish	<i>Fistularia tabacaria</i>	<i>Chilomycterus schoepfi</i>	striped burrfish
bluespotted sunfish	<i>Enneacanthus gloriosus</i>	<i>Clupea harengus</i>	Atlantic herring
bluntnose stingray	<i>Dasyatis sayi</i>	<i>Conger oceanicus</i>	conger eel
brown bullhead	<i>Ictalurus nebulosus</i>	<i>Cragnon septemspinosa (P)</i>	sand shrimp
brown shrimp	<i>Penaeus aztecus</i>	<i>Cynoscion nebulosus</i>	spotted seatrout
butterfish	<i>Peprilus triacanthus</i>	<i>Cynoscion regalis</i>	weakfish
channel (smooth) whelk (C)	<i>Busycon canaliculatum</i>	<i>Cyprinus carpio</i>	common carp
channel catfish	<i>Ictalurus punctatus</i>	<i>Dasyatis sabina</i>	Atlantic stingray
cleamose skate	<i>Raja eglanteria</i>	<i>Dasyatis sayi</i>	bluntnose stingray
common carp	<i>Cyprinus carpio</i>	<i>Dorosoma cepedianum</i>	gizzard shad
conger eel	<i>Conger oceanicus</i>	<i>Dorosoma petenense</i>	threadfin shad
cownose ray	<i>Rhinoptera bonasus</i>	<i>Enneacanthus gloriosus</i>	bluespotted sunfish
fawn cusk-eel	<i>Lepophidium cervinum</i>	<i>Etheostoma olmstedi</i>	tessellated darter
feather blenny	<i>Hypsoblennius hentzi</i>	<i>Etropus crossotus</i>	fringed flounder
Florida pompano	<i>Trachinotus carolinus</i>	<i>Etropus microstomus</i>	smallmouth flounder
forbes common sea star (P)	<i>Asterias forbesi</i>	<i>Etrumeus teres</i>	round herring
fringed flounder	<i>Etropus crossotus</i>	<i>Eucinostomus argenteus</i>	spotfin mojarra
gizzard shad	<i>Dorosoma cepedianum</i>	<i>Eucinostomus gula</i>	silver jenny
grass shrimp spp (P)	<i>Palaemonetes spp.</i>	<i>Fistularia tabacaria</i>	bluespotted cornetfish
green goby	<i>Microgobius thalassinus</i>	gelatinous zooplankton (C)	jellyfish spp
harvestfish	<i>Peprilus alepidotus</i>	<i>Gobiesox strumosus</i>	skilletfish
hickory shad	<i>Alosa mediocris</i>	<i>Gobiosoma bosci</i>	naked goby
hogchoker	<i>Trinectes maculatus</i>	<i>Gobiosoma ginsburgi</i>	seaboard goby
horseshoe crab	<i>Limulus polyphemus</i>	<i>Gymnura altavela</i>	spiny butterfly ray
inshore lizardfish	<i>Synodus foetens</i>	<i>Hippocampus erectus</i>	lined seahorse
iridescent swimming crab (C)	<i>Portunus gibbesii</i>	<i>Hypsoblennius hentzi</i>	feather blenny
jellyfish spp (C)	gelatinous zooplankton	<i>Ictalurus catus</i>	white catfish
kingfish spp	<i>Menticirrhus spp.</i>	<i>Ictalurus furcatus</i>	blue catfish
knobbed whelk (C)	<i>Busycon carica</i>	<i>Ictalurus nebulosus</i>	brown bullhead
lady crab (C)	<i>Ovalipes ocellatus</i>	<i>Ictalurus punctatus</i>	channel catfish

Species Names - Common Name Order		Species Names - Latin Name Order	
Common Name	Latin Name	Latin Name	Common Name
Sampling Key: P = Presence/Absence typically recorded, C = Counts taken, Nothing = Lengths taken			
lined seahorse	<i>Hippocampus erectus</i>	<i>Larimus fasciatus</i>	banded drum
little skate	<i>Raja erinacea</i>	<i>Leiostomus xanthurus</i>	spot
little surf clam (P)	<i>Mulinia lateralis</i>	<i>Lepisosteus osseus</i>	longnose gar
longnose gar	<i>Lepisosteus osseus</i>	<i>Lepomis auritus</i>	redbreast sunfish
lookdown	<i>Selene vomer</i>	<i>Lepomis gibbosus</i>	pumpkinseed
macoma clam spp (P)	<i>Macoma spp.</i>	<i>Lepophidium cervinum</i>	fawn cusk-eel
mantis shrimp	<i>Squilla spp.</i>	<i>Libinia dubia (C)</i>	spider crab, 6 spine
moon snail (P)	<i>Polinices heros</i>	<i>Libinia emarginata (C)</i>	spider crab, common
mud crab spp (P)	<i>Xanthidae</i>	<i>Limulus polyphemus</i>	horseshoe crab
mysid shrimp (P)	<i>Mysidopsis bigelowi</i>	<i>Loligo spp.</i>	squid spp
naked goby	<i>Gobiosoma bosci</i>	<i>Macoma spp. (P)</i>	macoma clam spp
New England dog whelk (P)	<i>Nassarius triutatus</i>	<i>Macrobrachium ohione (P)</i>	river shrimp
northern pipefish	<i>Syngnathus fuscus</i>	<i>Menidia menidia</i>	Atlantic silverside
northern puffer	<i>Sphoeroides maculatus</i>	<i>Menticirrhus spp.</i>	kingfish spp
northern sand lance	<i>Ammodytes dubius</i>	<i>Mercenaria mercenaria (P)</i>	quahog clam
northern searobin	<i>Prionotus carolinus</i>	<i>Merluccius bilinearis</i>	silver hake
northern stargazer	<i>Astroscopus guttatus</i>	<i>Microgobius thalassinus</i>	green goby
oyster toadfish	<i>Opsanus tau</i>	<i>Micropogonias undulatus</i>	Atlantic croaker
pigfish	<i>Orthopristis chrysoptera</i>	<i>Morone americana</i>	white perch
pink shrimp	<i>Penaeus duorarum</i>	<i>Morone saxatilis</i>	striped bass
pipefish spp	<i>Syngnathus spp.</i>	<i>Mulinia lateralis (P)</i>	little surf clam
pollock	<i>Pollachius virens</i>	<i>Mustelus canis</i>	smooth dogfish
Portunid spp (C)	<i>Portunids</i>	<i>Mysidopsis bigelowi (P)</i>	mysid shrimp
pumpkinseed	<i>Lepomis gibbosus</i>	<i>Mytilus edulis (P)</i>	blue mussel
purple sea urchin (P)	<i>Arbacia punctulata</i>	<i>Nassarius triutatus (P)</i>	New England dog whelk
quahog clam (P)	<i>Mercenaria mercenaria</i>	<i>Notropis hudsonius</i>	spottail shiner
red drum	<i>Sciaenops ocellatus</i>	<i>Ophidion marginatum</i>	striped cusk-eel
red hake	<i>Urophycis chuss</i>	<i>Opisthonema oglinum</i>	Atlantic thread herring
redbreast sunfish	<i>Lepomis auritus</i>	<i>Opsanus tau</i>	oyster toadfish

Species Names - Common Name Order		Species Names - Latin Name Order	
Common Name	Latin Name	Latin Name	Common Name
Sampling Key: P = Presence/Absence typically recorded, C = Counts taken, Nothing = Lengths taken			
right-hand hermit crab spp (P)	<i>Pagurus spp.</i>	<i>Orthopristis chrysoptera</i>	pigfish
river shrimp (P)	<i>Macrobrachium ohione</i>	<i>Ovalipes ocellatus (C)</i>	lady crab
rock crab	<i>Cancer irroratus</i>	<i>Pagurus spp. (P)</i>	right-hand hermit crab spp
roughneck shrimp (C)	<i>Trachypenaeus constrictus</i>	<i>Palaemonetes spp. (P)</i>	grass shrimp spp
round herring	<i>Etrumeus teres</i>	<i>Paralichthys dentatus</i>	summer flounder
sand shrimp (P)	<i>Cragion septemspinosa</i>	<i>Penaeus aztecus</i>	brown shrimp
sandbar shark	<i>Carcharhinus plumbeus</i>	<i>Penaeus duorarum</i>	pink shrimp
sargassum swimming crab (C)	<i>Portunus sayi</i>	<i>Penaeus setiferus</i>	white shrimp
scup	<i>Stenotomus chrysops</i>	<i>Peprilus alepidotus</i>	harvestfish
sea lamprey	<i>Petromyzon marinus</i>	<i>Peprilus triacanthus</i>	butterfish
seaboard goby	<i>Gobiosoma ginsburgi</i>	<i>Petromyzon marinus</i>	sea lamprey
shelligs blue crab (C)	<i>Callinectes ornatus</i>	<i>Pogonius cromis</i>	black drum
silver hake	<i>Merluccius bilinearis</i>	<i>Polinices heros (P)</i>	moon snail
silver jenny	<i>Eucinostomus gula</i>	<i>Pollachius virens</i>	pollock
silver perch	<i>Bairdiella chrysoura</i>	<i>Pomatomus saltatrix</i>	bluefish
skilletfish	<i>Gobiesox strumosus</i>	<i>Portunids (C)</i>	Portunid spp
smallmouth flounder	<i>Etropus microstomus</i>	<i>Portunus gibbesii (C)</i>	irresescent swimming crab
smooth dogfish	<i>Mustelus canis</i>	<i>Portunus sayi (C)</i>	sargassum swimming crab
Spanish mackerel	<i>Scomberomorus maculatus</i>	<i>Prionotus carolinus</i>	northern searobin
spider crab, 6 spine (C)	<i>Libinia dubia</i>	<i>Prionotus evolans</i>	striped searobin
spider crab, common (C)	<i>Libinia emarginata</i>	<i>Prionotus tribulus</i>	bighead searobin
spiny butterfly ray	<i>Gymnura altavela</i>	<i>Pseudopleuronectes americanus</i>	winter flounder
spot	<i>Leiostomus xanthurus</i>	<i>Raja eglanteria</i>	clearnose skate
spotfin butterflyfish	<i>Chaetodon ocellatus</i>	<i>Raja erinacea</i>	little skate
spotfin mojarra	<i>Eucinostomus argenteus</i>	<i>Raja ocellata</i>	winter skate
spottail shiner	<i>Notropis hudsonius</i>	<i>Rangia cuneata (P)</i>	wedge rangia clam
spotted hake	<i>Urophycis regia</i>	<i>Rapana venosa (C)</i>	veined rapa whelk
spotted seatrout	<i>Cynoscion nebulosus</i>	<i>Rhinoptera bonasus</i>	cownose ray
squid spp	<i>Loligo spp.</i>	<i>Sciaenops ocellatus</i>	red drum

Species Names - Common Name Order		Species Names - Latin Name Order	
Common Name	Latin Name	Latin Name	Common Name
Sampling Key: P = Presence/Absence typically recorded, C = Counts taken, Nothing = Lengths taken			
striped anchovy	<i>Anchoa hepsetus</i>	<i>Scomberomorus maculatus</i>	Spanish mackerel
striped bass	<i>Morone saxatilis</i>	<i>Scophthalmus aquosus</i>	windowpane
striped blenny	<i>Chasmodes bosquianus</i>	<i>Selene setapinnis</i>	Atlantic moonfish
striped burrfish	<i>Chilomycterus schoepfi</i>	<i>Selene vomer</i>	lookdown
striped cusk-eel	<i>Ophidion marginatum</i>	<i>Sphoeroides maculatus</i>	northern puffer
striped searobin	<i>Prionotus evolans</i>	<i>Spisula solidissima (P)</i>	surf clam
summer flounder	<i>Paralichthys dentatus</i>	<i>Squilla spp.</i>	mantis shrimp
surf clam (P)	<i>Spisula solidissima</i>	<i>Stenotomus chrysops</i>	scup
tautog	<i>Tautoga onitis</i>	<i>Symphurus plagiusa</i>	blackcheek tonguefish
tessellated darter	<i>Etheostoma olmstedi</i>	<i>Syngnathus fuscus</i>	northern pipefish
threadfin shad	<i>Dorosoma petenense</i>	<i>Syngnathus spp.</i>	pipefish spp
veined rapa whelk (C)	<i>Rapana venosa</i>	<i>Synodus foetens</i>	inshore lizardfish
weakfish	<i>Cynoscion regalis</i>	<i>Tautoga onitis</i>	tautog
wedge rangia clam (P)	<i>Rangia cuneata</i>	<i>Trachinotus carolinus</i>	Florida pompano
whelk (conch) spp (C)	<i>Busycon spp.</i>	<i>Trachypenaeus constrictus (C)</i>	roughneck shrimp
white catfish	<i>Ictalurus catus</i>	<i>Trichiurus lepturus</i>	Atlantic cutlassfish
white hake	<i>Urophycis tenuis</i>	<i>Trinectes maculatus</i>	hogchoker
white perch	<i>Morone americana</i>	<i>Urophycis chuss</i>	red hake
white shrimp	<i>Penaeus setiferus</i>	<i>Urophycis regia</i>	spotted hake
windowpane	<i>Scophthalmus aquosus</i>	<i>Urophycis tenuis</i>	white hake
winter flounder	<i>Pseudopleuronectes americanus</i>	<i>Urosalpinx cinerea (P)</i>	Atlantic oyster drill
winter skate	<i>Raja ocellata</i>	<i>Xanthidae (P)</i>	mud crab spp



Appendix B. Trawl Survey sample data sheets.

1. Data Sheet from October 1998 in the Chesapeake Bay.
2. Habitat data sheet for the given sampling day.
3. Invertebrate data sheet for the given sampling day.

RETAW

.....
Station Data Record
VIMS Trawl Survey
.....

Cruise #: CL981016
StaDate: 98, 10, 16
year | month | day
(LOCAL TIME)

STATION DATA

(Tow #) Station#	River	RiverMile	Lat_beg	Long_beg	feet	Depth meters	Tide Tow1	Tow2	Time_beg	Time_end
70	CL	---	3706.25	7559.49	80	24	7	12	15	20

Stratum	Compass	Gear	Lat_end	Long_end	Eng_rpm	Secchi	Tow Duration	Tow Distance	Remarks
S02	360	108	3706.38	7559.56	0900	19	5.0	---	104

StaType	feet Scope	meters	Net #	Speed over Ground (Knots)
S	60	183	A05 A11	1.5

HYDRO DATA

	ParCodeTemp	TempDegC	ParCodeDO	D.O.	ParCodeSal	Salinity
Surface:	HL	19.77	HL	9.77	HL	26.4
Bottom:	HL	19.78	HL	9.74	HL	26.3

ATMOS DATA

ParCodeTemp	AirTempC	ParCodeWind	WindSpeed	WindDir	ParWeather	Weather	ParCodeSea	SeaState
WS	17.8	WS	05	04	08	1	V1	3

CRUISE DATA

Cruise #	Cruise Date Begin	Time Begin	Vessel
	1 9		
Data Base #	Cruise Date End	Time End	vessel name
	1 9		

COMMENTS

RETAW:
HUNG RIPPED
NET ON ?

moved station

RETOW / 2nd TOW

Lat_b:	Long_b:
Lat_e:	Long_e:
Time:	
Tow 1:	
Tow 2:	
Depth:	
Comp.:	
Scope:	
Speed:	

CODES

TOW 1: DIRECTION UP OR DOWNSTREAM	
1: UP	6: Slack
2: DOWN	
TOW 2: DIRECTION RELATIVE TO CURRENT	
1: With	4: Oblique With
2: Against	5: Oblique Against
3: Perpendicular	6: Slack
TIDE: TIDAL STAGE	
1: Early flood	5: Early ebb
2: Max flood	6: Max ebb
3: Late flood	7: Late ebb
4: Slack before ebb	8: Slack before flood
SEASTATE	
0: Calm-glassy 0m	
1: Calm-rippled 0-.1m	
2: Smooth-wavelets 0.1-0.5m	
3: Slight 0.5-1.25m	
4: Moderate 1.25-2.5m	
WEATHER: OBSERVED WEATHER	
0: Clear	5: Drizzle
1: Partly cloudy	6: Rain
2: Overcast	7: Snow, snow/rain
3: Blowing snow	8: Showers
4: Fog, dust, haze	9: Thunderstorms

Cruise: CL 981016Date: Oct 16, 1998

Common	Scientific	Code	STATION NUMBER															
			9	13	15	16	5	70	6	11	8	21	29	22	79	24	26	
amphipod sp.	<i>Amphipoda sp.</i>	0841																
blood ark	<i>Anadara ovalis</i>	0826																
blue mussel	<i>Mytilus edulis</i>	0802																
Cragnon / sand shrimp	<i>Cragnon septemspinosa</i>	0604		✓	✓					✓	✓	✓	✓		✓	✓	✓	
hermit crab sp.	<i>Pagurus sp.</i>	0758	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Macoma clam sp.	<i>Macoma sp.</i>	0820																
Macrobrachium / river shrimp	<i>Macrobrachium ohione</i>	0592																
Mercenaria / quahog clam	<i>Mercenaria mercenaria</i>	0821								✓								
moon snail	<i>Polinices heros</i>	0800				✓	✓											
mud crab sp.	<i>Xanthidae sp.</i>	0594	✓				✓			✓	✓	✓	✓					
Mya arenaria / soft-shell clam	<i>Mya arenaria</i>	0831								✓	✓	✓	✓					
mysid shrimp sp.	<i>Mysidopsis sp.</i>	0740																
oyster, common	<i>Crassostrea virginica</i>	0819																
Paleomonetes / grass shrimp	<i>Paleomonetes sp.</i>	0620					✓	✓			✓	✓						
pistol (snapping) shrimp	<i>Alpheus heterochaelis</i>	0591																
razor clam sp.	<i>Solenidae sp.</i>	0790																
sand dollar	<i>Echinorhinus parma</i>	0702						✓	✓						✓			
sea anenome sp.	<i>Anthozoa</i>	0643																
sea cucumber sp.	<i>Holothuroidea</i>	0828																
sea star, common	<i>Asterias forbesi</i>	0700				✓					✓							
sea urchin	<i>Arbacia punctulata</i>	0840						✓					✓					
skeleton shrimp sp.	<i>Caprella sp.</i>	0658																
drill sp. (snail)		0831			✓			✓	✓									
Rangia / wedge clam	<i>Rangia cuneata</i>	0837																
worm sp.	<i>Annelida</i>	0775																
Salp				✓														
Purple Sea (echinid)				✓														
whale eggs							✓						✓					
P. sayi							2											
C. ornata			1			1							10					
channel/smooth whelk	<i>Busycon canaliculatum</i>	0829																
knobbed whelk	<i>Busycon carica</i>	0830																
lady crab	<i>Ovalipes ocellatus</i>	0612					2		1									
portunid crab sp.	<i>portunus sp.</i>													1				
Portunus gibesii	<i>Portunus gibesii</i>	0607									1							
spider crab, 6 spine	<i>Libinia dubia</i>	0593									3	1	1					
spider crab, common	<i>Libinia emarginata</i>	0605					1				4	1						
Trachypaneus / ruogneck shrimp	<i>Trachypaneus constrictus</i>	0595		2	1	1			1	2	1		3			1		

blue crabs, penaeid shrimp, squid, mantis shrimp (0621), horseshoe crab (0603) and rock crab (0656) are measured.

Appendix C. Description of the VIMS Trawl Survey sampling strata.

- Note: A. The "No. of Points" indicates the number of possible trawl sites within a strata. '*' indicates areas not presently sampled with a RSD.
- B. Strata for the York and Rappahannock Rivers were slightly different prior to 1995. These strata have been adjusted to the present sampling system. Conversions appear in Geer, 1997.

Appendix C. Chesapeake Bay Strata.

Region	Stratum Description	No .of Points	Percent of System	% of Total Sampling	Square Miles (NM)
Bottom Bay	001 West. Shoal 4-12'	1740	9.38	6.85	112.33
	002 East. Shoal 12-30'	863	4.65	3.40	55.72
	003 Central Plain 30-42'	910	4.91	3.58	58.75
	004 Deep Channel \geq 42'	386	2.08	1.52	24.92
	S01 West. Shallow 4-12'	216	1.16	0.85	13.94
	S02 East. Shallow 4-12'	58	0.31	0.23	3.74
		4173	22.50	16.42	269.41
Lower Bay	005 West. Shoal 4-12'	1027	5.54	4.04	66.30
	006 East. Shoal 12-30'	398	2.15	1.57	25.69
	007 Central Plain 30-42'	1756	9.47	6.91	113.37
	008 Deep Channel \geq 42'	684	3.69	2.69	44.16
	S05 West. Shallow 4-12'	215	1.16	0.85	13.88
	S06 East. Shallow 4-12'	145	0.78	0.57	9.36
		4225	22.78	16.62	272.77
Upper Bay	009 West. Shoal 4-12'	768	4.14	3.02	49.58
	010 East. Shoal 12-30'	632	3.41	2.49	40.80
	011 Central Plain 30-42'	2197	11.84	8.64	141.84
	012 Deep Channel \geq 42'	844	4.55	3.32	54.49
	S09 West. Shallow 4-12'	209	1.13	0.82	13.49
	S10 East. Shallow 4-12'	216	1.16	0.85	13.94
		4866	26.23	19.14	314.15
Top Bay*	013 West. Shoal 4-12'	404	2.18	1.59	26.08
	014 East. Shoal 12-30'	1533	8.26	6.03	98.97
	015 Central Plain 30-42'	1315	7.09	5.17	84.90
	016 Deep Channel \geq 42'	1273	6.86	5.01	82.18
	S13 West. Shallow 4-12'	164	0.88	0.65	10.59
	S14 East. Shallow 4-12'	597	3.22	2.35	38.54
		5286	28.50	10.17	341.26
Total Bay		18550		72.98	1197.59

Appendix C. James River Strata.

Region	Stratum Description	No .of Points	Percent of System	% of Total Sampling	Square Miles (NM)
Bottom James	070 Bottom JA 4-12'	423	17.43	1.66	27.31
	071 Bottom JA 12-30'	292	12.03	1.15	18.85
	072 Bottom JA 30-42'	68	2.80	0.27	4.39
	073 Bot & Low JA \geq 42'	59	2.43	0.23	3.81
		842	34.69	3.31	54.36
Lower James	074 Lower JA 4-12'	486	20.02	1.91	31.38
	075 Lower JA 12-30'	243	10.01	0.96	15.69
	076 Lower JA 30-42'	25	1.03	0.10	1.61
		754	31.07	2.97	48.68
Upper James	077 Upper JA 4-12'	203	8.36	0.80	13.11
	078 Upper JA 12-30'	178	7.33	0.70	11.49
	079 Up & Top JA \geq 30'	34	1.40	0.13	2.20
		415	17.10	1.63	26.79
Top James	080 Top JA 4-12'	264	10.88	1.04	17.04
	081 Top JA 12-30'	152	6.26	0.60	9.81
		416	17.14	1.64	26.86
TOTAL James R.		2427		9.55	156.69

Appendix C. Rappahannock River Strata.

Region	Stratum Description		No .of Points	Percent of System	% of Total Sampling	Square Miles (NM)
Bottom Rappahannock	050	Bottom RA 4-12'	98	7.08	0.39	6.33
	051	Bottom RA 12-30'	200	14.44	0.79	12.91
	052	Bottom RA 30-42'	66	4.77	0.26	4.26
	053	Bottom RA \geq 42'	84	6.06	0.33	5.42
			448	32.35	1.76	28.92
Lower Rappahannock	054	Lower RA 4-12'	94	6.79	0.37	6.07
	055	Lower RA 12-30'	167	12.06	0.66	10.78
	056	Lower RA 30-42'	67	4.84	0.26	4.33
	057	Lower RA \geq 42'	56	4.04	0.22	3.62
			384	27.73	1.51	24.79
Upper Rappahannock	058	Upper RA 4-12'	233	16.82	0.92	15.04
	059	Upper RA 12-30'	101	7.29	0.40	6.52
	060	Up & Top RA \geq 30'	32	2.31	0.13	2.07
			366	26.43	1.44	23.63
Top Rappahannock	061	Top RA 4-12'	137	9.89	0.54	8.84
	062	Top RA 12-30'	50	3.61	0.20	3.23
			187	13.50	0.74	12.07
TOTAL Rapp. R.			1385		5.45	89.41

Appendix C. York River Strata.

Region	Stratum Description	No .of Points	Percent of System	% of Total Sampling	Square Miles (NM)
Bottom York	030 Bottom YK 4-12'	94	12.18	0.37	6.07
	031 Bottom YK 12-30'	87	11.27	0.34	5.62
	032 Bottom YK 30-42'	66	8.55	0.26	4.26
	033 Bot & Low YK \geq 42'	71	9.20	0.28	4.58
		318	41.19	1.25	20.53
Lower York	034 Lower YK 4-12'	111	14.38	0.44	7.17
	035 Lower YK 12-30'	114	14.77	0.45	7.36
	036 Lower YK 30-42'	28	3.63	0.11	1.81
		253	32.77	1.00	16.33
Upper York	037 Up & Top YK 4-12'	54	6.99	0.21	3.49
	038 Upper YK 12-30'	71	9.20	0.28	4.58
	039 Up & Top YK \geq 30'	29	3.76	0.11	1.87
		154	19.95	0.61	9.94
Top York*	040 Top YK 12-30'	47	6.09	0.18	3.03
		47	6.09	0.18	3.03
TOTAL York R.		772		3.04	49.83

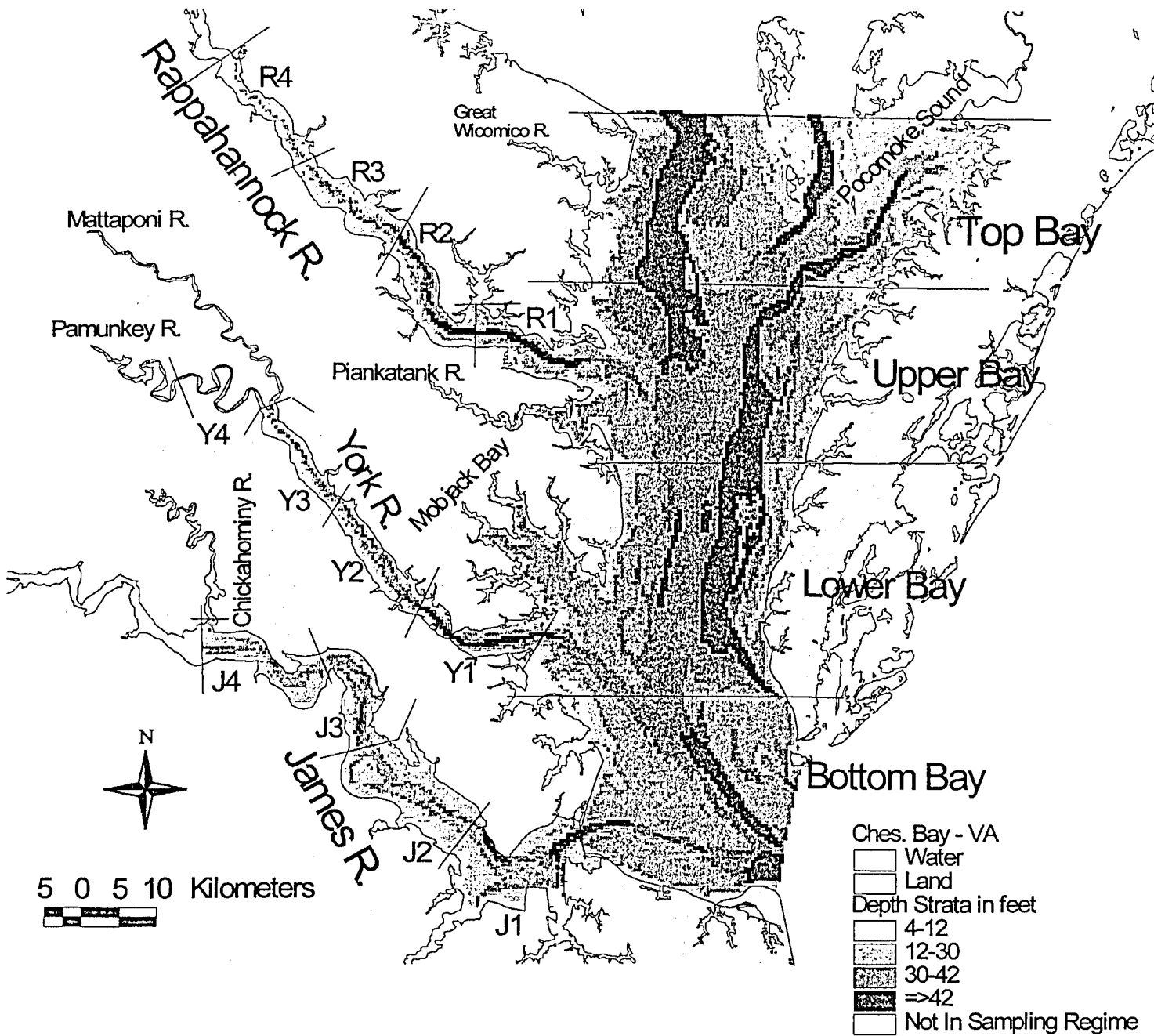
* Stratum 040 is not sampled with random stations due to its small area. There are 3 non-random fixed stations used to represent this stratum.

Appendix C. Secondary water systems strata.

Region	Stratum Description	No .of Points	Percent of System	% of Total Sampling	Square Miles (NM)
Pocomoke Sound	110 CP 4-12'	734	63.17	2.89	47.39
	111 CP 12-30'	344	29.60	1.35	29.60
	112 CP 30-42'	30	2.58	0.12	1.94
	113 CP \geq 42'	54	4.65	0.21	3.49
		1162		4.57	75.02
Mobjack Bay	090 MB 4-12'	114	17.17	0.45	7.36
	091 MB \geq 12'	310	46.69	1.22	20.01
	092 MB Tribs 4-12'	154	23.19	0.61	9.94
	093 MB Tribs. \geq 12'	86	12.95	0.34	5.55
		664		2.61	42.87
Great Wicomico River	121 GW 4-12'	154	78.57	0.61	9.94
	122 GW \geq 12'	42	21.43	0.17	2.71
		196		0.77	12.65
Piankatank River	105 PK 4-12'	133	50.57	0.52	8.59
	106 PK \geq 12'	130	49.43	0.51	8.39
		263		1.03	16.98
TOTAL SITES		25,419			1648.42

Appendix D. The VIMS Trawl Survey Random Stratified Design of the Chesapeake Bay and its tributaries, based on depth and region. Presently the Top Bay is not being sampled.

Note: Due to Loran distortion and computer software control of the placement of points on this map, locations may vary slightly from actual sites. This distortion may make some sites appear on land.



Appendix D. The VIMS trawl survey random stratified design of the Chesapeake Bay. Transect lines indicate geographic regions.



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Juvenile finfish and blue
crab stock assessment pro-
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