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Juvenile Fish and Blue Crab Stock Assessment Program Bottom Trawl Survey Annual Data Summary Report Volume 1999

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Juvenile Fish and Blue Crab Stock Assessment Program

Bottom Trawl Survey

Annual Data Summary Report

Volume 1999

By

Wendy A. Lowery

M. Todd Mathes

Patrick J. Geer

Special Scientific Report No. 124 Volume 1999

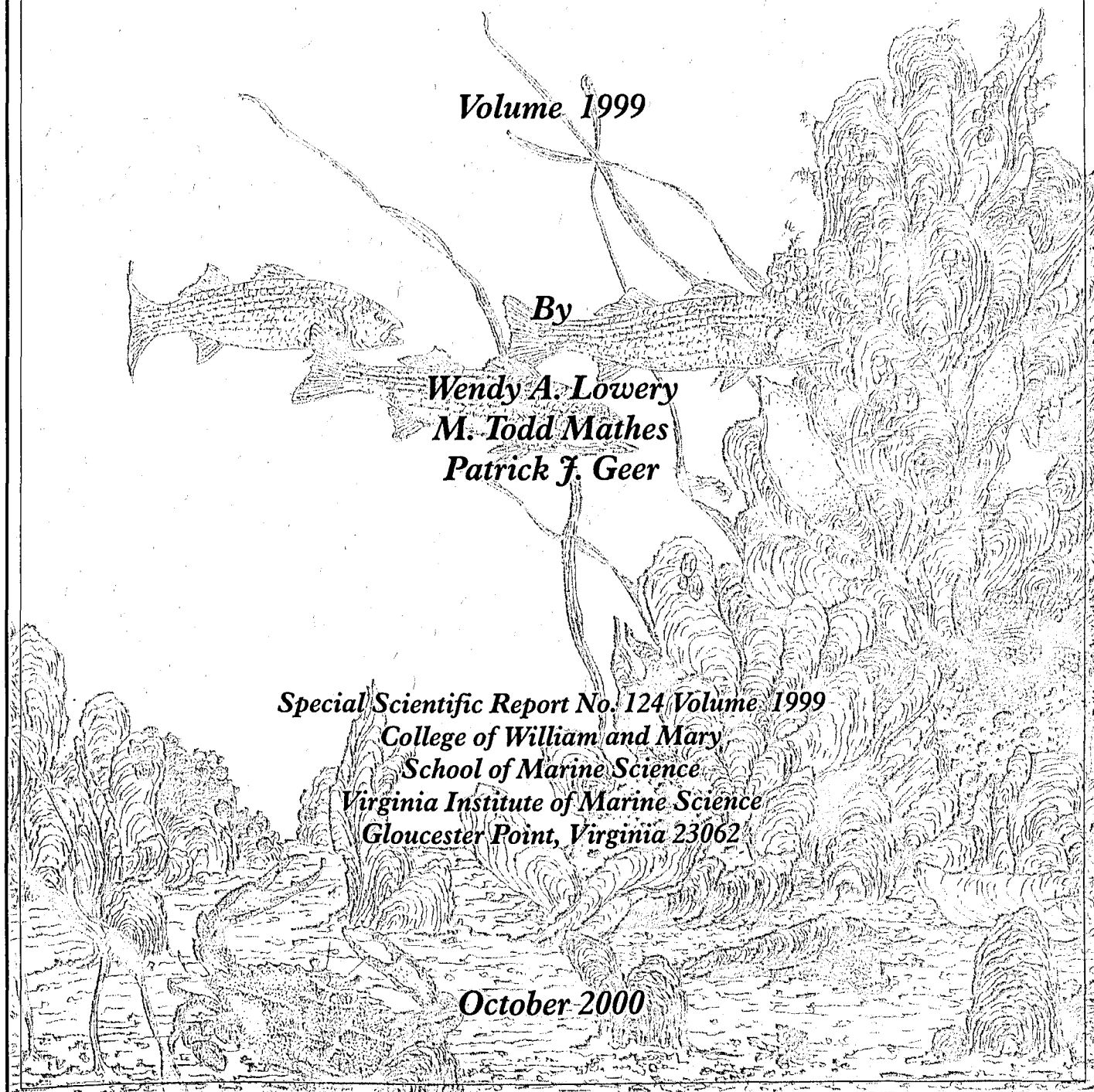
College of William and Mary

School of Marine Science

Virginia Institute of Marine Science

Gloucester Point, Virginia 23062

October 2000



RECENT VIMS TRAWL SURVEY CONTRIBUTIONS

- Geer, P.J. *In review*. Distribution, relative abundance, and habitat preferences of American eel, (*Anguilla rostrata*), in the Virginia portion of Chesapeake Bay. Submitted for publication in American Fisheries Society Proceedings of the International Anguillid Symposium.
- 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. and H.M. Austin. 2000. Estimation of relative abundance of recreationally important finfish in the Virginia portion of Chesapeake Bay. Annual report to VMRC/USFWS Sportfish Restoration Project F104R10. July 1999 to June 2000. Virginia Institute of Marine Science, Gloucester Pt. VA 23062. 122 p.
- Geer, P.J., W. Lowery, and P. MacDonald. 2000. Essential habitat of juvenile black sea bass, (*Centropristis striata*) and scup, (*Stenotomus chrysops*) in Chesapeake Bay. Presented at the 14th Annual meeting of the Tidewater Chapter of the American Fisheries Society; March 9-11, 2000. Kill Devil Hills, North Carolina.
- Geer, P.J., J.A. Weeder, S. Hammond, and R. Lukacovic. 2000. Evaluating recruitment of American eel, *Anguilla rostrata*, to the Potomac River - Spring 2000. Report to Potomac River Fisheries Commission. 36 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.
- Owens, S.J. and P.J. Geer. *In review*. Size and age structure of American eels in tributaries of the Virginia portion of the Chesapeake Bay. Submitted for publication in American Fisheries Society Proceedings of the International Anguillid Symposium.
- Terwilliger, Mark. R. , and Thomas A. Munroe. 1999. Age, growth, longevity, and mortality of blackcheek tonguefish, *Symphurus plagiusa* (Cynoglossidae: Pleuronectiformes), in Chesapeake Bay, Virginia. Fishery Bulletin 97(2): 340-361.

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.

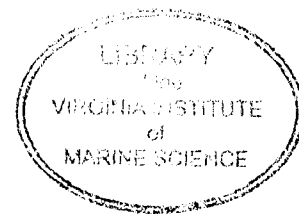
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JUVENILE FISH AND BLUE CRAB STOCK ASSESSMENT PROGRAM
BOTTOM TRAWL SURVEY
ANNUAL DATA SUMMARY REPORT

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by

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Special Scientific Report No. 124 Volume 1999
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School of Marine Science
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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 1999. 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. 1996b). 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 (Land et al. 1996a). 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 continues in 1999 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) are 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, habitat and invertebrate data began being collected. Continuing for 1999 is the recording of habitat type as a description of bottom structures/substrate and the collection of presence/absence information on mega-invertebrates (≥ 5 mm), with counts made for selected species. Table 1 indicates the substrate categories and the major species included in each category, and Appendix A lists all species captured in 1999 and their sampling status.

Sampling was continued in several small secondary water systems of the Chesapeake Bay. A random stratified design with additional fixed sites was followed for Mobjack Bay, Piankatank River, Pocomoke Sound and Great Wicomico River. The fixed sites were selected based on location and frequency of sampling in the past. Each system was sampled once per quarter. 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 Elizabeth River was sampled approximately every six weeks from November 1999 to May 2000 as part of a contract with the Virginia Department of Transportation to assess Essential Fish Habitat. Sampling was performed at fixed stations with replicates. The data from November and December 1999 are included in this report.

The following tables and figures include data for all finfish and mega-invertebrates (≥ 5 mm) caught during 1999. 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 (< 20 mm) 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 1999 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 the catch of a species was large and homogeneous. When subsampling, lengths were taken on a representative sample of the species, and total number was determined by direct counting or by measuring total volume and enumerating specimens contained in a certain volume, then multiplying the count by total volume. For habitat type, items in the net were 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.). 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 (≥ 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 that three fixed locations can provide 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.

Sampling of the Elizabeth River was started in November 1999 and was performed approximately every six weeks until May 2000. Four fixed stations were chosen and two trawls were done at each station. The stations were selected to cover an area above, below, and at the site of a proposed bridge crossing by the Virginia Department of Transportation.

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 Chesapeake Bay, the tributaries and secondary water systems by system, pooled over months, is presented in Tables 51-58. In previous Summary Reports, data for the Chesapeake Bay survey only, by segment, was pooled by months and shown in a separate table. In an effort to conserve printed space, the Bay data has been included together with the other water systems. Tables 59-136 contain analogous data summaries by each month and system for the Chesapeake Bay and the tributary and secondary 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 provided in Tables 137-148. 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 1999, 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 1999 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 1999 along with the standard sampling protocol for each species. Appendix B shows a sample data sheet from the Chesapeake Bay in October 1999, 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 1999 Sampling Season

Due to an unusually dry Spring and Summer in 1999, the salinity gradient was extended farther upstream in the tributaries than in recent years. This possibly had the effect of extending the

blue catfish population upstream to lower salinity since the uppermost river stations showed a decrease in numbers. Higher than usual salinity in the Bay may also explain why greater numbers of Atlantic cutlassfish, banded drum, star drum, and silver seatrout were caught this year. Other species caught in higher numbers this year were hickory shad, threadfin shad, Atlantic herring, and silver perch. Also of note were the large numbers of penaeid shrimp (pinks and whites) caught in the fall months of 1999. Spot, scup, and blue crabs remained at low levels, while weakfish seemed to increase slightly. There was a drop in the numbers of Atlantic croaker and American eels caught in the survey.

On September 15th 1999, localized flooding caused by Hurricane Floyd sent fresh water into the rivers which affected the salinity gradients. By the time sampling started for October, hydrographic data was back within normal ranges and there seemed to be no lasting effect.

DISCUSSION

The purpose of this report is to present a quick visual summary of the data collected during the 1999 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

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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

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

- 0: Clear-no cloud at any level
- 1: Partly cloudy-scattered or broken
- 2: Overcast
- 3: Sand, dust storm, or blowing snow
- 4: 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; \geq 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; \geq 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; \geq 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; \geq 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; \geq 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; \geq 42 ft
- 54: Lower; 4-12 ft
- 55: Lower; 12-30 ft
- 56: Lower; 30-42 ft
- 57: Lower; \geq 42 ft
- 58: Upper; 4-12 ft
- 59: Upper; 12-30 ft
- 60: Up. & Top; \geq 30ft
- 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; \geq 42ft
- 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; \geq 30 ft
- 80: Top; 4-12 ft
- 81: Top; 12-30 ft

Table 1. Continued.

Habitat Data

<u>Code</u>	<u>Description</u>
SND	Sand (hard) bottom
MUD	Mud (soft) bottom
HYD	Hydroids: <i>Sertularia cupressina</i> - "White Hair" <i>Garveia franciscana</i> - "Rope Grass" <i>Pennaria disticha</i> - "Feather Hydroid"
DMF	Dead man's fingers/Rubbery Bryozoan: <i>Alcyonidium sp.</i>
SPG	Sponges: <i>Microciona prolifera</i> - "Redbeard Sponge" <i>Haliclona loosanoffi</i> - "Loosanoff's Haliclona"
SQT	Sea squirts: <i>Mogula sp.</i>
SHL	Shell bottom: <i>Crassostrea virginica</i> - "Common Oyster" <i>Rangia cuneata</i> - "Wedge Rangia" <i>Ischadium recurvum</i> - "Bent Mussel" <i>Mytilus edulis</i> - "Blue Mussel"
SAV	Submerged Aquatic Vegetation: <i>Zostera marina</i> - "Eelgrass" <i>Ruppia maritima</i> - "Widgeon grass"
SWD	Seaweeds: <i>Ulva lactuca</i> - "Sea Lettuce" <i>Agardhiella tenera</i> - "Tapered Red Weed" <i>Gracilaria sp.</i>
COR	Coral: <i>Leptogorgia virgulata</i> - "Sea Whip" <i>Astrangia danae</i> - "Star Coral"
TUB	Tube Worms: <i>Chaetopterus sp.</i>
DET	Detritus
ART	Artificial (Trap Stakes, Ballast Rocks, Coal, Tires, Trash, etc.)
UNK	Undetermined

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.

The secondary water systems were 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 2.
January 1999

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			
GW990121	GW	1	R	121	19990121	1018	3748.07	7617.71	3748.29	7617.83	446.5	5.00	2.2	1	1	0	2
GW990121	GW	2	R	121	19990121	1043	3748.99	7618.19	3749.23	7618.20	445.0	5.00	3.5	1	1	0	2
GW990121	GW	3	R	121	19990121	1118	3750.84	7621.34	3750.79	7621.10	376.1	5.00	5.0	2	2	0	2
GW990121	GW	5	R	122	19990121	1006	3747.91	7617.31	3748.11	7617.49	460.5	5.00	5.0	1	1	0	2
GW990121	GW	7	R	122	19990121	1029	3748.56	7617.71	3748.82	7617.78	493.4	5.00	5.2	1	1	0	2
GW990121	GW	8	R	122	19990121	1058	3750.05	7619.12	3750.28	7619.26	476.3	5.00	6.6	1	1	0	2
JA990113	JA	JA01	F	71	19990113	1007	3659.71	7619.49	3659.65	7619.68	309.3	5.00	8.5	1	2	3	5
JA990113	JA	JA05	F	71	19990113	1112	3656.73	7623.09	3656.79	7623.26	281.1	5.00	4.9	1	2	2	7
JA990113	JA	JA13	F	76	19990113	1250	3701.21	7630.35	3701.33	7630.52	340.8	5.00	13.5	1	2	2	7
JA990113	JA	JA17	F	75	19990113	1430	3704.94	7636.33	3705.10	7636.41	320.4	5.00	5.7	1	6	2	8
JA990113	JA	JA24	F	79	19990113	1505	3709.12	7638.49	3709.32	7638.45	375.5	5.00	8.6	1	2	2	7
JA990114	JA	JA27	F	78	19990114	912	3712.67	7639.61	3712.55	7639.44	340.8	5.00	9.1	2	2	1	2
JA990114	JA	JA27	F	78	19990114	912	3712.67	7639.61	3712.55	7639.44	340.8	5.00	9.1	2	2	1	2
JA990114	JA	JA35	F	81	19990114	957	3711.23	7645.75	3711.43	7646.02	552.7	5.00	7.6	1	1	1	3
JA990114	JA	JA40	F	81	19990114	1033	3713.80	7649.46	3713.86	7649.79	513.4	5.00	6.1	1	1	1	3
JA990113	JA	2	R	70	19990113	1203	3655.55	7626.44	3655.67	7626.61	340.8	5.00	3.1	1	2	2	7
JA990113	JA	3	R	71	19990113	1150	3655.23	7625.79	3655.16	7626.02	372.6	5.00	3.9	1	2	2	7
JA990113	JA	5	R	72	19990113	1021	3659.48	7619.81	3659.35	7619.92	293.2	5.00	10.1	1	2	2	6
JA990113	JA	7	R	73	19990113	952	3659.61	7619.14	3659.49	7619.24	269.3	5.00	20.0	1	2	3	5
JA990113	JA	8	R	73	19990113	924	3659.65	7619.10	3659.57	7619.26	284.7	5.00	19.6	1	2	3	5
JA990113	JA	9	R	74	19990113	1353	3701.71	7631.97	3701.81	7632.14	317.8	5.00	1.5	1	2	3	7
JA990113	JA	11	R	75	19990113	1311	3701.03	7631.59	3701.15	7631.72	297.4	5.00	6.0	1	2	2	7
JA990113	JA	14	R	76	19990113	1400	3703.07	7634.82	3703.10	7635.07	383.8	5.00	11.9	1	2	2	7
JA990114	JA	15	R	77	19990114	840	3711.54	7640.44	3711.39	7640.34	316.7	5.00	3.4	2	2	1	2
JA990114	JA	18	R	78	19990114	858	3712.58	7640.14	3712.46	7640.00	307.7	5.00	7.3	2	2	1	2
JA990114	JA	19	R	79	19990114	1010	3711.99	7646.53	3712.17	7646.79	516.9	5.00	11.0	1	1	1	3
JA990114	JA	20	R	79	19990114	1121	3712.44	7647.22	3712.31	7647.04	364.4	5.00	15.2	2	2	1	3
JA990114	JA	21	R	80	19990114	935	3710.27	7642.86	3710.03	7642.99	486.6	5.00	3.0	1	1	2	2
JA990114	JA	23	R	81	19990114	1108	3712.74	7647.80	3712.62	7647.59	388.8	5.00	5.2	2	2	1	3
PK990119	PK	PK02	F	106	19990119	1020	3730.80	7619.24	3730.66	7619.03	411.1	5.00	6.9	2	2	3	3
PK990119	PK	PK03	F	106	19990119	1047	3732.01	7623.84	3732.08	7624.12	444.6	5.00	6.7	1	1	2	3
PK990119	PK	PK04	F	106	19990119	1121	3730.91	7625.99	3730.81	7625.74	422.5	5.00	4.9	2	2	1	3
PK990119	PK	1	R	105	19990119	955	3730.11	7618.62	3729.97	7618.80	376.9	5.00	2.7	1	1	3	3
PK990119	PK	4	R	105	19990119	931	3732.54	7618.40	3732.59	7618.16	376.1	5.00	1.5	2	2	3	3
PK990119	PK	5	R	106	19990119	1104	3730.98	7624.64	3730.79	7624.79	419.4	5.00	5.4	1	1	1	3
PK990119	PK	8	R	106	19990119	913	3732.33	7618.04	3732.16	7618.21	407.3	5.00	6.3	1	1	3	3
RA990119	RA	RA02	F	53	19990119	1251	3735.85	7621.11	3735.74	7621.40	485.3	5.00	17.1	1	2	3	5
RA990119	RA	RA10	F	53	19990119	1407	3737.91	7628.62	3737.85	7628.91	454.3	5.00	18.5	1	2	1	5
RA990120	RA	RA15	F	57	19990120	920	3739.99	7632.99	3740.20	7633.18	484.5	5.00	14.0	1	1	1	1
RA990120	RA	RA20	F	57	19990120	1010	3743.81	7634.87	3744.06	7634.99	497.8	5.00	15.2	1	1	1	1
RA990120	RA	RA25	F	59	19990120	1113	3747.32	7640.53	3747.51	7640.78	517.8	5.00	8.5	1	1	1	1
RA990120	RA	RA30	F	62	19990120	1145	3751.24	7645.29	3751.46	7645.48	499.5	5.00	5.5	1	1	2	1
RA990120	RA	RA35	F	62	19990120	1243	3754.47	7648.23	3754.64	7648.51	529.2	5.00	5.5	1	1	1	2
RA990120	RA	RA40	F	62	19990120	1326	3758.70	7651.60	3758.99	7651.68	550.9	5.00	4.3	1	1	1	2
RA990119	RA	1	R	50	19990119	1235	3736.65	7620.16	3736.68	7620.41	383.8	5.00	2.0	1	2	1	5
RA990119	RA	4	R	51	19990119	1349	3738.54	7627.44	3738.43	7627.65	378.5	5.00	7.2	1	2	1	5
RA990119	RA	6	R	52	19990119	1330	3737.35	7625.79	3737.32	7626.03	368.7	5.00	11.8	1	2	1	5
RA990119	RA	7	R	53	19990119	1306	3735.90	7621.91	3736.00	7622.10	343.0	5.00	19.8	1	2	3	5
RA990119	RA	9	R	54	19990119	1448	3737.68	7632.63	3737.87	7632.65	353.4	5.00	2.5	1	2	1	5
RA990120	RA	11	R	55	19990120	947	3740.69	7633.82	3740.91	7633.95	453.0	5.00	6.7	1	1	1	1
RA990120	RA	14	R	56	19990120	934	3740.17	7633.54	3740.43	7633.64	505.2	5.00	11.6	1	1	1	1
RA990119	RA	15	R	57	19990119	1428	3737.91	7631.00	3738.05	7631.21	411.1	5.00	15.6	1	2	1	5
RA990120	RA	17	R	58	19990120	1056	3745.87	7639.06	3745.99	7639.31	440.0	5.00	3.4	1	1	1	1
RA990120	RA	19	R	59	19990120	1040	3745.37	7637.25				5.00	4.0	1	1	1	1
RA990120	RA	21	R	60	19990120	1025	3744.86	7635.96	3744.98	7636.21	440.0	5.00	10.7	1	1	1	1
RA990120	RA	22	R	60	19990120	1301	3755.07	7649.33	3755.26	7649.69	650.3	5.00	9.1	1	1	1	2
RA990120	RA	23	R	61	19990120	1200	3751.85	7645.09	3751.70	7645.00	309.7	5.00	1.8	2	2	2	1
RA990120	RA	25	R	62	19990120	1215	3752.14	7645.99				5.00	5.5	1	1	1	1
YK990111	YK	YK02	F	32	19990111	1133	3713.62	7627.11	3713.65	7627.34	353.7	5.00	10.8	1	2	2	7
YK990111	YK	YK05	F	32	19990111	1256	3713.80	7628.95	3713.86	7629.17	352.2	5.00	15.2	1	2	2	7
YK990111	YK	YK10	F	35	19990111	1500	3718.41	7635.27	3718.64	7635.47	523.4	5.00	8.3	1	1	1	1
YK990112	YK	YK15	F	35	19990112	857	3723.27	7639.42	3723.41	7639.58	355.5	5.00	8.1	1	2	2	5
YK990112	YK	YK20	F	38	19990112	1017	3725.97	7642.62	3726.11	7642.74	317.0	5.00	6.2	1	2	2	6
YK990112	YK	YK25	F	38	19990112	1051	3728.96	7645.08	3729.09	7645.23	331.6	5.00	8.2	1	2	2	6
YK990112	YK	YK30	F	40	19990112	1129	3732.95	7649.59	3732.80	7649.64	288.1	5.00	4.9	1	2	1	6
YK990112	YK	YK35	F	40	19990112	1200	3733.04	7651.76	3733.19	7651.67	309.7	5.00	6.3	1	2	2	6
YK990112	YK	YK40	F	40	19990112	1232	3732.99	7653.15	3732.92	7653.33	302.6	5.00	3.7	1	2	1	6
YK990111	YK	1	R	30	19990111	1158	3715.27	7624.43	3715.32	7624.22	332.1	5.00	3.7	2	1	2	7
YK990111	YK	4	R	31	19990111	1219	3714.53	7625.74	3714.54	7625.97	349.8	5.00	5.9	1	2	2	7
YK990111	YK	5	R	32	19990111	1608	3715.03	7631.53	3714.90	7631.39	321.3	5.00	9.8	2	2	1	1
YK990111	YK	7	R	33	19990111	1242	3713.62	7628.95	3713.84	7629.22	578.2	5.00	15.2	1	2	2	7
YK990111	YK	8	R	33	19990111	1349	3714.69	7630.94	3714.85	7631.14	424.5	5.00	19.8	1	2	2	7
YK990111	YK	9	R	34	19990111	1433	3718.58	7635.10	3718.54	7634.88	342.3	5.00	2.6	2	2	2	1
YK990111	YK	12	R	35	19990111	1524	3720.79	7636.72	3720.70	7636.60	247.0	5.00	9.9</				

Table 3.
February 1999

System+ Cruise Number	Stat# or River			Stratum Code	Station Date	Time	Location				Tow Parameters				Sea Tidal		
	River	Mile	Type				Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One Two	State	Stage	
JA990203	JA	JA01	F	71	19990203	1546	3659.76	7619.50	3659.66	7619.68	330.3	5.00	6.8	1	2	1	7
JA990204	JA	JA05	F	71	19990204	835	3656.91	7622.86	3656.88	7623.19	504.3	5.00	6.1	1	1	1	1
JA990204	JA	JA13	F	76	19990204	956	3701.40	7630.56	3701.57	7630.84	529.2	5.00	7.1	1	1	1	1
JA990204	JA	JA17	F	75	19990204	1059	3705.02	7636.71	3705.28	7636.89	553.9	5.00	7.1	1	1	1	1
JA990204	JA	JA24	F	79	19990204	1132	3709.19	7638.47	3709.46	7638.51	504.0	5.00	10.1	1	1	2	1
JA990204	JA	JA27	F	78	19990204	1206	3712.46	7639.27	3712.64	7639.54	528.6	5.00	9.5	1	1	1	1
JA990204	JA	JA35	F	81	19990204	1357	3711.22	7645.74	3711.43	7645.93	484.5	5.00	8.0	1	1	1	2
JA990204	JA	JA40	F	81	19990204	1510	3713.83	7649.67	3713.79	7649.45	342.3	5.00	5.5	2	2	2	3
JA990204	JA	1	R	70	19990204	912	3655.15	7627.28	3655.34	7627.49	475.1	5.00	3.8	1	1	2	1
JA990204	JA	3	R	71	19990204	857	3655.43	7625.30	3655.34	7625.61	499.5	5.00	4.8	1	1	2	1
JA990203	JA	6	R	72	19990203	1612	3659.47	7619.81	3659.38	7619.92	236.1	5.00	10.1	1	2	1	7
JA990203	JA	7	R	73	19990203	1557	3659.66	7619.31	3659.58	7619.45	259.2	5.00	17.4	1	2	1	7
JA990203	JA	8	R	73	19990203	1532	3659.67	7618.99	3659.63	7619.16	268.6	5.00	20.1	1	2	1	7
JA990204	JA	10	R	74	19990204	1029	3701.62	7631.94	3701.72	7632.21	450.0	5.00	2.3	1	4	1	1
JA990204	JA	12	R	75	19990204	1111	3705.79	7637.14	3706.05	7637.31	546.6	5.00	8.2	1	1	2	1
JA990204	JA	14	R	76	19990204	1014	3701.16	7630.87	3701.05	7630.67	365.8	5.00	9.8	2	2	1	1
JA990204	JA	16	R	77	19990204	1227	3713.25	7640.03	3713.22	7640.34	474.1	5.00	2.5	1	1	1	2
JA990204	JA	17	R	78	19990204	1151	3710.82	7638.93	3711.11	7639.04	562.7	5.00	3.7	1	1	1	2
JA990204	JA	19	R	79	19990204	1415	3712.43	7647.16	3712.64	7647.37	503.1	5.00	17.7	1	1	2	2
JA990204	JA	20	R	79	19990204	1542	3712.69	7647.48	3712.58	7647.27	378.5	5.00	20.5	2	2	2	3
JA990204	JA	21	R	80	19990204	1320	3710.86	7642.93	3710.64	7643.12	499.5	5.00	3.9	1	1	2	2
JA990204	JA	23	R	81	19990204	1338	3710.83	7645.51	3711.01	7645.80	552.5	5.00	8.1	1	1	2	2
MB990216	MS	MS01	F	93	19990216	1019	3719.08	7625.80	3719.05	7626.06	398.8	5.00	6.4	1	2	1	1
MB990216	MW	MW02	F	93	19990216	1108	3722.02	7625.96	3722.09	7626.20	386.9	5.00	5.8	1	2	1	5
MB990216	MN	MN02	F	93	19990216	1207	3723.89	7624.35	3724.11	7624.38	410.2	5.00	7.0	1	2	1	6
MB990216	ME	ME02	F	93	19990216	1307	3723.48	7620.21	3723.65	7620.36	388.8	5.00	4.6	1	2	1	6
MB990216	MB	MB02	F	91	19990216	1348	3719.02	7619.94	3718.84	7619.75	441.1	5.00	5.4	2	1	1	6
MB990216	MB	MB03	F	91	19990216	1246	3721.06	7621.97	3720.85	7621.85	429.7	5.00	6.0	2	1	1	6
MB990216	MB	MB04	F	90	19990216	916	3717.12	7622.07	3717.19	7621.80	430.1	5.00	2.9	2	6	1	6
MB990216	MB	1	R	90	19990216	1334	3720.16	7619.37	3720.00	7619.58	435.5	5.00	2.1	1	1	1	6
MB990216	MB	2	R	90	19990216	1038	3720.38	7623.68	3720.57	7623.74	363.7	5.00	3.0	1	2	1	6
MB990216	MB	4	R	90	19990216	1232	3721.56	7621.97	3721.53	7621.68	444.0	5.00	3.0	2	1	1	6
MB990216	MB	5	R	91	19990216	1405	3718.12	7618.02	3717.96	7618.20	403.3	5.00	4.8	2	1	1	7
MB990216	MB	6	R	91	19990216	933	3718.82	7621.92	3719.03	7621.96	393.8	5.00	5.9	1	2	1	5
MB990216	MB	8	R	91	19990216	1053	3721.66	7624.21	3721.69	7624.47	398.8	5.00	7.6	1	2	1	5
MB990216	MS	10	R	92	19990216	955	3719.15	7625.08	3719.15	7625.31	349.3	5.00	2.0	1	2	1	5
MB990216	MW	12	R	92	19990216	1124	3722.86	7627.56	3723.08	7627.56	407.7	5.00	2.7	1	2	1	5
MB990216	MS	14	R	93	19990216	1009	3719.01	7625.38	3719.03	7625.66	426.9	5.00	6.2	1	2	1	5
MB990216	MN	15	R	93	19990216	1155	3723.37	7624.31	3723.56	7624.33	353.4	5.00	7.3	1	2	1	5
RA990211	RA	RA02	F	53	19990211	1322	3735.81	7620.97	3735.88	7621.23	415.7	5.00	17.1	1	2	3	7
RA990211	RA	RA10	F	53	19990211	1430	3738.00	7628.34	3737.95	7628.63	450.1	5.00	16.7	1	6	2	8
RA990210	RA	RA15	F	57	19990210	945	3739.91	7633.01	3740.08	7633.16	388.8	5.00	13.5	1	2	2	5
RA990210	RA	RA20	F	57	19990210	1036	3743.75	7634.75	3743.51	7634.68	457.3	5.00	11.3	2	1	2	5
RA990210	RA	RA25	F	59	19990210	1153	3747.13	7640.28	3747.26	7640.47	375.9	5.00	9.1	1	2	2	5
RA990210	RA	RA30	F	62	19990210	1248	3751.30	7645.30	3751.42	7645.47	340.8	5.00	5.6	1	2	2	6
RA990210	RA	RA35	F	62	19990210	1345	3754.40	7648.17	3754.51	7648.35	341.0	5.00	4.9	1	2	2	7
RA990210	RA	RA40	F	62	19990210	1418	3757.79	7651.62	3757.99	7651.63	370.9	5.00	3.9	1	2	2	7
RA990209	RA	2	R	50	19990209	1600	3736.60	7617.46	3736.76	7617.66	424.5	5.00	3.0	1	1	2	3
RA990211	RA	4	R	51	19990211	1335	3736.13	7621.08	3736.13	7620.80	425.3	5.00	6.6	2	1	2	3
RA990211	RA	6	R	52	19990211	1415	3737.59	7626.73	3737.67	7626.99	421.8	5.00	9.8	1	2	2	7
RA990211	RA	8	R	53	19990211	1352	3736.59	7622.69	3736.70	7622.93	417.6	5.00	11.3	1	2	2	7
RA990211	RA	9	R	54	19990211	1446	3736.89	7628.81	3736.85	7629.08	416.7	5.00	3.0	1	1	1	1
RA990211	RA	11	R	55	19990211	1529	3737.96	7632.34	3737.84	7632.10	427.0	5.00	5.8	2	2	1	1
RA990210	RA	14	R	56	19990210	1003	3741.28	7633.62	3741.48	7633.69	385.5	5.00	30.2	1	2	2	5
RA990211	RA	15	R	57	19990211	1508	3737.89	7630.37	3738.02	7630.61	436.9	5.00	15.9	1	1	1	1
RA990210	RA	18	R	58	19990210	1227	3749.60	7644.88	3749.79	7644.92	357.3	5.00	3.4	1	2	2	6
RA990210	RA	20	R	59	19990210	1108	3745.38	7635.89	3745.49	7636.09	365.8	5.00	7.3	1	2	2	5
RA990210	RA	21	R	60	19990210	1055	3744.80	7635.71	3744.94	7635.89	376.9	5.00	11.2	1	2	2	5
RA990210	RA	22	R	60	19990210	1122	3745.31	7636.21	3745.38	7636.45	386.9	5.00	9.1	1	2	2	5
RA990210	RA	23	R	61	19990210	1327	3753.97	7646.81	3754.11	7646.97	355.5	5.00	2.1	1	2	2	6
RA990210	RA	25	R	62	19990210	1303	3751.36	7645.77	3751.52	7645.89	348.0	5.00	3.9	1	2	2	6
YK990203	YK	YK02	F	32	19990203	805	3713.66	7627.56	3713.66	7627.36	303.8	5.00	11.9	2	2	2	1
YK990203	YK	YK05	F	32	19990203	722	3714.14	7629.48	3714.05	7629.28	346.5	5.00	15.3	2	2	1	1
YK990202	YK	YK10	F	35	19990202	1447	3718.45	7635.31	3718.21	7635.10	547.3	5.00	8.4	2	1	1	6
YK990202	YK	YK15	F	35	19990202	847	3723.33	7639.44	3723.55	7639.66	527.1	5.00	7.2	1	1	1	1
YK990202	YK	YK20	F	38	19990202	911	3726.00	7642.50	3726.23	7642.76	581.0	5.00	7.3	1	1	1	1
YK990202	YK	YK25	F	38	19990202	1035	3729.03	7645.08	3729.22	7645.44	650.3	5.00	10.1	1	1	1	1
YK990202	YK	YK30	F	40	19990202	1118	3732.89	7649.61	3732.64	7649.68	475.3	5.00	6.2	1	1	1	2
YK990202	YK	YK35	F	40	19990202	1144	3733.10	7651.71	3733.39	7651.59	567.4	5.00	6.8	1	1	1	2
YK990202	YK	YK40	F	40	19990202	1217	3733.02	7653.05	3732.90	7653.37	534.5	5.00	3.9	1	1	1	0
YK990203	YK	2	R	30	19990203	900	3715.38	7623.34	3715.33	7623.65	479.9	5.00	2.9	1	1	1	2
YK990202	YK	4	R	31	19990202	1525	3716.15	7631.65	3715.96	7631.45	465.0	5.00	4.5	2	1	1	6
YK990203	YK	5	R	32	19990203	825	3713.86	7625.83	3713.88	7625.63	306.0	5.00	12.6	2	2	2	1
YK990203	YK	7	R	33	19990203	845	3714.64	7623.29	3714.73	7623.1							

Table 4.
March 1999

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			
CP990323	CP	CP01	F	111	19990323	1149	3752.82	7549.35	3753.03	7549.25	417.7	5.00	4.9	1	2	2	7
CP990323	CP	CP03	F	113	19990323	1022	3748.92	7549.99	3749.10	7549.91	355.0	5.00	26.8	1	2	2	7
CP990323	CP	CP05	F	112	19990323	857	3745.18	7553.47	3745.35	7553.38	343.4	5.00	10.0	1	2	2	7
CP990323	CP	1	R	110	19990323	1330	3750.33	7546.91	3750.19	7547.00	293.2	5.00	1.9	2	2	2	2
CP990323	CP	2	R	110	19990323	1308	3752.35	7544.27	3752.35	7544.58	470.8	5.00	2.4	2	2	2	2
CP990323	CP	3	R	110	19990323	1247	3752.40	7546.73	3752.19	7546.68	396.5	5.00	3.0	2	2	2	1
CP990323	CP	4	R	110	19990323	1214	3754.58	7545.84	3754.47	7546.06	391.4	5.00	2.6	2	2	2	1
CP990323	CP	5	R	111	19990323	946	3747.00	7552.34	3747.21	7552.26	407.7	5.00	3.9	1	2	2	7
CP990323	CP	7	R	111	19990323	1100	3749.88	7549.89	3750.07	7549.82	367.8	5.00	6.5	1	2	2	7
CP990323	CP	8	R	111	19990323	1134	3752.09	7550.10	3752.30	7550.14	393.8	5.00	4.3	1	2	2	7
CP990323	CP	10	R	112	19990323	911	3745.33	7552.52	3745.47	7552.42	300.6	5.00	9.1	1	2	1	7
CP990323	CP	11	R	112	19990323	930	3745.64	7551.14	3745.85	7551.09	396.5	5.00	12.9	1	2	1	7
CP990323	CP	14	R	113	19990323	1004	3748.26	7550.47	3748.42	7550.37	333.1	5.00	22.9	1	2	2	7
CP990323	CP	16	R	113	19990323	1113	3749.85	7549.49	3749.64	7549.60	423.5	5.00	20.4	2	1	2	7
JA990302	JA	JA01	F	71	19990302	1158	3659.75	7619.47	3659.64	7619.63	317.2	5.00	6.4	1	2	3	5
JA990302	JA	JA05	F	71	19990302	1330	3657.16	7622.41	3657.25	7622.59	320.2	5.00	6.6	1	2	1	7
JA990302	JA	JA13	F	76	19990302	1504	3701.38	7630.56	3701.46	7630.74	311.0	5.00	9.1	1	2	1	7
JA990305	JA	JA17	F	75	19990305	1241	3705.32	7636.84	3705.15	7636.73	356.6	5.00	6.8	2	2	0	1
JA990305	JA	JA24	F	79	19990305	1147	3709.45	7638.41	3709.30	7638.47	292.5	5.00	9.4	2	2	0	1
JA990305	JA	JA27	F	78	19990305	815	3712.45	7639.27	3712.59	7639.42	345.3	5.00	8.3	1	2	1	7
JA990305	JA	JA35	F	81	19990305	847	3711.21	7645.73	3711.32	7645.89	317.2	5.00	7.0	1	2	1	7
JA990305	JA	JA40	F	81	19990305	947	3713.79	7649.40	3713.89	7649.65	422.5	5.00	5.1	1	2	1	7
JA990302	JA	1	R	70	19990302	1213	3700.18	7619.32	3700.30	7619.42	269.3	5.00	2.7	1	2	3	5
JA990302	JA	4	R	71	19990302	1403	3658.30	7627.16	3658.40	7627.24	221.6	5.00	5.8	1	2	1	7
JA990302	JA	6	R	72	19990302	1338	3657.12	7624.83	3657.02	7624.85	187.8	4.50	11.5	1	2	1	7
JA990302	JA	7	R	73	19990302	1243	3659.16	7620.10				3.00	14.1	1	2	3	6
JA990302	JA	8	R	73	19990302	1145	3659.78	7619.14	3659.72	7619.30	267.2	5.00	12.0	1	2	3	5
JA990302	JA	9	R	74	19990302	1429	3701.51	7629.01	3701.68	7629.14	371.8	5.00	2.7	1	2	1	7
JA990302	JA	11	R	75	19990302	1449	3700.96	7629.66	3701.02	7629.84	295.1	5.00	8.8	1	2	1	7
JA990302	JA	14	R	76	19990302	1537	3703.06	7634.78	3703.05	7634.98	304.3	5.00	11.1	1	2	1	7
JA990305	JA	15	R	77	19990305	1215	3705.65	7639.07	3705.46	7639.10	355.0	5.00	2.2	2	2	0	1
JA990305	JA	17	R	78	19990305	1110	3709.70	7638.70	3709.51	7638.68	353.4	5.00	4.8	2	6	1	8
JA990305	JA	19	R	79	19990305	1122	3709.65	7638.16	3709.54	7638.33	329.0	5.00	9.1	2	2	0	1
JA990305	JA	20	R	79	19990305	915	3712.72	7647.54	3712.87	7647.47	297.6	5.00	13.1	1	2	1	7
JA990305	JA	21	R	80	19990305	1017	3712.70	7650.64	3712.70	7650.37	410.1	5.00	2.6	2	6	1	8
JA990305	JA	24	R	81	19990305	1000	3713.83	7650.02	3713.75	7649.75	436.1	5.00	4.0	2	6	1	8
RA990318	RA	RA02	F	53	19990318	1011	3736.00	7621.20	3736.08	7621.47	436.1	5.00	14.0	1	1	3	3
RA990318	RA	RA10	F	53	19990318	1120	3737.97	7628.58	3737.97	7628.90	486.0	5.00	17.1	1	1	3	3
RA990318	RA	RA15	F	57	19990318	1155	3740.14	7633.03	3740.37	7633.05	427.3	5.00	15.6	1	1	3	3
RA990317	RA	RA20	F	57	19990317	1014	3743.73	7634.71	3743.95	7634.93	527.1	5.00	14.1	1	1	1	3
RA990317	RA	RA25	F	59	19990317	1202	3747.34	7640.61	3747.55	7640.86	543.7	5.00	8.2	1	1	1	3
RA990317	RA	RA30	F	62	19990317	1238	3751.47	7645.45	3751.29	7645.38	350.1	5.00	6.3	2	2	1	3
RA990317	RA	RA35	F	62	19990317	1300	3754.48	7648.29	3754.64	7648.57	518.4	5.00	5.5	1	1	1	3
RA990317	RA	RA40	F	62	19990317	1356	3757.00	7651.67				5.00	4.6	2	2	1	3
RA990318	RA	1	R	50	19990318	956	3736.53	7619.83	3736.52	7620.12	440.9	5.00	3.2	1	1	2	2
RA990318	RA	4	R	51	19990318	1056	3738.37	7626.92	3738.39	7627.22	457.2	5.00	8.2	1	1	3	3
RA990318	RA	6	R	52	19990318	1031	3736.57	7622.35	3736.76	7622.49	411.3	5.00	11.2	1	1	3	3
RA990318	RA	7	R	53	19990318	938	3735.64	7619.49	3735.72	7619.76	436.1	5.00	18.5	1	1	2	2
RA990317	RA	10	R	54	19990317	949	3742.92	7633.45	3742.79	7633.28	353.1	5.00	3.0	2	2	0	2
RA990317	RA	12	R	55	19990317	1039	3744.13	7634.58	3744.15	7634.82	366.4	5.00	4.1	1	1	1	3
RA990317	RA	14	R	56	19990317	1027	3744.05	7635.06	3743.88	7635.12	327.9	5.00	14.5	2	2	1	3
RA990317	RA	16	R	57	19990317	1002	3743.32	7634.28	3743.58	7634.36	496.9	5.00	13.6	1	1	0	2
RA990317	RA	17	R	58	19990317	1121	3745.41	7638.47	3745.37	7638.77	461.6	5.00	4.0	1	1	1	3
RA990317	RA	19	R	59	19990317	1052	3744.85	7635.38	3745.03	7635.55	421.8	5.00	5.5	1	1	1	3
RA990317	RA	21	R	60	19990317	1104	3745.04	7635.78	3745.11	7636.08	473.8	5.00	10.1	1	1	1	3
RA990317	RA	22	R	60	19990317	1150	3746.33	7639.80	3746.51	7640.02	472.1	5.00	7.9	1	1	1	3
RA990317	RA	24	R	61	19990317	1322	3756.72	7651.56	3757.00	7651.58	519.7	5.00	2.7	1	1	1	3
RA990317	RA	26	R	62	19990317	1335	3757.48	7651.59	3757.75	7651.63	504.0	5.00	4.6	1	1	1	3
YK990302	YK	YK02	F	32	19990302	927	3713.68	7627.23	3713.70	7627.00	351.3	5.00	11.9	2	2	2	2
YK990302	YK	YK05	F	32	19990302	906	3714.25	7629.06	3714.25	7628.82	364.5	5.00	11.9	2	2	2	2
YK990302	YK	YK10	F	35	19990302	733	3718.53	7635.29	3718.76	7635.45	490.6	5.00	7.6	1	1	1	2
YK990301	YK	YK15	F	35	19990301	908	3723.20	7639.46	3723.43	7639.60	476.3	5.00	10.5	1	1	2	3
YK990301	YK	YK20	F	38	19990301	1414	3726.05	7642.52	3725.85	7642.25	552.7	5.00	6.8	2	1	2	5
YK990301	YK	YK25	F	38	19990301	1018	3728.90	7644.94	3728.79	7644.81	283.8	5.00	9.1	2	2	2	3
YK990301	YK	YK30	F	40	19990301	1115	3732.99	7649.59	3732.77	7649.65	417.7	5.00	8.8	1	1	2	3
YK990301	YK	YK35	F	40	19990301	1200	3732.94	7651.74	3733.18	7651.62	480.6	5.00	7.0	1	1	2	3
YK990301	YK	YK40	F	40	19990301	1232	3733.04	7653.05	3732.89	7653.39	586.5	5.00	3.9	1	6	1	4
YK990302	YK	2	R	30	19990302	944	3714.83	7626.67	3714.87	7626.40	416.7	5.00	3.2	2	2	2	3
YK990302	YK	4	R	31	19990302	801	3716.19	7631.70	3716.08	7631.53	329.0	5.00	4.0	2	2	2	2
YK990302	YK	6	R	32	19990302	847	3715.29	7630.91	3715.16	7630.80	293.2	5.00	9.8	2	2	2	2
YK990302	YK	7	R	33	19990302	1006	3714.64	7623.95	3714.65	7623.70	380.2	5.00	18.3	2	2	2	3
YK990302	YK	8	R	33	19990302	1022	3714.90	7622.78	3714.94	7622.53	386.9	5.00	17.9	2	2	3	3
YK990301	YK	10	R	34	19990301	832	3721.76	7638.75	3721.77	7638.91	243.7	5.00	2.2	1	1	2	2
YK990301	YK	12	R	35	19990301	808	3720.89	7637.35	3720.92	7637.61	398.8	5.00					

Table 5.
April 1999

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	
JA990407	JA	JA01	F	71	19990407	809	3659.68	7619.59	3659.59	7619.83	400.9	5.00	8.5	1	2	1	6
JA990407	JA	JA05	F	71	19990407	943	3656.76	7623.25	3656.91	7623.35	316.7	5.00	5.8	1	2	1	6
JA990407	JA	JA13	F	76	19990407	1131	3701.06	7630.35	3701.19	7630.58	424.3	5.00	11.6	1	2	0	7
JA990407	JA	JA17	F	75	19990407	1243	3705.02	7636.43	3705.16	7636.63	399.5	5.00	7.3	1	1	0	1
JA990407	JA	JA24	F	79	19990407	1310	3709.13	7638.54	3709.37	7638.57	447.0	5.00	6.4	1	1	1	1
JA990407	JA	JA27	F	78	19990407	1348	3712.30	7639.06	3712.45	7639.30	458.4	5.00	10.7	1	1	0	0
JA990408	JA	JA35	F	81	19990408	1035	3711.23	7645.74	3711.34	7645.88	294.6	5.00	7.4	1	2	0	6
JA990407	JA	JA40	F	81	19990407	1452	3713.60	7650.33	3713.62	7650.10	351.3	5.00	3.0	2	2	0	2
JA990407	JA	2	R	70	19990407	1046	3657.05	7627.25	3657.26	7627.38	436.4	5.00	2.4	1	2	1	7
JA990407	JA	4	R	71	19990407	1029	3656.85	7625.60	3656.77	7625.85	407.6	5.00	5.8	1	2	0	7
JA990407	JA	6	R	72	19990407	907	3659.73	7619.32	3659.62	7619.57	431.0	5.00	10.4	1	2	1	6
JA990407	JA	7	R	73	19990407	850	3659.63	7618.87	3659.52	7619.06	353.3	5.00	21.6	1	2	1	6
JA990407	JA	8	R	73	19990407	831	3659.67	7618.97	3659.51	7619.09	348.0	5.00	20.4	1	2	1	6
JA990407	JA	10	R	74	19990407	1220	3702.70	7637.32	3702.77	7637.60	444.6	5.00	3.0	1	1	0	1
JA990407	JA	11	R	75	19990407	1153	3701.61	7632.82	3701.69	7633.13	493.6	5.00	5.5	1	2	1	7
JA990407	JA	13	R	76	19990407	1118	3700.86	7629.94	3700.97	7630.16	391.4	5.00	9.1	1	2	0	0
JA990408	CL	16	R	77	19990408	810	3713.22	7640.07	3713.17	7640.32	390.9	5.00	2.3	1	2	0	6
JA990408	JA	18	R	78	19990408	826	3712.64	7640.44	3712.56	7640.58	259.2	5.00	7.3	1	2	1	6
JA990407	JA	19	R	79	19990407	1517	3711.93	7646.53	3711.84	7646.33	346.5	5.00	9.8	2	2	0	2
JA990407	JA	20	R	79	19990407	1432	3713.10	7647.86	3713.18	7648.20	537.3	5.00	12.2	1	1	0	1
JA990408	CL	22	R	80	19990408	1019	3711.51	7644.33	3711.41	7644.51	330.3	5.00	2.7	1	2	1	6
JA990408	CL	23	R	81	19990408	958	3712.36	7642.51	3712.27	7642.69	320.2	5.00	8.5	1	2	1	6
MB990409	MS	MS01	F	93	19990409	1345	3719.04	7625.72	3719.00	7626.01	446.7	5.00	5.8	1	1	2	2
MB990409	MW	MW02	F	93	19990409	1256	3721.95	7625.78	3722.05	7626.03	422.5	5.00	5.8	1	1	2	2
MB990409	MN	MN02	F	93	19990409	1140	3723.89	7624.33	3724.15	7624.49	539.6	5.00	6.7	1	1	3	1
MB990409	ME	ME02	F	93	19990409	910	3723.59	7620.26	3723.73	7620.41	345.3	5.00	4.9	1	2	1	7
MB990409	MB	MB02	F	91	19990409	825	3718.89	7620.03	3718.99	7620.25	382.1	5.00	5.2	1	2	2	7
MB990409	MB	MB03	F	91	19990409	1049	3720.87	7622.02	3721.02	7622.25	446.4	5.00	5.8	1	1	2	1
MB990409	MB	MB04	F	90	19990409	1415	3717.15	7622.10	3717.08	7621.83	430.1	5.00	3.0	2	2	3	3
MB990409	MB	2	R	90	19990409	1020	3720.55	7620.15	3720.34	7620.04	423.5	5.00	3.4	2	2	6	8
MB990409	MB	3	R	90	19990409	1104	3721.79	7621.80	3721.66	7621.64	342.2	5.00	1.2	2	2	3	1
MB990409	MB	4	R	90	19990409	1003	3722.07	7620.43	3721.83	7620.60	514.2	5.00	1.2	2	1	7	7
MB990409	MB	5	R	91	19990409	810	3717.82	7618.85	3717.98	7619.13	518.4	5.00	6.1	1	2	2	7
MB990409	MB	7	R	91	19990409	1325	3719.66	7623.61	3719.91	7623.55	472.1	5.00	5.8	1	1	2	1
MB990409	MB	8	R	91	19990409	1035	3719.90	7621.06	3720.08	7621.35	552.5	5.00	5.2	1	1	2	1
MB990409	MN	11	R	92	19990409	1212	3725.46	7627.03	3725.69	7627.09	435.8	5.00	2.7	1	1	2	7
MB990409	ME	12	R	92	19990409	938	3723.89	7620.81	3724.06	7620.95	380.1	5.00	3.0	1	1	2	1
MB990409	MN	14	R	93	19990409	1125	3723.12	7624.17	3722.92	7624.03	427.3	5.00	6.7	2	2	3	1
MB990409	MN	16	R	93	19990409	1159	3724.80	7625.48	3724.84	7625.81	506.7	5.00	4.3	1	1	3	3
RA990414	RA	RA02	F	53	19990414	1150	3735.77	7621.15	3735.88	7621.37	391.4	5.00	18.0	1	6	3	4
RA990414	RA	RA10	F	53	19990414	1315	3737.96	7628.38	3737.97	7628.67	440.9	5.00	18.3	1	2	3	5
RA990414	RA	RA15	F	57	19990414	1417	3739.93	7633.02	3740.09	7633.10	320.4	5.00	13.7	1	2	3	6
RA990415	RA	RA20	F	57	19990415	944	3743.83	7634.84	3744.06	7635.04	523.4	5.00	16.2	1	1	3	0
RA990415	RA	RA25	F	59	19990415	1132	3747.73	7641.03	3747.59	7640.90	326.0	5.00	7.0	2	2	0	2
RA990415	RA	RA30	F	62	19990415	1212	3751.40	7645.44	3751.67	7645.67	610.2	5.00	6.1	1	1	0	2
RA990415	RA	RA35	F	62	19990415	1325	3754.37	7648.14	3754.54	7648.40	505.2	5.00	5.5	1	1	0	3
RA990415	RA	RA40	F	62	19990415	1357	3758.21	7651.79	3758.04	7651.73	327.9	5.00	3.4	2	2	1	2
RA990414	RA	2	R	50	19990414	1228	3735.66	7624.60	3735.85	7624.67	367.8	5.00	2.4	1	2	3	3
RA990414	RA	3	R	51	19990414	1115	3734.92	7620.75	3734.96	7621.03	431.7	5.00	7.9	1	1	3	3
RA990414	RA	5	R	52	19990414	1200	3736.02	7621.71	3736.06	7621.94	357.1	5.00	9.4	1	2	3	3
RA990414	RA	7	R	53	19990414	1133	3735.55	7621.59	3735.73	7621.73	395.6	5.00	16.5	1	1	3	3
RA990415	RA	10	R	54	19990415	929	3742.58	7633.27	3742.80	7633.47	508.4	5.00	2.6	1	1	0	1
RA990414	RA	12	R	55	19990414	1345	3739.05	7633.28	3739.27	7633.37	430.0	5.00	6.4	1	2	3	6
RA990415	RA	14	R	56	19990415	957	3743.95	7635.24	3743.78	7635.10	380.1	5.00	10.4	1	2	0	1
RA990414	RA	15	R	57	19990414	1400	3739.28	7633.11	3739.36	7633.12	149.0	5.00	14.6	1	2	3	6
RA990415	RA	17	R	58	19990415	1102	3747.00	7639.19	3747.14	7639.50	537.6	5.00	1.8	1	1	0	2
RA990415	RA	19	R	59	19990415	1015	3744.73	7636.86	3744.96	7637.09	551.1	5.00	2.7	1	1	0	1
RA990415	RA	21	R	60	19990415	1040	3746.51	7639.97	3746.76	7640.15	537.9	5.00	7.3	1	1	0	2
RA990415	RA	22	R	60	19990415	1116	3747.65	7640.62	3747.84	7640.91	563.9	5.00	8.5	1	1	0	2
RA990415	RA	24	R	61	19990415	1312	3754.41	7647.58	3754.32	7647.38	346.5	5.00	2.1	2	2	0	2
RA990415	RA	25	R	62	19990415	1246	3752.19	7646.13	3752.05	7646.01	317.0	5.00	6.7	2	2	0	3
YK990406	YK	YK02	F	32	19990406	827	3713.64	7627.37	3713.66	7627.06	472.3	5.00	11.0	2	2	0	2
YK990406	YK	YK05	F	32	19990406	736	3714.09	7629.15	3714.05	7628.82	506.7	5.00	12.9	2	1	0	7
YK990405	YK	YK10	F	35	19990405	744	3718.27	7635.14	3718.38	7635.29	305.7	5.00	8.2	1	2	2	6
YK990405	YK	YK15	F	35	19990405	840	3723.22	7639.37	3723.35	7639.57	387.7	5.00	8.7	1	2	2	7
YK990405	YK	YK20	F	38	19990405	949	3725.99	7642.60	3726.15	7642.81	435.5	5.00	6.1	1	2	2	7
YK990405	YK	YK25	F	38	19990405	1030	3729.06	7645.17	3729.19	7645.41	436.9	5.00	7.9	1	1	2	1
YK990405	YK	YK30	F	40	19990405	1313	3732.67	7649.67	3732.85	7649.62	342.1	5.00	6.1	2	2	1	2
YK990405	YK	YK35	F	40	19990405	1241	3733.17	7651.69	3733.00	7651.80	356.6	5.00	5.8	2	2	1	1
YK990405	YK	YK40	F	40	19990405	1218	3732.85	7653.49	3732.96	7653.25	417.6	5.00	3.4	2	2	1	1
YK990405	YK	2	R	30	19990405	1511	3717.22	7633.01	3717.04	7632.84	421.8	5.00	2.4	2	2	1	3
YK990406	YK	3	R	31	19990406	752	3714.36	7627.99	3714.41	7627.70	450.1	5.00	8.6	2	2	0	8
YK990406	YK	6	R	32	19990406	848	3713.87	7625.28	3713.87	7624.98	455.7	5.00	10.4	2	2	0	1
YK990406	YK	7	R	33	19990406	809	3713.90	7627.28	3713.85	7626.99							

Table 6.
May 1999

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		
CP990519	CP	CP01	F	111	19990519	1240	3752.64	7549.34	3752.84	7549.27	385.5	5.00	5.8	1	1	3	1	
CP990519	CP	CP03	F	113	19990519	1146	3748.85	7550.05	3748.99	7549.87	376.9	5.00	27.7	1	1	3	1	
CP990519	CP	CP05	F	112	19990519	1015	3745.13	7553.42	3745.28	7553.53	324.3	5.00	16.2	1	2	3	7	
CP990519	CP	1	R	110	19990519	1446	3746.93	7553.47	3747.06	7553.39	269.8	5.00	2.5	1	1	3	3	
CP990519	CP	2	R	110	19990519	1126	3747.26	7549.87	3747.08	7549.84	336.6	5.00	2.3	2	2	2	1	
CP990519	CP	3	R	110	19990519	1411	3748.92	7548.07	3749.00	7547.84	379.5	5.00	2.4	1	1	3	2	
CP990519	CP	4	R	110	19990519	1315	3753.07	7547.46	3752.95	7547.57	278.1	5.00	1.5	2	2	3	1	
CP990519	CP	5	R	111	19990519	1113	3747.30	7550.51	3747.48	7550.44	350.1	5.00	5.2	1	6	2	8	
CP990519	CP	7	R	111	19990519	1341	3751.29	7545.71	3751.09	7545.65	381.6	5.00	3.4	2	2	3	1	
CP990519	CP	8	R	111	19990519	1257	3754.31	7548.00	3754.51	7547.88	413.0	5.00	4.0	1	1	3	1	
CP990519	CP	9	R	112	19990519	1035	3745.22	7552.94	3745.06	7553.08	364.9	5.00	10.4	2	1	2	7	
CP990519	CP	12	R	112	19990519	1219	3750.64	7548.75	3750.79	7548.56	400.7	5.00	11.2	1	1	2	1	
CP990519	CP	13	R	113	19990519	1052	3745.81	7551.80	3745.86	7551.55	390.9	5.00	16.6	1	2	2	7	
CP990519	CP	16	R	113	19990519	1203	3749.54	7549.88	3749.74	7549.87	370.9	5.00	15.2	1	1	3	1	
JA990507	JA	JA01	F	71	19990507	854	3659.83	7619.40	3659.67	7619.59	413.7	5.00	4.7	1	2	3	7	
JA990507	JA	JA05	F	71	19990507	1004	3656.74	7623.19	3656.89	7623.36	379.4	5.00	4.9	1	2	3	7	
JA990506	JA	JA13	F	76	19990506	920	3701.37	7630.54	3701.51	7630.74	399.5	5.00	8.2	1	2	1	6	
JA990506	JA	JA17	F	75	19990506	1013	3704.99	7636.70	3705.18	7636.82	396.5	5.00	7.0	1	2	1	6	
JA990506	JA	JA24	F	79	19990506	1056	3709.10	7638.46	3709.30	7638.44	371.8	5.00	11.6	1	2	1	6	
JA990506	JA	JA27	F	78	19990506	1208	3712.48	7639.31	3712.66	7639.52	461.5	5.00	9.1	1	2	1	7	
JA990506	JA	JA35	F	81	19990506	1250	3711.23	7645.77	3711.38	7645.97	411.7	5.00	7.5	1	2	3	7	
JA990506	JA	JA40	F	81	19990506	1400	3713.68	7649.36	3713.90	7649.63	466.5	5.00	5.8	1	1	2	1	
JA990506	JA	1	R	70	19990506	1617	3655.62	7627.41	3655.58	7627.14	416.7	5.00	3.0	2	1	2	7	
JA990507	JA	4	R	71	19990507	1039	3656.63	7624.90	3656.49	7624.66	447.4	5.00	7.4	2	1	2	7	
JA990507	JA	6	R	72	19990507	1020	3657.41	7623.58	3657.39	7623.83	381.5	5.00	9.1	1	2	3	7	
JA990507	JA	7	R	73	19990507	935	3659.49	7619.16	3659.36	7619.33	353.1	5.00	19.0	1	2	3	7	
JA990507	JA	8	R	73	19990507	920	3659.57	7618.99	3659.43	7619.20	411.1	5.00	21.2	1	2	3	7	
JA990506	JA	9	R	74	19990506	937	3700.41	7631.88	3700.56	7632.05	379.4	5.00	2.7	1	2	1	6	
JA990506	JA	12	R	75	19990506	1025	3705.02	7636.48	3705.16	7636.64	355.5	5.00	6.2	1	2	1	6	
JA990506	JA	13	R	76	19990506	901	3700.44	7628.55	3700.54	7628.77	382.1	5.00	10.7	1	2	1	6	
JA990506	JA	16	R	77	19990506	1154	3712.11	7639.93	3711.90	7639.76	467.0	5.00	3.4	2	1	1	7	
JA990506	JA	18	R	78	19990506	1141	3711.37	7639.88	3711.52	7640.11	446.4	5.00	4.7	1	2	1	7	
JA990506	JA	19	R	79	19990506	1120	3709.33	7638.32	3709.53	7638.22	400.5	5.00	12.2	1	2	1	6	
JA990506	JA	20	R	79	19990506	1307	3711.70	7646.38	3711.86	7646.58	424.5	5.00	9.1	1	2	3	7	
JA990506	JA	21	R	80	19990506	1234	3710.97	7643.75	3710.85	7643.96	388.8	5.00	2.8	1	2	3	7	
JA990506	JA	24	R	81	19990506	1344	3712.37	7647.27	3712.59	7647.50	536.9	5.00	6.1	1	1	2	1	
RA990510	RA	RA02	F	53	19990510	1125	3735.83	7621.05	3735.90	7621.34	459.2	5.00	16.9	1	2	2	6	
RA990510	RA	RA10	F	53	19990510	1243	3737.93	7628.38	3737.95	7628.63	381.5	5.00	19.1	1	2	1	6	
RA990510	RA	RA15	F	57	19990510	1407	3740.01	7633.01	3740.18	7633.10	343.4	5.00	14.0	1	2	1	7	
RA990511	RA	RA20	F	57	19990511	1012	3743.83	7634.87	3744.04	7635.06	484.5	5.00	15.5	1	2	2	5	
RA990511	RA	RA25	F	59	19990511	1106	3747.55	7640.53	3747.70	7640.75	434.6	5.00	8.5	1	2	2	5	
RA990511	RA	RA30	F	62	19990511	1216	3751.30	7645.33	3751.50	7645.40	385.5	5.00	5.6	1	2	2	5	
RA990511	RA	RA35	F	62	19990511	1238	3754.12	7647.71	3754.23	7647.93	391.4	5.00	7.1	1	2	2	5	
RA990511	RA	RA40	F	62	19990511	1346	3757.98	7651.71	3758.20	7651.73	408.8	5.00	3.0	1	2	2	6	
RA990510	RA	1	R	50	19990510	1111	3736.37	7619.99	3736.37	7620.25	394.9	5.00	3.9	1	2	2	6	
RA990510	RA	4	R	51	19990510	1305	3739.68	7628.38	3739.53	7628.16	434.6	5.00	7.0	2	1	1	7	
RA990510	RA	5	R	52	19990510	1143	3736.76	7622.54	3736.89	7622.75	399.7	5.00	10.2	1	2	1	6	
RA990510	RA	8	R	53	19990510	1220	3737.57	7624.39	3737.72	7624.52	340.9	5.00	1.6	1	2	1	6	
RA990510	RA	10	R	54	19990510	1346	3737.37	7632.40	3737.55	7632.55	403.9	5.00	2.2	1	3	1	7	
RA990510	RA	11	R	55	19990510	1332	3737.32	7631.94	3737.49	7632.17	470.4	5.00	5.1	1	2	1	7	
RA990511	RA	14	R	56	19990511	942	3742.69	7633.91	3742.89	7634.05	427.3	5.00	9.4	1	2	2	5	
RA990511	RA	15	R	57	19990511	957	3742.98	7633.90	3743.19	7634.10	493.7	5.00	16.8	1	2	2	5	
RA990511	RA	18	R	58	19990511	1202	3750.63	7645.05	3750.80	7645.23	417.1	5.00	2.5	1	2	2	5	
RA990511	RA	20	R	59	19990511	1142	3748.39	7642.27	3748.51	7642.51	427.0	5.00	5.8	1	2	1	5	
RA990511	RA	21	R	60	19990511	1025	3744.84	7635.92	3745.01	7636.09	407.3	5.00	11.6	1	2	2	5	
RA990511	RA	22	R	60	19990511	1043	3745.63	7636.60	3745.69	7636.78	295.1	5.00	8.8	1	2	2	5	
RA990511	RA	24	R	61	19990511	1314	3756.32	7651.34	3756.50	7651.47	387.6	5.00	2.4	1	2	0	6	
RA990511	RA	26	R	62	19990511	1252	3754.34	7648.19	3754.47	7648.43	436.9	5.00	4.9	1	2	1	5	
YK990505	YK	YK02	F	32	19990505	812	3713.68	7626.97	3713.71	7627.23	398.8	5.00	11.0	1	2	2	7	
YK990505	YK	YK05	F	32	19990505	737	3714.18	7629.21	3714.13	7628.91	465.0	5.00	12.2	2	1	2	7	
YK990504	YK	YK10	F	35	19990504	824	3718.44	7635.20	3718.58	7635.37	366.0	5.00	7.1	1	2	1	7	
YK990504	YK	YK15	F	35	19990504	932	3723.20	7639.31	3723.34	7639.50	388.0	5.00	7.1	1	2	1	7	
YK990504	YK	YK20	F	38	19990504	1436	3726.12	7642.66	3725.98	7642.51	345.3	5.00	7.0	2	6	1	4	
YK990504	YK	YK25	F	38	19990504	1351	3729.11	7645.30	3728.96	7645.20	316.7	5.00	7.3	2	2	0	3	
YK990504	YK	YK30	F	40	19990504	1135	3732.92	7649.61	3732.67	7649.64	465.5	5.00	4.3	1	1	1	1	
YK990504	YK	YK35	F	40	19990504	1205	3733.05	7651.76	3733.26	7651.65	423.5	5.00	6.7	1	1	0	1	
YK990504	YK	YK40	F	40	19990504	1235	3733.07	7652.99	3732.96	7653.26	458.0	5.00	3.1	1	1	1	0	1
YK990505	YK	1	R	30	19990505	900	3713.84	7623.66	3713.81	7623.94	428.9	5.00	2.7	1	2	2	7	
YK990504	YK	4	R	31	19990504	735	3716.87	7632.79	3717.00	7633.00	399.7	5.00	6.6	1	2	1	7	
YK990504	YK	6	R	32	19990504	1550	3714.40	7629.26	3714.43	7629.49	353.7	5.00	9.3	1	2	2	6	
YK990505	YK	6	R	32	19990505	728	3714.38	7629.17	3714.40	7629.43	396.6	5.00	9.2	1	1	2	1	
YK990505	YK	7	R	33	19990505	830	3714.16	7625.39	3714.22	7625.13	410.3	5.00	14.6	2	1	2	7	
YK990505	YK	8	R	33	19990505	755	3714.08	7627.09	3714.13	7626.81	435.3	5.00	13.1	2	1	2	7	
YK990504	YK	9	R	34	19990504	749	3717.19	7633.1										

Table 7.
June 1999

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	
GW990611	GW	1	R	121	19990611	1147	3748.85	7618.23	3749.05	7618.23	370.6	5.00	2.7	1	2	1	6
GW990611	GW	2	R	121	19990611	1130	3748.86	7618.13	3748.63	7618.06	439.3	5.00	2.8	2	1	1	5
GW990611	GW	4	R	121	19990611	1055	3751.20	7619.79	3751.04	7619.64	373.9	5.00	4.9	2	1	2	5
GW990611	GW	5	R	122	19990611	1013	3749.40	7618.70	3749.56	7618.89	413.7	5.00	4.9	1	2	2	5
GW990611	GW	6	R	122	19990611	1000	3749.55	7618.14	3749.36	7617.99	419.4	5.00	6.7	2	1	1	5
GW990611	GW	7	R	122	19990611	1027	3749.98	7619.14	3750.19	7619.25	423.5	5.00	7.3	1	2	2	5
JA990602	JA	JA01	F	71	19990602	1056	3659.70	7619.48	3659.58	7619.75	466.5	5.00	9.1	1	1	2	3
JA990602	JA	JA05	F	71	19990602	1039	3656.92	7622.67	3656.97	7622.98	479.9	5.00	6.1	1	1	2	3
JA990601	JA	JA13	F	76	19990601	1210	3701.34	7630.46	3701.47	7630.74	488.8	5.00	8.2	1	1	2	3
JA990601	JA	JA17	F	75	19990601	1300	3705.06	7636.74	3705.33	7636.87	537.9	5.00	6.1	1	1	2	3
JA990601	JA	JA24	F	79	19990601	1355	3709.27	7638.42	3709.54	7638.43	500.5	5.00	11.0	1	1	2	3
JA990601	JA	JA27	F	78	19990601	1500	3712.54	7639.39	3712.69	7639.63	458.4	5.00	8.7	1	6	3	4
JA990601	JA	JA35	F	81	19990601	1557	3711.27	7645.80	3711.46	7645.85	360.2	5.00	7.3	1	2	3	5
JA990601	JA	JA40	F	81	19990601	1623	3713.70	7649.09	3713.78	7649.33	393.5	5.00	5.5	1	2	3	5
JA990602	JA	1	R	70	19990602	1019	3659.34	7621.55	3659.46	7621.34	388.8	5.00	3.7	2	2	2	3
JA990601	JA	3	R	71	19990601	1103	3655.37	7625.04	3656.02	7625.27	446.4	5.00	4.3	1	1	2	3
JA990602	JA	5	R	72	19990602	1111	3659.61	7619.61	3659.44	7619.85	481.8	5.00	11.0	1	1	2	2
JA990602	JA	7	R	73	19990602	1158	3659.12	7619.76	3659.22	7619.60	305.6	5.00	19.5	2	2	2	2
JA990602	JA	8	R	73	19990602	1142	3659.22	7619.87	3659.34	7619.72	318.4	5.00	17.1	2	2	2	2
JA990601	JA	9	R	74	19990601	1139	3700.99	7628.96	3701.22	7629.13	498.3	5.00	3.4	1	1	2	3
JA990601	JA	12	R	75	19990601	1233	3702.48	7633.75	3702.64	7633.99	469.9	5.00	6.4	1	1	2	3
JA990601	JA	13	R	76	19990601	1153	3701.00	7630.23	3701.15	7630.51	508.1	5.00	11.3	1	1	2	3
JA990601	JA	15	R	77	19990601	1322	3705.06	7639.26	3705.27	7639.08	475.6	5.00	2.1	1	1	2	3
JA990601	JA	17	R	78	19990601	1446	3711.66	7639.04	3711.86	7639.21	451.7	5.00	3.5	1	6	3	4
JA990601	JA	19	R	79	19990601	1410	3709.56	7638.12	3709.80	7638.03	465.3	5.00	9.8	1	1	2	3
JA990601	JA	20	R	79	19990601	1426	3709.50	7638.29	3709.76	7638.23	490.3	5.00	10.1	1	1	2	3
JA990601	JA	21	R	80	19990601	1543	3711.15	7644.67	3711.18	7644.92	383.8	5.00	4.0	1	2	3	5
JA990601	JA	24	R	81	19990601	1528	3711.32	7643.73	3711.16	7643.91	403.3	5.00	5.5	1	2	3	5
PK990608	PK	PK02	F	106	19990608	1220	3731.08	7619.51	3731.18	7619.78	450.0	5.00	7.6	1	1	1	1
PK990608	PK	PK03	F	106	19990608	1245	3731.98	7623.86	3732.05	7624.13	430.1	5.00	5.9	1	1	1	1
PK990608	PK	PK04	F	106	19990608	1329	3730.90	7625.89	3731.00	7626.15	436.2	5.00	3.9	1	1	1	1
PK990608	PK	1	R	105	19990608	1346	3730.88	7626.28	3730.88	7626.61	501.2	5.00	3.2	1	1	1	1
PK990608	PK	2	R	105	19990608	1307	3731.09	7624.52	3731.36	7624.54	501.2	5.00	3.0	1	1	1	1
PK990608	PK	5	R	106	19990608	1205	3730.86	7619.40	3730.72	7619.16	447.4	5.00	5.4	1	1	1	1
PK990608	PK	8	R	106	19990608	1137	3732.33	7619.06	3732.08	7619.06	463.3	5.00	4.6	1	1	1	1
RA990608	RA	RA02	F	53	19990608	1525	3735.81	7621.11	3735.89	7621.41	479.2	5.00	16.8	1	1	2	2
RA990610	RA	RA10	F	53	19990610	907	3737.92	7628.55	3737.92	7628.85	455.7	5.00	18.3	1	1	3	3
RA990610	RA	RA15	F	57	19990610	944	3740.15	7633.06	3740.40	7633.09	465.5	5.00	14.9	1	1	4	3
RA990610	RA	RA20	F	57	19990610	1044	3743.88	7634.98	3744.08	7635.17	469.7	5.00	14.7	1	2	3	5
RA990610	RA	RA25	F	59	19990610	1145	3747.46	7640.69	3747.62	7640.88	413.7	5.00	8.2	1	2	3	5
RA990610	RA	RA30	F	62	19990610	1232	3751.37	7645.42	3751.57	7645.59	451.7	5.00	5.3	1	2	2	5
RA990610	RA	RA35	F	62	19990610	1255	3754.39	7648.17	3754.52	7648.41	436.9	5.00	5.2	1	2	2	5
RA990610	RA	RA40	F	62	19990610	1343	3758.02	7651.70	3758.25	7651.80	452.4	5.00	4.0	1	2	2	5
RA990608	RA	1	R	50	19990608	1556	3735.09	7623.63	3735.02	7623.41	358.4	5.00	3.1	2	2	3	5
RA990608	RA	4	R	51	19990608	1453	3736.76	7618.38	3736.79	7618.68	459.0	5.00	6.1	1	1	2	3
RA990608	RA	5	R	52	19990608	1510	3735.23	7619.48	3735.31	7619.78	479.2	5.00	12.3	1	1	2	3
RA990608	RA	8	R	53	19990608	1538	3735.86	7621.85	3735.98	7622.14	493.4	5.00	18.9	1	1	2	3
RA990610	RA	9	R	54	19990610	1027	3742.28	7635.12	3742.47	7635.26	411.3	5.00	3.4	1	2	3	5
RA990610	RA	12	R	55	19990610	929	3738.99	7631.78	3739.19	7631.93	435.0	5.00	6.2	1	1	4	3
RA990610	RA	14	R	56	19990610	1012	3741.24	7633.65	3741.46	7633.75	455.0	5.00	9.4	1	6	3	4
RA990610	RA	16	R	57	19990610	956	3740.35	7633.12	3740.14	7633.12	389.1	5.00	15.8	2	2	3	5
RA990610	RA	18	R	58	19990610	1212	3748.75	7643.51	3748.92	7643.70	427.2	5.00	3.0	1	2	3	5
RA990610	RA	20	R	59	19990610	1159	3748.08	7641.79	3748.20	7642.04	440.0	5.00	4.8	1	2	3	5
RA990610	RA	21	R	60	19990610	1104	3745.90	7637.06	3745.76	7636.87	388.0	5.00	11.3	2	1	2	5
RA990610	RA	22	R	60	19990610	1133	3747.17	7640.15	3747.31	7640.39	447.4	5.00	9.1	1	2	3	5
RA990610	RA	24	R	61	19990610	1330	3756.68	7651.67	3756.92	7651.69	445.8	5.00	2.1	1	2	2	5
RA990610	RA	26	R	62	19990610	1317	3756.42	7651.13	3756.63	7651.22	412.4	5.00	4.3	1	2	2	5
YK990602	YK	YK02	F	32	19990602	1447	3713.65	7626.95	3713.68	7627.21	398.8	5.00	10.7	1	2	1	5
YK990602	YK	YK05	F	32	19990602	1521	3714.09	7628.92	3714.12	7629.16	368.7	5.00	12.2	1	2	1	5
YK990602	YK	YK10	F	35	19990602	1634	3718.31	7635.24	3718.50	7635.32	372.4	5.00	8.5	1	2	1	6
YK990603	YK	YK15	F	35	19990603	828	3723.12	7639.35	3723.24	7639.46	278.1	5.00	8.6	1	2	3	7
YK990603	YK	YK20	F	38	19990603	900	3725.87	7642.34	3726.02	7642.45	324.3	5.00	6.5	1	2	3	7
YK990603	YK	YK25	F	38	19990603	956	3728.75	7644.84	3728.93	7644.97	387.6	5.00	7.0	1	2	2	7
YK990603	YK	YK30	F	40	19990603	1115	3732.97	7649.59	3732.77	7649.65	381.6	5.00	7.6	1	1	2	7
YK990603	YK	YK35	F	40	19990603	1145	3732.86	7651.79	3733.07	7651.68	423.5	5.00	3.4	1	2	2	7
YK990603	YK	YK40	F	40	19990603	1218	3732.81	7653.44	3732.76	7653.70	405.6	5.00	6.7	1	1	1	1
YK990602	YK	1	R	30	19990602	1400	3715.32	7624.09	3715.30	7624.31	336.2	5.00	3.7	1	1	1	3
YK990602	YK	3	R	31	19990602	1340	3715.26	7623.10	3715.35	7622.82	456.8	5.00	4.9	2	2	2	5
YK990602	YK	5	R	32	19990602	1425	3713.95	7625.04	3713.94	7625.27	349.8	5.00	11.3	1	2	2	5
YK990602	YK	7	R	33	19990602	1507	3713.86	7628.28	3713.91	7628.52	376.1	5.00	15.8	1	1	1	5
YK990602	YK	8	R	33	19990602	1539	3714.05	7629.49	3713.96	7629.20	471.0	5.00	18.0	2	1	1	5
YK990603	YK	10	R	34	19990603	801	3720.03	7637.50	3720.19	7637.66	383.4	5.00	1.8	1	2	2	7
YK990602	YK	11	R	35	19990602	1622	3717.89	7635.64	3718.02	7635.78	321.3	5.00	5.5	1	2	1	6
YK990602	YK	13	R	36	19990602	1654	3717.11	7634									

Table 8.
July 1999

System+ Cruise Number	Stat# or River		Stat. Type	Stratum Code	Station Date	Station 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			
CP990715	CP	CP01	F	111	19990715	1208	3752.74	7549.29	3752.97	7549.14	483.3	5.00	5.8	1	1	0	2
CP990715	CP	CP03	F	113	19990715	1135	3749.07	7549.91	3749.27	7549.70	489.0	5.00	25.6	1	1	0	2
CP990715	CP	CP05	F	112	19990715	941	3745.13	7553.33	3745.27	7553.10	435.1	5.00	10.4	1	1	0	1
CP990715	CP	1	R	110	19990715	1404	3748.84	7549.15	3749.01	7548.95	437.6	5.00	3.0	1	1	1	3
CP990715	CP	2	R	110	19990715	1424	3748.91	7547.16	3748.81	7547.44	463.9	5.00	2.7	2	2	1	3
CP990715	CP	3	R	110	19990715	1332	3751.19	7543.99	3751.50	7544.06	584.2	5.00	2.7	2	2	1	3
CP990715	CP	4	R	110	19990715	1300	3752.93	7545.25	3752.83	7545.47	382.1	5.00	3.4	2	2	1	3
CP990715	CP	6	R	111	19990715	1120	3748.34	7550.67	3748.59	7550.50	530.3	5.00	6.4	1	1	0	2
CP990715	CP	7	R	111	19990715	1236	3752.75	7548.61	3752.95	7548.43	460.5	5.00	4.3	1	1	0	2
CP990715	CP	8	R	111	19990715	1219	3753.14	7549.07	3753.38	7548.94	486.6	5.00	4.6	1	1	0	2
CP990715	CP	10	R	112	19990715	1022	3745.40	7551.30	3745.61	7551.16	443.4	5.00	11.0	1	1	0	1
CP990715	CP	11	R	112	19990715	1040	3746.88	7551.61	3747.11	7551.48	469.7	5.00	11.6	1	1	0	1
CP990715	CP	13	R	113	19990715	958	3745.18	7551.74	3745.37	7551.60	411.3	5.00	14.0	1	1	0	1
CP990715	CP	15	R	113	19990715	1103	3747.51	7551.14	3747.37	7551.26	317.0	5.00	15.5	2	2	0	1
JA990716	JA	JA01	F	71	19990716	918	3659.77	7619.52	3659.65	7619.79	466.5	5.00	4.6	1	1	1	1
JA990716	JA	JA05	F	71	19990716	1142	3656.71	7623.21	3656.81	7623.49	463.9	5.00	5.5	1	1	1	3
JA990716	JA	JA13	F	76	19990716	1318	3701.27	7630.49	3701.41	7630.80	537.6	5.00	14.1	1	1	1	3
JA990716	JA	JA17	F	75	19990716	1429	3704.95	7636.36	3705.13	7636.54	431.3	5.00	6.8	1	1	1	3
JA990719	JA	JA24	F	79	19990719	1016	3709.04	7638.48	3709.21	7638.51	318.3	5.00	8.9	1	2	1	7
JA990719	JA	JA27	F	78	19990719	1111	3712.37	7639.14	3712.48	7639.29	305.7	5.00	8.5	1	2	1	7
JA990719	JA	JA35	F	81	19990719	1203	3711.04	7645.64	3711.12	7645.81	297.7	5.00	8.5	1	2	1	7
JA990719	JA	JA40	F	81	19990719	1332	3713.55	7650.33	3713.55	7650.57	364.5	5.00	2.4	1	1	2	1
JA990716	JA	2	R	70	19990716	1237	3655.96	7627.78	3655.76	7627.81	373.4	5.00	3.0	2	2	1	3
JA990716	JA	4	R	71	19990716	1223	3657.23	7626.57	3657.48	7626.86	639.2	5.00	4.8	1	1	1	3
JA990716	JA	5	R	72	19990716	1159	3657.22	7623.50	3657.21	7623.32	274.0	5.00	10.4	2	2	2	2
JA990716	JA	7	R	73	19990716	1111	3659.32	7619.47	3659.39	7619.36	211.5	5.00	18.9	2	2	2	2
JA990716	JA	8	R	73	19990716	1059	3659.28	7619.55	3659.37	7619.47	206.3	5.00	19.2	2	2	2	2
JA990716	JA	10	R	74	19990716	1408	3703.89	7634.63	3704.09	7634.81	460.5	5.00	3.7	1	1	1	3
JA990716	JA	12	R	75	19990716	1355	3702.88	7632.64	3703.01	7632.91	475.6	5.00	5.1	1	1	2	3
JA990716	JA	14	R	76	19990716	1338	3702.14	7631.92	3702.30	7632.19	506.0	5.00	11.3	1	1	1	3
JA990719	JA	15	R	77	19990719	1034	3710.12	7637.52	3710.30	7637.54	334.9	5.00	2.5	2	1	1	7
JA990719	JA	17	R	78	19990719	1049	3710.27	7638.35	3710.01	7638.59	485.6	5.00	4.0	1	2	1	7
JA990719	JA	19	R	79	19990719	1220	3711.88	7646.45	3711.92	7646.60	239.6	5.00	8.7	1	2	1	7
JA990719	JA	20	R	79	19990719	1258	3712.61	7647.34	3712.72	7647.50	317.2	5.00	19.8	1	2	2	7
JA990719	JA	21	R	80	19990719	1145	3711.22	7645.17	3711.30	7645.33	284.7	5.00	3.3	1	2	1	7
JA990719	JA	23	R	81	19990719	1313	3713.13	7648.75	3713.15	7648.97	336.2	5.00	4.6	1	6	2	8
RA990708	RA	RA02	F	53	19990708	1300	3735.71	7620.94	3735.77	7621.13	309.3	5.00	17.4	1	2	2	7
RA990708	RA	RA10	F	53	19990708	1445	3737.97	7628.56	3737.91	7628.81	395.7	5.00	16.2	1	2	2	6
RA990709	RA	RA15	F	57	19990709	933	3740.04	7633.07	3740.25	7633.13	399.7	5.00	13.5	1	6	2	4
RA990709	RA	RA20	F	57	19990709	1010	3743.75	7634.86	3743.94	7635.01	419.4	5.00	13.6	1	2	2	5
RA990709	RA	RA25	F	59	19990709	1131	3747.32	7640.44	3747.47	7640.61	379.4	5.00	9.1	1	2	2	5
RA990709	RA	RA30	F	62	19990709	1200	3751.21	7645.29	3751.40	7645.41	396.5	5.00	5.2	1	2	2	6
RA990709	RA	RA35	F	62	19990709	1233	3754.31	7648.02	3754.44	7648.24	411.9	5.00	5.5	1	2	2	6
RA990709	RA	RA40	F	62	19990709	1322	3757.56	7651.56	3757.77	7651.62	399.7	5.00	4.6	1	2	2	6
RA990708	RA	1	R	50	19990708	1607	3736.66	7620.15	3736.65	7619.92	349.8	5.00	2.0	2	2	2	1
RA990708	RA	4	R	51	19990708	1429	3739.35	7628.36	3739.14	7628.48	429.7	5.00	5.5	2	1	2	7
RA990708	RA	6	R	52	19990708	1345	3738.00	7625.66	3738.14	7625.91	459.9	5.00	11.0	1	2	3	7
RA990708	RA	7	R	53	19990708	1323	3736.85	7623.35	3736.90	7623.60	390.9	5.00	16.2	1	2	3	7
RA990709	RA	9	R	54	19990709	919	3740.01	7634.33	3740.18	7634.52	427.2	5.00	3.4	1	6	1	4
RA990709	RA	11	R	55	19990709	947	3741.09	7632.69	3741.29	7632.79	400.5	5.00	6.1	1	6	2	4
RA990708	RA	13	R	56	19990708	1519	3738.57	7632.07	3738.39	7631.87	451.1	5.00	11.6	2	2	2	1
RA990708	RA	15	R	57	19990708	1500	3737.68	7630.45	3737.79	7630.68	404.5	5.00	18.0	1	6	2	8
RA990709	RA	17	R	58	19990709	1139	3748.57	7643.04	3748.67	7643.27	395.4	5.00	3.4	1	2	1	5
RA990709	RA	19	R	59	19990709	1039	3746.77	7639.80	3746.89	7640.01	388.8	5.00	8.2	1	2	2	5
RA990709	RA	21	R	60	19990709	1100	3746.95	7640.01	3747.06	7640.26	431.0	5.00	8.2	1	2	2	5
RA990709	RA	22	R	60	19990709	1111	3747.06	7640.28	3747.25	7640.44	427.8	5.00	8.8	1	2	2	5
RA990709	RA	24	R	61	19990709	1249	3754.64	7647.31	3754.47	7647.13	417.1	5.00	1.8	2	1	1	6
RA990709	RA	25	R	62	19990709	1215	3752.62	7646.43	3752.82	7646.57	427.3	5.00	7.4	1	2	1	6
YK990702	YK	YK02	F	32	19990702	955	3713.64	7627.48	3713.67	7627.26	338.7	5.00	10.9	2	2	2	1
YK990702	YK	YK05	F	32	19990702	922	3714.11	7629.30	3714.12	7629.04	395.3	5.00	12.9	1	2	2	1
YK990702	YK	YK10	F	35	19990702	828	3718.33	7635.21	3718.52	7635.32	389.7	5.00	7.8	1	1	1	1
YK990701	YK	YK15	F	35	19990701	843	3723.22	7639.37	3723.38	7639.54	393.2	5.00	7.6	1	2	2	7
YK990701	YK	YK20	F	38	19990701	923	3725.99	7642.63	3726.16	7642.85	459.2	5.00	6.1	1	1	1	2
YK990701	YK	YK25	F	38	19990701	1002	3729.04	7645.09	3729.18	7645.34	459.9	5.00	8.4	1	1	1	2
YK990701	YK	YK30	F	40	19990701	1121	3732.95	7649.59	3732.70	7649.66	475.3	5.00	4.9	1	1	1	2
YK990701	YK	YK35	F	40	19990701	1146	3733.09	7651.75	3733.36	7651.62	537.9	5.00	6.1	1	1	1	2
YK990701	YK	YK40	F	40	19990701	1222	3732.81	7653.59	3732.89	7653.41	311.0	5.00	4.0	2	2	1	2
YK990702	YK	2	R	30	19990702	859	3714.77	7631.50	3714.60	7631.36	380.1	5.00	2.1	2	2	1	1
YK990702	YK	4	R	31	19990702	735	3716.03	7631.54	3716.15	7631.72	352.4	5.00	5.4	1	1	1	1
YK990702	YK	6	R	32	19990702	934.0	3714.19	7628.86	3714.26	7629.11	401.3	5.00	11.0	2	2	2	1
YK990702	YK	7	R	33	19990702	1017	3714.37	7624.68	3714.45	7624.48	338.0	5.00	15.3	1	1	1	1
YK990702	YK	8	R	33	19990702	750	3716.31	7632.45	3716.41	7632.66	368.9	5.00	15.3	1	1	2	7
YK990701	YK	10	R	34	19990701	820	3720.57	7638.42	3720.78	7638.58	458.8	5.00	1.3	2	2	4	3
YK990701	YK	12	R	35	19990701	1423	3720.28										

Table 9.

August 1999

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	
GW990813	GW	1	R	121	19990813	1002	3748.79	7618.18	3749.02	7618.20	427.3	5.00	2.1	1	1	2	1
GW990813	GW	2	R	121	19990813	1148	3750.84	7619.95	3750.72	7619.77	352.4	5.00	3.4	2	2	1	2
GW990813	GW	3	R	121	19990813	1109	3749.30	7619.02	3749.52	7619.00	408.8	5.00	4.0	1	1	1	2
GW990813	GW	5	R	122	19990813	1039	3749.32	7618.66	3749.51	7618.84	445.8	5.00	4.6	1	1	2	2
GW990813	GW	6	R	122	19990813	1017	3749.55	7618.20	3749.64	7618.47	442.7	5.00	6.4	1	1	2	1
GW990813	GW	7	R	122	19990813	1123	3750.32	7619.24	3750.53	7619.42	475.6	5.00	6.1	1	1	1	2
JA990816	JA	JA01	F	71	19990816	1258	3659.63	7619.88	3659.45	7620.14	516.9	5.00	5.7	1	1	1	2
JA990816	JA	JA05	F	71	19990816	1415	3656.78	7623.52	3656.84	7623.33	309.3	5.00	5.5	2	2	1	3
JA990817	JA	JA13	F	76	19990817	1327	3701.31	7630.48	3701.25	7630.31	281.1	5.00	10.4	2	2	1	1
JA990817	JA	JA17	F	75	19990817	1248	3705.03	7636.72	3704.87	7636.59	356.2	5.00	5.8	2	6	1	8
JA990817	JA	JA24	F	79	19990817	1200	3709.10	7638.45	3708.91	7638.50	360.2	5.00	12.2	2	1	1	7
JA990817	JA	JA27	F	78	19990817	1118	3712.26	7638.99	3712.36	7639.15	305.6	5.00	11.2	1	2	1	7
JA990817	JA	JA35	F	81	19990817	910	3711.17	7645.64	3711.28	7645.78	294.6	5.00	6.8	1	2	1	6
JA990817	JA	JA40	F	81	19990817	1022	3713.79	7649.52	3713.90	7649.74	391.4	5.00	1	1	2	1	6
JA990816	JA	1	R	70	19990816	1356	3658.35	7623.24	3658.48	7623.05	375.9	5.00	3.4	2	2	2	2
JA990819	JA	3	R	71	19990819	1127	3657.59	7624.12	3657.65	7623.93	309.3	5.00	6.1	2	1	2	7
JA990816	JA	5	R	72	19990816	1433	3657.09	7624.86	3657.03	7625.09	366.6	5.00	11.5	1	1	1	2
JA990816	JA	7	R	73	19990816	1313	3659.40	7619.38	3659.47	7619.23	262.2	5.00	18.0	2	2	2	2
JA990816	JA	8	R	73	19990816	1350	3659.30	7619.45	3659.40	7619.30	293.7	5.00	19.2	2	2	2	2
JA990817	JA	10	R	74	19990817	1306	3703.79	7633.00	3703.72	7632.77	372.6	5.00	2.7	2	2	2	1
JA990817	JA	11	R	75	19990817	1403	3701.03	7629.43	3700.96	7629.23	330.3	5.00	6.3	2	2	2	1
JA990817	JA	14	R	76	19990817	1343	3700.88	7630.27	3700.78	7630.07	355.8	5.00	10.1	2	2	2	1
JA990817	JA	15	R	77	19990817	1215	3707.93	7639.31	3707.72	7639.30	389.4	5.00	2.3	2	1	1	7
JA990817	JA	17	R	78	19990817	1135	3711.98	7639.13	3711.84	7638.87	472.5	5.00	4.1	2	1	1	7
JA990817	JA	19	R	79	19990817	928	3711.85	7646.35	3711.99	7646.52	366.0	5.00	8.6	1	2	2	6
JA990817	JA	20	R	79	19990817	945	3712.25	7646.91	3712.36	7647.02	263.6	5.00	13.2	1	2	2	6
JA990817	JA	21	R	80	19990817	834	3709.76	7644.71	3709.88	7644.88	340.8	5.00	2.1	1	2	1	6
JA990817	JA	23	R	81	19990817	1007	3713.21	7647.67	3713.34	7647.82	331.6	5.00	7.6	1	2	2	6
PK990813	PK	PK02	F	106	19990813	1404	3731.03	7619.46	3731.18	7619.67	423.1	5.00	7.0	1	1	2	3
PK990813	PK	PK03	F	106	19990813	1501	3732.05	7623.99	3731.98	7623.69	473.8	5.00	6.1	2	1	1	5
PK990813	PK	PK04	F	106	19990813	1521	3730.89	7625.82	3730.97	7626.07	407.6	5.00	4.6	1	2	2	5
PK990813	PK	2	R	105	19990813	1350	3730.13	7618.62	3730.28	7618.41	423.1	5.00	3.0	2	2	2	5
PK990813	PK	3	R	105	19990813	1430	3732.06	7620.66	3732.07	7620.93	410.5	5.00	3.4	1	2	2	5
PK990813	PK	5	R	106	19990813	1329	3731.78	7617.85	3731.77	7617.56	440.9	5.00	7.6	2	2	2	5
PK990813	PK	7	R	106	19990813	1444	3731.68	7621.35	3731.77	7621.60	414.7	5.00	7.6	1	2	2	5
RA990812	RA	RA02	F	53	19990812	1040	3735.90	7621.53	3735.87	7621.30	353.7	5.00	17.0	2	2	1	2
RA990812	RA	RA10	F	53	19990812	933	3737.93	7628.49	3737.89	7628.81	491.7	5.00	18.0	1	1	1	5
RA990811	RA	RA15	F	57	19990811	1605	3740.16	7623.07	3739.92	7633.05	445.8	5.00	14.9	2	1	1	5
RA990811	RA	RA20	F	57	19990811	1000	3743.78	7634.93	3744.02	7635.07	492.9	5.00	10.6	1	1	1	2
RA990811	RA	RA25	F	59	19990811	1138	3747.31	7640.54	3747.48	7640.82	529.2	5.00	8.5	1	1	1	3
RA990811	RA	RA30	F	62	19990811	1219	3751.21	7645.30	3751.50	7645.51	624.9	5.00	5.2	1	1	1	3
RA990811	RA	RA35	F	62	19990811	1316	3754.38	7648.15	3754.55	7648.44	541.5	5.00	5.4	1	1	1	0
RA990811	RA	RA40	F	62	19990811	1355	3757.79	7651.63	3758.05	7651.69	490.3	5.00	4.1	1	1	1	0
RA990812	RA	1	R	50	19990812	845	3734.73	7620.62	3734.68	7620.89	420.4	5.00	1.2	1	2	0	1
RA990812	RA	3	R	51	19990812	1100	3735.42	7618.19	3735.38	7617.96	357.1	5.00	8.7	2	2	2	7
RA990812	RA	6	R	52	19990812	1017	3737.39	7623.94	3737.28	7623.73	378.5	5.00	11.8	2	2	2	1
RA990812	RA	7	R	53	19990812	904	3736.32	7622.65	3736.45	7622.92	475.6	5.00	15.5	1	6	1	8
RA990812	RA	9	R	54	19990812	950	3738.39	7629.90	3738.54	7629.76	350.0	5.00	2.0	1	1	1	1
RA990811	RA	11	R	55	19990811	1550	3739.92	7634.04	3739.68	7633.86	522.0	5.00	4.3	2	1	1	5
RA990811	RA	14	R	56	19990811	1535	3741.19	7633.63	3740.96	7633.57	435.8	5.00	9.4	2	1	1	5
RA990811	RA	16	R	57	19990811	1012	3744.22	7635.23	3744.44	7635.42	499.5	5.00	16.8	1	1	1	2
RA990811	RA	17	R	58	19990811	1057	3745.64	7635.14	3745.80	7635.35	435.5	5.00	3.0	1	1	1	2
RA990811	RA	20	R	59	19990811	1204	3749.97	7644.25	3750.19	7644.44	499.5	5.00	6.1	1	1	1	3
RA990811	RA	21	R	60	19990811	1039	3744.89	7635.99	3745.10	7636.17	475.6	5.00	10.9	1	1	1	2
RA990811	RA	22	R	60	19990811	1121	3746.10	7638.81	3746.26	7639.07	493.8	5.00	6.8	1	1	1	3
RA990811	RA	24	R	61	19990811	1330	3755.11	7649.67	3755.05	7649.50	281.1	5.00	1.8	2	2	2	3
RA990811	RA	26	R	62	19990811	1255	3752.32	7646.13	3752.18	7646.02	308.6	5.00	5.7	2	2	2	3
YK990804	YK	YK02	F	32	19990804	1455	3713.63	7627.24	3713.60	7627.02	338.7	5.00	11.3	2	2	1	3
YK990804	YK	YK05	F	32	19990804	1535	3714.10	7629.26	3714.19	7629.55	471.0	5.00	13.5	1	1	2	3
YK990804	YK	YK10	F	35	19990804	1605	3718.24	7635.10	3718.46	7635.26	474.6	5.00	8.4	1	1	1	3
YK990805	YK	YK15	F	35	19990805	800	3723.26	7639.40	3723.36	7639.53	270.8	5.00	7.9	1	2	1	3
YK990805	YK	YK20	F	38	19990805	922	3725.96	7642.56	3726.04	7642.69	246.9	5.00	5.8	1	2	1	6
YK990805	YK	YK25	F	38	19990805	953	3729.07	7645.23	3729.14	7645.37	249.1	5.00	6.8	1	2	1	6
YK990805	YK	YK30	F	40	19990805	1107	3732.91	7649.61	3732.80	7649.64	208.9	5.00	5.0	1	2	1	6
YK990805	YK	YK35	F	40	19990805	1137	3733.00	7651.74	3733.12	7651.70	230.5	5.00	6.4	1	2	1	0
YK990805	YK	YK40	F	40	19990805	1206	3733.00	7653.15	3732.93	7653.33	302.6	5.00	6.4	1	2	1	7
YK990804	YK	1	R	30	19990804	1515	3713.30	7628.53	3713.20	7628.31	382.1	5.00	3.6	2	2	2	3
YK990804	YK	3	R	31	19990804	1400	3714.42	7627.03	3714.45	7626.81	338.7	5.00	8.7	2	2	2	3
YK990804	YK	6	R	32	19990804	1420	3714.12	7627.43	3714.17	7627.22	332.1	5.00	11.6	2	2	2	3
YK990804	YK	7	R	33	19990804	1335	3714.17	7626.49	3714.13	7626.81	491.7	5.00	13.4	1	1	1	2
YK990804	YK	8	R	33	19990804	1315	3714.38	7625.46	3714.44	7625.26	323.5	5.00	15.8	2	2	2	2
YK990804	YK	10	R	34	19990804	1625	3718.82	7636.89	3719.03	7637.06	467.0	5.00	2.6	1	1	1	3
YK990804	YK	11	R	35	19990804	1640	3720.27	7636.40	3720.12	7636.31	309.7	5.00	7.9	2	2	1	3
YK990805	YK	14	R	36	19990805	814	3										

Table 10.
September 1999

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			
JA990921	JA	JA01	F	71	19990921	1012	3659.71	7619.55	3659.64	7619.76	344.3	5.00	7.6	1	2	2	5
JA990921	JA	JA05	F	71	19990921	1134	3656.92	7622.77	3656.86	7622.97	323.5	5.00	5.7	1	2	2	6
JA990921	JA	JA13	F	76	19990921	1330	3701.38	7630.53	3701.50	7630.75	401.4	5.00	7.6	1	2	2	6
JA990921	JA	JA17	F	75	19990921	1405	3705.00	7636.70	3705.14	7636.81	308.6	5.00	6.7	1	2	2	6
JA990921	JA	JA24	F	79	19990921	1526	3709.13	7638.45	3709.35	7638.44	407.9	5.00	11.0	1	2	2	7
JA990921	JA	JA27	F	78	19990921	1603	3712.47	7639.26	3712.60	7639.45	375.9	5.00	8.8	1	2	2	7
JA990923	JA	JA35	F	81	19990923	859	3711.23	7645.73	3711.43	7645.98	530.6	5.00	7.9	1	1	1	3
JA990923	JA	JA40	F	81	19990923	1033	3713.89	7649.69	3713.81	7649.49	338.0	5.00	5.1	2	2	1	3
JA990921	JA	1	R	70	19990921	1115	3659.39	7621.97	3659.25	7622.16	388.0	5.00	3.2	1	2	2	6
JA990921	JA	3	R	71	19990921	1154	3656.85	7624.82	3656.88	7625.06	368.7	5.00	8.2	1	2	2	6
JA990921	JA	5	R	72	19990921	1032	3659.38	7619.85	3659.32	7620.06	337.8	5.00	10.4	1	2	2	6
JA990921	JA	7	R	73	19990921	940	3659.37	7619.06	3659.23	7619.18	317.0	5.00	17.4	2	1	2	5
JA990921	JA	8	R	73	19990921	926	3659.49	7619.25	3659.36	7619.40	331.6	5.00	18.3	1	2	2	5
JA990921	JA	9	R	74	19990921	1313	3659.81	7630.20	3659.94	7630.41	399.7	5.00	3.4	1	2	2	6
JA990921	JA	12	R	75	19990921	1446	3704.74	7638.51	3704.95	7638.53	390.3	5.00	5.8	1	2	2	7
JA990921	JA	13	R	76	19990921	1222	3659.97	7627.70	3659.78	7627.49	475.1	5.00	11.3	2	1	2	6
JA990923	JA	15	R	77	19990923	755	3713.23	7640.05	3713.18	7640.36	479.9	5.00	2.7	1	1	1	3
JA990923	JA	18	R	78	19990923	831	3712.84	7639.87	3712.88	7640.20	506.7	5.00	6.0	1	1	1	3
JA990921	JA	19	R	79	19990921	1538	3709.33	7638.33	3709.54	7638.33	389.1	5.00	11.9	1	2	2	7
JA990923	JA	20	R	79	19990923	1047	3712.52	7647.37	3712.41	7647.23	294.6	5.00	11.6	2	2	2	3
JA990923	JA	21	R	80	19990923	922	3711.77	7647.49	3712.01	7647.63	492.9	5.00	2.1	1	1	1	3
JA990923	JA	24	R	81	19990923	1008	3712.85	7651.85	3712.87	7651.64	321.1	5.00	7.6	2	2	1	3
MB990924	MS	MS01	F	93	19990924	1331	3719.10	7625.81	3719.03	7625.52	459.2	5.00	5.3	2	1	2	6
MB990924	MW	MW02	F	93	19990924	1247	3722.07	7625.89	3721.94	7625.63	462.6	5.00	5.5	2	1	2	6
MB990924	MN	MN02	F	93	19990924	1125	3723.95	7624.30	3724.16	7624.42	429.7	5.00	6.7	1	2	2	5
MB990924	ME	ME02	F	93	19990924	951	3723.44	7620.19	3723.21	7620.23	430.5	5.00	3.9	2	1	3	5
MB990924	MB	MB02	F	91	19990924	853	3718.93	7620.05	3719.12	7620.19	411.3	5.00	5.8	1	6	3	4
MB990924	MB	MB03	F	91	19990924	1017	3721.01	7621.94	3721.16	7622.16	434.6	5.00	6.1	1	2	3	5
MB990924	MB	MB04	F	90	19990924	1401	3717.20	7622.09	3717.39	7621.93	427.8	5.00	3.4	1	2	1	6
MB990924	MB	1	R	90	19990924	1413	3717.40	7621.28	3717.43	7621.00	428.9	5.00	2.6	2	1	2	7
MB990924	MB	2	R	90	19990924	819	3717.75	7617.47	3717.83	7617.72	407.6	5.00	6.4	1	6	3	4
MB990924	MB	4	R	90	19990924	928	3721.24	7620.35	3721.43	7620.46	389.7	5.00	4.2	1	2	3	5
MB990924	MB	5	R	91	19990924	841	3718.10	7619.76	3718.27	7619.94	417.1	5.00	6.9	1	6	3	4
MB990924	MB	7	R	91	19990924	907	3719.51	7619.74	3719.68	7619.90	397.9	5.00	5.5	1	2	3	5
MB990924	MB	8	R	91	19990924	1031	3721.11	7622.76	3721.31	7622.88	413.0	5.00	7.6	1	2	3	5
MB990924	MN	11	R	92	19990924	1138	3724.66	7624.99	3724.70	7625.26	416.7	5.00	2.9	1	2	1	6
MB990924	MN	12	R	92	19990924	1154	3724.91	7626.40	3725.02	7626.64	417.6	5.00	2.7	1	2	1	6
MB990924	MW	14	R	93	19990924	1300	3722.35	7626.27	3722.25	7626.00	450.0	5.00	4.9	2	1	2	6
MB990924	MN	15	R	93	19990924	1109	3722.58	7623.75	3722.79	7623.84	412.4	5.00	7.2	1	2	3	5
RA990910	RA	RA02	F	53	19990910	953	3735.78	7621.13	3735.73	7621.46	509.7	5.00	17.7	1	1	1	2
RA990910	RA	RA10	F	53	19990910	1058	3737.93	7628.20	3737.93	7628.53	501.2	5.00	20.4	1	1	1	2
RA990910	RA	RA15	F	57	19990910	1202	3740.05	7633.07	3740.29	7633.16	465.3	5.00	14.6	1	1	1	3
RA990910	RA	RA20	F	57	19990910	1301	3743.79	7634.79	3744.03	7634.86	457.3	5.00	16.5	1	1	1	3
RA990914	RA	RA25	F	59	19990914	1032	3747.29	7640.52	3747.41	7640.71	364.3	5.00	8.3	1	2	1	7
RA990914	RA	RA30	F	62	19990914	1106	3751.15	7645.24	3751.34	7645.36	396.5	5.00	4.8	1	2	1	7
RA990914	RA	RA35	F	62	19990914	1142	3754.21	7647.89	3754.33	7648.07	352.4	5.00	5.8	1	2	1	7
RA990914	RA	RA40	F	62	19990914	1212	3757.81	7651.58	3757.98	7651.54	320.8	5.00	5.1	1	2	1	7
RA990910	RA	2	R	50	19990910	924	3736.91	7617.79	3737.00	7618.02	387.1	5.00	3.0	1	1	1	2
RA990910	RA	3	R	51	19990910	939	3736.14	7619.50	3736.15	7619.82	486.4	5.00	4.6	1	1	1	2
RA990910	RA	5	R	52	19990910	1029	3736.33	7623.46	3736.44	7623.76	499.2	5.00	11.6	1	1	1	2
RA990910	RA	7	R	53	19990910	1014	3736.07	7622.48	3736.18	7622.77	485.3	5.00	19.2	1	1	1	2
RA990910	RA	10	R	54	19990910	1241	3741.42	7635.13	3741.62	7635.11	371.8	5.00	1.8	1	1	1	3
RA990910	RA	12	R	55	19990910	1223	3742.05	7632.87	3742.27	7632.93	417.7	5.00	5.8	1	1	1	3
RA990910	RA	13	R	56	19990910	1113	3737.66	7629.10	3737.63	7629.41	474.1	5.00	11.3	1	1	1	2
RA990910	RA	15	R	57	19990910	1134	3738.30	7632.07	3738.40	7632.34	450.0	5.00	15.2	1	1	1	3
RA990914	RA	17	R	58	19990914	1009	3745.54	7638.13	3745.54	7638.36	349.3	5.00	3.8	1	2	1	7
RA990914	RA	20	R	59	19990914	1336	3746.43	7639.25	3746.30	7639.07	364.4	5.00	5.8	2	2	1	1
RA990914	RA	21	R	60	19990914	947	3745.84	7636.79	3745.96	7637.02	414.1	5.00	9.2	1	2	1	7
RA990914	RA	22	R	60	19990914	1352	3746.18	7638.54	3746.09	7638.30	400.9	5.00	8.1	2	2	1	1
RA990914	RA	24	R	61	19990914	1243	3754.70	7648.07	3754.59	7647.85	391.4	5.00	2.0	2	2	1	1
RA990914	RA	26	R	62	19990914	1123	3752.52	7646.51	3752.69	7646.58	332.5	5.00	5.8	1	2	1	7
YK990908	YK	YK02	F	32	19990908	754	3713.64	7627.49	3713.69	7627.25	376.1	5.00	11.6	2	2	0	2
YK990907	YK	YK05	F	32	19990907	1610	3714.18	7629.31	3714.16	7629.06	381.5	5.00	12.7	2	2	2	1
YK990907	YK	YK10	F	35	19990907	815	3718.49	7635.32	3718.35	7635.17	345.3	5.00	8.5	2	2	1	3
YK990907	YK	YK15	F	35	19990907	929	3723.22	7639.35	3723.41	7639.58	496.0	5.00	8.5	1	1	1	3
YK990907	YK	YK20	F	38	19990907	1010	3725.97	7642.57	3726.16	7642.76	455.2	5.00	6.6	1	1	1	3
YK990907	YK	YK25	F	38	19990907	1358	3729.18	7645.41	3729.02	7645.13	518.4	5.00	7.1	2	1	1	6
YK990907	YK	YK30	F	40	19990907	1312	3732.94	7649.59	3732.78	7649.65	310.2	5.00	4.0	1	2	1	6
YK990907	YK	YK35	F	40	19990907	1153	3733.00	7651.77	3733.26	7651.62	532.9	5.00	6.9	1	2	1	5
YK990907	YK	YK40	F	40	19990907	1224	3732.83	7653.54	3732.94	7653.33	378.5	5.00	4.0	2	1	1	5
YK990908	YK	1	R	30	19990908	820	3715.23	7623.61	3715.34	7623.41	365.8	5.00	2.3	2	2	1	3
YK990908	YK	3	R	31	19990908	737	3713.46	7628.51	3713.46	7628.26	379.7	5.00	5.0	2	2	0	2
YK990907	YK	6	R	32	19990907	1557	3714.40	7629.38	3714.46	7629.68	469.0	5.00	9.1	1	1	2	1
YK990908	YK	7	R	33	19990908	843	3714.93	7622.86	3714.92	7622.6							

Table 11.
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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	
GW991011	GW	1	R	121	19991011	1137	3749.17	7618.21	3748.97	7618.23	371.8	5.00	2.7	2	2	1	2
GW991011	GW	2	R	121	19991011	1100	3750.87	7619.97	3750.74	7619.80	353.1	5.00	2.1	1	1	1	1
GW991011	GW	4	R	121	19991011	1045	3750.88	7620.19	3750.77	7620.42	404.5	5.00	4.2	1	1	1	1
GW991011	GW	6	R	122	19991011	945	3748.31	7617.47	3748.51	7617.62	435.0	5.00	5.2	1	2	1	7
GW991011	GW	7	R	122	19991011	955	3748.71	7617.77	3748.91	7617.88	406.5	5.00	5.0	1	2	1	7
GW991011	GW	8	R	122	19991011	1015	3750.03	7619.13	3750.25	7619.28	467.0	5.00	6.1	1	2	1	7
JA991015	JA	JA01	F	71	19991015	909	3659.75	7619.54	3659.64	7619.78	417.6	5.00	5.4	1	6	3	8
JA991015	JA	JA05	F	71	19991015	1117	3656.78	7623.49	3656.87	7623.32	307.4	5.00	5.5	2	2	3	1
JA991015	JA	JA13	F	76	19991015	1225	3701.29	7630.51	3701.43	7630.80	511.2	5.00	12.8	1	1	1	2
JA991015	JA	JA17	F	75	19991015	1342	3705.09	7636.39	3705.22	7636.62	424.3	5.00	6.1	1	1	1	2
JA991015	JA	JA24	F	79	19991015	1422	3709.13	7638.53	3709.40	7638.55	501.2	5.00	7.3	1	1	1	3
JA991019	JA	JA27	F	78	19991019	815	3712.67	7639.58	3712.54	7639.40	364.4	5.00	8.2	2	2	1	3
JA991019	JA	JA35	F	81	19991019	930	3711.21	7645.72	3711.39	7645.92	451.1	5.00	7.6	1	1	1	3
JA991019	JA	JA40	F	81	19991019	1005	3713.79	7649.42	3713.89	7649.68	436.2	5.00	5.6	1	2	1	5
JA991015	JA	1	R	70	19991015	1054	3659.22	7622.25	3659.13	7622.51	428.7	5.00	2.5	1	1	1	1
JA991015	JA	3	R	71	19991015	1141	3655.08	7625.79	3655.26	7625.68	373.0	5.00	3.7	2	2	2	1
JA991015	JA	5	R	72	19991015	1027	3659.76	7619.24	3659.68	7619.44	338.0	5.00	10.7	1	1	2	2
JA991015	JA	7	R	73	19991015	946	3659.58	7619.16	3659.38	7619.33	451.7	5.00	19.5	1	1	3	3
JA991015	JA	8	R	73	19991015	929	3659.59	7619.19	3659.42	7619.35	397.9	5.00	19.2	1	6	3	8
JA991015	JA	10	R	74	19991015	1324	3702.92	7638.50	3703.07	7638.35	359.4	5.00	2.3	2	2	1	2
JA991015	JA	11	R	75	19991015	1300	3702.15	7633.04	3702.30	7633.33	520.8	5.00	5.3	1	1	1	2
JA991015	JA	13	R	76	19991015	1245	3701.77	7631.69	3701.97	7631.90	489.0	5.00	10.8	1	1	1	2
JA991015	JA	15	R	77	19991015	1358	3705.97	7636.05	3706.05	7636.32	436.1	5.00	1.6	1	1	1	2
JA991019	JA	18	R	78	19991019	805	3712.93	7640.29	3712.91	7640.03	396.6	5.00	5.8	2	2	1	2
JA991019	JA	19	R	79	19991019	840	3709.63	7638.12	3709.45	7638.29	421.8	5.00	9.4	2	2	1	3
JA991019	JA	20	R	79	19991019	945	3712.49	7647.25	3712.65	7647.46	435.5	5.00	17.2	1	1	1	3
JA991019	JA	22	R	80	19991019	1045	3712.59	7652.66	3712.64	7652.37	450.1	5.00	2.8	2	1	1	5
JA991019	JA	24	R	81	19991019	1100	3713.14	7651.27	3713.14	7650.96	470.8	5.00	6.6	2	1	1	5
PK991011	PK	PK02	F	106	19991011	1400	3730.98	7619.38	3731.10	7619.61	414.1	5.00	7.6	1	2	2	5
PK991011	PK	PK03	F	106	19991011	1440	3731.97	7623.79	3732.03	7624.05	410.3	5.00	6.3	1	2	2	6
PK991011	PK	PK04	F	106	19991011	1500	3730.84	7625.79	3730.96	7626.00	388.8	5.00	6.1	1	2	2	6
PK991011	PK	1	R	105	19991011	1345	3729.97	7618.80	3730.13	7618.64	383.4	5.00	2.1	2	1	2	4
PK991011	PK	2	R	105	19991011	1325	3731.30	7617.76	3731.33	7618.02	398.8	5.00	2.4	1	6	2	5
PK991011	PK	6	R	106	19991011	1420	3731.58	7621.22	3731.64	7621.47	395.7	5.00	6.4	1	2	2	5
PK991011	PK	8	R	106	19991011	1310	3731.88	7618.12	3732.01	7617.90	411.9	5.00	6.5	2	2	2	3
RA991007	RA	RA02	F	53	19991007	1332	3735.81	7621.20	3735.67	7621.00	399.5	5.00	17.3	2	2	1	3
RA991007	RA	RA10	F	53	19991007	1147	3737.86	7628.66	3737.89	7628.40	398.8	5.00	18.6	2	2	2	3
RA991008	RA	RA15	F	57	19991008	939	3740.19	7633.10	3740.01	7633.10	333.5	5.00	15.2	2	2	1	1
RA991008	RA	RA20	F	57	19991008	1032	3743.71	7634.87	3743.96	7634.93	472.1	5.00	12.8	1	1	1	3
RA991008	RA	RA25	F	59	19991008	1153	3747.38	7640.62	3747.24	7640.89	485.3	5.00	8.3	2	2	2	3
RA991008	RA	RA30	F	62	19991008	1225	3751.45	7645.45	3751.31	7645.36	293.2	5.00	6.1	2	2	2	3
RA991008	RA	RA35	F	62	19991008	1250	3754.24	7647.96	3754.17	7647.82	249.1	5.00	6.1	2	2	2	3
RA991008	RA	RA40	F	62	19991008	1329	3757.74	7651.61	3758.01	7651.64	502.4	5.00	4.6	1	1	1	3
RA991007	RA	1	R	50	19991007	1420	3736.69	7617.55	3736.55	7617.35	399.5	5.00	1.9	1	2	2	5
RA991007	RA	3	R	51	19991007	1103	3736.40	7624.39	3736.50	7624.68	477.9	5.00	6.1	1	1	2	3
RA991007	RA	5	R	52	19991007	1400	3735.92	7618.07	3735.90	7617.78	442.0	5.00	15.2	2	1	2	5
RA991007	RA	8	R	53	19991007	1043	3736.78	7623.32	3736.85	7623.61	459.2	5.00	17.6	1	1	2	3
RA991007	RA	9	R	54	19991007	1226	3737.41	7632.38	3737.57	7632.56	403.3	5.00	3.0	1	1	2	3
RA991008	RA	12	R	55	19991008	1004	3743.10	7633.78	3743.31	7633.90	429.7	5.00	5.3	1	1	1	3
RA991007	RA	13	R	56	19991007	1209	3737.67	7631.42	3737.76	7631.68	428.7	5.00	12.8	2	1	2	5
RA991007	RA	15	R	57	19991007	1244	3738.13	7631.95	3738.06	7631.68	430.1	5.00	16.6	2	1	2	5
RA991008	RA	17	R	58	19991008	1048	3744.05	7636.38	3744.23	7636.59	461.5	5.00	3.4	1	1	1	3
RA991008	RA	19	R	59	19991008	1118	3746.55	7637.88	3746.64	7638.13	414.7	5.00	3.7	1	1	2	3
RA991008	RA	21	R	60	19991008	1104	3745.82	7636.76	3745.83	7637.08	486.4	5.00	9.4	1	1	1	3
RA991008	RA	22	R	60	19991008	1136	3746.59	7640.06	3746.77	7640.25	441.1	5.00	7.0	1	1	2	3
RA991008	RA	24	R	61	19991008	1343	3758.21	7651.86	3758.04	7651.77	343.4	5.00	2.8	2	2	2	3
RA991008	RA	25	R	62	19991008	1303	3754.27	7647.92	3754.15	7647.87	235.0	5.00	6.1	2	2	2	3
YK991005	YK	YK02	F	32	19991005	859	3713.66	7627.25	3713.60	7626.97	439.6	5.00	11.1	2	6	3	4
YK991005	YK	YK05	F	32	19991005	821	3714.06	7629.06	3714.13	7629.34	444.6	5.00	13.1	1	1	1	3
YK991004	YK	YK10	F	35	19991004	755	3718.29	7635.15	3718.47	7635.29	395.6	5.00	8.2	1	1	1	3
YK991004	YK	YK15	F	35	19991004	905	3723.18	7639.32	3723.33	7639.47	359.4	5.00	8.1	1	2	1	5
YK991004	YK	YK20	F	38	19991004	1005	3725.96	7642.50	3726.09	7642.72	411.9	5.00	6.1	1	2	1	5
YK991004	YK	YK25	F	38	19991004	1100	3729.04	7645.21	3729.16	7645.38	340.8	5.00	6.8	1	2	1	6
YK991004	YK	YK30	F	40	19991004	1130	3732.95	7649.58	3732.80	7649.64	292.5	5.00	3.6	1	2	1	6
YK991004	YK	YK35	F	40	19991004	1200	3732.94	7651.82	3733.06	7651.74	253.4	5.00	6.0	1	2	1	7
YK991004	YK	YK40	F	40	19991004	1233	3733.03	7653.03	3732.97	7653.21	295.1	5.00	3.5	1	2	1	7
YK991004	YK	2	R	30	19991004	1440	3717.22	7633.10	3717.10	7632.92	352.4	5.00	2.3	2	1	1	7
YK991005	YK	3	R	31	19991005	840	3714.38	7628.27	3714.38	7627.99	425.3	5.00	8.8	2	6	3	4
YK991005	YK	6	R	32	19991005	735	3714.57	7630.94	3714.71	7631.17	435.1	5.00	12.2	1	1	3	3
YK991005	YK	7	R	33	19991005	930	3714.39	7624.00	3714.39	7623.71	440.5	5.00	12.8	2	1	3	5
YK991005	YK	8	R	33	19991005	756	3714.18	7629.70	3714.09	7629.49	359.9	5.00	16.8	2	2	3	3
YK991004	YK	10	R	34	19991004	810	3718.43	7636.38	3718.59	7636.53	373.9	5.00	3.4	1	1	1	3
YK991004	YK	12	R	35	19991004	855	3722.54	7639.35	3722.35	7639.15	465.0	5.00	4.5	2	1	1	5
YK991004	YK	14	R	36	19991004	838	3721.92	7638.00	3722								

Table 12.
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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	
JA991112	JA	JA01	F	71	19991112	1005	3659.61	7619.52	3659.61	7619.81	440.5	5.00	7.0	1	1	2	2
JA991112	JA	JA05	F	71	19991112	1115	3656.80	7623.44	3656.91	7623.28	317.2	5.00	6.4	1	2	2	3
JA991112	JA	JA13	F	76	19991112	1310	3701.30	7630.56	3701.20	7630.40	305.6	5.00	13.7	2	2	1	1
JA991112	JA	JA17	F	75	19991112	1404	3705.14	7636.48	3705.29	7636.71	446.4	5.00	7.0	1	1	1	3
JA991112	JA	JA24	F	79	19991112	1446	3709.14	7638.49	3709.37	7638.58	447.6	5.00	9.8	1	1	1	3
JA991116	JA	JA27	F	78	19991116	828	3712.45	7639.28	3712.58	7639.48	387.7	5.00	8.2	1	2	2	2
JA991116	JA	JA35	F	81	19991116	919	3711.21	7645.72	3711.33	7645.89	340.8	5.00	7.3	1	2	2	6
JA991116	JA	JA40	F	81	19991116	1018	3713.78	7649.36	3713.85	7649.58	358.4	5.00	5.2	1	2	2	2
JA991112	JA	1	R	70	19991112	1030	3659.81	7620.05	3659.89	7619.86	324.4	5.00	1.8	2	2	2	2
JA991112	JA	3	R	71	19991112	1142	3655.20	7625.67	3655.35	7625.50	379.4	5.00	4.6	2	2	2	3
JA991112	JA	5	R	72	19991112	1050	3659.37	7619.93	3659.40	7619.83	161.7	5.00	10.7	2	2	2	2
JA991112	JA	7	R	73	19991112	912	3659.60	7619.34	3659.66	7619.13	337.8	5.00	18.3	2	2	2	2
JA991112	JA	8	R	73	19991112	936	3659.56	7619.40	3659.57	7619.19	319.5	5.00	18.0	2	2	2	2
JA991112	JA	9	R	74	19991112	1254	3701.92	7629.32	3702.05	7629.55	424.3	5.00	1.8	1	1	1	3
JA991112	JA	12	R	75	19991112	1328	3700.75	7631.13	3700.69	7630.89	381.1	5.00	6.4	2	2	2	3
JA991112	JA	13	R	76	19991112	1234	3700.37	7628.53	3700.50	7628.81	488.8	5.00	11.6	1	1	1	3
JA991112	JA	16	R	77	19991112	1429	3708.54	7639.58	3708.78	7639.68	469.9	5.00	2.7	1	1	1	3
JA991112	JA	17	R	78	19991112	1501	3709.82	7639.14	3709.59	7639.14	426.2	5.00	4.0	2	2	1	1
JA991116	JA	19	R	79	19991116	939	3711.76	7646.28	3711.84	7646.39	223.4	5.00	8.5	1	2	2	6
JA991116	JA	20	R	79	19991116	954	3712.01	7646.78	3711.80	7646.56	512.9	5.00	9.1	2	2	2	6
JA991116	JA	21	R	80	19991116	854	3710.53	7643.03	3710.36	7643.15	363.9	5.00	3.4	1	2	2	6
JA991116	JA	24	R	81	19991116	1035	3713.31	7650.92	3713.26	7651.11	303.1	5.00	4.3	1	2	2	6
JE991117	JE	JE00	F		19991117	1327	3651.49	7620.44	3651.54	7620.16	435.3	5.00	7.6	2	2	2	2
JE991117	JE	JE01	F		19991117	1350	3651.33	7620.37	3651.38	7620.14	361.4	5.00	1.5	2	2	2	2
JE991117	JE	JE02	F		19991117	1300	3650.87	7621.51	3651.11	7621.42	465.3	5.00	6.0	2	2	2	2
MB991105	MS	MS01	F	93	19991105	1244	3719.06	7625.78	3719.00	7625.49	454.3	5.00	5.2	2	1	1	7
MB991105	MW	MW02	F	93	19991105	1213	3722.08	7626.04	3721.96	7625.78	453.2	5.00	4.6	2	1	1	7
MB991105	MN	MN02	F	93	19991105	1123	3723.90	7624.34	3724.11	7624.45	423.5	5.00	5.5	2	1	2	7
MB991105	ME	ME02	F	93	19991105	925	3723.41	7620.38	3723.62	7620.50	429.7	5.00	4.3	1	2	2	6
MB991105	MB	MB02	F	91	19991105	835	3718.97	7620.14	3719.08	7620.35	378.5	5.00	5.3	1	2	2	6
MB991105	MB	MB03	F	91	19991105	1039	3721.01	7621.94	3721.16	7622.16	434.6	5.00	5.2	1	2	2	7
MB991105	MB	MB04	F	90	19991105	1337	3717.26	7622.03	3717.35	7621.76	442.7	5.00	3.0	2	1	1	7
MB991105	MB	1	R	90	19991105	1351	3717.15	7620.85	3717.14	7620.60	380.2	5.00	1.2	2	1	2	6
MB991105	MB	2	R	90	19991105	813	3718.75	7617.46	3718.90	7617.65	400.7	5.00	3.7	1	2	2	7
MB991105	MB	4	R	90	19991105	1324	3717.81	7622.32	3717.64	7622.22	349.7	5.00	1.5	2	1	2	7
MB991105	MB	6	R	91	19991105	848	3719.10	7621.01	3719.24	7621.21	399.5	5.00	5.2	1	2	2	6
MB991105	MB	7	R	91	19991105	1304	3719.63	7622.41	3719.47	7622.21	424.5	5.00	4.6	2	1	1	7
MB991105	MB	8	R	91	19991105	902	3720.32	7620.74	3720.12	7620.56	460.5	5.00	4.9	2	1	2	7
MB991105	MW	10	R	92	19991105	1140	3725.03	7625.65	3725.09	7625.90	395.7	5.00	2.7	2	1	1	6
MB991105	MN	12	R	92	19991105	1006	3725.14	7621.40	3725.09	7621.11	450.1	5.00	2.9	2	1	2	6
MB991105	MB	13	R	93	19991105	1103	3722.32	7623.27	3722.10	7623.14	453.0	5.00	6.7	2	1	1	7
MB991105	MB	16	R	93	19991105	941	3724.11	7620.87	3723.90	7620.70	467.0	5.00	4.0	2	1	1	6
RA991108	RA	RA02	F	53	19991108	1003	3735.84	7621.21	3735.90	7621.53	498.6	5.00	17.3	1	1	1	3
RA991108	RA	RA10	F	53	19991108	1124	3737.86	7628.72	3737.84	7629.05	502.6	5.00	18.5	1	1	1	5
RA991108	RA	RA15	F	57	19991108	1312	3740.20	7633.06	3740.44	7633.04	445.8	5.00	15.8	1	2	1	5
RA991108	RA	RA20	F	57	19991108	1415	3743.79	7634.93	3744.00	7635.08	450.9	5.00	17.2	1	1	1	5
RA991109	RA	RA25	F	59	19991109	1159	3747.31	7640.55	3747.49	7640.83	540.5	5.00	8.7	1	1	1	2
RA991109	RA	RA30	F	62	19991109	1301	3751.37	7645.40	3751.23	7645.28	317.0	5.00	6.0	2	2	1	2
RA991109	RA	RA35	F	62	19991109	1325	3754.42	7648.19	3754.59	7648.49	553.9	5.00	5.4	2	2	1	3
RA991109	RA	RA40	F	62	19991109	1422	3757.87	7651.61	3757.71	7651.62	296.9	5.00	5.2	1	2	0	2
RA991108	RA	2	R	50	19991108	1105	3738.74	7626.21	3738.91	7626.36	388.8	5.00	2.2	1	1	1	2
RA991108	RA	3	R	51	19991108	945	3736.50	7617.84	3736.50	7618.16	486.0	5.00	5.3	1	1	1	2
RA991108	RA	5	R	52	19991108	1019	3735.37	7621.24	3735.35	7620.99	381.5	5.00	11.5	2	2	1	2
RA991108	RA	8	R	53	19991108	1035	3735.80	7621.68	3735.92	7621.98	507.0	5.00	19.0	1	1	1	5
RA991108	RA	9	R	54	19991108	1335	3740.00	7634.31	3740.22	7634.36	414.7	5.00	3.5	1	2	1	5
RA991108	RA	11	R	55	19991108	1206	3737.41	7629.56	3737.42	7629.87	471.2	5.00	8.8	1	1	0	3
RA991108	RA	13	R	56	19991108	1138	3737.64	7629.21	3737.60	7629.51	461.6	5.00	11.0	1	1	1	3
RA991108	RA	16	R	57	19991108	1350	3740.32	7633.12	3740.55	7633.13	426.5	5.00	15.9	1	2	1	5
RA991109	RA	17	R	58	19991109	1219	3747.63	7642.97	3747.64	7642.72	380.2	5.00	2.4	2	2	1	2
RA991109	RA	20	R	59	19991109	1239	3749.35	7643.90	3749.22	7643.74	342.2	5.00	4.1	2	2	1	2
RA991109	RA	21	R	60	19991109	1125	3745.88	7637.18	3746.03	7637.41	446.4	5.00	9.1	1	1	1	2
RA991109	RA	22	R	60	19991109	1147	3746.64	7640.11	3746.85	7640.31	493.7	5.00	7.0	2	2	0	2
RA991109	RA	24	R	61	19991109	1343	3754.51	7646.96	3754.34	7646.84	363.9	5.00	2.4	2	2	0	2
RA991109	RA	26	R	62	19991109	1358	3754.85	7648.84	3754.96	7649.15	513.1	5.00	5.4	1	1	0	2
YK991103	YK	YK05	F	32	19991103	1323	3713.66	7627.31	3713.65	7626.97	516.7	5.00	11.1	2	1	1	7
YK991103	YK	YK10	F	32	19991103	1306	3714.17	7629.23	3714.11	7628.96	424.9	5.00	12.2	2	1	2	7
YK991103	YK	YK15	F	35	19991103	1125	3718.46	7635.29	3718.24	7635.07	527.1	5.00	7.7	1	1	2	6
YK991102	YK	YK15	F	35	19991102	831	3723.16	7639.38	3723.30	7639.55	366.0	5.00	9.8	1	2	2	6
YK991102	YK	YK20	F	38	19991102	911	3725.91	7642.37	3726.02	7642.55	341.0	5.00	7.3	1	2	2	6
YK991102	YK	YK25	F	38	19991102	1035	3728.71	7644.76	3728.84	7644.89	311.5	5.00	7.9	1	2	2	6
YK991102	YK	YK30	F	40	19991102	1137	3733.00	7649.57	3732.88	7649.62	235.0	5.00	7.3	1	2	1	6
YK991102	YK	YK35	F	40	19991102	1243	3732.92	7651.74	3733.06	7651.67	280.4	5.00	5.2	1	1	1	7
YK991102	YK	YK40	F	40	19991102	1311	3733.02	7653.06	3732.96	7653.23	281.1	5.00	3.7	1	2	1	7
YK991103	YK	1	R	30	19991103	1458	3714.99	7626.50	3714.94	7626.75	3						

Tables 14-25. Station data for the Chesapeake Bay by month. The survey is not conducted in the Bay 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 1999

System+ Cruise Number	Stat# or River Mile		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
NoData.																

Table 15.
February 1999

System+ Cruise Number	Stat# or River Mile		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
CL990203	CL	2	R	1	19990203	1420	3700.07	7608.37	3700.14	7608.63	415.7	5.00	7.4	1	2	1	7
CL990203	CL	4	R	1	19990203	1510	3702.17	7616.48	3701.99	7616.60	380.1	5.00	4.6	2	1	1	7
CL990203	CL	7	R	2	19990203	1017	3708.40	7605.99	3708.30	7605.84	293.7	5.00	8.1	2	2	2	2
CL990203	CL	8	R	2	19990203	1100	3709.53	7601.69	3709.42	7601.51	341.0	5.00	7.6	2	2	2	3
CL990203	CL	9	R	3	19990203	1315	3659.14	7602.68	3659.20	7602.97	454.3	5.00	9.8	1	2	2	5
CL990203	CL	10	R	3	19990203	1300	3659.42	7601.67	3659.22	7601.57	400.5	5.00	13.8	2	1	2	5
CL990203	CL	11	R	3	19990203	1217	3704.51	7607.69	3704.36	7607.76	297.6	5.00	9.6	2	1	2	5
CL990209	CL	12	R	3	19990209	910	3707.89	7612.26	3707.77	7612.03	414.1	5.00	9.4	2	1	2	7
CL990203	CL	13	R	4	19990203	1340	3656.40	7600.69	3656.31	7600.42	442.7	5.00	15.6	2	1	2	7
CL990203	CL	14	R	4	19990203	1436	3659.42	7610.28	3659.50	7610.53	407.6	5.00	14.9	1	2	1	7
CL990203	CL	15	R	4	19990203	1159	3705.63	7606.13	3705.53	7606.00	270.8	5.00	13.5	2	6	2	4
CL990209	CL	17	R	5	19990209	826	3710.72	7617.48	3710.54	7617.27	461.5	5.00	4.5	2	1	1	6
CL990209	CL	18	R	5	19990209	756	3712.14	7619.44	3711.94	7619.24	479.2	5.00	5.2	2	1	2	6
CL990203	CL	21	R	6	19990203	1040	3710.57	7602.95	3710.65	7602.71	393.5	5.00	9.8	2	2	2	2
CL990209	CL	23	R	6	19990209	1033	3711.69	7608.51	3711.74	7608.26	390.9	5.00	9.1	1	6	3	8
CL990209	CL	25	R	7	19990209	1015	3712.03	7609.39	3712.21	7609.23	412.7	5.00	10.2	1	6	2	8
CL990209	CL	26	R	7	19990209	1050	3713.08	7607.82	3713.22	7607.62	399.5	5.00	10.5	1	1	3	1
CL990209	CL	27	R	7	19990209	948	3713.72	7612.66	3713.89	7612.49	407.3	5.00	9.8	1	2	2	7
CL990209	CL	28	R	7	19990209	1231	3718.35	7602.80	3718.56	7602.82	390.3	5.00	9.8	1	1	1	1
CL990209	CL	29	R	8	19990209	1141	3717.13	7605.47	3717.26	7605.28	375.9	5.00	20.8	1	1	3	1
CL990209	CL	30	R	8	19990209	1118	3717.26	7606.29	3717.39	7606.11	364.4	5.00	23.7	1	1	3	1
CL990209	CL	31	R	8	19990209	1248	3718.44	7604.44	3718.66	7604.39	414.7	5.00	13.1	1	1	3	2
CL990209	CL	35	R	9	19990209	1514	3737.65	7616.00	3737.88	7616.00	426.2	5.00	4.3	1	1	2	2
CL990209	CL	36	R	9	19990209	1528	3738.87	7616.62	3739.10	7616.74	463.5	5.00	6.0	1	1	2	2
CL990211	CL	39	R	10	19990211	1139	3734.51	7558.38	3734.70	7558.34	357.3	5.00	7.3	1	2	1	6
CL990211	CL	40	R	10	19990211	1156	3736.61	7557.15	3736.82	7557.11	393.8	5.00	5.5	1	2	1	6
CL990209	CL	41	R	11	19990209	1334	3725.35	7607.84	3725.51	7608.02	403.3	5.00	12.3	1	1	3	1
CL990209	CL	42	R	11	19990209	1352	3725.72	7609.27	3725.92	7609.36	395.0	5.00	11.0	1	1	3	2
CL990211	CL	43	R	11	19990211	942	3732.70	7606.49	3732.46	7606.38	475.1	5.00	11.9	2	1	0	6
CL990211	CL	44	R	11	19990211	916	3734.54	7611.20	3734.33	7611.11	412.4	5.00	12.3	2	1	0	6
CL990211	CL	45	R	12	19990211	1015	3727.47	7603.38	3727.70	7603.35	428.6	5.00	16.8	1	2	0	6
CL990211	CL	46	R	12	19990211	1039	3731.02	7603.15	3731.24	7603.13	408.8	5.00	14.9	1	2	1	6
CL990211	CL	47	R	12	19990211	1058	3732.04	7601.16	3731.79	7601.22	472.1	5.00	12.9	2	1	1	6
CL990209	CL	68	S	S01	19990209	842	3709.88	7617.39	3709.68	7617.25	427.3	5.00	3.0	2	1	2	7
CL990203	CL	71	S	S02	19990203	1128	3705.06	7600.79	3705.31	7600.98	545.8	5.00	2.7	2	2	2	3
CL990209	CL	73	S	S05	19990209	812	3711.53	7618.67	3711.41	7618.41	453.2	5.00	1.7	2	1	1	6
CL990209	CL	80	S	S06	19990209	1213	3716.81	7602.41	3717.00	7602.27	411.3	5.00	1.6	1	1	2	1
CL990209	CL	84	S	S09	19990209	1502	3737.30	7615.80	3737.47	7615.98	417.1	5.00	2.7	1	1	2	2
CL990211	CL	87	S	S10	19990211	1120	3732.08	7557.98	3732.27	7557.91	367.8	5.00	3.2	1	2	0	6

Table 16.
March 1999

System+ Cruise Number	Stat# or River Mile		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
NoData.																

Table 21.
August 1999

System+ Cruise Number	Stat# or River				Location				Tow Parameters				Sea Tidal				
	River	Mile	Stat. Type	Stratum Code	Station Date	Station Time	Beginning	Beginning	Ending	Ending	Distance (m)	Duration (min)	Depth (m)	Direction		Sea State	Tidal Stage
							Latitude	Longitude	Latitude	Longitude				One	Two		
CL990806	CL	3	R	1	19990806	1051	3702.60	7611.35	3702.36	7611.22	486.6	5.00	6.2	2	1	2	6
CL990806	CL	4	R	1	19990806	952	3704.88	7610.11	3705.00	7610.21	269.3	5.00	8.2	1	2	2	5
CL990806	CL	7	R	2	19990806	1355	3706.60	7604.68	3706.73	7604.96	488.8	5.00	8.6	1	1	2	1
CL990806	CL	8	R	2	19990806	1415	3709.06	7605.73	3709.28	7605.86	453.0	5.00	8.0	1	1	2	1
CL990806	CL	9	R	3	19990806	1124	3657.92	7606.10	3657.78	7605.85	459.9	5.00	10.1	2	1	2	6
CL990806	CL	10	R	3	19990806	1214	3658.72	7559.54	3658.88	7559.66	348.0	5.00	11.4	1	2	2	6
CL990806	CL	11	R	3	19990806	915	3707.11	7608.53	3706.84	7608.46	511.5	5.00	12.6	2	1	2	5
CL990806	CL	12	R	3	19990806	824	3708.61	7612.37	3708.36	7612.34	465.5	5.00	10.8	2	1	2	5
CL990806	CL	14	R	4	19990806	1152	3658.13	7601.42	3657.88	7601.25	530.3	5.00	12.7	2	1	2	6
CL990806	CL	15	R	4	19990806	1240	3659.48	7600.42	3659.61	7600.63	399.7	5.00	13.4	1	2	2	7
CL990806	CL	16	R	4	19990806	929	3705.68	7607.41	3705.42	7607.29	515.1	5.00	13.4	2	1	2	5
CL990816	CL	17	R	5	19990816	1100	3710.11	7617.41	3709.95	7617.31	333.1	5.00	4.6	2	2	2	1
CL990812	CL	19	R	5	19990812	1410	3720.47	7611.33	3720.26	7611.31	390.3	5.00	8.5	2	2	4	3
CL990806	CL	21	R	6	19990806	1438	3710.39	7602.45	3710.65	7602.51	490.3	5.00	8.7	1	1	1	2
CL990810	CL	24	R	6	19990810	1144	3722.99	7600.74	3723.20	7600.71	391.8	5.00	5.6	1	6	1	4
CL990806	CL	25	R	7	19990806	1528	3712.12	7616.22	3712.26	7616.52	524.3	5.00	12.1	1	1	1	2
CL990810	CL	26	R	7	19990810	955	3713.38	7606.33	3713.63	7606.29	467.2	5.00	12.6	1	1	1	2
CL990810	CL	27	R	7	19990810	937	3714.09	7607.13	3714.36	7607.05	514.9	5.00	12.5	1	1	1	2
CL990810	CL	28	R	7	19990810	907	3716.65	7611.47	3716.85	7611.26	489.0	5.00	12.7	1	1	1	2
CL990810	CL	29	R	8	19990810	1026	3714.46	7603.68	3714.31	7603.57	324.3	5.00	15.0	2	2	2	3
CL990810	CL	31	R	8	19990810	1053	3718.13	7605.02	3718.37	7604.94	461.0	5.00	13.5	1	1	1	3
CL990810	CL	32	R	8	19990810	1120	3722.86	7604.09	3723.11	7604.03	472.1	5.00	13.8	1	1	1	3
CL990812	CL	34	R	9	19990812	1215	3732.13	7615.58	3731.96	7615.42	397.9	5.00	7.7	2	2	1	2
CL990812	CL	36	R	9	19990812	1132	3734.92	7612.16	3735.20	7612.18	519.7	5.00	5.6	1	1	1	2
CL990810	CL	37	R	10	19990810	1230	3726.22	7600.64	3726.39	7600.49	388.8	5.00	8.2	1	2	2	5
CL990810	CL	39	R	10	19990810	1354	3735.88	7556.69	3735.98	7556.53	305.6	5.00	5.7	1	2	2	5
CL990812	CL	41	R	11	19990812	1340	3726.45	7610.02	3726.26	7610.12	383.4	5.00	10.4	2	2	3	3
CL990812	CL	42	R	11	19990812	1315	3728.90	7606.39	3728.73	7606.32	332.5	5.00	11.1	2	2	3	2
CL990812	CL	43	R	11	19990812	1253	3732.70	7610.97	3732.50	7611.01	375.5	5.00	10.8	1	1	1	3
CL990810	CL	44	R	11	19990810	1430	3736.90	7604.03	3737.08	7604.16	387.6	5.00	12.1	1	2	2	5
CL990810	CL	46	R	12	19990810	1305	3732.35	7601.60	3732.58	7601.65	432.9	5.00	14.0	1	2	2	5
CL990810	CL	47	R	12	19990810	1325	3733.67	7601.99	3733.87	7601.96	373.4	5.00	14.7	1	2	2	5
CL990810	CL	48	R	12	19990810	1458	3738.76	7609.63	3738.67	7609.88	414.7	5.00	16.1	2	1	3	6
CL990806	CL	66	S	S01	19990806	1025	3704.87	7615.54	3704.64	7615.65	457.8	5.00	2.2	2	1	2	5
CL990806	CL	69	S	S02	19990806	1312	3704.32	7601.01	3704.16	7600.94	315.0	5.00	3.4	2	6	2	8
CL990810	CL	75	S	S05	19990810	825	3715.33	7621.09	3715.27	7620.85	381.1	5.00	3.0	2	2	2	2
CL990810	CL	80	S	S06	19990810	1156	3722.72	7600.08	3722.91	7559.99	377.7	5.00	2.3	1	2	1	5
CL990812	CL	83	S	S09	19990812	1232	3720.74	7616.43	3730.55	7616.32	389.7	5.00	2.2	2	2	3	2
CL990810	CL	85	S	S10	19990810	1215	3725.59	7559.72	3725.78	7559.66	363.7	5.00	2.6	1	2	2	5

Table 22.
September 1999

System+ Cruise Number	Stat# or River				Location				Tow Parameters				Sea Tidal				
	River	Mile	Stat. Type	Stratum Code	Station Date	Station Time	Beginning	Beginning	Ending	Ending	Distance (m)	Duration (min)	Depth (m)	Direction		Sea State	Tidal Stage
							Latitude	Longitude	Latitude	Longitude				One	Two		
CL990908	CL	2	R	1	19990908	1105	3657.71	7609.24	3657.91	7609.36	413.0	5.00	7.0	1	2	2	5
CL990908	CL	3	R	1	19990908	1000	3701.76	7612.23	3701.60	7612.07	383.4	5.00	5.6	2	2	2	3
CL990908	CL	5	R	2	19990908	1334	3701.03	7559.82	3701.13	7559.92	239.6	5.00	5.4	1	2	3	6
CL990908	CL	8	R	2	19990908	1506	3709.41	7605.95	3709.28	7606.17	411.9	5.00	7.6	1	2	3	7
CL990908	CL	9	R	3	19990908	1123	3659.36	7608.43	3659.31	7608.12	479.9	5.00	9.5	2	1	2	5
CL990908	CL	10	R	3	19990908	1316	3700.08	7559.66	3659.94	7559.36	524.3	5.00	7.6	2	1	3	6
CL990908	CL	11	R	3	19990908	1030	3700.53	7613.24	3700.59	7613.49	395.7	5.00	10.8	2	6	2	4
CL990908	CL	12	R	3	19990908	1525	3707.85	7609.60	3707.83	7609.84	366.4	5.00	11.4	1	2	3	7
CL990908	CL	14	R	4	19990908	1215	3657.96	7559.81	3657.93	7559.49	489.2	5.00	18.9	2	1	3	5
CL990908	CL	15	R	4	19990908	1157	3658.13	7601.19	3658.06	7600.89	473.8	5.00	14.3	2	1	3	5
CL990908	CL	16	R	4	19990908	1240	3659.68	7601.24	3659.64	7600.90	521.7	5.00	14.7	2	1	3	5
CL990909	CL	17	R	5	19990909	830	3714.13	7615.62	3714.27	7615.41	411.1	5.00	8.0	2	2	3	2
CL990909	CL	18	R	5	19990909	730	3715.14	7619.96	3715.04	7619.71	422.5	5.00	4.2	2	2	3	1
CL990908	CL	21	R	6	19990908	1445	3709.94	7602.31	3710.05	7602.46	305.7	5.00	7.7	1	2	3	7
CL990909	CL	22	R	6	19990909	949	3710.43	7606.89	3710.29	7606.93	266.4	5.00	9.5	2	2	3	2
CL990909	CL	25	R	7	19990909	920	3711.51	7610.52	3711.37	7610.56	266.4	5.00	10.5	2	2	3	2
CL990909	CL	26	R	7	19990909	1015	3713.32	7605.87	3713.55	7605.74	469.7	5.00	12.9	1	1	3	2
CL990909	CL	27	R	7	19990909	855	3713.79	7611.86	3713.61	7611.87	333.9	5.00	11.0	2	2	3	2
CL990920	CL	28	R	7	19990920	1404	3718.69	7611.78	3718.46	7611.89	457.8	5.00	10.4	2	1	2	6
CL990909	CL	29	R	8	19990909	1101	3718.30	7604.56	3718.55	7604.49	475.3	5.00	12.7	1	1	3	3
CL990909	CL	30	R	8	19990909	1115	3718.68	7604.61	3718.56	7604.73	287.5	5.00	12.9	2	2	3	3
CL990909	CL	31	R	8	19990909	1143	3723.08	7603.17	3723.34	7603.11	490.3	5.00	12.8	1	1	3	3
CL990909	CL	33	R	9	19990909	1246	3726.78	7613.02	3726.98	7612.95	385.5	5.00	5.5	1	1	3	3
CL990909	CL	34	R	9	19990909	1315	3731.02	7612.21	3731.25	7612.23	427.3	5.00	8.9	1	1	3	3
CL990920	CL	39	R	10	19990920	1204	3736.07	7557.90	3735.84	7557.99	447.6	5.00	7.0	2	1	1	5
CL990920	CL	40	R	10	19990920	1141	3736.38	7601.88	3736.16	7601.79	430.0	5.00	8.2	2	1	1	5
CL990909	CL	41	R	11	19990909	1343	3736.28	7610.99	3736.50	7610.97	408.8	5.00	12.2	1	1	3	3
CL990920	CL	42	R	11	19990920	940	3737.59	7611.66	3737.81	7611.68	408.8	5.00	11.3	1	2	1	5
CL990920	CL	43	R	11	19990920	1037	3738.47	7606.86	3738.63	7607.08	446.7	5.00	12.3	1	2	1	5
CL990920	CL	44	R	11	19990920	958	3739.53	7611.88	3739.75	7611.99	440.6	5.00	11.8	1	2	1	5
CL990920	CL	45	R	12	19990920	1255	3731.62	7601.47	3731.36	7601.53	490.3	5.00	13.4	2	1	1	6
CL990920	CL	46	R	12	19990920	1110	3736.41	7608.56	3736.18	7608.57	426.5	5.00	13.1	2	1	1	5
CL990920	CL	47	R	12	19990920	1051											

Table 23.
October 1999

System+ Cruise Number	Stat# or River				Station Date	Time	Location				Tow Parameters				Sea Tidal		
	River	Mile	Stat. Type	Stratum Code			Beginning Latitude	Beginning Longitude	Ending Latitude	Ending Longitude	Distance (m)	Duration (min)	Depth (m)	Direction One	Direction Two	State	Stage
CL991020	CL	1	R	1	19991020	952	3656.14	7607.27	3656.02	7607.02	440.0	5.00	9.8	2	1	2	5
CL991020	CL	3	R	1	19991020	906	3700.29	7608.97	3700.45	7609.00	300.0	5.00	7.0	1	2	2	5
CL991020	CL	4	R	1	19991020	836	3702.08	7614.22	3702.27	7614.11	389.7	5.00	4.9	1	2	2	5
CL991013	CL	5	R	2	19991013	1503	3701.45	7600.05	3701.52	7559.80	401.3	5.00	5.2	2	1	3	5
CL991013	CL	6	R	2	19991013	1447	3701.91	7559.41	3701.78	7559.16	449.7	5.00	6.1	2	1	3	5
CL991020	CL	7	R	2	19991020	1114	3706.47	7605.47	3706.61	7605.34	326.0	5.00	6.7	1	2	2	5
CL991013	CL	9	R	3	19991013	1523	3659.13	7601.46	3659.23	7601.69	395.4	5.00	11.3	1	2	3	5
CL991013	CL	10	R	3	19991013	1541	3700.37	7603.51	3700.56	7603.60	377.7	5.00	10.4	1	2	3	5
CL991013	CL	11	R	3	19991013	1425	3705.15	7559.29	3704.95	7559.22	385.5	5.00	14.8	2	2	2	3
CL991020	CL	12	R	3	19991020	1218	3708.37	7612.85	3708.22	7612.63	434.6	5.00	9.4	1	2	3	6
CL991020	CL	13	R	4	19991020	927	3658.75	7607.92	3658.71	7608.14	342.3	5.00	15.5	1	2	2	5
CL991013	CL	14	R	4	19991013	1553	3701.22	7603.19	3701.44	7603.23	412.2	5.00	16.5	1	2	3	5
CL991020	CL	15	R	4	19991020	1050	3704.74	7606.33	3704.89	7606.22	324.3	5.00	14.3	1	2	2	5
CL991006	CL	18	R	5	19991006	802	3715.37	7618.59	3715.42	7618.80	332.1	5.00	5.4	1	4	3	2
CL991006	CL	19	R	5	19991006	822	3715.95	7618.64	3716.12	7618.75	356.6	5.00	5.3	1	4	3	2
CL991006	CL	20	R	5	19991006	933	3723.41	7611.33	3723.62	7611.24	412.4	5.00	4.4	1	1	3	3
CL991020	CL	21	R	6	19991020	1249	3710.18	7608.72	3710.30	7608.68	230.5	5.00	7.9	1	2	3	6
CL991013	CL	22	R	6	19991013	1330	3710.30	7604.56	3710.20	7604.38	330.3	5.00	9.4	2	2	2	2
CL991013	CL	24	R	6	19991013	1221	3718.93	7602.62	3718.78	7602.52	316.7	5.00	9.4	2	2	2	2
CL991020	CL	25	R	7	19991020	1309	3711.19	7610.33	3711.31	7610.31	224.4	5.00	9.4	1	2	3	6
CL991013	CL	26	R	7	19991013	1305	3713.06	7603.78	3712.92	7603.75	263.4	5.00	12.1	2	2	2	2
CL991020	CL	27	R	7	19991020	1342	3715.48	7610.44	3715.63	7610.41	281.7	5.00	11.3	1	2	3	7
CL991020	CL	28	R	7	19991020	1406	3716.30	7608.60	3716.38	7608.47	246.9	5.00	11.6	1	2	3	7
CL991013	CL	29	R	8	19991013	1201	3720.49	7603.36	3720.35	7603.28	286.5	5.00	15.8	2	2	2	1
CL991013	CL	31	R	8	19991013	1140	3722.65	7602.15	3722.52	7602.24	277.0	5.00	13.4	2	2	2	1
CL991013	CL	32	R	8	19991013	1101	3723.65	7604.82	3723.49	7604.79	300.0	5.00	20.1	2	2	2	1
CL991006	CL	33	R	9	19991006	1353	3732.39	7616.82	3732.55	7616.66	383.4	5.00	5.4	1	2	1	6
CL991006	CL	34	R	9	19991006	1327	3733.88	7612.75	3734.07	7612.75	352.1	5.00	9.0	1	2	2	5
CL991006	CL	35	R	9	19991006	1450	3736.13	7617.02	3736.14	7617.25	349.8	5.00	8.5	1	5	1	6
CL991013	CL	37	R	10	19991013	1035	3725.94	7600.54	3725.77	7600.63	343.4	5.00	8.7	2	1	1	7
CL991013	CL	38	R	10	19991013	936	3729.14	7601.73	3728.87	7601.76	502.4	5.00	8.6	2	1	1	7
CL991006	CL	40	R	10	19991006	1203	3738.60	7557.42	3738.79	7557.45	355.0	5.00	6.3	1	2	3	5
CL991006	CL	41	R	11	19991006	1032	3729.14	7609.97	3729.37	7609.99	427.3	5.00	10.9	1	1	3	3
CL991006	CL	42	R	11	19991006	1110	3733.41	7604.53	3733.65	7604.57	448.9	5.00	12.4	1	1	3	3
CL991006	CL	43	R	11	19991006	1417	3735.39	7616.21	3735.36	7615.90	474.1	5.00	9.8	2	1	1	6
CL991006	CL	44	R	11	19991006	1434	3735.80	7616.52	3735.82	7616.76	366.4	5.00	11.0	1	5	1	6
CL991013	CL	45	R	12	19991013	951	3728.14	7602.49	3727.92	7602.53	412.2	5.00	16.1	2	1	1	7
CL991006	CL	47	R	12	19991006	1141	3736.17	7558.91	3736.37	7558.98	385.5	5.00	13.2	1	1	3	3
CL991006	CL	48	R	12	19991006	1258	3738.11	7610.47	3738.32	7610.49	390.3	5.00	13.2	1	2	3	5
CL991020	CL	66	S	S01	19991020	1158	3706.32	7615.29	3706.45	7615.28	241.4	5.00	2.5	1	2	3	6
CL991013	CL	71	S	S02	19991013	1407	3705.37	7601.08	3705.19	7600.95	387.6	5.00	3.7	2	2	3	3
CL991006	CL	75	S	S05	19991006	902	3719.89	7615.31	3720.11	7615.22	430.0	5.00	3.5	1	1	2	2
CL991013	CL	79	S	S06	19991013	1239	3716.80	7602.55	3716.63	7602.56	315.4	5.00	3.4	2	2	1	2
CL991006	CL	81	S	S09	19991006	1002	3726.80	7614.45	3727.01	7614.46	389.4	5.00	2.9	1	1	2	3
CL991013	CL	85	S	S10	19991013	1017	3727.12	7558.88	3726.94	7558.96	355.0	5.00	3.7	2	1	1	7

Table 24.
November 1999

System + Cruise Number	Stat# or		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			
CL991101	CL	2	R	1	19991101	1045	3656.69	7604.84	3656.84	7604.98	350.0	5.00	8.2	1	2	1	7
CL991118	CL	3	R	1	19991118	839	3659.69	7614.76	3659.66	7614.46	459.0	5.00	3.8	2	1	1	6
CL991118	CL	4	R	1	19991118	953	3704.63	7611.83	3704.82	7611.85	353.4	5.00	6.6	1	2	1	6
CL991101	CL	5	R	2	19991101	1142	3703.16	7559.08	3703.33	7559.26	417.1	5.00	10.1	1	2	0	7
CL991101	CL	6	R	2	19991101	1233	3706.57	7601.07	3706.70	7601.31	436.9	5.00	7.0	1	1	0	1
CL991101	CL	7	R	2	19991101	1258	3707.87	7605.97	3708.03	7606.16	413.7	5.00	7.3	1	1	0	1
CL991101	CL	9	R	3	19991101	1101	3658.02	7604.20	3657.99	7604.43	353.7	5.00	11.6	1	2	1	7
CL991118	CL	10	R	3	19991118	856	3659.84	7612.67	3659.79	7612.40	420.4	5.00	10.4	2	1	1	6
CL991101	CL	11	R	3	19991101	1015	3701.59	7606.80	3701.37	7606.60	508.4	5.00	9.4	2	1	0	6
CL991101	CL	12	R	3	19991101	844	3708.11	7611.54	3708.23	7611.70	329.4	5.00	10.7	1	2	0	6
CL991101	CL	14	R	4	19991101	952	3703.83	7605.30	3703.95	7605.44	307.7	5.00	14.9	1	2	1	6
CL991101	CL	15	R	4	19991101	933	3705.09	7607.14	3705.19	7607.31	317.8	5.00	13.1	1	2	1	6
CL991101	CL	16	R	4	19991101	905	3706.85	7608.90	3706.64	7608.67	522.9	5.00	12.5	2	1	1	6
CL991118	CL	17	R	5	19991118	1100	3711.49	7621.01	3711.30	7621.20	455.2	5.00	3.7	1	2	1	6
CL991101	CL	18	R	5	19991101	1513	3714.79	7613.64	3714.88	7613.88	400.9	5.00	8.2	1	1	1	2
CL991118	CL	19	R	5	19991118	1452	3718.97	7612.10	3718.80	7612.27	407.3	5.00	9.0	2	6	3	8
CL991101	CL	21	R	6	19991101	1325	3710.41	7602.87	3710.53	7603.10	414.1	5.00	9.1	1	1	0	1
CL991118	CL	22	R	6	19991118	1301	3718.54	7602.41	3718.30	7602.45	448.9	5.00	7.7	2	1	3	7
CL991118	CL	24	R	6	19991118	1331	3723.24	7600.75	3723.47	7600.78	428.6	5.00	5.2	1	2	2	7
CL991101	CL	25	R	7	19991101	1448	3711.52	7612.55	3711.36	7612.55	296.5	5.00	10.7	2	2	1	2
CL991101	CL	26	R	7	19991101	1436	3711.78	7611.53	3711.60	7611.63	366.5	5.00	10.7	2	2	1	1
CL991118	CL	27	R	7	19991118	1157	3717.79	7609.26	3717.99	7609.25	370.9	5.00	11.0	1	2	2	7
CL991118	CL	28	R	7	19991118	1215	3718.11	7607.42	3718.32	7607.35	403.4	5.00	12.2	1	2	3	7
CL991118	CL	29	R	8	19991118	1234	3717.23	7606.45	3717.43	7606.48	373.4	5.00	22.2	1	2	3	7
CL991118	CL	31	R	8	19991118	1357	3722.43	7605.87	3722.65	7605.78	430.0	5.00	13.4	1	6	3	8
CL991118	CL	32	R	8	19991118	1420	3722.74	7609.80	3722.98	7609.82	445.8	5.00	16.2	1	6	2	8
CL991110	CL	34	R	9	19991110	1504	3731.02	7612.89	3730.78	7612.88	445.0	5.00	8.6	2	2	2	3
CL991110	CL	35	R	9	19991110	1056	3735.05	7612.07	3735.19	7612.30	435.1	5.00	5.8	1	1	1	1
CL991110	CL	36	R	9	19991110	905	3737.87	7615.38	3738.06	7615.54	427.8	5.00	6.7	1	1	2	1
CL991110	CL	37	R	10	19991110	1329	3728.25	7559.19	3728.07	7559.28	360.5	5.00	5.4	2	2	2	3
CL991110	CL	38	R	10	19991110	1344	3728.45	7600.23	3728.26	7600.30	367.8	5.00	8.0	2	2	2	3
CL991110	CL	39	R	10	19991110	1312	3730.02	7559.11	3729.84	7559.21	366.5	5.00	5.8	2	2	2	3
CL991110	CL	41	R	11	19991110	1442	3731.10	7609.64	3730.88	7609.71	421.3	5.00	10.7	2	2	2	3
CL991110	CL	42	R	11	19991110	1421	3732.10	7607.44	3731.89	7607.47	391.8	5.00	11.9	2	2	2	3
CL991110	CL	43	R	11	19991110	1157	3738.01	7601.99	3737.86	7601.84	359.4	5.00	10.5	2	1	2	5
CL991110	CL	44	R	11	19991110	945	3739.96	7615.57	3740.18	7615.50	421.3	5.00	10.6	1	1	2	1
CL991110	CL	46	R	12	19991110	1028	3734.68	7610.78	3734.87	7610.73	360.2	5.00	12.6	2	2	3	1
CL991110	CL	47	R	12	19991110	1215	3736.77	7602.89	3736.63	7602.77	317.0	5.00	16.0	2	1	2	6
CL991110	CL	48	R	12	19991110	1140	3738.88	7602.86	3738.70	7602.79	350.1	5.00	13.4	2	1	2	5
CL991118	CL	66	S	S01	19991118	926	3703.57	7614.68	3703.78	7614.63	396.5	5.00	3.4	1	2	1	6
CL991101	CL	70	S	S02	19991101	1159	3704.78	7558.25	3704.90	7558.56	520.7	5.00	2.1	1	2	1	7
CL991118	CL	74	S	S05	19991118	1033	3710.56	7618.03	3710.76	7618.13	400.5	5.00	2.2	1	2	1	6
CL991101	CL	77	S	S06	19991101	1345	3712.74	7601.45	3712.95	7601.44	389.4	5.00	3.0	1	1	0	1
CL991110	CL	84	S	S09	19991110	923	3737.90	7616.39	3738.07	7616.58	427.2	5.00	3.7	1	1	2	1
CL991110	CL	86	S	S10	19991110	1256	3731.40	7558.41	3731.21	7558.49	372.4	5.00	3.4	2	1	2	6

Table 25.
December 1999

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
CL991208	CL	1	R	1	19991208	903	3657.47	7608.99	3657.37	7608.85	282.0	5.00	7.3	2	2	1	2
CL991208	CL	3	R	1	19991208	840	3658.93	7612.54	3658.87	7612.31	366.6	5.00	7.3	2	2	1	2
CL991208	CL	6	R	2	19991208	1157	3704.38	7601.74	3704.55	7601.85	356.6	5.00	4.3	1	1	1	3
CL991208	CL	8	R	2	19991208	1236	3707.50	7600.91	3707.67	7600.83	337.6	5.00	5.8	1	2	0	5
CL991208	CL	9	R	3	19991208	935	3658.30	7603.77	3658.26	7603.58	297.9	5.00	9.1	2	2	0	2
CL991208	CL	10	R	3	19991208	1043	3702.69	7605.30	3702.59	7605.08	382.1	5.00	11.0	2	2	1	3
CL991208	CL	11	R	3	19991208	1028	3702.64	7606.03	3702.71	7605.78	401.3	5.00	11.3	2	2	1	3
CL991203	CL	12	R	3	19991203	1328	3708.63	7610.27	3708.36	7610.26	500.5	5.00	11.0	2	1	2	6
CL991208	CL	13	R	4	19991208	955	3658.13	7601.34	3658.31	7601.24	366.5	5.00	14.3	2	2	0	3
CL991208	CL	15	R	4	19991208	1111	3706.56	7608.06	3706.56	7607.82	364.5	5.00	13.7	2	2	0	3
CL991208	CL	16	R	4	19991208	1126	3706.80	7607.41	3706.73	7607.23	302.6	5.00	14.0	2	2	0	3
CL991209	CL	17	R	5	19991209	1419	3717.57	7614.30	3717.79	7614.27	410.2	5.00	8.2	1	2	2	5
CL991209	CL	20	R	5	19991209	1508	3724.32	7612.86	3724.52	7612.90	375.5	5.00	3.7	1	2	2	5
CL991208	CL	21	R	6	19991208	1259	3710.29	7603.22	3710.45	7603.33	340.3	5.00	8.7	1	2	0	5
CL991203	CL	22	R	6	19991203	1303	3711.48	7608.65	3711.65	7608.66	315.4	5.00	8.5	1	2	2	6
CL991203	CL	25	R	7	19991203	1352	3711.06	7611.84	3711.22	7611.94	333.1	5.00	10.1	1	2	2	7
CL991203	CL	26	R	7	19991203	1247	3712.91	7608.43	3713.05	7608.28	345.3	5.00	10.1	1	2	2	6
CL991203	CL	27	R	7	19991203	1227	3713.78	7610.20	3713.51	7610.22	501.2	5.00	10.4	2	1	2	6
CL991209	CL	28	R	7	19991209	1345	3718.52	7610.05	3718.30	7610.00	414.7	5.00	10.3	2	1	1	5
CL991209	CL	29	R	8	19991209	1359	3717.68	7611.09	3717.46	7611.11	408.8	5.00	12.6	2	1	2	5
CL991209	CL	30	R	8	19991209	1439	3719.13	7611.18	3719.36	7611.18	426.2	5.00	12.5	1	2	2	5
CL991208	CL	32	R	8	19991208	1408	3721.01	7603.40	3721.20	7603.38	353.4	5.00	14.0	1	2	1	5
CL991209	CL	33	R	9	19991209	1522	3726.00	7613.12	3726.18	7613.16	339.0	5.00	5.5	1	2	2	5
CL991209	CL	35	R	9	19991209	1554	3730.54	7612.97	3730.74	7612.90	385.5	5.00	8.5	1	2	2	6
CL991209	CL	37	R	10	19991209	1218	3736.21	7557.71	3736.03	7557.81	366.5	5.00	6.6	2	2	1	3
CL991209	CL	39	R	10	19991209	1143	3738.35	7557.44	3738.16	7557.48	357.3	5.00	6.3	2	2	1	3
CL991209	CL	41	R	11	19991209	1621	3730.64	7611.02	3730.84	7610.91	406.5	5.00	9.8	1	2	3	6
CL991209	CL	42	R	11	19991209	1113	3738.65	7604.00	3738.46	7603.98	353.4	5.00	11.9	2	2	1	3
CL991209	CL	43	R	11	19991209	1035	3738.66	7608.44	3738.47	7608.40	357.3	5.00	12.6	2	2	1	2
CL991209	CL	44	R	11	19991209	1014	3739.06	7611.74	3739.30	7611.82	461.0	5.00	11.9	1	1	2	2
CL991208	CL	45	R	12	19991208	1509	3731.73	7602.26	3731.90	7602.35	343.4	5.00	15.2	1	2	1	6
CL991209	CL	46	R	12	19991209	952	3736.19	7609.31	3736.43	7609.27	448.9	5.00	12.6	2	2	1	2
CL991209	CL	48	R	12	19991209	1051	3738.54	7607.72	3738.35	7607.74	353.4	5.00	12.9	2	2	1	3
CL991203	CL	68	S	S01	19991203	1423	3709.43	7617.46	3709.57	7617.61	345.3	5.00	2.1	1	2	1	7
CL991208	CL	69	S	S02	19991208	1212	3705.06	7601.63	3704.91	7601.36	495.4	5.00	3.2	2	1	0	5
CL991203	CL	73	S	S05	19991203	1455	3713.39	7621.66	3713.56	7621.37	541.5	5.00	2.7	1	2	0	7
CL991208	CL	77	S	S06	19991208	1320	3712.24	7601.47	3712.40	7601.42	306.1	5.00	2.3	1	2	0	5
CL991209	CL	82	S	S09	19991209	915	3734.36	7617.70	3734.31	7617.43	420.4	5.00	3.3	2	2	1	2
CL991209	CL	86	S	S10	19991209	1201	3737.08	7555.68	3736.87	7555.73	396.5	5.00	3.0	2	2	1	3

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 were sampled once per quarter beginning in July, 1998.

Table 26.
January 1999

System+ Cruise Number	Stat # River River Mile	Air Depth (m)	Wind Temp. (C)	Wind Speed m/sec	Weather Direct. (deg)	Weather Obs.	Secchi (m)	Surface				Bottom					
								Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.		
GW99012	GW	1	2.2	9.0	0	1	2.6	5.57	18.4	12.10	108.7	5.42	18.8	12.38	111.1		
GW99012	GW	2	3.5	11.8	0	1	1.8	5.73	18.5	12.24	110.4	5.25	19.1	12.33	110.4		
GW99012	GW	3	5.0	13.1	0	1	2.3	6.31	16.5	11.74	106.0	5.64	18.4	11.21	100.8		
GW99012	GW	5	5.0	7.7	0	2	2.5	5.51	18.6	12.40	111.3	5.05	19.4	12.40	110.7		
GW99012	GW	7	5.2	9.7	0	1	3.0	5.72	18.4	12.14	109.4	5.04	19.4	13.00	116.0		
GW99012	GW	8	6.6	11.2	0	0	2.8	5.77	18.0	11.65	104.8	5.25	19.2	11.61	104.0		
JA990113	JA	JA01	8.5	10.1	8	220	1	2.3	4.70	21.5	12.30	110.4	4.70	22.8	12.52	113.3	
JA990113	JA	JA05	4.9	11.3	5	220	1	2.0	4.70	20.1	13.20	117.3	4.70	21.5	12.90	115.8	
JA990113	JA	JA13	13.5	12.3	8	220	1	2.0	4.50	15.3	12.30	105.3	4.50	18.0	12.50	109.0	
JA990113	JA	JA17	5.7	11.8	6	220	1	1.1	4.70	10.7	11.50	96.0	4.70	10.8	12.08	100.9	
JA990113	JA	JA24	8.6	13.7	6	220	1	0.6	5.60	7.0	10.97	91.4	4.90	8.0	11.90	98.0	
JA990114	JA	JA27	9.1	7.7	3	90	2	0.6	5.04	8.5	12.44	103.2	4.91	9.0	12.65	105.0	
JA990114	JA	JA27	9.1	7.7	3	90	2	0.6	5.04	8.5	12.44	103.2	4.91	9.0	12.65	105.0	
JA990114	JA	JA35	7.6	8.3	5	90	2	0.3	5.88	5.4	11.44	95.0	5.90	5.5	11.44	95.1	
JA990114	JA	JA40	6.1	9.1	5	90	2	0.3	4.80	3.5	10.85	86.5	4.87	3.6	11.35	90.7	
JA990113	JA	2	3.1	10.7	5	220	1	1.7	4.60	18.4	12.24	107.3	4.60	18.4	12.61	110.6	
JA990113	JA	3	3.9	10.3	5	220	1	1.1	4.60	18.1	13.00	113.7	4.50	19.9	12.56	110.9	
JA990113	JA	5	10.1	12.0	5	220	1	2.6	4.70	21.2	12.16	108.9	4.90	24.1	12.62	115.8	
JA990113	JA	7	20.0	11.4	8	220	1	2.2	4.70	21.7	12.55	112.8	5.10	24.8	12.02	111.3	
JA990113	JA	8	19.6	9.3	8	220	1	2.2	4.69	22.3	12.92	116.5	4.70	22.7	12.73	115.1	
JA990113	JA	9	1.5	13.2	8	220	1	1.9	4.70	16.0	12.53	108.4	4.60	16.9	12.66	109.9	
JA990113	JA	11	6.0	14.6	8	220	1	1.5	4.80	16.3	12.69	110.2	4.50	18.9	12.46	109.3	
JA990113	JA	14	11.9	12.9	8	220	1	1.4	4.90	13.7	11.98	102.5	4.50	15.2	12.43	106.4	
JA990114	JA	15	3.4	6.9	5	90	2	0.4	5.27	8.4	11.25	93.8	5.24	8.4	11.60	96.7	
JA990114	JA	18	7.3	7.4	5	90	2	0.5	5.00	8.3	11.60	96.0	4.88	9.0	12.00	99.5	
JA990114	JA	19	11.0	8.7	5	270	2	0.7	5.73	4.7	11.15	91.8	6.37	5.4	11.16	93.8	
JA990114	JA	20	15.2	8.4	5	90	2	0.4	5.66	4.2	11.77	96.4	6.58	5.3	11.67	98.5	
JA990114	JA	21	3.0	8.2	5	90	2	0.5	8.15	6.0	11.14	98.2	8.18	6.1	11.12	98.1	
JA990114	JA	23	5.2	8.9	5	90	2	0.3	5.03	3.6	11.83	95.0	6.00	4.5	11.75	97.2	
PK990119	PK	PK02	6.9	8.1	8	270	2	2.3	5.54	18.8	12.37	111.3	5.41	19.0	12.18	109.4	
PK990119	PK	PK03	6.7	9.8	8	270	2	2.2	5.85	17.1	12.21	109.4	5.30	19.0	12.37	110.8	
PK990119	PK	PK04	4.9	10.7	5	270	1	1.9	6.02	16.5	12.30	110.3	5.15	18.7	12.39	110.3	
PK990119	PK	1	2.7	8.7	8	270	1	2.0	5.60	18.6	13.00	117.0	5.59	18.6	13.47	121.2	
PK990119	PK	4	1.5	8.1	8	270	1	1.8	5.37	19.1	12.60	113.1	5.26	19.3	12.70	113.9	
PK990119	PK	5	5.4	18.7	5	270	2	1.8	5.95	16.7	12.53	112.3	5.14	18.8	12.66	112.8	
PK990119	PK	8	6.3	9.1	8	270	1	1.2	5.37	19.1	12.71	114.1	5.13	19.4	12.74	113.9	
RA990119	RA	RA02	17.1	10.6	8	270	1	2.0	5.14	19.1	12.60	112.5	4.95	19.4	12.56	111.8	
RA990119	RA	RA10	18.5	18.9	5	270	1	2.0	5.39	18.1	12.69	113.2	4.78	19.2	13.16	116.5	
RA990120	RA	RA15	14.0	9.7	5	140	2	1.2	5.11	16.4	12.70	111.3	4.77	19.2	11.80	104.4	
RA990120	RA	RA20	15.2	8.2	5	140	2	1.2	5.25	15.6	12.30	107.6	4.70	18.8	11.80	104.0	
RA990120	RA	RA25	8.5	9.4	8	140	2	0.8	5.21	13.4	12.40	106.7	5.08	15.1	11.97	103.9	
RA990120	RA	RA30	5.5	10.2	8	140	2	0.7	5.06	9.9	11.50	96.3	4.94	11.8	11.50	97.3	
RA990120	RA	RA35	5.5	9.9	8	140	2	0.7	4.92	7.8	11.34	93.4	4.86	8.3	11.47	94.6	
RA990120	RA	RA40	4.3	9.4	5	140	2	0.6	4.72	5.2	11.66	93.9	4.70	5.2	11.70	94.1	
RA990119	RA	1	2.0	10.7	8	270	1	2.3	5.60	19.1	12.44	112.3	5.44	19.2	12.43	111.9	
RA990119	RA	4	7.2	12.8	5	270	1	1.9	5.43	18.1	12.55	112.1	4.82	19.1	12.56	111.2	
RA990119	RA	6	11.8	17.4	5	270	1	1.7	5.38	18.2	12.27	109.5	4.73	19.5	12.47	110.5	
RA990119	RA	7	19.8	17.3	8	270	1	2.0	5.17	19.1	12.77	114.1	4.92	19.3	12.85	114.2	
RA990119	RA	9	2.5	12.4	5	270	1	1.3	5.62	17.5	13.00	116.2	5.02	18.0	12.81	113.2	
RA990120	RA	11	6.7	11.3	5	140	2	1.3	5.27	16.6	12.30	108.3	5.05	17.8	12.30	108.6	
RA990120	RA	14	11.6	9.3	5	140	2	1.8	5.24	16.8	12.10	106.6	4.94	18.1	12.00	105.9	
RA990119	RA	15	15.6	11.6	5	270	1	1.8	5.29	17.9	12.43	110.5	4.58	19.6	12.00	106.0	
RA990120	RA	17	3.4	10.2	8	140	2	0.9	5.22	14.5	12.18	105.6	5.07	15.2	11.95	103.8	
RA990120	RA	19	4.0	10.5	5	140	1	1.0	5.11	15.2	12.15	105.6	4.98	16.1	11.90	103.7	
RA990120	RA	21	10.7	9.6	5	140	1	1.0	5.20	15.2	12.17	106.0	4.75	18.1	11.63	102.1	
RA990120	RA	22	9.1	9.0	5	140	5	0.8	4.89	6.8	11.24	91.8	4.85	7.4	11.42	93.6	
RA990120	RA	23	1.8	9.4	8	140	2	0.7	4.91	9.1	11.24	91.8	4.85	4.91	11.1	11.51	96.8
RA990120	RA	25	5.5	10.3	8	140	2	0.6	4.87	9.7	11.60	96.6	4.90	11.3	11.40	96.0	
YK990111	YK	YK02	10.8	8.0	10	270	1	1.3	4.15	20.8	12.15	107.0	4.70	22.8	12.70	115.0	
YK990111	YK	YK05	15.2	7.0	8	270	1	1.1	3.79	18.8	12.15	104.7	4.41	21.5	12.02	107.1	
YK990111	YK	YK10	8.3	11.0	3	270	2	0.9	3.62	17.5	14.13	120.1	4.62	21.8	13.25	118.9	
YK990112	YK	YK15	8.1	7.9	10	220	2	0.9	3.20	15.6	12.91	107.2	4.43	19.5	13.18	115.9	
YK990112	YK	YK20	6.2	11.1	10	220	1	0.3	3.40	14.4	12.75	105.5	3.75	15.9	13.34	112.6	
YK990112	YK	YK25	8.2	10.4	10	220	2	0.6	3.58	11.7	12.02	98.2	3.75	14.7	11.81	98.8	
YK990112	YK	YK30	4.9	11.8	8	220	1	0.2	3.87	6.7	11.54	91.8	3.75	7.9	11.45	91.5	
YK990112	YK	YK35	6.3	13.6	8	220	1	0.2	3.85	2.2	11.32	87.3	3.64	2.9	11.41	87.9	
YK990112	YK	YK40	3.7	13.3	8	220	1	0.1	3.45	1.0	11.58	87.7	3.35	1.0	11.65	88.0	
YK990111	YK	1	3.7	5.0	5	360	1	1.5	3.80	21.2	12.83	112.3	3.86	21.2	12.74	111.7	
YK990111	YK	4	5.9	6.0	10	270	1	1.7	4.59	21.4	12.35	110.4	4.57	23.5	12.63	114.3	
YK990111	YK	5	9.8	8.0	3	160	1	1	4.02	19.1	13.17	114.3	4.65				
YK990111	YK	7	15.2	8.0	5	270	1	1.0	3.74	19.0	13.08	112.7	4.51	21.9	12.45	111.5	
YK990111	YK	8	19.8	11.0	8	270	1	0.8	3.90	18.6	12.30	106.1	4.61	22.7	13.22	119.3	
YK990111	YK	9	2.6	8.0	3	270	1	0.7	3.66	17.1	13.83	117.4	3.93	19.1	13.20	114.3	
YK990111	YK	12	9.9	9.0	3	270	2	0.7	3.60	17.0	12.99	110.0	4.39	20.3	13.46	118.9	
YK990112	YK	14	9.5	9.1	8	220	2	0.9	3.26	16.1	12.83	107.1	4.45	19.8	12.06	106.3	
YK990112	YK	15	2.6	10.8	10	220	2	0.5	3.65	14.8	12.50	104.4	3.75	16.1	12.01	101.5	
YK990112	YK	16	3.2	13.3	10	220	1	0.6	3.99	10.9	12.73	104.5	3.82	11.4	12.80	105.0	
YK990112	YK	17	6.8	8.4	10	220	2	0.7	3.37	15.2	12.67	105.4	4.31	18.8	12.25	106.9	
YK990112	YK	19	9.4	9.3	10	220	2	0.4	3.13	14.3	12.31	101.1	4.16	18.0	12.34	106.7	
YK990112	YK	20	7.3	10.2	8	220	2	0.6	3.44	12.7	12.57	103.0	3.75	15.1	12.64	106.1	

Table 27.
February 1999

System+ Cruise Number	Stat # 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.
JA990203	JA JA01	6.8	11.9	3	20	0	2.0	8.50	19.0	10.26	99.2	8.40	19.9	10.96	106.3
JA990204	JA JA05	6.1	9.6	5	220	4	1.4	8.23	17.9	10.08	96.1	8.14	18.8	10.04	96.1
JA990204	JA JA13	7.1	11.9	5	220	6	1.2	8.61	12.1	10.92	101.2	8.48	15.0	10.54	99.2
JA990204	JA JA17	7.1	10.3	5	220	6	0.7	9.02	0.6	10.00	86.9	8.94	8.8	10.41	95.2
JA990204	JA JA24	10.1	11.1	8	220	6	0.7	9.38	3.1	9.51	84.7	9.34	4.5	9.46	84.9
JA990204	JA JA27	9.5	12.6	8	220	4	0.4	9.60	1.7	9.90	87.8	9.47	2.2	9.95	88.3
JA990204	JA JA35	8.0	16.0	8	220	2	0.2	9.78	1.2	10.34	91.8	9.75	1.2	10.35	91.9
JA990204	JA JA40	5.5	15.8	8	220	1	0.2	9.01	0.4	10.65	92.4	8.96	0.3	10.73	92.9
JA990204	JA 1	3.8	11.0	5	220	4	1.0	8.64	15.3	10.46	99.0	8.64	15.3	10.35	98.0
JA990204	JA 3	4.8	11.2	5	220	4	1.4	8.58	15.6	10.41	98.6	8.25	17.8	10.30	98.2
JA990203	JA 6	10.1	10.8	3	20	0	1.7	8.70	18.4	10.31	99.3	8.40	19.6	11.48	111.1
JA990203	JA 7	17.4	11.1	3	20	0	1.7	8.50	18.4	10.31	99.3	8.30	19.8	10.73	103.8
JA990203	JA 8	20.1	12.6	3	20	0	2.0	8.40	19.2	10.74	103.7	8.30	19.8	10.73	103.8
JA990204	JA 10	2.3	12.7	5	220	5	1.0	8.74	7.3	10.81	97.4	8.56	12.9	10.90	101.4
JA990204	JA 12	8.2	10.8	8	220	4	0.9	9.07	6.6	9.77	88.3	9.01	7.8	9.84	89.5
JA990204	JA 14	9.8	11.4	5	220	6	1.2	8.56	11.9	10.88	100.6	8.41	16.9	10.69	101.7
JA990204	JA 16	2.5	13.1	8	220	4	0.4	9.50	1.7	10.04	88.9	9.48	1.6	10.10	89.3
JA990204	JA 17	3.7	13.4	5	220	4	0.4	9.48	2.9	9.45	84.2	9.43	3.0	9.40	83.8
JA990204	JA 19	17.7	16.0	8	220	2	0.3	9.07	0.6	10.53	91.6	9.20	0.7	10.60	92.6
JA990204	JA 20	20.5	14.1	8	220	2	0.2	9.25	0.7	10.40	90.9	9.58	1.4	10.43	92.1
JA990204	JA 21	3.9	14.5	8	220	2	0.3	11.97	2.2	9.30	87.4	12.56	2.0	9.24	88.1
JA990204	JA 23	8.1	15.1	8	220	2	0.2	9.45	0.9	10.32	90.8	9.52	1.1	10.40	91.7
MB99021	MS MS01	6.4	12.7	5	250	1	2.9	7.33	19.5	9.80	92.5	7.20	20.5	9.85	93.3
MB99021	MW MW0	5.8	13.4	3	250	1	1	7.66	20.0	9.37	89.4	7.43	20.4	9.58	91.1
MB99021	MN MN0	7.0	11.6	5	140	1	3.3	7.87	20.3	9.50	91.3	7.48	20.4	10.22	97.3
MB99021	ME ME02	4.6	14.1	5	140	1	1	8.12	19.9	9.62	92.7	7.64	20.3	9.65	92.2
MB99021	MB MB0	5.4	12.0	5	140	1	1	6.95	21.2	9.61	90.9	6.59	21.1	9.81	91.9
MB99021	MB MB0	6.0	11.1	5	140	1	1	7.72	20.5	9.65	92.5	6.83	20.8	9.77	91.9
MB99021	MB MB0	2.9	8.6	5	250	1	1.3	6.72	20.3	9.90	92.6	6.72	20.8	10.26	96.2
MB99021	MB 1	2.1	12.1	5	140	1	1	7.08	20.9	9.46	89.6	7.16	20.6	9.49	89.8
MB99021	MB 2	3.0	12.2	5	250	1	1	7.28	20.0	9.60	90.8	7.16	20.6	9.49	89.8
MB99021	MB 4	3.0	10.8	5	140	1	1	7.28	20.0	9.60	90.8	7.16	20.6	9.49	89.8
MB99021	MB 5	4.8	12.2	5	140	1	1	7.34	17.0	9.83	91.3	7.33	20.4	9.70	92.1
MB99021	MB 6	5.9	11.4	5	250	1	1	7.11	21.1	9.38	89.0	6.65	21.5	9.96	93.7
MB99021	MB 8	7.6	12.4	5	250	1	1	6.67	20.8	9.78	91.6	6.60	21.0	9.75	91.3
MB99021	MS 10	2.0	10.9	5	250	1	1	7.46	20.2	9.57	91.0	7.28	20.5	9.74	92.4
MB99021	MW 12	2.7	13.3	3	250	1	1	7.21	19.7	9.69	91.3	7.21	20.4	9.92	93.9
MB99021	MS 14	6.2	12.3	5	250	1	1	7.89	18.9	9.46	90.1	7.84	19.8	9.52	91.1
MB99021	MN 15	7.3	11.8	3	250	1	1	7.33	20.3	10.10	95.8	7.20	20.5	10.07	95.4
RA990211	RA RA02	17.1	11.2	8	140	1	1	7.54	20.3	10.10	96.3	7.38	20.4	9.68	92.0
RA990211	RA RA10	16.7	14.4	8	140	1	1	7.56	17.0	9.70	90.5	6.50	18.6	9.92	91.2
RA990210	RA RA15	13.5	9.8	5	360	2	2	7.95	15.1	9.92	92.3	6.59	18.5	10.03	92.4
RA990210	RA RA20	11.3	9.6	5	360	2	2	6.80	14.7	10.13	91.5	6.70	18.6	9.82	90.7
RA990210	RA RA25	9.1	12.7	5	40	1	1	6.90	14.5	11.56	104.5	6.90	18.0	10.09	93.3
RA990210	RA RA30	5.6	11.6	6	20	1	1	7.20	11.1	11.25	100.2	7.00	16.4	10.25	94.0
RA990210	RA RA35	4.9	11.5	5	20	1	1	7.40	9.1	11.70	103.3	7.00	12.5	10.44	93.4
RA990210	RA RA40	3.9	11.1	5	20	1	1	7.60	5.2	10.72	92.7	7.10	10.5	9.80	86.7
RA990209	RA 2	3.0	11.2	8	220	1	1	7.30	2.6	10.63	89.7	7.10	3.1	10.57	89.1
RA990211	RA 4	6.6	12.4	8	140	1	1	7.05	17.2	9.80	90.5	7.11	18.6	9.69	90.4
RA990211	RA 6	9.8	13.7	8	140	1	1	7.40	17.2	9.81	91.3	6.87	18.0	9.90	91.5
RA990211	RA 8	11.3	12.7	8	140	1	1	7.79	16.0	10.03	93.5	6.80	18.3	9.86	91.2
RA990211	RA 9	3.0	14.9	5	140	1	1	7.82	16.6	9.56	89.5	6.47	18.7	9.70	89.2
RA990211	RA 11	5.8	13.5	5	140	1	1	8.07	16.2	10.10	94.9	7.89	16.3	10.09	94.5
RA990210	RA 14	30.2	10.8	5	360	2	2	7.94	14.7	10.50	97.4	7.18	17.2	9.71	89.9
RA990211	RA 15	15.9	14.6	5	140	1	1	8.07	15.7	11.35	104.1	6.80	18.4	10.53	97.4
RA990210	RA 18	3.4	11.6	5	20	1	1	7.20	15.4	10.09	94.7	6.68	18.6	9.31	86.0
RA990210	RA 20	7.3	11.8	6	40	1	1	7.50	9.0	11.05	97.7	7.30	9.7	10.61	93.8
RA990210	RA 21	11.2	10.7	6	40	1	1	10.92	14.0	10.92	98.9	6.90	17.7	9.96	91.9
RA990210	RA 22	9.1	12.2	6	40	1	1	7.10	14.0	11.29	102.2	6.90	17.6	10.25	94.5
RA990210	RA 23	2.1	12.4	5	20	1	1	7.20	13.8	10.60	96.1	7.00	17.6	10.25	94.8
RA990210	RA 25	3.9	13.2	5	20	1	1	7.80	6.9	11.08	97.4	7.60	7.5	10.71	94.0
YK990203	YK YK02	11.9	9.1	4	290	2	2.0	7.60	8.1	11.26	99.3	7.20	9.1	10.84	95.3
YK990203	YK YK05	15.3	8.3	3	290	1	1.6	8.20	19.8	10.47	101.0	7.40	20.9	10.58	100.9
YK990202	YK YK10	8.4	15.1	5	160	2	2.0	8.20	18.4	8.04	80.3	7.80	20.2	10.05	96.3
YK990202	YK YK15	7.2	12.3	5	160	5	0.4	10.10	18.9	10.48	100.2	7.94	19.5	10.64	101.8
YK990202	YK YK20	7.3	13.1	5	160	5	0.3	8.15	14.1	10.75	99.8	8.09	15.3	10.78	100.8
YK990202	YK YK25	10.1	12.5	5	160	2	0.2	8.07	12.2	10.82	99.1	8.00	12.8	10.63	97.5
YK990202	YK YK30	6.2	14.3	5	160	2	0.2	8.25	10.1	11.20	101.6	8.04	11.1	10.52	95.6
YK990202	YK YK35	6.8	14.5	3	160	5	0.1	8.22	5.5	9.28	81.6	8.10	5.7	9.46	83.1
YK990202	YK YK40	3.9	14.8	0	160	4	0.1	8.35	1.3	10.06	86.4	8.25	1.3	10.20	87.4
YK990203	YK 2	2.9	9.3	3	320	1	2.6	8.23	0.4	10.91	92.9	8.14	0.4	10.90	92.6
YK990202	YK 4	4.5	16.2	5	160	2	1.5	7.20	21.1	10.17	96.7	7.20	21.0	10.44	99.2
YK990203	YK 5	12.6	10.0	4	320	2	2.3	8.30	19.4	10.00	96.5	7.90	20.0	10.45	100.3
YK990203	YK 7	18.1	10.4	3	320	1	2.6	8.20	20.0	10.57	102.1	7.20	21.2	12.10	115.1
YK990203	YK 8	14.6	9.7	3	290	1	1.6	7.60	20.6	10.06	96.2	6.80	21.5	10.44	98.6
YK990202	YK 10	3.2	11.6	5	160	5	0.4	8.00	19.2	10.08	96.4	7.50	20.7	9.56	91.3
YK990202	YK 11	5.5	15.2	5	160	2	1.3	8.05	14.7	11.00	102.3	8.00	14.7	11.15	103.6
YK990202	YK 13	11.2	14.7	5	160	2	0.9	8.27	18.8	10.22	98.1	8.05	19.3	10.62	101.8
YK990202	YK 15	2.1	14.0	5	160	6	0.3	8.34	18.1	10.36	99.2	7.97	19.2	10.86	103.8
YK990202	YK 16	4.1	14.2	5	160	2	0.2	8.02	12.6	11.70	107.3	8.05	12.7	11.82	108.5
YK990202	YK 18	4.5	14.2	5	160	6	0.3	8.07	9.6	10.42	93.8	8.04	9.6	10.41	93.7
YK990202	YK 19	8.2	12.8	5	160	6	0.2	8.23	11.1	10.58	96.5	8.00	12.2	11.08	101.3
YK990202	YK 20	8.5	12.7	5	160	5	0.2	8.12	11.5	10.93	99.7	8.02	11.7	10.81	98.5

Table 28.
March 1999

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.	
CP990323	CP CP01	4.9	9.4	5	110	2	1.0	8.10	16.1	10.36	97.4	8.03	16.6	10.26	96.6	
CP990323	CP CP03	26.8	9.0	4	110		1.0	7.52	16.9	9.76	91.0	7.42	17.3	9.93	92.6	
CP990323	CP CP05	10.0	9.3	3	140		1.3	6.97	17.8	9.54	88.3	7.02	17.9	10.26	95.1	
CP990323	CP 1	1.9	10.4	4	110		1.0	8.03	17.4	10.79	102.1	8.00	17.4	10.84	102.5	
CP990323	CP 2	2.4	10.1	4	110		0.7	8.54	16.4	10.66	101.4	8.23	16.7	10.71	101.4	
CP990323	CP 3	3.0	10.3	4	110		0.9	8.34	16.9	10.67	101.4	8.31	17.0	10.80	102.6	
CP990323	CP 4	2.6	10.0	4	110		0.6	8.61	15.8	10.31	97.9	8.45	16.6	10.30	97.9	
CP990323	CP 5	3.9	10.1	4	110		1.4	7.03	17.3	10.41	96.1	6.98	17.8	10.53	97.4	
CP990323	CP 7	6.5	10.1	4	110		1.0	7.64	17.5	9.74	91.4	7.56	17.5	10.10	94.6	
CP990323	CP 8	4.3	11.1	4	110		1.0	7.73	17.7	10.05	94.6	7.71	17.7	10.13	95.3	
CP990323	CP 10	9.1	10.2	3	110		1.5	7.22	17.7	9.52	88.5	7.23	17.9	10.00	93.2	
CP990323	CP 11	12.9	10.1	4	110		1.4	7.38	17.8	10.39	97.1	7.35	17.8	10.01	93.5	
CP990323	CP 14	22.9	8.4	5	110		1.2	7.43	17.7	9.67	90.4	7.36	17.8	10.30	96.2	
CP990323	CP 16	20.4	9.8	4	110		1.2	7.65	17.5	9.84	92.3	7.50	17.6	9.94	93.0	
JA990302	JA JA01	6.4	12.4	6	270	0	2.2	6.55	21.4	9.72	91.2	6.50	21.6	9.71	91.1	
JA990302	JA JA05	6.6	12.0	4	220	1	1.5	6.78	20.0	10.05	93.9	6.70	20.1	10.23	95.5	
JA990302	JA JA13	9.1	14.5	1	220	1	1.4	7.54	15.0	10.48	96.5	6.83	17.0	10.31	94.6	
JA990305	JA JA17	6.8	10.3	1	40	1	0.6	8.30	9.8	11.30	102.4	7.70	10.8	10.20	91.7	
JA990305	JA JA24	9.4	12.6	1	40	0	0.5	8.40	4.5	10.30	90.4	8.20	6.1	9.70	85.6	
JA990305	JA JA27	8.3	8.4	5	40	0	0.3	10.80	2.6	10.60	97.3	8.40	3.4	10.20	88.9	
JA990305	JA JA35	7.0	10.4	1	40	0	0.2	7.70	0.8	10.90	91.8	7.80	1.0	10.60	89.6	
JA990305	JA JA40	5.1	8.6	1	40	0	0.2	7.60	0.2	11.10	92.9	10.50	0.2	10.90	97.8	
JA990302	JA 1	2.7	11.3	6	270	0	2.2	6.83	21.0	9.56	90.0	6.82	21.1	9.85	92.8	
JA990302	JA 4	5.8	13.8	3	220	1	1.0	6.87	17.8	9.91	91.5	6.62	19.2	10.01	92.7	
JA990302	JA 6	11.5	15.1	3	220	1	0.8	7.32	18.1	9.96	93.1	6.42	20.1	9.77	90.6	
JA990302	JA 7	14.1	12.3	6	270	1	1.8	6.73	21.1	9.56	89.9	6.10	22.8	9.52	89.2	
JA990302	JA 8	12.0	11.6	5	270	0	2.3	6.49	21.3	9.90	92.7	6.37	21.6	9.63	90.1	
JA990302	JA 9	2.7	13.4	3	220	1	0.7	7.92	14.0	10.23	94.4	7.89	14.0	10.61	97.9	
JA990302	JA 11	8.8	13.9	3	220	1	0.8	7.43	15.3	10.10	92.9	6.72	17.7	10.25	94.2	
JA990302	JA 14	11.1	15.1	2	220	1	0.7	7.77	12.6	11.76	107.2	7.21	13.9	11.40	103.4	
JA990305	JA 15	2.2	8.5	1	40	1	0.4	8.40	6.3	12.00	106.6	8.10	6.5	11.90	105.1	
JA990305	JA 17	4.8	8.4	3	40	0	0.4	8.50	4.0	11.20	98.2	8.30	5.3	10.60	93.3	
JA990305	JA 19	9.1	12.3	1	40	1	0.4	8.10	4.8	10.90	95.2	8.20	6.3	10.30	91.0	
JA990305	JA 20	13.1	8.7	1	40	0	0.2	10.50	0.4	11.30	101.5	10.60	0.6	10.70	96.5	
JA990305	JA 21	2.6	10.3	1	40	0	0.2	7.40	0.4	10.80	90.1	7.30	0.4	10.90	90.7	
JA990305	JA 24	4.0	9.1	3	90	0	0.2	7.80	0.2	11.30	95.1	7.50	0.2	11.60	96.9	
RA990318	RA RA02	14.0	15.7	10	270	0	1.9	6.07	16.5	10.71	96.1	6.09	16.7	10.52	94.6	
RA990318	RA RA10	17.1	15.4	6	270	0	1.5	6.27	16.0	11.22	100.9	5.97	16.1	10.90	97.3	
RA990318	RA RA15	15.6	15.6	8	270	0	1.2	6.80	15.1	11.30	102.3	9.48	16.5	10.50	102.2	
RA990317	RA RA20	14.1	14.3	1	160	0	0.9	6.80	14.4	10.40	93.7	5.10	16.1	10.30	90.0	
RA990317	RA RA25	8.2	19.4	3	270	0	0.7	5.90	12.2	11.00	95.6	5.40	12.9	11.10	95.7	
RA990317	RA RA30	6.3	18.9	3	270	0	0.4	6.40	8.7	10.90	93.7	5.30	9.5	10.80	90.8	
RA990317	RA RA35	5.5	19.7	5	270	0	0.4	5.80	5.9	11.40	94.8	5.60	6.7	11.40	94.8	
RA990317	RA RA40	4.6	19.0	4	270	0	0.4	6.10	2.9	11.80	96.9	6.00	2.5	11.90	97.2	
RA990318	RA 1	3.2	14.7	10	270	0	1.6	6.87	16.6	10.50	96.2	6.82	16.6	10.60	97.0	
RA990318	RA 4	8.2	14.4	10	270	0	1.8	6.30	16.3	10.14	91.4	5.74	16.4	10.60	94.3	
RA990318	RA 6	11.2	14.7	10	270	0	2.0	6.22	16.5	10.60	95.5	5.91	16.5	10.95	97.9	
RA990318	RA 7	18.5	14.4	8	270	0	2.0	6.24	16.5	10.41	93.8	5.68	16.9	10.51	93.7	
RA990317	RA 10	3.0	14.9	1	160	0	1.3	5.80	15.3	12.10	107.0	5.80	15.2	11.40	100.8	
RA990317	RA 12	4.1	16.5	0	160	0	1.2	5.90	14.8	11.50	101.6	5.40	15.3	10.80	94.6	
RA990317	RA 14	14.5	13.7	1	160	0	1.0	5.80	14.6	10.80	95.1	5.20	15.9	10.90	95.4	
RA990317	RA 16	13.6	14.0	1	160	0	0.9	6.40	14.6	10.80	96.5	5.00	16.2	10.80	94.2	
RA990317	RA 17	4.0	18.9	2	270	0	1.0	5.70	14.1	11.80	103.3	5.40	15.2	10.70	93.7	
RA990317	RA 19	5.5	16.4	0	270	0	0.8	5.90	14.2	10.80	95.1	5.00	16.2	9.80	85.5	
RA990317	RA 21	10.1	17.1	2	270	0	0.7	6.00	12.9	11.10	97.1	5.40	13.9	11.00	95.5	
RA990317	RA 22	7.9	18.0	4	270	0	0.8	6.00	2.6	11.40	92.9	5.80	2.8	11.60	94.5	
RA990317	RA 24	2.7	20.2	3	270	0	0.4	5.90	2.6	11.34	92.6	5.84	2.5	11.65	94.8	
RA990317	RA 26	4.6	18.4	6	270	0	0.2	6.01	2.4	11.34	92.6	5.84	2.5	11.65	94.8	
YK990302	YK YK02	11.9	9.5	4	270	0	2.8	6.45	20.8	9.42	87.8	5.87	22.8	9.12	84.9	
YK990302	YK YK05	11.9	6.9	3	270	0	2.3	6.50	20.7	9.38	87.5	6.30	21.4	9.41	87.7	
YK990302	YK YK10	7.6	6.5	4	270	1	0.8	6.19	17.4	9.98	90.4	6.17	19.9	9.80	90.2	
YK990301	YK YK15	10.5	7.9	7	320	1	0.5	6.40	16.5	11.31	102.3	6.30	17.0	10.53	95.4	
YK990301	YK YK20	6.8	9.2	7	320	2	0.4	6.70	14.0	10.74	96.3	6.60	15.6	10.21	92.3	
YK990301	YK YK25	9.1	10.6	10	320	1	0.3	6.60	14.3	11.44	102.5	6.60	14.2	10.59	94.8	
YK990301	YK YK30	8.8	9.3	7	320	1	0.3	6.60	9.7	11.35	98.7	6.60	10.1	11.56	100.8	
YK990301	YK YK35	7.0	11.2	7	320	1	0.3	6.80	4.6	10.58	89.4	6.80	5.4	10.41	88.4	
YK990301	YK YK40	3.9	9.7	7	320	2	0.3	6.90	1.1	10.57	87.5	6.90	1.1	10.51	87.0	
YK990302	YK 2	3.2	8.2	3	270	0	2.2	6.39	21.0	9.45	88.1	6.40	20.9	9.55	89.0	
YK990302	YK 4	4.0	5.6	4	270	1	1.3	6.19	19.9	9.38	86.4	6.19	19.9	9.38	86.4	
YK990302	YK 6	9.8	9.2	4	270	1	1.9	6.19	20.4	9.57	88.4	6.19	20.4	9.45	87.3	
YK990302	YK 7	18.3	9.7	3	270	0	0.7	6.24	21.4	9.50	88.4	5.87	22.5	9.58	89.0	
YK990302	YK 8	17.9	9.7	3	270	0	2.5	6.07	21.5	9.64	89.4	5.94	21.8	9.58	88.8	
YK990301	YK 10	2.2	7.7	5	320	1	0.4	6.60	17.5	10.71	98.0	6.50	17.8	10.45	95.6	
YK990301	YK 12	4.8	6.8	7	320	1	0.4	6.40	17.6	11.98	109.2	6.40	18.6	10.89	99.9	
YK990301	YK 13	9.9	7.2	6	320	1	0.6	6.20	17.3	11.10	100.5	6.40	17.5	10.38	94.5	
YK990301	YK 15	0.9	12.2	7	320	2	0.2	6.90	14.3	11.13	100.5	6.80	14.5	10.35	93.3	
YK990301	YK 16	1.2	12.2	10	320	2	0.3	7.20	13.3	10.50	94.8	6.80	14.7	10.41	94.0	
YK990301	YK 17	6.0	9.6	10	320	2	0.4	6.80	11.5	10.87	96.1	6.60	13.1	10.26	91.2	
YK990301	YK 19	9.1	9.8	10	320	2	0.4	6.80	14.5	10.29	92.8	6.70	15.0	10.73	96.8	
YK990301	YK 20	8.5	8.1	8	320	1	0.3	6.60	14.0	10.51	94.0	6.50	14.2	10.78	96.3	



Table 29.
April 1999

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.	
JA990407	JA JA01	8.5	16.0	3	270	1	1.8	12.31	17.4	8.80	91.7	11.60	19.2	8.50	88.2	
JA990407	JA JA05	5.8	17.3	2	290	1	1.7	12.69	15.6	8.90	92.5	11.42	18.4	8.30	85.4	
JA990407	JA JA13	11.6	20.1	0		1	1.0	14.75	8.6	9.70	100.9	12.00	16.5	7.78	80.1	
JA990407	JA JA17	7.3	21.1	2	360	1	0.6	14.70	4.1	8.80	88.9	13.30	10.5	6.40	65.3	
JA990407	JA JA24	6.4	21.9	1	360	1	0.4	16.50	1.8	8.60	89.0	14.80	2.6	7.70	77.3	
JA990407	JA JA27	10.7	24.0	2	360	1	0.4	16.10	1.1	8.50	86.9	14.77	2.5	7.75	77.7	
JA990408	JA JA35	7.4	20.4	1	160	1	0.3	15.64	0.3	8.97	90.3	15.65	0.4	8.90	89.7	
JA990407	JA JA40	3.0	24.7	2	320	1	0.6	16.80	0.1	9.90	102.1	15.30	0.1	9.20	91.9	
JA990407	JA 2	2.4	18.8	2	340	1	1.1	13.64	12.4	8.73	90.8	13.11	13.4	8.15	84.3	
JA990407	JA 4	5.8	20.0	0		1	1.6	13.47	12.6	9.10	94.4	12.86	14.6	8.35	86.5	
JA990407	JA 6	10.4	16.9	2	290	1	1.9	12.38	17.3	8.94	93.3	10.96	20.5	8.50	87.7	
JA990407	JA 7	21.6	16.8	3	290	1	1.9	12.43	16.5	8.65	89.9	9.35	24.1	8.38	85.4	
JA990407	JA 8	20.4	16.9	2	270	1	1.8	12.59	16.3	8.66	90.2	9.34	24.2	8.39	85.5	
JA990407	JA 10	3.0	20.7	0		1	0.5	15.60	5.9	11.50	119.8	13.62	8.8	7.57	76.9	
JA990407	JA 11	5.5	20.5	1	360	1	0.8	15.30	6.4	12.50	129.7	12.70	12.9	7.34	75.0	
JA990407	JA 13	9.1	19.4	0		1	1.1	14.60	9.3	9.96	103.7	11.97	16.5	7.97	82.0	
JA990408	CL 16	2.3	16.9	0		0	0.3	15.47	1.4	8.65	87.4	15.48	1.9	7.90	80.1	
JA990408	JA 18	7.3	17.6	1	220	0	0	15.69	1.6	7.97	81.0	14.82	3.0	7.25	73.0	
JA990407	JA 19	9.8	25.1	2	320	1	0.6	15.00	0.2	9.10	90.4	14.90	0.2	8.90	88.2	
JA990407	JA 20	12.2	25.7	0		1	0.6	16.40	0.1	10.00	102.2	15.00	0.1	9.22	91.5	
JA990408	CL 22	2.7	21.1	1	160	0	0	0.1	15.92	0.6	8.87	90.0	15.89	0.6	8.77	89.0
JA990408	CL 23	8.5	18.2	0		0	0.2	16.14	1.1	8.18	83.7	15.95	1.3	8.14	83.0	
MB99040	MS MS01	5.8	23.7	5	90	1	3.0	17.19	18.2	8.47	98.2	14.87	18.4	8.34	92.3	
MB99040	MW MW0	5.8	23.1	5	90	1	2.5	16.98	18.0	8.65	99.7	14.37	18.3	8.06	88.3	
MB99040	MN MN0	6.7	19.4	5	90	1	1.7	17.10	18.2	8.92	103.2	15.89	18.3	7.79	88.0	
MB99040	ME ME02	4.9	18.2	1	220	2	1.5	17.65	17.6	7.58	88.4	15.05	17.9	6.30	69.8	
MB99040	MB MB0	5.2	17.2	3	220	2	2.5	14.00	17.9	10.42	112.9	13.75	18.2	9.40	101.5	
MB99040	MB MB0	5.8	16.9	2	90	2	2.5	14.35	17.7	9.92	108.2	14.02	18.4	8.55	93.0	
MB99040	MB MB0	3.0	23.6	3	90	1	2.8	15.59	18.2	8.62	96.7	14.78	18.3	8.54	94.3	
MB99040	MB 2	3.4	19.2	5	90	2	2.4	13.87	17.3	9.72	104.7	13.85	17.6	9.23	99.5	
MB99040	MB 3	1.2	18.7	6	90	2	1.7	14.53	17.6	9.69	106.0	14.53	17.6	9.12	99.8	
MB99040	MB 4	1.2	20.4	4	220	2	2.4	15.90	17.7	8.24	92.8	15.77	18.0	8.03	90.3	
MB99040	MB 5	6.1	16.9	2	220	2	2.5	14.28	17.8	8.25	89.9	12.97	17.7	8.78	93.0	
MB99040	MB 7	5.8	22.7	5	90	1	3.0	15.74	18.4	9.03	101.8	14.43	18.5	8.35	91.7	
MB99040	MB 8	5.2	16.9	5	90	2	2.2	14.38	17.9	9.27	101.3	14.65	18.5	8.52	94.0	
MB99040	MN 11	2.7	20.8	1	90	2	1.0	18.76	16.8	7.59	90.0	16.41	17.8	5.23	59.5	
MB99040	ME 12	3.0	18.5	2	220	2	1.3	18.11	17.3	7.77	91.2	16.02	17.7	8.82	99.6	
MB99040	MN 14	6.7	19.2	4	90	1	2.5	16.34	18.0	8.46	96.3	14.87	18.4	7.41	82.0	
MB99040	MN 16	4.3	19.4	2	90	1	1.5	17.95	17.7	8.81	103.4	15.43	18.1	6.89	77.0	
RA990414	RA RA02	18.0	14.7	5	360	0	1.6	12.63	14.2	8.99	92.5	12.15	15.2	8.95	91.7	
RA990414	RA RA10	18.3	16.9	6	320	0	2.0	12.96	14.4	9.76	101.2	12.44	14.8	8.36	86.0	
RA990414	RA RA15	13.7	17.5	5	320	0	1.2	12.97	13.7	9.05	93.5	12.06	15.0	7.66	78.2	
RA990415	RA RA20	16.2	13.6	1	270	0	0.9	12.96	12.5	8.50	87.1	12.36	14.3	6.69	68.5	
RA990415	RA RA25	7.0	14.3	1	70	2	0.5	13.14	11.2	8.26	84.3	13.02	12.1	7.54	77.2	
RA990415	RA RA30	6.1	14.9	2	20	2	0.3	13.72	7.7			13.54	9.9	7.80	79.7	
RA990415	RA RA35	5.5	16.0	1	140	2	0.4	14.07	6.6	8.55	86.6	13.72	7.5	7.99	80.7	
RA990415	RA RA40	3.4	15.7	3	140	2	0.3	14.08	3.8	8.19	81.5	14.00	4.0	8.06	80.2	
RA990414	RA 2	2.4	15.6	5	360	0	1.0	12.86	14.0	9.04	93.3	12.64	13.1	9.15	93.5	
RA990414	RA 3	7.9	13.1	2	360	0	1.2	12.46	13.7	8.80	89.9	12.35	14.1	8.77	89.6	
RA990414	RA 5	9.4	15.7	5	360	0	2.0	12.71	14.6	9.04	93.4	12.18	14.8	9.02	92.2	
RA990414	RA 7	16.5	13.9	6	360	0	1.4	12.61	14.6	9.00	92.8	12.18	14.3	8.99	91.6	
RA990415	RA 10	2.6	13.7	1	270	2	1.0	12.81	13.2	8.20	84.2	12.81	13.4	8.12	83.4	
RA990414	RA 12	6.4	17.7	7	320	0	1.7	13.12	13.5	9.27	96.0	12.59	14.0	8.25	84.7	
RA990415	RA 14	10.4	15.8	1	270	6	0.9	12.91	11.9	8.64	88.1	12.58	13.9	7.11	72.9	
RA990414	RA 15	14.6	17.9	6	320	0	1.9	12.63	13.8	8.91	91.4	12.51	14.6	7.83	80.5	
RA990415	RA 17	1.8	15.4	1	270	2	0.7	12.97	12.2	8.12	83.1	12.97	12.2	7.86	80.4	
RA990415	RA 19	2.7	14.1	0		6	0.6	12.89	12.5	7.71	78.9	12.94	12.5	7.64	78.3	
RA990415	RA 21	7.3	14.1	2	270	6	0.7	13.15	11.2	8.46	86.4	13.01	12.5	7.62	78.2	
RA990415	RA 22	8.5	14.6	1	270	2	0.6	13.15	11.4	8.40	85.9	13.07	12.0	7.98	81.7	
RA990415	RA 24	2.1	16.2	1	140	2	0.3	13.82	7.4	8.64	87.4	13.80	7.4	8.50	86.0	
RA990415	RA 25	6.7	15.7	1	70	2	0.3	13.70	7.8	8.71	88.1	13.50	9.8	8.21	83.7	
YK990406	YK YK02	11.0	9.9	0		1	1.4	11.64	17.2	9.07	93.0	11.21	17.5	8.71	88.7	
YK990406	YK YK05	12.9	6.7	0		1	1.3	11.57	17.0	8.63	88.3	10.58	17.8	8.40	84.5	
YK990405	YK YK10	8.2	10.5	5	40	2	0.9	12.30	15.5	8.90	91.6	11.12	15.9	8.60	86.5	
YK990405	YK YK15	8.7	12.2	3	40	2	0.6	13.40	11.2	9.00	92.4	12.80	13.4	9.00	92.5	
YK990405	YK YK20	6.1	14.2	4	40	2	0.5	13.78	9.1	9.44	96.4	13.60	11.1	8.55	88.1	
YK990405	YK YK25	7.9	10.8	5	40	1	0.5	13.82	7.0	8.61	86.9	13.92	8.5	8.71	88.9	
YK990405	YK YK30	6.1	14.2	1	40	1	0.4	14.18	3.4	8.49	84.5	13.88	4.1	8.00	79.4	
YK990405	YK YK35	5.8	15.1	4	40	1	0.4	14.13	0.2	8.07	78.6	13.97	0.3	7.88	76.6	
YK990405	YK YK40	3.4	13.4	3	40	1	1.4	14.22	0.1	8.30	81.0	14.07	0.1	8.20	79.7	
YK990405	YK 2	2.4	14.1	5	140	1	1.1	12.73	16.7	8.84	92.6	11.46	17.1	8.40	85.8	
YK990406	YK 3	8.6	8.1	0		1	1.1	11.62	17.1	8.95	91.7	11.32	17.7	8.70	88.9	
YK990406	YK 6	10.4	11.0	0		1	1.4	11.36	17.3	9.61	98.0	11.65	17.5	9.12	93.7	
YK990406	YK 7	17.8	8.9	0		1	1.2	11.69	17.2	9.33	95.8	10.37	18.4	8.24	82.8	
YK990405	YK 8	15.2	10.8	6	140	1	1.3	11.95	17.3	8.83	91.2	10.91	17.8	8.42	85.3	
YK990405	YK 10	2.1	11.6	5	40	2	0.6	14.07	12.3	8.68	90.0	14.15	12.3	8.70	91.4	
YK990405	YK 12	4.0	14.1	6	40	2	0.5	13.54	10.8	8.76	90.0	13.57	10.8	8.83	90.8	
YK990405	YK 14	8.2	12.4	4	40	2	0.6	13.47	10.8	8.97	92.0	12.96	13.1	8.52	87.7	
YK990405	YK 15	1.8	13.6	4	40	1	0.5	13.87	7.4	8.71	88.2	13.85	7.5	8.58	86.9	
YK990405	YK 16	2.7	12.7	5	40	1	0.5	13.88	6.4	8.88	89.4	13.90	7.0	8.38	84.7	
YK990405	YK 18	6.1	12.9	6	40	2	0.6	13.75	9.4	9.00	92.0	13.65	10.8	8.60	88.5	
YK990405	YK 19	7.9	11.7	6	40	2	0.5	13.78	8.0	9.06	91.9	13.82	10.1	8.40	86.4	
YK990405	YK 20	7.9		1	40	1	0.6	14.10	9.4	10.36	106.8	13.52	11.4	8.27	85.2	

Table 30.
May 1999

System+ Cruise Number	Stat # 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.	
CP990519	CP CP01	5.8	19.5	8	40		2	1.1	18.53	18.5	7.48	89.2	18.06	18.7	6.90	81.6
CP990519	CP CP03	27.7	19.2	8	40		5	1.4	17.82	18.9	7.55	89.0	17.39	18.9	6.55	76.6
CP990519	CP CP05	16.2	18.9	2	40		2	1.5	18.00	18.2	7.13	84.0	16.58	18.8	6.39	73.4
CP990519	CP 1	2.5	19.3	7	40		6	1.2	18.57	17.2	8.19	97.0	18.57	17.1	8.10	95.9
CP990519	CP 2	2.3	18.8	5	90		5	1.5	17.47	18.7	8.05	94.1	17.74	18.9	7.06	83.1
CP990519	CP 3	2.4	20.0	7	40		2	1.1	19.15	18.6	7.35	88.8	19.14	18.6	7.38	89.1
CP990519	CP 4	1.5	19.6	5	90		2	1.0	18.71	18.2	7.51	89.7	18.70	18.2	7.35	87.8
CP990519	CP 5	5.2	19.2	7	40		2	1.5	18.69	18.7	7.51	89.9	17.58	18.9	6.91	81.1
CP990519	CP 7	3.4	19.6	5	140		2	1.0	18.70	18.7	7.19	86.1	18.26	18.8	6.82	81.0
CP990519	CP 8	4.0	19.9	6	40		2	1.1	19.22	17.7	7.56	90.9	18.85	18.1	7.23	86.5
CP990519	CP 9	10.4	19.4	1	40		2	1.3	17.74	18.7	7.42	87.2	16.39	19.4	6.46	74.2
CP990519	CP 12	11.2	19.4	6	40		2	1.3	18.67	18.3	7.31	87.3	17.72	18.9	6.69	78.7
CP990519	CP 13	16.6	18.9	6	40		2	1.4	18.25	18.8	7.30	86.7	17.51	18.9	7.01	82.1
CP990519	CP 16	15.2	19.6	5	40		5	1.5	18.18	18.6	7.48	88.6	17.60	18.9	6.87	80.6
JA990507	JA JA01	4.7	19.6	6	220		1	1.5	15.60	17.4	9.12	101.9	14.98	18.2	8.80	97.5
JA990507	JA JA05	4.9	20.3	5	220		1	1.0	15.37	16.4	8.37	92.5	14.63	17.3	8.02	87.8
JA990506	JA JA13	8.2	26.7	4	140		4	0.8	16.11	12.0	8.20	89.6	14.17	16.0	7.70	82.8
JA990506	JA JA17	7.0	18.8	3	140		4	0.4	15.79	8.4	7.35	78.0	14.68	12.1	7.06	74.9
JA990506	JA JA24	11.6	20.0	4	140		2	0.4	16.00	5.1	7.37	77.0	15.52	7.4	7.10	74.5
JA990506	JA JA27	9.1	19.8	5	140		2	0.2	16.41	3.1	7.83	81.5	15.80	5.2	7.32	76.2
JA990506	JA JA35	7.5	20.2	5	140		2	0.1	16.39	0.9	8.51	87.4	15.94	1.5	8.24	84.1
JA990506	JA JA40	5.8	24.1	6	140		2	0.2	17.76	0.3	8.74	92.0	16.90	0.5	8.16	84.5
JA990506	JA 1	3.0	23.7	1	180		1	0.7	15.80	15.1	8.60	95.1	15.18	15.5	7.75	84.8
JA990507	JA 4	7.4	21.2	4	220		1	1.0	15.55	15.8	8.28	91.5	14.87	16.6	8.20	89.8
JA990507	JA 6	9.1	21.4	6	220		1	1.2	15.42	17.2	8.63	95.9	14.38	18.3	8.08	88.5
JA990507	JA 7	19.0	20.6	6	220		1	1.5	15.22	17.4	8.67	96.1	12.86	23.2	7.57	82.8
JA990507	JA 8	21.2	20.2	6	220		1	1.5	15.23	17.5	8.62	95.6	13.12	22.0	7.68	83.8
JA990506	JA 9	2.7	18.1	2	140		4	0.3	14.58	14.1	7.44	79.7	14.25	14.1	7.44	79.2
JA990506	JA 12	6.2	18.4	4	140		4	0.4	16.00	8.0	7.53	80.1	15.52	10.0	7.12	75.9
JA990506	JA 13	10.7	18.7	3	140		4	0.7	16.11	13.6	8.60	94.9	14.07	17.2	8.29	89.6
JA990506	JA 16	3.4	20.2	5	140		2	0.2	17.14	3.4	7.73	81.9	16.83	3.7	7.63	80.4
JA990506	JA 18	4.7	19.6	5	140		2	0.2	17.44	3.5	7.52	80.2	17.20	4.1	7.32	78.0
JA990506	JA 19	12.2	19.4	5	140		2	0.2	16.43	4.6	7.79	81.9	15.87	5.8	7.35	76.9
JA990506	JA 20	9.1	20.7	5	140		2	0.1	16.44	0.8	8.45	86.8	16.14	1.3	8.22	84.2
JA990506	JA 21	2.8	20.5	5	140		2	0.2	16.11	1.8	8.17	83.9	16.02	1.8	8.13	83.3
JA990506	JA 24	6.1	21.2	4	140		2	0.1	17.15	1.2	8.65	90.4	16.63	1.5	8.43	87.3
RA990510	RA RA02	16.9	19.4	6	40		0	2.0	17.50	14.4	8.73	99.5	15.00	15.2	7.39	80.4
RA990510	RA RA10	19.1	22.5	3	40		0	2.4	18.50	13.6	8.54	98.8	14.30	15.1	6.41	68.7
RA990510	RA RA15	14.0	24.2	1	40		0	1.7	20.10	12.6	8.30	98.5	14.80	14.3	6.82	73.5
RA990511	RA RA20	15.5	23.1	3	40		1	1.3	19.15	12.1	8.98	104.3	17.63	13.3	8.06	91.5
RA990511	RA RA25	8.5	23.1	1	40		1	1.1	20.58	10.7	7.90	93.6	17.44	12.4	6.40	72.0
RA990511	RA RA30	5.6	24.5	2	40		1	0.5	21.07	8.2	7.60	89.6	19.85	9.8	6.88	79.9
RA990511	RA RA35	7.1	25.3	2	40		1	0.5	22.14	6.9	7.67	91.6	20.24	8.2	6.80	78.9
RA990511	RA RA40	3.0	25.8	0	40		1	1	22.05	4.2	8.05	94.4	21.28	5.0	8.10	94.1
RA990510	RA 1	3.9	18.8	6	40		0	1.8	18.28	14.5	8.81	102.0	17.74	14.4	8.90	102.0
RA990510	RA 4	7.0	24.8	1	40		0	2.0	17.90	13.9	8.19	93.8	17.10	14.0	7.75	87.4
RA990510	RA 5	10.2	20.8	2	40		0	1.9	18.20	14.1	8.40	96.9	16.00	14.5	7.61	84.2
RA990510	RA 8	1.6	22.8	3	40		0	1.6	18.10	14.1	8.64	99.5	17.90	14.1	8.53	97.8
RA990510	RA 10	2.2	26.2	2	40		0	1.3	20.50	13.3	8.41	101.0	19.80	13.2	8.58	101.6
RA990510	RA 11	5.1	24.5	1	40		0	1.6	20.10	13.2	8.37	99.7	18.80	13.5	8.25	96.0
RA990511	RA 14	9.4	22.6	3	40		1	1.4	19.12	12.6	8.66	100.9	16.26	13.8	7.06	78.2
RA990511	RA 15	16.8	23.4	2	40		1	1.6	18.95	12.5	8.84	102.5	15.75	14.0	6.70	73.5
RA990511	RA 18	2.5	24.4	2	40		1	0.5	21.26	8.5	7.30	86.5	20.44	8.8	6.94	81.1
RA990511	RA 20	5.8	25.0	3	40		1	1.0	20.64	10.7	7.94	94.2	18.51	11.9	6.70	76.8
RA990511	RA 21	11.6	23.2	3	40		1	1.3	19.43	11.9	8.70	101.5	15.20	14.0	6.50	70.5
RA990511	RA 22	8.8	24.9	1	40		1	1.5	19.33	12.0	8.76	102.1	15.82	13.7	6.84	75.0
RA990511	RA 24	2.4	25.9	0	40		1	0.2	21.30	6.0	7.09	82.8	20.96	6.3	6.75	78.5
RA990511	RA 26	4.9	25.5	1	40		1	0.2	20.78	7.0	7.01	81.6	20.35	7.8	6.30	73.0
YK990505	YK YK02	11.0	15.0	5	140		2	2.0	14.75	17.1	8.59	94.1	14.28	17.4	7.92	86.1
YK990505	YK YK05	12.2	14.6	5	140		2	1.6	14.97	16.9	8.91	98.0	13.62	18.5	7.14	77.1
YK990504	YK YK10	7.1	15.2	4	270		2	0.5	14.22	15.5	8.00	85.8	14.18	16.6	7.76	83.8
YK990504	YK YK15	7.1	18.2	3	270		2	0.3	14.40	13.3	7.91	84.0	14.32	14.9	7.80	83.6
YK990504	YK YK20	7.0	24.2	3	270		1	0.5	16.44	13.2	7.27	80.5	14.48	13.9	7.60	81.2
YK990504	YK YK25	7.3	24.1	0	1		1	0.2	15.65	10.7	8.65	92.9	14.50	12.2	7.22	76.4
YK990504	YK YK30	4.3	20.6	0	1		1	0.2	15.47	5.6	8.40	87.1	15.32	5.7	7.62	78.8
YK990504	YK YK35	6.7	21.4	0	1		1	0.2	15.00	2.2	7.60	76.4	14.90	2.4	7.62	76.5
YK990504	YK YK40	3.1	22.1	0	1		1	0.2	15.33	0.6	7.90	79.2	15.33	0.7	7.83	78.5
YK990505	YK 1	2.7	16.4	5	140		2	1.9	14.80	17.5	8.60	94.6	14.58	17.6	8.20	89.8
YK990504	YK 4	6.6	13.9	4	270		2	0.5	14.00	16.5	7.60	81.7	14.00	17.1	7.86	84.8
YK990504	YK 6	9.3	16.4	5	270		1	1.5	14.88	17.0	8.80	96.6	13.72	17.9	7.85	84.6
YK990505	YK 6	9.2	14.1	5	140		2	1.3	15.13	17.0	8.87	97.9	13.59	18.5	7.29	78.6
YK990505	YK 7	14.6	16.7	5	140		2	1.9	14.65	17.3	8.72	95.5	13.45	18.5	7.15	76.9
YK990505	YK 8	13.1	14.8	5	140		2	2.0	14.78	17.0	8.78	96.2	13.67	18.2	7.46	80.4
YK990504	YK 9	2.3	14.5	4	270		2	0.5	13.83	16.4	7.70	82.4	13.85	16.4	7.75	83.0
YK990504	YK 12	5.5	15.9	3	270		1	0.3	14.18	14.3	8.20	87.3	14.18	14.4	8.12	86.5
YK990504	YK 14	9.6	18.3	3	270		1	0.3	14.38	13.7	7.82	83.3	14.28	15.3	7.53	80.8
YK990504	YK 15	2.7	18.4	3	320		1	0.2	14.62	12.3	7.70	81.7	14.43	13.0	7.70	81.7
YK990504	YK 16	2.7	18.5	3	320		1	0.2	14.53	10.8	7.45	78.2	14.52	11.6	7.28	76.7
YK990504	YK 17	5.1	19.3	3	320		1	0.3	14.57	11.9	7.87	83.2	14.43	12.9	7.80	82.7
YK990504	YK 19	7.5	19.9	2	320		1	0.2	14.78	10.3	7.86	82.6	14.55	11.9	7.50	79.3
YK990504	YK 20	8.0	26.1	2	270		1		16.71	11.2	9.15	100.7	14.43	13.4	7.2	

Table 31.
June 1999

System+ Cruise Number	Stat # River River Mile	Air Depth (m)	Temp. (C)	Wind		Weather Obs.	Secchi (m)	Surface				Bottom				
				Speed m/sec	Direct. (deg)			Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	
GW99061	GW	1	2.7	22.8	4	40	2	1.3	24.60	15.0	6.42	84.0	24.53	15.1	5.90	77.1
GW99061	GW	2	2.8	22.5	4	40	2	1.5	24.23	15.1	6.18	80.4	24.14	15.0	5.47	71.0
GW99061	GW	4	4.9	22.9	1	40	2	1.5	24.97	14.7	5.80	76.3	23.30	15.2	1.25	16.0
GW99061	GW	5	4.9	22.9	3	40	2	1.5	24.47	14.9	6.34	82.7	23.89	15.4	3.48	45.1
GW99061	GW	6	6.7	22.2	4	40	2	1.5	24.55	9.4	6.60	83.6	23.45	9.0	4.02	49.8
GW99061	GW	7	7.3	23.6	3	40	2	1.4	24.75	14.8	5.98	78.4	22.94	15.6	1.12	14.3
JA990602	JA	JA01	9.1	25.6	6	220	0	1.5	21.48	20.5	7.36	93.9	19.76	23.0	6.60	82.8
JA990601	JA	JA05	6.1	24.1	5	220	1	1.6	21.24	19.9	7.28	92.2	20.57	21.1	6.85	86.2
JA990601	JA	JA13	8.2	27.6	4	220	1	1.0	22.22	15.3	7.75	97.3	21.79	17.9	7.03	88.9
JA990601	JA	JA17	6.1	27.8	3	220	1	0.7	23.54	9.9	6.67	83.2	22.91	10.3	6.19	76.4
JA990601	JA	JA24	11.0	28.9	4	220	1	0.5	24.54	5.5	7.26	89.9	23.22	7.4	6.24	76.2
JA990601	JA	JA27	8.7	29.6	6	220	1	0.5	24.59	3.9	7.07	86.8	23.49	5.1	6.31	76.4
JA990601	JA	JA35	7.3	29.1	5	220	2	0.2	24.73	2.0	7.12	86.7	24.51	2.4	6.62	80.5
JA990601	JA	JA40	5.5	27.3	5	220	2	0.2	24.03	1.2	6.90	82.6	23.70	1.2	6.79	80.8
JA990602	JA	1	3.7	24.8	6	200	0	1.4	22.21	20.1	7.30	94.2	21.78	20.3	7.18	92.0
JA990601	JA	3	4.3	24.8	4	220	1	1.4	21.92	18.4	7.16	91.0	21.44	18.7	6.24	78.7
JA990602	JA	5	11.0	25.2	7	220	0	1.0	21.34	21.1	7.12	90.9	20.51	21.7	6.85	86.5
JA990602	JA	7	19.5	25.3	5	220	0	1.3	21.50	20.9	7.31	93.5	17.90	25.3	6.21	76.2
JA990602	JA	8	17.1	25.2	6	220	0	1.0	21.64	20.8	7.45	95.5	17.95	25.3	6.16	75.6
JA990601	JA	9	3.4	26.5	4	220	1	0.8	22.77	16.1	7.53	95.9	22.48	16.4	7.76	98.5
JA990601	JA	12	6.4	27.5	4	220	1	0.9	23.88	12.3	7.55	96.0	21.94	16.1	7.18	90.0
JA990601	JA	13	11.3	27.1	4	220	1	1.1	23.26	14.8	8.26	105.4	21.72	18.2	7.62	96.3
JA990601	JA	15	2.1	28.2	4	220	1	0.2	23.94	8.7	6.48	80.8	23.85	8.7	6.64	82.7
JA990601	JA	17	3.5	28.8	5	220	1	0.4	24.62	4.7	6.90	85.2	24.13	4.7	6.77	82.8
JA990601	JA	19	9.8	28.2	6	220	1	0.5	24.41	5.1	7.06	87.0	23.30	7.4	6.21	76.0
JA990601	JA	20	10.1	28.6	6	220	1	0.7	24.23	5.6	6.92	85.2	23.51	7.4	6.26	76.6
JA990601	JA	21	4.0	28.8	5	220	1	0.2	24.30	2.8	6.72	81.6	24.23	2.8	6.64	80.5
JA990601	JA	24	5.5	29.0	6	220	1	0.4	24.77	2.9	7.23	88.6	24.12	3.4	6.63	80.5
PK990608	PK	PK02	7.6	34.2	1	220	1	1.2	26.67	15.0	7.46	101.3	22.32	16.8	2.64	33.5
PK990608	PK	PK03	5.9	33.4	1	220	2	1.2	24.92	15.6	5.87	77.5	22.40	16.5	1.85	23.5
PK990608	PK	PK04	3.9	35.2	1	220	2	1.3	28.42	15.2	6.30	88.2	24.16	15.4	4.17	54.3
PK990608	PK	1	3.2	37.0	1	220	4	0.8	26.82	14.6	5.76	78.2	23.74	15.5	2.69	34.8
PK990608	PK	2	3.0	35.1	1	220	2	1.3	27.20	15.1	6.65	91.2	24.25	15.6	4.24	55.3
PK990608	PK	5	5.4	33.3	1	220	2	1.4	24.76	16.3	6.63	87.6	23.45	16.6	5.44	70.4
PK990608	PK	8	4.6	32.1	1	220	2	1.4	25.10	16.5	6.65	88.6	23.39	16.6	5.33	68.9
RA990608	RA	RA02	16.8	31.3	4	140	2	1.5	26.28	15.8	7.96	107.8	20.81	17.3	1.90	23.5
RA990610	RA	RA10	18.3	22.4	7	90	2	1.3	24.73	15.7	6.30	83.0	21.63	16.4	2.87	35.9
RA990610	RA	RA15	14.9	22.9	5	90	2	1.3	25.58	15.3	6.95	92.7	21.29	16.4	1.91	23.7
RA990610	RA	RA20	14.7	23.1	5	90	2	1.3	25.10	14.9	6.72	88.7	22.92	15.6	4.17	53.1
RA990610	RA	RA25	8.2	23.4	4	90	2	0.8	25.21	13.9	5.65	74.3	23.91	14.8	4.04	52.1
RA990610	RA	RA30	5.3	23.6	3	90	2	0.5	26.36	12.2	5.64	74.9	25.50	13.4	4.84	63.8
RA990610	RA	RA35	5.2	23.9	5	90	2	0.4	26.36	11.1	5.41	71.5	26.29	11.5	5.11	67.6
RA990610	RA	RA40	4.0	23.6	3	90	2	0.3	26.75	9.1	5.37	70.6	26.76	9.2	5.22	68.7
RA990608	RA	1	3.1	32.6	4	140	4	1.4	27.16	15.5	7.48	102.7	25.75	15.7	7.91	106.1
RA990608	RA	4	6.1	30.9	4	220	2	1.5	24.68	15.7	7.10	93.4	22.56	16.4	4.83	61.4
RA990608	RA	5	12.3	30.8	4	140	2	1.3	25.57	15.8	7.97	106.6	21.66	16.8	3.30	41.4
RA990608	RA	8	18.9	31.9	4	140	4	1.4	27.00	15.8	8.23	112.8	20.76	17.3	2.01	24.8
RA990610	RA	9	3.4	22.9	5	90	2	0.8	25.49	14.5	6.05	80.2	25.48	14.5	6.02	79.8
RA990610	RA	12	6.2	22.6	8	90	2	1.1	25.02	15.5	6.25	82.6	24.35	15.6	5.84	76.3
RA990610	RA	14	9.4	22.7	5	90	2	1.3	25.61	15.1	6.92	92.2	21.47	15.2	2.15	26.6
RA990610	RA	16	15.8	22.9	5	90	2	1.5	25.21	15.3	6.75	89.4	21.25	16.4	1.77	22.0
RA990610	RA	18	3.0	23.2	3	90	2	0.6	25.47	13.3	5.59	73.6	24.98	13.9	4.84	63.4
RA990610	RA	20	4.8	23.3	4	90	2	0.8	25.12	14.3	5.70	75.0	24.40	14.4	4.55	59.1
RA990610	RA	21	11.3	23.2	5	90	2	1.1	25.14	14.7	6.28	82.8	21.90	15.8	2.48	31.0
RA990610	RA	22	9.1	23.3	5	90	2	1.0	24.86	14.6	6.21	81.4	23.50	15.0	3.93	50.4
RA990610	RA	24	2.1	24.1	6	90	2	0.2	26.71	9.6	5.20	68.5	26.71	9.6	5.17	68.1
RA990610	RA	26	4.3	23.9	6	90	2	0.3	26.65	9.8	5.42	71.4	26.70	9.9	5.16	68.1
YK990602	YK	YK02	10.7	27.3	8	220	0	1.4	22.57	19.7	6.44	83.5	18.93	20.9	3.49	42.5
YK990602	YK	YK05	12.2	28.7	8	220	0	1.7	22.08	19.5	6.56	84.2	19.48	21.1	3.50	43.2
YK990602	YK	YK10	8.5	29.0	6	220	0	1.5	23.14	18.0	7.31	94.8	21.76	18.9	5.35	68.0
YK990603	YK	YK15	8.6	25.4	5	220	1	0.4	23.73	15.1	5.81	74.9	23.67	14.3	3.24	41.5
YK990603	YK	YK20	6.5	26.1	5	220	1	0.3	23.98	13.3	6.09	78.0	23.95	14.0	5.62	72.3
YK990603	YK	YK25	7.0	27.3	2	220	1	0.3	24.34	11.1	5.91	75.3	24.16	12.2	5.50	70.3
YK990603	YK	YK30	7.6	27.6	2	220	2	0.3	24.25	5.6	6.00	73.9	24.24	5.6	6.53	80.4
YK990603	YK	YK35	3.4	27.9	4	220	2	0.3	24.34	2.3	6.81	82.5	24.32	2.4	6.60	79.9
YK990603	YK	YK40	6.7	27.9	8	250	2	0.3	24.77	0.8	6.91	83.6	24.53	0.8	6.84	82.4
YK990602	YK	1	3.7	26.6	8	220	0	1.2	23.27	19.3	7.41	97.0	22.08	19.6	6.11	78.4
YK990602	YK	3	4.9	26.3	7	220	0	1.3	22.91	19.4	7.64	99.4	22.22	19.4	6.61	85.0
YK990602	YK	5	11.3	27.8	10	220	0	1.5	22.91	19.4	7.28	94.8	19.21	21.6	3.66	45.0
YK990602	YK	7	15.8	28.5	9	220	0	1.5	22.42	19.5	6.78	87.5	19.14	21.6	3.63	44.6
YK990602	YK	8	18.0	29.1	6	220	0	1.5	21.90	19.6	6.47	82.8	19.48	21.1	3.88	47.9
YK990603	YK	10	1.8	24.7	10	220	1	0.4	23.77	17.6	6.06	79.3	23.73	15.4	5.51	71.1
YK990602	YK	11	5.5	29.0	7	220	0	1.4	22.46	18.9	6.37	82.0	21.41	19.3	5.22	66.1
YK990602	YK	13	11.6	29.1	6	220	0	1.6	22.44	18.8	6.39	82.2	21.09	19.6	4.78	60.2
YK990603	YK	15	2.7	27.3	6	220	2	0.3	24.61	9.2	5.95	75.3	24.21	10.4	6.05	76.6
YK990603	YK	16	1.8	27.6	3	220	2	0.3	24.33	9.7	5.40	68.2	24.34	9.7	5.28	66.7
YK990603	YK	17	5.6	26.4	5	220	1	0.3	23.97	12.7	5.96	76.1	24.00	13.5	5.72	73.4
YK990603	YK	19	7.0	26.7	5	220	1	0.2	24.15	12.1	5.80	74.1	24.05	11.9	0.24	3.1
YK990603	YK	20	8.0	28.5	2	220	2	0.2	24.57	10.7	6.01	76.7	24.17	12.2	5.28	67.5

Table 32.
July 1999

System+ Cruise Number	Stat # River Mile	River Depth (m)	Air Temp. (C)	Wind		Weather Obs.	Secchi (m)	Surface				Bottom				
				Speed m/sec	Direct. (deg)			Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	
CP990715	CP	CP01	5.8	27.1	2	320	1	1.2	25.50	19.0	6.40	87.0	24.10	19.0	6.10	80.9
CP990715	CP	CP03	25.6	28.7	0	70	1	1.2	24.60	19.2	5.90	79.1	24.60	19.5	5.00	67.1
CP990715	CP	CP05	10.4	24.1	2	70	1	1.3	24.50	19.5	5.80	77.7	24.40	19.9	5.10	68.4
CP990715	CP	1	3.0	26.0	2	250	1	1.5	24.80	19.4	6.30	84.8	24.70	19.4	6.00	80.6
CP990715	CP	2	2.7	26.9	2	290	1	1.3	24.60	19.3	7.20	96.6	24.50	19.4	6.90	92.4
CP990715	CP	3	2.7	26.1	3	250	1	1.4	24.30	19.1	7.40	98.6	23.00	19.5	6.50	84.8
CP990715	CP	4	3.4	26.6	2	250	1	1.1	23.70	18.7	6.90	90.7	23.30	18.7	6.80	88.8
CP990715	CP	6	6.4	27.2	0	70	1	1.2	24.30	19.0	6.90	91.9	24.10	19.1	6.70	88.9
CP990715	CP	7	4.3	27.4	2	270	1	1.1	24.30	19.0	6.70	89.2	24.00	19.1	6.40	84.8
CP990715	CP	8	4.6	27.4	2	290	0	1.1	24.10	19.1	6.50	86.3	24.00	19.1	6.60	87.5
CP990715	CP	10	11.0	24.7	1	70	1	1.5	24.90	19.5	5.60	75.6	24.40	19.6	5.40	72.3
CP990715	CP	11	11.6	25.6	0	70	1	1.6	24.50	19.2	5.50	73.6	24.30	19.8	5.40	72.2
CP990715	CP	13	14.0	25.0	2	40	1	1.3	24.60	19.4	5.50	73.8	24.60	20.1	5.00	67.4
CP990715	CP	15	15.5	27.8	0	70	1	1.6	24.60	19.3	5.70	76.4	24.30	19.6	5.50	73.5
JA990716	JA	JA01	4.6	24.8	2	220	4	1.3	24.24	23.0	5.78	78.7	24.20	23.1	5.60	76.2
JA990716	JA	JA05	5.5	26.1	2	220	4	1.6	24.57	22.5	4.94	67.4	24.48	22.7	4.89	66.7
JA990716	JA	JA13	14.1	29.4	2	140	4	1.0	26.84	18.0	7.05	97.6	24.76	21.3	4.89	66.5
JA990716	JA	JA17	6.8	30.2	1	140	4	1.0	25.73	14.7	4.76	63.4	25.61	16.5	5.06	68.0
JA990719	JA	JA24	8.9	30.1	3	320	4	0.9	28.20	9.1	6.66	89.8	27.20	10.4	5.94	79.3
JA990719	JA	JA27	8.5	30.6	4	320	4	0.7	28.10	7.0	6.96	92.6	27.60	8.3	6.18	82.1
JA990719	JA	JA35	8.5	31.7	5	320	4	0.6	27.90	4.3	7.10	92.7	27.40	5.2	6.20	80.7
JA990719	JA	JA40	2.4	32.2	5	320	4	0.4	28.20	2.6	6.84	89.0	27.90	2.6	6.64	85.9
JA990716	JA	2	3.0	29.0	0	70	4	0.7	25.26	20.6	6.71	91.7	24.57	20.6	6.65	89.8
JA990716	JA	4	4.8	28.1	2	220	4	0.8	25.26	20.4	6.04	82.5	25.65	21.5	5.06	70.0
JA990716	JA	5	10.4	28.5	2	220	4	1.8	24.52	22.8	5.07	69.3	24.32	22.8	4.92	67.0
JA990716	JA	7	18.9	25.4	2	220	4	1.1	24.30	23.0	5.58	76.0	24.17	23.1	5.73	77.9
JA990716	JA	8	19.2	25.2	0	70	4	1.8	24.26	22.9	5.30	72.1	24.17	23.1	5.30	72.1
JA990716	JA	10	3.7	29.8	2	140	4	0.8	25.39	17.8	5.31	71.6	25.31	17.7	5.09	68.5
JA990716	JA	12	5.1	29.3	1	220	4	0.9	25.73	18.2	5.95	80.9	24.87	19.9	4.95	66.9
JA990716	JA	14	11.3	29.2	3	220	4	1.1	25.69	18.6	5.91	80.5	24.78	21.1	4.69	63.7
JA990719	JA	15	2.5	30.3	3	220	4	0.8	27.70	8.5	6.20	82.6	27.60	8.6	6.10	81.2
JA990719	JA	17	4.0	30.5	4	320	4	0.9	28.20	8.4	6.72	90.3	27.30	9.5	6.09	81.0
JA990719	JA	19	8.7	31.8	6	320	4	0.6	27.80	4.0	6.82	88.8	27.40	4.8	6.22	80.8
JA990719	JA	20	19.8	32.7	4	320	4	0.6	28.30	3.7	7.01	91.9	27.30	4.6	5.98	77.4
JA990719	JA	21	3.3	31.2	5	320	4	0.6	27.70	4.6	6.67	87.0	27.50	5.6	6.15	80.3
JA990719	JA	23	4.6	32.5	5	320	4	0.4	28.40	3.0	7.03	92.0	27.40	3.9	6.13	79.2
RA990708	RA	RA02	17.4	31.2	5	320	1	1.9	28.23	17.1	7.19	101.4	24.63	19.2	2.30	30.8
RA990708	RA	RA10	16.2	31.5	5	270	2	1.7	28.25	16.3	7.26	102.0	23.93	19.2	1.99	26.4
RA990709	RA	RA15	13.5	29.6	3	320	4	1.4	27.92	15.7	6.81	94.8	24.28	18.8	1.44	19.1
RA990709	RA	RA20	13.6	29.1	1	320	4	1.2	27.82	15.1	6.50	90.0	24.24	18.5	1.15	15.3
RA990709	RA	RA25	9.1	31.7	3	320	4	0.8	27.65	15.0	5.72	79.0	25.00	17.6	1.40	18.7
RA990709	RA	RA30	5.2	33.2	1	320	4	0.6	28.49	13.3	5.98	83.0	27.55	14.3	3.49	47.9
RA990709	RA	RA35	5.5	33.3	2	320	4	0.5	30.24	11.6	6.10	86.4	28.47	12.4	3.97	54.8
RA990709	RA	RA40	4.6	34.0	2	320	4	0.3	30.02	8.9	6.16	85.6	29.43	9.1	5.36	73.8
RA990708	RA	1	2.0	30.0	3	270	1	1.5	28.69	17.9	6.85	97.8	28.68	17.9	6.95	99.2
RA990708	RA	4	5.5	31.3	5	270	1	1.8	28.58	16.5	7.02	99.3	25.61	18.4	3.64	49.4
RA990708	RA	6	11.0	31.2	3	270	1	1.7	28.49	16.8	7.37	103.9	25.54	18.6	3.41	46.3
RA990708	RA	7	16.2	30.1	5	320	1	1.8	28.33	16.7	7.51	106.2	24.54	19.2	2.32	31.1
RA990709	RA	9	3.4	29.3	3	320	4	1.0	27.53	16.0	5.85	81.0	26.58	17.1	3.81	52.2
RA990709	RA	11	6.1	29.9	2	320	4	1.6	27.80	15.7	6.64	92.3	24.54	18.7	1.57	21.0
RA990708	RA	13	11.6	31.0	5	270	2	1.5	29.22	15.5	7.50	106.6	24.57	18.8	2.27	30.3
RA990708	RA	15	18.0	31.2	5	270	2	1.6	28.86	15.9	7.34	104.0	23.82	19.1	1.33	17.6
RA990709	RA	17	3.4	32.2	3	320	4	0.6	28.51	14.1	5.73	79.9	27.26	15.0	4.00	54.8
RA990709	RA	19	8.2	30.7	2	320	4	1.0	27.22	14.9	5.80	79.4	24.96	17.7	1.44	19.3
RA990709	RA	21	8.2	31.7	3	320	4	1.0	27.32	15.1	5.71	78.4	25.11	17.5	1.63	21.8
RA990709	RA	22	8.8	31.7	3	320	4	0.8	27.83	14.9	6.18	85.5	25.19	17.4	1.38	18.5
RA990709	RA	24	1.8	34.1	2	320	4	0.4	29.00	11.4	4.82	66.7	28.88	11.6	4.93	68.2
RA990709	RA	25	7.4	33.0	2	320	4	0.4	29.12	11.8	6.37	88.6	28.15	13.1	4.14	57.0
YK990702	YK	YK02	10.9	26.7	9	220	1	1.3	24.70	21.6	5.77	78.5	22.80	22.9	3.54	46.9
YK990702	YK	YK05	12.9	26.7	9	220	1	1.3	24.90	20.5	6.55	88.9	22.80	23.0	3.44	45.6
YK990702	YK	YK10	7.8	25.3	8	220	1	1.0	25.80	17.6	6.34	88.7	24.80	19.8	4.62	62.4
YK990701	YK	YK15	7.6	25.2	4	180	2	0.4	26.36	14.3	6.32	85.0	26.21	16.5	5.20	70.6
YK990701	YK	YK20	6.1	25.1	4	180	4	0.4	26.32	14.4	5.89	79.2	26.40	14.7	5.04	68.0
YK990701	YK	YK25	8.4	25.4	4	180	6	0.4	26.26	12.5	4.80	63.8	26.34	13.4	4.62	61.8
YK990701	YK	YK30	4.9	25.3	6	180	2	0.6	25.89	8.4	5.83	75.2	25.87	8.9	4.74	61.3
YK990701	YK	YK35	6.1	25.6	6	180	2	0.4	25.77	4.8	5.69	71.8	28.67	4.9	5.19	68.9
YK990701	YK	YK40	4.0	26.2	2	180	2	0.4	25.90	2.6	6.32	78.9	25.90	2.6	6.46	80.7
YK990702	YK	2	2.1	26.6	3	220	1	1.2	25.10	20.3	6.95	94.6	24.80	20.5	6.62	89.7
YK990702	YK	4	5.4	25.6	6	220	1	1.1	24.90	20.1	6.32	85.6	23.80	21.6	4.30	57.6
YK990702	YK	6	11.0	27.1	10	220	1	1.2	24.60	21.0	6.17	83.5	23.00	22.9	3.48	46.3
YK990702	YK	7	15.3	26.8	8	220	1	1.5	24.70	21.6	6.38	86.8	22.40	24.0	3.36	44.5
YK990702	YK	8	15.3	25.6	5	220	1	1.2	24.80	19.9	6.22	84.0	22.80	22.6	2.95	39.0
YK990701	YK	10	1.3	24.9	4	180	2	0.4	26.41	17.7	6.50	89.2	26.43	17.7	5.95	81.6
YK990701	YK	12	7.2	28.7	9	180	2	1.0	25.77	19.1	7.16	97.9	23.76	20.9	4.05	54.0
YK990702	YK	13	10.1	26.4	7	220	1	1.0	24.90	19.6	5.97	80.6	24.10	21.1	3.80	51.0
YK990701	YK	15	1.8	25.2	3	180	2	0.5	26.30	14.1	6.23	83.6	26.30	14.1	5.06	67.9
YK990701	YK	16	2.5	25.4	4	180	5	0.5	26.21	11.3	5.74	75.7	26.15	11.6	4.61	60.8
YK990701	YK	18	5.8	25.4	4	180	5	0.5	26.11	11.3	5.98	78.7	26.19	12.1	4.77	63.2
YK990701	YK	19	8.6	25.3	6	180	4	0.4	26.30	15.0	5.36	72.3	26.19	15.7	5.12	69.2
YK990701	YK	20	7.3	25.4	5	180	6	0.5	26.22	12.7	5.15	68.5	26.31	13.5	4.71	63.0

Table 33.

August 1999

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.	
GW99081	GW	1	2.1	27.4	3	200	2	1.6	27.90	18.6	5.71	80.8	27.47	19.0	3.28	46.2
GW99081	GW	2	3.4	30.8	3	180	2	1.3	28.39	18.2	3.94	56.1	27.90	18.5	2.81	39.7
GW99081	GW	3	4.0	30.2	4	200	2	1.5	28.15	18.4	5.50	78.0	27.82	18.6	3.70	52.3
GW99081	GW	5	4.6	29.7	5	200	2	1.7	28.15	18.4	5.18	75.5	27.78	18.6	3.78	53.4
GW99081	GW	6	6.4	28.9	6	200	2	1.8	28.08	18.3	5.40	76.5	27.46	19.0	2.92	41.1
GW99081	GW	7	6.1	30.5	5	180	2	1.4	28.43	18.1	4.86	69.2	27.65	18.7	3.03	42.7
JA990816	JA	JA01	5.7	30.7	2	40	4	1.2	27.46	23.7	6.22	89.8	27.42	23.9	6.30	91.0
JA990816	JA	JA05	5.5	28.7		40	4	0.8	27.75	23.7	6.53	94.8	27.65	23.5	6.39	92.5
JA990817	JA	JA13	10.4	32.1	3	220	4	1.0	28.58	19.5	9.00	129.4	28.00	20.5	7.10	101.7
JA990817	JA	JA17	5.8	32.0	5	220	4	1.1	29.06	14.3	8.10	114.1	28.56	14.5	7.10	99.3
JA990817	JA	JA24	12.2	31.5	1	180	4	0.7	29.56	10.8	8.50	118.4	28.56	12.7	7.26	100.5
JA990817	JA	JA27	11.2	31.0	1	180	4	0.8	29.50	10.4	8.12	112.8	29.08	11.1	7.44	103.0
JA990817	JA	JA35	6.8	27.4	3	180	4	0.9	28.62	7.6	8.07	108.7	29.22	8.8	7.82	107.1
JA990817	JA	JA40		30.1	2	180	4	0.5	28.78	5.3	7.82	104.3	28.49	6.2	7.53	100.4
JA990816	JA		3.4	30.2	0	0	4	1.2	28.25	23.4			27.80	23.5		
JA990819	JA		6.1	28.3	4	70	2	1.4	27.96	23.3	7.20	104.7	27.59	24.0	6.26	90.8
JA990816	JA		11.5	27.7	5	40	4	0.8	28.10	23.0	6.64	96.6	27.76	23.3	6.07	87.9
JA990816	JA		7	18.0	29.5		4		27.86	23.4	6.62	96.1	27.09	24.7	5.59	80.7
JA990816	JA		8	19.2	29.1	1	40	4	27.94	22.8	6.70	97.1	27.13	24.5	5.70	82.2
JA990817	JA		10	2.7	32.8	4	220	4	28.43	19.2	8.82	126.3	28.25	19.4	8.66	123.8
JA990817	JA		11	6.3	33.0	2	220	4	28.70	20.5	9.36	135.6	28.13	21.2	8.05	116.0
JA990817	JA		14	10.1	32.3	4	220	4	28.96	19.1	9.30	134.3	28.06	21.3	6.23	89.7
JA990817	JA		15	2.3	32.0	5	180	4	29.70	11.6	8.62	120.9	28.66	12.6	7.81	108.2
JA990817	JA		17	4.1	31.8	1	180	4	29.60	10.4	8.51	118.4	29.14	10.9	7.72	106.9
JA990817	JA		19	8.6	28.8	2	180	4	28.76	7.6	8.00	108.0	29.24	8.7	7.70	105.5
JA990817	JA		20	13.2	29.2	2	180	4	28.72	7.4	8.15	109.9	29.12	8.4	7.60	103.7
JA990817	JA		21	2.1	26.2	3	180	4	28.96	8.6	7.91	107.8	29.00	7.4	7.75	105.0
JA990817	JA		23	7.6	29.2	2	180	4	28.72	6.5	8.18	109.7	28.36	7.7	7.72	104.5
PK990813	PK	PK02	7.0	31.0	7	180	2	1.6	28.43	19.0	6.74	96.4	27.69	19.8	5.35	75.9
PK990813	PK	PK03	6.1	31.7	4	180	2	1.5	29.28	18.2	6.34	91.6	28.04	18.7	3.12	44.3
PK990813	PK	PK04	4.6	32.2	3	180	2	1.2	29.40	17.6	5.73	82.7	28.86	17.8	4.45	63.7
PK990813	PK		2	3.0	30.7	3	180	2	29.02	19.1	6.12	87.1	27.75	19.3	5.43	76.9
PK990813	PK		3	3.4	31.6	7	180	2	29.20	18.7	6.88	99.5	28.88	18.6	6.86	98.7
PK990813	PK		5	7.6	29.1	5	180	2	28.02	19.6	6.75	96.2	27.42	20.1	4.98	70.5
PK990813	PK		7	7.6	31.5	9	180	2	29.02	18.5	6.41	92.3	27.55	19.1	3.76	53.0
RA990812	RA	RA02	17.0	28.7	2	140	0	1.8	27.73	18.5	6.29	88.7	27.15	19.8	3.78	53.1
RA990812	RA	RA10	18.0	28.4	0	0	0	1.9	27.98	17.9	5.46	77.0	27.84	19.0	1.53	21.7
RA990811	RA	RA15	14.9	30.3	4	140	2	0.8	28.90	17.6	8.40	120.2	28.00	18.6	1.94	27.5
RA990811	RA	RA20	10.6	28.1	6	250	1	1.0	27.80	17.1	6.20	86.8	27.60	17.3	5.42	75.7
RA990811	RA	RA25	8.5	30.5	1	220	1	0.9	27.50	16.2	6.16	85.4	27.30	16.3	6.09	84.2
RA990811	RA	RA30	5.2	31.4	3	220	1	0.8	28.20	14.0	6.99	96.9	27.20	14.3	6.06	82.7
RA990811	RA	RA35	5.4	32.5	1	220	1	0.7	27.80	12.8	6.76	92.4	27.10	13.1	6.59	89.2
RA990811	RA	RA40	4.1	32.4	2	220	1	0.8	28.70	10.6	6.89	94.5	27.20	10.6	6.34	84.7
RA990812	RA		1	1.2	27.0	2	320	0	27.46	18.5	5.72	80.3	27.46	18.5	5.51	77.3
RA990812	RA		3	8.7	29.1	2	140	0	27.76	18.7	6.81	96.2	27.03	21.0	3.82	54.0
RA990812	RA		6	11.8	28.4	2	140	0	28.13	18.3	7.46	105.8	27.59	18.6	4.31	60.6
RA990812	RA		7	15.5	28.1	1	320	0	27.88	18.2	6.34	89.4	27.75	18.4	5.14	72.4
RA990812	RA		9	2.0	29.0	0	0	1.9	27.73	17.8	5.52	77.5	27.65	18.0	5.42	76.1
RA990811	RA		11	4.3	30.1	4	140	2	28.30	17.6	7.79	110.3	27.60	17.8	4.61	64.6
RA990811	RA		14	9.4	31.0	3	140	2	28.50	17.6	6.54	92.9	27.70	18.0	3.46	48.6
RA990811	RA		16	16.8	27.9	4	220	1	27.80	17.1	6.28	87.9	27.60	17.3	5.76	80.5
RA990811	RA		17	3.0	29.6	3	220	1	27.80	17.1	6.51	91.2	27.70	17.2	6.35	88.8
RA990811	RA		20	6.1	31.3	3	220	1	27.80	14.5	6.89	95.1	27.10	15.1	6.28	85.9
RA990811	RA		21	10.9	29.0	2	220	1	27.90	16.8	6.84	95.8	27.50	17.1	5.46	76.1
RA990811	RA		22	6.8	29.7	3	220	1	27.70	16.4	6.76	94.1	27.50	16.7	5.62	78.1
RA990811	RA		24	1.8	32.7	1	220	1	27.60	12.6	6.87	93.5	27.40	12.7	6.61	89.7
RA990811	RA		26	5.7	31.4	3	220	1	27.90	13.9	7.07	97.4	27.20	14.1	6.18	84.2
YK990804	YK	YK02	11.3	29.6	4	90	1	1.1	29.40	22.5	7.79	115.5	28.94	22.5	5.68	83.6
YK990804	YK	YK05	13.5	29.1	5	90	1	1.3	29.24	22.5	7.00	103.5	28.68	22.5	4.63	67.8
YK990804	YK	YK10	8.4	30.2	5	90	1	1.0	28.80	22.3	4.90	71.8	28.64	22.3	4.44	64.9
YK990805	YK	YK15	7.9	26.2	5	220	0	1.0	28.60	20.1	5.30	76.5	28.84	20.9	4.31	62.7
YK990805	YK	YK20	5.8	27.6	5	220	0	0.8	28.58	18.5	5.88	84.1	28.76	19.0	5.35	77.0
YK990805	YK	YK25	6.8	28.0	2	220	1	0.6	29.00	16.8	5.51	78.6	28.84	17.5	5.17	73.9
YK990805	YK	YK30	5.0	30.8	2	220	1	0.9	29.40	13.3	4.94	69.6	29.32	13.3	4.75	66.8
YK990805	YK	YK35	6.4	32.0	1	220	1	0.8	29.60	9.1	5.40	74.6	29.40	10.0	4.66	64.5
YK990805	YK	YK40		33.0	0	0	1	0.9	29.32	5.5	4.75	64.0	29.12	5.7	4.60	61.9
YK990804	YK		1	3.6	30.0	4	90	1	29.52	22.4	7.70	114.3	29.42	22.5	7.60	112.7
YK990804	YK		3	8.7	29.4	4	90	1	28.94	22.4	6.90	101.4	28.62	22.5	6.06	88.7
YK990804	YK		6	11.6	29.9	4	90	1	29.30	22.4	6.83	101.0	28.68	22.5	4.46	65.3
YK990804	YK		7	13.4	28.8	5	40	1	29.18	22.5	6.57	97.0	28.64	22.6	3.81	55.8
YK990804	YK		8	15.8	30.2	5	40	1	29.10	22.5	5.95	87.8	27.82	23.2	1.39	20.1
YK990804	YK		10	2.6	29.5	6	90	1	28.86	21.6	5.64	82.4	28.76	21.7	5.23	76.4
YK990804	YK		11	7.9	30.6	5	40	1	29.16	21.8	6.19	91.0	28.80	22.1	5.17	75.7
YK990805	YK		14	7.9	26.9	4	220	0	28.49	19.8	5.54	79.7	28.88	20.6	4.34	63.1
YK990805	YK		15	2.7	29.0	2	220	1	29.06	15.5	5.35	75.9	28.90	15.7	5.24	74.2
YK990805	YK		16	3.4	30.1	1	220	1	29.16	15.5	5.23	74.3	29.02	15.9	5.11	72.6
YK990805	YK		17	4.5	26.7	5	220	0	28.41	18.6	5.74	81.9	28.80		5.15	
YK990805	YK		19	9.1	26.8	5	220	0	28.33	19.0	5.50	78.5	28.86	20.0	4.88	70.7
YK990805	YK		20	10.0	26.4	5	220	0	28.25	18.2	5.58	79.2	28.68	19.5	5.25	75.6

Table 34.
September 1999

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.
JA990921	JA JA01	7.6	21.0	4	220	2	1.2	22.50	15.2	8.48	106.9	22.91	19.3	7.80	101.5
JA990921	JA JA05	5.7	20.4	4	220	5	0.8	22.47	15.2	8.02	101.1	22.74	21.2	6.43	84.3
JA990921	JA JA13	7.6	24.4	3	220	1	0.7	22.92	9.5	9.82	120.7	22.63	18.1	5.73	73.7
JA990921	JA JA17	6.7	23.6	5	220	1	0.6	22.99	5.5	9.40	113.1	22.77	8.2	8.02	97.6
JA990921	JA JA24	11.0	22.9	4	140	2	0.3	22.97	2.3	8.57	101.2	22.48	3.1	8.03	94.4
JA990921	JA JA27	8.8	25.1	2	140	2	0.3	23.24	1.6	8.32	98.3	23.11	1.6	8.06	95.0
JA990923	JA JA35	7.9	16.1	4	270	1	0.3	20.60	0.6	7.15	79.8	20.60	0.5	6.96	77.7
JA990923	JA JA40	5.1	17.4	4	270	1	0.2	19.99	0.3	7.20	79.3	19.89	0.3	7.03	77.3
JA990921	JA 1	3.2	20.8	4	220	6	1.1	22.56	16.4	8.26	105.0	22.65	16.7	7.84	100.0
JA990921	JA 3	8.2	20.4	4	220	6	0.8	22.60	12.4	8.88	110.4	22.72	21.4	6.12	80.3
JA990921	JA 5	10.4	20.8	5	220	2	1.2	22.35	15.4	8.40	105.8	22.90	21.3	7.13	93.8
JA990921	JA 7	17.4	21.2	5	220	2	1.1	22.28	14.8	8.31	104.1	22.86	28.9	5.50	75.6
JA990921	JA 8	18.3	20.7	4	220	2	1.3	22.41	15.4	8.61	108.5	22.78	17.8	8.12	104.5
JA990921	JA 9	3.4	23.5	4	220	1	0.9	22.73	9.9	9.45	116.1	22.76	14.1	7.71	97.1
JA990921	JA 12	5.8	24.1	4	220	2	0.4	22.65	4.9	8.77	104.5	22.68	5.6	8.55	102.3
JA990921	JA 13	11.3	21.0	4	220	2	0.8	22.42	11.1	8.90	109.4	22.70	21.0	5.90	77.2
JA990923	JA 15	2.7	13.4	3	270	1	0.1	20.75	1.6	7.26	81.8	20.69	1.7	7.29	82.1
JA990923	JA 18	6.0	15.5	3	270	1	0.3	21.38	1.3	7.41	84.4	21.35	1.4	7.20	82.0
JA990921	JA 19	11.9	24.4	3	140	2	0.3	22.66	2.2	8.68	101.8	22.53	3.8	7.89	93.2
JA990923	JA 20	11.6	19.4	5	270	1	0.2	20.93	0.6	7.22	81.2	20.72	0.6	6.89	77.1
JA990923	JA 21	2.1	17.2	2	270	1	0.2	20.42	0.6	7.29	81.1	20.42	0.6	7.19	80.0
JA990923	JA 24	7.6	17.2	3	270	1	0.2	20.15	0.3	7.58	83.7	20.21	0.3	7.03	77.8
MB99092	MS MS01	5.3	23.6	5	220	1	1.0	20.81	19.4	7.19	90.0	21.08	21.5	4.95	63.1
MB99092	MW MW0	5.5	23.0	4	220	1	1.2	21.05	19.9	7.38	93.1	20.94	21.2	5.70	72.3
MB99092	MN MN0	6.7	21.4	6	220	0	1.4	20.85	20.0	7.26	91.3	20.80	20.4	5.62	70.8
MB99092	ME ME02	3.9	20.3	8	220	0	0.7	20.58	19.9	6.51	81.4	20.49	20.1	6.33	79.1
MB99092	MB MB0	5.8	18.6	7	220	0	0.7	20.24	20.7	7.00	87.4	20.20	20.9	6.95	86.8
MB99092	MB MB0	6.1	20.5	6	220	0	1.2	20.34	20.4	7.54	94.1	20.31	20.6	7.07	88.3
MB99092	MB MB0	3.4	23.5	9	220	1	1.0	20.89	21.6	7.13	90.6	20.96	22.6	5.93	75.9
MB99092	MB 1	2.6	23.9	5	220	1	1.0	20.85	21.4	7.60	96.4	20.87	22.5	6.22	79.4
MB99092	MB 2	6.4	17.6	7	220	0	0.8	20.45	22.3	6.96	88.0	20.47	22.4	6.98	88.4
MB99092	MB 4	4.2	19.3	5	220	0	1.0	20.24	20.8	7.64	95.4	20.12	20.9	7.59	94.6
MB99092	MB 5	6.9	18.3	7	220	0	0.6	20.35	21.2	6.86	86.1	20.46	21.9	6.75	85.2
MB99092	MB 7	5.5	18.6	6	220	0	0.8	20.31	20.7	7.33	91.6	20.30	20.8	7.37	92.2
MB99092	MB 8	7.6	20.4	7	220	0	1.0	20.42	20.3	7.74	96.7	20.86	21.7	5.28	67.1
MB99092	MN 11	2.9	22.1	5	220	0	1.2	21.10	20.0	7.13	90.1	21.34	20.5	4.10	52.2
MB99092	MN 12	2.7	22.8	5	220	0	1.2	21.33	19.8	6.73	85.3	21.76	20.6	3.55	45.6
MB99092	MW 14	4.9	23.3	5	220	1	1.2	21.12	19.8	6.94	87.6	20.90	20.2	5.85	73.7
MB99092	MN 15	7.2	21.6	5	220	0	1.3	20.41	20.3	6.92	86.5	20.74	21.2	5.23	66.1
RA990910	RA RA02	17.7	23.0	5	40	2	1.6	24.50	20.8	5.10	68.9	24.40	22.7	4.60	62.7
RA990910	RA RA10	20.4	25.6	2	40	2	1.6	24.60	20.1	6.00	80.8	24.10	22.5	3.50	47.4
RA990910	RA RA15	14.6	24.9	4	340	2	1.4	24.60	19.7	5.90	79.3	24.00	21.5	3.50	47.0
RA990910	RA RA20	16.5	26.9	5	340	2	1.3	25.20	19.4	5.90	80.0	24.60	19.7	4.80	64.5
RA990914	RA RA25	8.3	24.3	2	90	2	0.9	24.67	16.3	6.45	85.1	24.56	17.3	5.86	77.6
RA990914	RA RA30	4.8	25.2	2	90	2	0.6	25.02	14.2	5.96	78.2	25.09	15.6	5.66	75.0
RA990914	RA RA35	5.8	24.7	5	90	2	0.6	24.97	12.2	6.23	80.8	24.88	12.7	5.65	73.4
RA990914	RA RA40	5.1	25.3	4	90	2	0.6	25.21	9.7	6.06	77.8	25.03	10.0	5.64	72.3
RA990910	RA 2	3.0	22.2	4	40	6	1.9	24.55	21.1	5.77	78.1	24.70	21.8	5.53	75.4
RA990910	RA 3	4.6	22.5	6	40	2	1.7	24.72	21.2	5.80	78.8	24.64	21.4	5.50	74.7
RA990910	RA 5	11.6	23.6	5	40	2	1.5	24.70	20.4	5.70	77.1	24.40	21.5	3.40	46.0
RA990910	RA 7	19.2	23.6	5	40	2	1.7	24.50	20.4	5.80	78.1	24.30	22.6	4.10	55.7
RA990910	RA 10	1.8	26.3	4	340	2	1.2	24.90	19.5	5.90	79.8	24.50	19.8	4.70	63.1
RA990910	RA 12	5.8	26.1	1	340	2	1.4	25.00	19.5	5.90	79.8	24.50	19.8	4.70	63.1
RA990910	RA 13	11.3	25.3	2	340	2	1.5	24.60	21.1	6.00	81.3	24.10	22.3	2.50	33.8
RA990910	RA 15	15.2	24.2	2	340	2	1.5	24.70	19.9	6.00	80.9	24.00	22.4	3.40	45.9
RA990914	RA 17	3.8	24.2	1	90	2	1.0	24.65	17.9	5.63	75.0	24.66	18.2	5.42	72.3
RA990914	RA 20	5.8	25.4	4	90	2	1.2	24.93	18.1	6.21	83.2	24.78	18.9	4.57	61.3
RA990914	RA 21	9.2	23.4	1	90	2	0.9	24.61	18.7	5.62	75.1	24.54	19.7	3.63	48.7
RA990914	RA 22	8.1	26.1	5	90	2	1.3	24.85	18.1	6.31	84.4	24.65	19.4	4.19	56.3
RA990914	RA 24	2.0	26.1	5	90	2	0.6	25.10	12.6	6.00	78.2	24.93	12.8	5.70	74.1
RA990914	RA 26	5.8	24.8	5	90	2	0.6	24.76	12.6	6.27	81.2	24.93	13.7	5.56	72.6
YK990908	YK YK02	11.6	22.9	0	0	0	1.2	24.14	21.6	5.90	79.5	23.79	22.2	5.01	67.3
YK990907	YK YK05	12.7	29.7	5	220	1	0.9	24.47	20.9	6.28	84.8	23.91	21.0	5.64	75.4
YK990907	YK YK10	8.5	23.2	2	220	1	0.9	23.80	19.4	6.31	83.5	23.90	19.7	6.16	81.8
YK990907	YK YK15	8.5	26.2	4	220	1	0.9	23.98	18.3	6.38	84.1	23.91	18.5	6.14	81.0
YK990907	YK YK20	6.6	26.6	3	220	1	0.7	23.99	17.6	6.12	80.4	23.89	17.7	6.10	80.0
YK990907	YK YK25	7.1	30.1	5	220	1	0.6	25.73	15.4	7.36	98.5	24.01	16.5	6.20	81.0
YK990907	YK YK30	4.0	29.8	3	220	1	0.5	25.51	12.6	5.88	77.1	24.03	13.8	5.22	67.1
YK990907	YK YK35	6.9	28.7	2	220	1	0.6	24.67	10.5	6.19	79.0	24.08	10.6	5.69	71.9
YK990907	YK YK40	4.0	29.7	4	220	1	0.5	24.59	7.0	6.05	75.6	24.17	7.4	5.56	69.1
YK990908	YK 1	2.3	23.2	3	180	0	1.5	24.18	21.8	6.63	89.5	24.17	21.8	6.62	89.4
YK990908	YK 3	. .	22.6	4	140	0	1.1	24.47	21.4	5.83	78.9	24.32	21.4	5.79	78.2
YK990907	YK 6	9.1	28.2	5	220	1	0.9	24.79	20.8	6.53	88.6	23.94	20.9	0.89	11.9
YK990908	YK 7	15.1	23.9	1	140	0	1.5	24.22	21.8	6.51	88.0	23.77	23.2	6.09	82.3
YK990907	YK 8	13.8	29.7	8	220	1	1.2	25.11	20.1	6.98	94.9	23.90	20.7	5.73	76.5
YK990907	YK 9	2.6	24.0	3	220	1	0.9	23.90	19.9	6.00	79.7	23.90	20.0	6.00	79.8
YK990907	YK 11	7.1	23.9	3	220	1	1.1	23.97	19.5	6.23	82.7	24.00	20.0	6.15	81.9
YK990907	YK 13	9.8	25.2	3	220	1	0.8	23.96	18.6	6.23	82.3	23.92	18.8	6.12	80.8
YK990907	YK 15	1.6	27.0	3	220	1	0.6	24.32	16.8	6.60	86.8	23.95	17.5	6.41	84.1
YK990907	YK 16	2.0	27.6	5	220	1	0.6	24.67	16.1	6.73	88.7	23.97	16.9	6.31	82.5
YK990907	YK 17	5.7	30.0	5	220	1	1.6	24.89	14.8	6.46	84.9	24.05	15.4	5.80	75.3
YK990907	YK 19	10.9	26.7	4	220	1	7.0	23.98	17.7	6.35	83.4	23.89	18.0	6.16	81.0
YK990907	YK 20	7.3	29.0	5	220	1	0.5	25.42	15.8	7.27	97.0	24.04	16.7	6.40	83.7

Table 35.
October 1999

System+	Stat #	Air	Wind	Weather	Surface				Bottom							
					Temp.	Salin.	DO	%	Temp.	Salin.	DO	%				
Cruise	River	Depth	Temp.	Speed	Direct.	Obs.	Secchi	Temp.	Salin.	DO	%	Temp.	Salin.	DO	%	
Number	River	Mile	(m)	(C)	m/sec	(deg)	(m)	(C)	(ppt)	(mg/L)	Satur.	(C)	(ppt)	(mg/L)	Satur.	
GW99101	GW	1	2.7	21.5	5	320	2	1.5	19.82	16.6	7.13	86.2	19.66	16.6	6.85	82.6
GW99101	GW	2	2.1	21.9	3	320	2	2.2	20.24	15.9	7.13	86.5	19.66	16.5	6.11	73.6
GW99101	GW	4	4.2	22.0	3	320	2	2.3	20.38	15.5	7.08	85.9	20.10	15.9	6.20	75.1
GW99101	GW	6	5.2	20.7	3	220	2	2.5	19.70	16.6	7.56	91.2	19.83	17.1	7.08	85.8
GW99101	GW	7	5.0	21.0	3	270	2	1.5	19.82	16.5	7.31	88.3	19.51	16.9	6.07	73.1
GW99101	GW	8	6.1	21.3	3	320	2	2.5	20.28	15.8	7.36	89.3	19.56	16.6	5.97	71.8
JA991015	JA	JA01	5.4	17.6	8	40	1	1.3	18.77	14.3	7.72	90.2	19.31	17.7	6.80	81.9
JA991015	JA	JA05	5.5	19.2	8	40	1	1.2	19.38	13.9	7.03	82.9	19.75	17.2	6.45	78.1
JA991015	JA	JA13	12.8	20.3	1	40	1	1.3	19.40	11.9	7.28	84.9	19.92	16.6	6.19	75.0
JA991015	JA	JA17	6.1	20.3	1	40	1	0.9	20.50	4.7	7.27	83.0	19.64	9.7	6.28	72.6
JA991015	JA	JA24	7.3	21.0	1	40	1	0.5	19.97	2.5	6.92	77.2	19.85	4.4	6.55	73.7
JA991019	JA	JA27	8.2		4	40	0	0.8	19.03	3.4	7.78	85.6	19.70	6.9	6.83	77.8
JA991019	JA	JA35	7.6	16.8	5	40	0	0.5	19.29	0.8	7.91	86.2	19.70	2.1	7.20	79.7
JA991019	JA	JA40	5.6	16.5	3	40	0	0.2	19.06	0.5	7.55	81.7	19.29	0.8	7.45	81.2
JA991015	JA	1	2.5	19.4	1	40	1	1.5	18.62	15.3	7.39	86.6	18.90	16.9	7.04	83.7
JA991015	JA	3	3.7	19.7	8	40	1	1.1	18.92	11.3	7.33	84.4	18.79	12.0	7.17	82.6
JA991015	JA	5	10.7	18.8	4	40	1	1.3	19.15	15.1	7.12	84.2	19.88	21.4	6.19	77.1
JA991015	JA	7	19.5	18.1	5	40	1	1.2	18.93	14.8	6.90	81.1	19.93	21.3	5.97	74.4
JA991015	JA	8	19.2	16.9	8	40	1	1.4	18.84	14.8	6.93	81.3	19.94	20.7	5.97	74.1
JA991015	JA	10	2.3	21.7	1	40	1	1.1	18.95	5.6	7.48	83.3	18.88	7.2	6.24	70.0
JA991015	JA	11	5.3	22.2	1	40	1	1.0	18.99	7.5	7.27	81.9	19.80	14.0	6.14	73.1
JA991015	JA	13	10.8	20.9	1	40	1	1.2	19.13	10.1	7.01	80.5	19.90	16.2	5.98	72.2
JA991015	JA	15	1.6	21.6	1	40	1	1.1	19.66	6.9	6.69	76.1	19.64	6.9	6.74	76.6
JA991019	JA	18	5.8	12.8	3	40	0	0.7	19.50	3.0	7.78	86.2	19.79	5.7	7.04	79.7
JA991019	JA	19	9.4	14.6	4	40	0	1.0	18.80	4.3	7.71	84.9	19.40	8.2	6.96	79.4
JA991019	JA	20	17.2	16.9	5	40	0	0.3	19.23	0.7	7.47	81.2	19.38	1.4	7.12	78.0
JA991019	JA	22	2.8	18.2	2	40	0	0.3	18.40	0.2	8.47	90.3	17.95	0.1	7.67	81.0
JA991019	JA	24	6.6	18.2	3	40	0	0.2	18.64	0.2	7.89	84.5	18.92	0.3	7.65	82.5
PK991011	PK	PK02	7.6	22.0	5	360	2	2.2	20.10	16.5	7.56	91.8	19.79	17.1	6.56	79.5
PK991011	PK	PK03	6.3	23.2	5	360	2	2.0	20.45	15.3	6.70	81.4	19.60	16.6	4.90	59.0
PK991011	PK	PK04	6.1	23.3	5	360	2	1.6	20.76	14.1	6.87	83.3	20.09	15.9	3.82	46.2
PK991011	PK	1	2.1	22.0	5	360	2	2.1	20.05	16.4	7.52	91.2	19.97	16.5	7.29	88.3
PK991011	PK	2	2.4	22.2	5	360	2	2.5	19.99	16.6	7.55	91.6	19.87	16.9	7.44	90.2
PK991011	PK	6	6.4	22.3	3	360	2	2.0	20.29	15.8	7.24	87.9	19.70	16.9	5.57	67.3
PK991011	PK	8	6.5	22.0	5	360	2	2.5	19.88	16.9	7.34	89.0	19.85	17.6	6.45	78.5
RA991007	RA	RA02	17.3	14.9	7	360	1	1.9	20.00	15.5	7.91	95.3	20.38	17.7	5.57	68.5
RA991007	RA	RA10	18.6	15.7	5	360	1	1.5	19.92	14.2	7.58	90.5	20.60	17.4	5.70	70.3
RA991008	RA	RA15	15.2	18.3	4	140	1	1.6	18.75	12.7	8.16	94.4	20.75	15.5	5.06	61.8
RA991008	RA	RA20	12.8	17.9	1	140	1	1.1	19.01	12.0	7.96	92.2	21.18	16.4	4.10	50.8
RA991008	RA	RA25	8.3	19.2	3	140	1	1.0	17.79	11.5	7.13	80.3	20.62	14.4	4.55	55.1
RA991008	RA	RA30	6.1	19.2	3	140	1	0.8	19.45	8.1	7.79	88.9	19.75	10.3	6.28	73.0
RA991008	RA	RA35	6.1	19.2	1	140	1	0.3	19.00	6.0	7.67	85.7	19.17	8.0	6.56	74.4
RA991008	RA	RA40	4.6	19.8	1	140	1	0.3	18.69	1.9	8.42	91.2	18.71	1.9	8.59	93.1
RA991007	RA	1	1.9	13.7	5	360	1	1.7	19.91	17.6	7.57	92.2	19.74	17.8	7.35	89.3
RA991007	RA	3	6.1	13.7	5	360	1	1.4	19.73	14.3	7.26	86.4	20.86	15.5	4.57	56.0
RA991007	RA	5	15.2	15.2	6	360	1	2.0	20.00	16.8	7.79	94.6	20.00	17.9	7.20	88.0
RA991007	RA	8	17.6	14.0	5	360	1	1.8	19.33	14.5	7.26	86.7	20.35	17.6	5.52	67.8
RA991007	RA	9	3.0	16.1	4	360	1	1.2	19.60	13.0	8.10	95.4	19.53	13.1	7.52	88.6
RA991008	RA	12	5.3	18.3	1	140	1	1.4	17.78	14.0	6.92	79.2	20.89	15.9	4.33	53.2
RA991007	RA	13	12.8	17.2	4	360	1	1.4	19.73	13.3	7.99	94.6	21.09	16.4	4.91	60.7
RA991007	RA	15	16.6	16.4	4	360	1	1.3	19.91	13.5	7.95	94.5	21.21	17.2	5.10	63.5
RA991008	RA	17	3.4	17.8	1	140	1	1.3	18.97	12.3	7.53	87.3	19.45	12.5	7.16	83.9
RA991008	RA	19	3.7	18.3	3	140	1	1.3	19.70	13.0	6.46	76.3	20.18	13.7	5.30	63.4
RA991008	RA	21	9.4	18.3	4	140	1	1.5	19.81	13.0	6.83	80.8	21.19	16.2	3.80	47.0
RA991008	RA	22	7.0	18.3	5	140	1	1.1	19.70	11.3	7.13	83.4	20.70	14.0	4.31	52.2
RA991008	RA	24	2.8	20.8	1	140	1	0.3	18.61	2.0	8.40	90.9	18.60	2.2	8.35	90.5
RA991008	RA	25	6.1	19.5	1	140	1	0.3	18.99	6.1	7.69	86.0	19.41	8.4	6.28	71.8
YK991005	YK	YK02	11.1	14.4	8	360	2	1.1	21.86	17.9	7.07	89.5	21.49	20.7	5.45	69.6
YK991005	YK	YK05	13.1	14.7	8	360	2	1.1	21.70	17.8	6.62	83.5	21.47	20.9	5.63	72.0
YK991004	YK	YK10	8.2	22.5	6	220	1	1.4	21.75	16.2	7.49	93.7	21.77	19.3	4.96	63.2
YK991004	YK	YK15	8.1	22.8	5	220	1	1.3	21.84	11.8	7.81	95.4	21.77	16.3	5.08	63.6
YK991004	YK	YK20	6.1	24.5	6	220	1	0.9	21.88	11.0	7.98	97.1	21.88	12.8	6.43	79.0
YK991004	YK	YK25	6.8	22.7	3	320	1	1.0	21.84	7.9	7.89	94.2	21.82	10.1	7.17	86.7
YK991004	YK	YK30	3.6	23.7	1	320	1	0.4	21.75	2.9	6.68	77.3	21.72	5.4	6.61	77.6
YK991004	YK	YK35	6.0	24.1	1	320	1	0.4	21.29	0.6	5.29	59.9	21.26	0.7	5.22	59.1
YK991004	YK	YK40	3.5	25.1	2	320	1	0.3	21.40	0.2	5.39	61.0	21.31	0.2	5.36	60.6
YK991004	YK	2	2.3	24.1	2	320	2	1.3	22.30	15.7	7.50	94.5	21.90	16.7	6.50	81.8
YK991005	YK	3	8.8	14.4	8	360	2	1.3	21.63	18.3	6.82	86.2	21.59	20.2	5.97	76.2
YK991005	YK	6	12.2	15.0	9	360	2	1.3	21.64	17.5	6.61	83.1	21.72	19.5	5.63	71.7
YK991005	YK	7	12.8	15.2	6	360	2	1.1	21.66	19.0	7.21	91.5	21.64	21.0	6.71	86.1
YK991005	YK	8	16.8	14.8	6	360	2	1.1	21.66	17.5	7.04	88.6	21.49	21.0	5.76	73.7
YK991004	YK	10	3.4	22.9	2	320	1	1.3	21.68	15.6	6.79	84.5	21.80	18.8	4.94	62.8
YK991004	YK	12	4.5	23.3	2	320	1	1.3	21.79	13.6	7.41	91.4	21.82	14.6	6.64	82.4
YK991004	YK	14	9.6	23.2	6	220	1	1.3	21.72	13.1	7.81	95.9	21.79	17.3	5.01	63.1
YK991004	YK	15	3.4	22.7	3	320	1	1.0	21.82	8.7	7.73	92.7	21.79	9.8	7.27	87.7
YK991004	YK	16	2.6	26.6	3	320	1	0.7	22.11	5.1	7.30	86.2	21.96	5.1	7.16	84.3
YK991004	YK	17	4.5	23.6	3	220	1	1.3	21.93	10.9	8.25	100.4	21.82	13.9	6.05	74.8
YK991004	YK	19	10.1	24.6	3	220	1	1.2	21.84	10.5	7.91	95.9	21.80	14.1	5.83	72.1
YK991004	YK	20	7.8	23.9	6	220	1	1.0	21.95	10.0	8.16	98.8	21.88	11.1	7.29	88.7

Table 36.

November 1999

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.
JA991112	JA JA01	7.0	15.1	4	90	2	1.1	14.58	22.2	7.16	80.7	14.43	22.6	7.24	81.5
JA991112	JA JA05	6.4	15.7	5	90	2	1.1	14.58	21.3	7.09	79.4	14.56	21.4	6.97	78.1
JA991112	JA JA13	13.7	16.6	2	90	1	1.2	14.41	17.3	7.43	80.9	14.46	19.9	7.05	78.1
JA991112	JA JA17	7.0	15.8	3	40	1	1.6	14.38	12.7	7.46	78.9	14.14	15.0	7.37	78.7
JA991112	JA JA24	9.8	15.3	3	40	1	1.1	14.54	7.5	7.59	78.0	14.13	11.0	7.47	77.8
JA991116	JA JA27	8.2	9.5	5	320	1	1.0	13.30	4.5	7.04	69.2	13.93	9.9	7.49	77.2
JA991116	JA JA35	7.3	11.8	7	320	1	0.4	13.11	2.2	7.90	76.2			7.64	
JA991116	JA JA40	5.2	12.3	6	320	1	0.3	12.82	1.3	8.12	77.4	12.98	1.5	8.12	77.8
JA991112	JA 1	1.8	15.2	6	90	2	2.2	14.41	22.4	6.85	77.0	14.41	22.5	6.84	76.9
JA991112	JA 3	4.6	16.0	3	90	2	2.2	14.41	19.0	7.04	77.5	14.34	19.1	7.01	77.1
JA991112	JA 5	10.7	15.7	5	90	2	2.2	14.66	22.3	7.06	79.7	14.53	22.7	7.22	81.5
JA991112	JA 7	18.3	13.8	4	90	2	2.2	14.39	21.7	6.15	68.8	14.74	23.6	6.10	69.5
JA991112	JA 8	18.0	14.8	5	90	2	2.2	14.59	22.3	6.53	73.6	14.99	24.4	6.52	75.1
JA991112	JA 9	1.8	16.7	2	90	2	2.2	14.59	18.9	7.08	78.2	14.58	18.8	7.09	78.2
JA991112	JA 12	6.4	16.8	3	40	1	1.1	14.33	16.6	7.57	82.0	14.53	20.1	7.09	78.8
JA991112	JA 13	11.6	16.5	4	90	2	2.2	14.56	17.7	6.79	74.4	14.51	20.3	6.68	74.3
JA991112	JA 16	2.7	15.7	2	40	2	0.7	14.58	6.8	7.58	77.7	14.06	9.1	7.57	77.8
JA991112	JA 17	4.0	16.0	2	40	1	1.1	14.46	7.2	7.60	77.9	14.11	9.0	7.52	77.3
JA991116	JA 19	8.5	11.0	6	320	1	0.4	13.00	2.0	7.84	75.3	13.53	3.5	7.83	76.8
JA991116	JA 20	9.1	9.4	6	320	1	1.1	13.10	1.9	7.97	76.7	13.61	3.5	7.82	76.9
JA991116	JA 21	3.4	10.7	6	320	1	0.5	13.76	3.1	7.89	77.6	13.78	3.1	7.88	77.6
JA991116	JA 24	4.3	12.6	9	320	1	0.3	12.34	0.4	8.33	78.1	12.87	1.0	8.21	78.2
JE991117	JE JE00	7.6	.	6	220	0	1.2	12.12	17.7	8.55	88.9	11.94	18.4	7.84	81.6
JE991117	JE JE01	1.5	.	6	220	0	1.0	11.94	17.9	8.42	87.3	11.93	17.9	8.44	87.5
JE991117	JE JE02	6.0	.	7	220	0	.	12.12	18.2	8.86	92.4	11.83	18.5	.	.
MB991110	MS MS01	5.2	18.1	5	220	0	1.4	14.03	19.2	8.38	91.6	14.35	19.7	7.28	80.4
MB991110	MW MW0	4.6	18.0	4	220	0	2.2	14.26	18.9	8.57	94.0	14.77	19.7	7.10	79.1
MB991110	MN MN0	5.5	17.0	5	220	0	2.0	14.72	19.1	8.37	92.8	14.64	19.4	7.40	82.0
MB991110	ME ME02	4.3	16.4	4	220	0	1.6	14.35	19.4	7.96	87.7	14.34	19.6	7.59	83.7
MB991110	MB MB0	5.3	13.7	5	220	0	1.4	14.37	20.8	8.22	91.4	14.00	20.9	8.41	92.9
MB991110	MB MB0	5.2	16.1	4	220	0	2.1	14.34	19.8	8.37	92.5	14.18	19.9	7.93	87.4
MB991110	MB MB0	3.0	18.7	5	220	0	2.0	14.42	20.3	8.14	90.3	14.39	20.3	8.11	90.0
MB991110	MB 1	1.2	19.9	5	220	0	2.1					14.73	20.4	8.36	93.4
MB991110	MB 2	3.7	13.4	5	220	0	1.7	13.36	20.5	8.33	90.5	13.30	20.8	8.30	90.3
MB991110	MB 4	1.5	18.2	5	220	0	1.6					13.58	20.1	8.67	94.4
MB991110	MB 6	5.2	14.4	5	220	0	1.4	14.35	20.7	8.15	90.5	14.35	20.7	7.88	87.5
MB991110	MB 7	4.6	18.8	5	220	0	1.8	14.48	19.9	8.27	91.7	14.42	20.2	7.93	88.0
MB991110	MB 8	4.9	14.9	3	220	0	1.6	14.24	20.6	8.19	90.7	14.27	20.6	7.98	88.5
MB991110	MW 10	2.7	17.9	6	220	0	1.5	14.53	18.5	8.10	89.1	15.09	19.1	7.45	83.2
MB991110	MN 12	2.9	17.2	3	220	0	1.2	14.14	18.7	7.87	86.0	14.20	18.9	7.73	84.7
MB991110	MB 13	6.7	16.3	5	220	0	1.3	14.63	19.5	8.27	91.7	14.84	20.2	7.12	79.6
MB991110	MB 16	4.0	15.2	5	220	0	1.7	14.37	19.2	7.98	87.9	14.43	19.5	7.61	84.1
RA991108	RA RA02	17.3	14.4	2	40	1	1	13.92	17.2	7.88	84.9	14.22	18.3	7.60	83.0
RA991108	RA RA10	18.5	12.4	1	270	1	1.8	14.10	16.1	7.76	83.3	14.39	17.9	6.58	71.9
RA991108	RA RA15	15.8	15.7	1	360	0	1.8	13.81	15.9	7.57	80.7	14.44	17.4	6.00	65.4
RA991108	RA RA20	17.2	16.4	3	360	0	1.6	13.88	15.1	7.63	81.1	14.46	16.9	6.15	66.9
RA991109	RA RA25	8.7	19.0	1	40	1	1.3	13.18	13.7	9.30	96.5	13.96	15.2	7.70	82.0
RA991109	RA RA30	6.0	18.1	1	40	1	1.0	12.55	10.7	10.06	101.1	13.28	13.3	8.34	86.5
RA991109	RA RA35	5.4	18.9	1	40	1	1	12.75	9.3	9.60	96.0	12.57	10.3	8.97	89.9
RA991109	RA RA40	5.2	19.9	0	40	1	1	12.42	6.8	9.81	95.9	12.39	6.8	9.88	96.5
RA991108	RA 2	2.2	13.3	3	270	1	2.3	14.05	17.0	7.55	81.5	14.04	17.1	7.50	80.9
RA991108	RA 3	5.3	12.9	1	40	1	2.2	13.61	17.8	7.93	85.2	13.33	18.4	7.79	83.5
RA991108	RA 5	11.5	13.3	1	360	1	2.4	13.97	17.2	7.35	79.3	14.24	18.4	6.85	74.8
RA991108	RA 8	19.0	14.3	1	40	1	2.8	14.01	17.1	7.46	80.5	14.25	18.4	7.24	79.1
RA991108	RA 9	3.5	15.5	3	360	0	1.5	13.30	15.0	7.60	79.7	13.81	16.0	6.82	72.8
RA991108	RA 11	8.8	16.3	2	270	1	1.6	13.79	16.0	7.66	81.7	14.02	16.6	6.94	74.7
RA991108	RA 13	11.0	14.1	0	40	1	2.2	14.11	16.1	7.60	81.6	14.29	17.4	6.77	73.6
RA991108	RA 16	15.9	15.6	4	360	0	1.6	13.96	15.7	7.74	82.7	14.44	17.5	6.43	70.2
RA991109	RA 17	2.4	19.6	1	40	1	1.0	13.11	13.4	9.38	97.0	13.10	13.5	8.95	92.6
RA991109	RA 20	4.1	18.3	1	40	1	0.9	12.54	11.1	10.12	101.9	13.43	14.1	8.15	85.2
RA991109	RA 21	9.1	17.6	1	40	1	1.5	13.20	15.0	10.42	109.1	14.21	16.1	7.56	81.4
RA991109	RA 22	7.0	18.7	1	40	1	1.2	12.98	13.6	9.51	98.2	14.08	15.6	7.64	81.8
RA991109	RA 24	2.4	19.6	0	40	1	0.5	12.89	9.4	9.62	96.6	12.67	9.9	9.51	95.3
RA991109	RA 26	5.4	19.4	0	40	1	1	12.78	8.8	9.74	97.2	12.60	9.8	8.91	89.1
YK991103	YK YK02	11.1	13.7	7	270	1	1.6	16.25	19.9	7.78	89.4	16.36	20.0	7.63	87.9
YK991103	YK YK05	12.2	12.6	9	270	1	1.2	16.11	19.5	7.72	88.3	16.20	20.5	7.35	84.7
YK991103	YK YK10	7.7	11.7	9	270	1	0.8	16.25	18.2	7.60	86.4	16.26	18.2	7.32	85.6
YK991102	YK YK15	9.8	19.0	8	140	2	1.0	16.74	15.1	7.59	85.6	16.51	17.8	7.04	80.3
YK991102	YK YK20	7.3	19.2	8	140	2	0.6	16.46	14.3	7.49	83.6	16.38	15.6	7.37	82.8
YK991102	YK YK25	7.9	19.6	8	140	2	0.5	16.60	11.6	7.47	82.2	16.29	13.1	7.28	80.3
YK991102	YK YK30	7.3	20.3	5	140	2	0.5	16.64	7.9	6.85	73.8	16.38	8.6	6.68	71.9
YK991102	YK YK35	5.2	20.4	5	140	6	0.3	16.33	3.7	6.55	68.3	16.35	3.7	0.35	3.7
YK991102	YK YK40	3.7	20.5	5	140	6	0.2	16.10	0.8	6.74	68.8	16.04	0.7	6.37	64.9
YK991103	YK 1	2.3	12.8	11	270	1	1.0	15.87	19.8	8.61	98.1	15.89	19.8	8.65	98.6
YK991103	YK 4	7.3	13.9	10	270	1	0.7	15.61	18.3	7.76	87.2	16.00	19.0	7.37	83.8
YK991103	YK 5	11.6	12.3	7	270	1	1.5	16.20	20.1	7.73	88.9	16.22	20.1	7.83	90.0
YK991103	YK 7	14.3	12.3	10	270	1	1.6	16.17	20.1	8.04	92.4	16.28	20.3	7.84	90.4
YK991103	YK 8	15.0	14.1	11	270	1	1.3	16.15	20.2	8.33	95.7	16.46	21.4	7.35	85.6
YK991103	YK 9	3.0	11.7	11	270	1	0.6	15.40	18.2	7.93	88.7	15.34	18.2	7.95	88.7
YK991102	YK 11	5.2	18.5	8	140	5	1.5	16.62	18.1	8.14	93.2	16.55	18.5	7.77	89.1
YK991103	YK 13	11.3	12.8	10	270	1	0.7	15.97	18.3	7.43	84.1	16.29	19.5	7.14	81.9
YK991102	YK 15	2.2	18.9	8	140	2	0.8	16.57	14.0	7.63	85.1	16.43	15.4	7.18	80.6
YK991102	YK 16	2.1	20.1	8	140	2	0.4	16.29	11.5	7.17	78.4	16.25	11.6	7.15	78.1
YK991103	YK 18	8.5	11.7	8	270	1	0.6	15.94							

Table 37.
December 1999

System+ Cruise Number	Stat # River River Mile	Depth (m)	Air		Wind		Weather Obs.	Secchi (m)	Surface				Bottom			
			Temp. (C)	Temp. (C)	Speed m/sec	Direct. (deg)			Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.
CP991213	CP	CP01	6.1	13.4	1	90	2	2.0	8.13	18.7	11.20	107.1	8.12	18.8	10.88	104.1
CP991213	CP	CP03	24.9	12.8	1	90	2	2.8	8.38	18.5	11.14	107.0	9.33	20.9	9.55	95.2
CP991213	CP	CP05	9.8	13.9	2	90	2	2.5	8.52	18.1	11.13	107.0	9.14	19.8	10.10	99.6
CP991213	CP	1	3.1	14.7	1	90	2	1.0	8.60	18.2	10.93	105.4	8.54	18.5	10.89	105.0
CP991213	CP	2	3.4	15.7	1	90	2	1.0	8.54	17.9	11.41	109.6	8.57	18.4	10.83	104.4
CP991213	CP	3	2.5	14.1	1	90	2	1.8	7.82	18.1	11.93	112.9	7.79	18.2	11.86	112.2
CP991213	CP	4	1.7	14.5	1	90	2	2.0	8.20	18.6	10.53	100.9	8.50	19.3	10.40	100.7
CP991213	CP	5	6.4	14.1	1	90	2	2.0	8.19	18.8	11.34	108.6	8.19	18.8	10.72	102.7
CP991213	CP	7	7.6	14.6	1	90	2	2.0	8.31	18.7	11.13	106.9	8.17	18.8	10.75	103.0
CP991213	CP	8	6.7	13.6	1	90	2	2.7	8.51	18.2	11.25	108.2	8.84	19.0	11.35	110.6
CP991213	CP	10	9.8	13.3	1	90	2	2.8	8.57	18.2	11.00	106.0	8.83	19.4	10.46	102.1
CP991213	CP	11	9.4	13.0	1	90	2	2.5	8.60	18.4	11.05	106.6	9.68	21.8	9.30	94.0
CP991213	CP	13	12.8	13.1	1	90	2	2.0	8.33	18.5	10.98	105.4	9.40	21.0	9.16	91.6
CP991213	CP	15	21.9	13.9	1	90	2	1.6	10.64	22.4			10.39	23.7		
JA991206	JA	JA01	5.8	15.7	5	180	2	1.7	10.82	21.8	7.83	81.2	10.46	23.0	7.86	81.5
JA991206	JA	JA05	5.6	16.0	2	220	2	1.5	10.49	17.3	8.39	83.9	10.33	20.4	8.04	81.8
JA991206	JA	JA13	12.2	15.3	4	220	5	0.7	11.13	11.1	8.34	81.4	10.46	15.3	8.24	81.3
JA991206	JA	JA17	6.2	15.2	2	220	6	0.6	11.28	7.9	8.31	79.7	10.59	9.2	8.26	78.7
JA991206	JA	JA24	6.4	14.8	2	220	5	0.5	11.25	4.9			10.95	6.5		
JA991207	JA	JA27	8.6	6.2	7	360	0	0.4	10.89	3.8			10.90	3.8		
JA991207	JA	JA35	8.3	9.2	8	360	0	0.2	10.23	1.4			10.31	1.9		
JA991207	JA	JA40	4.6	8.3	7	360	0	1.2	10.72	19.6	8.30	84.7	10.71	19.7	8.31	84.8
JA991206	JA	1	2.2	16.2	1	220	6	1.5	10.46	21.9	7.99	82.3	10.44	22.6	7.99	82.6
JA991206	JA	3	7.0	16.4	4	220	2	1.6	10.49	22.1	7.86	81.1	10.41	23.1	7.94	82.3
JA991206	JA	6	10.7	16.1	0	0	2	1.8	10.64	22.6	5.48	56.9	10.44	25.1	5.47	57.5
JA991206	JA	7	20.5	17.1	5	220	1	1.8	10.66	22.6	6.89	71.6	10.44	25.3	6.76	71.1
JA991206	JA	8	20.7	17.8	5	220	1	1.4	10.54	16.6	8.35	83.3	10.49	16.8	8.29	82.7
JA991206	JA	9	2.7	15.0	2	220	5	1.3	10.67	16.4	8.31	83.0	10.25	18.2	8.16	81.7
JA991206	JA	12	5.2	15.0	2	220	5	1.9	10.67	17.9	7.41	74.7	10.43	20.6	7.44	75.9
JA991206	JA	13	10.2	15.3	3	220	2	0.8	11.02	5.8	8.26	77.7	10.82	7.5	8.21	77.8
JA991206	JA	15	3.0	14.5	2	220	2	0.6	10.95	3.7			11.66	4.6		
JA991207	JA	18	8.5	10.7	5	360	0	0.3	10.67	3.3			10.67	3.3		
JA991207	JA	19	10.7	9.1	7	360	0	0.2	10.35	2.4			10.51	2.9		
JA991207	JA	20	17.5	8.1	7	360	0	0.3	10.28	0.5			10.28	0.5		
JA991207	JA	22	2.4	8.8	7	360	0	0.4	11.35	3.9			11.51	4.2		
JA991207	JA	23	8.6	9.4	8	360	0	1.1	11.59	19.7	11.08	115.3	10.91	21.6	10.32	107.1
JE991215	JE	JE00	7.8	12.0	0	0	1	1.1	11.51	20.3	10.13	105.7	11.51	20.3	10.13	105.7
JE991215	JE	JE01	1.3	15.8	2	140	0	1.0	11.68	19.0	11.78	122.3	11.08	21.0	9.88	102.5
JE991215	JE	JE02	6.0	15.7	0	0	1	1.2	11.76	20.2	10.35	108.5	10.74	21.9	9.90	102.6
JE991215	JE	JE27	6.4	17.1	1	140	0	1.1								
JE991215	JE	JE00	7.4					1.1								
JE991215	JE	JE01	2.1					1.0								
JE991215	JE	JE02	5.3					1.2								
JE991215	JE	JE27	6.0		6	180	5	3.5	9.90	18.2	10.66	105.9	9.45	18.9	10.19	100.6
RA991214	RA	RA02	16.8	12.6	1	90	2	3.2	9.62	17.3	10.74	105.4	9.47	18.5	9.84	96.9
RA991214	RA	RA10	17.3	14.2	1	90	2	3.2	9.59	16.6	11.00	107.4	9.52	17.9	10.13	99.5
RA991214	RA	RA15	15.8	13.8	0	0	2	2.5	9.45	15.8	10.84	104.9	9.61	17.8	9.60	94.5
RA991214	RA	RA20	16.1	15.0	0	0	2	1.5	9.27	13.9	11.90	113.3	9.56	15.3	10.74	103.9
RA991210	RA	RA25	8.6	15.7	5	220	2	0.6	9.01	10.4	12.83	118.7	9.03	12.3	11.73	109.9
RA991210	RA	RA30	5.5	15.6	4	220	6	0.3	8.87	8.3	14.69	133.7	8.70	9.5	12.49	114.1
RA991210	RA	RA35	5.3	15.6	4	220	6	0.5	9.67	17.4	10.99	108.0	9.67	17.4	10.93	107.4
RA991210	RA	RA40	5.0	14.1	4	220	2	3.4	9.67	17.4	10.99	108.0	9.67	17.4	10.93	107.4
RA991214	RA	2	3.2	12.4	3	180	2	4.1	9.61	17.7	10.93	107.5	9.45	18.3	9.14	89.9
RA991214	RA	3	8.1	11.2	5	220	5	3.8	9.60	17.3	10.85	106.4	9.51	17.9	10.00	98.2
RA991214	RA	6	11.4	12.2	3	270	2	3.2	9.54	18.4	10.96	108.1	9.44	19.2	10.00	98.9
RA991214	RA	7	17.7	11.6	5	140	5	3.2	9.54	18.4	10.96	108.1	9.44	19.2	10.00	98.9
RA991214	RA	9	2.4	14.8	0	0	2	2.1	9.99	15.8	10.98	107.6	9.69	16.0	11.02	107.4
RA991214	RA	12	7.7	14.1	0	0	2	3.6	9.56	16.8	10.73	104.8	9.56	18.0	9.89	97.3
RA991214	RA	14	8.0	14.3	0	0	2	2.2	9.53	15.3	11.20	108.3	9.62	17.7	9.49	93.3
RA991214	RA	15	14.8	14.8	0	0	2	2.5	9.52	16.2	10.65	103.5	9.61	17.8	9.54	93.9
RA991210	RA	18	3.0	16.0	8	220	2	0.7	9.05	10.9	12.51	116.2	9.05	11.0	12.56	116.8
RA991210	RA	20	5.2	14.1	1	220	2	1.4	9.73	15.7	11.72	114.1	9.72	15.7	11.25	109.5
RA991210	RA	21	9.1	14.5	8	220	2	1.7	9.53	15.0	11.54	109.4	9.99	17.3	9.94	98.3
RA991210	RA	22	8.8	14.9	8	220	2	1.3	9.28	14.0	11.16	106.4	9.57	15.3	10.58	102.4
RA991210	RA	24	2.0	14.3	2	220	6	0.3					8.71	5.4	12.56	111.7
RA991210	RA	26	4.2	16.4	2	220	2	0.8	9.04	10.5	12.71	117.8	8.93	11.0	12.04	111.6
YK991203	YK	YK02	11.6	13.6	2	270	1	1.6	9.84	21.0			10.11	23.3		
YK991203	YK	YK05	16.5	14.2	4	270	1	1.6	9.82	21.3			10.03	23.2		
YK991203	YK	YK10	6.7	9.6	4	270	1	1.0	9.13	19.7			10.72	21.3		
YK991202	YK	YK15	7.9	6.9	6	320	0	0.6	9.28	19.2			11.10	20.5		
YK991202	YK	YK20	6.3	10.8	3	320	0	0.5	8.36	16.9			10.38	19.2		
YK991202	YK	YK25	7.6	13.7	3	320	0	0.5	9.59	13.6	6.06	58.0	9.52	16.6	6.51	63.4
YK991202	YK	YK30	5.2	11.9	3	320	0	0.3	10.64	10.2	6.36	61.0	10.51	10.6	6.75	64.7
YK991202	YK	YK35	6.4	10.4	1	320	0	0.3	11.07	6.3	7.53	71.2	10.81	8.3	7.53	71.7
YK991202	YK	YK40	3.7	9.3	4	320	0	0.2	10.35	2.0	7.37	66.7	10.36	2.1	7.45	67.5
YK991203	YK	2	2.4	13.7	1	220	1	2.2	9.44	21.5			9.64	22.2		
YK991203	YK	4	8.2	7.3	5	250	1	1.3	9.62	20.7			10.35	22.2		
YK991203	YK	6	9.8	12.1	3	270	1	1.5	9.98	21.6			10.00	22.7		
YK991203	YK	7	20.7	10.3	4	250	1	1.5	9.74	21.0			10.05	23.2		
YK991203	YK	8	20.7	8.7	3	270	1	1.6	9.57	20.9			9.92	22.6		
YK991202	YK	10	3.0		4	320	0		8.54	18.5			9.40	19.6		
YK991203	YK	11	6.4	9.4	2	270	1	1.1	9.02	19.4			10.79	21.6		
YK991202	YK	14	9.4	7.0	6	320	0		9.52	19.5			10.41	20.3		
YK991202	YK	15	2.3	7.0	6	320	0	0.4					7.80	15.6		
YK991202	YK	16	1.5	11.1	2	320	0	0.5					9.36	15.4	7.34	70.7
YK991202	YK	18	4.8	13.2												

Tables 38-49. Atmospheric and hydrographic data for the Chesapeake Bay by month. The survey is not performed in the Bay 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 1999

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.	
NoData.																

Table 39.
February 1999

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.	
CL990203	CL	2	7.4	12.4	3	320	0	2.3	7.70	23.6	9.81	95.9	7.50	24.3	10.51	102.7
CL990203	CL	4	4.6	12.1	3	320	0	2.4	7.40	21.5	10.13	97.0	7.30	21.6	10.52	100.6
CL990203	CL	7	8.1	9.3	4	360	1	2.4	7.20	25.3	9.85	96.2	7.20	25.6	9.76	95.6
CL990203	CL	8	7.6	10.3	4	360	1	1.8	7.30	27.1	9.99	99.0	7.30	28.5	10.43	104.3
CL990203	CL	9	9.8	11.8	5	320	0	3.1	7.80	25.8	9.92	98.6	7.70	28.3	9.84	99.2
CL990203	CL	10	13.8	11.6	4	320	0	2.5	7.90	25.4	9.72	96.6	7.80	28.7	10.26	103.9
CL990203	CL	11	9.6	10.9	4	320	1	3.3	7.30	24.1	9.88	96.0	7.20	25.5	10.15	99.3
CL990209	CL	12	9.4	6.4	8	220	1	3.0	6.70	21.9	9.50	89.7	7.58	22.0	8.85	85.4
CL990203	CL	13	15.6	12.5	4	320	0	1.9	7.90	25.1	9.46	93.8	8.00	30.0	9.09	93.3
CL990203	CL	14	14.9	11.8	3	320	0	2.4	7.90	21.8	9.72	94.4	7.40	24.2	9.95	97.0
CL990203	CL	15	13.5	11.9	4	320	1	2.2	7.30	25.6	8.75	85.9	7.30	26.1	9.25	91.1
CL990209	CL	17	4.5	.	5	220	1	2.8	7.02	20.9	9.58	90.6	7.02	21.4	9.56	90.7
CL990209	CL	18	5.2	8.1	5	220	1	2.9	7.22	20.8	10.13	96.2	7.25	20.9	10.32	98.1
CL990203	CL	21	9.8	9.1	4	360	1	2.0	7.10	23.6	10.00	96.4	7.00	24.6	10.12	98.0
CL990209	CL	23	9.1	7.0	8	220	1	2.6	6.72	21.7	9.38	88.5	7.23	24.8	9.11	88.8
CL990209	CL	25	10.2	7.1	8	220	1	3.2	6.72	21.8	9.41	88.8	7.53	26.2	8.98	88.9
CL990209	CL	26	10.5	8.1	8	220	1	3.0	6.60	21.4	9.55	89.7	7.39	25.1	8.97	87.9
CL990209	CL	27	9.8	7.8	8	220	1	3.2	6.60	21.1	9.52	89.2	7.31	24.8	8.72	85.1
CL990209	CL	28	9.8	8.1	8	220	2	2.3	7.23	23.6	8.90	86.1	6.98	23.9	9.12	87.8
CL990209	CL	29	20.8	8.2	8	220	1	4.0	6.85	22.2	9.30	88.3	7.00	24.4	9.14	88.4
CL990209	CL	30	23.7	8.8	8	220	1	2.8	6.77	22.1	9.40	89.0	7.08	24.4	9.09	88.0
CL990209	CL	31	13.1	9.0	8	220	2	3.4	6.82	21.9	9.47	89.7	7.06	24.2	9.26	89.5
CL990209	CL	35	4.3	10.8	8	220	2	4.0	6.35	18.2	9.73	88.9	6.27	18.5	10.00	91.4
CL990209	CL	36	6.0	12.7	8	220	1	4.2	6.11	17.1	10.11	91.2	6.00	18.1	10.21	92.5
CL990211	CL	39	7.3	11.4	3	200	1	3.3	7.16	20.8	9.28	88.0	7.02	22.6	9.34	89.3
CL990211	CL	40	5.5	11.3	3	200	1	3.2	7.06	21.2	9.25	87.7	6.87	21.6	9.44	89.3
CL990209	CL	41	12.3	9.3	8	220	1	2.3	6.54	19.8	9.16	85.0	7.30	25.5	8.80	86.3
CL990209	CL	42	11.0	8.7	8	220	1	2.8	6.59	19.7	9.66	89.7	7.11	24.1	8.63	83.5
CL990211	CL	43	11.9	7.4	0		1	5.0	6.27	18.9	9.90	90.7	6.85	22.4	9.52	90.5
CL990211	CL	44	12.3	8.1	0		1	4.2	5.89	17.8	10.21	92.0	6.35	19.8	10.01	92.5
CL990211	CL	45	16.8	9.8	0		1	5.0	6.80	21.8	9.43	89.2	7.11	23.7	8.91	86.0
CL990211	CL	46	14.9	11.8	0		1	5.2	6.68	21.5	9.52	89.6	7.11	24.0	8.83	85.4
CL990211	CL	47	12.9	11.7	0		1	4.8	6.68	21.1	9.67	90.8	7.05	23.7	9.45	91.1
CL990209	CL	68	3.0	7.1	8	220	1	2.4	6.90	20.8	9.61	90.5	7.10	21.1	9.52	90.3
CL990203	CL	71	2.7	12.5	4	360	1	2.0	7.90	30.1	8.94	91.6	7.90	30.2	9.28	95.1
CL990209	CL	73	1.7	6.4	5	220	1	2.6	6.93	20.8	9.91	93.4	6.97	21.0	9.83	92.9
CL990209	CL	80	1.6	8.3	8	220	1	2.2					6.98	23.5	9.13	87.7
CL990209	CL	84	2.7	11.6	8	220	1	3.4	6.27	18.3	9.66	88.2	6.21	18.3	10.10	92.1
CL990211	CL	87	3.2	11.6	0		1	2.6	7.16	21.8	9.02	86.1	7.15	22.1	9.01	86.1

Table 40.
March 1999

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.	
NoData.																

Table 41.
April 1999

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.	
CL990406	CL	2	6.6	16.4	8	140	2	2.0	12.10	19.1	9.32	97.7	10.75	20.2	9.24	94.7
CL990406	CL	4	6.4	11.9	8	140	1	2.1	10.68	20.9	9.42	96.8	9.24	25.0	9.37	95.8
CL990406	CL	5	6.2	10.7	8	110	1	2.3	9.98	26.5	9.22	96.7	9.45	27.9	9.32	97.5
CL990406	CL	8	8.0	12.4	5	110	1	3.2	10.35	21.5	9.35	95.8	10.52	26.3	9.32	98.8
CL990406	CL	9	9.7	10.9	8	140	1	2.5	11.31	20.5	9.26	96.3	8.40	27.9	9.20	94.0
CL990406	CL	10	11.3	12.9	8	140	2	2.1	11.37	19.1	9.25	95.5	10.00	21.6	8.92	90.7
CL990406	CL	10	11.3	8.1	0	140	1	2.1	11.37	19.1	9.25	95.5	10.00	21.6	8.92	90.7
CL990406	CL	11	12.2	11.2	8	140	1	2.4	10.86	19.8	9.67	99.1	9.40	27.6	9.06	94.5
CL990406	CL	12	11.0	11.4	8	140	1	2.8	11.11	19.2	9.68	99.4	9.40	23.7	9.48	96.4
CL990406	CL	12	11.0	11.4	8	140	1	2.1	11.67	19.6	9.25	96.4	8.30	27.9	9.15	93.3
CL990406	CL	14	13.4	12.0	8	140	1	2.1	11.67	19.6	9.25	96.4	8.30	27.9	9.15	93.3
CL990406	CL	15	14.0	11.6	8	110	1	3.0	10.88	20.5	9.91	102.1	8.92	28.9	9.17	95.4
CL990406	CL	16	13.5	11.6	8	140	1	2.7	11.18	20.0	9.51	98.3	9.52	26.3	9.16	95.0
CL990408	CL	18	8.0	19.8	1	200	0	2.8	11.37	17.7	10.07	103.0	9.83	21.3	9.27	93.7
CL990408	CL	19	7.2	18.9	1	200	0	2.8	12.46	16.6	10.48	109.0	12.63	18.0	9.15	96.4
CL990419	CL	22	8.6	16.5	2	220	1	1.9	13.00	19.6	8.86	95.0	12.30	21.0	8.35	89.0
CL990419	CL	24	4.6	14.7	2	220	2	2.0	12.70	18.1	9.25	97.6	12.70	18.5	9.19	97.3
CL990406	CL	25	10.1	11.0	0	200	1	2.2	9.93	18.4	9.73	96.8	9.47	24.8	9.13	93.7
CL990406	CL	26	11.0	11.3	0	200	1	3.2	10.17	19.0	9.88	99.2	9.52	23.6	9.53	97.1
CL990408	CL	27	9.9	20.1	1	200	0	2.8	11.52	16.6	10.96	111.7	9.76	21.1	9.54	96.2
CL990419	CL	28	10.3	15.9	3	220	2	2.4	12.70	17.9	9.48	99.9	12.20	20.0	8.83	93.3
CL990406	CL	29	14.3	13.1	5	160	1	3.7	9.73	23.1	9.52	97.2	10.26	26.3	8.65	91.2
CL990408	CL	31	12.9	19.0	1	200	0	2.8	12.92	15.6	10.69	111.6	9.47	22.8	8.90	90.1
CL990419	CL	32	20.6	13.9	2	220	2	2.7	12.80	15.3	9.76	101.5	11.80	21.8	7.45	78.9
CL990414	CL	34	9.1	13.9	6	360	0	2.0	11.26	16.2	8.96	90.6	11.03	17.3	8.77	88.8
CL990414	CL	34	9.1	13.9	6	360	0	2.2	12.23	15.7	9.01	92.7	11.69	15.3	9.27	94.1
CL990419	CL	36	5.5	17.3	3	360	0	2.2	12.23	15.7	9.01	92.7	11.69	15.3	9.27	94.1
CL990419	CL	37	7.6	14.3	2	220	1	2.1	12.70	18.1	9.42	99.4	12.40	18.2	9.22	96.8
CL990419	CL	38	7.8	13.0	3	220	1	2.4	12.30	18.1	8.10	84.8	12.20	18.2	8.82	92.2
CL990414	CL	41	9.8	11.9	6	360	0	1.6	11.23	17.2	8.89	90.4	11.09	18.9	8.60	88.1
CL990419	CL	42	11.6	13.8	2	220	1	2.0	12.40	17.9	8.97	94.0	12.20	18.2	8.79	91.8
CL990419	CL	43	9.3	13.3	3	220	1	2.5	12.30	17.6	9.16	95.6	12.30	18.3	8.84	92.6
CL990419	CL	44	10.1	13.4	3	220	1	2.3	12.50	17.0	8.46	88.3	12.10	18.0	8.31	86.5
CL990419	CL	45	16.3	13.7	2	220	1	2.6	12.60	17.0	9.81	102.6	11.80	19.4	8.22	85.8
CL990419	CL	47	12.7	12.3	4	220	1	2.4	12.00	15.8	8.61	88.2	12.10	18.5	8.33	87.0
CL990419	CL	48	14.0	12.3	3	220	1	2.1	11.80	14.0	10.23	103.2	11.30	19.2	7.67	79.1
CL990408	CL	68	2.2	23.1	1	200	0	2.8	13.75	18.1	9.18	99.1	13.77	18.1	9.30	100.4
CL990406	CL	69	3.2	12.1	5	110	1	1.8	9.84	26.3	9.60	100.3	9.80	26.8	9.34	97.8
CL990408	CL	74	2.4	19.3	1	200	0	1.9	13.87	17.2	9.67	104.1	13.90	17.1	9.95	107.1
CL990406	CL	77	3.4	12.4	5	160	2	2.0	10.37	23.2	9.07	94.0	9.88	24.5	9.26	95.7
CL990414	CL	83	2.1	16.2	1	360	0	2.0	11.62	16.1	11.12	113.2	11.55	16.1	9.74	99.0
CL990419	CL	86	2.0	14.4	3	220	1	2.5	12.90	18.3	8.98	95.3	12.80	18.4	8.86	93.9

Table 42.
May 1999

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.	
CL990507	CL	2	7.9	24.5	0	140	1	3.1	15.50	18.3	9.22	103.4	11.90	27.4	8.62	94.8
CL990505	CL	4	5.8	15.9	6	140	1	0.2	14.08	17.5	9.27	100.4	13.83	17.6	9.07	97.8
CL990507	CL	6	7.2	23.8	1	90	1	2.0	15.87	19.7	8.65	98.5	13.65	25.2	8.58	96.6
CL990505	CL	8	9.1	14.7	6	140	1	3.3	13.92	17.8	9.28	100.4	12.02	26.0	8.15	89.1
CL990507	CL	9	11.9	23.4	1	40	1	3.3	15.82	17.3	9.44	105.9	12.27	27.2	8.35	92.5
CL990507	CL	10	10.9	25.1	5	90	1	2.8	15.38	18.5	9.06	101.4	13.57	25.0	8.55	96.0
CL990505	CL	11	11.0	14.9	6	140	2	2.2	14.58	18.2	9.16	100.7	11.87	26.4	7.99	87.3
CL990505	CL	12	11.0	14.7	6	140	2	2.1	14.08	18.0	9.17	99.6	11.95	26.2	8.00	87.4
CL990507	CL	13	17.5	23.5	1	40	1	3.2	15.08	19.6	9.14	102.4	11.50	28.4	8.11	89.0
CL990507	CL	15	16.2	23.7	1	90	1	3.2	15.74	17.5	9.08	101.8	11.98	28.0	8.28	91.6
CL990505	CL	16	13.1	13.7	6	140	2	2.6	13.95	18.6	9.51	103.4	11.80	27.2	8.00	87.7
CL990510	CL	17	6.5	18.7	7	40	0	2.6	17.20	17.3	8.88	102.4	14.80	19.4	8.11	90.2
CL990512	CL	18	7.9	21.3	4	160	0	2.0	18.81	16.3	8.71	103.1	14.51	20.5	5.95	66.2
CL990507	CL	21	10.0	25.0	5	90	1	2.9	15.79	17.9	9.65	108.6	12.81	24.1	8.40	92.3
CL990512	CL	22	4.4	22.0	6	160	0	2.4	18.54	17.3	9.23	109.3	17.30	21.4	8.37	99.1
CL990512	CL	25	11.9	22.2	1	140	0	2.1	18.65	16.1	9.37	110.4	13.03	25.1	6.58	73.1
CL990512	CL	26	11.6	21.9	5	140	0	2.1	17.69	15.8	9.96	115.0	13.55	24.4	6.78	75.8
CL990512	CL	27	11.3	21.2	0	140	0	2.8	17.88	15.6	9.83	113.7	14.42	25.0	7.19	81.1
CL990512	CL	28	12.5	21.2	0	140	0	3.0	18.13	15.5	9.66	112.3	14.27	25.3	7.14	80.5
CL990512	CL	29	15.5	21.9	5	140	0	2.0	18.50	16.3	9.51	111.8	13.61	24.1	7.13	79.7
CL990512	CL	31	28.0	22.0	4	160	0	2.4	18.37	15.9	9.88	115.6	13.17	24.9	5.91	65.8
CL990512	CL	32	17.1	22.1	5	180	0	2.7	18.42	15.3	9.91	115.7	13.82	24.0	7.21	80.9
CL990512	CL	33	5.2	22.3	3	180	0	1.8	19.74	14.6	8.37	99.8	19.18	14.6	8.59	101.4
CL990513	CL	36	8.7	21.7	4	90	2	1.3	18.88	14.1	8.49	99.3	18.04	14.6	8.02	92.5
CL990513	CL	39	8.8	19.7	2	90	5	2.1	17.83	13.6	10.88	124.3	13.98	21.7	6.80	75.4
CL990513	CL	40	7.9	19.7	2	90	1	2.2	18.64	14.1	10.63	123.7	15.99	18.7	7.80	88.5
CL990512	CL	41	12.8	20.7	1	110	0	2.8	18.31	15.5	9.35	109.0	14.12	23.3	6.94	78.0
CL990512	CL	42	12.2	19.8	1	110	0	2.5	18.09	15.3	9.44	109.5	13.71	23.2	6.78	75.5
CL990513	CL	43	11.0	19.2	1	90	6	2.2	18.09	14.3	10.37	119.5	13.78	22.9	5.58	62.1
CL990513	CL	44	12.3	19.2	1	90	6	2.0	17.24	13.7	11.68	131.9	13.78	22.6	6.66	74.0
CL990512	CL	46	14.9	23.6	3	180	0	2.0	18.55	14.8	9.71	113.3	13.79	23.5	6.81	76.1
CL990513	CL	47	13.6	19.7	2	90	2	1.8	18.26	13.2	11.08	127.3	13.35	21.2	4.61	50.3
CL990513	CL	48	13.4	20.2	5	90	2	2.0	18.17	12.7	10.74	122.8	14.27	19.8	4.90	54.0
CL990505	CL	66	3.7	15.3	5	140	1	1.2	14.15	17.9	9.16	99.6	14.15	17.9	9.01	98.0
CL990507	CL	72	1.5	23.5	1	90	0	2.0	14.95	22.0	8.73	99.0	14.92	22.0	8.21	93.0
CL990510	CL	75	1.7	17.9	8	40	1	1.6	17.50	17.4	8.20	95.2	17.50	17.6		

Table 43.
June 1999

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.
CL990607	CL	1	10.9	27.2	3	220	0	1.9	22.50	20.3	6.88	89.4	19.00	26.9	6.86	86.8
CL990607	CL	3	8.0	28.7	4	250	0	2.2	23.70	20.3	6.78	90.0	18.00	26.5	5.24	64.9
CL990607	CL	6	5.2	24.2	2	200	0	2.0	21.40	23.7	6.85	88.9	20.60	25.6	6.79	87.8
CL990607	CL	7	7.1	23.9	8	220	0	2.2	22.20	22.7	6.84	89.6	20.30	25.7	6.71	86.4
CL990607	CL	9	9.5	27.9	2	250	0	2.4	23.30	21.6	6.69	88.8	18.80	25.6	6.13	76.7
CL990607	CL	10	10.6	29.1	2	250	0	2.4	23.20	20.7	7.14	94.1	18.70	26.7	6.49	81.5
CL990607	CL	11	10.1	29.0	2	250	0	1.9	23.30	20.7	7.06	93.2	18.60	26.9	6.58	82.6
CL990601	CL	12	9.8	22.8	10	220	1	1.9	20.37	19.9	6.88	85.7	17.79	24.9	6.27	76.6
CL990607	CL	13	15.6	26.6	2	220	0	2.5	22.50	21.7	6.86	89.8	15.80	29.0	6.99	84.2
CL990607	CL	14	15.3	25.8	3	220	0	2.2	22.60	21.9	7.57	99.4	17.80	28.6	7.42	92.7
CL990607	CL	15	13.1	28.6	4	250	0	2.4	23.60	22.0	6.81	91.1	17.90	27.4	6.41	79.6
CL990601	CL	17	9.3	22.0	10	220	1	1.6	21.60	19.1	6.90	87.5	18.19	23.1	5.25	63.9
CL990608	CL	20	6.5	27.1	2	220	1	1.8	23.70	18.5	6.93	91.0	21.68	20.2	4.95	63.3
CL990608	CL	20	6.5	27.1	2	220	0	1.8	23.70	18.5	6.93	91.0	21.68	20.2	4.95	63.3
CL990608	CL	20	6.5	27.1	2	220	1	1.8	23.40	18.8	7.77	101.7	19.10	25.9	6.54	82.4
CL990607	CL	22	9.2	30.5	2	250	0	2.0	23.80	21.6	6.94	93.0	20.60	24.1	6.43	82.4
CL990608	CL	23	4.3	29.6	2	250	0	1.7	23.80	21.6	7.02	91.6	19.12	24.8	4.62	57.9
CL990608	CL	25	9.3	25.7	3	220	1	1.7	23.25	18.8	7.02	91.6	19.12	24.8	4.53	57.2
CL990608	CL	26	9.1	25.4	3	220	1	1.7	23.64	19.0	6.54	86.0	20.36	22.3	4.53	57.9
CL990608	CL	27	11.0	25.6	4	220	1	1.9	23.26	18.6	7.24	94.4	19.74	24.0	4.72	59.5
CL990607	CL	28	11.9	29.4	3	250	0	2.3	24.60	18.4	8.19	109.3	20.10	24.2	5.31	67.5
CL990607	CL	29	11.6	23.7	4	200	0	2.0	21.46	22.4	7.18	92.6	20.05	25.0	6.58	83.9
CL990609	CL	31	13.4	28.7	4	360	1	2.0	25.31	18.0	7.82	105.4	20.22	24.2	4.59	58.5
CL990609	CL	32	14.0	27.9	3	340	1	2.1	24.12	17.0	7.46	97.9	19.91	24.8	4.93	62.7
CL990608	CL	34	8.0	30.7	1	220	4	1.5	24.52	16.3	6.44	84.8	21.31	18.6	3.16	39.7
CL990608	CL	35	6.9	31.7	1	220	4	1.6	24.30	16.2	6.56	86.0	21.70	17.8	3.30	41.6
CL990609	CL	37	7.3	28.5	3	360	1	2.0	25.91	18.3	7.28	99.4	22.44	20.2	4.56	59.1
CL990609	CL	38	8.2	31.1	3	320	1	1.7	26.81	17.7	7.51	103.7	21.57	19.7	3.61	45.9
CL990609	CL	41	9.1	28.3	3	20	1	2.2	25.45	17.8	7.80	105.3	21.75	22.1	5.00	64.7
CL990609	CL	42	10.1	27.9	4	360	1	2.2	25.08	17.8	7.90	106.0	21.07	22.4	4.54	58.1
CL990609	CL	43	11.3	28.0	4	340	1	2.2	25.94	18.2	7.29	99.5	21.14	21.4	3.92	50.0
CL990609	CL	44	12.2	29.3	2	360	1	2.3	26.22	17.7	7.71	105.4	21.18	21.7	3.75	47.9
CL990609	CL	46	15.5	31.1	2	360	1	2.0	26.15	17.9	7.63	104.3	21.28	21.4	3.96	50.6
CL990609	CL	47	12.8	30.6	4	180	1	1.1	25.86	17.2	7.37	99.9	20.98	20.4	2.79	35.3
CL990609	CL	48	12.2	31.5	1	160	1	2.1	26.10	15.8	8.40	113.4	20.62	19.4	1.46	18.2
CL990601	CL	68	2.4	23.7	10	220	0	1.7	22.54	19.7	6.55	84.8	20.15	20.4	5.51	68.6
CL990607	CL	72	3.9	24.3	1	200	0	1.3	21.60	24.9	6.40	84.0	21.00	25.8	6.50	84.8
CL990608	CL	74	2.1	28.8	2	220	4	1.3	24.44	18.5	6.15	81.8	24.35	18.5	6.10	81.0
CL990607	CL	77	2.8	29.1	2	250	0	2.1	23.90	22.0	6.97	93.7	23.30	22.6	7.43	99.2
CL990608	CL	83	2.0	30.1	2	220	4	1.2	23.90	22.0	6.97	93.7	24.44	16.9	6.48	85.5
CL990609	CL	85	1.5	28.5	4	360	1	1.9	23.90	22.0	6.97	93.7	25.58	18.5	7.51	102.0

Table 44.
July 1999

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.
CL990706	CL	1	5.2	32.0	1	220	0	1.9	27.00	23.8	7.31	104.8	23.20	27.3	6.05	82.9
CL990706	CL	2	4.3	32.0	1	220	0	1.6	27.30	22.8	6.53	93.6	26.70	23.3	6.92	98.5
CL990706	CL	6	8.4	31.0	1	220	0	2.0	25.90	26.2	6.86	97.9	24.00	27.6	6.81	94.7
CL990706	CL	8	8.3	33.9	2	220	0	1.3	27.00	24.9	7.22	104.2	24.70	27.5	6.32	89.0
CL990706	CL	9	9.6	31.0	1	220	0	3.5	23.80	28.9	6.98	97.5	20.30	31.3	7.13	94.8
CL990706	CL	10	9.2	31.0	2	220	0	2.0	26.20	24.4	7.11	100.9	22.10	29.3	7.20	97.8
CL990706	CL	11	10.7	33.2	1	220	0	1.7	26.60	25.5	6.94	99.8	21.30	30.4	6.86	92.4
CL990706	CL	12	9.8	31.0	2	220	0	1.8	26.10	22.4	7.99	111.9	21.50	29.7	6.03	81.2
CL990706	CL	13	14.7	32.0	2	220	0	2.4	26.50	24.9	7.06	101.0	20.40	31.2	7.14	95.1
CL990706	CL	15	14.6	32.3	1	220	0	2.4	28.80	23.1	7.28	107.2	20.70	30.9	7.06	94.4
CL990706	CL	16	13.4	30.5	2	220	0	2.4	27.50	22.6	8.07	115.9	22.00	29.3	6.82	92.5
CL990707	CL	17	8.2	27.4	6	220	2	1.5	25.60	21.9	5.40	74.8	25.20	22.3	4.80	66.2
CL990708	CL	18	5.5	29.0	3	320	0	1.8	26.21	20.8	5.10	70.9	26.18	20.9	4.76	66.2
CL990706	CL	21	8.5	29.5	3	220	0	2.3	27.20	23.1	7.96	114.1	23.50	27.7	6.84	94.4
CL990706	CL	23	5.3	34.2	1	220	0	1.8	28.50	23.6	7.34	107.8	25.10	25.3	6.28	87.9
CL990707	CL	25	10.1	28.5	6	220	2	1.7	26.50	22.5	7.90	111.5	22.80	28.7	6.20	85.0
CL990707	CL	26	10.4	28.7	6	220	2	2.1	27.00	22.6	7.80	111.1	23.40	28.1	6.60	91.1
CL990707	CL	27	9.8	28.4	6	220	2	1.7	26.50	22.5	7.70	108.7	23.50	28.0	6.40	88.5
CL990707	CL	28	9.1	27.8	6	220	2	1.8	26.40	21.9	6.60	92.7	23.00	26.9	3.20	43.6
CL990707	CL	29	20.4	29.1	6	220	2	2.0	27.10	21.3	8.40	119.0	23.80	26.6	5.50	75.8
CL990707	CL	31	18.9	29.0	5	320	2	2.0	27.20	19.9	8.60	121.1	24.20	25.0	5.10	70.2
CL990707	CL	32	12.8	29.4	5	360	2	2.0	27.20	19.3	8.70	122.1	24.70	24.3	4.80	66.3
CL990708	CL	33	8.5	28.1	2	320	1	1.5	26.84	19.1	5.76	80.2	25.07	20.7	2.94	40.1
CL990708	CL	36	8.8	25.9	3	320	1	2.2	26.88	18.2	5.97	82.8	24.85	19.2	2.75	37.0
CL990707	CL	38	7.0	29.7	5	40	2	1.9	28.00	22.0	6.81	107.8	26.00	23.0	6.28	87.9
CL990707	CL	40	8.5	28.8	4	40	2	1.7	29.00	22.0	6.81	107.8	26.00	22.0	6.20	85.0
CL990707	CL	41	10.1	28.6	5	360	2	2.0	29.00	22.0	6.81	107.8	26.00	24.0	6.20	85.0
CL990708	CL	42	9.1	28.7	2	320	1	1.5	26.63	18.7	6.23	86.3	24.65	20.8	2.87	38.9
CL990708	CL	43	12.2	26.9	2	320	1	1.8	26.21	19.8	6.30	87.1	25.47	20.4	3.85	52.8
CL990708	CL	44	11.6	27.2	3	320	1	2.0	27.61	16.9	6.95	96.9	23.47	20.0	1.28	16.9
CL990707	CL	45	22.4	28.8	5	360	2	2.1	27.90	18.8	9.40	133.1	24.40	24.5	4.40	60.6
CL990707	CL	47	15.8	28.9	5	20	2	2.1	28.00	22.0	6.81	107.8	26.00	25.0	6.20	85.0
CL990708	CL	48	13.1	26.7	3	320	1	1.7	26.86	18.0	6.29	87.1	24.50	20.8	2.95	39.8
CL990706	CL	66	2.7	32.0	1	220	0	1.7	27.50	22.8	6.73	96.8	27.30	22.9	6.67	95.7
CL990706	CL	72	1.8	33.1	2	220	0	1.4	27.50	22.8	6.73	96.8	26.20	25.6	6.76	96.6
CL990702	CL	75	1.7	26.4	9	220	1	1.5	24.40	22.2	6.94	94.3	24.40	22.1	6.81	92.5
CL990706	CL	77	2.8	33.8	2	220	0	1.3	27.20	24.8	6.81	98.5				

Table 45.
August 1999

System+ Cruise Number	Stat # River Mile	Depth (m)	Air		Wind		Weather Obs.	Secchi (m)	Surface				Bottom			
			Temp. (C)	Speed m/sec	Direct. (deg)	Temp. (C)			Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	
CL990806	CL	3	6.2	28.1	3	40	4	1.7	27.53	22.7	6.16	88.6	27.40	23.0	5.90	84.8
CL990806	CL	4	8.2	.	5	40	4	2.2	27.63	21.9	7.13	102.3	26.05	27.9	4.89	70.6
CL990806	CL	7	8.6	.	2	40	4	2.3	27.78	24.7	6.82	99.6	26.54	27.4	6.25	90.7
CL990806	CL	8	8.0	31.1	3	40	4	2.7	28.68	22.4	7.10	103.9	26.56	27.1	5.78	83.8
CL990806	CL	9	10.1	.	4	40	4	1.8	27.38	23.4	6.76	97.4	26.80	25.2	6.17	88.9
CL990806	CL	10	11.4	.	5	40	4	3.8	27.15	26.0	6.96	101.3	26.39	28.3	6.14	89.4
CL990806	CL	11	12.6	27.0	7	40	4	3.0	27.32	21.8	7.05	100.5	26.06	28.6	5.43	78.7
CL990806	CL	12	10.8	27.1	5	360	4	2.1	27.71	21.6	6.88	98.6	26.05	28.1	5.00	72.3
CL990806	CL	14	12.7	.	4	40	4	2.5	27.42	23.8	6.51	94.0	26.27	27.0	5.64	81.3
CL990806	CL	15	13.4	.	4	40	4	3.2	27.30	25.7	6.58	95.9	26.31	28.4	5.82	84.7
CL990806	CL	16	13.4	27.2	4	40	4	3.2	27.40	22.5	7.05	101.1	26.03	28.7	5.52	80.0
CL990816	CL	17	4.6	28.1	4	40	1	1.5	27.57	23.0	6.30	90.8	27.22	23.0	5.75	82.4
CL990812	CL	19	8.5	28.6	5	140	0	1.6	27.59	22.5	6.46	92.9	26.96	23.8	5.11	73.2
CL990806	CL	21	8.7	31.1	2	360	4	2.2	27.78	25.3	6.76	99.1	26.71	26.8	5.38	78.1
CL990810	CL	24	5.6	28.2	1	270	1	1.9	27.76	23.8	6.84	99.4	27.24	24.6	5.40	78.1
CL990806	CL	25	12.1	31.5	2	360	4	2.0	29.06	20.1	8.00	116.4	26.27	27.0	3.05	44.0
CL990810	CL	26	12.6	26.4	2	320	1	1.6	27.01	23.9	6.60	94.7	27.11	25.1	5.47	79.2
CL990810	CL	27	12.5	26.3	1	320	1	1.3	26.98	23.6	5.97	85.5	27.17	24.7	5.48	79.2
CL990810	CL	28	12.7	24.6	4	320	1	1.7	26.82	21.8	6.41	90.6	27.26	23.0	5.00	71.7
CL990810	CL	29	15.0	26.8	1	270	1	1.4	27.55	23.8	6.72	97.3	27.36	26.0	5.74	83.8
CL990810	CL	31	13.5	28.1	1	270	1	1.6	27.26	22.9	6.64	95.2	27.19	24.7	5.92	85.6
CL990810	CL	32	13.8	27.7	1	270	1	1.9	27.63	22.2	6.65	95.5	27.22	24.9	5.20	75.3
CL990812	CL	34	7.7	.	3	160	0	1.7	28.13	20.2	6.06	86.8	27.09	20.6	5.10	71.9
CL990812	CL	36	5.6	28.7	2	140	0	2.3	27.30	20.9	5.51	78.1	27.17	21.7	4.16	59.1
CL990810	CL	37	8.2	27.4	3	270	1	1.5	27.78	23.9	6.30	91.6	27.19	24.4	6.32	91.2
CL990810	CL	39	5.7	27.6	2	270	1	1.3	27.75	22.5	6.82	98.3	27.20	22.6	5.59	79.9
CL990812	CL	41	10.4	.	4	140	0	1.5	27.32	21.6	5.65	80.5	27.05	22.0	4.94	70.2
CL990812	CL	42	11.1	29.8	3	140	0	1.5	27.75	23.2	6.94	100.5	26.98	23.4	5.26	75.2
CL990812	CL	43	10.8	28.9	3	160	0	1.9	27.98	21.0	6.83	98.0	27.22	22.3	3.57	48.1
CL990810	CL	44	12.1	27.1	4	220	1	1.9	28.15	21.6	7.57	109.3	27.34	24.1	3.78	54.6
CL990810	CL	46	14.0	27.4	2	250	1	1.9	28.06	22.3	6.71	97.2	27.32	25.0	4.33	62.9
CL990810	CL	47	14.7	28.3	2	250	1	2.1	27.90	22.1	7.17	103.4	27.28	24.4	4.63	66.9
CL990810	CL	48	16.1	27.4	7	180	1	1.6	28.00	19.7	8.74	124.6	27.46	23.0	4.17	60.0
CL990806	CL	66	2.2	.	5	40	4	1.1	27.69	22.4	6.02	86.7	27.69	22.4	5.96	85.8
CL990806	CL	69	3.4	.	4	40	4	2.6	27.61	25.4	7.04	102.9	27.40	25.7	7.07	103.2
CL990810	CL	75	3.0	22.9	5	320	1	1.3	26.92	22.6	6.04	85.9	26.69	22.7	5.56	78.8
CL990810	CL	80	2.3	28.6	3	270	1	1.3	27.71	24.0	5.98	86.9	27.30	24.2	5.69	82.2
CL990812	CL	83	.	29.1	5	140	0	1.6	27.57	19.8	6.44	91.2	27.09	20.1	5.43	76.4
CL990810	CL	85	2.6	28.1	2	270	1	1.5	27.38	24.0	6.00	86.7	27.03	24.2	5.75	82.7

Table 46.
September 1999

System+ Cruise Number	Stat # River Mile	Depth (m)	Air		Wind		Weather Obs.	Secchi (m)	Surface				Bottom			
			Temp. (C)	Speed m/sec	Direct. (deg)	Temp. (C)			Salin. (ppt)	DO (mg/L)	% Satur.	Temp. (C)	Salin. (ppt)	DO (mg/L)	% Satur.	
CL990908	CL	2	7.0	25.2	3	220	2	1.6	23.77	23.6	8.51	115.3	23.55	24.4	6.76	91.6
CL990908	CL	3	5.6	26.0	1	140	1	2.4	23.88	24.2	7.57	103.1	23.55	24.9	7.13	96.9
CL990908	CL	5	5.4	.	1	0	1	1.2	23.85	27.6	7.37	102.3	23.81	27.6	7.61	105.5
CL990908	CL	8	7.6	26.2	6	40	1	2.0	25.10	24.2	9.23	128.4	23.21	27.4	7.67	105.1
CL990908	CL	9	9.5	26.1	2	140	2	1.7	24.04	24.1	7.98	108.9	23.45	25.7	6.74	91.9
CL990908	CL	10	7.6	27.9	1	140	2	1.3	23.77	27.8	6.40	88.8	23.74	27.8	7.22	100.1
CL990908	CL	11	10.8	26.9	1	90	2	1.4	23.98	23.3	7.62	103.4	23.53	24.9	6.89	93.6
CL990908	CL	12	11.4	26.3	5	40	1	1.8	25.54	24.0	9.47	132.6	23.37	27.8	7.38	101.6
CL990908	CL	14	18.9	26.9	4	140	2	1.9	24.06	25.8	7.49	103.3	23.11	28.1	6.40	87.9
CL990908	CL	15	14.3	26.8	1	140	2	1.9	24.44	24.9	6.76	93.3	22.79	29.3	6.42	88.3
CL990908	CL	16	14.7	26.9	2	140	2	1.9	24.35	25.6	7.13	98.7	23.11	28.5	6.29	86.6
CL990909	CL	17	8.0	24.7	3	200	1	1.5	24.00	24.9	6.56	89.9	23.40	26.7	5.13	70.3
CL990909	CL	18	4.2	24.1	5	200	1	1.2	24.40	23.8	6.52	89.4	24.40	23.9	6.46	88.6
CL990908	CL	21	7.7	26.4	5	220	1	0.5	25.02	24.7	8.11	112.9	23.35	28.0	6.97	96.1
CL990909	CL	22	9.5	25.2	5	220	1	1.0	23.80	28.5	6.43	89.6	23.70	28.5	6.29	87.5
CL990909	CL	25	10.5	25.1	5	220	1	1.6	24.16	25.1	6.89	94.8	23.70	28.0	6.16	85.5
CL990909	CL	26	12.9	27.0	3	220	1	1.8	24.50	25.5	7.33	101.7	23.30	28.8	5.43	75.1
CL990909	CL	27	11.0	24.9	4	220	1	1.8	24.06	25.0	6.62	90.8	23.25	27.9	5.08	69.9
CL990920	CL	28	10.4	24.5	3	180	1	2.1	23.60	22.4	8.00	107.3	22.90	24.9	4.80	64.5
CL990909	CL	29	12.7	27.0	4	220	1	1.9	24.70	24.3	7.08	97.9	23.40	29.8	5.38	75.0
CL990909	CL	30	12.9	27.0	4	220	1	1.9	24.80	24.5	7.14	99.0	23.40	29.8	5.43	75.7
CL990909	CL	31	12.8	26.8	4	220	1	1.9	25.20	23.9	7.04	97.9	23.40	28.9	5.29	73.4
CL990909	CL	33	5.5	26.9	3	220	1	1.4	25.10	23.0	6.75	93.3	23.80	25.0	4.96	67.7
CL990909	CL	34	8.9	28.0	3	220	1	1.8	25.20	22.7	7.04	97.3	23.70	24.9	4.24	57.8
CL990920	CL	39	7.0	25.4	1	200	1	2.5	22.80	23.6	7.00	93.2	22.50	24.5	6.40	85.2
CL990920	CL	40	8.2	24.1	2	180	1	2.7	22.90	22.6	7.20	95.4	22.90	25.0	5.30	71.2
CL990909	CL	41	12.2	28.3	4	220	1	2.3	25.00	22.3	6.91	94.9	23.37	26.2	4.02	54.9
CL990920	CL	42	11.3	25.7	3	180	0	1.9	22.60	20.2	6.70	87.1	23.10	24.2	3.88	52.1
CL990920	CL	43	12.3	23.1	3	140	1	2.7	22.90	21.1	6.72	88.3	23.02	25.4	4.45	60.1
CL990920	CL	44	11.8	25.0	2	180	0	2.0	22.90	20.7	6.20	81.3	23.06	23.9	3.75	50.2
CL990920	CL	45	13.4	25.4	3	220	1	2.1	23.20	22.5	6.90	91.9	22.50	25.1	5.70	76.1
CL990920	CL	46	13.1	24.2	4	140	1	2.3	23.07	21.5	7.04	93.0	23.04	25.6	4.33	58.5
CL990920	CL	47	12.7	24.1	4	140	1	2.5	23.04	21.3	6.86	90.5	23.07	25.6	4.19	56.7
CL990921	CL	66	3.1	21.4	4	220	2	1.1	23.11	18.8	9.04	117.7	22.77	23.4	6.49	86.2
CL990908	CL	69	1.8	29.0	1	220	1	1.4	24.05	28.4	7.34	102.7	24.01	28.4	7.55	105.6
CL990909	CL	74	3.0	24.4	4	200	1	1.1	24.30	23.7	6.38	87.3	24.30	23.7	6.39	87.4
CL990909	CL	77	2.8	26.3	4	220	1	1.0	24.30	28.2	6.93	97.3	24.30	28.2	6.72	94.3
CL990909	CL	81	3.0	26.6	5	220	1	1.4	25.40	22.5	7.15	99.0	24.20	23.9	5.38	73.5
CL990920	CL	88	2.4	25.5	1	220	1	1.8	22.90	23.8	6.90	92.1	22.70	24.3	7.00	93.4

Table 47.
October 1999

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.
CL991020	CL	1	9.8	18.0	4	360	2	1.5	18.76	19.0	7.30	87.7	19.48	26.3	6.29	80.0
CL991020	CL	3	7.0	17.2	6	20	2	1.6	18.83	18.3	7.47	89.5	19.44	26.0	6.88	87.3
CL991020	CL	4	4.9	16.8	5	20	2	1.4	19.09	17.4	7.47	89.5	19.04	18.8	7.33	88.4
CL991013	CL	5	5.2	21.7	5	180	2	2.1	20.55	26.8	7.12	92.7	20.58	27.3	6.99	91.3
CL991013	CL	6	6.1	21.7	5	180	2	2.6	20.58	27.3	6.90	90.1	20.56	27.3	6.90	90.1
CL991020	CL	7	6.7	17.6	2	40	6	2.0	18.89	21.8	7.20	88.2	18.91	25.1	6.86	85.7
CL991013	CL	9	11.3	20.9	5	180	2	1.8	20.30	22.2	7.58	95.6	20.65	26.7	6.47	84.3
CL991013	CL	10	10.4	20.9	5	180	2	1.6	20.38	22.2	7.72	97.5	20.51	26.0	6.55	84.8
CL991013	CL	11	14.8	21.5	4	160	2	1.7	20.50	27.3	7.05	92.0	20.18	27.7	7.02	91.2
CL991020	CL	12	9.4	16.3	8	20	2	1.8	18.69	19.9	7.31	88.2	19.13	23.5	6.44	80.0
CL991020	CL	13	15.5	17.3	5	360	2	1.5	18.76	19.1	7.22	86.8	19.44	26.3	6.59	83.8
CL991013	CL	14	16.5	20.9	5	180	2	1.7	20.37	22.4	7.64	96.6	20.43	26.5	6.74	87.4
CL991020	CL	15	14.3	17.7	2	40	6	1.9	18.84	21.9	7.05	86.3	19.18	26.8	6.62	84.0
CL991006	CL	18	5.4	14.0	8	320	1	1.3	19.78	18.9	6.90	84.5	19.82	19.0	6.88	84.4
CL991006	CL	19	5.3	15.4	8	320	1	1.5	20.16	19.2	7.01	86.6	20.18	19.3	6.93	85.7
CL991006	CL	20	4.4	14.8	8	360	1	1.2	20.38	18.9	7.18	88.9	20.41	19.0	6.85	85.0
CL991020	CL	21	7.9	16.4	8	20	2	1.6	18.77	21.3	7.21	87.8	19.07	23.0	7.02	86.9
CL991013	CL	22	9.4	21.8	4	160	2	1.4	19.98	23.3	7.43	93.7	19.96	23.3	7.30	92.0
CL991013	CL	24	9.4	22.4	5	160	1	1.6	19.91	21.9	6.84	85.4	19.89	21.8	6.83	85.3
CL991020	CL	25	9.4	16.4	7	20	2	1.7	18.80	21.1	7.18	87.4	19.04	22.8	6.77	83.6
CL991013	CL	26	12.1	21.8	4	160	2	1.6	20.13	22.3	7.70	96.8	19.92	22.8	6.98	87.7
CL991020	CL	27	11.3	16.0	6	40	6	1.4	18.80	20.2	7.06	85.5	18.96	20.8	6.80	82.9
CL991020	CL	28	11.6	16.1	6	40	6	1.7	18.75	20.2	7.31	88.4	19.02	21.3	6.83	83.6
CL991013	CL	29	15.8	22.3	4	160	1	1.8	19.96	21.7	7.16	89.4	19.93	21.8	6.69	83.6
CL991013	CL	31	13.4	21.8	5	160	1	1.8	19.93	21.6	7.14	89.1	20.05	21.9	6.41	80.3
CL991013	CL	32	20.1	21.7	5	160	1	1.7	20.04	21.7	6.74	84.3	20.08	24.0	6.31	80.1
CL991006	CL	33	5.4	19.1	2	360	1	1.6	19.85	16.1	7.90	95.2	20.22	17.0	6.68	81.6
CL991006	CL	34	9.0	18.4	5	320	1	1.4	20.76	17.9	7.18	89.0	20.41	18.1	6.60	81.4
CL991006	CL	35	8.5	20.4	2	320	1	2.0	20.75	16.1	7.45	91.4	19.85	17.4	7.15	86.9
CL991013	CL	37	8.7	21.0	4	160	1	1.8	19.83	20.7	6.88	85.2	19.79	20.7	6.67	82.5
CL991013	CL	38	8.6	19.1	4	160	1	2.2	19.51	20.5	7.24	89.1	19.91	21.0	6.59	81.9
CL991006	CL	40	6.3	17.4	5	320	1	1.8	20.03	18.5	7.57	92.9	19.86	18.7	7.13	87.3
CL991006	CL	41	10.9	17.2	8	360	1	1.8	20.59	18.8	6.97	86.6	20.72	19.4	6.55	81.9
CL991006	CL	42	12.4	16.8	5	340	1	1.7	20.68	20.3	6.80	85.4	20.64	20.5	6.73	84.6
CL991006	CL	43	9.8	19.0	2	320	1	1.9	20.66	16.8	7.40	91.0	20.48	17.9	6.24	77.0
CL991006	CL	44	11.0	19.8	3	320	1	2.4	20.43	16.8	7.46	91.4	20.52	17.6	6.12	75.4
CL991013	CL	45	16.1	20.7	4	160	1	2.0	19.53	20.0	7.59	93.1	20.00	21.7	6.41	80.1
CL991006	CL	47	13.2	17.4	5	320	1	1.8	20.52	19.5	7.15	89.1	20.46	19.7	6.79	84.6
CL991006	CL	48	13.2	18.2	5	320	1	1.7	20.64	18.1	6.93	85.8	20.49	18.6	6.62	82.0
CL991020	CL	66	2.5	17.1	8	20	2	1.2	18.47	19.0	7.51	89.7	18.48	19.0	7.48	89.4
CL991013	CL	71	3.7	21.4	4	160	2	1.8	20.43	27.2	6.85	89.1	20.40	27.2	6.84	89.0
CL991006	CL	75	3.5	14.8	8	360	1	1.9	19.70	18.9	7.22	88.3	19.74	18.9	7.10	86.9
CL991013	CL	79	3.4	21.8	4	160	2	1.5	19.82	21.7	7.95	99.0	19.81	21.7	7.99	99.5
CL991006	CL	81	2.9	15.9	8	360	1	1.7	19.43	17.2	7.26	87.4	19.44	17.2	7.26	87.4
CL991013	CL	85	3.7	20.5	4	160	1	1.5	19.57	20.1	7.27	89.3	19.59	20.1	7.24	89.0

Table 48.
November 1999

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.
CL991101	CL	2	8.2	20.3	1	70	1	1.7	17.00	20.5	9.01	105.5	16.74	25.4	7.78	93.4
CL991118	CL	3	3.8	11.3	5	180	0	1.5	11.97	21.6	7.56	80.3	11.99	21.7	7.47	79.4
CL991118	CL	4	6.6	10.8	3	180	0	1.4	11.30	21.7	8.70	91.1	11.66	22.4	8.05	85.4
CL991101	CL	5	10.1	20.7	0		1	2.8	16.67	26.5	8.55	103.1	16.77	27.6	8.25	100.4
CL991101	CL	6	7.0	22.9	0		1	2.5	17.22	23.3	8.96	107.2	16.53	26.0	8.72	104.6
CL991101	CL	7	7.3	21.5	0		1	2.1	16.86	23.1	8.53	101.2	16.56	25.4	8.50	101.7
CL991101	CL	9	11.6	19.9	1	70	1	1.9	16.57	21.6	9.38	109.7	17.10	27.8	7.30	89.5
CL991118	CL	10	10.4	11.2	5	180	0	1.3	11.55	21.4	7.62	80.1	13.00	27.3	7.08	79.7
CL991101	CL	11	9.4	20.1	1	200	1	2.3	16.42	21.6	9.15	106.6	16.64	26.3	7.85	94.5
CL991101	CL	12	10.7	18.8	0		1	2.7	16.59	21.6	8.79	102.8	16.44	26.1	7.60	91.0
CL991101	CL	14	14.9	19.5	1	200	1	3.1	16.66	21.8	9.31	109.1	16.97	27.8	8.10	99.0
CL991101	CL	15	13.1	18.4	2	200	1	2.3	16.59	21.4	9.27	108.2	16.98	27.8	8.08	98.8
CL991101	CL	16	12.5	18.4	1	200	1	2.6	16.60	21.6	8.91	104.2	16.79	27.4	7.90	96.1
CL991118	CL	17	3.7	13.9	4	180	0	2.5	11.18	20.8	8.43	87.6	11.60	21.1	8.42	88.4
CL991101	CL	18	8.2	20.9	1	40	1	2.4	16.64	20.9	8.66	100.9	16.24	22.5	7.36	85.9
CL991118	CL	19	9.0	12.1	4	180	0	1.9	11.97	21.0	8.41	89.0	12.55	22.8	8.00	86.7
CL991101	CL	21	9.1	22.9	0		1	2.2	17.44	21.4	9.07	107.7	16.34	24.5	7.87	93.2
CL991118	CL	22	7.7	14.3	4	180	0	1.8	12.45	22.6	8.09	87.4	12.26	22.8	7.91	85.2
CL991118	CL	24	5.2	14.9	3	180	0	1.8	11.79	21.7	8.47	89.7	12.02	22.2	8.05	85.9
CL991101	CL	25	10.7	21.2	1	40	1	2.8	17.74	21.3	9.38	112.0	16.28	24.2	7.38	87.1
CL991101	CL	26	10.7	21.7	1	40	1	2.5	17.71	21.0	9.01	107.3	16.34	25.2	7.69	91.4
CL991118	CL	27	11.0	13.4	4	220	0	2.0	12.60	23.1	7.98	86.7	12.52	23.2	7.85	85.2
CL991118	CL	28	12.2	13.4	4	180	0	2.3	12.77	23.2	8.03	87.6	12.55	24.8	7.70	84.5
CL991118	CL	29	22.2	13.1	4	180	0	2.3	12.49	23.2	8.14	88.3	11.93	24.1	8.09	87.2
CL991118	CL	31	13.4	12.8	2	180	0	2.1	12.60	22.3	7.92	85.6	12.26	23.1	7.82	84.4
CL991118	CL	32	16.2	12.2	3	180	0	2.0	11.68	19.5	8.46	88.1	12.39	22.2	7.81	84.0
CL991110	CL	34	8.6	19.1	1	220	0	3.0	14.83	18.7	8.80	97.5	14.38	20.6	7.46	82.9
CL991110	CL	35	5.8	18.5	1	220	0	2.7	14.45	19.1	8.08	89.1	14.28	19.4	7.81	85.9
CL991110	CL	36	6.7	17.4	5	220	0	3.6	13.99	18.9	9.01	98.2	14.26	19.3	7.58	83.3
CL991110	CL	37	5.4	17.3	1	220	0	1.8	14.16	21.6	8.26	91.9	14.03	21.7	8.10	89.9
CL991110	CL	38	8.0	18.1	1	220	1	3.5	14.38	22.0	8.07	90.4	14.31	22.0	7.98	89.3
CL991110	CL	39	5.8	17.2	5	220	0	3.2	14.44	21.9	8.17	91.6	14.39	21.9	8.12	91.0
CL991110	CL	41	10.7	18.7	4	220	0	2.9	14.94	19.4	8.72	97.3	14.43	21.0	7.45	83.1
CL991110	CL	42	11.9	18.5	0		0	3.1	14.86	19.6	8.64	96.4	14.40	21.6	7.49	83.8
CL991110	CL	43	10.5	17.7	2	220	0	3.4	14.53	20.7	8.59	95.8	14.17	21.3	8.01	89.0
CL991110	CL	44	10.6	18.4	3	220	0	3.0	13.94	18.7	8.55	93.0	14.27	19.5	6.95	76.5
CL991110	CL	46	12.6	17.1	2	220	0	3.1	14.16	18.8	8.67	94.8	14.44	20.6	7.24	80.5
CL991110	CL	47	16.0	17.0	0		0	3.4	14.59	20.3	8.97	99.9	14.18	21.6	7.92	88.2
CL991110	CL	48	13.4	18.4	3	220	0	2.5	14.45	20.2	8.54	94.8	14.14	21.3	7.80	86.6
CL991118	CL	66	3.4	10.9	5	180	0	1.7	11.93	21.4	7.86	83.3	11.93	21.4	7.99	84.7
CL991101	CL	70	2.1	21.6	1	360	1	1.6	16.72	29.2	8.14	99.9	16.68	29.2	7.92	97.2
CL991118	CL	74	2.2	11.8	4	180	0	3.2	10.97	21.3	8.57	88.9	10.97	21.3	8.60	89.2
CL991101	CL	77	3.0	23.4	0		1	2.3	17.11	23.6	9.02	107.9	16.66	24.0	9.00	106.9
CL991110	CL	84	3.7	18.6	3	220	0	3.3	13.91	18.8	8.37	91.1	13.96	18.9	8.00	87.2
CL991110	CL	86	3.4	17.4	1	220	0	2.0	14.29	21.4	8.18	91.2	14.27	21.4	8.16	90.9

Table 49.
December 1999

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.	
CL991208	CL	1	7.3	9.3	1	360	1	1.6	10.05	24.5	.	.	10.13	24.8	.	.
CL991208	CL	3	7.3	8.2	1	360	1	1.8	10.05	22.6	.	.	10.13	23.3	.	.
CL991208	CL	6	4.3	12.5	0		1	2.0	10.20	27.4	.	.	10.21	28.6	.	.
CL991208	CL	8	5.8	13.1	0		1	2.1	10.33	26.6	.	.	10.05	29.8	.	.
CL991208	CL	9	9.1	10.4	0		1	1.8	10.07	28.0	.	.	11.00	29.7	.	.
CL991208	CL	10	11.0	13.3	0		1	1.7	10.43	27.1	.	.	10.56	28.3	.	.
CL991208	CL	11	11.3	12.3	1	320	1	1.4	10.51	27.7	.	.	10.51	27.9	.	.
CL991203	CL	12	11.0	12.2	3	220	2	1.8	9.49	22.5	.	.	10.84	31.0	.	.
CL991208	CL	13	14.3	11.1	0		1	2.2	10.46	28.9	.	.	11.41	30.6	.	.
CL991208	CL	15	13.7	12.2	0		1	1.8	10.23	24.0	.	.	10.25	27.2	.	.
CL991208	CL	16	14.0	13.7	0		1	1.8	10.26	24.2	.	.	10.39	27.5	.	.
CL991209	CL	17	8.2	12.4	1	140	1	2.9	9.96	22.2	10.65	108.6	9.86	22.3	10.68	108.8
CL991209	CL	20	3.7	13.8	2	140	1	2.9	9.76	20.2	10.92	109.5	9.74	20.3	11.00	110.3
CL991208	CL	21	8.7	12.4	0		1	1.9	10.36	25.6	.	.	9.95	25.9	.	.
CL991203	CL	22	8.5	13.4	2	220	2	1.7	9.80	23.2	.	.	10.25	30.2	.	.
CL991203	CL	25	10.1	14.5	1	220	2	1.9	9.62	22.9	.	.	10.48	30.8	.	.
CL991203	CL	26	10.1	14.8	2	220	2	1.6	9.93	23.5	.	.	10.13	29.7	.	.
CL991203	CL	27	10.4	12.9	2	220	2	1.8	9.65	22.9	.	.	10.36	30.1	.	.
CL991209	CL	28	10.3	11.0	1	140	1	3.0	9.97	21.5	11.07	112.4	9.96	23.3	10.74	110.3
CL991209	CL	29	12.6	12.1	2	140	1	3.0	10.10	22.4	10.60	108.6	10.00	23.4	10.13	104.2
CL991209	CL	30	12.5	14.0	1	140	1	2.9	10.20	21.9	10.68	109.3	9.98	23.1	10.11	103.8
CL991208	CL	32	14.0	13.1	0		1	1.8	10.05	24.2	11.23	116.3	9.87	24.9	10.46	108.3
CL991209	CL	33	5.5	14.6	3	140	1	1.5	9.77	19.9	10.60	106.1	9.76	19.9	10.64	106.5
CL991209	CL	35	8.5	12.8	3	140	1	2.8	9.82	19.6	10.70	107.0	9.89	19.8	10.88	109.1
CL991209	CL	37	6.6	11.7	3	220	2	2.7	9.44	20.8	11.03	110.2	9.92	22.5	10.18	104.0
CL991209	CL	39	6.3	12.4	2	220	1	2.8	8.94	19.4	11.50	112.6	9.85	22.0	10.34	105.1
CL991209	CL	41	9.8	11.8	5	140	1	3.6	9.68	19.5	10.92	108.8	10.00	20.5	9.66	97.6
CL991209	CL	42	11.9	13.0	3	220	1	2.9	8.98	19.5	11.32	111.0	9.99	23.4	9.64	99.2
CL991209	CL	43	12.6	10.6	2	220	2	3.0	9.16	19.6	11.28	111.1	10.12	24.1	9.19	95.2
CL991209	CL	44	11.9	10.3	1	220	2	3.2	9.14	19.2	11.12	109.2	10.06	20.3	9.56	96.6
CL991208	CL	45	15.2	11.8	2	220	1	2.7	9.98	22.1	11.53	117.6	9.93	25.6	10.24	106.7
CL991209	CL	46	12.6	9.4	2	220	1	3.1	8.80	19.6	10.98	107.3	10.18	23.2	9.00	92.9
CL991209	CL	48	12.9	12.5	2	220	2	3.0	9.26	19.6	11.18	110.4	10.10	24.1	9.07	93.9
CL991203	CL	68	2.1	13.4	1	220	1	2.0	8.78	21.7	.	.	8.73	22.0	.	.
CL991208	CL	69	3.2	13.1	0		1	1.2	10.26	28.8	.	.	10.25	28.9	.	.
CL991203	CL	73	2.7	14.2	0		1	1.9	9.51	21.1	.	.	9.36	22.3	.	.
CL991208	CL	77	2.3	12.4	0		1	1.3	9.64	23.7	.	.	9.62	25.2	.	.
CL991209	CL	82	3.3	9.2	3	220	1	2.8	9.27	18.2	10.44	102.2	9.32	18.2	10.46	102.5
CL991209	CL	86	3.0	12.6	3	220	2	2.1	9.51	20.4	11.00	109.8	9.48	20.5	11.00	109.8

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. 'Number of Species' also includes only the species which were measured or counted and does not include those invertebrates which were processed as presence/absence.

NOTE: Invertebrate processing began in 1998. The programs used to calculate 'Number of Species' did not include presence/absence invertebrate species in the 1998 Summary Report and in this report. Future reports will show the number of fish species and invertebrate 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, 1999

River - All - Pooled

No. of Random Trawls Made - 1019

No. of Fixed Trawls Made - 363

No. of Species - 123

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	395,224	1137	62.29	285.98	.	350,981	51	0.08	12	94
hogchoker	74,535	770	11.75	53.93	.	21,332	83	0.23	12	186
Atlantic croaker	49,471	987	7.80	35.80	30.02	36,173	132	0.61	6	420
weakfish	19,594	570	3.09	14.18	11.89	17,475	106	0.56	5	431
spot	17,087	647	2.69	12.36	10.37	14,649	141	0.26	13	279
white perch	15,280	322	2.41	11.06	9.27	2,861	134	0.47	30	274
blue catfish	6,472	127	1.02	4.68	3.93	1,088	227	0.88	82	589
jellyfish spp	6,363	434	1.00	4.60	3.86	.	.	.	.	.
blue crab, male	5,652	733	0.89	4.09	3.43	.	70	0.52	7	184
blue crab, juvenile female	4,657	721	0.73	3.37	2.83	.	55	0.42	6	142
silver perch	4,291	272	0.68	3.10	2.60	4,020	118	0.51	40	233
squid spp	3,314	192	0.52	2.40	2.01	.	36	0.39	9	150
striped anchovy	2,918	153	0.46	2.11	1.77	2,907	74	0.64	29	131
blackcheek tonguefish	2,748	503	0.43	1.99	1.67	1,091	109	0.73	18	201
kingfish spp	2,576	289	0.41	1.86	1.56	2,387	87	1.22	6	330
roughneck shrimp	2,290	127	0.36	1.66	1.39	.	.	.	.	.
Atlantic herring	1,944	80	0.31	1.41	1.18	.	54	0.53	29	276
white catfish	1,440	192	0.23	1.04	0.87	111	232	2.06	49	539
blue crab, adult female	1,416	376	0.22	1.02	0.86	.	139	0.42	85	195
spotted hake	1,191	213	0.19	0.86	0.72	1,173	120	1.37	33	329
northern searobin	1,129	275	0.18	0.82	0.69	1,106	93	1.02	22	210
summer flounder	942	394	0.15	0.68	0.57	453	271	2.67	29	642
white shrimp	853	147	0.13	0.62	0.52	.	104	0.74	40	165
smallmouth flounder	821	174	0.13	0.59	0.50	771	77	0.64	31	122
threadfin shad	781	39	0.12	0.57	0.47	.	87	0.56	58	136
mantis shrimp	735	182	0.12	0.53	0.45	.	80	1.00	26	277
spider crab, common	722	75	0.11	0.52	0.44	.	.	.	.	.
harvestfish	686	139	0.11	0.50	0.42	666	57	1.30	6	181
oyster toadfish	637	155	0.10	0.46	0.39	.	192	2.50	23	370
gizzard shad	625	128	0.10	0.45	0.38	367	184	3.18	74	419
inshore lizardfish	624	178	0.10	0.45	0.38	545	153	1.88	48	314
blueback herring	617	75	0.10	0.45	0.37	606	81	1.01	57	254
alewife	616	70	0.10	0.45	0.37	613	116	0.79	41	216
channel catfish	550	82	0.09	0.40	0.33	16	282	3.45	91	594
striped bass	538	122	0.08	0.39	0.33	415	138	3.25	59	584
American eel	395	141	0.06	0.29	0.24	.	275	3.63	133	705
northern pipefish	382	149	0.06	0.28	0.23	.	131	1.67	33	216
butterfish	372	112	0.06	0.27	0.23	286	100	1.69	21	184
black seabass	335	115	0.05	0.24	0.20	157	117	2.41	36	230
scup	331	18	0.05	0.24	0.20	324	102	1.57	44	194
naked goby	286	118	0.05	0.21	0.17	.	37	0.52	16	57
spider crab, 6 spine	281	124	0.04	0.20	0.17	.	.	.	.	.
Atlantic silverside	245	34	0.04	0.18	0.15	245	91	1.44	46	123
Atlantic menhaden	240	92	0.04	0.17	0.15	133	115	3.64	25	334
Atlantic spadefish	140	59	0.02	0.10	0.08	.	78	2.17	13	180
banded drum	138	53	0.02	0.10	0.08	.	65	2.28	19	153
northern puffer	133	74	0.02	0.10	0.08	112	88	3.21	12	184
star drum	132	21	0.02	0.10	0.08	.	79	1.37	40	110
channel (smooth) whelk	118	70	0.02	0.09	0.07	.	.	.	.	.
striped searobin	95	56	0.01	0.07	0.06	.	90	2.81	24	177
pigfish	91	44	0.01	0.07	0.06	.	143	3.22	26	236
American shad	91	33	0.01	0.07	0.06	89	130	2.18	90	228
brown shrimp	86	36	0.01	0.06	0.05	.	79	3.49	35	160
Atlantic cutlassfish	85	49	0.01	0.06	0.05	.	319	17.36	58	780
lady crab	81	36	0.01	0.06	0.05	.	19	.	19	19
clearnose skate	76	44	0.01	0.05	0.05	.	378	8.81	133	475
Irresdescent swimming crab	69	32	0.01	0.05	0.04	.	.	.	.	.
shelligs blue crab	67	8	0.01	0.05	0.04	.	.	.	.	.
knobbed whelk	66	35	0.01	0.05	0.04	.	.	.	.	.
feather blenny	65	37	0.01	0.05	0.04	.	61	2.84	26	174
pink shrimp	60	33	0.01	0.04	0.04	.	86	2.66	38	136
rock crab	58	29	0.01	0.04	0.04	.	39	4.09	10	119
blue crab, sex unknown	53	19	0.01	0.04	0.03	.	26	4.27	5	129
Atlantic thread herring	52	25	0.01	0.04	0.03	.	104	7.38	43	194
bluefish	51	25	0.01	0.04	0.03	.	187	7.55	106	308
seaboard goby	49	23	0.01	0.04	0.03	.	36	0.94	19	54
skilletfish	48	36	0.01	0.03	0.03	.	44	1.50	26	67
lined seahorse	38	33	0.01	0.03	0.02	.	62	3.08	31	119
silver seatrout	29	11	0.00	0.02	0.02	.	161	2.81	130	186
windowpane	28	22	0.00	0.02	0.02	21	143	13.18	33	286
horseshoe crab	28	19	0.00	0.02	0.02	.	239	9.57	132	317
green goby	24	15	0.00	0.02	0.01	.	38	2.33	15	50
Atlantic moonfish	20	13	0.00	0.01	0.01	.	71	3.82	37	105
black drum	19	11	0.00	0.01	0.01	.	213	6.14	146	257
lesser blue crab	16	10	0.00	0.01	0.01	.	.	.	.	.
fringed flounder	13	11	0.00	0.01	0.01	.	99	2.23	80	115
tautog	13	5	0.00	0.01	0.01	.	380	26.98	204	526
brown bullhead	12	10	0.00	0.01	0.01	.	153	17.79	78	255
common carp	12	4	0.00	0.01	0.01	.	539	29.04	292	725
longnose gar	11	7	0.00	0.01	0.01	.	693	44.00	474	910
Spanish mackerel	11	5	0.00	0.01	0.01	.	146	4.20	120	176

Table 50. (continued)

Month - All - Pooled, 1999

River - All - Pooled

No. of Random Trawls Made - 1019

No. of Fixed Trawls Made - 363

No. of Species - 123

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)
red drum	10	6	0.00	0.01	0.01	.	126	37.74	51	355
spotted seatrout	9	7	0.00	0.01	0.01	.	175	21.35	53	243
spottail shiner	9	5	0.00	0.01	0.01	.	81	4.01	70	100
hickory shad	8	6	0.00	0.01	0.00	.	126	19.33	53	203
northern stargazer	7	6	0.00	0.00	0.00	.	74	24.35	23	185
sea lamprey	6	6	0.00	0.00	0.00	.	144	2.93	134	151
bluntnose stingray	6	6	0.00	0.00	0.00	.	286	62.69	192	590
striped burrfish	6	6	0.00	0.00	0.00	.	149	15.48	92	195
coarse hand lady crab	6	1	0.00	0.00	0.00	.	83	20.83	29	132
tessellated darter	5	4	0.00	0.00	0.00	.	72	7.09	61	100
Atlantic stingray	5	4	0.00	0.00	0.00	.	321	32.29	246	406
Portunid spp	5	3	0.00	0.00	0.00	.	.	.	.	.
spottin butterflyfish	5	1	0.00	0.00	0.00	.	46	4.08	36	59
red hake	5	4	0.00	0.00	0.00	.	120	26.20	73	185
spiny butterfly ray	4	4	0.00	0.00	0.00	.	690	74.73	551	830
lookdown	4	4	0.00	0.00	0.00	.	64	18.71	27	116
winter flounder	4	4	0.00	0.00	0.00	.	129	73.30	33	347
bluespotted cornetfish	4	3	0.00	0.00	0.00	.	281	68.99	170	457
cownose ray	4	3	0.00	0.00	0.00	.	439	105.17	192	640
striped blenny	3	3	0.00	0.00	0.00	.	66	7.54	52	78
southern stingray	3	3	0.00	0.00	0.00	.	575	58.86	492	689
Atlantic sturgeon	3	3	0.00	0.00	0.00	.	677	68.88	580	810
pinfish	3	3	0.00	0.00	0.00	.	123	3.21	118	129
speckled crab	3	2	0.00	0.00	0.00	.	.	.	.	.
blotched swimming crab	3	1	0.00	0.00	0.00	.	610	79.31	460	730
smooth butterfly ray	3	2	0.00	0.00	0.00	.	98	25.00	73	123
northern sennet	3	2	0.00	0.00	0.00	.	77	9.50	67	86
silver jenny	3	2	0.00	0.00	0.00	.	.	.	.	.
veined rapa whelk	3	1	0.00	0.00	0.00	.	128	8.00	120	136
sheepshead	3	1	0.00	0.00	0.00	.	.	.	.	.
sargassum swimming crab	3	1	0.00	0.00	0.00	.	32	.	32	32
silver hake	3	1	0.00	0.00	0.00	.	50	.	50	50
bighead searobin	3	1	0.00	0.00	0.00	.	124	.	124	124
striped killifish	3	1	0.00	0.00	0.00	.	129	.	129	129
bluegill	3	1	0.00	0.00	0.00	.	114	.	114	114
conger eel	3	1	0.00	0.00	0.00	.	139	.	139	139
blue runner	3	1	0.00	0.00	0.00	.	142	.	142	142
striped cusk-eel	3	1	0.00	0.00	0.00	.	102	.	102	102
spottin mojarra	3	1	0.00	0.00	0.00	.	394	.	394	394
sharksucker	3	1	0.00	0.00	0.00	.	28	.	28	28
Atlantic bumper	3	1	0.00	0.00	0.00	.	74	.	74	74
gray snapper	525	.	.	.	.	.	.	.	.	.
mud crab spp	474	.	.	.	.	.	.	.	.	.
sand shrimp	330	.	.	.	.	.	.	.	.	.
grass shrimp spp	248	.	.	.	.	.	.	.	.	.
right-hand hermit crab spp	155	.	.	.	.	.	.	.	.	.
worm spp	143	.	.	.	.	.	.	.	.	.
mysis shrimp	118	.	.	.	.	.	.	.	.	.
Amphipod spp	115	.	.	.	.	.	.	.	.	.
little surf clam	98	.	.	.	.	.	.	.	.	.
drill & snail spp	90	.	.	.	.	.	.	.	.	.
wedge rangia clam	89	.	.	.	.	.	.	.	.	.
bent mussel	66	.	.	.	.	.	.	.	.	.
oyster, common	61	.	.	.	.	.	.	.	.	.
blood ark/clam	55	.	.	.	.	.	.	.	.	.
moon snail	46	.	.	.	.	.	.	.	.	.
quahog clam	36	.	.	.	.	.	.	.	.	.
blue mussel	34	.	.	.	.	.	.	.	.	.
sand dollar	33	.	.	.	.	.	.	.	.	.
slipper shell spp	30	.	.	.	.	.	.	.	.	.
skeleton shrimp spp	30	.	.	.	.	.	.	.	.	.
soft-shell clam	24	.	.	.	.	.	.	.	.	.
leech spp	22	.	.	.	.	.	.	.	.	.
macoma clam spp	21	.	.	.	.	.	.	.	.	.
transverse ark (clam)	15	.	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	14	.	.	.	.	.	.	.	.	.
sea cucumber spp	13	.	.	.	.	.	.	.	.	.
river shrimp	12	.	.	.	.	.	.	.	.	.
glassy lyonsia	12	.	.	.	.	.	.	.	.	.
Northern dwarf tellin	7	.	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	6	.	.	.	.	.	.	.	.	.
brittle/serpent star spp	6	.	.	.	.	.	.	.	.	.
commensal crab spp	4	.	.	.	.	.	.	.	.	.
flat-brown(coastal) mud	4	.	.	.	.	.	.	.	.	.
forbes common sea star	2	.	.	.	.	.	.	.	.	.
purplish tagelus	2	.	.	.	.	.	.	.	.	.
ribbed mussel	1	.	.	.	.	.	.	.	.	.
yoldias clam spp	1	.	.	.	.	.	.	.	.	.
false angel wing	1	.	.	.	.	.	.	.	.	.
stout razor clam (tagelus)	1	.	.	.	.	.	.	.	.	.
All Species Combined	634,537	.	.	.	.	.	.	.	.	.

Table 51-58. Species composition, number caught, catch per trawl, and length statistics for **all months, by system** for the Chesapeake Bay, 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. 'Number of Species' also includes only the species which were measured or counted and does not include those invertebrates which were processed as presence/absence.

NOTE: Invertebrate processing began in 1998. The programs used to calculate 'Number of Species' did not include presence/absence invertebrate species in the 1998 Summary Report and in this report. Future reports will show the number of fish species and invertebrate 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, 1999
 System - Chesapeake Bay
 No. of Random Trawls Made - 402
 No. of Fixed Trawls Made - 0
 No. of Species - 93

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	79,717	291	69.27	198.30		64,510	52	0.15	12	87
Atlantic croaker	5,973	211	5.19	14.86	17.65	2,341	173	1.42	7	389
weakfish	3,776	140	3.28	9.39	11.16	2,994	118	1.39	5	369
spot	3,534	142	3.07	8.79	10.44	3,122	150	0.66	13	279
squid spp	2,979	153	2.59	7.41	8.80		35	0.43	9	150
striped anchovy	2,551	82	2.22	6.35	7.54	2,542	72	0.85	29	127
jellyfish spp	2,265	123	1.97	5.64	6.69					
kingfish spp	1,811	140	1.57	4.50	5.35	1,637	90	1.82	6	330
hogchoker	1,515	119	1.32	3.77		18	112	0.70	31	186
Atlantic herring	1,422	50	1.24	3.54	4.20		58	0.62	33	234
roughneck shrimp	1,043	73	0.91	2.59	3.08					
northern searobin	917	188	0.80	2.28	2.71	896	95	1.15	22	210
blackcheek tonguefish	862	134	0.75	2.14	2.55	46	137	0.81	43	183
smallmouth flounder	698	146	0.61	1.74	2.06	648	77	0.68	31	122
spider crab, common	660	47	0.57	1.64	1.95					
silver perch	636	48	0.55	1.58	1.88	619	113	1.32	43	200
spotted hake	414	88	0.36	1.03	1.22	401	111	2.54	33	317
summer flounder	405	177	0.35	1.01	1.20	217	280	4.44	74	642
inshore lizardfish	378	100	0.33	0.94	1.12	328	156	2.41	48	314
scup	323	14	0.28	0.80	0.95	321	99	1.28	44	124
blue crab, adult female	309	105	0.27	0.77	0.91		136	0.96	91	195
northern pipefish	293	91	0.25	0.73	0.87		132	1.95	68	216
butterfish	271	69	0.24	0.67	0.80	214	93	1.90	21	184
mantis shrimp	264	65	0.23	0.66	0.78		81	1.97	26	277
black seabass	248	71	0.22	0.62	0.73	122	108	2.54	36	228
blue crab, juvenile female	167	72	0.15	0.42	0.49		53	2.49	10	131
blueback herring	137	7	0.12	0.34	0.40	134	87	2.58	68	254
blue crab, male	126	67	0.11	0.31	0.37		77	3.89	14	180
harvestfish	119	34	0.10	0.30	0.35	118	58	2.89	6	135
northern puffer	109	58	0.09	0.27	0.32	93	88	3.51	12	184
spider crab, 6 spine	87	43	0.08	0.22	0.26				19	19
lady crab	79	35	0.07	0.20	0.23		19		34	168
striped searobin	73	38	0.06	0.18	0.22		90	3.14	133	475
clearnose skate	71	40	0.06	0.18	0.21		378	9.14		
shellfish blue crab	67	8	0.06	0.16	0.20					
knobbed whelk	64	34	0.06	0.16	0.19		52	3.31	19	153
banded drum	63	34	0.05	0.16	0.19					
Irresdescent swimming crab	61	28	0.05	0.15	0.18					
rock crab	52	26	0.05	0.13	0.15		40	4.53	10	119
pigfish	47	27	0.04	0.12	0.14		132	4.25	26	196
Atlantic cutlassfish	45	19	0.04	0.11	0.13		278	20.48	58	595
channel (smooth) whelk	43	34	0.04	0.11	0.13					
Atlantic spadefish	37	19	0.03	0.09	0.11		88	4.94	13	159
Atlantic thread herring	37	16	0.03	0.09	0.11		85	7.35	43	184
white shrimp	37	16	0.03	0.09	0.11		106	3.01	74	144
lined seahorse	29	25	0.03	0.07	0.09		58	3.50	31	119
silver seatrout	29	11	0.03	0.07	0.09		161	2.81	130	186
windowpane	24	19	0.02	0.06	0.07	17	148	15.07	33	286
bluefish	19	11	0.02	0.05	0.06		230	11.15	122	308
lesser blue crab	16	10	0.01	0.04	0.05					
Atlantic silverside	13	8	0.01	0.03	0.04	13	71	3.84	52	98
horseshoe crab	13	8	0.01	0.03	0.04		212	13.98	132	284
Atlantic moonfish	12	8	0.01	0.03	0.04		71	5.79	37	105
brown shrimp	11	11	0.01	0.03	0.03		114	5.65	78	137
seaboard goby	9	7	0.01	0.02	0.03		37	2.70	29	54
oyster toadfish	8	8	0.01	0.02	0.02		193	41.81	49	312
Atlantic menhaden	8	6	0.01	0.02	0.02	5	110	36.98	33	316
black drum	8	4	0.01	0.02	0.02		207	11.53	146	255
fringed flounder	7	6	0.01	0.02	0.02		100	4.07	80	115
tautog	6	1	0.01	0.01	0.02		313	26.55	204	382
naked goby	5	5	0.00	0.01	0.01		30	2.66	20	35
striped burrfish	5	5	0.00	0.01	0.01		142	17.21	92	195
northern stargazer	5	4	0.00	0.01	0.01		62	21.58	32	148
Portunid spp	5	3	0.00	0.01	0.01					
alewife	5	2	0.00	0.01	0.01	5	91	15.03	66	149
feather blenny	4	4	0.00	0.01	0.01		51	2.99	44	58
bluntnose stingray	4	4	0.00	0.01	0.01		234	22.04	197	298
spiny butterfly ray	4	4	0.00	0.01	0.01		690	74.73	551	830
star drum	4	4	0.00	0.01	0.01		67	12.78	43	98
skilletfish	4	3	0.00	0.01	0.01		40	7.92	27	62
southern stingray	3	3	0.00	0.01	0.01		575	58.86	492	689
pink shrimp	3	3	0.00	0.01	0.01		92	9.35	73	102
speckled crab	3	3	0.00	0.01	0.01					

Table 51. (continued)

Month - All - Pooled, 1999

System - Chesapeake Bay

No. of Random Trawls Made - 402

No. of Fixed Trawls Made - 0

No. of Species - 93

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)
blotched swimming crab	3	2	0.00	0.01	0.01	.	.	.	.	.
smooth butterfly ray	3	1	0.00	0.01	0.01	.	610	79.31	460	730
red hake	2	2	0.00	0.00	0.01	.	162	23.00	139	185
hickory shad	2	2	0.00	0.00	0.01	.	194	9.00	185	203
cownose ray	2	2	0.00	0.00	0.01	.	462	123.00	339	585
Spanish mackerel	2	1	0.00	0.00	0.01	.	146	2.50	143	148
sargassum swimming crab	2	1	0.00	0.00	0.01	.	.	.	.	.
silver hake	1	1	0.00	0.00	0.00	.	32	.	32	32
American shad	1	1	0.00	0.00	0.00	1	123	.	123	123
spotted seatrout	1	1	0.00	0.00	0.00	.	238	.	238	238
bighead searobin	1	1	0.00	0.00	0.00	.	50	.	50	50
bluespotted cornetfish	1	1	0.00	0.00	0.00	.	457	.	457	457
conger eel	1	1	0.00	0.00	0.00	.	114	.	114	114
blue runner	1	1	0.00	0.00	0.00	.	139	.	139	139
lookdown	1	1	0.00	0.00	0.00	.	27	.	27	27
pinfish	1	1	0.00	0.00	0.00	.	122	.	122	122
striped cusk-eel	1	1	0.00	0.00	0.00	.	142	.	142	142
northern sennet	1	1	0.00	0.00	0.00	.	123	.	123	123
sharksucker	1	1	0.00	0.00	0.00	.	394	.	394	394
silver jenny	1	1	0.00	0.00	0.00	.	67	.	67	67
right-hand hermit crab spp	.	187	.	.	.	.	.	.	.	.
sand shrimp	.	182	.	.	.	.	.	.	.	.
mud crab spp	.	132	.	.	.	.	.	.	.	.
grass shrimp spp	.	46	.	.	.	.	.	.	.	.
mysid shrimp	.	44	.	.	.	.	.	.	.	.
worm spp	.	38	.	.	.	.	.	.	.	.
Amphipod spp	.	36	.	.	.	.	.	.	.	.
sand dollar	.	34	.	.	.	.	.	.	.	.
drill & snail spp	.	34	.	.	.	.	.	.	.	.
moon snail	.	32	.	.	.	.	.	.	.	.
slipper shell spp	.	28	.	.	.	.	.	.	.	.
blue mussel	.	26	.	.	.	.	.	.	.	.
blood ark/clam	.	19	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	14	.	.	.	.	.	.	.	.
sea cucumber spp	.	8	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	7	.	.	.	.	.	.	.	.
quahog clam	.	6	.	.	.	.	.	.	.	.
commensal crab spp	.	5	.	.	.	.	.	.	.	.
leech spp	.	5	.	.	.	.	.	.	.	.
forbes common sea star	.	3	.	.	.	.	.	.	.	.
transverse ark (clam)	.	3	.	.	.	.	.	.	.	.
soft-shell clam	.	2	.	.	.	.	.	.	.	.
glassy Lyonsia	.	2	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
purplish tagelus	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
yoldia spp. (clam)	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	115,080									

Table 52.

Month - All - Pooled, 1999

System - James River

No. of Random Trawls Made - 168

No. of Fixed Trawls Made - 96

No. of Species - 93

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	41,486	181	35.78	157.14	.	13,033	73	0.42	12	178
bay anchovy	33,638	224	29.01	127.42	.	29,785	52	0.21	15	90
Atlantic croaker	13,292	228	11.46	50.35	32.56	9,749	120	1.06	6	403
white perch	7,769	123	6.70	29.43	19.03	1,974	121	0.66	47	274
spot	3,058	151	2.64	11.58	7.49	2,486	139	0.56	36	260
blue catfish	2,937	84	2.53	11.13	7.19	451	216	1.13	82	514
weakfish	2,803	113	2.42	10.62	6.87	2,587	92	1.07	16	419
blue crab, male	1,506	192	1.30	5.70	3.69	.	68	1.02	9	184
blue crab, juvenile female	1,240	178	1.07	4.70	3.04	.	53	0.80	12	142
roughneck shrimp	1,141	26	0.98	4.32	2.79	.	.	.	.	.
jellyfish spp	709	48	0.61	2.68	1.74	.	.	.	.	.
silver perch	542	55	0.47	2.05	1.33	473	121	1.32	42	213
blackcheek tonguefish	498	100	0.43	1.89	1.22	204	108	1.75	18	201
blue crab, adult female	423	83	0.36	1.60	1.04	.	142	0.84	89	180
oyster toadfish	365	58	0.31	1.38	0.89	.	196	3.14	23	370
white catfish	355	71	0.31	1.34	0.87	8	224	3.37	86	539
gizzard shad	353	64	0.30	1.34	0.86	162	193	4.15	74	386
channel catfish	336	56	0.29	1.27	0.82	11	267	4.20	91	594
spotted hake	334	31	0.29	1.27	0.82	329	138	3.07	59	329
white shrimp	266	31	0.23	1.01	0.65	.	102	1.64	40	158
American eel	238	70	0.21	0.90	0.58	.	257	3.95	133	644
summer flounder	197	54	0.17	0.75	0.48	55	266	4.49	29	499
striped bass	181	49	0.16	0.69	0.44	123	146	5.84	59	584
kingfish spp	165	34	0.14	0.63	0.40	164	79	2.42	31	174
threadfin shad	162	22	0.14	0.61	0.40	.	84	1.12	58	127
Atlantic silverside	161	5	0.14	0.61	0.39	161	99	2.44	46	123
squid spp	152	18	0.13	0.58	0.37	.	35	1.70	14	117
smallmouth flounder	116	23	0.10	0.44	0.28	116	72	1.77	34	102
spider crab, 6 spine	114	29	0.10	0.43	0.28	.	.	.	.	.
star drum	113	10	0.10	0.43	0.28	.	81	1.30	56	110
blueback herring	104	15	0.09	0.39	0.25	103	75	1.39	57	193
alewife	90	14	0.08	0.34	0.22	89	118	1.32	87	165
naked goby	86	37	0.07	0.33	0.21	.	36	0.92	16	57
mantis shrimp	81	18	0.07	0.31	0.20	.	77	2.67	40	147
striped anchovy	69	12	0.06	0.26	0.17	67	79	1.88	47	131
brown shrimp	68	19	0.06	0.26	0.17	.	71	3.46	35	152
black seabass	63	25	0.05	0.24	0.15	27	137	5.34	47	210
banded drum	60	8	0.05	0.23	0.15	.	76	2.83	34	122
northern searobin	58	22	0.05	0.22	0.14	58	72	4.09	28	161
channel (smooth) whelk	57	20	0.05	0.22	0.14	.	.	.	.	.
harvestfish	49	15	0.04	0.19	0.12	45	53	4.69	16	140
spider crab, common	48	20	0.04	0.18	0.12	.	.	.	.	.
pink shrimp	45	23	0.04	0.17	0.11	.	89	2.99	42	136
pigfish	34	9	0.03	0.13	0.08	.	155	4.84	95	236
seaboard goby	33	11	0.03	0.13	0.08	.	36	1.07	22	52
northern pipefish	31	17	0.03	0.12	0.08	.	132	4.95	67	188
American shad	31	5	0.03	0.12	0.08	31	118	3.00	90	163
Atlantic menhaden	29	16	0.03	0.11	0.07	4	159	8.48	45	302
inshore lizardfish	27	13	0.02	0.10	0.07	22	163	8.44	80	252
butterfish	25	12	0.02	0.09	0.06	17	115	7.13	31	182
Atlantic cutlassfish	24	17	0.02	0.09	0.06	.	322	30.82	224	760
feather blenny	19	9	0.02	0.07	0.05	.	67	7.48	32	174
horseshoe crab	13	9	0.01	0.05	0.03	.	254	10.14	191	305
common carp	12	4	0.01	0.05	0.03	.	539	29.04	292	725
blue crab, sex unknown	12	9	0.01	0.04	0.03	.	36	11.10	13	106
striped searobin	11	3	0.01	0.04	0.02	.	84	11.70	24	177
Atlantic herring	10	3	0.01	0.03	0.02	.	54	1.80	46	62
brown bullhead	8	6	0.01	0.03	0.02	3	124	12.86	78	172
scup	8	4	0.01	0.03	0.02	.	152	17.07	81	194
Atlantic thread herring	8	4	0.01	0.03	0.02	.	180	4.38	162	194
Iridescent swimming crab	8	4	0.01	0.03	0.02	.	.	.	.	.
tautog	7	4	0.01	0.03	0.02	.	438	31.71	320	526
fringed flounder	6	5	0.01	0.02	0.01	.	98	1.51	92	102
rock crab	6	3	0.01	0.02	0.01	.	29	3.81	19	45
spotfin butterflyfish	5	1	0.00	0.02	0.01	.	46	4.08	36	59
skilletfish	4	4	0.00	0.02	0.01	.	49	1.55	45	52
windowpane	4	3	0.00	0.02	0.01	4	111	10.33	87	137
Atlantic spadefish	4	3	0.00	0.02	0.01	.	58	10.05	35	84
lined seahorse	3	3	0.00	0.01	0.01	.	75	9.39	61	93
Atlantic sturgeon	3	2	0.00	0.01	0.00	.	677	68.88	580	810
red hake	2	2	0.00	0.01	0.00	.	78	4.50	73	82
tessellated darter	2	2	0.00	0.01	0.00	.	81	19.50	61	100
spottail shiner	2	2	0.00	0.01	0.00	.	99	1.00	98	100

Table 52. (continued)

Month - All - Pooled, 1999

System - James River

No. of Random Trawls Made - 168

No. of Fixed Trawls Made - 96

No. of Species - 93

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)
green goby	2	2	0.00	0.01	0.00	.	37	6.50	30	43
clearnose skate	2	2	0.00	0.01	0.00	.	328	82.00	246	410
pinfish	2	2	0.00	0.01	0.00	.	124	5.50	118	129
veined rapa whelk	2	2	0.00	0.01	0.00	.	.	.	.	.
northern puffer	2	1	0.00	0.01	0.00	1	73	53.00	20	126
spotted seatrout	2	1	0.00	0.01	0.00	.	183	36.00	147	219
cownose ray	2	1	0.00	0.01	0.00	.	416	224.00	192	640
lady crab	2	1	0.00	0.01	0.00	.	.	.	.	.
knobbed whelk	2	1	0.00	0.01	0.00	.	.	.	.	.
bluefish	1	1	0.00	0.00	0.00	.	186	.	186	186
black drum	1	1	0.00	0.00	0.00	.	242	.	242	242
red drum	1	1	0.00	0.00	0.00	.	355	.	355	355
Spanish mackerel	1	1	0.00	0.00	0.00	.	120	.	120	120
bluespotted cornetfish	1	1	0.00	0.00	0.00	.	325	.	325	325
Atlantic stingray	1	1	0.00	0.00	0.00	.	406	.	406	406
bluntnose stingray	1	1	0.00	0.00	0.00	.	590	.	590	590
lookdown	1	1	0.00	0.00	0.00	.	116	.	116	116
northern stargazer	1	1	0.00	0.00	0.00	.	23	.	23	23
northern sennet	1	1	0.00	0.00	0.00	.	73	.	73	73
spotfin mojarra	1	1	0.00	0.00	0.00	.	102	.	102	102
mud crab spp	.	133	.	.	.	.	.	.	.	.
grass shrimp spp	.	115	.	.	.	.	.	.	.	.
sand shrimp	.	94	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	62	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	49	.	.	.	.	.	.	.	.
worm spp	.	35	.	.	.	.	.	.	.	.
drill & snail spp	.	35	.	.	.	.	.	.	.	.
bent mussel	.	31	.	.	.	.	.	.	.	.
blood ark/clam	.	28	.	.	.	.	.	.	.	.
Amphipod spp	.	25	.	.	.	.	.	.	.	.
oyster, common	.	23	.	.	.	.	.	.	.	.
quahog clam	.	19	.	.	.	.	.	.	.	.
moon snail	.	17	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	11	.	.	.	.	.	.	.	.
river shrimp	.	8	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	8	.	.	.	.	.	.	.	.
blue mussel	.	7	.	.	.	.	.	.	.	.
mysid shrimp	.	6	.	.	.	.	.	.	.	.
soft-shell clam	.	6	.	.	.	.	.	.	.	.
leech spp	.	6	.	.	.	.	.	.	.	.
transverse ark (clam)	.	6	.	.	.	.	.	.	.	.
sea cucumber spp	.	5	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	5	.	.	.	.	.	.	.	.
flat-browed(coastal) mud	.	3	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	3	.	.	.	.	.	.	.	.
glassy lyonsia	.	3	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	2	.	.	.	.	.	.	.	.
slipper shell spp	.	2	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	1	.	.	.	.	.	.	.	.
forbes common sea star	.	1	.	.	.	.	.	.	.	.
purplish tagelus	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
commensal crab spp	.	1	.	.	.	.	.	.	.	.
false angel wing	.	1	.	.	.	.	.	.	.	.
Stout razor clam (tagelus)	.	1	.	.	.	.	.	.	.	.
All Species Combined	115,948									

Table 53.

Month - All - Pooled, 1999
 System - Rappahannock River
 No. of Random Trawls Made - 168
 No. of Fixed Trawls Made - 96
 No. of Species - 61
 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	83,951	241	68.86	318.00	.	76,897	50	0.19	13	94
hogchoker	8,711	192	7.15	33.00	.	1,091	81	0.34	18	160
weakfish	6,772	113	5.55	25.65	23.15	6,369	101	0.99	16	431
Atlantic croaker	4,967	203	4.07	18.81	16.98	3,792	122	1.67	7	420
white perch	4,147	111	3.40	15.71	14.18	554	139	0.79	30	247
blue catfish	3,531	39	2.90	13.38	12.07	637	245	1.11	153	408
spot	3,301	127	2.71	12.50	11.29	2,895	148	0.48	73	242
jellyfish spp	938	96	0.77	3.55	3.21	.	.	.	.	.
blue crab, male	881	165	0.72	3.34	3.01	.	73	1.34	7	171
blue crab, juvenile female	756	173	0.62	2.86	2.58	.	57	0.97	7	126
white catfish	472	51	0.39	1.79	1.61	0	259	2.34	145	444
alewife	466	29	0.38	1.77	1.59	464	116	1.06	41	216
kingfish spp	339	54	0.28	1.28	1.16	332	79	2.33	16	209
silver perch	255	40	0.21	0.97	0.87	247	123	1.32	50	217
blue crab, adult female	232	67	0.19	0.88	0.79	.	142	0.92	85	175
blackcheek tonguefish	216	72	0.18	0.82	0.74	114	102	2.48	43	160
blueback herring	176	30	0.14	0.67	0.60	172	87	2.38	62	250
channel catfish	175	19	0.14	0.66	0.60	3	293	4.46	94	501
gizzard shad	173	25	0.14	0.66	0.59	156	145	3.40	99	381
striped bass	123	27	0.10	0.47	0.42	92	155	8.30	68	358
harvestfish	118	29	0.10	0.45	0.40	116	48	2.74	17	181
striped anchovy	113	21	0.09	0.43	0.39	113	80	1.57	40	114
Atlantic menhaden	105	37	0.09	0.40	0.36	46	113	5.31	30	319
American eel	105	34	0.09	0.40	0.36	.	282	5.14	156	610
white shrimp	99	32	0.08	0.38	0.34	.	103	1.47	61	133
summer flounder	97	56	0.08	0.37	0.33	40	278	7.54	64	494
mantis shrimp	97	18	0.08	0.37	0.33	.	69	1.89	34	112
inshore lizardfish	94	24	0.08	0.36	0.32	87	136	5.03	62	277
spotted hake	79	38	0.06	0.30	0.27	79	112	4.55	46	219
naked goby	54	28	0.04	0.20	0.18	.	37	1.17	19	54
roughneck shrimp	52	15	0.04	0.20	0.18	.	.	.	.	.
Atlantic herring	50	9	0.04	0.19	0.17	.	54	4.58	42	276
northern searobin	39	20	0.03	0.15	0.13	39	81	3.52	46	147
threadfin shad	38	6	0.03	0.14	0.13	.	95	2.32	72	130
American shad	33	17	0.03	0.13	0.11	32	139	3.59	110	228
Atlantic spadefish	26	8	0.02	0.10	0.09	.	70	3.78	35	106
skilletfish	15	14	0.01	0.06	0.05	.	44	1.19	37	54
butterfish	13	9	0.01	0.05	0.04	2	134	12.07	72	179
black seabass	11	8	0.01	0.04	0.04	3	158	19.56	43	209
feather blenny	9	6	0.01	0.03	0.03	.	55	3.06	39	70
blue crab, sex unknown	9	6	0.01	0.03	0.03	.	12	1.10	5	16
northern pipefish	8	8	0.01	0.03	0.03	.	141	10.56	98	181
oyster toadfish	7	7	0.01	0.03	0.02	.	203	33.14	54	326
green goby	7	6	0.01	0.03	0.02	.	41	1.57	36	46
northern puffer	7	4	0.01	0.03	0.02	6	86	12.30	53	139
hickory shad	6	4	0.00	0.02	0.02	.	103	16.67	53	154
squid spp	5	3	0.00	0.02	0.02	.	52	6.95	35	77
brown bullhead	4	4	0.00	0.02	0.01	.	228	19.46	190	255
spider crab, 6 spine	4	4	0.00	0.02	0.01	.	.	.	.	.
bluefish	3	2	0.00	0.01	0.01	.	208	42.62	149	291
striped searobin	3	2	0.00	0.01	0.01	.	83	10.82	62	98
Atlantic moonfish	3	2	0.00	0.01	0.01	.	68	6.77	55	77
Atlantic thread herring	3	1	0.00	0.01	0.01	.	87	2.91	82	92
lined seahorse	2	2	0.00	0.01	0.01	.	74	9.50	64	83
Atlantic cutlassfish	2	2	0.00	0.01	0.01	.	360	129.50	230	489
Atlantic silverside	2	1	0.00	0.01	0.01	2	95	6.00	89	101
black drum	1	1	0.00	0.00	0.00	.	182	.	182	182
spotted seatrout	1	1	0.00	0.00	0.00	.	53	.	53	53
seaboard goby	1	1	0.00	0.00	0.00	.	19	.	19	19
banded drum	1	1	0.00	0.00	0.00	.	42	.	42	42
northern stargazer	1	1	0.00	0.00	0.00	.	185	.	185	185
mud crab spp	.	78	.	.	.	.	.	.	.	.
sand shrimp	.	57	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	51	.	.	.	.	.	.	.	.
grass shrimp spp	.	44	.	.	.	.	.	.	.	.
nysid shrimp	.	37	.	.	.	.	.	.	.	.
bent mussel	.	35	.	.	.	.	.	.	.	.
worm spp	.	28	.	.	.	.	.	.	.	.
oyster, common	.	18	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	12	.	.	.	.	.	.	.	.
leech spp	.	10	.	.	.	.	.	.	.	.
Amphipod spp	.	9	.	.	.	.	.	.	.	.
drill & snail spp	.	9	.	.	.	.	.	.	.	.
soft-shell clam	.	6	.	.	.	.	.	.	.	.
transverse ark (clam)	.	6	.	.	.	.	.	.	.	.
macoma clam spp	.	5	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	5	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	4	.	.	.	.	.	.	.	.
glassy lyonsia	.	3	.	.	.	.	.	.	.	.
quahog clam	.	3	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	2	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
All Species Combined	121,909									

Table 54.

Month - All - Pooled, 1999

System - York River

No. of Random Trawls Made - 157

No. of Fixed Trawls Made - 108

No. of Species - 79

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	70,378	241	52.22	265.58	.	62,517	52	0.18	15	89
hogchoker	21,853	219	16.21	82.46	.	7,180	83	0.39	13	173
Atlantic croaker	20,815	231	15.44	78.55	48.92	16,789	126	1.04	6	414
weakfish	4,054	128	3.01	15.30	9.53	3,719	99	1.13	11	398
white perch	3,285	85	2.44	12.40	7.72	333	153	0.96	60	272
blue crab, male	2,446	193	1.81	9.23	5.75	.	68	0.79	7	181
spot	2,436	132	1.81	9.19	5.72	1,610	146	0.68	29	274
blue crab, juvenile female	1,803	184	1.34	6.80	4.24	.	56	0.71	7	136
jellyfish spp	1,763	90	1.31	6.65	4.14	.	.	.	.	.
silver perch	1,057	76	0.78	3.99	2.48	947	123	1.05	41	233
blackcheek tonguefish	1,032	141	0.77	3.89	2.43	622	93	1.07	33	164
white catfish	613	70	0.45	2.31	1.44	103	217	3.85	49	462
white shrimp	350	41	0.26	1.32	0.82	.	108	1.03	54	165
blue crab, adult female	289	70	0.21	1.09	0.68	.	141	0.87	99	184
oyster toadfish	246	72	0.18	0.93	0.58	.	188	4.02	45	331
harvestfish	222	33	0.16	0.84	0.52	221	43	1.84	7	128
mantis shrimp	219	45	0.16	0.83	0.51	.	86	1.69	35	144
striped bass	219	37	0.16	0.83	0.51	192	118	3.66	70	456
blueback herring	196	19	0.15	0.74	0.46	193	78	1.42	63	198
kingfish spp	183	43	0.14	0.69	0.43	177	91	2.62	12	211
spotted hake	174	36	0.13	0.66	0.41	174	127	2.83	44	208
summer flounder	123	48	0.09	0.46	0.29	81	234	7.53	82	615
squid spp	114	10	0.08	0.43	0.27	.	45	1.54	30	92
naked goby	92	28	0.07	0.35	0.22	.	35	0.99	17	57
striped anchovy	64	9	0.05	0.24	0.15	64	74	1.46	56	100
Atlantic silverside	63	14	0.05	0.24	0.15	63	88	1.55	57	111
gizzard shad	56	30	0.04	0.21	0.13	13	282	12.96	102	419
spider crab, 6 spine	51	29	0.04	0.19	0.12	.	.	.	.	.
roughneck shrimp	46	8	0.03	0.17	0.11	.	.	.	.	.
American eel	44	32	0.03	0.17	0.10	.	342	16.10	133	705
Atlantic spadefish	43	15	0.03	0.16	0.10	.	76	3.63	33	115
channel catfish	39	7	0.03	0.15	0.09	2	367	16.24	115	546
inshore lizardfish	38	11	0.03	0.14	0.09	36	134	6.45	75	229
alewife	37	18	0.03	0.14	0.09	37	114	1.55	101	148
northern searobin	34	18	0.03	0.13	0.08	34	79	4.04	50	153
American shad	25	9	0.02	0.09	0.06	24	133	3.77	100	175
Atlantic menhaden	21	18	0.02	0.08	0.05	4	140	12.88	44	334
butterfish	21	8	0.02	0.08	0.05	18	111	4.91	56	144
northern pipefish	19	15	0.01	0.07	0.04	.	129	8.28	86	215
channel (smooth) whelk	17	15	0.01	0.06	0.04	.	.	.	.	.
feather blenny	16	7	0.01	0.06	0.04	.	74	4.16	38	97
blue crab, sex unknown	16	3	0.01	0.06	0.04	.	12	0.44	7	14
star drum	14	6	0.01	0.05	0.03	.	77	3.83	51	94
Atlantic cutlassfish	12	9	0.01	0.05	0.03	.	401	53.72	207	780
longnose gar	11	7	0.01	0.04	0.03	.	693	44.00	474	910
spider crab, common	11	6	0.01	0.04	0.03	.	.	.	.	.
black seabass	9	7	0.01	0.03	0.02	3	136	14.98	48	206
skilletfish	9	5	0.01	0.03	0.02	.	50	5.24	36	67
Atlantic herring	8	2	0.01	0.03	0.02	.	72	22.18	42	226
banded drum	7	6	0.01	0.03	0.02	.	81	6.95	67	113
red drum	7	4	0.01	0.03	0.02	.	112	39.62	51	346
spottail shiner	7	3	0.01	0.03	0.02	.	75	2.60	70	90
sea lamprey	6	6	0.00	0.02	0.01	.	144	2.93	134	151
black drum	6	4	0.00	0.02	0.01	.	226	8.22	194	257
northern puffer	6	4	0.00	0.02	0.01	3	96	23.25	36	158
coarse hand lady crab	6	1	0.00	0.02	0.01	.	83	20.83	29	132
brown shrimp	5	4	0.00	0.02	0.01	.	99	18.71	54	160
Atlantic moonfish	5	3	0.00	0.02	0.01	.	74	6.23	56	95
threadfin shad	5	1	0.00	0.02	0.01	.	104	6.60	87	124
blue catfish	4	4	0.00	0.02	0.01	0	397	72.57	251	589
pigfish	3	3	0.00	0.01	0.01	.	135	7.97	125	151
striped searobin	3	2	0.00	0.01	0.01	.	91	2.08	87	94
tessellated darter	3	2	0.00	0.01	0.01	.	66	0.88	65	68
Atlantic stingray	3	2	0.00	0.01	0.01	.	289	41.84	246	373
smallmouth flounder	3	1	0.00	0.01	0.01	3	63	12.24	44	86
green goby	2	2	0.00	0.01	0.00	.	37	13.00	24	50
pink shrimp	2	2	0.00	0.01	0.00	.	97	0.50	96	97
bluefish	2	1	0.00	0.01	0.00	.	115	8.50	106	123
sheepshead	2	1	0.00	0.01	0.00	.	128	8.00	120	136
spotted seatrout	2	1	0.00	0.01	0.00	.	130	16.50	113	146
Atlantic thread herring	1	1	0.00	0.00	0.00	.	130	.	130	130
Spanish mackerel	1	1	0.00	0.00	0.00	.	176	.	176	176
winter flounder	1	1	0.00	0.00	0.00	.	347	.	347	347

Table 54. (continued)

Month - All - Pooled, 1999

System - York River

No. of Random Trawls Made - 157

No. of Fixed Trawls Made - 108

No. of Species - 79

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)
striped killifish	1	1	0.00	0.00	0.00	.	124	.	124	124
bluegill	1	1	0.00	0.00	0.00	.	129	.	129	129
seaboard goby	1	1	0.00	0.00	0.00	.	34	.	34	34
bluntnose stingray	1	1	0.00	0.00	0.00	.	192	.	192	192
gray snapper	1	1	0.00	0.00	0.00	.	74	.	74	74
horseshoe crab	1	1	0.00	0.00	0.00	.	317	.	317	317
mud crab spp	.	109	.	.	.	.	.	.	.	.
grass shrimp spp	.	74	.	.	.	.	.	.	.	.
sand shrimp	.	69	.	.	.	.	.	.	.	.
worm spp	.	39	.	.	.	.	.	.	.	.
mysis shrimp	.	29	.	.	.	.	.	.	.	.
Amphipod spp	.	24	.	.	.	.	.	.	.	.
quahog clam	.	15	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	15	.	.	.	.	.	.	.	.
macoma clam spp	.	14	.	.	.	.	.	.	.	.
blood ark/clam	.	14	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	14	.	.	.	.	.	.	.	.
bent mussel	.	13	.	.	.	.	.	.	.	.
soft-shell clam	.	12	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	6	.	.	.	.	.	.	.	.
river shrimp	.	5	.	.	.	.	.	.	.	.
oyster, common	.	5	.	.	.	.	.	.	.	.
drill & snail spp	.	4	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	3	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	3	.	.	.	.	.	.	.	.
transverse ark (clam)	.	3	.	.	.	.	.	.	.	.
sea anemone spp (Anthozoa)	.	2	.	.	.	.	.	.	.	.
blue mussel	.	2	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	2	.	.	.	.	.	.	.	.
flat-browed(coastal) mud	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
slipper shell spp	.	1	.	.	.	.	.	.	.	.
leech spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	134,784									

Table 55.

Month - All - Pooled, 1999
 System - Mobjack Bay & Tribs
 No. of Random Trawls Made - 40
 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	43,326	47	86.06	637.15	.	39,060	50	0.36	18	83
spot	2,300	30	4.57	33.82	33.47	2,283	130	0.58	90	243
silver perch	1,249	25	2.48	18.37	18.18	1,232	113	0.79	69	190
Atlantic croaker	1,027	40	2.04	15.10	14.95	884	89	3.28	10	374
weakfish	626	29	1.24	9.21	9.11	545	129	2.32	26	356
Atlantic herring	427	12	0.85	6.28	6.21	.	45	0.31	29	63
blue crab, male	308	44	0.61	4.53	4.48	.	72	2.07	11	153
blue crab, juvenile female	188	39	0.37	2.76	2.74	.	58	2.25	6	124
hogchoker	148	16	0.29	2.18	.	0	111	1.62	82	150
summer flounder	69	30	0.14	1.01	1.00	33	300	8.43	155	477
squid spp	63	7	0.13	0.93	0.92	.	34	0.60	28	48
kingfish spp	61	10	0.12	0.90	0.89	60	91	4.21	45	151
harvestfish	60	12	0.12	0.88	0.87	60	84	1.92	33	117
blue crab, adult female	53	21	0.11	0.78	0.77	.	128	1.60	105	163
Atlantic menhaden	50	3	0.10	0.74	0.73	50	110	4.69	25	144
butterfish	42	14	0.08	0.62	0.61	35	115	3.36	78	164
blackcheek tonguefish	40	19	0.08	0.59	0.58	18	105	5.96	45	160
mantis shrimp	34	16	0.07	0.50	0.49	.	79	4.24	36	132
white shrimp	32	14	0.06	0.47	0.47	.	107	2.63	84	132
naked goby	32	11	0.06	0.47	0.47	.	40	1.40	17	52
bluefish	25	9	0.05	0.37	0.36	.	158	6.32	110	247
inshore lizardfish	24	9	0.05	0.35	0.35	21	170	6.56	109	230
Atlantic spadefish	22	8	0.04	0.32	0.32	.	78	3.17	50	114
striped anchovy	15	9	0.03	0.22	0.22	15	84	3.20	60	101
spider crab, 6 spine	13	10	0.03	0.19	0.19	.	.	.	.	.
green goby	13	5	0.03	0.19	0.19	.	36	5.96	15	49
leather blenny	12	6	0.02	0.18	0.17	.	47	3.46	37	78
striped bass	8	3	0.02	0.12	0.12	8	117	5.37	94	138
alewife	7	1	0.01	0.10	0.10	7	120	2.68	108	129
northern pipefish	6	6	0.01	0.09	0.09	.	118	12.56	78	152
banded drum	6	3	0.01	0.09	0.09	.	66	11.23	31	92
roughneck shrimp	6	3	0.01	0.09	0.09	.	.	.	.	.
jellyfish spp	6	11	0.01	0.08	0.08	.	.	.	.	.
oyster toadfish	5	4	0.01	0.07	0.07	.	109	23.29	53	160
spotted hake	4	4	0.01	0.06	0.06	4	83	20.67	52	142
skilletfish	3	3	0.01	0.04	0.04	.	46	7.51	31	54
pigfish	3	2	0.01	0.04	0.04	.	145	13.98	117	162
clearnose skate	3	2	0.01	0.04	0.04	.	404	34.51	364	473
spider crab, common	3	2	0.01	0.04	0.04	.	.	.	.	.
seaboard goby	3	1	0.01	0.04	0.04	.	34	0.88	33	36
American eel	2	2	0.00	0.03	0.03	.	482	1.50	480	483
striped searobin	2	2	0.00	0.03	0.03	.	99	31.50	67	130
Atlantic silverside	2	2	0.00	0.03	0.03	2	82	1.00	81	83
lookdown	2	2	0.00	0.03	0.03	.	56	0.00	56	56
smallmouth flounder	2	2	0.00	0.03	0.03	2	72	17.00	55	89
northern searobin	2	1	0.00	0.03	0.03	2	63	4.00	59	67
bluespotted cornetfish	2	1	0.00	0.03	0.03	.	171	1.00	170	172
black seabass	1	1	0.00	0.01	0.01	0	184	.	184	184
blueback herring	1	1	0.00	0.01	0.01	1	81	.	81	81
northern puffer	1	1	0.00	0.01	0.01	1	90	.	90	90
gizzard shad	1	1	0.00	0.01	0.01	1	120	.	120	120
spotted seatrout	1	1	0.00	0.01	0.01	.	243	.	243	243
striped blenny	1	1	0.00	0.01	0.01	.	78	.	78	78
star drum	1	1	0.00	0.01	0.01	.	40	.	40	40
Atlantic cutlassfish	1	1	0.00	0.01	0.01	.	594	.	594	594
Atlantic bumper	1	1	0.00	0.01	0.01	.	28	.	28	28
channel (smooth) whelk	1	1	0.00	0.01	0.01	.	.	.	.	.
mud crab spp	.	29	.	.	.	.	.	.	.	.
sand shrimp	.	25	.	.	.	.	.	.	.	.
grass shrimp spp	.	25	.	.	.	.	.	.	.	.
Amphipod spp	.	16	.	.	.	.	.	.	.	.
mysid shrimp	.	13	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	10	.	.	.	.	.	.	.	.
worm spp	.	6	.	.	.	.	.	.	.	.
drill & snail spp	.	5	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
soft-shell clam	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
leech spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	50,346									

Table 56.

Month - All - Pooled, 1999
 System - Piankatank River
 No. of Random Trawls Made - 16
 No. of Fixed Trawls Made - 12
 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	46,644	22	94.79	1665.86	.	42,192	49	0.39	20	83
spot	1,021	19	2.07	36.46	41.77	927	126	1.25	37	237
Atlantic croaker	450	19	0.91	16.07	18.41	361	111	6.03	21	372
weakfish	403	16	0.82	14.39	16.49	302	137	3.15	33	338
jellyfish spp	138	9	0.28	4.91	5.62	.	.	.	.	.
hogchoker	121	15	0.25	4.32	.	9	95	2.13	26	156
blue crab, male	73	18	0.15	2.61	2.99	.	83	3.95	21	166
blue crab, juvenile female	71	16	0.14	2.54	2.90	.	66	3.16	21	118
silver perch	54	6	0.11	1.93	2.21	49	126	4.06	48	200
striped anchovy	42	9	0.09	1.50	1.72	42	74	2.12	49	108
harvestfish	38	7	0.08	1.36	1.55	26	115	5.87	31	173
blue crab, adult female	30	8	0.06	1.07	1.23	.	136	2.34	98	169
inshore lizardfish	21	7	0.04	0.75	0.86	18	152	11.76	60	264
summer flounder	20	12	0.04	0.71	0.82	11	268	18.13	117	439
Atlantic menhaden	14	2	0.03	0.50	0.57	14	41	0.91	36	46
kingfish spp	10	4	0.02	0.36	0.41	10	89	7.90	40	121
mantis shrimp	8	5	0.02	0.29	0.33	.	68	6.53	50	107
white shrimp	6	2	0.01	0.21	0.25	.	116	5.14	104	137
skilletfish	5	2	0.01	0.18	0.20	.	53	3.44	46	62
naked goby	4	4	0.01	0.14	0.16	.	34	5.97	17	45
blackcheek tonguefish	4	4	0.01	0.14	0.16	0	151	7.42	131	166
pigfish	4	3	0.01	0.14	0.16	.	172	17.38	142	208
Atlantic spadefish	4	3	0.01	0.14	0.16	.	61	7.04	46	79
black drum	3	1	0.01	0.11	0.12	.	205	4.70	199	214
blue crab, sex unknown	3	1	0.01	0.11	0.12	.	103	0.67	102	104
northern puffer	2	2	0.00	0.07	0.08	2	97	11.00	86	108
American eel	2	2	0.00	0.07	0.08	.	270	0.50	269	270
Atlantic silverside	2	2	0.00	0.07	0.08	2	90	13.00	77	103
Spanish mackerel	2	1	0.00	0.07	0.08	.	154	4.00	150	158
alewife	1	1	0.00	0.04	0.04	1	45	.	45	45
striped bass	1	1	0.00	0.04	0.04	0	196	.	196	196
Atlantic thread herring	1	1	0.00	0.04	0.04	.	88	.	88	88
northern searobin	1	1	0.00	0.04	0.04	1	160	.	160	160
striped searobin	1	1	0.00	0.04	0.04	.	106	.	106	106
lined seahorse	1	1	0.00	0.04	0.04	.	67	.	67	67
striped blenny	1	1	0.00	0.04	0.04	.	52	.	52	52
Atlantic stingray	1	1	0.00	0.04	0.04	.	332	.	332	332
banded drum	1	1	0.00	0.04	0.04	.	57	.	57	57
Atlantic cutlassfish	1	1	0.00	0.04	0.04	.	705	.	705	705
brown shrimp	1	1	0.00	0.04	0.04	.	139	.	139	139
mud crab spp	.	7	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	5	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
sand shrimp	.	2	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
mysis shrimp	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
slipper shell spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	49,210									

Table 57.

Month - All - Pooled, 1999

System - Great Wicomico River

No. of Random Trawls Made - 24

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	8,859	17	77.82	369.13	.	8,249	50	0.51	25	82
weakfish	769	9	6.75	32.04	30.67	702	121	3.39	18	309
spot	689	15	6.05	28.71	27.48	684	118	1.13	66	196
Atlantic croaker	193	13	1.70	8.04	7.70	175	65	6.40	42	376
silver perch	179	5	1.57	7.46	7.14	169	113	3.22	40	193
blue crab, male	130	17	1.14	5.42	5.18	.	72	3.41	12	145
blue crab, juvenile female	117	18	1.03	4.88	4.67	.	59	2.36	17	122
jellyfish spp	106	11	0.93	4.43	4.24	.	.	.	.	.
harvestfish	80	9	0.70	3.33	3.19	80	61	3.12	16	108
striped anchovy	64	11	0.56	2.67	2.55	64	89	1.51	69	110
blue crab, adult female	45	7	0.40	1.88	1.79	.	137	1.46	115	156
inshore lizardfish	40	12	0.35	1.67	1.60	31	167	6.05	93	232
hogchoker	18	4	0.16	0.75	0.75	0	103	3.64	65	138
summer flounder	16	8	0.14	0.67	0.64	11	227	23.39	111	402
naked goby	11	3	0.10	0.46	0.44	.	39	2.03	32	49
mantis shrimp	10	6	0.09	0.42	0.40	.	74	4.67	52	97
skilletfish	8	5	0.07	0.33	0.32	.	33	2.11	26	44
kingfish spp	7	4	0.06	0.29	0.28	7	86	7.29	54	112
northern searobin	5	3	0.04	0.21	0.20	4	113	17.08	91	181
Spanish mackerel	5	1	0.04	0.21	0.20	.	143	2.78	138	153
northern puffer	4	2	0.04	0.17	0.16	4	108	7.92	85	120
feather blenny	3	3	0.03	0.13	0.12	.	57	5.46	46	64
blackcheek tonguefish	3	3	0.03	0.13	0.12	0	123	5.21	114	132
Atlantic spadefish	3	2	0.03	0.13	0.12	.	70	10.40	58	91
blue crab, sex unknown	3	1	0.03	0.13	0.12	.	19	0.33	19	20
striped searobin	2	2	0.02	0.08	0.08	.	90	8.50	81	98
oyster toadfish	2	2	0.02	0.08	0.08	.	160	25.50	134	185
spider crab, 6 spine	2	2	0.02	0.08	0.08	.	.	.	.	.
winter flounder	2	1	0.02	0.08	0.08	.	67	5.00	62	72
white shrimp	2	1	0.02	0.08	0.08	.	109	5.50	103	114
black seabass	1	1	0.01	0.04	0.04	0	230	.	230	230
bluefish	1	1	0.01	0.04	0.04	.	191	.	191	191
squid spp	1	1	0.01	0.04	0.04	.	49	.	49	49
spotted seatrout	1	1	0.01	0.04	0.04	.	202	.	202	202
lined seahorse	1	1	0.01	0.04	0.04	.	61	.	61	61
striped blenny	1	1	0.01	0.04	0.04	.	67	.	67	67
striped burrfish	1	1	0.01	0.04	0.04	.	181	.	181	181
oyster, common	.	9	.	.	.	.	.	.	.	.
mud crab spp	.	8	.	.	.	.	.	.	.	.
grass shrimp spp	.	8	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	6	.	.	.	.	.	.	.	.
sand shrimp	.	2	.	.	.	.	.	.	.	.
bent mussel	.	2	.	.	.	.	.	.	.	.
drill & snail spp	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	11,384									

Table 58.

Month - All - Pooled, 1999
 System - Pocomoke Sound
 No. of Random Trawls Made - 44
 No. of Fixed Trawls Made - 12
 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	13,377	43	77.93	238.88	.	12,620	54	0.5	24	88
Atlantic croaker	955	32	5.56	17.05	30.66	291	218	3.06	20	414
hogchoker	674	21	3.93	12.04	.	1	112	1	78	162
jellyfish spp	437	40	2.55	7.8	14.03	.	.	.	.	.
weakfish	387	20	2.25	6.91	12.42	253	139	4.62	23	366
spot	345	23	2.01	6.16	11.08	239	149	2.43	79	237
blue crab, juvenile female	277	33	1.61	4.95	8.89	.	54	1.62	10	119
spotted hake	185	15	1.08	3.3	5.94	185	115	1.88	53	193
blue crab, male	143	30	0.83	2.55	4.59	.	70	2.65	16	152
blackcheek tonguefish	84	26	0.49	1.5	2.7	79	92	2.89	47	162
northern scarobin	73	22	0.43	1.3	2.34	72	92	3.57	50	153
silver perch	49	10	0.29	0.88	1.57	16	148	7.91	61	209
blue crab, adult female	33	13	0.19	0.59	1.06	.	127	2.08	106	159
Atlantic herring	27	4	0.16	0.48	0.87	.	66	1.51	45	77
northern pipefish	25	12	0.15	0.45	0.8	.	122	5.92	53	196
mantis shrimp	20	7	0.12	0.36	0.64	.	87	3.91	51	110
summer flounder	14	8	0.08	0.25	0.45	4	261	18.45	146	420
Atlantic menhaden	11	8	0.06	0.2	0.35	8	87	17.5	44	184
alewife	10	5	0.06	0.18	0.32	10	116	4.01	100	141
American eel	4	1	0.02	0.07	0.13	.	336	13.19	306	362
blueback herring	3	3	0.02	0.05	0.1	3	90	3.71	85	97
white shrimp	3	2	0.02	0.05	0.1	.	82	2.73	78	87
black seabass	2	2	0.01	0.04	0.06	2	147	24	123	171
striped bass	2	2	0.01	0.04	0.06	0	313	2	311	315
Atlantic thread herring	2	2	0.01	0.04	0.06	.	175	3	172	178
northern puffer	2	2	0.01	0.04	0.06	2	44	4.5	39	48
seaboard goby	2	2	0.01	0.04	0.06	.	39	3	36	42
feather blenny	2	2	0.01	0.04	0.06	.	46	20	26	66
Atlantic silverside	2	2	0.01	0.04	0.06	2	81	19	62	100
inshore lizardfish	2	2	0.01	0.04	0.06	2	93	9	84	102
smallmouth flounder	2	2	0.01	0.04	0.06	2	44	0.5	43	44
red drum	2	1	0.01	0.04	0.06	.	62	10	52	72
lined seahorse	2	1	0.01	0.04	0.06	.	88	6.5	81	94
American shad	1	1	0.01	0.02	0.03	1	163	.	163	163
winter flounder	1	1	0.01	0.02	0.03	.	33	.	33	33
Atlantic spadefish	1	1	0.01	0.02	0.03	.	180	.	180	180
naked goby	1	1	0.01	0.02	0.03	.	36	.	36	36
oyster toadfish	1	1	0.01	0.02	0.03	.	63	.	63	63
spider crab, 6 spine	1	1	0.01	0.02	0.03	.	.	.	.	.
roughneck shrimp	1	1	0.01	0.02	0.03	.	.	.	.	.
horseshoe crab	1	1	0.01	0.02	0.03	.	.	.	.	.
sand shrimp	.	37	.	.	.	.	306	.	306	306
mud crab spp	.	19	.	.	.	.	.	.	.	.
mysid shrimp	.	13	.	.	.	.	.	.	.	.
grass shrimp spp	.	12	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	8	.	.	.	.	.	.	.	.
worm spp	.	7	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	6	.	.	.	.	.	.	.	.
moon snail	.	5	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	4	.	.	.	.	.	.	.	.
glassy Lyonsia	.	4	.	.	.	.	.	.	.	.
Amphipod spp	.	4	.	.	.	.	.	.	.	.
drill & snail spp	.	4	.	.	.	.	.	.	.	.
transverse ark (clam)	.	3	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
leech spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	17,166									

Table 59-136.

Species composition, number caught, catch per trawl, and length statistics by **month and system** for the Chesapeake Bay and the tributary (James, York, and Rappahannock Rivers), and secondary water system (Pocomoke Sound, Mobjack Bay, Piankatank and Great Wicomico Rivers) surveys. The Elizabeth River was added in November and December as an extra monitoring project.

- 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. 'Number of Species' also includes only the species which were measured or counted and does not include those invertebrates which were processed as presence/absence.

NOTE: Invertebrate processing began in 1998. The programs used to calculate 'Number of Species' did not include presence/absence invertebrate species in the 1998 Summary Report and in this report. Future reports will show the number of fish species and invertebrate 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 systems for each month appear as follows:

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Table 59.

Month - January, 1999
 System - Chesapeake Bay
 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

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.										

Table 60.

Month - January, 1999
 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)
hogchoker	5,455	11	55.35	247.95		1,972	71	1.34	31	129
white perch	2,737	13	27.77	124.41	65.84	456	127	2.11	55	254
Atlantic croaker	759	18	7.70	34.50	18.26	738	66	0.93	27	127
bay anchovy	243	16	2.47	11.05		243	44	0.51	26	69
Atlantic silverside	160	4	1.62	7.27	3.85	160	101	2.22	55	123
blueback herring	75	8	0.76	3.41	1.80	75	71	0.83	57	94
white catfish	66	8	0.67	3.00	1.59	4	289	9.95	87	539
alewife	65	5	0.66	2.95	1.56	65	114	1.17	87	134
gizzard shad	64	8	0.65	2.91	1.54	35	193	9.21	107	367
striped bass	40	10	0.41	1.82	0.96	37	134	10.69	75	399
blue crab, male	32	11	0.32	1.45	0.77		49	5.36	14	123
blue crab, juvenile female	27	11	0.27	1.23	0.65		41	4.35	15	89
seaboard goby	20	3	0.20	0.91	0.48		36	0.93	29	45
American shad	20	2	0.20	0.91	0.48	20	111	3.08	90	142
threadfin shad	14	2	0.14	0.64	0.34		82	1.73	70	94
spotted hake	12	2	0.12	0.55	0.29	12	86	3.62	64	104
blackcheck tonguefish	10	5	0.10	0.45	0.24	9	74	6.61	55	120
Atlantic menhaden	7	3	0.07	0.32	0.17	0	135	6.83	108	155
feather blenny	7	1	0.07	0.32	0.17		54	5.89	38	84
northern pipefish	6	3	0.06	0.27	0.14		118	5.00	102	135
naked goby	6	3	0.06	0.27	0.14		36	2.96	29	49
common carp	5	1	0.05	0.23	0.12		503	69.10	292	725
American eel	4	4	0.04	0.18	0.10		281	35.72	185	347
spot	3	3	0.03	0.14	0.07	3	108	3.51	104	115
oyster toadfish	3	2	0.03	0.14	0.07		161	47.37	66	211
red hake	2	2	0.02	0.09	0.05		78	4.50	73	82
brown bullhead	2	2	0.02	0.09	0.05		156	3.00	153	159
spider crab, common	2	2	0.02	0.09	0.05					
blue crab, adult female	2	2	0.02	0.09	0.05					
summer flounder	1	1	0.01	0.05	0.02		138	2.50	135	140
channel catfish	1	1	0.01	0.05	0.02	1	29		29	29
skilletfish	1	1	0.01	0.05	0.02	0	511		511	511
Atlantic sturgeon	1	1	0.01	0.05	0.02		49		49	49
blue catfish	1	1	0.01	0.05	0.02	0	580		580	580
pink shrimp	1	1	0.01	0.05	0.02		251		251	251
brown shrimp	1	1	0.01	0.05	0.02		42		42	42
sand shrimp		13					121		121	121
grass shrimp spp		13								
mud crab spp		10								
right-hand hermit crab spp		4								
wedge rangia clam (Atlantic)		4								
blood ark/clam		3								
worm spp		2								
oyster, common		2								
flat-browed(coastal) mud		1								
moon snail		1								
soft-shell clam		1								
blue mussel		1								
purplish tagelus		1								
glassy Lyonsia		1								
macoma clam spp		1								
quahog clam		1								
All Species Combined	9,855									

Table 61.

Month - January, 1999

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)
white perch	1,688	11	47.50	76.73	81.59	375	116	1.35	48	217
bay anchovy	1,050	21	29.54	47.73	.	1,050	38	0.42	20	76
hogchoker	435	9	12.24	19.77	.	166	66	1.56	28	125
Atlantic croaker	98	14	2.76	4.45	4.74	90	52	2.62	18	154
gizzard shad	83	9	2.34	3.77	4.01	81	138	2.90	100	294
blue catfish	41	3	1.15	1.86	1.98	0	257	5.41	220	408
blueback herring	40	12	1.13	1.82	1.93	40	77	1.35	62	96
striped bass	27	7	0.76	1.23	1.30	26	116	12.17	70	401
blue crab, male	24	9	0.68	1.09	1.16	.	37	2.49	21	57
channel catfish	19	2	0.53	0.86	0.92	3	283	21.28	94	378
blue crab, juvenile female	16	8	0.45	0.73	0.77	.	34	2.12	18	47
naked goby	10	5	0.28	0.45	0.48	.	41	2.67	26	52
white catfish	9	4	0.25	0.41	0.43	0	278	9.49	228	320
mantis shrimp	3	1	0.08	0.14	0.14	.	75	2.91	70	80
alewife	2	2	0.06	0.09	0.10	2	98	2.00	96	100
blackcheek tonguefish	2	2	0.06	0.09	0.10	2	62	11.00	51	73
green goby	2	1	0.06	0.09	0.10	.	42	4.00	38	46
Atlantic herring	1	1	0.03	0.05	0.05	.	276	.	276	276
Atlantic menhaden	1	1	0.03	0.05	0.05	0	124	.	124	124
brown bullhead	1	1	0.03	0.05	0.05	.	238	.	238	238
feather blenny	1	1	0.03	0.05	0.05	.	56	.	56	56
blue crab, adult female	1	1	0.03	0.05	0.05	.	157	.	157	157
grass shrimp spp	.	10	.	.	.	.	.	.	.	.
mud crab spp	.	9	.	.	.	.	.	.	.	.
mysis shrimp	.	6	.	.	.	.	.	.	.	.
sand shrimp	.	5	.	.	.	.	.	.	.	.
quahog clam	.	3	.	.	.	.	.	.	.	.
bent mussel	.	3	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
drill & snail spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	3,554									

Table 62.

Month - January, 1999
 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	5,976	17	58.48	271.64		5,951	48	0.52	28	88
Atlantic croaker	2,269	18	22.20	103.14	56.18	2,239	58	0.89	19	201
white perch	1,270	10	12.43	57.73	31.44	159	139	2.15	67	265
hogchoker	204	16	2.00	9.27		23	85	1.41	32	145
striped bass	120	9	1.17	5.45	2.97	119	102	2.99	70	401
blackcheek tonguefish	86	9	0.84	3.91	2.13	83	67	1.83	42	147
blueback herring	72	9	0.70	3.27	1.78	72	76	0.67	63	93
Atlantic silverside	53	9	0.52	2.41	1.31	53	88	1.57	57	106
white catfish	50	3	0.49	2.27	1.24	13	217	13.95	74	375
blue crab, juvenile female	22	8	0.22	1.00	0.54		38		18	89
gizzard shad	18	9	0.18	0.82	0.45	5	263	23.83	115	419
blue crab, male	17	7	0.17	0.77	0.42		36	6.31	16	122
northern pipefish	8	5	0.08	0.36	0.20		114	6.88	87	144
red drum	6	3	0.06	0.27	0.15		73	7.77	51	97
mantis shrimp	6	2	0.06	0.27	0.15		61	6.16	40	83
spotted hake	5	1	0.05	0.23	0.12	5	88	5.81	71	103
naked goby	4	2	0.04	0.18	0.10		31	2.10	27	37
spottail shiner	4	1	0.04	0.18	0.10		72	0.85	70	74
white shrimp	3	3	0.03	0.14	0.07		113	12.74	92	136
alewife	3	2	0.03	0.14	0.07	3	104	2.19	101	108
channel catfish	3	1	0.03	0.14	0.07	0	234	49.39	135	287
sea lamprey	2	2	0.02	0.09	0.05		144	7.50	136	151
feather blenny	2	2	0.02	0.09	0.05		81	16.00	65	97
oyster toadfish	2	2	0.02	0.09	0.05		111	48.00	63	159
American shad	1	1	0.01	0.05	0.02	1	128		128	128
spot	1	1	0.01	0.05	0.02	1	136		136	136
black drum	1	1	0.01	0.05	0.02		227		227	227
Atlantic menhaden	1	1	0.01	0.05	0.02	0	101		101	101
winter flounder	1	1	0.01	0.05	0.02		347		347	347
tessellated darter	1	1	0.01	0.05	0.02		65		65	65
striped killifish	1	1	0.01	0.05	0.02		124		124	124
seaboard goby	1	1	0.01	0.05	0.02		34		34	34
skilletfish	1	1	0.01	0.05	0.02		45		45	45
spider crab, 6 spine	1	1	0.01	0.05	0.02					
spider crab, common	1	1	0.01	0.05	0.02					
channel (smooth) whelk	1	1	0.01	0.05	0.02					
jellyfish spp	1	1	0.01	0.05	0.02					
blue crab, adult female	1	1	0.01	0.05	0.02		141		141	141
sand shrimp		13								
mud crab spp		10								
grass shrimp spp		8								
quahog clam		5								
worm spp		4								
macoma clam spp		3								
blood ark/clam		3								
wedge rangia clam (Atlantic)		2								
Amphipod spp		2								
sea anenome spp (Anthozoa)		1								
blue mussel		1								
All Species Combined	10,219									

Table 63.

Month - January, 1999
 System - Piankatank River
 No. of Random Trawls Made - 4
 No. of Fixed Trawls Made - 3
 No. of Species - 8

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	22	3	56.41	3.14		22	40	0.99	34	34
skilletfish	5	2	12.82	0.71	38.46		53	3.44	46	62
hogchoker	4	1	10.26	0.57		4	34	2.71	26	38
Atlantic croaker	2	2	5.13	0.29	15.38	2	62	14.00	48	76
Atlantic silverside	2	2	5.13	0.29	15.38	2	90	13.00	77	103
blue crab, male	2	2	5.13	0.29	15.38		96	39.50	56	135
naked goby	1	1	2.56	0.14	7.69		45		45	45
blue crab, juvenile female	1	1	2.56	0.14	7.69		42		42	42
little (dwarf) surf clam	.	7	.	.	.	.	.	.	.	.
sand shrimp	.	2	.	.	.	.	.	.	.	.
mud crab spp	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
slipper shell spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	39									

Table 64.

Month - January, 1999
 System - Great Wicomico River
 No. of Random Trawls Made - 6
 No. of Fixed Trawls Made - 0
 No. of Species - 6

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)
skilletfish	2	2	28.57	0.33	33.33		30	3.00	27	33
Atlantic croaker	1	1	14.29	0.17	16.67	1	22		22	22
bay anchovy	1	1	14.29	0.17	16.67	1	40		40	40
feather blenny	1	1	14.29	0.17	16.67		46		46	46
blue crab, male	1	1	14.29	0.17	16.67		20		20	20
blue crab, juvenile female	1	1	14.29	0.17	16.67		26		26	26
little (dwarf) surf clam	.	6	.	.	.	.	.	.	.	.
grass shrimp spp	.	3	.	.	.	.	.	.	.	.
mud crab spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	7									

Table 65.

Month - January, 1999

System - All - Pooled

No. of Random Trawls Made - 51

No. of Fixed Trawls Made - 28

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	7,292	58	30.80	92.30	.	7,267	44	0.33	20	88
hogchoker	6,098	37	25.76	77.19	.	2,165	74	0.90	26	145
white perch	5,695	34	24.06	72.09	55.38	990	125	1.06	48	265
Atlantic croaker	3,129	53	13.22	39.61	30.43	3,070	60	0.66	18	201
Atlantic silverside	215	15	0.91	2.72	2.09	215	94	1.45	55	123
blueback herring	187	29	0.79	2.37	1.82	187	74	0.54	57	96
striped bass	187	26	0.79	2.37	1.82	182	111	3.36	70	401
gizzard shad	165	26	0.70	2.09	1.60	121	173	5.59	100	419
white catfish	125	15	0.53	1.58	1.22	17	259	8.26	74	539
blackcheek tonguefish	98	16	0.41	1.24	0.95	94	68	1.75	42	147
blue crab, male	76	30	0.32	0.96	0.74	.	43	3.16	14	135
alewife	70	9	0.30	0.89	0.68	70	113	1.16	87	134
blue crab, juvenile female	67	29	0.28	0.85	0.65	.	38	2.14	15	89
blue catfish	42	4	0.18	0.53	0.41	0	257	5.28	220	408
channel catfish	23	4	0.10	0.29	0.22	3	286	21.25	94	511
naked goby	21	11	0.09	0.27	0.20	.	38	1.74	26	52
seaboard goby	21	4	0.09	0.27	0.20	.	35	0.89	29	45
American shad	21	3	0.09	0.27	0.20	21	111	3.04	90	142
spotted hake	17	3	0.07	0.22	0.17	17	86	2.98	64	104
northern pipefish	14	8	0.06	0.18	0.14	.	116	4.35	87	144
threadfin shad	14	2	0.06	0.18	0.14	.	82	1.73	70	94
feather blenny	11	5	0.05	0.14	0.11	.	58	5.47	38	97
skilletfish	9	6	0.04	0.11	0.09	.	46	3.74	27	62
Atlantic menhaden	9	5	0.04	0.11	0.09	0	130	6.46	101	155
mantis shrimp	9	3	0.04	0.11	0.09	.	65	4.70	40	83
red drum	6	3	0.03	0.08	0.06	.	73	7.77	51	97
oyster toadfish	5	4	0.02	0.06	0.05	.	141	32.43	63	211
common carp	5	1	0.02	0.06	0.05	.	503	69.10	292	725
spot	4	4	0.02	0.05	0.04	4	115	7.43	104	136
American eel	4	4	0.02	0.05	0.04	.	281	35.72	185	347
blue crab, adult female	4	4	0.02	0.05	0.04	.	143	4.77	135	157
spottail shiner	4	1	0.02	0.05	0.04	.	72	0.85	70	74
brown bullhead	3	3	0.01	0.04	0.03	.	183	27.39	153	238
white shrimp	3	3	0.01	0.04	0.03	.	113	12.74	92	136
spider crab, common	3	3	0.01	0.04	0.03	.	.	.	.	.
red hake	2	2	0.01	0.03	0.02	.	78	4.50	73	82
sea lamprey	2	2	0.01	0.03	0.02	.	144	7.50	136	151
green goby	2	1	0.01	0.03	0.02	.	42	4.00	38	46
summer flounder	1	1	0.00	0.01	0.01	1	29	.	29	29
Atlantic herring	1	1	0.00	0.01	0.01	.	276	.	276	276
black drum	1	1	0.00	0.01	0.01	.	227	.	227	227
winter flounder	1	1	0.00	0.01	0.01	.	347	.	347	347
tessellated darter	1	1	0.00	0.01	0.01	.	65	.	65	65
striped killifish	1	1	0.00	0.01	0.01	.	124	.	124	124
Atlantic sturgeon	1	1	0.00	0.01	0.01	.	580	.	580	580
spider crab, 6 spine	1	1	0.00	0.01	0.01	.	.	.	.	.
pink shrimp	1	1	0.00	0.01	0.01	.	42	.	42	42
brown shrimp	1	1	0.00	0.01	0.01	.	121	.	121	121
channel (smooth) whelk	1	1	0.00	0.01	0.01	.	.	.	.	.
jellyfish spp	1	1	0.00	0.01	0.01	.	.	.	.	.
grass shrimp spp	.	34	.	.	.	.	.	.	.	.
sand shrimp	.	33	.	.	.	.	.	.	.	.
mud crab spp	.	31	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	13	.	.	.	.	.	.	.	.
quahog clam	.	10	.	.	.	.	.	.	.	.
mysid shrimp	.	6	.	.	.	.	.	.	.	.
worm spp	.	6	.	.	.	.	.	.	.	.
blood ark/clam	.	6	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	6	.	.	.	.	.	.	.	.
macoma clam spp	.	5	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	4	.	.	.	.	.	.	.	.
oyster, common	.	4	.	.	.	.	.	.	.	.
Amphipod spp	.	4	.	.	.	.	.	.	.	.
soft-shell clam	.	3	.	.	.	.	.	.	.	.
bent mussel	.	3	.	.	.	.	.	.	.	.
sea anemone spp (Anthozoa)	.	2	.	.	.	.	.	.	.	.
blue mussel	.	2	.	.	.	.	.	.	.	.
flat-browed(coastal) mud	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
purplish tagelus	.	1	.	.	.	.	.	.	.	.
glassy lyonsia	.	1	.	.	.	.	.	.	.	.
slipper shell spp	.	1	.	.	.	.	.	.	.	.
drill & snail spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	23,674									

Table 66.

Month - February, 1999

System - Chesapeake Bay

No. of Random Trawls Made - 39

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	7,020	26	86.62	180.00	.	6,851	52	0.52	31	85
spider crab, common	595	10	7.34	15.26	55.14	.	.	.	.	.
spotted hake	172	15	2.12	4.41	15.94	165	94	2.69	46	261
Atlantic croaker	120	11	1.48	3.08	11.12	34	240	11.24	27	383
northern pipefish	64	15	0.79	1.64	5.93	.	111	2.97	68	192
smallmouth flounder	37	5	0.46	0.95	3.43	37	80	1.67	55	101
blackcheek tonguefish	19	5	0.23	0.49	1.76	4	124	7.94	43	157
blue crab, adult female	15	8	0.19	0.38	1.39	.	137	4.26	115	163
rock crab	13	3	0.16	0.33	1.20	.	73	12.78	12	119
channel (smooth) whelk	8	8	0.10	0.21	0.74	.	.	.	.	.
Atlantic menhaden	6	4	0.07	0.15	0.56	5	87	45.93	33	316
hogchoker	5	2	0.06	0.13	.	5	36	2.33	31	43
blueback herring	4	4	0.05	0.10	0.37	3	92	15.82	68	137
lady crab	3	3	0.04	0.08	0.28	.	19	.	19	19
blue crab, juvenile female	3	3	0.04	0.08	0.28	.	63	16.90	31	88
squid spp	2	2	0.02	0.05	0.19	.	32	6.00	26	38
lined seahorse	2	2	0.02	0.05	0.19	.	49	2.00	47	51
Atlantic silverside	2	2	0.02	0.05	0.19	2	85	13.00	72	98
summer flounder	2	1	0.02	0.05	0.19	0	351	54.50	296	405
windowpane	2	1	0.02	0.05	0.19	2	58	5.50	52	63
horseshoe crab	2	1	0.02	0.05	0.19	.	161	4.00	157	165
red hake	1	1	0.01	0.03	0.09	.	139	.	139	139
Atlantic herring	1	1	0.01	0.03	0.09	.	234	.	234	234
northern searobin	1	1	0.01	0.03	0.09	1	82	.	82	82
feather blenny	1	1	0.01	0.03	0.09	.	44	.	44	44
skilletfish	1	1	0.01	0.03	0.09	.	27	.	27	27
clearnose skate	1	1	0.01	0.03	0.09	.	259	.	259	259
roughneck shrimp	1	1	0.01	0.03	0.09	.	.	.	.	.
mantis shrimp	1	1	0.01	0.03	0.09	.	93	.	93	93
sand shrimp	.	31	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	16	.	.	.	.	.	.	.	.
mud crab spp	.	8	.	.	.	.	.	.	.	.
mysid shrimp	.	8	.	.	.	.	.	.	.	.
moon snail	.	7	.	.	.	.	.	.	.	.
worm spp	.	4	.	.	.	.	.	.	.	.
drill & snail spp	.	4	.	.	.	.	.	.	.	.
sand dollar	.	3	.	.	.	.	.	.	.	.
quahog clam	.	3	.	.	.	.	.	.	.	.
slipper shell spp	.	2	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
glassy lyonsia	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	8,104									

Table 67.

Month - February, 1999

System - James River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

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	8,450	11	60.62	384.09	.	1,909	67	1.61	24	118
bay anchovy	2,805	21	20.12	127.50	.	2,787	54	0.58	31	84
white perch	1,400	14	10.04	63.64	52.16	677	100	1.27	47	227
blue catfish	283	7	2.03	12.86	10.54	15	240	2.70	87	354
spotted hake	180	5	1.29	8.18	6.71	180	95	1.85	67	122
blue crab, juvenile female	156	18	1.12	7.09	5.81	.	46	1.76	15	112
blue crab, male	155	15	1.11	7.05	5.77	.	57	2.58	9	165
Atlantic croaker	146	13	1.05	6.64	5.44	131	80	4.52	27	325
channel catfish	83	8	0.60	3.77	3.09	7	266	8.75	99	585
white catfish	56	8	0.40	2.55	2.09	1	214	5.52	87	358
gizzard shad	45	10	0.32	2.05	1.68	23	202	10.01	85	341
American eel	34	7	0.24	1.55	1.27	.	249	10.45	157	401
striped bass	32	12	0.23	1.45	1.19	25	159	14.83	70	377
blueback herring	26	5	0.19	1.18	0.97	25	86	4.34	73	193
alewife	19	4	0.14	0.86	0.71	19	129	2.34	103	143
blue crab, adult female	12	4	0.09	0.55	0.45	.	149	3.75	127	169
naked goby	9	3	0.06	0.41	0.34	.	41	2.80	31	57
American shad	9	2	0.06	0.41	0.34	9	131	4.67	117	163
northern pipefish	9	1	0.06	0.41	0.34	.	140	7.84	121	188
blackcheek tonguefish	7	3	0.05	0.32	0.26	7	69	3.61	58	84
spider crab, common	6	2	0.04	0.27	0.22	.	.	.	.	.
feather blenny	3	2	0.02	0.14	0.11	.	43	5.81	32	52
common carp	3	1	0.02	0.14	0.11	.	557	25.56	507	592
oyster toadfish	2	2	0.01	0.09	0.07	.	45	8.50	36	53
rock crab	2	2	0.01	0.09	0.07	.	21	2.00	19	23
pink shrimp	2	1	0.01	0.09	0.07	.	129	7.50	121	136
channel (smooth) whelk	2	1	0.01	0.09	0.07	.	.	.	.	.
summer flounder	1	1	0.01	0.05	0.04	1	201	.	201	201
skilletfish	1	1	0.01	0.05	0.04	.	51	.	51	51
Atlantic sturgeon	1	1	0.01	0.05	0.04	.	640	.	640	640
sand shrimp	.	11	.	.	.	.	.	.	.	.
mud crab spp	.	7	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	5	.	.	.	.	.	.	.	.
moon snail	.	3	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	2	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
glassy Lyonsia	.	1	.	.	.	.	.	.	.	.
commensal crab spp	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	13,939									

Table 68.

Month - February, 1999

System - Rappahannock River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

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	18,659	19	95.29	848.14	.	18,605	43	0.43	29	92
white perch	281	7	1.44	12.77	36.16	82	113	2.38	50	238
blue catfish	201	3	1.03	9.14	25.87	0	259	6.05	204	383
hogchoker	145	12	0.74	6.59	.	39	69	1.79	28	116
Atlantic croaker	59	14	0.30	2.68	7.59	57	52	3.47	16	209
alewife	52	7	0.27	2.36	6.69	52	113	0.95	98	130
gizzard shad	37	2	0.19	1.68	4.76	37	128	1.48	112	142
Atlantic menhaden	24	8	0.12	1.09	3.09	3	96	5.03	33	121
white catfish	23	4	0.12	1.05	2.96	0	289	9.72	203	440
striped bass	23	2	0.12	1.05	2.96	22	111	7.86	68	250
blueback herring	18	5	0.09	0.82	2.32	18	75	1.29	62	88
blue crab, juvenile female	13	8	0.07	0.59	1.67	.	43	1.84	33	55
blue crab, male	13	6	0.07	0.59	1.67	.	40	2.53	26	61
channel catfish	10	3	0.05	0.45	1.29	0	315	17.41	218	376
American shad	9	7	0.05	0.41	1.16	9	127	3.63	110	144
naked goby	5	4	0.03	0.23	0.64	.	36	1.83	29	39
blackcheek tonguefish	3	3	0.02	0.14	0.39	3	76	6.23	64	84
spotted hake	3	2	0.02	0.14	0.39	3	86	15.19	69	116
skilletfish	2	2	0.01	0.09	0.26	.	41	2.50	38	43
brown bullhead	1	1	0.01	0.05	0.13	.	190	.	190	190
little (dwarf) surf clam	.	10	.	.	.	.	.	.	.	.
sand shrimp	.	8	.	.	.	.	.	.	.	.
mysid shrimp	.	8	.	.	.	.	.	.	.	.
mud crab spp	.	5	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
macoma clam spp	.	2	.	.	.	.	.	.	.	.
drill & snail spp	.	2	.	.	.	.	.	.	.	.
grass shrimp spp	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	19,581									

Table 69.

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, 1999										
System - York River										
No. of Random Trawls Made - 13										
No. of Fixed Trawls Made - 9										
No. of Species - 26										
Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker										
bay anchovy	1,355	19	31.51	61.59	.	1,350	48	0.55	29	81
Atlantic croaker	1,106	18	25.72	50.27	46.79	1,081	53	1.15	20	220
white perch	868	13	20.19	39.45	36.72	110	143	1.93	60	248
hogchoker	581	16	13.51	26.41	.	52	83	1.20	34	140
blueback herring	115	2	2.67	5.23	4.86	115	74	0.60	66	88
blue crab, male	53	8	1.23	2.41	2.24	.	41	1.80	18	88
white catfish	49	5	1.14	2.23	2.07	11	198	15.19	66	462
blue crab, juvenile female	48	6	1.12	2.18	2.03	.	38	1.45	23	64
striped bass	45	9	1.05	2.05	1.90	41	126	8.87	80	444
blackcheek tonguefish	20	9	0.47	0.91	0.85	20	62	2.11	49	86
alewife	12	7	0.28	0.55	0.51	12	112	3.43	102	148
naked goby	8	4	0.19	0.36	0.34	.	34	3.01	24	46
jellyfish spp	8	3	0.19	0.36	0.34	.	.	.	.	.
sea lamprey	4	4	0.09	0.18	0.17	.	144	3.46	134	150
American shad	4	3	0.09	0.18	0.17	3	145	14.92	106	175
spotted hake	4	3	0.09	0.18	0.17	4	99	8.22	78	118
channel catfish	4	1	0.09	0.18	0.17	1	344	85.14	115	523
gizzard shad	3	3	0.07	0.14	0.13	1	278	71.06	137	362
Atlantic silverside	3	1	0.07	0.14	0.13	3	89	2.40	86	94
northern pipefish	2	2	0.05	0.09	0.08	.	95	9.00	86	104
Atlantic menhaden	2	1	0.05	0.09	0.08	0	107	19.00	88	126
tessellated darter	2	1	0.05	0.09	0.08	.	67	1.00	66	68
summer flounder	1	1	0.02	0.05	0.04	1	254	.	254	254
Atlantic herring	1	1	0.02	0.05	0.04	.	226	.	226	226
feather blenny	1	1	0.02	0.05	0.04	.	38	.	38	38
channel (smooth) whelk	1	1	0.02	0.05	0.04	.	.	.	.	.
sand shrimp	.	11	.	.	.	.	.	.	.	.
mysid shrimp	.	10	.	.	.	.	.	.	.	.
mud crab spp	.	7	.	.	.	.	.	.	.	.
grass shrimp spp	.	4	.	.	.	.	.	.	.	.
worm spp	.	3	.	.	.	.	.	.	.	.
Amphipod spp	.	3	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	2	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
All Species Combined	4,300									

Table 70.

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, 1999										
System - Mobjack Bay & Tribs.										
No. of Random Trawls Made - 10										
No. of Fixed Trawls Made - 7										
No. of Species - 9										
Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker										
bay anchovy	8	2	33.33	0.47	.	8	47	2.37	37	59
naked goby	5	2	20.83	0.29	31.25	.	39	1.30	35	43
Atlantic silverside	2	2	8.33	0.12	12.50	2	82	1.00	81	83
blue crab, male	2	2	8.33	0.12	12.50	.	25	8.00	17	33
Atlantic menhaden	2	1	8.33	0.12	12.50	2	35	0.00	35	35
feather blenny	2	1	8.33	0.12	12.50	.	44	1.00	43	45
blueback herring	1	1	4.17	0.06	6.25	1	81	.	81	81
green goby	1	1	4.17	0.06	6.25	.	49	.	49	49
skilletfish	1	1	4.17	0.06	6.25	.	31	.	31	31
sand shrimp	.	8	.	.	.	.	.	.	.	.
grass shrimp spp	.	5	.	.	.	.	.	.	.	.
mud crab spp	.	3	.	.	.	.	.	.	.	.
mysid shrimp	.	3	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	2	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
leech spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	24									

Table 71.

Month - February, 1999

System - All - Pooled

No. of Random Trawls Made - 90

No. of Fixed Trawls Made - 32

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	29,847	87	64.96	244.65	.	29,601	49	0.28	29	92
hogchoker	9,181	41	19.98	75.25	.	2,005	73	0.96	24	140
white perch	2,549	34	5.55	20.89	36.84	869	116	1.10	47	248
Atlantic croaker	1,431	56	3.11	11.73	20.68	1,303	92	3.55	16	383
spider crab, common	601	12	1.31	4.93	8.68	.	.	.	.	.
blue catfish	484	10	1.05	3.97	6.99	15	245	2.58	87	383
spotted hake	359	25	0.78	2.94	5.19	352	94	2.02	46	261
blue crab, male	223	31	0.49	1.83	3.22	.	52	1.92	9	165
blue crab, juvenile female	220	35	0.48	1.80	3.18	.	44	1.33	15	112
blueback herring	164	17	0.36	1.34	2.37	162	78	1.48	62	193
white catfish	128	17	0.28	1.05	1.85	12	221	7.10	66	462
striped bass	100	23	0.22	0.82	1.45	88	133	6.67	68	444
channel catfish	97	12	0.21	0.80	1.40	8	274	8.53	99	585
gizzard shad	85	15	0.18	0.70	1.23	61	173	7.26	85	362
alewife	83	18	0.18	0.68	1.20	83	117	1.20	98	148
northern pipefish	75	18	0.16	0.61	1.08	.	114	2.93	68	192
blackcheek tonguefish	49	20	0.11	0.40	0.71	34	88	5.22	43	157
smallmouth flounder	37	5	0.08	0.30	0.53	37	80	1.67	55	101
Atlantic menhaden	34	14	0.07	0.28	0.49	10	91	8.72	33	316
American eel	34	7	0.07	0.28	0.49	.	249	10.45	157	401
naked goby	27	13	0.06	0.22	0.39	.	38	1.44	24	57
blue crab, adult female	27	12	0.06	0.22	0.39	.	142	3.06	115	169
American shad	22	12	0.05	0.18	0.32	21	132	3.65	106	175
rock crab	15	5	0.03	0.12	0.22	.	66	11.97	12	119
channel (smooth) whelk	11	10	0.02	0.09	0.16	.	.	.	.	.
jellyfish spp	8	3	0.02	0.07	0.12	.	.	.	.	.
feather blenny	7	5	0.02	0.06	0.10	.	43	2.35	32	52
Atlantic silverside	7	5	0.02	0.06	0.10	7	86	3.24	72	98
skilletfish	5	5	0.01	0.04	0.07	.	38	4.27	27	51
sea lamprey	4	4	0.01	0.03	0.06	.	144	3.46	134	150
summer flounder	4	3	0.01	0.03	0.06	2	289	43.28	201	405
lady crab	3	3	0.01	0.02	0.04	.	19	.	19	19
common carp	3	1	0.01	0.02	0.04	.	557	25.56	507	592
squid spp	2	2	0.00	0.02	0.03	.	32	6.00	26	38
Atlantic herring	2	2	0.00	0.02	0.03	.	230	4.00	226	234
lined seahorse	2	2	0.00	0.02	0.03	.	49	2.00	47	51
oyster toadfish	2	2	0.00	0.02	0.03	.	45	8.50	36	53
windowpane	2	1	0.00	0.02	0.03	2	58	5.50	52	63
tessellated darter	2	1	0.00	0.02	0.03	.	67	1.00	66	68
pink shrimp	2	1	0.00	0.02	0.03	.	129	7.50	121	136
horseshoe crab	2	1	0.00	0.02	0.03	.	161	4.00	157	165
red hake	1	1	0.00	0.01	0.01	.	139	.	139	139
northern searobin	1	1	0.00	0.01	0.01	1	82	.	82	82
brown bullhead	1	1	0.00	0.01	0.01	.	190	.	190	190
green goby	1	1	0.00	0.01	0.01	.	49	.	49	49
clearnose skate	1	1	0.00	0.01	0.01	.	259	.	259	259
Atlantic sturgeon	1	1	0.00	0.01	0.01	.	640	.	640	640
roughneck shrimp	1	1	0.00	0.01	0.01	.	.	.	.	.
mantis shrimp	1	1	0.00	0.01	0.01	.	93	.	93	93
sand shrimp	.	69	.	.	.	.	.	.	.	.
mud crab spp	.	30	.	.	.	.	.	.	.	.
mysid shrimp	.	29	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	22	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	15	.	.	.	.	.	.	.	.
moon snail	.	11	.	.	.	.	.	.	.	.
grass shrimp spp	.	10	.	.	.	.	.	.	.	.
worm spp	.	10	.	.	.	.	.	.	.	.
drill & snail spp	.	6	.	.	.	.	.	.	.	.
quahog clam	.	4	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	4	.	.	.	.	.	.	.	.
Amphipod spp	.	4	.	.	.	.	.	.	.	.
sand dollar	.	3	.	.	.	.	.	.	.	.
oyster, common	.	3	.	.	.	.	.	.	.	.
glassy lyonsia	.	2	.	.	.	.	.	.	.	.
macoma clam spp	.	2	.	.	.	.	.	.	.	.
bent mussel	.	2	.	.	.	.	.	.	.	.
slipper shell spp	.	2	.	.	.	.	.	.	.	.
sea anemone spp (Anthozoa)	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
commensal crab spp	.	1	.	.	.	.	.	.	.	.
leech spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	45,948									

Table 72.

Month - March, 1999										
System - Chesapeake Bay										
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										
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.										

Table 73.

Month - March, 1999										
System - James River										
No. of Random Trawls Made - 14										
No. of Fixed Trawls Made - 8										
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	7,224	20	63.61	328.36	.	7,059	52	0.43	30	81
hogchoker	2,002	12	17.63	91.00	.	895	61	1.49	20	122
white perch	1,200	12	10.57	54.55	56.34	394	119	1.52	47	274
blue catfish	372	8	3.28	16.91	17.46	40	229	3.47	96	366
Atlantic croaker	195	11	1.72	8.86	9.15	174	75	5.52	22	377
blue crab, male	71	12	0.63	3.23	3.33	.	52	3.61	12	130
gizzard shad	67	8	0.59	3.05	3.15	47	171	7.10	103	317
blue crab, juvenile female	59	9	0.52	2.68	2.77	.	44	3.03	16	103
channel catfish	49	6	0.43	2.23	2.30	3	270	10.40	91	501
American eel	24	7	0.21	1.09	1.13	.	238	9.66	133	298
striped bass	21	8	0.18	0.95	0.99	20	151	13.55	71	393
white catfish	20	7	0.18	0.91	0.94	2	201	13.49	86	316
naked goby	7	3	0.06	0.32	0.33	.	41	2.34	30	49
Atlantic menhaden	6	3	0.05	0.27	0.28	1	119	17.05	45	171
blackcheek tonguefish	6	3	0.05	0.27	0.28	6	59	2.07	53	67
blue crab, adult female	6	3	0.05	0.27	0.28	.	138	6.86	121	165
brown bullhead	5	3	0.04	0.23	0.23	.	102	11.20	78	144
alewife	4	3	0.04	0.18	0.19	3	127	13.25	105	165
oyster toadfish	3	3	0.03	0.14	0.14	.	112	64.34	47	241
spotted hake	3	2	0.03	0.14	0.14	3	135	4.33	127	142
spot	3	1	0.03	0.14	0.14	0	113	1.67	110	115
American shad	2	1	0.02	0.09	0.09	2	131	12.00	119	143
feather blenny	2	1	0.02	0.09	0.09	.	49	11.50	37	60
blueback herring	1	1	0.01	0.05	0.05	1	76	.	76	76
tessellated darter	1	1	0.01	0.05	0.05	.	100	.	100	100
skilletfish	1	1	0.01	0.05	0.05	.	45	.	45	45
smallmouth flounder	1	1	0.01	0.05	0.05	1	95	.	95	95
channel (smooth) whelk	1	1	0.01	0.05	0.05	.	.	.	.	.
mud crab spp	.	11	.	.	.	.	.	.	.	.
sand shrimp	.	7	.	.	.	.	.	.	.	.
grass shrimp spp	.	6	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	5	.	.	.	.	.	.	.	.
Amphipod spp	.	5	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	4	.	.	.	.	.	.	.	.
mysis shrimp	.	3	.	.	.	.	.	.	.	.
drill & snail spp	.	3	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	11,356									

Table 74.

Month - March, 1999

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	1,792	20	38.82	81.45		1,771	47	0.57	28	88
blue catfish	690	4	14.95	31.36	30.50	3	232	1.97	159	361
white perch	681	14	14.75	30.95	30.11	81	134	1.67	55	243
hogchoker	562	13	12.18	25.55		152	69	0.96	18	119
alewife	346	11	7.50	15.73	15.30	346	121	1.01	94	146
blueback herring	107	6	2.32	4.86	4.73	107	88	0.75	73	103
channel catfish	99	3	2.14	4.50	4.38	0	296	5.94	204	501
white catfish	73	6	1.58	3.32	3.23	0	236	9.02	145	444
striped bass	59	9	1.28	2.68	2.61	43	168	12.53	71	433
Atlantic croaker	56	9	1.21	2.55	2.48	53	49	4.87	19	221
Atlantic menhaden	26	6	0.56	1.18	1.15	1	113	3.87	39	151
blue crab, juvenile female	20	9	0.43	0.91	0.88	.	36	2.37	16	53
American shad	20	6	0.43	0.91	0.88	20	139	2.74	121	160
gizzard shad	18	3	0.39	0.82	0.80	18	135	5.14	105	172
spotted hake	14	7	0.30	0.64	0.62	14	99	6.80	46	132
blue crab, male	14	6	0.30	0.64	0.62	.	37	4.96	16	74
blackcheek tonguefish	12	7	0.26	0.55	0.53	12	64	2.96	47	80
naked goby	7	4	0.15	0.32	0.31	.	38	2.36	30	47
skilletfish	5	4	0.11	0.23	0.22	.	47	3.08	37	54
feather blenny	4	1	0.09	0.18	0.18	.	48	3.10	39	53
brown bullhead	2	2	0.04	0.09	0.09	.	255	.	255	255
Atlantic silverside	2	1	0.04	0.09	0.09	2	95	6.00	89	101
threadfin shad	2	1	0.04	0.09	0.09	.	113	11.50	101	124
mantis shrimp	2	1	0.04	0.09	0.09	.	69	3.00	66	72
northern pipefish	1	1	0.02	0.05	0.04	.	181	.	181	181
green goby	1	1	0.02	0.05	0.04	.	45	.	45	45
seaboard goby	1	1	0.02	0.05	0.04	.	19	.	19	19
mysid shrimp	.	6	.	.	.	.	.	.	.	.
mud crab spp	.	5	.	.	.	.	.	.	.	.
grass shrimp spp	.	4	.	.	.	.	.	.	.	.
jellyfish spp	.	4	.	.	.	.	.	.	.	.
sand shrimp	.	3	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	3	.	.	.	.	.	.	.	.
glassy lyonsia	.	2	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	2	.	.	.	.	.	.	.	.
bent mussel	.	2	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
leech spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	4,616									

Table 75.

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, 1999										
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										
bay anchovy	3,908	18	66.52	177.64	.	3,899	47	0.50	29	87
hogchoker	762	14	12.97	34.64	.	83	83	0.94	29	151
white perch	448	15	7.63	20.36	37.18	51	141	2.12	67	259
Atlantic croaker	317	16	5.40	14.41	26.31	306	61	1.46	21	124
blue crab, male	101	10	1.72	4.59	8.38	.	54	3.17	13	145
blue crab, juvenile female	94	8	1.60	4.27	7.80	.	47	2.03	17	112
blackcheek tonguefish	80	10	1.36	3.64	6.64	80	64	0.93	47	80
white catfish	50	6	0.85	2.27	4.15	9	230	13.91	63	425
spotted hake	35	8	0.60	1.59	2.90	35	102	4.51	44	151
striped bass	26	8	0.44	1.18	2.16	25	122	11.49	86	395
gizzard shad	9	5	0.15	0.41	0.75	0	314	10.02	257	348
Atlantic menhaden	8	8	0.14	0.36	0.66	1	102	8.57	44	122
alewife	8	6	0.14	0.36	0.66	8	119	2.27	112	129
blueback herring	7	6	0.12	0.32	0.58	6	92	13.61	73	173
American eel	4	4	0.07	0.18	0.33	.	296	52.76	156	411
Atlantic silverside	4	3	0.07	0.18	0.33	4	106	2.21	102	111
naked goby	3	2	0.05	0.14	0.25	.	39	2.33	35	43
skilletfish	2	2	0.03	0.09	0.17	.	62	5.50	56	67
oyster toadfish	2	2	0.03	0.09	0.17	.	172	109.00	63	281
American shad	2	1	0.03	0.09	0.17	2	133	4.50	128	137
spottail shiner	2	1	0.03	0.09	0.17	.	75	2.00	73	77
northern searobin	1	1	0.02	0.05	0.08	1	65	.	65	65
channel (smooth) whelk	1	1	0.02	0.05	0.08	.	.	.	.	.
blue crab, adult female	1	1	0.02	0.05	0.08	.	132	.	132	132
macoma clam spp	.	9	.	.	.	.	.	.	.	.
mud crab spp	.	6	.	.	.	.	.	.	.	.
sand shrimp	.	6	.	.	.	.	.	.	.	.
mysid shrimp	.	5	.	.	.	.	.	.	.	.
worm spp	.	4	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	4	.	.	.	.	.	.	.	.
jellyfish spp	.	4	.	.	.	.	.	.	.	.
grass shrimp spp	.	3	.	.	.	.	.	.	.	.
river shrimp	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	5,875									

Table 76.

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, 1999										
System - Pocomoke Sound										
No. of Random Trawls Made - 11										
No. of Fixed Trawls Made - 3										
No. of Species - 19										
Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker										
bay anchovy	1,185	13	81.67	84.64	.	1,185	52	0.69	32	77
spotted hake	114	7	7.86	8.14	43.02	114	106	1.67	53	155
blue crab, juvenile female	73	6	5.03	5.21	27.55	.	25	1.47	10	69
blue crab, male	19	4	1.31	1.36	7.17	.	38	5.45	16	104
blackcheek tonguefish	17	4	1.17	1.21	6.42	17	60	1.75	47	75
mantis shrimp	9	4	0.62	0.64	3.40	.	78	6.94	51	106
Atlantic menhaden	7	5	0.48	0.50	2.64	6	47	0.94	44	51
alewife	6	3	0.41	0.43	2.26	6	121	5.29	105	141
northern pipefish	5	3	0.34	0.36	1.89	.	108	8.74	82	123
blueback herring	3	3	0.21	0.21	1.13	3	90	3.71	85	97
northern searobin	3	3	0.21	0.21	1.13	3	67	3.18	61	72
Atlantic croaker	2	2	0.14	0.14	0.75	2	55	6.00	49	61
blue crab, adult female	2	1	0.14	0.14	0.75	.	139	20.00	119	159
summer flounder	1	1	0.07	0.07	0.38	0	302	.	302	302
American shad	1	1	0.07	0.07	0.38	1	163	.	163	163
striped bass	1	1	0.07	0.07	0.38	0	315	.	315	315
hogchoker	1	1	0.07	0.07	0.38	0	102	.	102	102
oyster toadfish	1	1	0.07	0.07	0.38	.	63	.	63	63
horseshoe crab	1	1	0.07	0.07	0.38	.	306	.	306	306
sand shrimp	.	12	.	.	.	.	.	.	.	.
jellyfish spp	.	11	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	4	.	.	.	.	.	.	.	.
mud crab spp	.	3	.	.	.	.	.	.	.	.
mysid shrimp	.	3	.	.	.	.	.	.	.	.
glassy lyonsia	.	3	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	3	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	1,451									

Table 77.

Month - March, 1999

System - All - Pooled

No. of Random Trawls Made - 52

No. of Fixed Trawls Made - 28

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	14,109	71	60.56	176.36	.	13,914	50	0.27	28	88
hogchoker	3,327	40	14.28	41.59	.	1,130	72	0.71	18	151
white perch	2,329	41	10.00	29.11	39.73	526	129	1.02	47	274
blue catfish	1,062	12	4.56	13.28	18.12	43	231	1.91	96	366
Atlantic croaker	570	38	2.45	7.13	9.72	535	65	2.43	19	377
alewife	364	23	1.56	4.55	6.21	363	121	1.01	94	165
blue crab, juvenile female	246	32	1.06	3.08	4.20	.	39	1.31	10	112
blue crab, male	205	32	0.88	2.56	3.50	.	51	2.12	12	145
spotted hake	166	24	0.71	2.08	2.83	166	105	1.62	44	155
channel catfish	148	9	0.64	1.85	2.52	3	285	5.76	91	501
white catfish	143	19	0.61	1.79	2.44	11	228	7.26	63	444
blueback herring	118	16	0.51	1.48	2.01	117	88	1.37	73	173
blackcheek tonguefish	115	24	0.49	1.44	1.96	115	63	0.78	47	80
striped bass	107	26	0.46	1.34	1.83	88	155	8.20	71	433
gizzard shad	94	16	0.40	1.18	1.60	65	178	7.11	103	348
Atlantic menhaden	47	22	0.20	0.59	0.80	9	102	4.76	59	171
American eel	28	11	0.12	0.35	0.48	.	246	11.27	133	411
American shad	25	9	0.11	0.31	0.43	25	139	2.57	119	163
naked goby	17	9	0.07	0.21	0.29	.	40	1.38	30	49
mantis shrimp	11	5	0.05	0.14	0.19	.	76	5.73	51	106
blue crab, adult female	9	5	0.04	0.11	0.15	.	138	5.59	119	165
skilletfish	8	7	0.03	0.10	0.14	.	50	3.23	37	67
brown bullhead	7	5	0.03	0.09	0.12	.	128	27.06	78	255
oyster toadfish	6	6	0.03	0.08	0.10	.	124	43.72	47	281
northern pipefish	6	4	0.03	0.08	0.10	.	120	14.16	82	181
Atlantic silverside	6	4	0.03	0.08	0.10	6	103	3.16	89	111
feather blenny	6	2	0.03	0.08	0.10	.	48	3.56	37	60
northern searobin	4	4	0.02	0.05	0.07	4	66	2.29	61	72
spot	3	1	0.01	0.04	0.05	0	113	1.67	110	115
channel (smooth) whelk	2	2	0.01	0.03	0.03	.	.	.	.	.
spottail shiner	2	1	0.01	0.03	0.03	.	75	2.00	73	77
threadfin shad	2	1	0.01	0.03	0.03	.	113	11.50	101	124
summer flounder	1	1	0.00	0.01	0.02	0	302	.	302	302
tessellated darter	1	1	0.00	0.01	0.02	.	100	.	100	100
green goby	1	1	0.00	0.01	0.02	.	45	.	45	45
seaboard goby	1	1	0.00	0.01	0.02	.	19	.	19	19
smallmouth flounder	1	1	0.00	0.01	0.02	1	95	.	95	95
horseshoe crab	1	1	0.00	0.01	0.02	.	306	.	306	306
sand shrimp	.	28	.	.	.	.	.	.	.	.
mud crab spp	.	25	.	.	.	.	.	.	.	.
jellyfish spp	.	19	.	.	.	.	.	.	.	.
mysid shrimp	.	17	.	.	.	.	.	.	.	.
grass shrimp spp	.	13	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	11	.	.	.	.	.	.	.	.
macoma clam spp	.	10	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	9	.	.	.	.	.	.	.	.
worm spp	.	7	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	7	.	.	.	.	.	.	.	.
Amphipod spp	.	6	.	.	.	.	.	.	.	.
glassy Lyonsia	.	5	.	.	.	.	.	.	.	.
bent mussel	.	4	.	.	.	.	.	.	.	.
oyster, common	.	3	.	.	.	.	.	.	.	.
drill & snail spp	.	3	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
river shrimp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
leech spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	23,298									

Table 78.

Month - April, 1999
 System - Chesapeake Bay
 No. of Random Trawls Made - 39
 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	1,636	21	52.76	41.95		1,629	59	0.64	26	85
Atlantic herring	927	17	29.90	23.77	63.85		50	0.85	33	182
blueback herring	131	1	4.22	3.36	9.02	131	84	0.64	71	97
northern searobin	79	18	2.55	2.03	5.44	79	58	1.39	42	100
Atlantic croaker	60	5	1.93	1.54	4.13	0	244	3.59	185	338
spotted hake	47	14	1.52	1.21	3.24	46	102	6.44	40	241
jellyfish spp	38	8	1.22	0.97	2.60					
blackcheek tonguefish	25	2	0.81	0.64	1.72	6	126	5.32	58	160
blue crab, juvenile female	24	10	0.77	0.62	1.65		38	4.87	12	109
blue crab, male	15	9	0.48	0.38	1.03		53	9.37	14	150
summer flounder	13	10	0.42	0.33	0.90	0	322	21.36	215	467
blue crab, adult female	13	10	0.42	0.33	0.90		143	2.78	124	160
lady crab	13	6	0.42	0.33	0.90					
hogchoker	13	2	0.42	0.33		0	113	3.33	100	138
spider crab, common	12	7	0.39	0.31	0.83					
northern pipefish	11	10	0.35	0.28	0.76		149	7.19	110	196
black seabass	10	7	0.32	0.26	0.69	10	55	2.44	43	68
smallmouth flounder	7	3	0.23	0.18	0.48	7	78	6.15	57	102
channel (smooth) whelk	6	4	0.19	0.15	0.41					
mantis shrimp	3	3	0.10	0.08	0.21					
spot	3	2	0.10	0.08	0.21	0	168	8.69	151	178
oyster toadfish	2	2	0.06	0.05	0.14		282	21.50	260	303
clearnose skate	2	2	0.06	0.05	0.14		347	74.50	272	421
spider crab, 6 spine	2	2	0.06	0.05	0.14					
horseshoe crab	2	2	0.06	0.05	0.14		222	62.00	160	284
hickory shad	1	1	0.03	0.03	0.07		203		203	203
American shad	1	1	0.03	0.03	0.07	1	123		123	123
Atlantic menhaden	1	1	0.03	0.03	0.07	0	190		190	190
banded drum	1	1	0.03	0.03	0.07		153		153	153
roughneck shrimp	1	1	0.03	0.03	0.07					
rock crab	1	1	0.03	0.03	0.07		18		18	18
knobbed whelk	1	1	0.03	0.03	0.07					
sand shrimp		32								
mud crab spp		13								
mysis shrimp		12								
right-hand hermit crab spp		11								
Amphipod spp		11								
grass shrimp spp		10								
worm spp		7								
moon snail		6								
sand dollar		3								
little (dwarf) surf clam		2								
leech spp		2								
blood ark/clam		1								
All Species Combined	3,101									

Table 79.

Month - April, 1999

System - James River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

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)
bay anchovy	5,050	21	50.79	229.55	.	5,007	54	0.50	26	89
hogchoker	2,648	14	26.63	120.36	.	618	67	1.25	18	135
white perch	706	14	7.10	32.09	31.45	437	101	2.12	58	243
blue catfish	378	10	3.80	17.18	16.84	69	203	2.94	91	358
Atlantic croaker	269	20	2.71	12.23	11.98	144	144	6.02	23	373
blue crab, male	211	16	2.12	9.59	9.40	.	71	2.36	12	175
blue crab, juvenile female	175	13	1.76	7.95	7.80	.	58	1.92	13	128
spotted hake	95	8	0.96	4.32	4.23	90	159	3.70	90	329
summer flounder	59	11	0.59	2.68	2.63	0	273	3.61	204	365
American eel	59	9	0.59	2.68	2.63	.	224	5.69	157	326
blackcheek tonguefish	47	7	0.47	2.14	2.09	20	115	5.73	51	172
gizzard shad	43	6	0.43	1.95	1.92	0	194	11.15	104	362
channel catfish	36	6	0.36	1.64	1.60	1	251	8.77	98	374
striped bass	25	3	0.25	1.14	1.11	24	127	6.68	86	201
blue crab, adult female	24	9	0.24	1.09	1.07	.	143	2.00	126	166
white catfish	24	6	0.24	1.09	1.07	1	190	11.37	106	297
oyster toadfish	15	7	0.15	0.68	0.67	.	240	11.63	155	339
northern searobin	13	2	0.13	0.59	0.58	13	46	4.80	28	90
naked goby	13	2	0.13	0.59	0.58	.	39	1.48	34	45
channel (smooth) whelk	6	3	0.06	0.27	0.27	.	.	.	.	.
spider crab, common	5	3	0.05	0.23	0.22	.	.	.	.	.
smallmouth flounder	5	2	0.05	0.23	0.22	5	68	3.91	55	75
spot	4	4	0.04	0.18	0.18	0	171	9.51	143	185
black seabass	4	3	0.04	0.18	0.18	4	51	1.94	47	56
northern pipefish	4	2	0.04	0.18	0.18	.	130	18.31	104	184
rock crab	4	1	0.04	0.18	0.18	.	33	4.57	23	45
common carp	3	1	0.03	0.14	0.13	.	575	7.51	567	590
spottail shiner	2	2	0.02	0.09	0.09	.	99	1.00	98	100
horseshoe crab	2	2	0.02	0.09	0.09	.	237	22.50	214	259
blue crab, sex unknown	2	1	0.02	0.09	0.09	.	83	23.50	59	106
alewife	1	1	0.01	0.05	0.04	1	113	.	113	113
Atlantic herring	1	1	0.01	0.05	0.04	.	46	.	46	46
Atlantic menhaden	1	1	0.01	0.05	0.04	0	201	.	201	201
tautog	1	1	0.01	0.05	0.04	.	320	.	320	320
windowpane	1	1	0.01	0.05	0.04	1	87	.	87	87
lined seahorse	1	1	0.01	0.05	0.04	.	61	.	61	61
seaboard goby	1	1	0.01	0.05	0.04	.	31	.	31	31
feather blenny	1	1	0.01	0.05	0.04	.	94	.	94	94
skilletfish	1	1	0.01	0.05	0.04	.	52	.	52	52
roughneck shrimp	1	1	0.01	0.05	0.04	.	.	.	.	.
pink shrimp	1	1	0.01	0.05	0.04	.	90	.	90	90
mantis shrimp	1	1	0.01	0.05	0.04	.	91	.	91	91
grass shrimp spp	.	13	.	.	.	.	.	.	.	.
mud crab spp	.	12	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	11	.	.	.	.	.	.	.	.
Amphipod spp	.	9	.	.	.	.	.	.	.	.
sand shrimp	.	5	.	.	.	.	.	.	.	.
leech spp	.	5	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	4	.	.	.	.	.	.	.	.
worm spp	.	4	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
soft-shell clam	.	3	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	3	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
quahog clam	.	2	.	.	.	.	.	.	.	.
mysis shrimp	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	9,943									

Table 80.

Month - April, 1999

System - Rappahannock River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

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	1,451	17	34.35	65.95	.	159	86	0.88	52	160
bay anchovy	892	17	21.12	40.55	.	883	52	0.68	29	85
blue catfish	661	5	15.65	30.05	35.14	22	246	2.58	153	333
Atlantic croaker	294	16	6.96	13.36	15.63	8	255	3.47	38	400
blue crab, male	255	19	6.04	11.59	13.56	.	51	1.70	7	171
blue crab, juvenile female	239	19	5.66	10.86	12.71	.	46	1.10	7	116
white perch	130	12	3.08	5.91	6.91	4	165	2.85	78	247
white catfish	68	9	1.61	3.09	3.62	0	260	6.69	172	366
American eel	57	12	1.35	2.59	3.03	.	281	5.16	156	331
Atlantic herring	45	6	1.07	2.05	2.39	.	49	0.60	42	64
spotted hake	33	14	0.78	1.50	1.75	33	97	5.49	46	146
jellyfish spp	23	10	0.54	1.04	1.21	.	.	.	.	.
summer flounder	17	6	0.40	0.77	0.90	0	309	15.79	180	403
blackcheek tonguefish	13	9	0.31	0.59	0.69	12	70	8.07	43	160
spot	9	2	0.21	0.41	0.48	0	195	7.02	164	229
northern searobin	6	5	0.14	0.27	0.32	6	58	2.57	46	64
Atlantic menhaden	5	5	0.12	0.23	0.27	1	181	43.20	47	319
blue crab, sex unknown	4	2	0.09	0.18	0.21	.	10	1.87	5	14
channel catfish	4	1	0.09	0.18	0.21	0	289	9.23	272	312
blue crab, adult female	3	3	0.07	0.14	0.16	.	149	8.19	136	164
blueback herring	3	2	0.07	0.14	0.16	0	236	13.50	209	250
naked goby	3	2	0.07	0.14	0.16	.	44	8.08	28	54
weakfish	2	2	0.05	0.09	0.11	0	329	7.00	322	336
black seabass	1	1	0.02	0.05	0.05	1	43	.	43	43
alewife	1	1	0.02	0.05	0.05	0	216	.	216	216
American shad	1	1	0.02	0.05	0.05	1	126	.	126	126
striped bass	1	1	0.02	0.05	0.05	0	303	.	303	303
northern pipefish	1	1	0.02	0.05	0.05	.	122	.	122	122
oyster toadfish	1	1	0.02	0.05	0.05	.	208	.	208	208
northern stargazer	1	1	0.02	0.05	0.05	.	185	.	185	185
little (dwarf) surf clam	.	15	.	.	.	.	.	.	.	.
mysid shrimp	.	12	.	.	.	.	.	.	.	.
leech spp	.	9	.	.	.	.	.	.	.	.
mud crab spp	.	8	.	.	.	.	.	.	.	.
grass shrimp spp	.	5	.	.	.	.	.	.	.	.
Amphipod spp	.	4	.	.	.	.	.	.	.	.
bent mussel	.	4	.	.	.	.	.	.	.	.
sand shrimp	.	3	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
soft-shell clam	.	2	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
drill & snail spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	4,224									

Table 81.

Month - April, 1999

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)
bay anchovy	9,119	20	65.77	414.50	.	9,085	53	0.66	30	89
hogchoker	2,410	17	17.38	109.55	.	403	84	1.00	35	169
Atlantic croaker	636	20	4.59	28.91	27.23	444	151	5.87	16	395
blue crab, male	495	17	3.57	22.50	21.19	.	54	1.37	16	173
blue crab, juvenile female	473	19	3.41	21.50	20.25	.	48	0.96	13	105
white perch	210	9	1.51	9.55	8.99	13	166	2.62	72	269
white catfish	193	14	1.39	8.77	8.26	59	185	7.80	49	429
spotted hake	99	10	0.71	4.50	4.24	99	127	3.22	48	184
blackcheek tonguefish	83	15	0.60	3.77	3.55	78	71	2.27	44	148
channel catfish	21	1	0.15	0.95	0.90	1	392	21.97	118	546
naked goby	20	3	0.14	0.91	0.86	.	36	2.02	19	51
American shad	17	3	0.12	0.77	0.73	17	132	3.88	109	160
northern searobin	14	8	0.10	0.64	0.60	14	61	2.25	50	74
alewife	14	3	0.10	0.64	0.60	14	115	2.06	103	130
oyster toadfish	13	8	0.09	0.59	0.56	.	192	23.59	53	320
American eel	11	6	0.08	0.50	0.47	.	324	22.98	249	464
blue crab, adult female	9	3	0.06	0.41	0.39	.	140	4.52	130	157
striped bass	7	3	0.05	0.32	0.30	7	98	6.03	77	128
summer flounder	6	2	0.04	0.27	0.26	0	259	11.24	211	285
gizzard shad	4	1	0.03	0.18	0.17	0	264	19.54	229	318
channel (smooth) whelk	3	3	0.02	0.14	0.13	.	.	.	.	.
blueback herring	2	2	0.01	0.09	0.09	0	174	24.50	149	198
Atlantic menhaden	2	2	0.01	0.09	0.09	0	262	72.50	189	334
weakfish	1	1	0.01	0.05	0.04	0	266	.	266	266
longnose gar	1	1	0.01	0.05	0.04	.	804	.	804	804
spottail shiner	1	1	0.01	0.05	0.04	.	90	.	90	90
blue catfish	1	1	0.01	0.05	0.04	0	417	.	417	417
mud crab spp	.	15	.	.	.	.	.	.	.	.
Amphipod spp	.	12	.	.	.	.	.	.	.	.
mysid shrimp	.	11	.	.	.	.	.	.	.	.
grass shrimp spp	.	8	.	.	.	.	.	.	.	.
soft-shell clam	.	8	.	.	.	.	.	.	.	.
worm spp	.	7	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	6	.	.	.	.	.	.	.	.
jellyfish spp	.	5	.	.	.	.	.	.	.	.
sand shrimp	.	3	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
bent mussel	.	2	.	.	.	.	.	.	.	.
flat-browed(coastal) mud	.	1	.	.	.	.	.	.	.	.
spider crab, 6 spine	.	1	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	1	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
blood ark/clam	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	13,865									

Table 82.

Month - April, 1999
 System - Mobjack Bay & Tribs.
 No. of Random Trawls Made - 10
 No. of Fixed Trawls Made - 7
 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	519	13	43.76	30.53	.	515	55	0.71	32	83
Atlantic herring	427	12	36.00	25.12	64.11	.	45	0.31	29	63
blue crab, male	84	13	7.08	4.94	12.61	.	72	3.69	11	131
blue crab, juvenile female	50	13	4.22	2.94	7.51	.	44	3.41	17	109
Atlantic croaker	46	9	3.88	2.71	6.91	3	248	11.41	24	374
summer flounder	9	5	0.76	0.53	1.35	0	347	25.62	259	477
striped bass	8	3	0.67	0.47	1.20	8	117	5.37	94	138
blue crab, adult female	7	4	0.59	0.41	1.05	.	130	3.41	114	143
alewife	7	1	0.59	0.41	1.05	7	120	2.68	108	129
naked goby	6	2	0.51	0.35	0.90	.	40	3.45	30	52
Atlantic menhaden	5	1	0.42	0.29	0.75	5	30	1.61	25	35
spotted hake	3	3	0.25	0.18	0.45	3	84	29.20	52	142
spider crab, common	3	2	0.25	0.18	0.45	.	.	.	.	.
northern searobin	2	1	0.17	0.12	0.30	2	63	4.00	59	67
spot	1	1	0.08	0.06	0.15	0	243	.	243	243
American eel	1	1	0.08	0.06	0.15	.	480	.	480	480
northern pipefish	1	1	0.08	0.06	0.15	.	97	.	97	97
striped blenny	1	1	0.08	0.06	0.15	.	78	.	78	78
feather blenny	1	1	0.08	0.06	0.15	.	38	.	38	38
hogchoker	1	1	0.08	0.06	.	0	115	.	115	115
skilletfish	1	1	0.08	0.06	0.15	.	54	.	54	54
oyster toadfish	1	1	0.08	0.06	0.15	.	160	.	160	160
spider crab, 6 spine	1	1	0.08	0.06	0.15	.	.	.	.	.
channel (smooth) whelk	1	1	0.08	0.06	0.15	.	.	.	.	.
sand shrimp	.	15	.	.	.	.	.	.	.	.
Amphipod spp	.	15	.	.	.	.	.	.	.	.
grass shrimp spp	.	11	.	.	.	.	.	.	.	.
mysid shrimp	.	9	.	.	.	.	.	.	.	.
mud crab spp	.	8	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	7	.	.	.	.	.	.	.	.
jellyfish spp	.	6	.	.	.	.	.	.	.	.
worm spp	.	5	.	.	.	.	.	.	.	.
drill & snail spp	.	5	.	.	.	.	.	.	.	.
soft-shell clam	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	1,186									

Table 83.

Month - April, 1999

System - All - Pooled

No. of Random Trawls Made - 90

No. of Fixed Trawls Made - 32

No. of Species - 55

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	17,216	92	53.27	141.11	.	17,119	55	0.29	26	89
hogchoker	6,523	51	20.18	53.47	.	1,180	80	0.65	18	169
Atlantic herring	1,400	36	4.33	11.48	16.32	.	47	0.37	29	182
Atlantic croaker	1,305	70	4.04	10.70	15.21	599	187	3.32	16	400
blue crab, male	1,060	74	3.28	8.69	12.35	.	59	1.03	7	175
white perch	1,046	35	3.24	8.57	12.19	454	135	1.91	58	269
blue catfish	1,040	16	3.22	8.52	12.12	91	221	2.38	91	417
blue crab, juvenile female	961	74	2.97	7.88	11.20	.	49	0.74	7	128
white catfish	285	29	0.88	2.34	3.32	60	202	5.96	49	429
spotted hake	277	49	0.86	2.27	3.23	271	130	2.58	40	329
blackcheek tonguefish	168	33	0.52	1.38	1.96	116	91	2.85	43	172
blueback herring	136	5	0.42	1.11	1.59	131	93	4.10	71	250
American eel	128	28	0.40	1.05	1.49	.	260	5.26	156	480
northern searobin	114	34	0.35	0.93	1.33	114	57	1.20	28	100
summer flounder	104	34	0.32	0.85	1.21	0	291	5.34	180	477
channel catfish	61	8	0.19	0.50	0.71	2	302	12.42	98	546
jellyfish spp	61	29	0.19	0.50	0.71	.	.	.	.	.
blue crab, adult female	56	29	0.17	0.46	0.65	.	142	1.49	114	166
gizzard shad	47	7	0.15	0.39	0.55	0	200	10.68	104	362
naked goby	42	9	0.13	0.34	0.49	.	38	1.45	19	54
striped bass	41	10	0.13	0.34	0.48	39	125	6.41	77	303
ovster toadfish	32	19	0.10	0.26	0.37	.	220	12.02	53	339
alewife	23	6	0.07	0.19	0.27	22	121	4.58	103	216
spider crab, common	20	12	0.06	0.16	0.23	.	.	.	.	.
American shad	19	5	0.06	0.16	0.22	19	131	3.50	109	160
northern pipefish	17	14	0.05	0.14	0.20	.	140	6.95	97	196
spot	17	9	0.05	0.14	0.20	0	187	6.31	143	243
channel (smooth) whelk	16	11	0.05	0.13	0.19	.	.	.	.	.
black seabass	15	11	0.05	0.12	0.17	15	53	1.87	43	68
Atlantic menhaden	14	10	0.04	0.11	0.16	6	141	28.94	25	334
lady crab	13	6	0.04	0.11	0.15	.	.	.	.	.
smallmouth flounder	12	5	0.04	0.10	0.14	12	74	4.10	55	102
blue crab, sex unknown	6	3	0.02	0.05	0.07	.	34	16.49	5	106
rock crab	5	2	0.02	0.04	0.06	.	30	4.58	18	45
horseshoe crab	4	4	0.01	0.03	0.05	.	229	27.25	160	284
mantis shrimp	4	4	0.01	0.03	0.05	.	109	10.16	91	138
spider crab, 6 spine	3	4	0.01	0.02	0.03	.	.	.	.	.
weakfish	3	3	0.01	0.02	0.03	0	308	21.39	266	336
spottail shiner	3	3	0.01	0.02	0.03	.	96	3.06	90	100
common carp	3	1	0.01	0.02	0.03	.	575	7.51	567	590
feather blenny	2	2	0.01	0.02	0.02	.	66	28.00	38	94
skilletfish	2	2	0.01	0.02	0.02	.	53	1.00	52	54
clearnose skate	2	2	0.01	0.02	0.02	.	347	74.50	272	421
roughneck shrimp	2	2	0.01	0.02	0.02	.	.	.	.	.
hickory shad	1	1	0.00	0.01	0.01	.	203	.	203	203
tautog	1	1	0.00	0.01	0.01	.	320	.	320	320
windowpane	1	1	0.00	0.01	0.01	1	87	.	87	87
longnose gar	1	1	0.00	0.01	0.01	.	804	.	804	804
lined seahorse	1	1	0.00	0.01	0.01	.	61	.	61	61
seaboard goby	1	1	0.00	0.01	0.01	.	31	.	31	31
striped blenny	1	1	0.00	0.01	0.01	.	78	.	78	78
banded drum	1	1	0.00	0.01	0.01	.	153	.	153	153
northern stargazer	1	1	0.00	0.01	0.01	.	185	.	185	185
pink shrimp	1	1	0.00	0.01	0.01	.	90	.	90	90
knobbed whelk	1	1	0.00	0.01	0.01	.	.	.	.	.
sand shrimp	.	58	.	.	.	.	.	.	.	.
mud crab spp	.	56	.	.	.	.	.	.	.	.
Amphipod spp	.	51	.	.	.	.	.	.	.	.
grass shrimp spp	.	47	.	.	.	.	.	.	.	.
mysis shrimp	.	45	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	33	.	.	.	.	.	.	.	.
worm spp	.	25	.	.	.	.	.	.	.	.
leech spp	.	16	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	15	.	.	.	.	.	.	.	.
soft-shell clam	.	15	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	12	.	.	.	.	.	.	.	.
moon snail	.	8	.	.	.	.	.	.	.	.
bent mussel	.	7	.	.	.	.	.	.	.	.
drill & snail spp	.	6	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	5	.	.	.	.	.	.	.	.
sand dollar	.	3	.	.	.	.	.	.	.	.
oyster, common	.	3	.	.	.	.	.	.	.	.
quahog clam	.	3	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
sea cucumber spp	.	2	.	.	.	.	.	.	.	.
flat-browed(coastal) mud	.	1	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	32,319									

Table 84.

Month - May, 1999
 System - Chesapeake Bay
 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	2,746	30	56.37	70.41		2,714	56	0.43	30	81
Atlantic herring	485	25	9.96	12.44	29.12		61	0.55	41	94
hogchoker	460	7	9.44	11.79		1	120	2.88	65	172
Atlantic croaker	376	10	7.72	9.64	22.57	0	233	2.25	163	364
blackcheek tonguefish	190	5	3.90	4.87	11.41	0	149	1.89	124	171
northern searobin	159	31	3.26	4.08	9.55	159	70	1.09	36	102
spotted hake	79	26	1.62	2.03	4.74	76	121	6.36	40	317
weakfish	69	11	1.42	1.77	4.14	41	223	4.37	156	283
smallmouth flounder	48	14	0.99	1.23	2.88	48	78	2.29	32	115
spot	31	7	0.64	0.79	1.86	0	167	1.44	146	186
summer flounder	27	17	0.55	0.69	1.62	0	326	17.22	191	512
knobbed whelk	26	8	0.53	0.67	1.56					
black seabass	24	13	0.49	0.62	1.44	24	57	2.81	36	92
rock crab	21	11	0.43	0.54	1.26		31	3.75	17	100
spider crab, common	20	9	0.41	0.51	1.20					
northern pipefish	12	8	0.25	0.31	0.72		133	4.14	106	160
clearnose skate	11	7	0.23	0.28	0.66		362	14.38	256	411
spider crab, 6 spine	11	4	0.23	0.28	0.66					
blue crab, juvenile female	10	7	0.21	0.26	0.60		37	5.03	15	62
channel (smooth) whelk	9	7	0.18	0.23	0.54					
blue crab, male	8	6	0.16	0.21	0.48		53	9.44	26	110
jellyfish spp	8	5	0.16	0.19	0.46					
blue crab, adult female	7	6	0.14	0.18	0.42		130	3.63	118	147
windovypane	6	5	0.12	0.15	0.36	3	165	41.27	49	286
kingfish spp	5	3	0.10	0.13	0.30	0	254	13.18	203	276
lady crab	4	4	0.08	0.10	0.24					
lined seahorse	3	2	0.06	0.08	0.18		75	11.22	54	92
mantis shrimp	3	2	0.06	0.08	0.18		134	3.61	129	141
silver perch	3	1	0.06	0.08	0.18	1	175	14.75	149	200
butterfish	2	2	0.04	0.05	0.12	2	70	47.50	22	117
northern puffer	2	2	0.04	0.05	0.12	2	125	9.00	116	134
squid spp	1	1	0.02	0.03	0.06		81		81	81
alewife	1	1	0.02	0.03	0.06	1	149		149	149
blueback herring	1	1	0.02	0.03	0.06	0	254		254	254
Atlantic menhaden	1	1	0.02	0.03	0.06	0	170		170	170
conger eel	1	1	0.02	0.03	0.06		114		114	114
roughneck shrimp	1	1	0.02	0.03	0.06					
horseshoe crab	1	1	0.02	0.03	0.06		230		230	230
sand shrimp		34								
right-hand hermit crab spp		21								
mysid shrimp		13								
Amphipod spp		10								
mud crab spp		9								
worm spp		7								
sand dollar		6								
skeleton shrimp spp		5								
drill & snail spp		5								
slipper shell spp		4								
moon snail		3								
soft-shell clam		2								
sea cucumber spp		2								
forbes common sea star		1								
blue mussel		1								
quahog clam		1								
blood ark/clam		1								
commensal crab spp		1								
little (dwarf) surf clam		1								

All Species Combined	4,872									

Table 85.

Month - May, 1999

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)
hogchoker	4,068	18	52.94	184.91		688	80	0.85	29	143
Atlantic croaker	1,961	21	25.52	89.14	62.55	467	176	2.31	21	403
bay anchovy	481	18	6.26	21.86		477	60	0.83	37	88
spot	232	19	3.02	10.55	7.40	0	160	0.98	128	260
blue crab, juvenile female	180	17	2.34	8.18	5.74	.	54	1.74	16	136
blue crab, male	150	18	1.95	6.82	4.78	.	64	2.72	13	169
blue catfish	118	10	1.54	5.36	3.76	90	202	4.08	150	380
white perch	62	8	0.81	2.82	1.98	0	128	3.90	73	191
blackcheek tonguefish	58	15	0.75	2.64	1.85	12	131	4.52	52	175
American eel	46	9	0.60	2.09	1.47	.	290	5.58	184	430
blue crab, adult female	45	8	0.59	2.05	1.44	.	144	2.24	108	171
oyster toadfish	37	8	0.48	1.68	1.18	.	174	9.43	45	358
spotted hake	36	7	0.47	1.64	1.15	36	172	4.12	102	222
summer flounder	36	3	0.47	1.64	1.15	0	275	9.39	206	499
gizzard shad	30	5	0.39	1.36	0.96	0	284	3.73	248	321
striped bass	25	2	0.33	1.14	0.80	0	134	5.60	98	196
jellyfish spp	19	3	0.25	0.86	0.61	.	.	.	.	.
channel catfish	17	6	0.22	0.77	0.54	0	340	24.13	156	594
weakfish	16	8	0.21	0.73	0.51	16	170	2.37	150	189
white catfish	13	5	0.17	0.59	0.41	0	200	13.91	137	351
channel (smooth) whelk	11	3	0.14	0.50	0.35	.	.	.	.	.
Atlantic menhaden	9	3	0.12	0.41	0.29	0	181	5.91	156	212
Atlantic herring	9	2	0.12	0.41	0.29	.	55	1.73	48	62
northern searobin	5	4	0.07	0.23	0.16	5	69	7.47	45	88
spider crab, 6 spine	5	1	0.07	0.23	0.16	.	.	.	.	.
northern pipefish	3	3	0.04	0.14	0.10	.	138	12.12	123	162
spider crab, common	3	3	0.04	0.14	0.10	.	.	.	.	.
windowpane	3	2	0.04	0.14	0.10	3	119	9.39	106	137
black seabass	2	2	0.03	0.09	0.06	2	79	9.00	70	88
naked goby	2	1	0.03	0.09	0.06	.	46	0.00	46	46
smallmouth flounder	1	1	0.01	0.05	0.03	1	87	.	87	87
mantis shrimp	1	1	0.01	0.05	0.03	.	96	.	96	96
mud crab spp	.	9	.	.	.	.	.	.	.	.
grass shrimp spp	.	9	.	.	.	.	.	.	.	.
worm spp	.	5	.	.	.	.	.	.	.	.
sand shrimp	.	4	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	4	.	.	.	.	.	.	.	.
drill & snail spp	.	4	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
moon snail	.	3	.	.	.	.	.	.	.	.
oyster, common	.	3	.	.	.	.	.	.	.	.
blood ark/clam	.	3	.	.	.	.	.	.	.	.
Amphipod spp	.	3	.	.	.	.	.	.	.	.
bent mussel	.	3	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	3	.	.	.	.	.	.	.	.
soft-shell clam	.	2	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	1	.	.	.	.	.	.	.	.
mysid shrimp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
leech spp	.	1	.	.	.	.	.	.	.	.
false angel wing	.	1	.	.	.	.	.	.	.	.
All Species Combined	7,684									

Table 86.

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 - May, 1999										
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										
bay anchovy	4,262	21	68.24	193.73		4,216	61	0.63	39	90
blue catfish	877	6	14.04	39.86	53.54	418	234	2.34	183	356
hogchoker	346	15	5.54	15.73		46	82	1.10	40	128
Atlantic croaker	162	16	2.59	7.36	9.89	4	240	4.35	22	404
jellyfish spp	153	13	2.45	6.95	9.34					
spot	139	15	2.23	6.32	8.49	0	172	1.11	136	212
white perch	62	11	0.99	2.82	3.79	0	178	2.76	107	222
blue crab, juvenile female	44	13	0.70	2.00	2.69		56	3.66	13	118
blue crab, male	40	15	0.64	1.82	2.44		71	4.54	33	139
white catfish	32	6	0.51	1.45	1.95	0	240	9.47	151	390
American eel	26	6	0.42	1.18	1.59		280	4.73	232	344
weakfish	20	8	0.32	0.91	1.22	9	242	10.63	163	298
spotted hake	19	10	0.30	0.86	1.16	19	136	7.27	95	188
Atlantic menhaden	17	5	0.27	0.77	1.04	13	85	23.77	30	316
northern searobin	13	4	0.21	0.59	0.79	13	72	2.86	56	95
channel catfish	12	3	0.19	0.55	0.73	0	269	7.71	213	299
summer flounder	6	4	0.10	0.27	0.37	0	315	24.38	265	414
Atlantic herring	4	2	0.06	0.18	0.24		55	3.57	45	62
striped bass	4	2	0.06	0.18	0.24	0	344	72.38	237	558
blue crab, adult female	2	2	0.03	0.09	0.12		143	1.50	141	144
naked goby	2	1	0.03	0.09	0.12		54	0.00	54	54
black seabass	1	1	0.02	0.05	0.06	1	50		50	50
alewife	1	1	0.02	0.05	0.06	0	200		200	200
American shad	1	1	0.02	0.05	0.06	0	228		228	228
northern pipefish	1	1	0.02	0.05	0.06		153		153	153
sand shrimp	.	4	.	.	.	.	.	.	.	.
mud crab spp	.	2	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
mysid shrimp	.	2	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	1	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	1	.	.	.	.	.	.	.	.
All Species Combined	6,246									

Table 87.

Month - May, 1999

System - York River

No. of Random Trawls Made - 14

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)
Atlantic croaker	3,958	23	44.86	172.09	78.34	1,954	195	2.20	18	378
hogchoker	3,482	20	39.46	151.39		952	80	1.02	23	163
spot	507	19	5.75	22.04	10.03	0	168	0.65	131	205
bay anchovy	289	21	3.28	12.57		277	54	0.86	32	82
blue crab, male	124	21	1.41	5.39	2.45	.	68	2.11	21	131
blue crab, juvenile female	84	19	0.95	3.65	1.66	.	58	2.20	19	129
white catfish	77	10	0.87	3.35	1.52	9	237	9.77	82	460
white perch	63	7	0.71	2.74	1.25	0	180	4.14	96	250
jellyfish spp	60	11	0.67	2.59	1.18	.	.	.	.	.
weakfish	35	10	0.40	1.52	0.69	23	230	10.55	140	395
oyster toadfish	33	7	0.37	1.43	0.65	.	206	8.97	100	302
spotted hake	25	9	0.28	1.09	0.49	25	170	4.39	122	208
blackcheek tonguefish	22	10	0.25	0.96	0.44	20	76	4.63	50	141
American eel	11	7	0.12	0.48	0.22	.	365	36.09	250	705
northern searobin	9	4	0.10	0.39	0.18	9	75	1.69	69	84
Atlantic herring	7	1	0.08	0.30	0.14	.	50	2.78	42	64
summer flounder	6	3	0.07	0.26	0.12	0	308	25.76	240	401
mantis shrimp	5	3	0.06	0.22	0.10	.	102	7.43	90	131
naked goby	4	4	0.05	0.17	0.08	.	50	4.17	38	57
blue crab, adult female	4	3	0.05	0.17	0.08	.	139	6.71	127	158
Atlantic menhaden	4	2	0.05	0.17	0.08	0	157	4.68	148	168
silver perch	3	2	0.03	0.13	0.06	1	189	12.98	164	208
smallmouth flounder	3	1	0.03	0.13	0.06	3	63	12.24	44	86
striped bass	2	1	0.02	0.09	0.04	0	98	2.00	96	100
channel catfish	2	1	0.02	0.09	0.04	0	318	31.50	286	349
black seabass	1	1	0.01	0.04	0.02	1	48	.	48	48
longnose gar	1	1	0.01	0.04	0.02	.	910	.	910	910
feather blenny	1	1	0.01	0.04	0.02	.	88	.	88	88
spider crab, common	1	1	0.01	0.04	0.02	.	.	.	.	.
channel (smooth) whelk	1	1	0.01	0.04	0.02	.	.	.	.	.
mud crab spp	.	8	.	.	.	.	.	.	.	.
grass shrimp spp	.	4	.	.	.	.	.	.	.	.
sand shrimp	.	3	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	3	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
mysid shrimp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	8,824									

Table 88.

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	691	8	50.11	49.36		680	62	0.97	43	88
Atlantic croaker	223	10	16.17	15.93	35.40	0	238	2.04	158	340
blue crab, juvenile female	98	13	7.11	7.00	15.56		53	1.83	18	100
spotted hake	71	8	5.15	5.07	11.27	71	130	3.47	68	193
hogchoker	58	7	4.21	4.14		0	115	2.07	88	154
northern searobin	43	10	3.12	3.07	6.83	43	71	1.73	50	94
weakfish	37	6	2.68	2.64	5.87	9	252	6.58	152	310
spot	35	11	2.54	2.50	5.56	0	179	2.25	156	206
blue crab, male	34	10	2.47	2.43	5.40		58	3.45	27	123
Atlantic herring	27	4	1.96	1.93	4.29		66	1.51	45	77
blackcheek tonguefish	17	8	1.23	1.21	2.70	13	91	8.39	52	162
jellyfish spp	11	9	0.80	0.79	1.75					
summer flounder	8	4	0.58	0.57	1.27	0	277	8.35	234	312
northern pipefish	8	4	0.58	0.57	1.27		135	4.49	119	156
silver perch	4	2	0.29	0.29	0.63	1	174	7.47	158	194
American eel	4	1	0.29	0.29	0.63		336	13.19	306	362
blue crab, adult female	3	2	0.22	0.21	0.48		134	3.06	128	138
smallmouth flounder	2	2	0.15	0.14	0.32	2	44	0.50	43	44
Atlantic menhaden	2	1	0.15	0.14	0.32	0	184	0.00	184	184
lined seahorse	2	1	0.15	0.14	0.32		88	6.50	81	94
winter flounder	1	1	0.07	0.07	0.16		33		33	33
sand shrimp	.	11	.	.	.	.	.	.	.	.
mud crab spp	.	7	.	.	.	.	.	.	.	.
grass shrimp spp	.	7	.	.	.	.	.	.	.	.
mysis shrimp	.	7	.	.	.	.	.	.	.	.
worm spp	.	5	.	.	.	.	.	.	.	.
Amphipod spp	.	4	.	.	.	.	.	.	.	.
little (divarf) surf clam	.	4	.	.	.	.	.	.	.	.
transverse ark (clam)	.	3	.	.	.	.	.	.	.	.
drill & snail spp	.	2	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
glassy lyonsia	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	1,379									

Table 89.

Month - May, 1999

System - All - Pooled

No. of Random Trawls Made - 92

No. of Fixed Trawls Made - 28

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	8,469	98	29.20	70.58	.	8,364	58	0.31	30	90
hogchoker	8,414	67	29.01	70.12	.	1,687	84	0.64	23	172
Atlantic croaker	6,680	80	23.03	55.67	55.11	2,425	196	1.40	18	404
blue catfish	995	16	3.43	8.29	8.21	508	217	2.65	150	380
spot	944	71	3.25	7.87	7.79	0	167	0.49	128	260
Atlantic herring	532	34	1.83	4.43	4.39	.	61	0.51	41	94
blue crab, juvenile female	416	69	1.43	3.47	3.43	.	54	1.06	13	136
blue crab, male	356	70	1.23	2.97	2.94	.	65	1.51	13	169
blackcheek tonguefish	287	38	0.99	2.39	2.37	45	122	3.24	50	175
jellyfish spp	250	41	0.86	2.08	2.06	.	.	.	.	.
spotted hake	230	60	0.79	1.92	1.90	227	138	2.94	40	317
northern searobin	229	53	0.79	1.91	1.89	229	70	0.85	36	102
white perch	187	26	0.64	1.56	1.54	0	162	2.73	73	250
weakfish	177	43	0.61	1.48	1.46	98	228	3.61	140	395
white catfish	122	21	0.42	1.02	1.01	9	234	6.86	82	460
American eel	87	23	0.30	0.73	0.72	.	299	6.23	184	705
summer flounder	83	31	0.29	0.69	0.68	0	297	7.74	191	512
oyster toadfish	70	15	0.24	0.58	0.58	.	189	6.77	45	358
blue crab, adult female	61	21	0.21	0.51	0.50	.	142	1.85	108	171
smallmouth flounder	54	18	0.19	0.45	0.45	54	76	2.34	32	115
Atlantic menhaden	33	12	0.11	0.28	0.27	13	129	14.60	30	316
channel catfish	31	10	0.11	0.26	0.26	0	311	14.78	156	594
striped bass	31	5	0.11	0.26	0.26	0	159	16.14	96	558
gizzard shad	30	5	0.10	0.25	0.25	0	284	3.73	248	321
black seabass	28	17	0.10	0.23	0.23	28	58	2.72	36	92
knobbed whelk	26	8	0.09	0.22	0.21	.	.	.	.	.
northern pipefish	24	16	0.08	0.20	0.20	.	135	2.91	106	162
spider crab, common	24	13	0.08	0.20	0.20	.	.	.	.	.
rock crab	21	11	0.07	0.18	0.17	.	31	3.75	17	100
channel (smooth) whelk	21	11	0.07	0.18	0.17	.	.	.	.	.
spider crab, 6 spine	16	5	0.06	0.13	0.13	.	.	.	.	.
clearnose skate	11	7	0.04	0.09	0.09	.	362	14.38	256	411
silver perch	10	5	0.03	0.08	0.08	3	179	6.16	149	208
windowpane	9	7	0.03	0.08	0.07	6	149	27.84	49	286
mantis shrimp	9	6	0.03	0.08	0.07	.	112	6.84	90	141
naked goby	8	6	0.03	0.07	0.07	.	50	2.21	38	57
kingfish spp	5	3	0.02	0.04	0.04	0	254	13.18	203	276
lined seahorse	5	3	0.02	0.04	0.04	.	80	7.13	54	94
lady crab	4	4	0.01	0.03	0.03	.	.	.	.	.
butterfish	2	2	0.01	0.02	0.02	2	70	47.50	22	117
alewife	2	2	0.01	0.02	0.02	1	175	25.50	149	200
northern puffer	2	2	0.01	0.02	0.02	2	125	9.00	116	134
squid spp	1	1	0.00	0.01	0.01	.	81	.	81	81
blueback herring	1	1	0.00	0.01	0.01	0	254	.	254	254
American shad	1	1	0.00	0.01	0.01	0	228	.	228	228
winter flounder	1	1	0.00	0.01	0.01	.	33	.	33	33
longnose gar	1	1	0.00	0.01	0.01	.	910	.	910	910
feather blenny	1	1	0.00	0.01	0.01	.	88	.	88	88
conger eel	1	1	0.00	0.01	0.01	.	114	.	114	114
roughneck shrimp	1	1	0.00	0.01	0.01	.	.	.	.	.
horseshoe crab	1	1	0.00	0.01	0.01	.	230	.	230	230
sand shrimp	.	56	.	.	.	.	.	.	.	.
mud crab spp	.	35	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	25	.	.	.	.	.	.	.	.
mysid shrimp	.	24	.	.	.	.	.	.	.	.
grass shrimp spp	.	22	.	.	.	.	.	.	.	.
worm spp	.	20	.	.	.	.	.	.	.	.
Amphipod spp	.	17	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	11	.	.	.	.	.	.	.	.
drill & snail spp	.	11	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	7	.	.	.	.	.	.	.	.
soft-shell clam	.	7	.	.	.	.	.	.	.	.
oyster, common	.	7	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	7	.	.	.	.	.	.	.	.
sand dollar	.	6	.	.	.	.	.	.	.	.
moon snail	.	6	.	.	.	.	.	.	.	.
bent mussel	.	5	.	.	.	.	.	.	.	.
blood ark/clam	.	4	.	.	.	.	.	.	.	.
slipper shell spp	.	4	.	.	.	.	.	.	.	.
quahog clam	.	3	.	.	.	.	.	.	.	.
transverse ark (clam)	.	3	.	.	.	.	.	.	.	.
sea cucumber spp	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
forbes common sea star	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
glassy lyonsia	.	1	.	.	.	.	.	.	.	.
commensal crab spp	.	1	.	.	.	.	.	.	.	.
leech spp	.	1	.	.	.	.	.	.	.	.
false angel wing	.	1	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	1	.	.	.	.	.	.	.	.
All Species Combined	29,004									

Table 90.

Month - June, 1999
 System - Chesapeake Bay
 No. of Random Trawls Made - 39
 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	9,969	32	78.90	255.62		9,964	60	0.26	39	87
Atlantic croaker	1,171	19	9.27	30.03	46.00	14	225	1.54	146	388
jellyfish spp	600	31	4.74	15.37	23.55					
weakfish	152	16	1.20	3.90	5.97	0	201	2.74	120	309
hogchoker	121	14	0.96	3.10		0	108	1.68	75	159
spotted hake	83	12	0.66	2.13	3.26	82	157	5.39	55	284
northern searobin	80	24	0.63	2.05	3.14	80	91	2.08	41	146
spot	75	14	0.59	1.92	2.95	5	163	4.22	13	209
black seabass	58	12	0.46	1.49	2.28	58	71	2.70	49	121
smallmouth flounder	43	12	0.34	1.10	1.69	43	90	1.67	61	114
blackcheek tonguefish	37	10	0.29	0.95	1.45	3	148	3.48	81	177
striped anchovy	33	8	0.26	0.85	1.30	33	106	1.14	91	117
summer flounder	23	18	0.18	0.59	0.90	2	319	17.83	122	472
scup	23	6	0.18	0.59	0.90	22	65	3.96	44	101
squid spp	22	6	0.17	0.56	0.86		58	6.90	17	130
spider crab, common	21	11	0.17	0.54	0.82					
butterfish	20	8	0.16	0.51	0.79	7	93	9.63	33	146
kingfish spp	16	5	0.13	0.41	0.63	3	257	12.18	152	330
rock crab	11	6	0.09	0.28	0.43		29	2.96	11	43
northern pipefish	10	9	0.08	0.26	0.39		154	4.79	127	173
clearnose skate	9	6	0.07	0.23	0.35		386	17.77	277	451
mantis shrimp	7	4	0.06	0.18	0.27		133	25.10	72	277
knobbed whelk	7	4	0.06	0.18	0.27					
Atlantic herring	6	4	0.05	0.15	0.24		79	3.65	64	87
blue crab, adult female	6	4	0.05	0.15	0.24		143	7.89	108	165
blue crab, juvenile female	5	4	0.04	0.13	0.20		52	5.25	34	64
lady crab	3	2	0.02	0.08	0.12					
windowpane	2	2	0.02	0.05	0.08	1	196	56.00	140	252
silver perch	2	2	0.02	0.05	0.08	2	165	5.00	160	170
blue crab, male	2	2	0.02	0.05	0.08		49	23.00	26	72
Atlantic thread herring	2	1	0.02	0.05	0.08		178	6.00	172	184
northern puffer	2	1	0.02	0.05	0.08	0	136	9.50	126	145
Atlantic cutlassfish	2	1	0.02	0.05	0.08		437	15.00	422	452
bluefish	1	1	0.01	0.03	0.04		201		201	201
harvestfish	1	1	0.01	0.03	0.04	0	135		135	135
red hake	1	1	0.01	0.03	0.04		185		185	185
blueback herring	1	1	0.01	0.03	0.04	0	116		116	116
hickory shad	1	1	0.01	0.03	0.04		185		185	185
lined seahorse	1	1	0.01	0.03	0.04		58		58	58
southern stingray	1	1	0.01	0.03	0.04		492		492	492
bluntnose stingray	1	1	0.01	0.03	0.04		298		298	298
spiny butterfly ray	1	1	0.01	0.03	0.04		551		551	551
striped burrfish	1	1	0.01	0.03	0.04		195		195	195
spider crab, 6 spine	1	1	0.01	0.03	0.04					
horseshoe crab	1	1	0.01	0.03	0.04		132		132	132
channel (smooth) whelk	1		0.01	0.03	0.04					
right-hand hermit crab spp		16								
mud crab spp		9								
sand shrimp		9								
blue mussel		9								
slipper shell spp		6								
skeleton shrimp spp		4								
worm spp		3								
grass shrimp spp		2								
blood ark/clam		2								
forbes common sea star		1								
sand dollar		1								
moon snail		1								
sea cucumber spp		1								
Amphipod spp		1								
drill & snail spp		1								
All Species Combined	12,636									

Table 91.

Month - June, 1999

System - James 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	1,381	21	34.01	62.77	59.76	208	187	1.66	39	380
bay anchovy	1,188	15	29.26	54.00	.	1,172	63	0.62	42	90
hogchoker	561	18	13.82	25.50	.	153	70	1.36	28	156
jellyfish spp	241	13	5.94	10.95	10.43	.	.	.	.	.
spot	192	17	4.73	8.73	8.31	10	163	1.84	36	215
weakfish	115	15	2.83	5.23	4.98	0	174	1.88	116	259
blue crab, juvenile female	52	12	1.28	2.36	2.25	.	77	3.87	26	130
blue crab, male	50	16	1.23	2.27	2.16	.	86	5.52	19	163
blue catfish	49	6	1.21	2.23	2.12	48	195	3.74	157	336
white perch	31	7	0.76	1.41	1.34	0	148	4.99	95	220
blue crab, adult female	23	6	0.57	1.05	1.00	.	151	2.31	121	169
spider crab, common	23	4	0.57	1.05	1.00	.	.	.	.	.
blackcheek tonguefish	22	12	0.54	1.00	0.95	13	113	7.74	70	201
spider crab, 6 spine	20	1	0.49	0.91	0.87	.	.	.	.	.
American eel	19	7	0.47	0.86	0.82	.	277	12.27	153	328
white catfish	18	6	0.44	0.82	0.78	0	178	9.64	131	288
summer flounder	14	4	0.34	0.64	0.61	0	264	5.75	224	304
striped bass	10	3	0.25	0.45	0.43	0	162	25.33	98	380
silver perch	9	3	0.22	0.41	0.39	4	170	7.46	141	200
northern searobin	6	3	0.15	0.27	0.26	6	92	5.56	79	111
black seabass	6	2	0.15	0.27	0.26	6	99	3.40	92	114
oyster toadfish	5	2	0.12	0.23	0.22	.	185	16.45	134	234
Atlantic menhaden	3	3	0.07	0.14	0.13	0	227	37.35	188	302
channel catfish	3	3	0.07	0.14	0.13	0	322	9.82	303	335
spotted hake	3	3	0.07	0.14	0.13	3	207	18.01	171	226
butterfish	3	2	0.07	0.14	0.13	0	125	11.14	103	139
northern pipefish	3	2	0.07	0.14	0.13	.	109	21.50	67	137
feather blenny	2	1	0.05	0.09	0.09	.	124	50.50	73	174
horseshoe crab	2	1	0.05	0.09	0.09	.	260	45.00	215	305
knobbed whelk	2	1	0.05	0.09	0.09	.	.	.	.	.
gizzard shad	1	1	0.02	0.05	0.04	0	284	.	284	284
lined seahorse	1	1	0.02	0.05	0.04	.	93	.	93	93
channel (smooth) whelk	1	1	0.02	0.05	0.04	.	.	.	.	.
veined rapa whelk	1	1	0.02	0.05	0.04	.	.	.	.	.
mud crab spp	.	11	.	.	.	.	.	.	.	.
sand shrimp	.	8	.	.	.	.	.	.	.	.
grass shrimp spp	.	3	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	3	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
oyster, common	.	3	.	.	.	.	.	.	.	.
drill & snail spp	.	3	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
blue mussel	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	2	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
glassy lyonsia	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
transverse ark (clam)	.	1	.	.	.	.	.	.	.	.
All Species Combined	4,060									

Table 92.

Month - June, 1999

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	7,164	21	79.94	325.64	.	6,848	64	0.53	43	93
jellyfish spp	586	22	6.54	26.64	38.53	.	.	.	.	.
Atlantic croaker	307	20	3.43	13.95	20.18	77	219	4.11	89	420
hogchoker	277	17	3.09	12.59	.	119	67	1.50	30	141
spot	143	17	1.60	6.50	9.40	38	153	3.43	73	206
white perch	141	8	1.57	6.41	9.27	2	166	2.37	30	218
blue catfish	82	3	0.91	3.73	5.39	67	235	3.10	180	327
blue crab, male	76	10	0.85	3.45	5.00	.	84	3.14	33	160
weakfish	47	11	0.52	2.14	3.09	0	196	2.47	158	233
blue crab, juvenile female	44	14	0.49	2.00	2.89	.	75	2.89	46	119
white catfish	42	2	0.47	1.91	2.76	0	259	7.30	183	405
northern searobin	14	6	0.16	0.64	0.92	14	90	2.53	73	111
American eel	6	3	0.07	0.27	0.39	.	327	57.54	240	610
spotted hake	6	3	0.07	0.27	0.39	6	193	5.34	183	219
summer flounder	5	4	0.06	0.23	0.33	2	265	70.12	115	494
butterfish	4	3	0.04	0.18	0.26	0	76	2.06	72	80
striped bass	4	2	0.04	0.18	0.26	0	169	10.09	144	187
blue crab, adult female	4	2	0.04	0.18	0.26	.	130	3.09	126	139
channel catfish	3	2	0.03	0.14	0.20	0	275	7.88	266	291
alewife	2	1	0.02	0.09	0.13	2	44	2.50	41	46
blueback herring	1	1	0.01	0.05	0.07	0	223	.	223	223
naked goby	1	1	0.01	0.05	0.07	.	54	.	54	54
blackcheek tonguefish	1	1	0.01	0.05	0.07	1	79	.	79	79
silver perch	1	1	0.01	0.05	0.07	0	217	.	217	217
Atlantic cutlassfish	1	1	0.01	0.05	0.07	.	489	.	489	489
mud crab spp	.	2	.	.	.	.	.	.	.	.
grass shrimp spp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	8,962									

Table 93.

Month - June, 1999

System - York River

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 9

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	2,206	21	36.88	100.27	.	2,202	58	0.49	40	83
Atlantic croaker	1,539	21	25.73	69.95	57.82	756	164	2.55	38	414
hogchoker	1,114	22	18.62	50.64	.	393	82	1.71	22	173
jellyfish spp	381	18	6.36	17.30	14.30	.	.	.	.	.
blue crab, male	211	16	3.53	9.59	7.93	.	91	2.05	31	156
blue crab, juvenile female	163	18	2.73	7.41	6.12	.	83	1.54	24	126
spot	157	15	2.62	7.14	5.90	27	158	2.72	34	210
weakfish	41	12	0.69	1.86	1.54	0	192	2.81	159	229
blue crab, adult female	27	7	0.45	1.23	1.01	.	139	3.27	108	177
blackcheek tonguefish	24	11	0.40	1.09	0.90	23	84	3.11	64	138
white catfish	20	5	0.33	0.91	0.75	0	227	18.17	89	426
white perch	19	4	0.32	0.86	0.71	0	170	8.81	111	247
summer flounder	14	6	0.23	0.64	0.53	9	167	23.26	82	299
mantis shrimp	13	4	0.22	0.59	0.49	.	91	2.36	78	101
spider crab, common	9	4	0.15	0.41	0.34	.	.	.	.	.
oyster toadfish	8	5	0.13	0.36	0.30	.	152	20.60	64	223
American eel	7	4	0.12	0.32	0.26	.	336	47.91	133	508
northern searobin	7	2	0.12	0.32	0.26	7	98	3.41	85	112
striped bass	5	2	0.08	0.23	0.19	0	161	15.93	130	218
spotted hake	4	3	0.07	0.18	0.15	4	191	8.63	168	207
gizzard shad	4	2	0.07	0.18	0.15	0	377	11.32	344	394
silver perch	3	1	0.05	0.14	0.11	1	185	19.22	157	222
butterfish	2	2	0.03	0.09	0.08	1	65	9.00	56	74
channel (smooth) whelk	2	2	0.03	0.09	0.08	.	.	.	.	.
northern pipefish	1	1	0.02	0.05	0.04	.	215	.	215	215
naked goby	1	1	0.02	0.05	0.04	.	42	.	42	42
mud crab spp	.	8	.	.	.	.	.	.	.	.
grass shrimp spp	.	8	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	2	.	.	.	.	.	.	.	.
bent mussel	.	2	.	.	.	.	.	.	.	.
sand shrimp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
drill & snail spp	.	1	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	1	.	.	.	.	.	.	.	.
All Species Combined	5,982									

Table 94.

Month - June, 1999										
System - Piankatank River										
No. of Random Trawls Made - 4										
No. of Fixed Trawls Made - 3										
No. of Species - 16										
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	5,323	7	89.25	760.43	.	5,272	54	0.49	44	83
spot	289	6	4.85	41.29	47.45	250	101	2.00	37	203
jellyfish spp	134	6	2.25	19.14	22.00	.	.	.	.	.
Atlantic croaker	49	6	0.82	7.00	8.05	0	245	5.70	199	372
weakfish	40	6	0.67	5.71	6.57	0	189	1.85	160	222
blue crab, juvenile female	35	6	0.59	5.00	5.75	.	74	3.31	34	108
hogchoker	32	4	0.54	4.57	.	5	87	3.65	49	130
blue crab, male	25	3	0.42	3.57	4.11	.	83	4.41	41	135
Atlantic menhaden	14	2	0.23	2.00	2.30	14	41	0.91	36	46
blue crab, adult female	13	2	0.22	1.86	2.13	.	141	3.22	125	169
summer flounder	4	3	0.07	0.57	0.66	1	310	72.03	117	439
American eel	2	2	0.03	0.29	0.33	.	270	0.50	269	270
alewife	1	1	0.02	0.14	0.16	1	45	.	45	45
striped bass	1	1	0.02	0.14	0.16	0	196	.	196	196
striped anchovy	1	1	0.02	0.14	0.16	1	97	.	97	97
naked goby	1	1	0.02	0.14	0.16	.	37	.	37	37
mud crab spp	.	4	.	.	.	.	.	.	.	.
mysid shrimp	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	5,964									

Table 95.

Month - June, 1999										
System - Great Wicomico River										
No. of Random Trawls Made - 6										
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)
bay anchovy	4,746	6	93.65	791.00	.	4,673	54	0.49	40	82
spot	139	5	2.74	23.17	43.30	134	98	2.05	66	196
jellyfish spp	101	6	1.99	16.83	31.46	.	.	.	.	.
blue crab, male	27	5	0.53	4.50	8.41	.	76	6.44	17	145
blue crab, juvenile female	26	5	0.51	4.33	8.10	.	58	4.54	17	122
Atlantic croaker	15	5	0.30	2.50	4.67	1	233	15.65	94	376
summer flounder	4	2	0.08	0.67	1.25	4	125	7.19	111	141
northern searobin	4	2	0.08	0.67	1.25	4	97	3.18	91	102
blue crab, adult female	3	1	0.06	0.50	0.93	.	134	10.02	115	149
winter flounder	2	1	0.04	0.33	0.62	.	67	5.00	62	72
hogchoker	1	1	0.02	0.17	.	0	97	.	97	97
oyster, common	.	3	.	.	.	.	.	.	.	.
mud crab spp	.	2	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
drill & snail spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	5,068									

Table 96.

Month - June, 1999

System - All - Pooled

No. of Random Trawls Made - 90

No. of Fixed Trawls Made - 28

No. of Species - 60

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	30,596	102	71.70	259.29		30,131	60	0.20	39	93
Atlantic croaker	4,462	92	10.46	37.81	44.76	1,056	192	1.27	38	420
hogchoker	2,106	76	4.94	17.85		670	78	0.91	22	173
jellyfish spp	2,042	96	4.79	17.31	20.48					
spot	995	74	2.33	8.43		464	136	1.41	13	215
weakfish	395	60	0.93	3.35	3.96	0	190	1.39	116	309
blue crab, male	391	52	0.92	3.31	3.92		87	1.57	17	163
blue crab, juvenile female	325	59	0.76	2.75	3.26		78	1.25	17	130
white perch	191	19	0.45	1.62	1.92	2	163	2.16	30	247
blue catfish	131	9	0.31	1.11	1.31	115	220	2.94	157	336
northern searobin	111	37	0.26	0.94	1.11	111	92	1.58	41	146
spotted hake	96	21	0.22	0.81	0.96	95	162	4.90	55	284
blackcheek tonguefish	84	34	0.20	0.71	0.84	40	119	4.02	64	201
white catfish	80	13	0.19	0.68	0.80	0	233	7.23	89	426
blue crab, adult female	76	22	0.18	0.64	0.76		142	1.74	108	177
summer flounder	64	37	0.15	0.54	0.64	18	257	13.27	82	494
black seabass	64	14	0.15	0.54	0.64	64	74	2.67	49	121
spider crab, common	53	19	0.12	0.45	0.53					
smallmouth flounder	43	12	0.10	0.36	0.43	43	90	1.67	61	114
American eel	34	16	0.08	0.29	0.34		298	15.38	153	610
striped anchovy	34	9	0.08	0.29	0.34	34	105	1.14	91	117
butterfish	29	15	0.07	0.25	0.29	8	92	7.19	33	146
scup	23	6	0.05	0.19	0.23	22	65	3.96	44	101
squid spp	22	6	0.05	0.19	0.22		58	6.90	17	130
spider crab, 6 spine	21	2	0.05	0.18	0.21					
striped bass	20	8	0.05	0.17	0.20	0	165	13.10	98	380
mantis shrimp	20	8	0.05	0.17	0.20					
Atlantic menhaden	17	5	0.04	0.14	0.17	14	74	18.65	36	302
kingfish spp	16	5	0.04	0.14	0.16	3	257	12.18	152	330
silver perch	15	7	0.04	0.13	0.15	7	176	6.46	141	222
northern pipefish	14	12	0.03	0.12	0.14		149	8.81	67	215
oyster toadfish	13	7	0.03	0.11	0.13		165	14.48	64	234
rock crab	11	6	0.03	0.09	0.11		29	2.96	11	43
clearnose skate	9	6	0.02	0.08	0.09		386	17.77	277	451
knobbed whelk	9	5	0.02	0.08	0.09					
channel catfish	6	5	0.01	0.05	0.06	0	299	11.92	266	335
Atlantic herring	6	4	0.01	0.05	0.06		79	3.65	64	87
gizzard shad	5	3	0.01	0.04	0.05	0	358	20.56	284	394
channel (smooth) whelk	4	4	0.01	0.03	0.04					
naked goby	3	3	0.01	0.03	0.03		44	5.04	37	54
alewife	3	2	0.01	0.03	0.03	3	44	1.53	41	46
Atlantic outlassfish	3	2	0.01	0.03	0.03		454	19.38	422	489
horseshoe crab	3	2	0.01	0.03	0.03		217	49.95	132	305
lady crab	3	2	0.01	0.03	0.03					
blueback herring	2	2	0.00	0.02	0.02	0	170	53.50	116	223
windowpane	2	2	0.00	0.02	0.02	1	196	56.00	140	252
lined seahorse	2	2	0.00	0.02	0.02		76	17.50	58	93
Atlantic thread herring	2	1	0.00	0.02	0.02		178	6.00	172	184
winter flounder	2	1	0.00	0.02	0.02		67	5.00	62	72
northern puffer	2	1	0.00	0.02	0.02	0	136	9.50	126	145
feather blenny	2	1	0.00	0.02	0.02		124	50.50	73	174
bluefish	1	1	0.00	0.01	0.01		201		201	201
harvestfish	1	1	0.00	0.01	0.01	0	135		135	135
red hake	1	1	0.00	0.01	0.01		185		185	185
hickory shad	1	1	0.00	0.01	0.01		185		185	185
southern stingray	1	1	0.00	0.01	0.01		492		492	492
bluntnose stingray	1	1	0.00	0.01	0.01		298		298	298
spiny butterfly ray	1	1	0.00	0.01	0.01		551		551	551
striped burrfish	1	1	0.00	0.01	0.01		195		195	195
veined rapa whelk	1	1	0.00	0.01	0.01					
mud crab spp		36								
right-hand hermit crab spp		20								
sand shrimp		18								
grass shrimp spp		16								
blue mussel		12								
skeleton shrimp spp		7								
worm spp		7								
oyster, common		6								
blood ark/clam		6								
slipper shell spp		6								
drill & snail spp		6								
bent mussel		5								
wedge rangia clam (Atlantic)		4								
moon snail		2								
Amphipod spp		2								
forbes common sea star		1								
sand dollar		1								
mysid shrimp		1								
soft-shell clam		1								
glassy lyonsia		1								
sea cucumber spp		1								
transverse ark (clam)		1								
Northern dwarf tellin		1								
All Species Combined	42,671									

Table 97.

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)
bav anchovy	11,527	31	74.84	295.56		819	57	0.28	34	82
jellyfish spp	1,467	37	9.52	37.62	40.44					
Atlantic croaker	1,074	21	6.97	27.54	29.60	38	228	1.33	24	389
spot	299	20	1.94	7.67	8.24	193	132	2.51	67	217
hogchoker	247	23	1.60	6.33		12	107	1.38	66	186
northern searobin	211	33	1.37	5.41	5.82	208	115	1.06	66	177
weakfish	156	19	1.01	4.00	4.30	52	164	7.42	25	338
kingfish spp	80	5	0.52	2.05	2.21	67	95	15.79	34	306
blackcheek tonguefish	62	20	0.40	1.59	1.71	19	139	2.70	95	181
summer flounder	43	22	0.28	1.10	1.19	27	248	20.18	103	642
blue crab, adult female	36	10	0.23	0.92	0.99		137	2.70	104	178
black seabass	29	12	0.19	0.74	0.80	29	117	3.02	88	171
smallmouth flounder	27	10	0.18	0.69	0.74	0	104	2.04	77	122
silver seatrout	19	7	0.12	0.49	0.52		157	2.60	141	179
mantis shrimp	17	10	0.11	0.44	0.47		101	4.22	78	129
clearnose skate	14	5	0.09	0.36	0.39		379	21.88	217	474
silver perch	11	4	0.07	0.28	0.30	1	156	12.04	43	195
blue crab, male	9	6	0.06	0.23	0.25		94	7.44	61	137
blue crab, juvenile female	9	6	0.06	0.23	0.25		76	5.04	46	100
squid spp	7	3	0.05	0.18	0.19		56	8.26	32	97
butterfish	6	5	0.04	0.15	0.17	1	113	16.12	69	157
northern pipefish	6	4	0.04	0.15	0.17		162	14.66	113	210
spider crab, 6 spine	5	2	0.03	0.13	0.14					
northern puffer	4	3	0.03	0.10	0.11	1	121	23.76	60	176
spotted hake	4	3	0.03	0.10	0.11	4	154	11.00	123	175
knobbed whelk	4	3	0.03	0.10	0.11					
scup	3	3	0.02	0.08	0.08	3	86	5.36	76	94
spider crab, common	3	3	0.02	0.08	0.08					
pigfish	3	2	0.02	0.08	0.08		151	9.17	139	169
striped anchovy	3	2	0.02	0.08	0.08	0	105	0.88	103	106
lady crab	3	2	0.02	0.08	0.08					
inshore lizardfish	3	1	0.02	0.08	0.08	3	77	8.89	60	90
Atlantic thread herring	2	2	0.01	0.05	0.06		144	15.00	129	159
windowpane	2	2	0.01	0.05	0.06	2	108	31.50	76	139
bluefish	1	1	0.01	0.03	0.03		132		132	132
Atlantic spadefish	1	1	0.01	0.03	0.03		159		159	159
oyster toadfish	1	1	0.01	0.03	0.03		312		312	312
spiny butterfly ray	1	1	0.01	0.03	0.03		830		830	830
cownose ray	1	1	0.01	0.03	0.03		339		339	339
Atlantic cutlassfish	1	1	0.01	0.03	0.03		595		595	595
brown shrimp	1	1	0.01	0.03	0.03		137		137	137
right-hand hermit crab spp		13								
blue mussel		12								
mud crab spp		3								
sand dollar		3								
slipper shell spp		3								
sand shrimp		2								
blood ark/clam		2								
drill & snail spp		2								
grass shrimp spp		1								
skeleton shrimp spp		1								
forbes common sea star		1								
moon snail		1								
sea cucumber spp		1								
wedge rangia clam (Atlantic)		1								
All Species Combined	15,402									

Table 98.

Month - July, 1999

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)
bay anchovy	1,018	16	23.70	46.27	.	25	63	0.54	26	84
hogchoker	848	21	19.74	38.55	.	591	77	1.36	38	165
weakfish	693	19	16.13	31.50	28.52	636	66	2.29	21	326
Atlantic croaker	552	22	12.85	25.09	22.72	358	171	1.81	106	387
spot	283	19	6.59	12.86	11.65	229	124	2.05	64	212
jellyfish spp	281	14	6.54	12.77	11.56	.	.	.	.	.
blue catfish	177	7	4.12	8.05	7.28	168	202	1.95	148	290
blue crab, adult female	81	11	1.89	3.68	3.33	.	124	1.72	89	166
blue crab, male	76	17	1.77	3.45	3.13	.	97	3.53	33	152
white perch	69	6	1.61	3.14	2.84	0	184	2.99	110	250
blue crab, juvenile female	57	18	1.33	2.59	2.35	.	74	2.65	26	110
blackcheek tonguefish	27	9	0.63	1.23	1.11	24	112	3.05	77	146
oyster toadfish	23	7	0.54	1.05	0.95	.	194	12.67	23	268
summer flounder	20	4	0.47	0.91	0.82	11	239	19.43	167	461
silver perch	14	4	0.33	0.64	0.58	1	165	9.89	42	194
black seabass	12	3	0.28	0.55	0.49	12	137	6.39	108	174
white catfish	12	2	0.28	0.55	0.49	0	207	15.72	139	295
spider crab, 6 spine	11	6	0.26	0.50	0.45	.	.	.	.	.
northern searobin	6	2	0.14	0.27	0.25	6	116	12.39	58	139
American eel	5	4	0.12	0.23	0.21	.	228	16.40	188	272
harvestfish	5	2	0.12	0.23	0.21	3	29	.	29	29
channel catfish	4	1	0.09	0.18	0.16	0	309	38.10	212	396
gizzard shad	3	3	0.07	0.14	0.12	0	240	43.09	159	306
Atlantic cutlassfish	3	3	0.07	0.14	0.12	.	545	146.15	266	760
striped bass	3	2	0.07	0.14	0.12	0	311	87.51	138	419
naked goby	2	2	0.05	0.09	0.08	.	41	9.00	32	50
Atlantic thread herring	2	1	0.05	0.09	0.08	.	176	14.00	162	190
threadfin shad	2	1	0.05	0.09	0.08	.	112	3.00	109	115
butterfish	1	1	0.02	0.05	0.04	1	31	.	31	31
tautog	1	1	0.02	0.05	0.04	.	332	.	332	332
striped anchovy	1	1	0.02	0.05	0.04	0	101	.	101	101
northern pipefish	1	1	0.02	0.05	0.04	.	139	.	139	139
clearnose skate	1	1	0.02	0.05	0.04	.	410	.	410	410
horseshoe crab	1	1	0.02	0.05	0.04	.	295	.	295	295
mantis shrimp	1	1	0.02	0.05	0.04	.	98	.	98	98
mud crab spp	.	11	.	.	.	.	.	.	.	.
grass shrimp spp	.	8	.	.	.	.	.	.	.	.
bent mussel	.	7	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	6	.	.	.	.	.	.	.	.
drill & snail spp	.	5	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	4	.	.	.	.	.	.	.	.
Amphipod spp	.	4	.	.	.	.	.	.	.	.
river shrimp	.	3	.	.	.	.	.	.	.	.
blue mussel	.	3	.	.	.	.	.	.	.	.
quahog clam	.	3	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
ovster, common	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	2	.	.	.	.	.	.	.	.
mysid shrimp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	4,296									

Table 99.

Month - July, 1999
 System - Rappahannock River
 No. of Random Trawls Made - 14
 No. of Fixed Trawls Made - 8
 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	3,232	17	58.48	146.91		64	60	0.50	31	89
Atlantic croaker	601	16	10.87	27.32	31.77	517	159	3.15	98	342
weakfish	496	19	8.97	22.55	26.22	478	69	1.60	27	255
hogchoker	403	20	7.29	18.32		243	76	1.21	34	125
spot	314	19	5.68	14.27	16.60	291	124	1.44	86	208
blue catfish	124	1	2.24	5.64	6.56	114	234	4.29	181	339
jellyfish spp	120	20	2.16	5.43	6.32					
white perch	56	6	1.01	2.55	2.96	0	164	3.19	117	213
blue crab, male	51	16	0.92	2.32	2.70		95	3.55	52	150
blue crab, juvenile female	45	17	0.81	2.05	2.38		74	2.72	34	107
white catfish	29	3	0.52	1.32	1.53	0	291	5.64	226	379
summer flounder	16	8	0.29	0.73	0.85	6	244	20.90	64	333
blue crab, adult female	9	6	0.16	0.41	0.48		114	6.93	85	140
inshore lizardfish	7	1	0.13	0.32	0.37	7	72	2.95	63	82
American eel	5	3	0.09	0.23	0.26		266	34.91	172	336
blackcheek tonguefish	4	4	0.07	0.18	0.21	4	106	4.64	93	114
northern searobin	3	3	0.05	0.14	0.16	3	121	9.61	102	134
channel catfish	3	1	0.05	0.14	0.16	0	274	18.67	255	311
feather blenny	2	2	0.04	0.09	0.11		66	4.50	61	70
black seabass	1	1	0.02	0.05	0.05	1	100		100	100
hickory shad	1	1	0.02	0.05	0.05		53		53	53
striped bass	1	1	0.02	0.05	0.05	0	168		168	168
northern pipefish	1	1	0.02	0.05	0.05		121		121	121
naked goby	1	1	0.02	0.05	0.05		42		42	42
oyster toadfish	1	1	0.02	0.05	0.05		154		154	154
silver perch	1	1	0.02	0.05	0.05	0	191		191	191
mud crab spp		3								
bent mussel		2								
grass shrimp spp		1								
sand shrimp		1								
macoma clam spp		1								
wedge rangia clam (Atlantic)		1								
Amphipod spp		1								
little (dwarf) surf clam		1								
Northern dwarf tellin		1								
All Species Combined	5,527									

Table 100.

Month - July, 1999

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	2,946	21	43.43	133.91		49	60	0.41	37	86
Atlantic croaker	1,785	20	26.31	81.14	54.47	1,486	156	2.41	60	391
hogchoker	561	19	8.27	25.50		247	81	1.35	27	170
jellyfish spp	528	19	7.78	24.00	16.11					
weakfish	388	17	5.72	17.64	11.84	362	70	2.83	25	312
spot	207	14	3.05	9.41	6.32	178	112	2.63	29	217
blue crab, male	141	21	2.08	6.41	4.30		90	2.07	38	152
blue crab, juvenile female	78	16	1.15	3.55	2.38		78	2.24	27	111
blue crab, adult female	33	11	0.49	1.50	1.01		133	2.92	99	168
summer flounder	31	7	0.46	1.41	0.95	21	198	13.01	113	375
white perch	14	3	0.21	0.64	0.43	0	193	10.64	108	272
striped bass	11	2	0.16	0.50	0.34	0	189	7.44	150	236
blackcheek tonguefish	10	6	0.15	0.45	0.31	10	92	4.09	60	106
oyster toadfish	9	4	0.13	0.41	0.27		146	10.48	115	224
gizzard shad	6	2	0.09	0.27	0.18	0	359	11.51	322	393
white catfish	5	4	0.07	0.23	0.15	0	234	35.52	116	303
silver perch	5	4	0.07	0.23	0.15	0	182	9.71	152	205
longnose gar	5	2	0.07	0.23	0.15		628	65.29	474	790
spider crab, 6 spine	4	1	0.06	0.18	0.12					
mantis shrimp	3	1	0.04	0.14	0.09		107	12.13	86	128
northern pipefish	2	2	0.03	0.09	0.06		147	2.50	144	149
Atlantic cutlassfish	2	2	0.03	0.09	0.06		283	62.00	221	345
channel (smooth) whelk	2	2	0.03	0.09	0.06					
black seabass	2	1	0.03	0.09	0.06	2	114	22.00	92	136
butterfish	1	1	0.01	0.05	0.03	0	100		100	100
harvestfish	1	1	0.01	0.05	0.03	0	128		128	128
American eel	1	1	0.01	0.05	0.03		281		281	281
northern searobin	1	1	0.01	0.05	0.03	1	116		116	116
green goby	1	1	0.01	0.05	0.03		50		50	50
naked goby	1	1	0.01	0.05	0.03		48		48	48
grass shrimp spp		9								
mud crab spp		6								
quahog clam		2								
blood ark/clam		2								
big-clawed snapping shrimp		1								
sand shrimp		1								
skeleton shrimp spp		1								
soft-shell clam		1								
wedge rangia clam (Atlantic)		1								
transverse ark (clam)		1								
All Species Combined	6,784									

Table 101.

Month - July, 1999
 System - Pocomoke Sound
 No. of Random Trawls Made - 11
 No. of Fixed Trawls Made - 3
 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	797	10	23.97	56.93	.	51	67	0.69	31	88
hogchoker	615	13	18.50	43.93	.	1	112	1.15	78	162
Atlantic croaker	471	13	14.17	33.64	24.62	30	239	2.32	138	414
jellyfish spp	422	14	12.69	30.14	22.06	.	.	.	.	.
weakfish	350	14	10.53	25.00	18.30	244	126	4.56	23	366
spot	310	12	9.32	22.14	16.20	239	144	2.63	79	237
blue crab, juvenile female	104	13	3.13	7.43	5.44	.	75	2.05	32	119
blue crab, male	84	14	2.53	6.00	4.39	.	86	2.96	29	152
silver perch	45	8	1.35	3.21	2.35	15	146	8.51	61	209
blackcheck tonguefish	44	13	1.32	3.14	2.30	43	107	1.59	86	138
northern searobin	27	9	0.81	1.93	1.41	26	129	2.34	110	153
blue crab, adult female	27	9	0.81	1.93	1.41	.	126	2.14	106	144
mantis shrimp	11	3	0.33	0.79	0.58	.	95	2.81	80	110
summer flounder	5	3	0.15	0.36	0.26	4	226	49.13	146	420
northern pipefish	3	2	0.09	0.21	0.16	.	149	25.62	108	196
black seabass	2	2	0.06	0.14	0.10	2	147	24.00	123	171
Atlantic thread herring	2	2	0.06	0.14	0.10	.	175	3.00	172	178
northern puffer	2	2	0.06	0.14	0.10	2	44	4.50	39	48
inshore lizardfish	2	2	0.06	0.14	0.10	2	93	9.00	84	102
Atlantic spadefish	1	1	0.03	0.07	0.05	.	180	.	180	180
spider crab, 6 spine	1	1	0.03	0.07	0.05	.	.	.	.	.
mud crab spp	.	3	.	.	.	.	.	.	.	.
sand shrimp	.	1	.	.	.	.	.	.	.	.
grass shrimp spp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
All Species Combined	3,325									

Table 102.

Month - July, 1999

System - All - Pooled

No. of Random Trawls Made - 91

No. of Fixed Trawls Made - 28

No. of Species - 58

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	19,520	95	55.25	164.03	.	1,008	60	0.21	26	89
Atlantic croaker	4,483	92	12.69	37.67	34.12	2,429	190	1.18	24	414
jellyfish spp	2,818	104	7.97	23.68	21.44	.	.	.	.	.
hogchoker	2,674	96	7.57	22.47	.	1,094	87	0.72	27	186
weakfish	2,083	88	5.90	17.50	15.85	1,772	88	1.65	21	366
spot	1,413	84	4.00	11.87	10.75	1,130	128	1.05	29	237
blue crab, male	361	74	1.02	3.03	2.75	.	91	1.41	29	152
blue catfish	301	8	0.85	2.53	2.29	282	209	1.99	148	339
blue crab, juvenile female	293	70	0.83	2.46	2.23	.	76	1.16	26	119
northern searobin	248	48	0.70	2.08	1.89	244	117	1.02	58	177
blue crab, adult female	186	47	0.53	1.56	1.42	.	128	1.22	85	178
blackcheek tonguefish	147	52	0.42	1.24	1.12	100	120	1.92	60	181
white perch	139	15	0.39	1.17	1.06	0	177	2.39	108	272
summer flounder	115	44	0.33	0.97	0.88	69	231	9.73	64	642
kingfish spp	80	5	0.23	0.67	0.61	67	95	15.79	34	306
silver perch	76	21	0.22	0.64	0.58	17	154	5.76	42	209
black seabass	46	19	0.13	0.39	0.35	46	123	3.13	88	174
white catfish	46	9	0.13	0.39	0.35	0	263	8.44	116	379
oyster toadfish	34	13	0.10	0.29	0.26	.	184	10.42	23	312
mantis shrimp	32	15	0.09	0.27	0.24	.	100	2.66	78	129
smallmouth flounder	27	10	0.08	0.23	0.21	0	104	2.04	77	122
spider crab, 6 spine	21	10	0.06	0.18	0.16	.	.	.	.	.
silver seatrout	19	7	0.05	0.16	0.14	.	157	2.60	141	179
clearnose skate	15	6	0.04	0.13	0.11	.	381	20.47	217	474
striped bass	15	5	0.04	0.13	0.11	0	212	20.64	138	419
northern pipefish	13	10	0.04	0.11	0.10	.	151	8.83	108	210
inshore lizardfish	12	4	0.03	0.10	0.09	12	77	3.59	60	102
American eel	11	8	0.03	0.09	0.08	.	250	17.69	172	336
gizzard shad	9	5	0.03	0.08	0.07	0	320	24.61	159	393
butterfish	8	7	0.02	0.07	0.06	2	101	15.53	31	157
squid spp	7	3	0.02	0.06	0.05	.	56	8.26	32	97
channel catfish	7	2	0.02	0.06	0.05	0	294	22.70	212	396
Atlantic cutlassfish	6	6	0.02	0.05	0.05	.	466	89.11	221	760
Atlantic thread herring	6	5	0.02	0.05	0.05	.	165	8.55	129	190
northern puffer	6	5	0.02	0.05	0.05	3	95	22.27	39	176
harvestfish	6	3	0.02	0.05	0.05	3	79	49.50	29	128
longnose gar	5	2	0.01	0.04	0.04	.	628	65.29	474	790
naked goby	4	4	0.01	0.03	0.03	.	43	4.04	32	50
spotted hake	4	3	0.01	0.03	0.03	4	154	11.00	123	175
striped anchovy	4	3	0.01	0.03	0.03	0	104	1.11	101	106
knobbed whelk	4	3	0.01	0.03	0.03	.	.	.	.	.
scup	3	3	0.01	0.03	0.02	3	86	5.36	76	94
spider crab, common	3	3	0.01	0.03	0.02	.	.	.	.	.
pigfish	3	2	0.01	0.03	0.02	.	151	9.17	139	169
lady crab	3	2	0.01	0.03	0.02	.	.	.	.	.
windowpane	3	2	0.01	0.02	0.02	2	108	31.50	76	139
Atlantic spadefish	2	2	0.01	0.02	0.02	.	170	10.50	159	180
feather blenny	2	2	0.01	0.02	0.02	.	66	4.50	61	70
channel (smooth) whelk	2	2	0.01	0.02	0.02	.	.	.	.	.
threadfin shad	2	1	0.01	0.02	0.02	.	112	3.00	109	115
bluefish	1	1	0.00	0.01	0.01	.	132	.	132	132
hickory shad	1	1	0.00	0.01	0.01	.	53	.	53	53
tautog	1	1	0.00	0.01	0.01	.	332	.	332	332
green goby	1	1	0.00	0.01	0.01	.	50	.	50	50
spiny butterfly ray	1	1	0.00	0.01	0.01	.	830	.	830	830
cownose ray	1	1	0.00	0.01	0.01	.	339	.	339	339
horseshoe crab	1	1	0.00	0.01	0.01	.	295	.	295	295
brown shrimp	1	1	0.00	0.01	0.01	.	137	.	137	137
mud crab spp	.	26	.	.	.	.	.	.	.	.
grass shrimp spp	.	21	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	18	.	.	.	.	.	.	.	.
blue mussel	.	15	.	.	.	.	.	.	.	.
bent mussel	.	10	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	9	.	.	.	.	.	.	.	.
drill & snail spp	.	7	.	.	.	.	.	.	.	.
blood ark/clam	.	6	.	.	.	.	.	.	.	.
sand shrimp	.	5	.	.	.	.	.	.	.	.
quahog clam	.	5	.	.	.	.	.	.	.	.
Amphipod spp	.	5	.	.	.	.	.	.	.	.
river shrimp	.	3	.	.	.	.	.	.	.	.
sand dollar	.	3	.	.	.	.	.	.	.	.
moon snail	.	3	.	.	.	.	.	.	.	.
oyster, common	.	3	.	.	.	.	.	.	.	.

Table 102. (continued)

Month - July, 1999										
System - All - Pooled										
No. of Random Trawls Made - 91										
No. of Fixed Trawls Made - 28										
No. of Species - 58										
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)
slipper shell spp	.	3	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	3	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	2	.	.	.	.	.	.	.	.
sea cucumber spp	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
forbes common sea star	.	1	.	.	.	.	.	.	.	.
mysid shrimp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1
macoma clam spp	.	1
little (dwarf) surf clam	.	1
transverse ark (clam)	.	1
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All Species Combined	35,334									

Table 103.

Month - August, 1999
 System - Chesapeake Bay
 No. of Random Trawls Made - 39
 No. of Fixed Trawls Made - 0
 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	8,125	32	51.78	208.33		5,458	46	0.48	12	75
weakfish	1,998	29	12.73	51.23	27.17	1,701	82	2.05	6	306
Atlantic croaker	1,505	26	9.59	38.59	20.47	1,128	209	1.02	128	331
kingfish spp	767	30	4.89	19.67	10.43	734	49	1.98	17	263
spot	670	28	4.27	17.18	9.11	529	148	1.15	64	239
striped anchovy	501	23	3.19	12.85	6.81	497	51	0.97	29	119
scup	296	4	1.89	7.59	4.03	296	105	0.87	62	124
hogchoker	214	22	1.36	5.49	2.11	0	111	1.60	66	183
northern searobin	187	20	1.19	4.79	2.54	185	131	2.47	22	183
blackcheek tonguefish	155	26	0.99	3.97	2.11	1	130	1.69	80	181
squid spp	139	24	0.89	3.56	1.89		36	2.14	13	150
inshore lizardfish	132	29	0.84	3.38	1.80	129	121	3.08	48	314
jellyfish spp	132	25	0.84	3.38	1.80					
mantis shrimp	123	13	0.78	3.15	1.67		71	2.56	26	130
black seabass	102	14	0.65	2.62	1.39	0	131	1.27	92	167
summer flounder	83	25	0.53	2.13	1.13	48	265	10.71	74	608
butterfish	80	23	0.51	2.05	1.09	46	93	5.08	21	184
smallmouth flounder	78	11	0.50	2.00	1.06	55	66	3.86	31	112
harvestfish	65	18	0.41	1.67	0.88	65	32	1.97	6	81
blue crab, adult female	55	18	0.35	1.41	0.75		127	1.96	91	165
blue crab, juvenile female	45	15	0.29	1.15	0.61		79	3.93	14	117
spider crab, 6 spine	36	15	0.23	0.92	0.49					
roughneck shrimp	31	10	0.20	0.79	0.42					
blue crab, male	30	9	0.19	0.77	0.41		98	4.50	48	154
northern puffer	22	14	0.14	0.56	0.30	22	62	6.24	12	102
Iridescent swimming crab	15	7	0.10	0.38	0.20					
Atlantic cutlassfish	12	5	0.08	0.31	0.16		403	14.95	291	467
Atlantic thread herring	11	6	0.07	0.28	0.15		85	17.26	43	176
silver seatrout	10	4	0.06	0.26	0.14		168	5.96	130	186
northern pipefish	8	6	0.05	0.21	0.11		159	10.12	130	205
pigfish	6	3	0.04	0.15	0.08		145	24.06	26	177
lady crab	6	2	0.04	0.15	0.08					
tautog	6	1	0.04	0.15	0.08		313	26.55	204	382
Atlantic spadefish	4	3	0.03	0.10	0.05		20	4.68	13	34
knobbed whelk	4	3	0.03	0.10	0.05					
clearnose skate	4	2	0.03	0.10	0.05		386	58.05	224	475
striped searobin	3	3	0.02	0.08	0.04		137	8.72	121	151
silver perch	3	3	0.02	0.08	0.04	3	103	9.54	87	120
banded drum	3	3	0.02	0.08	0.04		25	3.18	19	30
smooth butterfly ray	3	1	0.02	0.08	0.04		610	79.31	460	730
Atlantic herring	2	2	0.01	0.05	0.03		43	5.50	37	48
southern stingray	2	2	0.01	0.05	0.03		617	72.00	545	689
bluntnose stingray	2	2	0.01	0.05	0.03		209	11.50	197	220
northern stargazer	2	2	0.01	0.05	0.03		94	54.50	39	148
Spanish mackerel	2	1	0.01	0.05	0.03		146	2.50	143	148
windowpane	2	1	0.01	0.05	0.03	2	110	8.00	102	118
bighead searobin	1	1	0.01	0.03	0.01		50		50	50
lined seahorse	1	1	0.01	0.03	0.01		101		101	101
naked goby	1	1	0.01	0.03	0.01		31		31	31
spiny butterfly ray	1	1	0.01	0.03	0.01		808		808	808
cownose ray	1	1	0.01	0.03	0.01		585		585	585
Atlantic moonfish	1	1	0.01	0.03	0.01		74		74	74
northern sennet	1	1	0.01	0.03	0.01		123		123	123
fringed flounder	1	1	0.01	0.03	0.01		108		108	108
sharksucker	1	1	0.01	0.03	0.01		394		394	394
brown shrimp	1	1	0.01	0.03	0.01		106		106	106
speckled crab	1	1	0.01	0.03	0.01					
right-hand hermit crab spp		21								
mud crab spp		12								
slipper shell spp		10								
grass shrimp spp		6								
sand dollar		5								
worm spp		5								
sand shrimp		4								
blood ark/clam		3								
blue mussel		1								
glassy lyonsia		1								
Amphipod spp		1								
drill & snail spp		1								
transverse ark (clam)		1								
All Species Combined	15,692									

Table 104.

Month - August, 1999										
System - James River										
No. of Random Trawls Made - 14										
No. of Fixed Trawls Made - 8										
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	5,679	18	52.47	258.14	.	4,431	42	0.56	22	80
hogchoker	1,349	18	12.46	61.32	.	40	75	1.28	12	158
weakfish	833	21	7.70	37.86	21.94	821	58	1.16	16	382
spot	733	20	6.77	33.32	19.31	687	132	1.12	89	245
white perch	391	5	3.61	17.77	10.30	0	132	2.19	85	218
Atlantic croaker	389	19	3.59	17.68	10.25	345	180	2.21	116	373
blue catfish	293	5	2.71	13.32	7.72	0	201	2.47	151	295
jellyfish spp	160	15	1.48	7.27	4.21	.	.	.	.	.
oyster toadfish	132	7	1.22	6.00	3.48	.	190	5.58	32	370
blue crab, male	108	18	1.00	4.91	2.85	.	97	3.95	13	181
blue crab, juvenile female	87	17	0.80	3.95	2.29	.	64	4.03	12	142
squid spp	72	6	0.67	3.27	1.90	.	27	0.90	14	45
channel catfish	64	3	0.59	2.91	1.69	0	202	6.62	149	431
white catfish	55	5	0.51	2.50	1.45	0	213	6.07	141	343
kingfish spp	54	8	0.50	2.45	1.42	54	56	3.27	31	111
striped anchovy	54	6	0.50	2.45	1.42	54	73	1.13	47	89
blackcheek tonguefish	50	11	0.46	2.27	1.32	0	124	1.27	107	151
spider crab, 6 spine	48	8	0.44	2.18	1.26	.	.	.	.	.
harvestfish	36	10	0.33	1.64	0.95	34	44	4.32	16	140
silver perch	35	7	0.32	1.59	0.92	24	115	7.98	44	211
roughneck shrimp	34	8	0.31	1.55	0.90	.	.	.	.	.
blue crab, adult female	30	10	0.28	1.36	0.79	.	142	2.33	117	170
inshore lizardfish	17	7	0.16	0.77	0.45	17	137	5.33	80	181
American eel	16	6	0.15	0.73	0.42	.	286	16.23	192	489
black seabass	15	4	0.14	0.68	0.40	0	145	6.06	103	200
striped bass	13	1	0.12	0.59	0.34	13	67	1.35	59	73
naked goby	12	8	0.11	0.55	0.32	.	28	1.51	18	38
summer flounder	10	7	0.09	0.45	0.26	8	207	13.30	144	298
Atlantic thread herring	6	3	0.06	0.27	0.16	.	181	4.65	165	194
mantis shrimp	6	2	0.06	0.27	0.16	.	60	3.46	45	68
threadfin shad	6	1	0.06	0.27	0.16	.	106	0.61	105	109
pigfish	5	3	0.05	0.23	0.13	.	177	21.32	95	217
spider crab, common	5	3	0.05	0.23	0.13	.	.	.	.	.
Iridescent swimming crab	4	1	0.04	0.18	0.11	.	.	.	.	.
gizzard shad	2	2	0.02	0.09	0.05	0	221	27.00	194	248
brown shrimp	2	2	0.02	0.09	0.05	.	118	7.00	111	125
northern puffer	2	1	0.02	0.09	0.05	1	73	53.00	20	126
Atlantic spadefish	2	1	0.02	0.09	0.05	.	46	10.50	35	56
scup	1	1	0.01	0.05	0.03	0	160	.	160	160
butterfish	1	1	0.01	0.05	0.03	1	42	.	42	42
Spanish mackerel	1	1	0.01	0.05	0.03	.	120	.	120	120
tautog	1	1	0.01	0.05	0.03	.	469	.	469	469
northern searobin	1	1	0.01	0.05	0.03	1	161	.	161	161
bluespotted cornetfish	1	1	0.01	0.05	0.03	.	325	.	325	325
lined seahorse	1	1	0.01	0.05	0.03	.	72	.	72	72
green goby	1	1	0.01	0.05	0.03	.	30	.	30	30
bluntnose stingray	1	1	0.01	0.05	0.03	.	590	.	590	590
lookdown	1	1	0.01	0.05	0.03	.	116	.	116	116
Atlantic cutlassfish	1	1	0.01	0.05	0.03	.	740	.	740	740
northern stargazer	1	1	0.01	0.05	0.03	.	23	.	23	23
northern sennet	1	1	0.01	0.05	0.03	.	73	.	73	73
smallmouth flounder	1	1	0.01	0.05	0.03	1	54	.	54	54
pink shrimp	1	1	0.01	0.05	0.03	.	90	.	90	90
mud crab spp	.	14	.	.	.	.	.	.	.	.
grass shrimp spp	.	10	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	9	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	7	.	.	.	.	.	.	.	.
worm spp	.	7	.	.	.	.	.	.	.	.
quahog clam	.	5	.	.	.	.	.	.	.	.
drill & snail spp	.	5	.	.	.	.	.	.	.	.
bent mussel	.	4	.	.	.	.	.	.	.	.
blood ark/clam	.	3	.	.	.	.	.	.	.	.
transverse ark (clam)	.	3	.	.	.	.	.	.	.	.
river shrimp	.	2	.	.	.	.	.	.	.	.
sand shrimp	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	1	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	1	.	.	.	.	.	.	.	.
All Species Combined	10,824									

Table 105.

Month - August, 1999

System - Rappahannock 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	3,727	20	36.72	169.41	.	2,652	43	0.58	20	94
weakfish	3,034	20	29.89	137.91	58.88	2,966	73	1.52	16	349
hogchoker	1,271	22	12.52	57.77	.	0	86	0.77	42	152
spot	641	19	6.31	29.14	12.44	590	145	1.14	87	242
white perch	394	6	3.88	17.91	7.65	0	177	1.35	130	210
Atlantic croaker	321	20	3.16	14.59	6.23	235	184	2.37	68	326
blue crab, male	142	22	1.40	6.45	2.76	.	99	2.81	11	162
blue crab, juvenile female	130	22	1.28	5.91	2.52	.	83	1.92	13	118
white catfish	89	2	0.88	4.05	1.73	0	253	3.73	183	356
harvestfish	73	13	0.72	3.32	1.42	73	33	0.97	17	59
blue crab, adult female	68	20	0.67	3.09	1.32	.	140	1.62	100	171
kingfish spp	47	9	0.46	2.14	0.91	47	44	1.77	29	77
inshore lizardfish	46	9	0.45	2.09	0.89	46	112	4.08	62	163
mantis shrimp	38	3	0.37	1.73	0.74	.	55	1.38	37	73
striped anchovy	32	7	0.32	1.45	0.62	32	62	2.04	40	82
jellyfish spp	25	8	0.25	1.14	0.49	.	.	.	.	.
naked goby	19	8	0.19	0.86	0.37	.	31	1.11	19	42
summer flounder	15	7	0.15	0.68	0.29	9	244	18.13	173	384
blackcheek tonguefish	12	6	0.12	0.55	0.23	0	124	2.18	115	139
gizzard shad	3	2	0.03	0.14	0.06	0	275	53.25	211	381
Atlantic spadefish	3	2	0.03	0.14	0.06	.	43	4.04	35	48
blue crab, sex unknown	3	2	0.03	0.14	0.06	.	15	0.67	14	16
blue catfish	3	1	0.03	0.14	0.06	0	235	26.12	184	271
northern puffer	2	2	0.02	0.09	0.04	2	88	26.50	61	114
American eel	2	2	0.02	0.09	0.04	.	232	23.50	208	255
silver perch	2	2	0.02	0.09	0.04	1	125	74.50	50	199
spider crab, 6 spine	2	2	0.02	0.09	0.04	.	.	.	.	.
hickory shad	2	1	0.02	0.09	0.04	.	81	0.50	80	81
northern searobin	2	1	0.02	0.09	0.04	2	110	37.00	73	147
Atlantic menhaden	1	1	0.01	0.05	0.02	0	191	.	191	191
spotted seatrout	1	1	0.01	0.05	0.02	.	53	.	53	53
roughneck shrimp	1	1	0.01	0.05	0.02	.	.	.	.	.
mud crab spp	.	10	.	.	.	.	.	.	.	.
grass shrimp spp	.	6	.	.	.	.	.	.	.	.
littie (dwarf) surf clam	.	6	.	.	.	.	.	.	.	.
transverse ark (clam)	.	6	.	.	.	.	.	.	.	.
worm spp	.	3	.	.	.	.	.	.	.	.
bent mussel	.	3	.	.	.	.	.	.	.	.
drill & snail spp	.	3	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	2	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
All Species Combined	10,151									

Table 109.

Month - August, 1999

System - All - Pooled

No. of Random Trawls Made - 90

No. of Fixed Trawls Made - 28

No. of Species - 79

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	51,362	100	66.48	436.97		41,183	45	0.27	12	94
weakfish	7,713	101	9.94	65.36	35.47	7,242	76	0.89	6	382
hogchoker	4,249	89	5.48	36.01		51	87	0.58	12	183
spot	3,102	95	4.00	26.29	14.26	2,719	137	0.61	64	247
Atlantic croaker	2,921	94	3.77	24.75	13.43	2,340	187	0.88	68	383
jellyfish spp	902	74	1.16	7.65	4.15					
kingfish spp	874	50	1.13	7.41	4.02	841	49	1.55	17	263
white perch	789	12	1.02	6.69	3.63	0	156	1.75	85	247
striped anchovy	650	47	0.84	5.51	2.99	646	59	0.82	29	119
blue crab, male	472	82	0.61	4.00	2.17		95	1.51	11	181
blue crab, juvenile female	452	83	0.58	3.83	2.08		76	1.26	12	142
harvestfish	399	66	0.51	3.38	1.83	385	37	1.33	6	173
scup	297	5	0.38	2.52	1.37	296	105	0.93	62	160
blue catfish	296	6	0.38	2.51	1.36	0	201	2.51	151	295
blackcheek tonguefish	290	57	0.37	2.46	1.33	1	125	1.05	80	181
inshore lizardfish	256	38	0.33	2.17	1.18		122	2.05	48	314
blue crab, adult female	233	67	0.30	1.97	1.07	251	137	0.92	91	177
silver perch	220	24	0.28	1.86	1.01	172	113	3.74	40	233
mantis shrimp	212	30	0.27	1.80	0.97		68	1.82	26	130
squid spp	211	30	0.27	1.79	0.97		34	1.59	13	150
northern searobin	194	26	0.25	1.64	0.89	191	131	2.42	22	183
white catfish	153	9	0.20	1.30	0.70	0	234	3.85	95	356
oyster toadfish	151	13	0.19	1.28	0.69		188	5.02	32	370
summer flounder	134	54	0.17	1.14	0.62	85	251	7.85	74	608
black seabass	119	20	0.15	1.01	0.55	0	133	1.42	92	200
spider crab, 6 spine	93	30	0.12	0.79	0.43					
butterfish	81	24	0.10	0.69	0.37	47	93	5.06	21	184
smallmouth flounder	79	12	0.10	0.67	0.36	56	66	3.79	31	112
roughneck shrimp	66	19	0.09	0.56	0.30					
channel catfish	64	3	0.08	0.54	0.29	0	202	6.62	149	431
naked goby	37	18	0.05	0.31	0.17		30	0.79	18	42
northern puffer	33	22	0.04	0.28	0.15	32	72	5.81	12	126
blue crab, sex unknown	23	5	0.03	0.19	0.11		25	6.46	7	104
Irrescendent swimming crab	19	8	0.02	0.16	0.09					
Atlantic thread herring	18	10	0.02	0.15	0.08		117	15.07	43	194
Atlantic cutlassfish	18	10	0.02	0.15	0.08		438	29.71	291	740
American eel	18	8	0.02	0.15	0.08		280	15.09	192	489
Atlantic spadefish	13	10	0.02	0.11	0.06		38	4.37	13	62
striped bass	13	1	0.02	0.11	0.06	13	67	1.35	59	73
northern pipefish	11	8	0.01	0.09	0.05		163	7.98	130	205
pigfish	11	6	0.01	0.09	0.05		159	16.30	26	217
Spanish mackerel	10	4	0.01	0.08	0.05		144	3.30	120	158
silver seatrout	10	4	0.01	0.08	0.05		168	5.96	130	186
tautog	7	2	0.01	0.06	0.03		335	31.61	204	469
gizzard shad	6	5	0.01	0.05	0.03	0	275	34.63	194	383
lady crab	6	2	0.01	0.05	0.03					
threadfin shad	6	1	0.01	0.05	0.03		106	0.61	105	109
striped searobin	5	5	0.01	0.04	0.02		123	9.89	98	151
spider crab, common	5	3	0.01	0.04	0.02					
knobbed whelk	4	3	0.01	0.03	0.02					
cleannose skate	4	2	0.01	0.03	0.02		386	58.05	224	475
lined seahorse	3	3	0.00	0.03	0.01		80	10.60	67	101
bluntnose stingray	3	3	0.00	0.03	0.01		336	127.34	197	590
banded drum	3	3	0.00	0.03	0.01		25	3.18	19	30
northern stargazer	3	3	0.00	0.03	0.01		70	39.27	23	148
brown shrimp	3	3	0.00	0.03	0.01		114	5.69	106	125
smooth butterfly ray	3	1	0.00	0.03	0.01		610	79.31	460	730
Atlantic herring	2	2	0.00	0.02	0.01		43	5.50	37	48
Atlantic menhaden	2	2	0.00	0.02	0.01	0	207	16.00	191	225
feather blenny	2	2	0.00	0.02	0.01		62	2.00	60	64
southern stingray	2	2	0.00	0.02	0.01		617	72.00	545	689
northern sennet	2	2	0.00	0.02	0.01		98	25.00	73	123
hickory shad	2	1	0.00	0.02	0.01		81	0.50	80	81
windowpane	2	1	0.00	0.02	0.01	2	110	8.00	102	118
spotted seatrout	1	1	0.00	0.01	0.00		53		53	53
bighead searobin	1	1	0.00	0.01	0.00		50		50	50
bluespotted cornetfish	1	1	0.00	0.01	0.00		325		325	325
longnose gar	1	1	0.00	0.01	0.00		850		850	850
green goby	1	1	0.00	0.01	0.00		30		30	30
skilletfish	1	1	0.00	0.01	0.00		38		38	38
spiny butterfly ray	1	1	0.00	0.01	0.00		808		808	808
cownose ray	1	1	0.00	0.01	0.00		585		585	585
lookdown	1	1	0.00	0.01	0.00		116		116	116

Table 109. (continued)

Month - August, 1999

System - All - Pooled

No. of Random Trawls Made - 90

No. of Fixed Trawls Made - 28

No. of Species - 79

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 moonfish	1	1	0.00	0.01	0.00	.	74	.	74	74
fringed flounder	1	1	0.00	0.01	0.00	.	108	.	108	108
striped burrfish	1	1	0.00	0.01	0.00	.	181	.	181	181
sharksucker	1	1	0.00	0.01	0.00	.	394	.	394	394
pink shrimp	1	1	0.00	0.01	0.00	.	90	.	90	90
speckled crab	1	1	0.00	0.01	0.00	.	.	.	.	.
mud crab spp	.	46	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	28	.	.	.	.	.	.	.	.
grass shrimp spp	.	25	.	.	.	.	.	.	.	.
worm spp	.	18	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	11	.	.	.	.	.	.	.	.
slipper shell spp	.	11	.	.	.	.	.	.	.	.
drill & snail spp	.	10	.	.	.	.	.	.	.	.
transverse ark (clam)	.	10	.	.	.	.	.	.	.	.
sand shrimp	.	7	.	.	.	.	.	.	.	.
oyster, common	.	7	.	.	.	.	.	.	.	.
bent mussel	.	7	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	7	.	.	.	.	.	.	.	.
blood ark/clam	.	6	.	.	.	.	.	.	.	.
sand dollar	.	5	.	.	.	.	.	.	.	.
quahog clam	.	5	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	4	.	.	.	.	.	.	.	.
Amphipod spp	.	3	.	.	.	.	.	.	.	.
river shrimp	.	2	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
glassy lyonsia	.	1	.	.	.	.	.	.	.	.
All Species Combined	77,558									

Table 110.

Month - September, 1999
 System - Chesapeake Bay
 No. of Random Trawls Made - 39
 No. of Fixed Trawls Made - 0
 No. of Species - 55
 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	17,733	26	71.91	454.69		16,847	45	0.38	16	72
striped anchovy	1,820	25	7.38	46.67	27.17	1,819	68	1.05	35	127
roughneck shrimp	893	20	3.62	22.90	13.33					
weakfish	870	26	3.53	22.31	12.99	749	116	2.14	5	344
squid spp	582	33	2.36	14.92	8.69		37	1.00	9	109
kingfish spp	561	37	2.27	14.38	8.38	483	95	2.44	20	287
spot	445	30	1.80	11.41	6.64	404	160	1.23	92	245
Atlantic croaker	416	26	1.69	10.67	6.21	49	167	3.50	8	335
hogchoker	230	21	0.93	5.90		0	116	1.65	77	178
silver perch	187	17	0.76	4.79	2.79	186	94	1.67	54	168
blackcheek tonguefish	150	19	0.61	3.85	2.24	1	140	1.54	44	183
butterfish	129	16	0.52	3.31	1.93	126	89	1.39	49	158
inshore lizardfish	105	26	0.43	2.69	1.57	92	158	3.62	76	256
smallmouth flounder	63	16	0.26	1.62	0.94	63	62	1.57	36	82
northern puffer	47	19	0.19	1.21	0.70	45	76	3.67	32	181
summer flounder	44	22	0.18	1.13	0.66	31	248	11.69	128	492
banded drum	39	17	0.16	1.00	0.58		45	2.82	25	109
harvestfish	39	12	0.16	1.00	0.58	39	84	1.89	52	106
mantis shrimp	34	12	0.14	0.87	0.51		70	4.43	28	126
blue crab, adult female	31	8	0.13	0.79	0.46		127	2.84	94	157
blue crab, juvenile female	27	8	0.11	0.69	0.40		42	6.19	14	118
pigfish	18	9	0.07	0.46	0.27		124	3.32	102	148
northern searobin	18	9	0.07	0.46	0.27	7	126	11.72	43	187
striped searobin	17	11	0.07	0.44	0.25		92	7.74	48	157
Atlantic thread herring	17	5	0.07	0.44	0.25		61	2.24	44	73
blue crab, male	16	5	0.06	0.41	0.24		47	8.81	20	142
jellyfish spp	15	7	0.06	0.37	0.22					
Atlantic spadefish	14	7	0.06	0.36	0.21		97	4.72	70	118
spider crab, 6 spine	10	3	0.04	0.26	0.15					
iridescent swimming crab	9	6	0.04	0.23	0.13					
lady crab	9	4	0.04	0.23	0.13					
shellfish blue crab	9	2	0.04	0.23	0.13					
northern pipefish	8	6	0.03	0.21	0.12		155	7.69	127	178
black seabass	6	6	0.02	0.15	0.09	0	141	9.09	109	170
Atlantic moonfish	6	4	0.02	0.15	0.09		79	8.81	52	105
brown shrimp	5	5	0.02	0.13	0.07		113	7.71	85	127
windowpane	5	4	0.02	0.13	0.07	4	163	23.22	107	248
knobbed whelk	5	3	0.02	0.13	0.07					
clearnose skate	4	2	0.02	0.10	0.06		280	65.65	133	450
channel (smooth) whelk	4	2	0.02	0.10	0.06					
bluefish	3	3	0.01	0.08	0.04		206	42.02	122	250
lined seahorse	3	3	0.01	0.08	0.04		75	21.84	53	119
oyster toadfish	2	2	0.01	0.05	0.03		50	0.50	49	50
striped burrfish	2	2	0.01	0.05	0.03		126	33.50	92	159
black drum	1	1	0.00	0.03	0.01		146		146	146
bluespotted cornetfish	1	1	0.00	0.03	0.01		457		457	457
skilletfish	1	1	0.00	0.03	0.01		30		30	30
bluntnose stingray	1	1	0.00	0.03	0.01		221		221	221
spiny butterfly ray	1	1	0.00	0.03	0.01		571		571	571
star drum	1	1	0.00	0.03	0.01		43		43	43
striped cusk-eel	1	1	0.00	0.03	0.01		142		142	142
fringed flounder	1	1	0.00	0.03	0.01		80		80	80
silver jenny	1	1	0.00	0.03	0.01		67		67	67
pink shrimp	1	1	0.00	0.03	0.01		73		73	73
spider crab, common	1	1	0.00	0.03	0.01					
mud crab spp		22								
right-hand hermit crab spp		17								
grass shrimp spp		6								
drill & snail spp		6								
sand dollar		4								
sand shrimp		3								
worm spp		2								
moon snail		2								
Amphipod spp		2								
transverse ark (clam)		2								
big-clawed snapping shrimp		1								
oyster, common		1								
sea cucumber spp		1								
bent mussel		1								
little (dwarf) surf clam		1								
leech spp		1								
All Species Combined	24,661									

Table 111.

Month - September, 1999

System - James River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 52

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	5,782	20	47.95	262.82	.	2,471	76	1.56	13	178
bay anchovy	1,641	20	13.61	74.59	.	1,582	39	0.65	15	68
roughneck shrimp	914	7	7.58	41.55	19.72	.	.	.	.	.
spot	723	20	6.00	32.86	15.60	710	132	1.14	86	244
Atlantic croaker	604	22	5.01	27.45	13.03	434	74	3.25	6	304
weakfish	600	17	4.98	27.27	12.95	587	89	1.59	24	304
blue catfish	295	10	2.45	13.41	6.37	8	207	3.01	82	432
blue crab, male	270	20	2.24	12.27	5.83	.	71	2.71	9	184
white perch	223	9	1.85	10.14	4.81	7	128	2.11	70	224
blue crab, juvenile female	169	19	1.40	7.68	3.65	.	54	2.56	12	132
blackcheek tonguefish	122	12	1.01	5.55	2.63	54	89	4.29	18	154
silver perch	111	11	0.92	5.05	2.40	102	103	2.66	64	210
white shrimp	84	8	0.70	3.82	1.81	.	76	2.25	40	147
oyster toadfish	59	9	0.49	2.68	1.27	.	201	6.62	52	295
kingfish spp	47	8	0.39	2.14	1.01	46	73	4.32	31	151
blue crab, adult female	46	12	0.38	2.09	0.99	.	150	1.61	131	171
brown shrimp	46	6	0.38	2.09	0.99	.	63	3.77	35	152
mantis shrimp	42	6	0.35	1.91	0.91	.	77	4.01	40	147
banded drum	38	3	0.32	1.73	0.82	.	75	3.18	35	105
gizzard shad	27	8	0.22	1.23	0.58	0	276	4.21	243	339
smallmouth flounder	23	5	0.19	1.05	0.50	23	58	3.02	34	97
naked goby	19	9	0.16	0.86	0.41	.	34	1.95	16	50
American eel	16	6	0.13	0.73	0.35	.	273	13.42	190	409
white catfish	13	6	0.11	0.59	0.28	0	203	8.62	164	254
pink shrimp	13	6	0.11	0.59	0.28	.	79	4.11	59	104
summer flounder	13	5	0.11	0.59	0.28	4	308	26.27	183	471
pigfish	13	4	0.11	0.59	0.28	.	153	9.26	125	236
spider crab, 6 spine	12	6	0.10	0.55	0.26	.	.	.	.	.
black seabass	11	5	0.09	0.50	0.24	0	161	9.35	111	205
squid spp	11	2	0.09	0.50	0.24	.	71	7.02	33	117
jellyfish spp	8	3	0.06	0.34	0.16	.	.	.	.	.
scup	7	3	0.06	0.32	0.15	3	150	19.67	81	194
butterfish	6	4	0.05	0.27	0.13	5	100	10.44	74	142
channel catfish	5	4	0.04	0.23	0.11	0	336	38.04	267	470
striped anchovy	5	2	0.04	0.23	0.11	5	89	3.06	78	97
spotfin butterflyfish	5	1	0.04	0.23	0.11	.	46	4.08	36	59
inshore lizardfish	4	4	0.03	0.18	0.09	3	188	17.75	157	239
channel (smooth) whelk	4	3	0.03	0.18	0.09	.	.	.	.	.
harvestfish	4	2	0.03	0.18	0.09	4	84	1.31	80	86
tautog	4	1	0.03	0.18	0.09	.	486	23.95	427	526
threadfin shad	3	2	0.02	0.14	0.06	.	100	10.44	81	117
horseshoe crab	3	2	0.02	0.14	0.06	.	263	35.89	191	302
striped searobin	2	2	0.02	0.09	0.04	.	37	13.00	24	50
cownose ray	2	1	0.02	0.09	0.04	.	416	224.00	192	640
lady crab	2	1	0.02	0.09	0.04	.	.	.	.	.
Atlantic spadefish	1	1	0.01	0.05	0.02	.	56	.	56	56
northern searobin	1	1	0.01	0.05	0.02	1	39	.	39	39
brown bullhead	1	1	0.01	0.05	0.02	.	172	.	172	172
green goby	1	1	0.01	0.05	0.02	.	43	.	43	43
clearnose skate	1	1	0.01	0.05	0.02	.	246	.	246	246
star drum	1	1	0.01	0.05	0.02	.	56	.	56	56
Irredescent swimming crab	1	1	0.01	0.05	0.02	.	.	.	.	.
grass shrimp spp	.	14	.	.	.	.	.	.	.	.
mud crab spp	.	12	.	.	.	.	.	.	.	.
sand shrimp	.	8	.	.	.	.	.	.	.	.
blood ark/clam	.	5	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	4	.	.	.	.	.	.	.	.
drill & snail spp	.	4	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	2	.	.	.	.	.	.	.	.
river shrimp	.	2	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
bent mussel	.	2	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	12,058									

Table 112.

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	7,255	20	56.63	329.77		6,707	44	0.51	13	86
weakfish	1,946	19	15.19	88.45	47.50	1,786	98	1.78	17	358
hogchoker	1,459	20	11.39	66.32		5	90	0.67	25	141
spot	1,052	22	8.21	47.82	25.68	987	153	0.74	96	237
Atlantic croaker	267	20	2.08	12.14	6.52	50	168	4.62	10	287
kingfish spp	120	21	0.94	5.45	2.93	116	60	2.64	16	155
white perch	116	6	0.91	5.27	2.83	0	173	2.28	106	227
blue crab, male	94	17	0.73	4.27	2.29	.	100	4.30	16	169
blue crab, adult female	73	15	0.57	3.32	1.78	.	149	1.36	126	175
striped anchovy	72	10	0.56	3.27	1.76	72	86	1.36	49	102
blue crab, juvenile female	59	17	0.46	2.68	1.44	.	66	4.15	15	124
roughneck shrimp	46	9	0.36	2.09	1.12	.	.	.	.	.
harvestfish	34	10	0.27	1.55	0.83	32	67	6.52	18	181
silver perch	27	14	0.21	1.23	0.66	23	123	5.71	74	184
white catfish	27	2	0.21	1.23	0.66	0	291	9.69	228	429
mantis shrimp	24	4	0.19	1.09	0.59	.	76	3.72	34	94
Atlantic spadefish	21	4	0.16	0.95	0.51	.	73	3.91	46	106
blackcheek tonguefish	18	10	0.14	0.82	0.44	0	135	2.55	113	152
inshore lizardfish	18	8	0.14	0.82	0.44	15	167	11.81	84	277
jellyfish spp	16	7	0.12	0.73	0.39	.	.	.	.	.
summer flounder	15	12	0.12	0.68	0.37	7	289	17.88	212	444
blue catfish	14	1	0.11	0.64	0.34	0	312	13.25	249	401
northern puffer	5	2	0.04	0.23	0.12	4	85	15.72	53	139
American eel	4	4	0.03	0.18	0.10	.	279	18.95	230	321
white shrimp	4	3	0.03	0.18	0.10	.	88	10.61	61	109
squid spp	4	2	0.03	0.18	0.10	.	46	4.19	35	54
striped searobin	3	2	0.02	0.14	0.07	.	83	10.82	62	98
Atlantic thread herring	3	1	0.02	0.14	0.07	.	87	2.91	82	92
Atlantic menhaden	2	2	0.02	0.09	0.05	0	173	6.00	167	179
lined seahorse	2	2	0.02	0.09	0.05	.	74	9.50	64	83
spider crab, 6 spine	2	2	0.02	0.09	0.05	.	.	.	.	.
black seabass	2	1	0.02	0.09	0.05	0	157	14.00	143	171
hickory shad	1	1	0.01	0.05	0.02	.	100	.	100	100
channel catfish	1	1	0.01	0.05	0.02	0	349	.	349	349
green goby	1	1	0.01	0.05	0.02	.	36	.	36	36
skilletfish	1	1	0.01	0.05	0.02	.	43	.	43	43
oyster toadfish	1	1	0.01	0.05	0.02	.	54	.	54	54
Atlantic moonfish	1	1	0.01	0.05	0.02	.	55	.	55	55
banded drum	1	1	0.01	0.05	0.02	.	42	.	42	42
mud crab spp	.	9	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	7	.	.	.	.	.	.	.	.
bent mussel	.	4	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	2	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	1	.	.	.	.	.	.	.	.
All Species Combined	12,811									

Table 113.

Month - September, 1999

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)
bay anchovy	4,985	21	44.27	226.59	.	4,129	49	0.55	15	80
hogchoker	2,953	19	26.23	134.23	.	169	87	1.19	13	173
weakfish	1,458	21	12.95	66.27	43.89	1,366	84	1.65	11	313
blue crab, male	235	18	2.09	10.68	7.07	.	67	2.53	7	181
Atlantic croaker	229	17	2.03	10.41	6.89	13	181	3.89	25	348
jellyfish spp	209	7	1.86	9.50	6.29	.	.	.	.	.
silver perch	196	21	1.74	8.91	5.90	167	104	2.67	51	201
spot	179	17	1.59	8.14	5.39	170	135	2.39	83	235
blue crab, juvenile female	166	21	1.47	7.55	5.00	.	51	2.33	8	120
blackcheek tonguefish	134	16	1.19	6.09	4.03	14	121	2.33	40	158
kingfish spp	125	16	1.11	5.68	3.76	119	82	3.15	12	211
mantis shrimp	63	12	0.56	2.86	1.90	.	81	2.91	38	137
striped anchovy	49	5	0.44	2.23	1.48	49	70	1.26	56	87
oyster toadfish	41	11	0.36	1.86	1.23	.	194	10.56	84	331
blue crab, adult female	39	11	0.35	1.77	1.17	.	145	1.84	107	165
harvestfish	34	8	0.30	1.55	1.02	34	64	3.45	18	118
Atlantic spadefish	31	9	0.28	1.41	0.93	.	72	4.51	35	115
roughneck shrimp	25	5	0.22	1.14	0.75	.	.	.	.	.
spider crab, 6 spine	20	10	0.18	0.91	0.60	.	.	.	.	.
white catfish	16	3	0.14	0.73	0.48	0	260	16.87	140	328
summer flounder	14	6	0.12	0.64	0.42	12	226	13.33	184	346
inshore lizardfish	14	6	0.12	0.64	0.42	12	172	6.57	140	229
white shrimp	8	1	0.07	0.36	0.24	.	83	5.75	58	104
coarse hand lady crab	6	1	0.05	0.27	0.18	.	83	20.83	29	132
northern puffer	4	2	0.04	0.18	0.12	2	92	31.19	36	158
black seabass	3	2	0.03	0.14	0.09	0	150	1.20	148	152
squid spp	2	2	0.02	0.09	0.06	.	69	23.00	46	92
pigfish	2	2	0.02	0.09	0.06	.	128	2.50	125	130
brown shrimp	2	2	0.02	0.09	0.06	.	121	39.00	82	160
bluefish	2	1	0.02	0.09	0.06	.	115	8.50	106	123
sheepshead	2	1	0.02	0.09	0.06	.	128	8.00	120	136
naked goby	2	1	0.02	0.09	0.06	.	23	6.00	17	29
Atlantic stingray	2	1	0.02	0.09	0.06	.	248	1.50	246	249
white perch	1	1	0.01	0.05	0.03	0	197	.	197	197
red drum	1	1	0.01	0.05	0.03	.	346	.	346	346
Spanish mackerel	1	1	0.01	0.05	0.03	.	176	.	176	176
gizzard shad	1	1	0.01	0.05	0.03	0	360	.	360	360
American eel	1	1	0.01	0.05	0.03	.	318	.	318	318
longnose gar	1	1	0.01	0.05	0.03	.	734	.	734	734
northern pipefish	1	1	0.01	0.05	0.03	.	108	.	108	108
bluegill	1	1	0.01	0.05	0.03	.	129	.	129	129
bluntnose stingray	1	1	0.01	0.05	0.03	.	192	.	192	192
star drum	1	1	0.01	0.05	0.03	.	71	.	71	71
mud crab spp	.	12	.	.	.	.	.	.	.	.
river shrimp	.	4	.	.	.	.	.	.	.	.
worm spp	.	2	.	.	.	.	.	.	.	.
quahog clam	.	2	.	.	.	.	.	.	.	.
drill & snail spp	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
grass shrimp spp	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
leech spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	11,260									

Table 115. (continued)

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)
Spanish mackerel	1	1	0.00	0.01	0.00	.	176	.	176	176
longnose gar	1	1	0.00	0.01	0.00	.	734	.	734	734
brown bullhead	1	1	0.00	0.01	0.00	.	172	.	172	172
bluegill	1	1	0.00	0.01	0.00	.	129	.	129	129
spiny butterfly ray	1	1	0.00	0.01	0.00	.	571	.	571	571
Atlantic cutlassfish	1	1	0.00	0.01	0.00	.	594	.	594	594
striped cusk-eel	1	1	0.00	0.01	0.00	.	142	.	142	142
fringed flounder	1	1	0.00	0.01	0.00	.	80	.	80	80
Atlantic bumper	1	1	0.00	0.01	0.00	.	28	.	28	28
silver jenny	1	1	0.00	0.01	0.00	.	67	.	67	67
spider crab, common	1	1	0.00	0.01	0.00	.	.	.	.	.
mud crab spp	.	63	.	.	.	.	.	.	.	.
grass shrimp spp	.	27	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	21	.	.	.	.	.	.	.	.
drill & snail spp	.	12	.	.	.	.	.	.	.	.
sand shrimp	.	11	.	.	.	.	.	.	.	.
worm spp	.	9	.	.	.	.	.	.	.	.
bent mussel	.	9	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	9	.	.	.	.	.	.	.	.
river shrimp	.	6	.	.	.	.	.	.	.	.
blood ark/clam	.	5	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	4	.	.	.	.	.	.	.	.
sand dollar	.	4	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	4	.	.	.	.	.	.	.	.
oyster, common	.	3	.	.	.	.	.	.	.	.
quahog clam	.	3	.	.	.	.	.	.	.	.
Amphipod spp	.	3	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
sea cucumber spp	.	2	.	.	.	.	.	.	.	.
leech spp	.	2	.	.	.	.	.	.	.	.
transverse ark (clam)	.	2	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	1	.	.	.	.	.	.	.	.
All Species Combined	72,963									

Table 116.

Month - October, 1999
 System - Chesapeake Bay
 No. of Random Trawls Made - 45
 No. of Fixed Trawls Made - 0
 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	4,769	33	51.27	105.98		4,381	52	0.36	29	78
squid spp	1,497	39	16.09	33.27	34.53		32	0.56	10	125
Atlantic croaker	537	34	5.77	11.93	12.39	379	96	4.20	13	314
spot	429	24	4.61	9.53	9.90	409	159	1.04	101	279
weakfish	428	20	4.60	9.51	9.87	354	157	2.37	59	369
kingfish spp	248	29	2.67	5.51	5.72	217	107	3.61	20	288
hogchoker	197	17	2.12	4.38		0	114	1.42	76	171
striped anchovy	171	20	1.84	3.80	3.94	170	94	0.95	46	127
smallmouth flounder	151	30	1.62	3.36	3.48	151	74	1.17	43	106
silver perch	127	5	1.37	2.82	2.93	123	135	1.30	90	193
inshore lizardfish	96	31	1.03	2.13	2.21	69	185	3.92	108	272
blackcheek tonguefish	89	19	0.96	1.98	2.05	3	143	2.09	63	178
summer flounder	64	25	0.69	1.42	1.48	36	290	8.20	196	437
roughneck shrimp	55	19	0.59	1.22	1.27					
mantis shrimp	41	10	0.44	0.91	0.95		90	3.82	39	142
striped searobin	32	14	0.34	0.71	0.74		81	4.47	34	168
butterfish	31	13	0.33	0.69	0.72	29	108	3.04	85	150
northern searobin	30	10	0.32	0.67	0.69	28	72	7.21	28	207
northern puffer	25	13	0.27	0.56	0.58	21	104	4.70	73	167
blue crab, juvenile female	24	10	0.26	0.53	0.55		45	6.31	12	111
Irredescent swimming crab	22	8	0.24	0.49	0.51					
lady crab	21	9	0.23	0.47	0.48					
shelligs blue crab	21	2	0.23	0.47	0.48					
white shrimp	20	9	0.22	0.44	0.46		117	3.67	81	144
blue crab, male	19	11	0.20	0.42	0.44		66	9.98	14	157
Atlantic cutlassfish	19	8	0.20	0.42	0.44		182	28.02	58	585
Atlantic spadefish	18	8	0.19	0.40	0.42		92	3.36	63	130
northern pipefish	16	9	0.17	0.36	0.37		134	9.62	88	213
banded drum	14	7	0.15	0.31	0.32		70	6.68	29	134
pigfish	11	8	0.12	0.24	0.25		150	5.59	121	196
spider crab, 6 spine	7	7	0.08	0.16	0.16					
clearnose skate	7	5	0.08	0.16	0.16		428	12.99	378	468
harvestfish	6	2	0.06	0.13	0.14	6	100	4.51	89	118
blue crab, adult female	5	4	0.05	0.11	0.12		144	10.29	107	171
Atlantic moonfish	5	3	0.05	0.11	0.12		60	7.67	37	77
lesser blue crab	5	3	0.05	0.11	0.12					
alewife	4	1	0.04	0.09	0.09	4	77	5.34	66	91
black seabass	3	3	0.03	0.07	0.07	0	159	17.68	136	194
bluefish	3	3	0.03	0.07	0.07		255	10.02	236	270
blotched swimming crab	3	2	0.03	0.07	0.07					
black drum	2	2	0.02	0.04	0.05		193	0.50	192	193
lined seahorse	2	2	0.02	0.04	0.05		52	8.50	43	60
fringed flounder	2	2	0.02	0.04	0.05		107	8.50	98	115
striped burrfish	2	2	0.02	0.04	0.05		132	8.00	124	140
brown shrimp	2	2	0.02	0.04	0.05		122	6.00	116	128
windowpane	2	1	0.02	0.04	0.05	2	168	0.00	168	168
northern stargazer	2	1	0.02	0.04	0.05		41	8.50	32	49
sargassum swimming crab	2	1	0.02	0.04	0.05					
jellyfish spp	2	2	0.02	0.03	0.03					
silver hake	1	1	0.01	0.02	0.02		32		32	32
spotted hake	1	1	0.01	0.02	0.02	1	37		37	37
naked goby	1	1	0.01	0.02	0.02		35		35	35
oyster toadfish	1	1	0.01	0.02	0.02		64		64	64
blue runner	1	1	0.01	0.02	0.02		139		139	139
lookdown	1	1	0.01	0.02	0.02		27		27	27
star drum	1	1	0.01	0.02	0.02		49		49	49
pinfish	1	1	0.01	0.02	0.02		122		122	122
pink shrimp	1	1	0.01	0.02	0.02		102		102	102
spider crab, common	1	1	0.01	0.02	0.02					
channel (smooth) whelk	1	1	0.01	0.02	0.02					
knobbed whelk	1	1	0.01	0.02	0.02					
Portunid spp	1	1	0.01	0.02	0.02					
speckled crab	1	1	0.01	0.02	0.02					
right-hand hermit crab spp		27								
mud crab spp		18								
sand shrimp		17								
grass shrimp spp		7								
Amphipod spp		6								
drill & snail spp		6								
worm spp		3								
blood ark/clam		2								
sand dollar		1								
mysid shrimp		1								
blue mussel		1								
quahog clam		1								
sea cucumber spp		1								
All Species Combined	9,302									

Table 117.

Month - October, 1999
 System - James River
 No. of Random Trawls Made - 14
 No. of Fixed Trawls Made - 8
 No. of Species - 48
 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	2,814	14	26.71	127.91	.	1,012	82	1.57	29	176
Atlantic croaker	2,631	21	24.97	119.59	49.43	2,426	97	4.21	6	377
bay anchovy	2,398	22	22.76	109.00	.	1,919	52	0.91	22	82
blue catfish	842	10	7.99	38.27	15.82	12	233	3.28	117	514
spot	335	19	3.18	15.23	6.29	297	151	1.79	102	257
weakfish	309	12	2.93	14.05	5.80	295	135	2.07	70	419
silver perch	212	14	2.01	9.64	3.98	186	126	1.83	82	213
white perch	201	11	1.91	9.14	3.78	3	133	2.06	80	233
blue crab, male	153	18	1.45	6.95	2.87	.	69	3.51	16	168
roughneck shrimp	136	3	1.29	6.18	2.55	.	.	.	.	.
blue crab, adult female	98	6	0.93	4.45	1.84	.	147	1.59	124	168
blue crab, juvenile female	72	11	0.68	3.27	1.35	.	49	3.06	14	119
white shrimp	63	6	0.60	2.86	1.18	.	124	2.53	61	158
kingfish spp	39	10	0.37	1.77	0.73	39	97	4.11	66	174
oyster toadfish	30	5	0.28	1.36	0.56	.	216	8.96	67	292
threadfin shad	18	3	0.17	0.82	0.34	.	71	1.35	66	82
blackcheek tonguefish	16	7	0.15	0.73	0.30	3	130	7.57	62	153
pigfish	16	2	0.15	0.73	0.30	.	149	1.90	134	162
white catfish	14	8	0.13	0.64	0.26	0	243	16.69	163	379
star drum	14	3	0.13	0.64	0.26	.	72	1.57	62	83
Atlantic cutlassfish	13	8	0.12	0.59	0.24	.	255	6.09	224	301
butterfish	12	3	0.11	0.55	0.23	9	126	6.80	103	176
channel catfish	12	3	0.11	0.55	0.23	0	310	12.70	202	378
smallmouth flounder	12	3	0.11	0.55	0.23	12	71	3.70	48	92
striped anchovy	9	3	0.09	0.41	0.17	8	110	3.65	96	131
summer flounder	7	6	0.07	0.32	0.13	6	259	12.87	236	332
inshore lizardfish	6	2	0.06	0.27	0.11	2	223	9.93	183	252
mantis shrimp	6	2	0.06	0.27	0.11	.	67	8.51	48	106
American eel	5	4	0.05	0.23	0.09	.	205	15.49	172	258
brown shrimp	5	3	0.05	0.23	0.09	.	60	5.40	41	74
gizzard shad	4	3	0.04	0.18	0.08	0	264	16.19	224	302
horseshoe crab	4	2	0.04	0.18	0.08	.	244	3.77	235	253
harvestfish	4	1	0.04	0.18	0.08	4	109	1.63	105	113
naked goby	4	1	0.04	0.18	0.08	.	.	.	.	.
squid spp	3	3	0.03	0.14	0.06	.	46	14.40	27	74
black seabass	3	2	0.03	0.14	0.06	1	150	39.25	74	205
striped bass	2	2	0.02	0.09	0.04	2	113	21.50	91	134
Atlantic menhaden	2	2	0.02	0.09	0.04	2	132	24.00	108	156
fringed flounder	2	2	0.02	0.09	0.04	.	101	0.50	100	101
alewife	1	1	0.01	0.05	0.02	1	100	.	100	100
black drum	1	1	0.01	0.05	0.02	.	242	.	242	242
Atlantic spadefish	1	1	0.01	0.05	0.02	.	84	.	84	84
striped searobin	1	1	0.01	0.05	0.02	.	177	.	177	177
Atlantic stingray	1	1	0.01	0.05	0.02	.	406	.	406	406
Atlantic sturgeon	1	1	0.01	0.05	0.02	.	810	.	810	810
spotfin mojarra	1	1	0.01	0.05	0.02	.	102	.	102	102
spider crab, 6 spine	1	1	0.01	0.05	0.02	.	.	.	.	.
spider crab, common	1	1	0.01	0.05	0.02	.	.	.	.	.
mud crab spp	.	14	.	.	.	.	.	.	.	.
grass shrimp spp	.	11	.	.	.	.	.	.	.	.
sand shrimp	.	7	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	4	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
worm spp	.	3	.	.	.	.	.	.	.	.
bent mussel	.	3	.	.	.	.	.	.	.	.
drill & snail spp	.	3	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
transverse ark (clam)	.	1	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	1	.	.	.	.	.	.	.	.
All Species Combined	10,535									

Table 118.

Month - October, 1999

System - Rappahannock 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)
bay anchovy	11,009	22	75.62	500.41	.	10,475	48	0.62	20	83
hogchoker	958	19	6.58	43.55	.	41	88	1.10	32	151
weakfish	832	19	5.72	37.82	32.11	764	131	2.13	43	431
spot	569	18	3.91	25.86	21.96	555	150	0.81	100	220
Atlantic croaker	305	19	2.10	13.86	11.77	222	75	4.70	10	325
blue catfish	182	5	1.25	8.27	7.02	0	249	2.82	164	396
kingfish spp	126	13	0.87	5.73	4.86	123	104	3.76	54	209
silver perch	118	14	0.81	5.36	4.55	117	120	1.53	84	207
white perch	81	9	0.56	3.68	3.13	0	178	3.69	101	228
blue crab, male	67	21	0.46	3.05	2.59	.	90	5.69	20	170
blue crab, adult female	58	10	0.40	2.64	2.24	.	140	1.29	108	168
blue crab, juvenile female	41	18	0.28	1.86	1.58	.	48	4.17	18	126
blackcheek tonguefish	41	15	0.28	1.86	1.58	7	128	5.14	45	158
white catfish	41	5	0.28	1.86	1.58	0	239	5.22	186	329
white shrimp	21	10	0.14	0.95	0.81	.	115	2.57	96	133
inshore lizardfish	21	4	0.14	0.95	0.81	18	175	6.85	120	237
mantis shrimp	19	6	0.13	0.86	0.73	.	79	4.28	52	110
jellyfish spp	13	3	0.09	0.59	0.50	.	.	.	.	.
harvestfish	11	6	0.08	0.50	0.42	11	92	4.99	59	116
striped anchovy	9	4	0.06	0.41	0.35	9	103	3.48	78	114
summer flounder	6	6	0.04	0.27	0.23	4	284	16.20	240	336
black seabass	4	2	0.03	0.18	0.15	0	205	2.66	197	209
butterfish	4	2	0.03	0.18	0.15	0	162	7.33	141	175
American eel	3	3	0.02	0.14	0.12	.	219	38.55	166	294
roughneck shrimp	3	3	0.02	0.14	0.12	.	.	.	.	.
gizzard shad	2	2	0.01	0.09	0.08	0	276	10.00	266	286
Atlantic spadefish	2	2	0.01	0.09	0.08	.	80	8.00	72	88
oyster toadfish	2	2	0.01	0.09	0.08	.	265	61.50	203	326
bluefish	2	1	0.01	0.09	0.08	.	167	18.00	149	185
alewife	2	1	0.01	0.09	0.08	2	122	2.00	120	124
Atlantic moonfish	2	1	0.01	0.09	0.08	1	75	2.00	73	77
striped bass	1	1	0.01	0.05	0.04	0	230	.	230	230
Atlantic menhaden	1	1	0.01	0.05	0.04	1	136	.	136	136
skilletfish	1	1	0.01	0.05	0.04	.	42	.	42	42
Atlantic cutlassfish	1	1	0.01	0.05	0.04	.	230	.	230	230
mud crab spp	.	6	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	6	.	.	.	.	.	.	.	.
bent mussel	.	5	.	.	.	.	.	.	.	.
worm spp	.	4	.	.	.	.	.	.	.	.
oyster, common	.	4	.	.	.	.	.	.	.	.
sand shrimp	.	3	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
glassy Lyonsia	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	14,558									

Table 119.

Month - October, 1999
 System - York River
 No. of Random Trawls Made - 13
 No. of Fixed Trawls Made - 9
 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)
bay anchovy	11,172	21	60.30	507.82	.	9,314	53	0.64	21	84
hogchoker	3,013	22	16.26	136.95	.	1,300	86	1.36	20	163
Atlantic croaker	1,777	20	9.59	80.77	40.94	1,512	109	4.02	6	394
weakfish	850	20	4.59	38.64	19.58	771	121	2.12	25	349
silver perch	403	19	2.18	18.32	9.28	376	121	1.49	68	221
spot	306	19	1.65	13.91	7.05	284	155	1.48	119	274
blue crab, male	280	20	1.51	12.73	6.45	.	69	2.59	14	168
blackcheek tonguefish	137	13	0.74	6.23	3.16	16	124	2.57	33	158
blue crab, juvenile female	118	18	0.64	5.36	2.72	.	50	2.56	7	120
blue crab, adult female	89	12	0.48	4.05	2.05	.	140	1.24	116	178
oyster toadfish	57	12	0.31	2.59	1.31	.	190	6.07	81	295
white catfish	49	7	0.26	2.23	1.13	0	239	10.93	134	429
white shrimp	48	11	0.26	2.18	1.11	.	113	2.99	56	150
mantis shrimp	48	10	0.26	2.18	1.11	.	91	2.90	58	137
harvestfish	33	8	0.18	1.50	0.76	33	88	0.93	72	96
kingfish spp	26	12	0.14	1.18	0.60	26	106	5.56	55	159
roughneck shrimp	21	3	0.11	0.95	0.48	.	.	.	.	.
white perch	16	4	0.09	0.73	0.37	0	168	5.67	112	218
spider crab, 6 spine	14	7	0.08	0.64	0.32	.	.	.	.	.
summer flounder	11	5	0.06	0.50	0.25	9	275	34.97	203	615
Atlantic spadefish	10	4	0.05	0.45	0.23	.	89	3.27	74	109
butterfish	10	3	0.05	0.45	0.23	9	108	4.63	94	144
striped anchovy	7	3	0.04	0.32	0.16	7	84	5.57	61	98
squid spp	4	2	0.02	0.18	0.09	.	64	3.17	56	71
Atlantic cutlassfish	3	3	0.02	0.14	0.07	.	382	152.11	207	685
American eel	2	2	0.01	0.09	0.05	.	415	63.00	352	478
naked goby	2	2	0.01	0.09	0.05	.	34	4.00	30	38
banded drum	2	2	0.01	0.09	0.05	.	69	1.50	67	70
longnose gar	2	1	0.01	0.09	0.05	.	593	23.00	570	616
inshore lizardfish	2	1	0.01	0.09	0.05	2	170	13.50	156	183
brown shrimp	2	1	0.01	0.09	0.05	.	66	12.00	54	78
channel (smooth) whelk	2	1	0.01	0.09	0.05	.	.	.	.	.
northern puffer	1	1	0.01	0.05	0.02	0	149	.	149	149
gizzard shad	1	1	0.01	0.05	0.02	0	336	.	336	336
pigfish	1	1	0.01	0.05	0.02	.	151	.	151	151
feather blenny	1	1	0.01	0.05	0.02	.	83	.	83	83
Atlantic stingray	1	1	0.01	0.05	0.02	.	373	.	373	373
Atlantic moonfish	1	1	0.01	0.05	0.02	.	56	.	56	56
star drum	1	1	0.01	0.05	0.02	.	51	.	51	51
blue catfish	1	1	0.01	0.05	0.02	0	589	.	589	589
gray snapper	1	1	0.01	0.05	0.02	.	74	.	74	74
pink shrimp	1	1	0.01	0.05	0.02	.	97	.	97	97
mud crab spp	.	7	.	.	.	.	.	.	.	.
grass shrimp spp	.	6	.	.	.	.	.	.	.	.
sand shrimp	.	4	.	.	.	.	.	.	.	.
Amphipod spp	.	2	.	.	.	.	.	.	.	.
jellyfish spp	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
little (dwari) surf clam	.	1	.	.	.	.	.	.	.	.
drill & snail spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	18,526									

Table 120.

Month - October, 1999

System - Piankatank River

No. of Random Trawls Made - 4

No. of Fixed Trawls Made - 3

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	10,059	6	90.59	1437.00	.	9,854	47	0.69	20	69
Atlantic croaker	365	5	3.29	52.14	36.78	340	53	3.68	21	278
spot	358	7	3.22	51.14	36.07	319	154	1.66	100	234
weakfish	63	5	0.57	9.00	6.35	45	154	7.51	64	323
hogchoker	52	5	0.47	7.43	.	0	106	2.24	68	148
silver perch	52	5	0.47	7.43	5.24	47	129	3.62	98	200
blue crab, male	33	7	0.30	4.71	3.32	.	76	7.00	21	166
blue crab, juvenile female	28	5	0.25	4.00	2.82	.	55	5.68	21	118
harvestfish	21	3	0.19	3.00	2.12	21	106	2.14	87	123
blue crab, adult female	13	4	0.12	1.86	1.31	.	133	4.05	98	151
kingfish spp	9	3	0.08	1.29	0.91	9	94	6.45	60	121
inshore lizardfish	8	4	0.07	1.14	0.81	5	203	17.96	128	264
summer flounder	7	3	0.06	1.00	0.71	5	273	21.02	235	394
striped anchovy	7	3	0.06	1.00	0.71	7	94	3.47	85	108
white shrimp	6	2	0.05	0.86	0.60	.	116	5.14	104	137
pigfish	4	3	0.04	0.57	0.40	.	172	17.38	142	208
mantis shrimp	4	3	0.04	0.57	0.40	.	81	9.34	64	107
blackcheek tonguefish	3	3	0.03	0.43	0.30	0	158	4.36	151	166
black drum	3	1	0.03	0.43	0.30	.	205	4.70	199	214
naked goby	2	2	0.02	0.29	0.20	.	27	10.00	17	37
Atlantic spadefish	2	1	0.02	0.29	0.20	.	72	7.50	64	79
striped blenny	1	1	0.01	0.14	0.10	.	52	.	52	52
Atlantic stingray	1	1	0.01	0.14	0.10	.	332	.	332	332
banded drum	1	1	0.01	0.14	0.10	.	57	.	57	57
brown shrimp	1	1	0.01	0.14	0.10	.	139	.	139	139
jellyfish spp	1	1	0.00	0.07	0.05	.	.	.	.	.
oyster, common	.	3	.	.	.	.	.	.	.	.
bent mussel	.	2	.	.	.	.	.	.	.	.
mud crab spp	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
All Species Combined	11,104									

Table 121.

Month - October, 1999

System - Great Wicomico River

No. of Random Trawls Made - 6

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	3,375	6	80.19	562.50	.	3,159	45	0.81	25	72
spot	287	5	6.82	47.83	35.13	287	146	0.97	118	190
Atlantic croaker	175	5	4.16	29.17	21.42	172	41	3.31	12	315
weakfish	76	4	1.81	12.67	9.30	15	215	4.17	75	309
blue crab, male	69	5	1.64	11.50	8.45	62	62	5.02	12	138
silver perch	48	3	1.14	8.00	5.88	38	155	1.53	121	193
striped anchovy	35	5	0.83	5.83	4.28	35	98	1.15	81	110
blue crab, juvenile female	32	6	0.76	5.33	3.92	.	49	5.36	17	114
harvestfish	25	3	0.59	4.17	3.06	25	96	1.35	84	108
hogchoker	17	3	0.40	2.83	.	0	103	3.84	65	138
inshore lizardfish	14	6	0.33	2.33	1.71	7	205	5.18	179	232
summer flounder	8	3	0.19	1.33	0.98	3	306	20.89	240	402
blue crab, adult female	8	2	0.19	1.33	0.98	.	128	3.15	116	145
mantis shrimp	7	4	0.17	1.17	0.86	.	82	3.48	72	97
kingfish spp	6	3	0.14	1.00	0.73	6	92	5.79	73	112
naked goby	6	2	0.14	1.00	0.73	.	43	2.68	32	49
skilletfish	5	2	0.12	0.83	0.61	.	33	3.07	26	44
blackcheek tonguefish	2	2	0.05	0.33	0.24	0	127	5.00	122	132
oyster toadfish	2	2	0.05	0.33	0.24	.	160	25.50	134	185
Atlantic spadefish	2	1	0.05	0.33	0.24	.	75	16.50	58	91
white shrimp	2	1	0.05	0.33	0.24	.	109	5.50	103	114
black seabass	1	1	0.02	0.17	0.12	0	230	.	230	230
bluefish	1	1	0.02	0.17	0.12	.	191	.	191	191
squid spp	1	1	0.02	0.17	0.12	.	49	.	49	49
spotted seatrout	1	1	0.02	0.17	0.12	.	202	.	202	202
striped searobin	1	1	0.02	0.17	0.12	.	81	.	81	81
lined seahorse	1	1	0.02	0.17	0.12	.	61	.	61	61
striped blenny	1	1	0.02	0.17	0.12	.	67	.	67	67
spider crab, 6 spine	1	1	0.02	0.17	0.12	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
mud crab spp	.	1	.	.	.	.	.	.	.	.
bent mussel	.	1	.	.	.	.	.	.	.	.
All Species Combined	4,209									

Table 122.

Month - October, 1999

System - All - Pooled

No. of Random Trawls Made - 96

No. of Fixed Trawls Made - 28

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	42,782	110	62.70	345.02	.	39,102	50	0.27	20	84
hogchoker	7,051	80	10.33	56.86	.	2,353	90	0.75	20	176
Atlantic croaker	5,790	104	8.49	46.69	31.47	5,051	90	1.93	6	394
weakfish	2,558	80	3.75	20.63	13.90	2,244	138	1.16	25	431
spot	2,284	92	3.35	18.42	12.41	2,151	153	0.55	100	279
squid spp	1,505	45	2.21	12.14	8.18	.	32	0.57	10	125
blue catfish	1,025	16	1.50	8.27	5.57	12	240	2.50	117	589
silver perch	960	60	1.41	7.74	5.22	887	127	0.84	68	221
blue crab, male	621	82	0.91	5.01	3.38	.	71	1.76	12	170
kingfish spp	454	70	0.67	3.66	2.47	420	104	2.09	20	288
blue crab, juvenile female	315	68	0.46	2.54	1.71	.	49	1.57	7	126
white perch	298	24	0.44	2.40	1.62	3	146	2.09	80	233
blackcheck tonguefish	288	59	0.42	2.32	1.57	29	130	1.74	33	178
blue crab, adult female	271	38	0.40	2.19	1.47	.	141	0.82	98	178
striped anchovy	238	38	0.35	1.92	1.29	236	95	0.79	46	131
roughneck shrimp	215	28	0.32	1.73	1.17	.	.	.	.	.
smallmouth flounder	163	33	0.24	1.31	0.89	163	73	1.12	43	106
white shrimp	160	39	0.23	1.29	0.87	.	118	1.52	36	158
inshore lizardfish	147	48	0.22	1.19	0.80	103	188	3.09	108	272
mantis shrimp	125	35	0.18	1.01	0.68	.	87	1.93	39	142
white catfish	104	20	0.15	0.84	0.57	0	240	5.93	134	429
summer flounder	103	48	0.15	0.83	0.56	63	286	6.73	196	615
harvestfish	100	23	0.15	0.81	0.54	100	96	1.11	59	123
oyster toadfish	92	22	0.13	0.74	0.50	.	198	5.35	64	326
butterfish	57	21	0.08	0.46	0.31	47	116	3.05	85	176
Atlantic cutlassfish	36	20	0.05	0.29	0.20	.	226	20.60	58	685
Atlantic spadefish	35	17	0.05	0.28	0.19	.	88	2.34	58	130
striped searobin	34	16	0.05	0.27	0.18	.	84	5.07	34	177
pigfish	32	14	0.05	0.26	0.17	.	152	3.12	121	208
northern searobin	30	10	0.04	0.24	0.16	28	72	7.21	28	207
northern puffer	26	14	0.04	0.21	0.14	21	106	4.83	73	167
spider crab, 6 spine	23	16	0.03	0.19	0.13	.	.	.	.	.
iridescent swimming crab	22	8	0.03	0.18	0.12	.	.	.	.	.
lady crab	21	9	0.03	0.17	0.11	.	.	.	.	.
shelligs blue crab	21	2	0.03	0.17	0.11	.	.	.	.	.
threadfin shad	18	3	0.03	0.15	0.10	.	71	1.35	66	82
banded drum	17	10	0.02	0.14	0.09	.	69	5.32	29	134
northern pipefish	16	9	0.02	0.13	0.09	.	134	9.62	88	213
star drum	16	5	0.02	0.13	0.09	.	70	2.36	49	83
naked goby	15	8	0.02	0.12	0.08	.	38	2.83	17	49
jellyfish spp	15	8	0.02	0.12	0.08	.	.	.	.	.
channel catfish	12	3	0.02	0.10	0.07	0	310	12.70	202	378
black seabass	11	8	0.02	0.09	0.06	1	180	13.53	74	230
American eel	10	9	0.01	0.08	0.05	.	251	31.43	166	478
brown shrimp	10	7	0.01	0.08	0.05	.	81	10.73	41	139
Atlantic moonfish	8	5	0.01	0.06	0.04	.	64	5.27	37	77
gizzard shad	7	6	0.01	0.06	0.04	0	278	13.36	224	336
clearnose skate	7	5	0.01	0.06	0.04	.	428	12.99	378	468
alewife	7	3	0.01	0.06	0.04	7	93	8.64	66	124
bluetfish	6	5	0.01	0.05	0.03	.	215	19.35	149	270
black drum	6	4	0.01	0.05	0.03	.	207	7.73	192	242
skilletfish	6	3	0.01	0.05	0.03	.	34	2.94	26	44
lesser blue crab	5	3	0.01	0.04	0.03	.	.	.	.	.
fringed flounder	4	4	0.01	0.03	0.02	.	104	3.88	98	115
horseshoe crab	4	2	0.01	0.03	0.02	.	244	3.77	235	253
striped bass	3	3	0.00	0.02	0.02	2	152	41.09	91	230
Atlantic menhaden	3	3	0.00	0.02	0.02	3	133	13.92	108	156
lined seahorse	3	3	0.00	0.02	0.02	.	55	5.84	43	61
Atlantic stingray	3	3	0.00	0.02	0.02	.	370	21.40	332	406
blotched swimming crab	3	2	0.00	0.02	0.02	.	.	.	.	.
channel (smooth) whelk	3	2	0.00	0.02	0.02	.	.	.	.	.
striped blenny	2	2	0.00	0.02	0.01	.	60	7.50	52	67
striped burrfish	2	2	0.00	0.02	0.01	.	132	8.00	124	140
pink shrimp	2	2	0.00	0.02	0.01	.	100	2.50	97	102
spider crab, common	2	2	0.00	0.02	0.01	.	.	.	.	.
windowpane	2	1	0.00	0.02	0.01	2	168	0.00	168	168
longnose gar	2	1	0.00	0.02	0.01	.	593	23.00	570	616
northern stargazer	2	1	0.00	0.02	0.01	.	41	8.50	32	49
sargassum swimming crab	2	1	0.00	0.02	0.01	.	.	.	.	.
silver hake	1	1	0.00	0.01	0.01	.	32	.	32	32
spotted seatrout	1	1	0.00	0.01	0.01	.	202	.	202	202
spotted hake	1	1	0.00	0.01	0.01	1	37	.	37	37
feather blenny	1	1	0.00	0.01	0.01	.	83	.	83	83

Table 122. (continued)

Month - October, 1999

System - All - Pooled

No. of Random Trawls Made - 96

No. of Fixed Trawls Made - 28

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)
Atlantic sturgeon	1	1	0.00	0.01	0.01	.	810	.	810	810
blue runner	1	1	0.00	0.01	0.01	.	139	.	139	139
lookdown	1	1	0.00	0.01	0.01	.	27	.	27	27
pinfish	1	1	0.00	0.01	0.01	.	122	.	122	122
spotfin mojarra	1	1	0.00	0.01	0.01	.	102	.	102	102
gray snapper	1	1	0.00	0.01	0.01	.	74	.	74	74
Knobbed whelk	1	1	0.00	0.01	0.01	.	.	.	.	.
Portunid spp	1	1	0.00	0.01	0.01	.	.	.	.	.
speckled crab	1	1	0.00	0.01	0.01	.	.	.	.	.
mud crab spp	.	47	.	.	.	.	.	.	.	.
sand shrimp	.	31	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	30	.	.	.	.	.	.	.	.
grass shrimp spp	.	28	.	.	.	.	.	.	.	.
worm spp	.	11	.	.	.	.	.	.	.	.
oyster, common	.	11	.	.	.	.	.	.	.	.
bent mussel	.	11	.	.	.	.	.	.	.	.
drill & snail spp	.	10	.	.	.	.	.	.	.	.
Amphipod spp	.	9	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	7	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	6	.	.	.	.	.	.	.	.
quahog clam	.	3	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
sand dollar	.	1	.	.	.	.	.	.	.	.
mysid shrimp	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
glassy Lyonsia	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
sea cucumber spp	.	1	.	.	.	.	.	.	.	.
transverse ark (clam)	.	1	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	1	.	.	.	.	.	.	.	.
All Species Combined	68,233									

Table 123.

Month - November, 1999
 System - Chesapeake Bay
 No. of Random Trawls Made - 45
 No. of Fixed Trawls Made - 0
 No. of Species - 55
 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	3,665	24	48.57	81.44		3,323	53	0.67	19	80
spot	1,570	12	20.81	34.89	40.68	1,570	133	1.29	99	186
squid spp	700	35	9.28	15.56	18.14		36	0.64	11	135
silver perch	298	11	3.95	6.62	7.72	298	115	1.41	88	158
Atlantic croaker	174	29	2.31	3.87	4.51	161	51	4.87	7	346
smallmouth flounder	130	24	1.72	2.89	3.37	130	80	1.25	40	116
northern pipefish	118	7	1.56	2.62	3.06		147	3.11	94	216
kingfish spp	93	21	1.23	2.07	2.41	92	121	4.83	6	252
blue crab, adult female	90	23	1.19	2.00	2.33		139	1.62	100	174
weakfish	85	13	1.13	1.89	2.20	80	146	3.73	98	281
summer flounder	81	27	1.07	1.80	2.10	60	285	7.52	184	550
blackcheek tonguefish	81	17	1.07	1.80	2.10	2	138	2.02	54	178
northern searobin	58	19	0.77	1.29	1.50	56	71	3.28	34	210
inshore lizardfish	42	13	0.56	0.93	1.09	35	200	4.54	134	297
shelligs blue crab	37	4	0.49	0.82	0.96					
mantis shrimp	30	7	0.40	0.67	0.78		96	5.05	43	151
striped anchovy	23	4	0.30	0.51	0.60	23	108	2.63	70	124
hogchoker	22	8	0.29	0.49		0	110	4.69	80	156
blue crab, male	20	13	0.27	0.44	0.52		89	12.95	16	160
roughneck shrimp	20	8	0.27	0.44	0.52					
striped searobin	19	8	0.25	0.42	0.49		99	2.82	76	119
blue crab, juvenile female	18	8	0.24	0.40	0.47		33	6.34	10	104
white shrimp	15	6	0.20	0.33	0.39		97	3.02	76	113
spider crab, 6 spine	13	7	0.17	0.29	0.34					
knobbed whelk	12	8	0.16	0.27	0.31					
bluefish	11	3	0.15	0.24	0.29		242	11.97	191	308
lined seahorse	10	9	0.13	0.22	0.26		49	3.20	31	64
lady crab	10	1	0.13	0.22	0.26					
spotted hake	9	7	0.12	0.20	0.23	8	77	24.23	42	270
pigfish	9	5	0.12	0.20	0.23		109	6.30	74	130
Irredescent swimming crab	8	5	0.11	0.18	0.21					
northern puffer	7	6	0.09	0.16	0.18	2	153	13.92	80	184
clearnose skate	6	5	0.08	0.13	0.16		407	6.47	392	431
lesser blue crab	6	3	0.08	0.13	0.16					
black drum	5	1	0.07	0.11	0.13		225	9.09	199	255
horseshoe crab	5	1	0.07	0.11	0.13		245	15.41	188	280
jellyfish spp	4	5	0.05	0.09	0.10					
channel (smooth) whelk	4	4	0.05	0.09	0.10					
Atlantic thread herring	4	1	0.05	0.09	0.10		109	9.31	84	129
Atlantic silverside	4	1	0.05	0.09	0.10	4	61	4.73	54	74
Atlantic cutlassfish	3	3	0.04	0.07	0.08		294	14.38	265	310
butterfish	3	2	0.04	0.07	0.08	3	100	21.01	58	122
fringed flounder	3	2	0.04	0.07	0.08		99	0.67	98	100
Portunid spp	3	1	0.04	0.07	0.08					
naked goby	2	2	0.03	0.04	0.05		25	5.00	20	30
oyster toadfish	2	2	0.03	0.04	0.05		253	33.50	219	286
banded drum	2	2	0.03	0.04	0.05		40	19.00	21	59
star drum	2	2	0.03	0.04	0.05		88	10.50	77	98
spider crab, common	2	2	0.03	0.04	0.05					
brown shrimp	2	2	0.03	0.04	0.05		104	25.50	78	129
black seabass	2	1	0.03	0.04	0.05	0	181	19.00	162	200
spotted seatrout	1	1	0.01	0.02	0.03		238		238	238
windowpane	1	1	0.01	0.02	0.03	0	207		207	207
feather blenny	1	1	0.01	0.02	0.03		52		52	52
speckled crab	1	1	0.01	0.02	0.03					
mud crab spp		23								
right-hand hermit crab spp		23								
sand shrimp		20								
blood ark/clam		6								
sand dollar		5								
grass shrimp spp		3								
moon snail		3								
drill & snail spp		3								
worm spp		2								
Amphipod spp		2								
blue mussel		1								
purplish tagelus		1								
sea cucumber spp		1								
slipper shell spp		1								
little (dwarf) surf clam		1								
All Species Combined	7,546									

Table 124.

Month - November, 1999

System - James River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

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)
hogchoker	3,243	12	39.30	147.41		1,134	77	1.85	17	176
Atlantic croaker	1,441	20	17.46	65.50	37.83	1,416	49	1.13	13	278
bay anchovy	1,200	15	14.54	54.55		461	61	0.88	20	84
white perch	476	11	5.77	21.64	12.50	0	134	1.30	92	247
spot	425	16	5.15	19.32	11.16	425	136	0.77	95	190
weakfish	209	18	2.53	9.50	5.49	205	138	2.05	89	326
silver perch	152	13	1.84	6.91	3.99	147	120	1.54	93	200
white shrimp	106	13	1.28	4.82	2.78	.	106	1.81	60	152
blue crab, juvenile female	101	17	1.22	4.59	2.65	.	41	2.38	12	111
blue catfish	101	7	1.22	4.59	2.65	0	235	5.54	154	428
blue crab, male	97	16	1.18	4.41	2.55	.	57	4.23	9	147
blackcheek tonguefish	89	7	1.08	4.05	2.34	34	110	3.69	50	158
star drum	88	4	1.07	4.00	2.31	.	81	1.45	66	110
squid spp	64	5	0.78	2.91	1.68	.	35	1.34	24	66
smallmouth flounder	58	5	0.70	2.64	1.52	58	75	1.74	57	92
threadfin shad	48	5	0.58	2.18	1.26	.	92	2.12	72	127
gizzard shad	44	7	0.53	2.00	1.16	40	113	9.16	74	386
blue crab, adult female	42	6	0.51	1.91	1.10	.	146	1.85	122	172
white catfish	38	6	0.46	1.73	1.00	0	210	7.44	119	376
channel catfish	25	8	0.30	1.14	0.66	0	309	13.92	182	502
roughneck shrimp	25	2	0.30	1.14	0.66	.	.	.	.	.
mantis shrimp	22	4	0.27	1.00	0.58	.	81	5.09	43	119
kingfish spp	21	5	0.25	0.95	0.55	21	96	3.55	76	121
pink shrimp	14	5	0.17	0.64	0.37	.	102	3.74	76	120
banded drum	13	3	0.16	0.59	0.34	.	66	6.34	34	106
brown shrimp	12	5	0.15	0.55	0.32	.	92	8.12	56	150
oyster toadfish	12	3	0.15	0.55	0.32	.	206	18.07	62	308
naked goby	10	4	0.12	0.45	0.26	.	36	1.83	29	45
channel (smooth) whelk	9	4	0.11	0.41	0.24	.	.	.	.	.
northern searobin	8	3	0.10	0.36	0.21	8	61	5.46	32	82
American eel	7	4	0.08	0.32	0.18	.	234	18.74	152	288
striped searobin	6	4	0.07	0.27	0.16	.	81	6.62	54	100
summer flounder	5	5	0.06	0.23	0.13	4	258	21.85	208	336
Atlantic cutlassfish	5	4	0.06	0.23	0.13	.	286	3.44	278	298
black seabass	5	2	0.06	0.23	0.13	2	147	28.00	74	202
spider crab, 6 spine	5	1	0.06	0.23	0.13	.	.	.	.	.
blue crab, sex unknown	4	1	0.05	0.18	0.11	.	.	.	.	.
spider crab, common	3	2	0.04	0.14	0.08	.	.	.	.	.
Irrescendent swimming crab	3	2	0.04	0.14	0.08	.	.	.	.	.
northern pipefish	2	2	0.02	0.09	0.05	.	152	36.00	116	188
pintfish	2	2	0.02	0.09	0.05	.	124	5.50	118	129
fringed flounder	2	2	0.02	0.09	0.05	.	95	3.00	92	98
butterfish	2	1	0.02	0.09	0.05	1	157	25.00	132	182
feather blenny	2	1	0.02	0.09	0.05	.	81	11.00	70	92
bluefish	1	1	0.01	0.05	0.03	.	186	.	186	186
striped bass	1	1	0.01	0.05	0.03	0	224	.	224	224
Atlantic menhaden	1	1	0.01	0.05	0.03	1	170	.	170	170
common carp	1	1	0.01	0.05	0.03	.	560	.	560	560
Atlantic silverside	1	1	0.01	0.05	0.03	1	46	.	46	46
horseshoe crab	1	1	0.01	0.05	0.03	.	248	.	248	248
sand shrimp	.	15	.	.	.	.	.	.	.	.
mud crab spp	.	10	.	.	.	.	.	.	.	.
grass shrimp spp	.	10	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	9	.	.	.	.	.	.	.	.
blood ark/clam	.	5	.	.	.	.	.	.	.	.
drill & snail spp	.	5	.	.	.	.	.	.	.	.
bent mussel	.	4	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	3	.	.	.	.	.	.	.	.
worm spp	.	3	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	2	.	.	.	.	.	.	.	.
moon snail	.	2	.	.	.	.	.	.	.	.
quahog clam	.	2	.	.	.	.	.	.	.	.
sea cucumber spp	.	2	.	.	.	.	.	.	.	.
flat-browed(coastal) mud	.	1	.	.	.	.	.	.	.	.
river shrimp	.	1	.	.	.	.	.	.	.	.
blue mussel	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	1	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	1	.	.	.	.	.	.	.	.
All Species Combined	8,252									

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)
bay anchovy	9,917	21	71.50	450.77	.	8,991	52	0.44	24	89
hogchoker	1,150	16	8.29	52.27	.	73	90	1.20	42	152
Atlantic croaker	1,129	19	8.14	51.32	40.29	1,111	43	1.28	7	346
spot	434	15	3.13	19.73	15.49	434	142	0.76	110	197
weakfish	394	14	2.84	17.91	14.06	365	145	2.27	73	314
white perch	185	10	1.33	8.41	6.60	0	158	2.32	90	240
blackcheek tonguefish	106	12	0.76	4.82	3.78	69	95	3.40	50	160
silver perch	106	8	0.76	4.82	3.78	106	125	1.29	99	156
blue crab, male	93	17	0.67	4.23	3.32	.	63	4.61	14	165
blue crab, juvenile female	73	17	0.53	3.32	2.61	.	48	3.12	14	122
white shrimp	65	13	0.47	2.95	2.32	.	101	1.60	77	128
kingfish spp	46	11	0.33	2.09	1.64	46	118	3.56	68	184
blue catfish	43	2	0.31	1.95	1.53	0	283	4.89	238	352
white catfish	35	6	0.25	1.59	1.25	0	264	7.90	150	395
channel catfish	23	2	0.17	1.05	0.82	0	300	7.72	255	413
summer flounder	16	8	0.12	0.73	0.57	12	280	9.44	231	355
blue crab, adult female	12	6	0.09	0.55	0.43	.	144	3.35	120	162
mantis shrimp	11	3	0.08	0.50	0.39	.	87	4.95	66	112
Atlantic menhaden	7	3	0.05	0.32	0.25	7	150	5.31	131	171
butterfish	5	4	0.04	0.23	0.18	2	158	10.89	120	179
black seabass	2	2	0.01	0.09	0.07	0	206	0.00	206	206
green goby	2	2	0.01	0.09	0.07	.	42	1.50	40	43
oyster toadfish	2	2	0.01	0.09	0.07	.	237	45.00	192	282
inshore lizardfish	2	2	0.01	0.09	0.07	1	229	31.00	198	260
roughneck shrimp	2	2	0.01	0.09	0.07	.	.	.	.	.
American eel	2	1	0.01	0.09	0.07	.	382	18.00	364	400
bluetfish	1	1	0.01	0.05	0.04	.	291	.	291	291
squid spp	1	1	0.01	0.05	0.04	.	77	.	77	77
black drum	1	1	0.01	0.05	0.04	.	182	.	182	182
northern searobin	1	1	0.01	0.05	0.04	1	54	.	54	54
northern pipefish	1	1	0.01	0.05	0.04	.	98	.	98	98
blue crab, sex unknown	1	1	0.01	0.05	0.04	.	14	.	14	14
jellyfish spp	1	1	0.01	0.05	0.04	.	.	.	.	.
sand shrimp	.	13	.	.	.	.	.	.	.	.
mud crab spp	.	6	.	.	.	.	.	.	.	.
grass shrimp spp	.	6	.	.	.	.	.	.	.	.
worm spp	.	5	.	.	.	.	.	.	.	.
bent mussel	.	4	.	.	.	.	.	.	.	.
oyster, common	.	3	.	.	.	.	.	.	.	.
sea anemone spp (Anthozoa)	.	2	.	.	.	.	.	.	.	.
drill & snail spp	.	2	.	.	.	.	.	.	.	.
mysid shrimp	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	13,869									

Table 126.

Month - November, 1999

System - York River

No. of Random Trawls Made - 13

No. of Fixed Trawls Made - 9

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	4,663	21	37.39	211.95	.	3,448	61	0.50	33	84
hogchoker	3,317	17	26.60	150.77	.	2,348	80	1.83	16	169
Atlantic croaker	2,060	20	16.52	93.64	45.86	1,961	63	2.68	13	346
spot	543	17	4.35	24.68	12.09	543	140	0.70	109	184
weakfish	404	19	3.24	18.36	8.99	370	145	2.10	67	348
silver perch	399	19	3.20	18.14	8.88	390	129	0.77	96	189
blue crab, male	283	18	2.27	12.86	6.30	.	78	2.38	14	170
blackcheek tonguefish	118	16	0.95	5.36	2.63	60	103	3.23	38	164
blue crab, juvenile female	117	18	0.94	5.32	2.60	.	63	2.70	18	133
white shrimp	110	15	0.88	5.00	2.45	.	110	1.49	76	165
white perch	106	9	0.85	4.82	2.36	0	200	1.92	149	250
squid spp	106	5	0.85	4.82	2.36	.	43	1.33	30	68
white catfish	46	8	0.37	2.09	1.02	0	264	8.68	134	402
blue crab, adult female	44	8	0.35	2.00	0.98	.	148	2.75	117	184
mantis shrimp	38	4	0.30	1.73	0.85	.	99	3.72	52	144
oyster toadfish	31	8	0.25	1.41	0.69	.	194	10.22	70	321
kingfish spp	22	10	0.18	1.00	0.49	22	120	4.06	83	152
summer flounder	16	6	0.13	0.73	0.36	9	293	13.78	228	386
butterfish	8	2	0.06	0.36	0.18	8	128	4.73	101	144
spider crab, 6 spine	5	4	0.04	0.23	0.11	.	.	.	.	.
black drum	4	2	0.03	0.18	0.09	.	234	7.97	221	257
Atlantic moonfish	4	2	0.03	0.18	0.09	.	79	5.43	71	95
American eel	3	3	0.02	0.14	0.07	.	378	57.74	293	488
striped searobin	3	2	0.02	0.14	0.07	.	91	2.08	87	94
Atlantic cutlassfish	3	1	0.02	0.14	0.07	.	499	140.54	353	780
channel catfish	2	2	0.02	0.09	0.04	0	381	7.00	374	388
naked goby	2	2	0.02	0.09	0.04	.	43	6.00	37	49
star drum	2	2	0.02	0.09	0.04	.	79	15.00	64	94
black seabass	1	1	0.01	0.05	0.02	0	206	.	206	206
harvestfish	1	1	0.01	0.05	0.02	1	94	.	94	94
striped bass	1	1	0.01	0.05	0.02	0	456	.	456	456
Atlantic menhaden	1	1	0.01	0.05	0.02	1	168	.	168	168
gizzard shad	1	1	0.01	0.05	0.02	0	387	.	387	387
Atlantic spadefish	1	1	0.01	0.05	0.02	.	80	.	80	80
green goby	1	1	0.01	0.05	0.02	.	24	.	24	24
banded drum	1	1	0.01	0.05	0.02	.	80	.	80	80
blue catfish	1	1	0.01	0.05	0.02	0	329	.	329	329
horseshoe crab	1	1	0.01	0.05	0.02	.	317	.	317	317
blue crab, sex unknown	1	1	0.01	0.05	0.02	.	12	.	12	12
brown shrimp	1	1	0.01	0.05	0.02	.	122	.	122	122
channel (smooth) whelk	1	1	0.01	0.05	0.02	.	.	.	.	.
sand shrimp	.	12	.	.	.	.	.	.	.	.
mud crab spp	.	8	.	.	.	.	.	.	.	.
grass shrimp spp	.	4	.	.	.	.	.	.	.	.
bent mussel	.	4	.	.	.	.	.	.	.	.
worm spp	.	3	.	.	.	.	.	.	.	.
blood ark/clam	.	3	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	12,472									

Table 127.

Month - November, 1999

System - Mobjack Bay & Tribs.

No. of Random Trawls Made - 10

No. of Fixed Trawls Made - 7

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)
bay anchovy	33,818	15	91.50	1989.29		30,524	56	0.38	27	77
spot	993	12	2.69	58.41	31.62	993	126	0.64	92	176
silver perch	813	9	2.20	47.82	25.89	813	117	0.81	89	158
Atlantic croaker	760	14	2.06	44.71	24.20	754	57	1.21	18	346
weakfish	210	13	0.57	12.35	6.69	200	148	2.30	61	324
blue crab, male	83	14	0.22	4.88	2.64	.	66	4.34	16	151
squid spp	63	7	0.17	3.71	2.01	.	34	0.60	28	48
blue crab, juvenile female	55	10	0.15	3.24	1.75	.	49	4.75	14	109
summer flounder	28	13	0.08	1.65	0.89	15	311	11.53	216	432
white shrimp	23	9	0.06	1.35	0.73	.	102	2.67	84	125
bluefish	21	6	0.06	1.24	0.67	.	162	6.74	125	247
naked goby	18	5	0.05	1.06	0.57	.	42	1.64	26	52
blackcheek tonguefish	14	8	0.04	0.82	0.45	14	71	3.12	48	84
blue crab, adult female	10	6	0.03	0.59	0.32	.	132	3.32	112	144
spider crab, 6 spine	8	5	0.02	0.47	0.25	.	.	.	.	.
butterfish	7	2	0.02	0.41	0.22	7	127	4.20	110	145
jellyfish spp	6	5	0.01	0.32	0.18	.	.	.	.	.
banded drum	4	2	0.01	0.24	0.13	.	82	8.61	56	92
roughneck shrimp	4	1	0.01	0.24	0.13	.	.	.	.	.
kingfish spp	3	3	0.01	0.18	0.10	3	116	14.95	96	145
hogchoker	3	3	0.01	0.18		0	95	5.86	84	104
seaboard goby	3	1	0.01	0.18	0.10	.	34	0.88	33	36
feather blenny	3	1	0.01	0.18	0.10	.	63	7.88	51	78
northern pipefish	2	2	0.01	0.12	0.06	.	115	14.50	100	129
green goby	2	2	0.01	0.12	0.06	.	43	0.50	42	43
mantis shrimp	2	2	0.01	0.12	0.06	.	112	9.50	102	121
clearnose skate	2	1	0.01	0.12	0.06	.	425	48.50	376	473
spotted seatrout	1	1	0.00	0.06	0.03	.	243	.	243	243
spotted hake	1	1	0.00	0.06	0.03	1	80	.	80	80
inshore lizardfish	1	1	0.00	0.06	0.03	1	211	.	211	211
smallmouth flounder	1	1	0.00	0.06	0.03	1	89	.	89	89
mud crab spp	.	10	.	.	.	.	.	.	.	.
grass shrimp spp	.	5	.	.	.	.	.	.	.	.
sand shrimp	.	2	.	.	.	.	.	.	.	.
mysid shrimp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	36,962									

Table 128.

Month - November, 1999

System - Elizabeth River

No. of Random Trawls Made - 0

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)
Atlantic croaker	446	3	41.22	148.67	44.82	446	50	3.93	36	62
threadfin shad	307	2	28.37	102.33	30.85	.	92	0.95	81	133
bay anchovy	80	3	7.39	26.67	.	71	51	1.21	33	76
white perch	78	2	7.21	26.00	7.84	0	156	4.68	100	222
spot	63	2	5.82	21.00	6.33	63	118	1.77	96	193
white shrimp	39	2	3.60	13.00	3.92	.	90	2.76	60	142
gizzard shad	19	2	1.76	6.33	1.91	12	143	4.25	115	182
blue crab, juvenile female	10	2	0.92	3.33	1.01	.	28	2.31	14	38
hogchoker	7	1	0.65	2.33	.	0	90	5.76	70	112
blackcheek tonguefish	6	2	0.55	2.00	0.60	5	80	8.66	57	120
blue crab, male	6	2	0.55	2.00	0.60	.	50	7.68	24	75
blue crab, sex unknown	5	1	0.46	1.67	0.50	.	51	20.18	20	129
weakfish	3	1	0.28	1.00	0.30	3	117	13.68	102	144
pink shrimp	3	1	0.28	1.00	0.30	.	72	8.45	59	88
striped bass	2	2	0.18	0.67	0.20	0	294	16.00	278	310
spider crab, 6 spine	2	1	0.18	0.67	0.20	.	.	.	.	.
summer flounder	1	1	0.09	0.33	0.10	1	276	.	276	276
oyster toadfish	1	1	0.09	0.33	0.10	.	204	.	204	204
silver perch	1	1	0.09	0.33	0.10	1	71	.	71	71
silver jenny	1	1	0.09	0.33	0.10	.	86	.	86	86
brown shrimp	1	1	0.09	0.33	0.10	.	80	.	80	80
blue crab, adult female	1	1	0.09	0.33	0.10	.	151	.	151	151
big-clawed snapping shrimp	.	3	.	.	.	.	.	.	.	.
mud crab spp	.	3	.	.	.	.	.	.	.	.
grass shrimp spp	.	2	.	.	.	.	.	.	.	.
oyster, common	.	2	.	.	.	.	.	.	.	.
bent mussel	.	2	.	.	.	.	.	.	.	.
drill & snail spp	.	2	.	.	.	.	.	.	.	.
sand shrimp	.	1	.	.	.	.	.	.	.	.
All Species Combined	1,082									

Table 129.

Month - November, 1999

System - All - Pooled

No. of Random Trawls Made - 96

No. of Fixed Trawls Made - 35

No. of Species - 74

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	53,343	99	66.53	407.20	.	46,818	56	0.24	19	89
hogchoker	7,742	57	9.66	59.10	.	3,555	83	1.02	16	176
Atlantic croaker	6,010	105	7.50	45.88	31.47	5,849	52	0.91	7	346
spot	4,028	74	5.02	30.75	21.09	4,028	135	0.37	92	197
silver perch	1,769	61	2.21	13.50	9.26	1,755	122	0.51	71	200
weakfish	1,305	78	1.63	9.96	6.83	1,223	144	1.09	61	348
squid spp	934	53	1.16	7.13	4.89	.	36	0.52	11	135
white perch	845	32	1.05	6.45	4.42	0	153	1.36	90	250
blue crab, male	582	80	0.73	4.44	3.05	.	70	1.78	9	170
blackcheek tonguefish	414	62	0.52	3.16	2.17	184	108	1.75	38	178
blue crab, juvenile female	374	72	0.47	2.85	1.96	.	50	1.53	10	133
white shrimp	358	58	0.45	2.73	1.87	.	104	0.90	60	165
threadfin shad	355	7	0.44	2.71	1.86	.	92	1.04	72	133
blue crab, adult female	199	50	0.25	1.52	1.04	.	142	1.10	100	184
smallmouth flounder	189	30	0.24	1.44	0.99	189	79	1.09	40	116
kingfish spp	185	50	0.23	1.41	0.97	184	117	2.71	6	252
summer flounder	147	60	0.18	1.12	0.77	101	289	5.13	184	550
blue catfish	145	10	0.18	1.11	0.76	0	254	4.47	154	428
northern pipefish	123	12	0.15	0.94	0.64	.	145	3.19	94	216
white catfish	119	20	0.15	0.91	0.62	0	247	5.23	119	402
mantis shrimp	103	20	0.13	0.79	0.54	.	93	2.44	43	151
star drum	92	8	0.11	0.70	0.48	.	81	1.44	64	110
northern searobin	67	23	0.08	0.51	0.35	65	69	2.94	32	210
gizzard shad	64	10	0.08	0.49	0.34	52	126	7.82	74	387
roughneck shrimp	51	13	0.06	0.39	0.27	.	.	.	.	.
channel catfish	50	12	0.06	0.38	0.26	0	307	8.05	182	502
oyster toadfish	48	16	0.06	0.37	0.25	.	201	8.33	62	321
inshore lizardfish	45	16	0.06	0.34	0.24	37	201	4.45	134	297
shellies blue crab	37	4	0.05	0.28	0.19	.	.	.	.	.
bluefish	34	11	0.04	0.26	0.18	.	193	8.97	125	308
spider crab, 6 spine	33	18	0.04	0.25	0.17	.	.	.	.	.
naked goby	32	13	0.04	0.24	0.17	.	39	1.40	20	52
striped searobin	28	14	0.03	0.21	0.15	.	94	2.72	54	119
butterfish	25	11	0.03	0.19	0.13	21	133	5.20	58	182
striped anchovy	23	4	0.03	0.18	0.12	23	108	2.63	70	124
banded drum	20	8	0.02	0.15	0.10	.	68	5.23	21	106
pink shrimp	17	6	0.02	0.13	0.09	.	97	4.36	59	120
brown shrimp	16	9	0.02	0.12	0.08	.	95	6.83	56	150
channel (smooth) whelk	14	9	0.02	0.11	0.07	.	.	.	.	.
American eel	12	8	0.01	0.09	0.06	.	295	27.14	152	488
knobbed whelk	12	8	0.01	0.09	0.06	.	.	.	.	.
Atlantic cutlassfish	11	8	0.01	0.08	0.06	.	346	44.37	265	780
Irresescent swimming crab	11	7	0.01	0.08	0.06	.	.	.	.	.
blue crab, sex unknown	11	4	0.01	0.08	0.06	.	40	15.61	12	129
jellyfish spp	11	11	0.01	0.08	0.05	.	.	.	.	.
lined seahorse	10	9	0.01	0.08	0.05	.	49	3.20	31	64
spotted hake	10	8	0.01	0.08	0.05	9	78	21.67	42	270
black seabass	10	6	0.01	0.08	0.05	2	172	16.02	74	206
black drum	10	4	0.01	0.08	0.05	.	224	7.12	182	257
lady crab	10	1	0.01	0.08	0.05	.	.	.	.	.
Atlantic menhaden	9	5	0.01	0.07	0.05	9	154	4.91	131	171
pigfish	9	5	0.01	0.07	0.05	.	109	6.30	74	130
clearnose skate	8	6	0.01	0.06	0.04	.	412	10.69	376	473
northern puffer	7	6	0.01	0.05	0.04	2	153	13.92	80	184
horseshoe crab	7	3	0.01	0.05	0.04	.	256	14.75	188	317
feather blenny	6	3	0.01	0.05	0.03	.	67	6.51	51	92
lesser blue crab	6	3	0.01	0.05	0.03	.	.	.	.	.
green goby	5	5	0.01	0.04	0.03	.	38	3.64	24	43
fringed flounder	5	4	0.01	0.04	0.03	.	98	1.47	92	100
spider crab, common	5	4	0.01	0.04	0.03	.	.	.	.	.
Atlantic silverside	5	2	0.01	0.04	0.03	5	58	4.73	46	74
striped bass	4	4	0.00	0.03	0.02	0	317	49.62	224	456
Atlantic moonfish	4	2	0.00	0.03	0.02	.	79	5.43	71	95
Atlantic thread herring	4	1	0.00	0.03	0.02	.	109	9.31	84	129
seaboard goby	3	1	0.00	0.02	0.02	.	34	0.88	33	36
Portunid spp	3	1	0.00	0.02	0.02	.	.	.	.	.
spotted seatrout	2	2	0.00	0.02	0.01	.	241	2.50	238	243
pinfish	2	2	0.00	0.02	0.01	.	124	5.50	118	129
harvestfish	1	1	0.00	0.01	0.01	1	94	.	94	94
common carp	1	1	0.00	0.01	0.01	.	560	.	560	560
windowpane	1	1	0.00	0.01	0.01	0	207	.	207	207
Atlantic spadefish	1	1	0.00	0.01	0.01	.	80	.	80	80
silver jenny	1	1	0.00	0.01	0.01	.	86	.	86	86

Table 129. (continued)

Month - November, 1999

System - All - Pooled

No. of Random Trawls Made - 96

No. of Fixed Trawls Made - 35

No. of Species - 74

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)
speckled crab	1	1	0.00	0.01	0.01	.	.	.	.	.
sand shrimp	.	63	.	.	.	.	.	.	.	.
mud crab spp	.	60	.	.	.	.	.	.	.	.
grass shrimp spp	.	34	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	27	.	.	.	.	.	.	.	.
blood ark/clam	.	14	.	.	.	.	.	.	.	.
bent mussel	.	14	.	.	.	.	.	.	.	.
worm spp	.	13	.	.	.	.	.	.	.	.
drill & snail spp	.	12	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	11	.	.	.	.	.	.	.	.
oyster, common	.	7	.	.	.	.	.	.	.	.
sand dollar	.	5	.	.	.	.	.	.	.	.
moon snail	.	5	.	.	.	.	.	.	.	.
Amphipod spp	.	5	.	.	.	.	.	.	.	.
quahog clam	.	4	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	4	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	3	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	3	.	.	.	.	.	.	.	.
sea cucumber spp	.	3	.	.	.	.	.	.	.	.
sea anenome spp (Anthozoa)	.	2	.	.	.	.	.	.	.	.
mysid shrimp	.	2	.	.	.	.	.	.	.	.
blue mussel	.	2	.	.	.	.	.	.	.	.
flat-browed(coastal) mud	.	1	.	.	.	.	.	.	.	.
river shrimp	.	1	.	.	.	.	.	.	.	.
purplish tagelus	.	1	.	.	.	.	.	.	.	.
slipper shell spp	.	1	.	.	.	.	.	.	.	.
Northern dwarf tellin	.	1	.	.	.	.	.	.	.	.
All Species Combined	80,183									

Table 130.

Month - December, 1999
 System - Chesapeake Bay
 No. of Random Trawls Made - 39
 No. of Fixed Trawls Made - 0
 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	12,527	36	91.00	321.21	.	12,524	43	0.28	24	79
Atlantic croaker	540	30	3.92	13.85	43.78	538	41	0.73	16	102
smallmouth flounder	114	21	0.83	2.92	9.24	114	81	1.44	39	114
northern searobin	94	23	0.68	2.41	7.62	93	75	1.95	36	131
blackcheek tonguefish	54	11	0.39	1.38	4.38	7	131	3.11	56	171
blue crab, adult female	51	14	0.37	1.31	4.13	.	142	2.65	100	195
roughneck shrimp	41	13	0.30	1.05	3.32	.	.	.	.	.
kingfish spp	41	10	0.30	1.05	3.32	41	112	3.17	71	163
northern pipefish	40	17	0.29	1.03	3.24	.	120	3.66	78	169
squid spp	29	10	0.21	0.74	2.35	.	34	1.42	21	58
summer flounder	25	10	0.18	0.64	2.03	13	287	14.10	181	448
spotted hake	19	10	0.14	0.49	1.54	19	58	3.03	33	78
weakfish	18	6	0.13	0.46	1.46	17	145	11.27	89	313
black seabass	14	3	0.10	0.36	1.13	1	175	10.96	63	228
clearnose skate	13	5	0.09	0.33	1.05	.	396	23.40	249	449
spot	12	5	0.09	0.31	0.97	12	135	6.82	102	178
channel (smooth) whelk	10	7	0.07	0.26	0.81	.	.	.	.	.
seaboard goby	9	7	0.07	0.23	0.73	.	37	2.70	29	54
harvestfish	8	1	0.06	0.21	0.65	8	91	4.83	75	111
Atlantic cutlassfish	8	1	0.06	0.21	0.65	.	.	.	.	.
blue crab, male	7	6	0.05	0.18	0.57	.	237	5.14	219	261
lined seahorse	7	5	0.05	0.18	0.57	.	121	16.78	44	180
Atlantic silverside	7	5	0.05	0.18	0.57	7	54	3.27	41	63
Iridescent swimming crab	7	2	0.05	0.18	0.57	.	72	4.63	52	85
lady crab	7	2	0.05	0.18	0.57	.	.	.	.	.
rock crab	6	5	0.04	0.15	0.49	.	21	6.10	10	44
hogchoker	6	3	0.04	0.15	0.49	0	128	11.46	82	168
silver perch	5	5	0.04	0.13	0.41	5	93	10.60	73	128
lesser blue crab	5	4	0.04	0.13	0.41	.	.	.	.	.
spider crab, common	5	3	0.04	0.13	0.41	.	.	.	.	.
mantis shrimp	5	3	0.04	0.13	0.41	.	52	6.97	40	78
banded drum	4	4	0.03	0.10	0.32	.	55	15.65	24	92
knobbed whelk	4	3	0.03	0.10	0.32	.	.	.	.	.
windowpane	2	2	0.01	0.05	0.16	1	134	101.00	33	235
striped searobin	2	2	0.01	0.05	0.16	.	70	19.00	51	89
feather blenny	2	2	0.01	0.05	0.16	.	53	5.00	48	58
spider crab, 6 spine	2	2	0.01	0.05	0.16	.	.	.	.	.
horseshoe crab	2	2	0.01	0.05	0.16	.	203	12.00	191	215
skilletfish	2	1	0.01	0.05	0.16	.	51	11.00	40	62
white shrimp	2	1	0.01	0.05	0.16	.	79	4.50	74	83
blue crab, juvenile female	2	1	0.01	0.05	0.16	.	79	52.00	27	131
jellyfish spp	2	3	0.01	0.04	0.12	.	.	.	.	.
scup	1	1	0.01	0.03	0.08	0	87	.	87	87
Atlantic herring	1	1	0.01	0.03	0.08	.	70	.	70	70
Atlantic thread herring	1	1	0.01	0.03	0.08	.	72	.	72	72
naked goby	1	1	0.01	0.03	0.08	.	34	.	34	34
northern stargazer	1	1	0.01	0.03	0.08	.	44	.	44	44
pink shrimp	1	1	0.01	0.03	0.08	.	100	.	100	100
Portunid spp	1	1	0.01	0.03	0.08	.	.	.	.	.
sand shrimp	.	30	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	22	.	.	.	.	.	.	.	.
mud crab spp	.	15	.	.	.	.	.	.	.	.
grass shrimp spp	.	11	.	.	.	.	.	.	.	.
mysisid shrimp	.	10	.	.	.	.	.	.	.	.
moon snail	.	9	.	.	.	.	.	.	.	.
drill & snail spp	.	6	.	.	.	.	.	.	.	.
worm spp	.	5	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	4	.	.	.	.	.	.	.	.
commensal crab spp	.	4	.	.	.	.	.	.	.	.
sand dollar	.	3	.	.	.	.	.	.	.	.
Amphipod spp	.	3	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
slipper shell spp	.	2	.	.	.	.	.	.	.	.
leech spp	.	2	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
quahog clam	.	1	.	.	.	.	.	.	.	.
voldia spp. (clam)	.	1	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	13,767									

Table 131.

Month - December, 1999

System - James River

No. of Random Trawls Made - 14

No. of Fixed Trawls Made - 8

No. of Species - 48

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	4,711	22	35.84	214.14	.	4,622	52	0.48	25	85
hogchoker	4,266	12	32.45	193.91	.	1,550	67	1.29	15	141
Atlantic croaker	2,964	20	22.55	134.73	71.10	2,908	50	0.80	9	177
white perch	273	13	2.08	12.41	6.55	0	137	1.93	88	245
blue crab, male	133	15	1.01	6.05	3.19	.	51	2.67	12	150
spot	125	13	0.95	5.68	3.00	125	128	1.08	103	172
blue crab, juvenile female	105	16	0.80	4.77	2.52	.	46	2.36	15	125
threadfin shad	71	8	0.54	3.23	1.70	.	79	1.14	58	115
blackcheek tonguefish	44	9	0.33	2.00	1.06	22	108	5.18	50	155
oyster toadfish	44	3	0.33	2.00	1.06	.	210	7.24	64	297
channel catfish	37	7	0.28	1.68	0.89	0	291	5.62	162	356
summer flounder	31	7	0.24	1.41	0.74	20	275	14.40	158	484
roughneck shrimp	31	5	0.24	1.41	0.74	.	.	.	.	.
weakfish	28	3	0.21	1.27	0.67	27	150	4.72	108	220
blue catfish	28	3	0.21	1.27	0.67	1	262	8.21	82	326
white catfish	26	4	0.20	1.18	0.62	0	222	6.73	152	275
channel (smooth) whelk	23	4	0.17	1.05	0.55	.	.	.	.	.
gizzard shad	23	3	0.17	1.05	0.55	17	154	15.69	74	322
northern searobin	18	6	0.14	0.82	0.43	18	70	4.24	48	105
smallmouth flounder	15	5	0.11	0.68	0.36	15	91	2.10	74	102
blue crab, adult female	14	6	0.11	0.64	0.34	.	158	4.04	133	180
pink shrimp	13	8	0.10	0.59	0.31	.	82	4.16	61	105
white shrimp	13	4	0.10	0.59	0.31	.	111	4.36	82	132
seaboard goby	12	7	0.09	0.55	0.29	.	38	2.44	22	52
spider crab, 6 spine	12	5	0.09	0.55	0.29	.	.	.	.	.
star drum	10	2	0.08	0.45	0.24	.	91	3.72	69	104
striped bass	9	5	0.07	0.41	0.22	2	270	45.69	106	584
silver perch	9	3	0.07	0.41	0.22	9	114	3.78	100	132
banded drum	9	2	0.07	0.41	0.22	.	99	5.23	75	122
blue crab, sex unknown	6	2	0.05	0.27	0.14	.	21	1.98	15	28
spotted hake	5	4	0.04	0.23	0.12	5	74	5.71	59	94
black seabass	5	2	0.04	0.23	0.12	0	176	9.99	148	210
kingfish spp	4	3	0.03	0.18	0.10	4	101	7.67	84	118
American eel	3	3	0.02	0.14	0.07	.	392	131.14	203	644
northern pipefish	3	3	0.02	0.14	0.07	.	142	21.46	107	181
squid spp	2	2	0.02	0.09	0.05	.	38	1.50	36	39
striped searobin	2	2	0.02	0.09	0.05	.	94	6.00	88	100
feather blenny	2	2	0.02	0.09	0.05	.	85	5.00	80	90
brown shrimp	2	2	0.02	0.09	0.05	.	69	4.00	65	73
blueback herring	2	1	0.02	0.09	0.05	2	84	0.50	83	84
spotted seatrout	2	1	0.02	0.09	0.05	.	183	36.00	147	219
naked goby	2	1	0.02	0.09	0.05	.	39	7.50	31	46
Atlantic cutlassfish	2	1	0.02	0.09	0.05	.	303	26.50	276	329
fringed flounder	2	1	0.02	0.09	0.05	.	99	3.00	96	102
mantis shrimp	2	1	0.02	0.09	0.05	.	69	9.50	59	78
red drum	1	1	0.01	0.05	0.02	.	355	.	355	355
tessellated darter	1	1	0.01	0.05	0.02	.	61	.	61	61
veined rapa whelk	1	1	0.01	0.05	0.02	.	.	.	.	.
grass shrimp spp	.	18	.	.	.	.	.	.	.	.
sand shrimp	.	15	.	.	.	.	.	.	.	.
mud crab spp	.	12	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	6	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	5	.	.	.	.	.	.	.	.
worm spp	.	4	.	.	.	.	.	.	.	.
oyster, common	.	4	.	.	.	.	.	.	.	.
blood ark/clam	.	4	.	.	.	.	.	.	.	.
bent mussel	.	4	.	.	.	.	.	.	.	.
quahog clam	.	3	.	.	.	.	.	.	.	.
drill & snail spp	.	3	.	.	.	.	.	.	.	.
slipper shell spp	.	2	.	.	.	.	.	.	.	.
flat-browed (coastal) mud	.	1	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	1	.	.	.	.	.	.	.	.
forbes common sea star	.	1	.	.	.	.	.	.	.	.
moon snail	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	1	.	.	.	.	.	.	.	.
transverse ark (clam)	.	1	.	.	.	.	.	.	.	.
Stout razor clam (tagelus)	.	1	.	.	.	.	.	.	.	.
All Species Combined	13,146									

Table 132.

Month - December, 1999
 System - Rappahannock River
 No. of Random Trawls Made - 14
 No. of Fixed Trawls Made - 8
 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)
bav anchovy	14,992	22	84.17	681.45	.	14,635	48	0.39	14	85
Atlantic croaker	1,368	20	7.68	62.18	53.34	1,368	41	0.76	13	100
blue catfish	613	5	3.44	27.86	23.90	13	257	2.84	163	332
white perch	332	11	1.86	15.09	12.94	10	133	2.31	72	244
hogchoker	254	12	1.43	11.55	.	48	69	1.40	24	116
alewife	60	5	0.34	2.73	2.34	60	111	1.26	92	133
threadfin shad	36	5	0.20	1.64	1.40	.	94	2.29	72	130
blue crab, juvenile female	32	11	0.18	1.45	1.25	.	30	1.57	17	53
gizzard shad	30	7	0.17	1.36	1.17	20	171	12.60	99	347
Atlantic menhaden	21	5	0.12	0.95	0.82	20	115	7.70	79	231
blue crab, male	12	7	0.07	0.55	0.47	.	33	3.46	22	56
white shrimp	9	6	0.05	0.41	0.35	.	91	3.19	72	106
blueback herring	7	4	0.04	0.32	0.27	7	84	3.66	68	95
skilletfish	6	6	0.03	0.27	0.23	.	44	0.87	42	47
naked goby	6	2	0.03	0.27	0.23	.	39	2.71	31	50
blackcheek tonguefish	4	3	0.02	0.18	0.16	4	70	5.20	55	78
white catfish	4	2	0.02	0.18	0.16	0	272	15.77	236	308
spotted hake	4	2	0.02	0.18	0.16	4	80	5.68	70	96
northern pipefish	3	3	0.02	0.14	0.12	.	151	16.29	121	177
striped bass	3	2	0.02	0.14	0.12	1	237	42.19	176	318
American shad	2	2	0.01	0.09	0.08	2	151	3.00	148	154
feather blenny	2	2	0.01	0.09	0.08	.	61	1.00	60	62
blue crab, adult female	2	2	0.01	0.09	0.08	.	148	15.50	132	163
hickory shad	2	1	0.01	0.09	0.08	.	152	2.00	150	154
jellyfish spp	2	8	0.01	0.08	0.07	.	.	.	.	.
summer flounder	1	1	0.01	0.05	0.04	0	391	.	391	391
weakfish	1	1	0.01	0.05	0.04	1	80	.	80	80
channel catfish	1	1	0.01	0.05	0.04	0	287	.	287	287
green goby	1	1	0.01	0.05	0.04	.	36	.	36	36
blue crab, sex unknown	1	1	0.01	0.05	0.04	.	11	.	11	11
sand shrimp	.	17	.	.	.	.	.	.	.	.
mud crab spp	.	13	.	.	.	.	.	.	.	.
worm spp	.	7	.	.	.	.	.	.	.	.
bent mussel	.	4	.	.	.	.	.	.	.	.
grass shrimp spp	.	3	.	.	.	.	.	.	.	.
oyster, common	.	3	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	3	.	.	.	.	.	.	.	.
mysid shrimp	.	2	.	.	.	.	.	.	.	.
Amphipod spp	.	2	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	1	.	.	.	.	.	.	.	.
All Species Combined	17,811									

Table 133.

Month - December, 1999
 System - York River
 No. of Random Trawls Made - 13
 No. of Fixed Trawls Made - 9
 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)
bay anchovy	21,705	21	72.37	986.59	.	21,631	50	0.47	21	78
Atlantic croaker	4,469	17	14.90	203.14	71.95	4,425	43	0.91	7	173
hogchoker	2,074	15	6.92	94.27	.	1,199	75	1.82	15	166
blue crab, male	360	16	1.20	16.36	5.80	.	43	1.93	12	151
blue crab, juvenile female	315	14	1.05	14.32	5.07	.	34	1.39	7	136
white perch	266	9	0.89	12.09	4.28	0	168	1.77	99	254
blackcheek tonguefish	247	14	0.82	11.23	3.98	218	76	1.69	40	162
white shrimp	181	11	0.60	8.23	2.91	.	107	1.48	54	151
spot	115	13	0.38	5.23	1.85	115	121	1.10	93	161
white catfish	49	3	0.16	2.23	0.79	2	217	10.79	106	393
naked goby	45	6	0.15	2.05	0.72	.	33	1.13	19	45
oyster toadfish	31	7	0.10	1.41	0.50	.	182	18.36	45	323
weakfish	22	7	0.07	1.00	0.35	17	161	16.54	56	398
summer flounder	11	6	0.04	0.50	0.18	9	250	9.51	210	305
feather blenny	11	2	0.04	0.50	0.18	.	74	4.24	54	94
star drum	10	2	0.03	0.45	0.16	.	79	4.01	52	94
gizzard shad	8	4	0.03	0.36	0.13	7	149	25.41	102	325
striped anchovy	8	1	0.03	0.36	0.13	8	89	1.95	84	100
channel catfish	7	1	0.02	0.32	0.11	0	374	15.58	306	428
kingfish spp	6	4	0.02	0.27	0.10	6	109	4.08	101	128
skilletfish	6	2	0.02	0.27	0.10	.	42	6.00	36	48
threadfin shad	5	1	0.02	0.23	0.08	.	104	6.60	87	124
mantis shrimp	5	1	0.02	0.23	0.08	.	67	7.18	47	92
American eel	4	4	0.01	0.18	0.06	.	344	88.69	195	600
banded drum	4	3	0.01	0.18	0.06	.	87	11.48	67	113
channel (smooth) whelk	3	2	0.01	0.14	0.05	.	.	.	.	.
Atlantic silverside	3	1	0.01	0.14	0.05	3	68	2.60	64	73
striped bass	2	2	0.01	0.09	0.03	0	258	39.50	218	297
Atlantic menhaden	2	2	0.01	0.09	0.03	2	127	12.00	115	139
spotted hake	2	2	0.01	0.09	0.03	2	54	.	54	54
northern pipefish	2	2	0.01	0.09	0.03	.	109	21.00	88	130
squid spp	2	1	0.01	0.09	0.03	.	44	5.50	38	49
spotted seatrout	2	1	0.01	0.09	0.03	.	130	16.50	113	146
American shad	1	1	0.00	0.05	0.02	1	100	.	100	100
black drum	1	1	0.00	0.05	0.02	.	194	.	194	194
Atlantic thread herring	1	1	0.00	0.05	0.02	.	130	.	130	130
silver perch	1	1	0.00	0.05	0.02	1	115	.	115	115
blue catfish	1	1	0.00	0.05	0.02	0	251	.	251	251
spider crab, 6 spine	1	1	0.00	0.05	0.02	.	.	.	.	.
pink shrimp	1	1	0.00	0.05	0.02	.	96	.	96	96
blue crab, sex unknown	1	1	0.00	0.05	0.02	.	14	.	14	14
jellyfish spp	0	1	0.00	0.00	0.00	.	.	.	.	.
mud crab spp	.	17	.	.	.	.	.	.	.	.
sand shrimp	.	15	.	.	.	.	.	.	.	.
grass shrimp spp	.	13	.	.	.	.	.	.	.	.
worm spp	.	10	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	2	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	2	.	.	.	.	.	.	.	.
mysis shrimp	.	2	.	.	.	.	.	.	.	.
quahog clam	.	2	.	.	.	.	.	.	.	.
blood ark/clam	.	2	.	.	.	.	.	.	.	.
bent mussel	.	2	.	.	.	.	.	.	.	.
transverse ark (clam)	.	2	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	1	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	1	.	.	.	.	.	.	.	.
oyster, common	.	1	.	.	.	.	.	.	.	.
macoma clam spp	.	1	.	.	.	.	.	.	.	.
Amphipod spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	29,990									

Table 134.

Month - December, 1999										
System - Pocomoke Sound										
No. of Random Trawls Made - 11										
No. of Fixed Trawls Made - 3										
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)
bay anchovy	10,704	12	97.21	764.57	.	10,704	40	0.51	24	70
Atlantic croaker	259	7	2.35	18.50	84.36	259	46	2.46	20	85
northern pipefish	9	3	0.08	0.64	2.93	.	109	10.76	53	148
blue crab, male	6	2	0.05	0.43	1.95	.	25	4.75	17	46
blackcheek tonguefish	6	1	0.05	0.43	1.95	6	65	6.01	48	90
jellyfish spp	4	6	0.04	0.29	1.30	.	.	.	.	.
alewife	4	2	0.04	0.29	1.30	4	109	4.65	100	118
white shrimp	3	2	0.03	0.21	0.98	.	82	2.73	78	87
Atlantic menhaden	2	2	0.02	0.14	0.65	2	129	4.00	125	133
seaboard goby	2	2	0.02	0.14	0.65	.	39	3.00	36	42
feather blenny	2	2	0.02	0.14	0.65	.	46	20.00	26	66
Atlantic silverside	2	2	0.02	0.14	0.65	2	81	19.00	62	100
red drum	2	1	0.02	0.14	0.65	.	62	10.00	52	72
blue crab, juvenile female	2	1	0.02	0.14	0.65	.	17	4.50	12	21
striped bass	1	1	0.01	0.07	0.33	0	311	.	311	311
naked goby	1	1	0.01	0.07	0.33	.	36	.	36	36
roughneck shrimp	1	1	0.01	0.07	0.33	.	.	.	.	.
blue crab, adult female	1	1	0.01	0.07	0.33	.	124	.	124	124
sand shrimp	.	13	.	.	.	.	.	.	.	.
mud crab spp	.	6	.	.	.	.	.	.	.	.
grass shrimp spp	.	4	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	3	.	.	.	.	.	.	.	.
mysis shrimp	.	3	.	.	.	.	.	.	.	.
moon snail	.	3	.	.	.	.	.	.	.	.
drill & snail spp	.	2	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	1	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	1	.	.	.	.	.	.	.	.
leech spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	11,011									

Table 135.

Month - December, 1999										
System - Elizabeth River										
No. of Random Trawls Made - 0										
No. of Fixed Trawls Made - 8										
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	15,254	8	86.53	1906.75	.	15,080	49	0.43	35	80
Atlantic croaker	1,353	7	7.67	169.13	57.02	1,345	53	1.38	15	204
spot	340	6	1.93	42.50	14.33	340	117	0.60	93	200
threadfin shad	269	8	1.53	33.63	11.34	.	84	0.65	70	136
silver perch	269	6	1.53	33.63	11.34	267	110	1.19	74	174
blue crab, male	33	5	0.19	4.13	1.39	.	37	4.04	13	93
blue crab, juvenile female	28	6	0.16	3.50	1.18	.	30	3.29	14	100
gizzard shad	23	6	0.13	2.88	0.97	23	133	4.35	98	184
white shrimp	19	6	0.11	2.38	0.80	.	92	3.77	59	112
spider crab, 6 spine	7	5	0.04	0.88	0.29	.	.	.	.	.
pink shrimp	7	4	0.04	0.88	0.29	.	65	6.98	38	84
blue crab, sex unknown	5	3	0.03	0.63	0.21	.	13	2.12	7	20
blackcheek tonguefish	3	2	0.02	0.38	0.13	3	82	15.56	53	106
jellyfish spp	2	6	0.01	0.25	0.08	.	.	.	.	.
Atlantic menhaden	2	2	0.01	0.25	0.08	2	120	32.00	88	152
hogchoker	2	2	0.01	0.25	0.08	0	120	9.00	111	129
oyster toadfish	2	2	0.01	0.25	0.08	.	135	78.50	56	213
mantis shrimp	2	2	0.01	0.25	0.08	.	92	8.00	84	100
striped bass	2	1	0.01	0.25	0.08	0	231	0.50	230	231
weakfish	1	1	0.01	0.13	0.04	1	128	.	128	128
white perch	1	1	0.01	0.13	0.04	0	134	.	134	134
spotted seatrout	1	1	0.01	0.13	0.04	.	210	.	210	210
spotted hake	1	1	0.01	0.13	0.04	1	90	.	90	90
naked goby	1	1	0.01	0.13	0.04	.	48	.	48	48
roughneck shrimp	1	1	0.01	0.13	0.04	.	.	.	.	.
blue crab, adult female	1	1	0.01	0.13	0.04	.	154	.	154	154
mud crab spp	.	7	.	.	.	.	.	.	.	.
sand shrimp	.	5	.	.	.	.	.	.	.	.
grass shrimp spp	.	4	.	.	.	.	.	.	.	.
drill & snail spp	.	3	.	.	.	.	.	.	.	.
ribbed mussel	.	2	.	.	.	.	.	.	.	.
Amphipod spp	.	2	.	.	.	.	.	.	.	.
bent mussel	.	2	.	.	.	.	.	.	.	.
worm spp	.	1	.	.	.	.	.	.	.	.
slipper shell spp	.	1	.	.	.	.	.	.	.	.
All Species Combined	17,629									

Table 136.

Month - December, 1999

System - All - Pooled

No. of Random Trawls Made - 91

No. of Fixed Trawls Made - 36

No. of Species - 74

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	79,893	121	77.30	629.08		79,196	47	0.18	14	85
Atlantic croaker	10,953	101	10.60	86.24	64.97	10,843	45	0.41	7	204
hogchoker	6,602	44	6.39	51.98		2,797	71	0.91	15	168
white perch	872	34	0.84	6.87	5.17	10	146	1.28	72	254
blue catfish	642	9	0.62	5.06	3.81	14	258	3.13	82	332
spot	592	37	0.57	4.66	3.51	592	121	0.53	93	200
blue crab, male	551	51	0.53	4.34	3.27	.	46	1.52	12	180
blue crab, juvenile female	484	49	0.47	3.81	2.87	.	37	1.12	7	136
threadfin shad	381	22	0.37	3.00	2.26	.	85	0.63	58	136
blackcheek tonguefish	358	40	0.35	2.82	2.12	260	90	1.91	40	171
silver perch	284	15	0.27	2.24	1.68	282	110	1.16	73	174
white shrimp	227	30	0.22	1.79	1.35	.	104	1.32	54	151
smallmouth flounder	129	26	0.12	1.02	0.77	129	82	1.32	39	114
northern searobin	112	29	0.11	0.88	0.66	111	74	1.79	36	131
gizzard shad	84	20	0.08	0.66	0.50	67	154	6.84	74	347
white catfish	79	9	0.08	0.62	0.47	2	222	7.17	106	393
oyster toadfish	77	12	0.07	0.61	0.46	.	198	8.21	45	323
roughneck shrimp	74	20	0.07	0.58	0.44	.	.	.	.	.
weakfish	70	18	0.07	0.55	0.42	63	151	6.28	56	398
blue crab, adult female	69	24	0.07	0.54	0.41	.	145	2.29	100	195
summer flounder	68	24	0.07	0.54	0.40	42	277	8.71	158	484
alewife	64	7	0.06	0.50	0.38	64	111	1.21	92	133
northern pipefish	57	28	0.06	0.45	0.34	.	121	3.54	53	181
naked goby	56	12	0.05	0.44	0.33	.	35	1.09	19	50
kingfish spp	51	17	0.05	0.40	0.30	51	111	2.67	71	163
channel catfish	45	9	0.04	0.35	0.27	0	303	6.87	162	428
channel (smooth) whelk	36	13	0.03	0.28	0.21	.	.	.	.	.
squid spp	33	13	0.03	0.26	0.20	.	35	1.33	21	58
spotted hake	31	19	0.03	0.24	0.18	31	64	2.88	33	96
Atlantic menhaden	27	11	0.03	0.21	0.16	26	118	6.29	79	231
seaboard goby	23	16	0.02	0.18	0.14	.	38	1.63	22	54
pink shrimp	22	14	0.02	0.17	0.13	.	78	3.89	38	105
spider crab, 6 spine	22	13	0.02	0.17	0.13	.	.	.	.	.
star drum	20	4	0.02	0.16	0.12	.	85	2.97	52	104
feather blenny	19	10	0.02	0.15	0.11	.	69	3.95	26	94
black seabass	19	5	0.02	0.15	0.11	1	175	8.35	63	228
striped bass	17	11	0.02	0.13	0.10	3	261	25.07	106	584
banded drum	17	9	0.02	0.13	0.10	.	85	6.61	24	122
skilletfish	14	9	0.01	0.11	0.08	.	45	2.19	36	62
mantis shrimp	14	7	0.01	0.11	0.08	.	66	5.03	40	100
blue crab, sex unknown	13	7	0.01	0.10	0.08	.	17	1.65	7	28
clearnose skate	13	5	0.01	0.10	0.08	.	396	23.40	249	449
Atlantic silverside	12	8	0.01	0.09	0.07	12	73	3.75	52	100
Atlantic cutlassfish	10	2	0.01	0.08	0.06	.	250	10.39	219	329
jellyfish spp	9	24	0.01	0.07	0.06	.	.	.	.	.
blueback herring	9	5	0.01	0.07	0.05	9	84	2.80	68	95
harvestfish	8	1	0.01	0.06	0.05	8	91	4.83	75	111
striped anchovy	8	1	0.01	0.06	0.05	8	89	1.95	84	100
American eel	7	7	0.01	0.06	0.04	.	365	69.27	195	644
lined seahorse	7	5	0.01	0.06	0.04	.	54	3.27	41	63
Iridescent swimming crab	7	2	0.01	0.06	0.04	.	.	.	.	.
lady crab	7	2	0.01	0.06	0.04	.	.	.	.	.
rock crab	6	5	0.01	0.05	0.04	.	21	6.10	10	44
lesser blue crab	5	4	0.00	0.04	0.03	.	.	.	.	.
spotted seatrout	5	3	0.00	0.04	0.03	.	167	20.38	113	219
spider crab, common	5	3	0.00	0.04	0.03	.	.	.	.	.
striped searobin	4	4	0.00	0.03	0.02	.	82	10.68	51	100
knobbed whelk	4	3	0.00	0.03	0.02	.	.	.	.	.
American shad	3	3	0.00	0.02	0.02	3	134	17.09	100	154
red drum	3	2	0.00	0.02	0.02	.	160	97.84	52	355
Atlantic thread herring	2	2	0.00	0.02	0.01	.	101	29.00	72	130
windowpane	2	2	0.00	0.02	0.01	1	134	101.00	33	235
horseshoe crab	2	2	0.00	0.02	0.01	.	203	12.00	191	215
brown shrimp	2	2	0.00	0.02	0.01	.	69	4.00	65	73
hickory shad	2	1	0.00	0.02	0.01	.	152	2.00	150	154
fringed flounder	2	1	0.00	0.02	0.01	.	99	3.00	96	102
scup	1	1	0.00	0.01	0.01	0	87	.	87	87
Atlantic herring	1	1	0.00	0.01	0.01	.	70	.	70	70
black drum	1	1	0.00	0.01	0.01	.	194	.	194	194
tessellated darter	1	1	0.00	0.01	0.01	.	61	.	61	61
green goby	1	1	0.00	0.01	0.01	.	36	.	36	36
northern stargazer	1	1	0.00	0.01	0.01	.	44	.	44	44
Portunid spp	1	1	0.00	0.01	0.01	.	.	.	.	.

Table 136. (continued)

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 - December, 1999										
System - All - Pooled										
No. of Random Trawls Made - 91										
No. of Fixed Trawls Made - 36										
No. of Species - 74										
Adjusted Percent of Catch Excludes Bay Anchovy and Hogchoker										
veined rapa whelk	1	1	0.00	0.01	0.01	.	.	.	.	.
sand shrimp	.	95	.	.	.	.	.	.	.	.
mud crab spp	.	70	.	.	.	.	.	.	.	.
grass shrimp spp	.	53	.	.	.	.	.	.	.	.
right-hand hermit crab spp	.	29	.	.	.	.	.	.	.	.
worm spp	.	28	.	.	.	.	.	.	.	.
mysid shrimp	.	17	.	.	.	.	.	.	.	.
drill & snail spp	.	14	.	.	.	.	.	.	.	.
moon snail	.	13	.	.	.	.	.	.	.	.
bent mussel	.	12	.	.	.	.	.	.	.	.
skeleton shrimp spp	.	9	.	.	.	.	.	.	.	.
oyster, common	.	9	.	.	.	.	.	.	.	.
wedge rangia clam (Atlantic)	.	9	.	.	.	.	.	.	.	.
Amphipod spp	.	9	.	.	.	.	.	.	.	.
blood ark/clam	.	8	.	.	.	.	.	.	.	.
quahog clam	.	6	.	.	.	.	.	.	.	.
slipper shell spp	.	5	.	.	.	.	.	.	.	.
commensal crab spp	.	4	.	.	.	.	.	.	.	.
little (dwarf) surf clam	.	4	.	.	.	.	.	.	.	.
big-clawed snapping shrimp	.	3	.	.	.	.	.	.	.	.
sand dollar	.	3	.	.	.	.	.	.	.	.
leech spp	.	3	.	.	.	.	.	.	.	.
transverse ark (clam)	.	3	.	.	.	.	.	.	.	.
brittle/serpent star spp	.	2	.	.	.	.	.	.	.	.
macoma clam spp	.	2	.	.	.	.	.	.	.	.
ribbed mussel	.	2	.	.	.	.	.	.	.	.
flat-browed(coastal) mud	.	1	.	.	.	.	.	.	.	.
forbes common sea star	.	1	.	.	.	.	.	.	.	.
soft-shell clam	.	1	.	.	.	.	.	.	.	.
voldia spp. (clam)	.	1	.	.	.	.	.	.	.	.
Stout razor clam (tagelus)	.	1	.	.	.	.	.	.	.	.
All Species Combined	103,353									

Tables 137-148:

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 137.

January 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
GW990121	1	1	MOVED STATION FROM ORGINIAL LOCATION/ OUTSIDE OF CREEK TO FIND CORRECT .
GW990121	1	2	DEPTH .
GW990121	2	1	MOVED ORGINAL STATION / OUTSIDE OF CREEK TO FIND CORRECT DEPTH .
JA990113	3	1	1 DEAD PINK SHRIMP @70MM .
JA990113	14	1	CAUGHT A CRAB POT .
JA990114	15	1	THIS STATION WAS A RETOW. HUNG IN FIRST FEW SECONDS OF TOW. SECOND .
JA990114	15	2	TOW HAD A FEW BUMPS...LAST FEW SECONDS OF TOW. BROKE TICKLER CHAIN .
JA990114	21	1	TEMPERATURE IS CORRECT. TOWED RIGHT OFF THE END OF SURRY NUCLEAR .
JA990114	21	2	STATION...WARM WATER DISCHARGE CANAL .
JA990114	JA27	1	ATLANTIC STURGEON CAUGHT AND TAGGED DORSAL FIN NO. 13003 .
RA990119	9	1	NO HABITAT DATA COLLECTED .
RA990120	17	1	3:50 INTO TOW CAUGHT SOMETHING IN NET. POUND NET POLE ON CHAIN .
RA990120	19	1	NO ENDING LAT OR LONGS WRITTEN DOWN FOR THIS STATION .
RA990120	22	1	BROKEN TICKLER CHAIN (ROCKS AND POUND NET POLES IN NET) .
RA990120	23	1	NO SURFACE HYDRO DATA COLLECTED FOR THIS STATION DUE TO DEPTH .
RA990120	25	1	NO ENDING LAT OR LONGS FOR THIS STATION .
RA990120	25	2	BROKE TICKLER CHAIN, KNOT SLIPPED DOWN PAST THE COD END .
RA990119	RA10	1	NO HABITAT DATA COLLECTED .
YK990111	5	1	HYDROLAB'S BATTERIES RAN OUT. NO SALINITY OR DO, NO SECCHI AND NO .
YK990111	5	2	VESSEL SPEED RECORDED FOR THIS STATION .
YK990111	8	1	THIS STATION WAS A RETOW. COULD NOT GET NET ON BOARD BOAT .
YK990111	8	2	2 PINK SHRIMP AND 1 WHITE SHRIMP DEAD.* .

Table 138.

February 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL990203	15	1	1 DEAD HORSESHOE CRAB .
CL990209	17	1	NO AIR TEMPERATURE RECORDED FOR THIS STATION. HUNG IN FIRST MINUTE OF .
CL990209	17	2	TOW. BROKE TICKLER CHAIN .
CL990209	18	1	BROKE TICKLER CHAIN .
CL990209	80	1	ONLY BOTTOM HYDRO COLLECTED FOR THIS STATION DUE TO DEPTH .
CL990209	84	1	BROKE TICKLER CHAIN .
JA990203	7	1	MOVED STATION WEST OF THE HAMPTON ROADS BRIDGE TUNNELL .
JA990204	21	1	TEMPERATURE FOR SURFACE AND BOTTOM ARE CORRECT READINGS. STATION OFF .
JA990204	21	2	SURRY NUCLEAR POWER STATION WARM WATER DISCHARGE CANAL .
JA990204	23	1	STURGEON TAGGED #13015 .
MB990216	1	1	ONLY SURFACE TAKEN FOR THIS STATION DUE TO DEPTH .
MB990216	4	1	CAUGHT A CRAB POT IN THE NET .
MB990216	10	1	CAUGHT A SMALL TERAPIN TURTLE .
RA990210	18	1	TICKLER CHAIN BROKE .
RA990210	20	1	BROKE TICKLER CHAIN .
RA990210	23	1	BROKE TICKLER CHAIN .
RA990210	25	1	SPECIES CODE 103 (ANCHOVIES) ONLY SUBSAMPLE, NO INDIVIDUAL LENGTHS .
RA990210	RA20	1	THIS STATION WAS RETOW DUE TO GILL NET IN THE WAY .
RA990210	RA25	1	SPECIES CODE 103 (ANCHOVIES) ONLY SUBSAMPLE, NO INDIVIDUAL LENGTHS .
RA990210	RA35	1	BROKE TICKLER CHAIN .
YK990203	8	1	ONE MENHADEN WITH LESION .
YK990202	18	1	BROKE TICKLER CHAIN....NO BOTTOM HYDRO DATA COLLECTED FOR THIS STATION .
YK990202	18	2	DUE TO ENGINE PROBLEMS .

Table 139.

March 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CP990323	10	1	SPECIES CODE 621 (MANTIS SHRIMP) 1 DEAD .
JA990302	1	1	STATION 1 NEEDS TO BE DELETED FROM MAP COORDINATES. COORDINATES .
JA990302	1	2	PUTS STATION ON LAND (PHOEBUS). STATION MOVED. .
JA990302	6	1	TOW DURATION OF 4.5 MINUTES. DOOR FLIPPED IN MUD BANK .
JA990302	7	1	TOW DURATION ONLY 3 MINUTES...KEPT TOW (HANG) .
JA990302	7	2	NO ENDING LAT OR LONGS FOR THIS STATION. .
JA990302	14	1	THIS STATION WAS A RETOW....DOOR FLIPPED .
JA990305	24	1	DEPTH WAS APPROXIMATED. DEPTH WAS WRITTEN DOWN WRONG. USED DEPTH ON .
JA990305	24	2	CHARTS .
JA990305	24	3	NO VESSEL SPEED RECORDED FOR THIS STATION .
JA990302	JA05	1	THIS STATION WAS A RETOW...DRAGGING SOMETHING .
JA990305	JA24	1	CAUGHT A BIG PIECE OF CABLE IN NET .
RA990317	10	1	THIS STATION WAS A RETOW .
RA990317	12	1	DOOR FLIPPED .
RA990317	14	1	DEPTH WAS AVERAGED. STARTED IN 58 FT...ENDED AT 36 FT. .
RA990317	16	1	ENDED TOW IN 50 FT OF WATER. STARTED WITH 13.6 FT. .
RA990317	17	1	NO HYDRO DATA COLLECTED FOR THIS STATION. HYDRO PROBLEMS. .
RA990317	17	2	NO SECCHI DATA COLLECTED FOR THIS STATION .
RA990317	26	1	SPECIES CODE 116 (BROWN BULLHEAD) NO MEASUREMENT. ONLY 1 FISH. .
RA990317	RA30	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
RA990317	RA40	1	NO ENDING LAT OR LONGS COLLECTED FOR THIS STATION .
YK990302	6	1	THIS STATION WAS A RETOW. NET FILLED UNABLE TO GET ON BOARD BOAT .
YK990301	YK20	1	CAUGHT AN EEL POT .

Table 140.

April 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL990406	10	1	STATION 10 WAS REPLACED BY BACKUP 10. .
CL990408	18	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
CL990408	19	1	TICKLER CHAIN BROKE AT 2:30 MINUTES INTO TOW. .
CL990419	48	1	SPECIES CODE 28 (HICKORY SHAD) CONFIRMED. MTM .
CL990408	68	1	RIPPED COD END OF NET. SWITCHED NETS FROM A12 TO A04. THIS STATION .
CL990408	68	2	WAS A RETOW. HUNG ON SOMETHING. .
CL990408	74	1	CAUGHT A CRABPOT IN NET. .
JA990407	4	1	NO VESSEL SPEED RECORDED FOR THIS STATION .
JA990407	7	1	DOORS FLIPPED LATE INTO TOW. .
JA990407	13	1	BROKE TICKLER CHAIN. .
JA990408	18	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
JA990407	19	1	SPECIES CODE 151 (HOGCHOKERS). SUBSAMPLE TAKEN BUT ONLY CUPS COUNTED .
JA990407	19	2	AND NO COUNTED FISH (CUP). 51 CUPS THROWN OVER BOARD, BUT NO COUNT. .
JA990408	23	1	THIS STATION WAS A RETOW. TOOK AN HOUR TO FINALLY START SECOND TOW. .
JA990408	23	2	MAJOR HANG. BROKE TAG LINE IN HALF. SOME HOW BROKE FREE. .
JA990407	JA17	1	NO VESSEL SPEED RECORDED FOR THIS STATION .
JA990407	JA40	1	SPECIES CODE 151 (HOGCHOKERS) ONLY A COUNTED SUBSAMPLE TAKEN. .
JA990407	JA40	2	NO INDIVIDUAL FISH MEASURED. .
MB990409	11	1	MOVED STATION 11. USED BACKUP STATION. ORIGINAL STATION IN WARE RIVER .
MB990409	11	2	MOVED IT TO THE NORTH RIVER .
MB990409	12	1	MOVED STATION 12. USED BACKUP STATION. ORIGINAL STATION IN WARE RIVER .
MB990409	12	2	MOVED IT TO THE EAST RIVER .
MB990409	ME02	1	CAUGHT A CRAB POT ON TICKLER CHAIN .
RA990415	21	1	DEEPEST WATER THAT WAS FOUND. STRATUM >30FT. .
RA990415	21	2	SCOUT II WENT OUT HALFWAY THROUGH SAMPLE. READINGS ARE SLIGHTLY OFF .
RA990415	22	1	CAUGHT AN OLD ANCHOR .
RA990415	25	1	THIS STATION WAS A RETOW. HUNG AT 45 SECONDS. NET IN 2 PIECES. .
RA990415	25	2	MOVED STATION. RETOW..BROKE TICKLER CHAIN .
RA990415	RA30	1	SURFACE D.O. TOO HIGH. DID NOT ENTER READING. .
RA990415	RA30	2	SWITCHED BACK TO SCOUT II DATA LOGGER .
YK990405	8	1	NO VESSEL SPEED RECORDED FOR THIS STATION .
YK990405	15	1	MANY BLUE CRABS. SUBSAMPLE, REMAINDER COUNTED AND DISCARDED. .
YK990405	15	2	SUBSAMPLE SEPARATED BY SEX AND RATIO APPLIED TO DISCARD .
YK990405	15	3	SUBSAMPLE MAY BE BIASED TOWARDS LARGER INDIVIDUALS - PJG .
YK990405	20	1	AIR TEMPERATURE NOT RECORDED FOR THIS STATION .
YK990405	20	2	RECREATIONAL FISHERMAN IN LOCATION OF STATION, USED BACKUP STATION .
YK990405	YK30	1	SPECIES CODE 37 (MENHADEN) ONE LESIONED FISH .
YK990405	YK35	1	NO SECCHI DATA RECORDED FOR THIS STATION .

Table 141.
May 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL990507	6	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
CL990505	16	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
CL990512	33	1	TICKLER CHAIN BROKE AT THIS STATION .
CL990512	41	1	QUESTIONABLE ENDING COORDINATES .
CL990505	66	1	LAST STATION DUE TO VESSEL FAILURE. TRANSMISSION ??? .
CP990519	1	1	SOME INFO. SPOT, CRABS, ENTERED IN PREVIOUS STATION .
CP990519	1	2	BOARD MESSING UP .
JA990507	8	1	THIS STATION WAS A RETOW. HUNG AT 2:00 MINUTES .
JA990506	19	1	BROKE TICKLER CHAIN... GOT HUNG ON THE WAY UP WITH THE NET .
JA990506	21	1	1 MENHADEN WITH LESION (QUESTIONABLE...LOOKS LIKE AN ABRASION) .
JA990506	24	1	THIS STATION WAS RETOW. MOVED STATION UP RIVER TO AVOID HANG .
RA990510	1	1	THIS STATION WAS A RETOW, DOOR FLIPPED .
RA990510	8	1	THIS STATION WAS A RETOW, NET HUNG ON THE WAY UP .
RA990511	RA25	1	BUMP @ 1:26 MINUTES INTO TOW...PROBLEMS WITH HYDROLAB 4 .
RA990511	RA40	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
YK990504	6	1	VESSEL SPEED NOT RECORDED .
YK990505	6	1	4 MEASURED SPOT (33) WITH FIN ROT, 1 MEASURED GRAY TROUT WITH FIN ROT .
YK990504	12	1	VESSEL SPEED NOT RECORDED .
YK990504	12	2	1:30 LEFT INTO TOW HUNG, BROKE FREE, BROKE TICKLER CHAIN .
YK990504	15	1	VESSEL SPEED NOT RECORDED .
YK990504	19	1	VESSEL SPEED NOT RECORDED .
YK990504	20	1	NO SECCHI DATA COLLECTED .
YK990505	YK02	1	1 MENHADEN WITH FIN ROT .
YK990504	YK25	1	VESSEL SPEED NOT RECORDED .
YK990504	YK40	1	VESSEL SPEED NOT RECORDED .

Table 142.
June 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL990608	25	1	NO VESSEL SPEED COLLECTED FOR THIS STATION .
CL990609	47	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
CL990607	77	1	BROKE TICKLER CHAIN .
CL990608	83	1	ONLY BOTTOM HYDRO DATA COLLECTED FOR THIS STATION DUE TO DEPTH OF 6 FT .
CL990608	83	2	OF WATER .
CL990609	85	1	ONLY BOTTOM HYDRO DATA COLLECTED FOR THIS STATION, DUE TO DEPTH OF 5FT .
GW990611	1	1	USED BACK-UP STATION, ON OYSTER GROUNDS .
GW990611	2	1	USED BACK-UP STATION. WE WERE NOT ABLE TO DO ST. 3 (OY GROUNDS) .
GW990611	2	2	BACK-UP 3 WAS UP CRANES CREEK, SO WE USED BACK-UP ST. 2 .
JA990602	1	1	CAUGHT A CRAB POT. USED SCOUT II HYDROLAB, COULDN'T GET SURVEYOR 4 .
JA990602	1	2	TO WORK .
JA990602	5	1	BROKE TICKLER CHAIN. SECCHI DATA NOT COLLECTED FOR THIS STATION .
JA990601	20	1	BROKE TICKLER CHAIN. COUPLE OF BUMPS THROUGHOUT TOW .
JA990601	JA27	1	CAUGHT A CRAB POT .
PK990608	2	1	THIS STATION WAS A RETOW. FIRST TOW DEPTH OUT OF RANGE. 2 MINUTES .
PK990608	2	2	INTO TOW, DEPTH WENT FROM 10 TO 20 FT. MOVED STATION 60 FT UP RIVER .
RA990610	22	1	BROKE TICKLER CHAIN .
YK990603	17	1	TICKLER CHAIN BROKE .
YK990603	19	1	COULDN'T FIND CORRECT DEPTH.. SHOULD BE 30 FT ONLY COULD FIND 23 FT .
YK990603	19	2	BOTTOM DO READING CORRECT. .
YK990602	YK02	1	BROKE TICKLER CHAIN 1:36 MINUTES INTO TOW .
YK990603	YK35	1	BROKE TICKLER CHAIN .

Table 143.
July 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL990706	11	1	RETOW - OUT OF DEPTH STRATA .
CL990707	38	1	HYDROLAB NOT WORKING. USED THERMOMETER AND REFRACTOMETER. .
CL990707	38	2	USED KEMMERER BOTTLE. NO DO FOR SURFACE AND BOTTOM .
CL990707	40	1	USED THERMOMETER AND REFRACTOMETER. NO D.O. READINGS. .
CL990707	41	1	USED THERMOMETER AND REFRACTOMETER. NO D.O. READINGS .
CL990707	47	1	USED THERMOMETER AND REFRACTOMETER. NO D.O. READINGS. .
CL990706	72	1	TOO MUCH WATER AT STATION - ALTERNATIVE STATIONS HAD BOATS NEARBY .
CL990706	72	2	MOVED STATION CLOSE TO RANDOM 8 .
CL990706	72	3	NO HYDRO SURFACE DATA - STATION WAS SHALLOW .
CL990707	86	1	USED THERMOMETER AND REFRACTOMETER. NO D.O. READINGS .
CP990715	3	1	MOVED STATION. BEASLEY BAY AREA .
CP990715	CP03	1	SAV CAUGHT IN NET WAS DEAD. .
CP990715	CP05	1	SPONGE CAUGHT IN NET WAS DEAD .
JA990716	4	1	NO WIND SPEED RECORDED .
JA990716	5	1	NO WIND SPEED RECORDED .
JA990716	5	2	RAPA EGGS FOUND IN TOW .
JA990716	7	1	NO WIND SPEED RECORDED .
JA990716	8	1	RETOW BECAUSE OF LOOSE TAG LINE .
JA990716	14	1	NO WIND SPEED RECORDED .
JA990716	14	2	TICKLER CHAIN BROKE .
JA990719	15	1	MOVED STATION OUT OF RESTRICTED AREA .
JA990719	15	2	GRAVEL (SMALL ROCKS) IN THE HABITAT .
JA990719	20	1	RETOW. NET MAY NOT HAVE BEEN ON BOTTOM .
JA990716	JA05	1	NO VESSEL SPEED RECORDED .
JA990716	JA13	1	NO VESSEL SPEED RECORDED .
JA990716	JA13	2	BROKEN TICKLER CHAIN .
RA990708	1	1	STATION 1 DONE INSTEAD OF STATION 2. RIPPED NET ON STATION 2 .
RA990708	1	2	USED BACKUP STATION 1 .
RA990708	15	1	NO VESSEL SPEED RECORDED FOR THIS STATION .
RA990709	24	1	SPECIES CODE 28 (HICKORY SHAD) BROUGHT BACK TO LAB AND ID. .
RA990709	25	1	BUMP 1 MINUTE INTO TOW .
RA990709	RA35	1	CAUGHT A CRAB POT .
YK990702	4	1	1 WEAKFISH WITH SORES, POSSIBLY DUE TO NET DAMAGE .
YK990701	YK35	1	CAUGHT A CRAB POT IN THE NET .

Table 144.
August 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL990806	3	1	ONE CREW MEMBER SEASICK. LOTS OF FISH, ROUGH, BUSY, VERY HECTIC.
CL990806	3	2	SOME DATA MAY BE MISSING FOR SOME STATIONS - AIR TEMP, SOG, ETC.
CL990806	4	1	MISSING AIR TEMP.
CL990806	7	1	MISSING AIR TEMP.
CL990806	9	1	MISSING AIR TEMP.
CL990806	10	1	LOGGERHEAD TURTLE. STATUS-HEALTHY. LENGTH=689 WIDTH=652.
CL990806	11	1	RETOW THREE TIMES. STARTED NEW DATASHEET.
CL990806	14	1	MISSING SPEED OVER GROUND AND AIR TEMP.
CL990806	15	1	MISSING AIR TEMP.
CL990806	21	1	MISSING SPEED OVER GROUND.
CL990806	25	1	MISSING VESSEL SPEED.
CL990810	26	1	RETOW - MAY NOT HAVE BEEN ON BOTTOM.
CL990812	34	1	NO AIR TEMP. RECORDED.
CL990812	41	1	NO AIR TEMP. RECORDED.
CL990806	66	1	MISSING AIR TEMP.
CL990806	69	1	MISSING AIR TEMP AND COMPASS HEADING.
CL990812	83	1	NO DEPTH RECORDED.
GW990813	1	1	CAUGHT 3 CRAB POTS, RETOW & MOVED STATION ACROSS RIVER.
GW990813	1	2	SECOND TOW CAUGHT 1 CRAB POT.
GW990813	1	3	CAUGHT 1 DIAMONDBACK TURTLE.
GW990813	2	1	RAN AT 800 RPM.
GW990813	3	1	STA. 3 MOVED - LOWERED RPM'S TO 800 TO HAVE ENOUGH ROOM TO TRAWL.
JA990816	1	1	HYDROLAB MEMBRANE BAD. NO D.O. FOR THIS STATION.
JA990819	3	1	RECOVERED NET, USED STATION 3 INSTEAD OF 4.
JA990816	7	1	NO WIND SPEED OR SECCHI DEPTH RECORDED.
JA990816	8	1	NO SECCHI DEPTH RECORDED.
JA990817	21	1	THIS STATION WAS A RETOW. NET TWISTED.
JA990817	23	1	TICKLER CHAIN BROKE. CAUGHT BIG LOG.
JA990817	23	2	SPECIES CODE 314 (BLUE CATFISH) ONLY A SUBSAMPLE. NO INDIVIDUAL.
JA990817	23	3	LENGTHS.
JA990816	JA01	1	MOVED STATION SLIGHTLY DUE TO DREDGE.
JA990816	JA05	1	NO WIND SPEED RECORDED.
JA990817	JA24	1	THIS STATION WAS A RETOW. NET NOT ON BOTTOM.
JA990817	JA35	1	THIS STATION WAS A RETOW. CAUGHT A CRABPOT.
JA990817	JA40	1	NO DEPTH RECORDED FOR THIS STATION.
PK990813	5	1	NUMBER OF BAY ANCHOVIES CORRECT. PAN 99 = 28,750.
RA990812	6	1	RED TIDE PRESENT.
RA990811	16	1	CAUGHT 1 CRAB POT.
RA990811	22	1	COULD NOT FIND RIGHT DEPTH STRATA.
RA990811	24	1	TICKLER CHAIN BROKE.
RA990811	26	1	1 MIN. INTO TOW HUNG ON TRAP STAKE, RETOW - 2:20 INTO TOW, HIT SNAG.
RA990811	26	2	TICKLER CHAIN BROKE ON RETOW.
YK990804	3	1	TICKLER CHAIN BROKE.
YK990804	6	1	JELLYFISH WERE MOSTLY CHRYSAORA AND AURELIA.
YK990804	7	1	TICKLER CHAIN BROKE, JELLYFISH ABOUT 90% CHRYSAORA & SOME AURELIA.
YK990804	8	1	NEW NET AND NEW DOORS USED AT ALL STATIONS STARTING AUGUST 1.
YK990804	11	1	JELLYFISH MOSTLY CHRYSAORA & AURELIA.
YK990805	17	1	NO BOTTOM SALINITY TAKEN.
YK990804	YK05	1	JELLYFISH MOSTLY CHRYSAORA & AURELIA.
YK990804	YK10	1	JELLYFISH MOSTLY CHRYSAORA & AURELIA.
YK990805	YK15	1	90% OF JELLYFISH ARE CHRYSAORA.
YK990805	YK35	1	JELLYFISH WERE CTENOPHORES ONLY.
YK990805	YK40	1	NO DEPTH TAKEN.

Table 145.
September 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL990908	5	1	NO AIR TEMP., WIND SPEED, OR WIND DIRECTION RECORDED FOR THIS STATION.
CL990908	11	1	RETOW.
CL990908	14	1	SECCHI DEPTH NOT RECORDED.
CL990909	17	1	TICKLER CHAIN BROKE.
CL990909	22	1	JELLIES WERE CTENOPHORES.
CL990909	25	1	JELLIES WERE CTENOPHORES.
CL990909	29	1	JELLIES WERE CTENOPHORES.
CL990920	43	1	RETOW - NET MAY NOT HAVE BEEN ON BOTTOM.
CL990908	69	1	RETOW, DOOR FLIPPED.
CL990909	74	1	JELLYFISH WERE MOON JELLIES.
CL990909	77	1	JELLYFISH WERE CTENOPHORES.
JA990921	1	1	PARTIAL CRAB-POT CAUGHT ON TICKLER CHAIN.
JA990921	5	1	TICKLER CHAIN BROKE, HOLE IN NET.
JA990921	7	1	VESSEL SPEED NOT RECORDED.
JA990921	8	1	MOVED STATION - ORIGINAL STATION IN RESTRICTED ZONE.
JA990921	12	1	COULD NOT FIND CORRECT DEPTH AT STATION - MOVED 1 MILE UP RIVER.
JA990923	15	1	STATION MOVED OUT OF CABLE AREA.
JA990923	20	1	SAV WAS COONTAIL.
JA990923	JA35	1	SAV WAS COONTAIL.
JA990923	JA40	1	SAV WAS COONTAIL.
RA990910	10	1	NO SURFACE HYDROGRAPHICAL DATA. DEPTH WAS 6 FT..
YK990908	3	1	DEPTH NOT RECORDED.
YK990907	9	1	CAUGHT A CRAB POT AT THIS STATION.
YK990907	11	1	TICKLER CHAIN BROKE.
YK990907	YK10	1	THIS STATION WAS A RETOW. NET NOT RIGHT (SIDE-UP).
YK990907	YK25	1	SPECIES CODE 151 NO INDIVIDUAL LENGTHS. JUST A COUNT.

Table 146.
October 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL991020	3	1	USED BACK-UP NET, UNKNOWN NET NUMBER.
CL991020	12	1	ONE DOOR FLIPPED.
GW991011	1	1	STATION 1 WAS DONE INSTEAD OF STATION 3. COULDN'T GET TO STATION 3.
GW991011	1	2	THIS STATION WAS A RETOW. CAUGHT 2 CRAB POTS IN FIRST TOW..
JA991015	5	1	TRAWL HUNG IN MUD BANK WITH 10 SECONDS LEFT IN TOW.
JA991015	10	1	NO SECCHI DEPTH RECORDED.
JA991015	15	1	NO SECCHI DEPTH RECORDED.
JA991019	20	1	NO SPEED RECORDED.
JA991019	20	2	BROKEN TICKLER CHAIN.
JA991019	JA27	1	NO AIR TEMP. RECORDED.
PK991011	8	1	THIS STATION WAS A RETOW.
RA991008	12	1	CAUGHT AN EEL POT IN NET.
RA991008	22	1	SPECIES 32 (WHITE PERCH), 151 (HOGCHOKERS), 597 (WHITE SHRIMP) ONLY.
RA991008	22	2	A COUNT. NO INDIVIDUAL LENGTHS. ACCIDENTLY SPECIES THROWN OVER BOARD.
RA991008	22	3	WITHOUT BEING MEASURED.
RA991008	24	1	ONE OF ONE MENHADEN WITH LESION.
RA991008	25	1	NIBBLE 50 SECONDS REMAINING IN TOW. BROKE TICKLER CHAIN..
RA991007	RA10	1	RETOW - MAY NOT HAVE BEEN ON THE BOTTOM.
YK991004	2	1	NO SECCHI READING TAKEN FOR THIS STATION.
YK991005	3	1	BROKE TICKLER CHAIN. BUMPED 3 MINUTES INTO TOW..
YK991005	YK05	1	THIS STATION WAS A RETOW..
YK991004	YK10	1	NO VESSEL SPEED TAKEN FOR THIS STATION.

Table 147.
November 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL991118	3	1	ANNOMETER NOT READING .
CL991118	3	2	DEPARTED FOR SUNSET MARINA (HAMPTON,VA) .
CL991118	10	1	ANNOMETER NOT WORKING .
CL991101	15	1	THIS STATION WAS A RETOW. HEADING AGAINST CURRENT .
CL991118	19	1	RETURNED TO VIMS .
CL991101	26	1	THIS STATION WAS A RETOW. FIRST TOW NOT ON BOTTOM .
CL991110	34	1	DEPART DELTAVILLE .
CL991110	35	1	THIS STATION WAS A RETOW. (LEFT DEPTH STRATA) .
CL991110	36	1	BROKE TICKLER CHAIN .
CL991118	66	1	ANNOMETER NOT WORKING .
CL991110	84	1	TICKLER CHAIN BROKE .
CL991110	86	1	ARRIVE AT VIMS .
JA991112	1	1	POWER TO COMPUTER LOST AT ABOUT 1330. JOURNAL FILE TS991108.AAB WAS .
JA991112	1	2	LOST AS A RESULT. STATIONS 7,8,101,1.5,105,3,13,9,113 WILL BE .
JA991112	1	3	DIFFICULT TO CHECK FMB DOWNLOAD TO ERROR CHECK -PJG 11/18/99 .
JA991112	5	1	BROKE TICKLER CHAIN .
JA991112	7	1	UNKNOWN NET NUMBER .
JA991112	7	2	USED NEW TICKLER CHAIN .
JA991112	7	3	LOTS OF STAR DRUM ALL DAY .
JA991116	20	1	ENGINE RPM 800 INSTEAD OF 900 .
JA991116	20	2	SPECIES CODE 614 (BLUE CRAB, SEX UNKNOWN) ONLY A SUBSAMPLE NO .
JA991116	20	3	INDIVIDUAL LENGTHS - .
JA991112	JA13	1	NET HUNG WITH 20 SECONDS LEFT IN TOW, BROKE TICKLER CHAIN .
JA991116	JA27	1	DEPARTED FROM KINGSMILL, RETURNED TO KINGSMILL .
JA991116	JA35	1	NO BOTTOM HYDRO TEMP OR SALINITY RECORDED FOR THIS STATION .
JE991117	JE00	1	LARGE TIMBERS IN NET .
JE991117	JE00	2	SITE DIRECTLY OFF IMPACT AREA IN CHANNEL .
JE991117	JE01	1	LOCATION IN SHALLOW AREA DIRECTLY OVER IMPACT AREA .
JE991117	JE02	1	ELIZABETH RIVER FACT FINDING MISSION FOR VDOT .
JE991117	JE02	2	WESTERN BRANCH CHANNEL STATION .
JE991117	JE02	3	SECCHI AND AIR TEMP MISSING .
JE991117	JE02	4	D.O. SEEMS RATHER HIGH ON BOTTOM .
JE991117	JE02	5	ALL CRABS MEASURED AS SP. CODE 614 .
JE991117	JE02	6	D.O. DELETED. VALUE OUT OF RANGE .
MB991105	1	1	ONLY BOTTOM HYDRO DATA COLLECTED DUE TO DEPTH .
MB991105	4	1	ONLY BOTTOM HYDRO DATA COLLECTED DUE TO DEPTH OF 4-5 FEET OF WATER .
MB991105	4	2	THIS STATION WAS A BACKUP STATION .
MB991105	13	1	SPECIES CODE 6141 NO INDIVIDUAL LENGTHS ONLY A COUNT .
MB991105	MB04	1	DEPARTED FROM VIMS AND RETURNED TO VIMS .
RA991108	2	1	CAUGHT CRAB-POT .
RA991108	2	2	UNKNOWN NET NUMBER .
RA991108	3	1	UNKNOWN NET NUMBER .
RA991108	8	1	ANEMOMETER NOT REGISTERING .
RA991109	21	1	DEPARTED FROM DELTAVILLE .
RA991108	RA15	1	HAD TO RE-CALIBRATE HYDROLAB D.O. .
RA991109	RA25	1	CAUGHT A CRAB POT .
RA991109	RA35	1	CAUGHT A CRAB POT AND BROKE TICKLER CHAIN .
RA991109	RA40	1	RETURN TO DELTAVILLE .
YK991103	1	1	DEPARTED FROM VIMS AND RETURNED TO VIMS .
YK991102	11	1	NO ENDING LAT OR LONGS WRITTEN DOWN FOR THIS STATION .
YK991102	11	2	45 SECONDS LEFT IN TOW HANG. TICKLER CHAIN BROKE .
YK991102	19	1	CAUGHT A CRAB POT IN NET .
YK991103	20	1	UNKNOWN NET NUMBER .
YK991102	YK30	1	THIS STATION WAS A RETOW. .
YK991102	YK35	1	THIS STATION WAS A RETOW. CAUGHT SOMETHING BIG IN NET. COULDN'T GET .
YK991102	YK35	2	NET ON BOARD BOAT. NET WAS RIPPED. NEW NET. .

Table 148.
December 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
CL991208	1	1	PROBLEM WITH DISSOLVED OXYGEN PROBE .
CL991208	1	2	TICKLER CHAIN BROKE .
CL991203	12	1	D.O. READING FAULTY - DELETED .
CL991203	22	1	D.O. READING FAULTY - DELETED .
CL991203	25	1	D.O. READING FAULTY - DELETED .
CL991203	26	1	D.O. FAULTY - DELETED .
CL991203	27	1	D.O. FAULTY - DELETED .
CL991209	35	1	STATION 35 WAS DONE INSTEAD OF STATION 34. STATION 34 ON REEF. .
CL991209	43	1	CAUGHT A CRAB POT AT THIS STATION .
CL991203	68	1	D.O. FAULTY - DELETED .
CL991203	73	1	D.O. FAULTY - DELETED .
CL991208	77	1	HYDROLAB SONDE D.O. CALIBRATION FAILED .
CP991213	15	1	1 OUT OF 1 MENHADEN WITH LESION .
CP991213	CP03	1	NO SECCHI DEPTH RECORDED FOR THIS STATION .
JA991206	6	1	PROBLEMS W/ DEPTH - TOWED IN ZIG-ZAG MANNER TO MAINTAIN STRATA .
JA991207	18	1	THIS STATION WAS A RETOW, TAG LINE CAME OFF NET. TICKLER CHAIN BROKE .
JA991207	18	2	SECOND TOW...TOWED AT 800 RPMS. .
JA991207	18	3	DEPARTED FROM KINGSMILL AND LEFT BOAT IN HAMPTON (SUNSET MARINA) .
JA991207	18	4	THIS DATABASE SHOULD BE DAY 4. FIRST DAY (TS991201) DID NOT WORK .
JA991207	18	5	SO EVERY DATABASE IS OFF BY ONE .
JA991207	18	6	ALL D.O.'s FOR THE DAY SEEM TO BE TOO LOW .
JA991206	JA01	1	DISSOLVED OXYGEN READING WAS QUESTIONABLE - DELETED .
JA991206	JA13	1	RETOW - NOT ON BOTTOM .
JA991206	JA17	1	COURSE ALTERED DURING TOW TO AVOID A GILL NET .
JA991207	JA40	1	NO D.O. READINGS FOR THE ENTIRE DAY. HYDROLAB NOT WORKING CORRECTLY. .
JA991207	JA40	2	ALL READINGS WERE TOO LOW AND NOT ENTERED INTO DATABASE. .
JE991215	JE00	1	STATIONS 1 AND 2 AT MOUTH OF WESTERN BRANCH IN CHANNEL OF IMPACT AREA .
JE991215	JE00	1	HYDRO AND ATMOS ASSOCIATED WITH STATION 1 .
JE991215	JE01	1	IMPACT SITE SHALLOW WATER .
JE991215	JE01	1	HYDRO AND ATMOS ASSOCIATED WITH STATION 5 .
JE991215	JE01	2	LITTLE SNAG IN TOW AT 4:30 MINUTES. ALL FINE .
JE991215	JE01	2	SNAG AT 2:00 MINUTES. BROKE TICKLER CHAIN .
JE991215	JE01	3	VEINED RAPA WHELK SHELL IN TOW .
JE991215	JE02	1	WESTERN BRANCH NEAR CHANNEL MARKER 9 .
JE991215	JE02	1	HYDRO AND ATMOS ASSOCIATED WITH STATION 3 .
JE991215	JE27	1	LAMBERT BEND SITE - NEW .
JE991215	JE27	1	HYDRO AND ATMOS ASSOCIATED WITH STATION 7 .
JE991215	JE27	2	SNAG DURING TOW AT 4:30 AND 4:45 MINUTES. ALL FINE .
RA991214	3	1	RE-TOW, MAY NOT HAVE BEEN ON BOTTOM .
RA991214	9	1	TICKLER CHAIN BROKE .
RA991210	18	1	THIS STATION WAS A RETOW. FIRST TOW ON SOMEONE'S OYSTER GROUND. .
RA991210	21	1	2 OUT OF 11 MENHADEN WITH LESIONS* .
RA991210	22	1	3 OUT OF 5 MENHADEN WITH LESIONS .
RA991210	24	1	ONLY BOTTOM HYDRO DATA COLLECTED FOR THIS STATION. ONLY 6 FT OF WATER .
RA991210	26	1	CAUGHT A POUND NET POLE IN NET .
RA991210	RA25	1	1 OUT OF 3 MENHADEN WITH LESIONS .
RA991210	RA40	1	DEPARTED FROM DELTAVILLE AND RETURNED TO DELTAVILLE .
YK991203	2	1	DEPARTED FROM VIMS AND RETURNED TO VIMS .
YK991203	2	2	D.O. FAULTY - DELETED .
YK991203	4	1	D.O. FAULTY - DELETED .
YK991203	6	1	D.O. FAULTY - DELETED .
YK991203	7	1	D.O. FAULTY - DELETED .
YK991203	8	1	D.O. FAULTY - DELETED .
YK991202	10	1	NO SECCHI, NO AIR TEMPERATURE COLLECTED FOR THIS STATION.* .
YK991202	10	2	ANNOMETER NOT WORKING FOR THIS STATION .
YK991202	10	3	DEPARTED FROM VIMS AND RETURNED TO VIMS .
YK991202	10	4	D.O. READING FAULTY - DELETED .

Table 148. (continued)
December 1999

System & Cruise No.	Stat# or River Mile	Record Number	Comment
YK991203	11	1	BROKE TICKLER CHAIN .
YK991203	11	2	D.O. FAULTY - DELETED .
YK991202	14	1	NO SECCHI DATA COLLECTED FOR THIS STATION .
YK991202	14	2	D.O. READING FAULTY - DELETED .
YK991202	15	1	ONLY BOTTOM HYDRO DATA COLLECTED FOR THIS STATION DUE TO DEPTH OF 4FT. .
YK991202	15	2	D.O. READING FAULTY - DELETED .
YK991202	16	1	ONLY BOTTOM HYDRO COLLECTED FOR THIS STATION DUE TO DEPTH OF 5FT. .
YK991202	16	2	SPECIES CODE 151 AND 152 ONLY A SUBSAMPLE WAS TAKEN. NO LENGTHS .
YK991202	18	1	HUNG 20 SECONDS INTO TOW. .
YK991202	19	1	SPECIES CODE 70 (SPOTTED HAKE) ONLY ONE COUNTED. NO MEASUREMENTS .
YK991202	20	1	THIS STATION WAS A RETOW. DID NOT FIND >30FT DEPTH. HUNG TWICE IN .
YK991202	20	2	LESS THAN A MINUTE INTO TOW. .
YK991202	20	3	NO AIR TEMPERATURE COLLECTED FOR THIS STATION .
YK991203	YK02	1	D.O. FAULTY - DELETED .
YK991203	YK05	1	D.O. FAULTY - DELETED .
YK991203	YK10	1	D.O. FAULTY - DELETED .
YK991202	YK15	1	D.O. READING FAULTY - DELETED .
YK991202	YK20	1	D.O. READING FAULTY - DELETED .
YK991202	YK25	1	NO HABITAT INFORMATION WAS NOT WRITTEN DOWN FOR THIS STATION .

FIGURES

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VIMS Juvenile Fish Trawl Survey

Sampling Changes 1955 - 2000

Vessel

- VL = Virginia Lee
- PA = Pathfinder
- LA = Langley
- BR = Brooks
- RE = Restless
- JS = Capt. John Smith
- FH = Fish Hawk

Gear Type

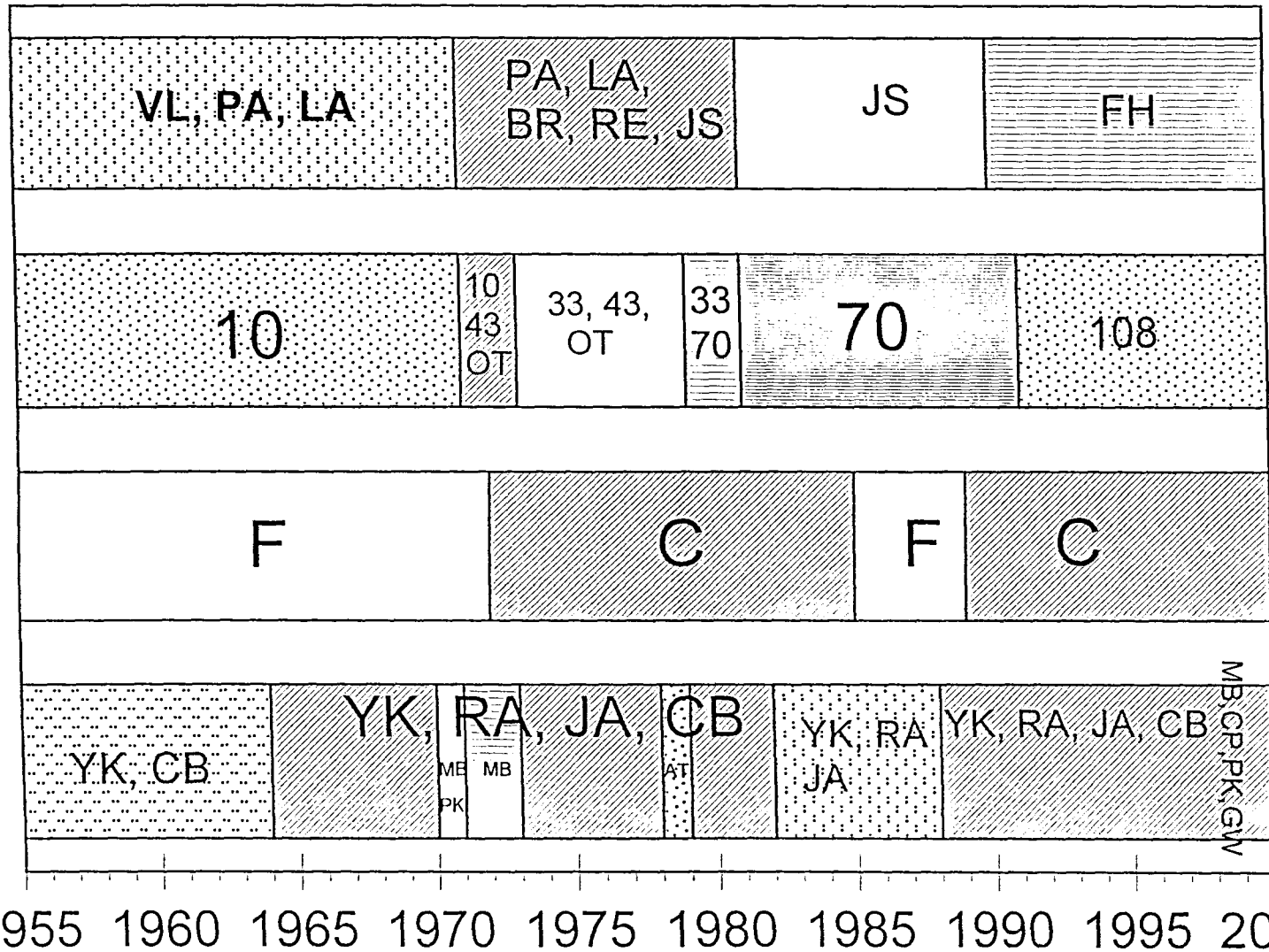
- 10 = Unlined/No Tickler
- 33 = Lined/No Tickler
- 43 = Unlined/Tickler
- OT = 16' Nets
- 70 = Lined/Tickler
- 108 = Lined/Tickler/China-V

Sampling System

- F = Fixed
- R = Random
- C = Combination

System

- YK = York River
- RA = Rappahannock River
- JA = James River
- CB = Chesapeake Bay
- MB = Mobjack Bay
- PK = Piankatank River
- AT = Atlantic Ocean
- GW = Great Wicomico River
- CP = Pocomoke Sound



1955 1960 1965 1970 1975 1980 1985 1990 1995 2000
 Gear Type is 30 foot otter trawl if not specified.

Figure 1. Sampling system, design, and gear changes for the VIMS trawl survey, 1955-2000.

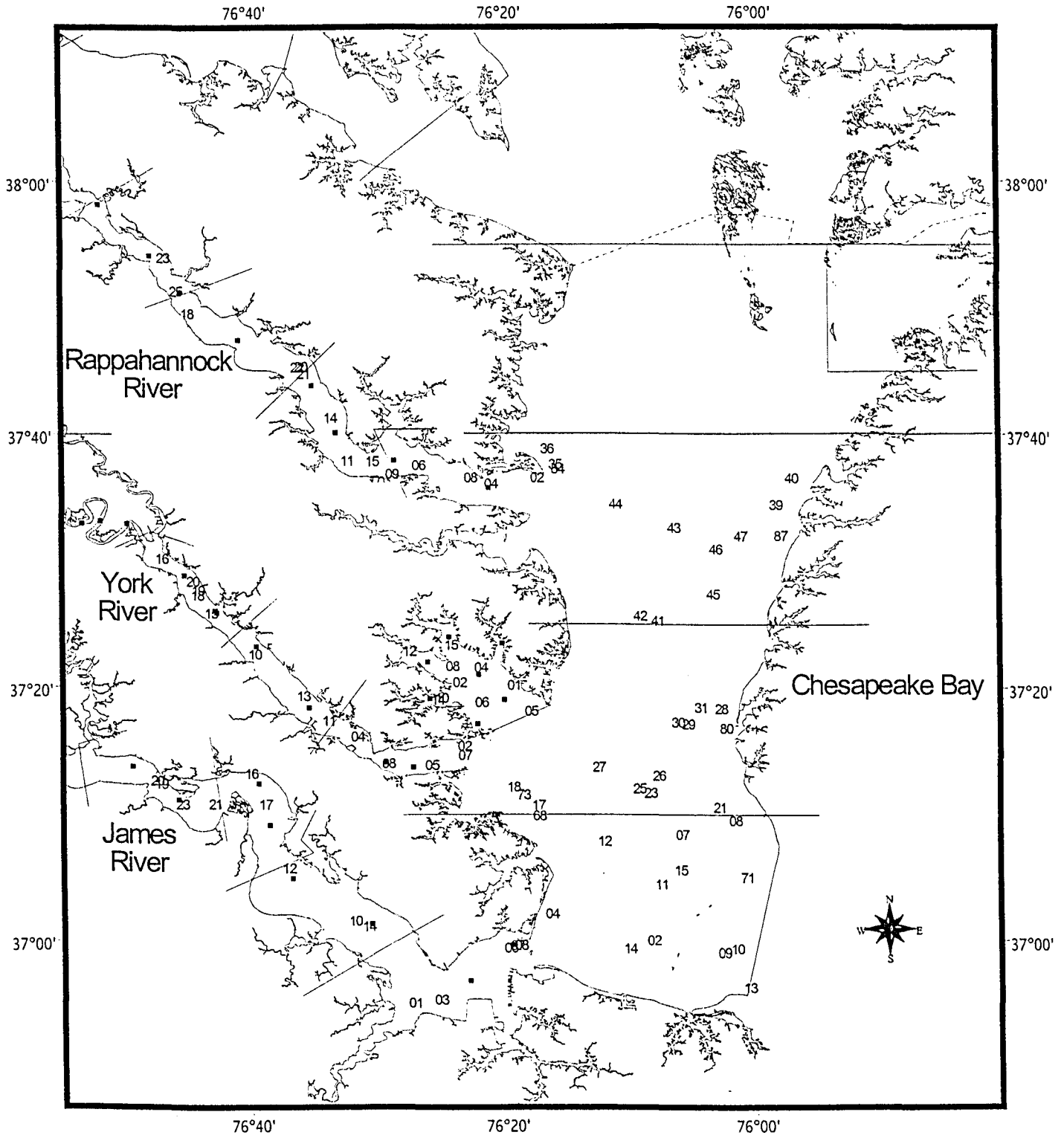


Figures 2-14 Stations sampled in 1999 by month.

- Notes: A. Due to GPS 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 1999.
- C. Fixed stations are represented by squares for each month. Figure 14 shows the relative position and station numbers of the fixed stations.
- D. Solid lines mark regions of the rivers and segments of the bay. The Virginia/Maryland state line is shown by a dotted line.

Figure 3

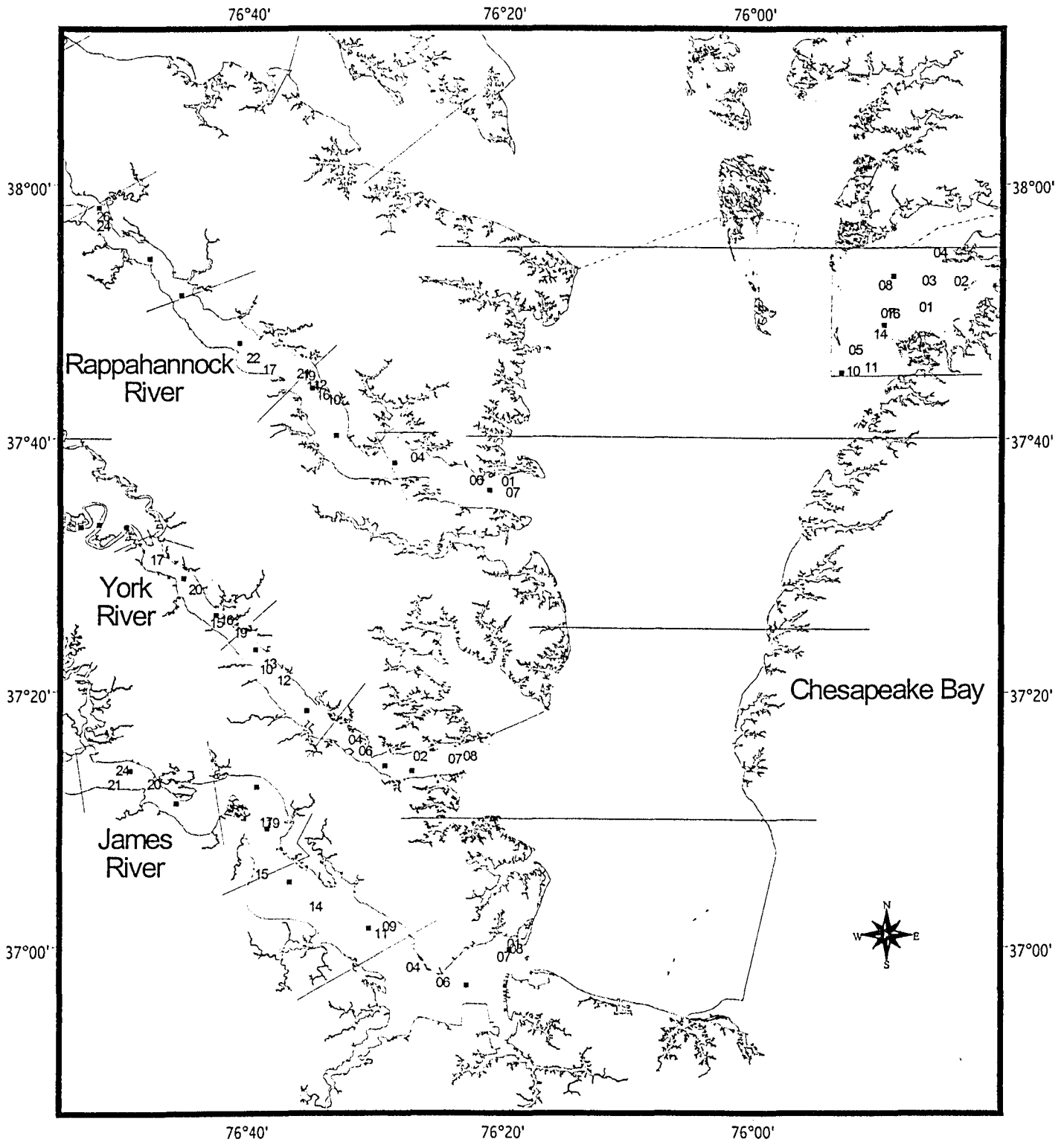
Trawl Survey Station Locations February, 1999



Note: Boxes indicate fixed river mile stations
and numbers indicate random stations.

Figure 4

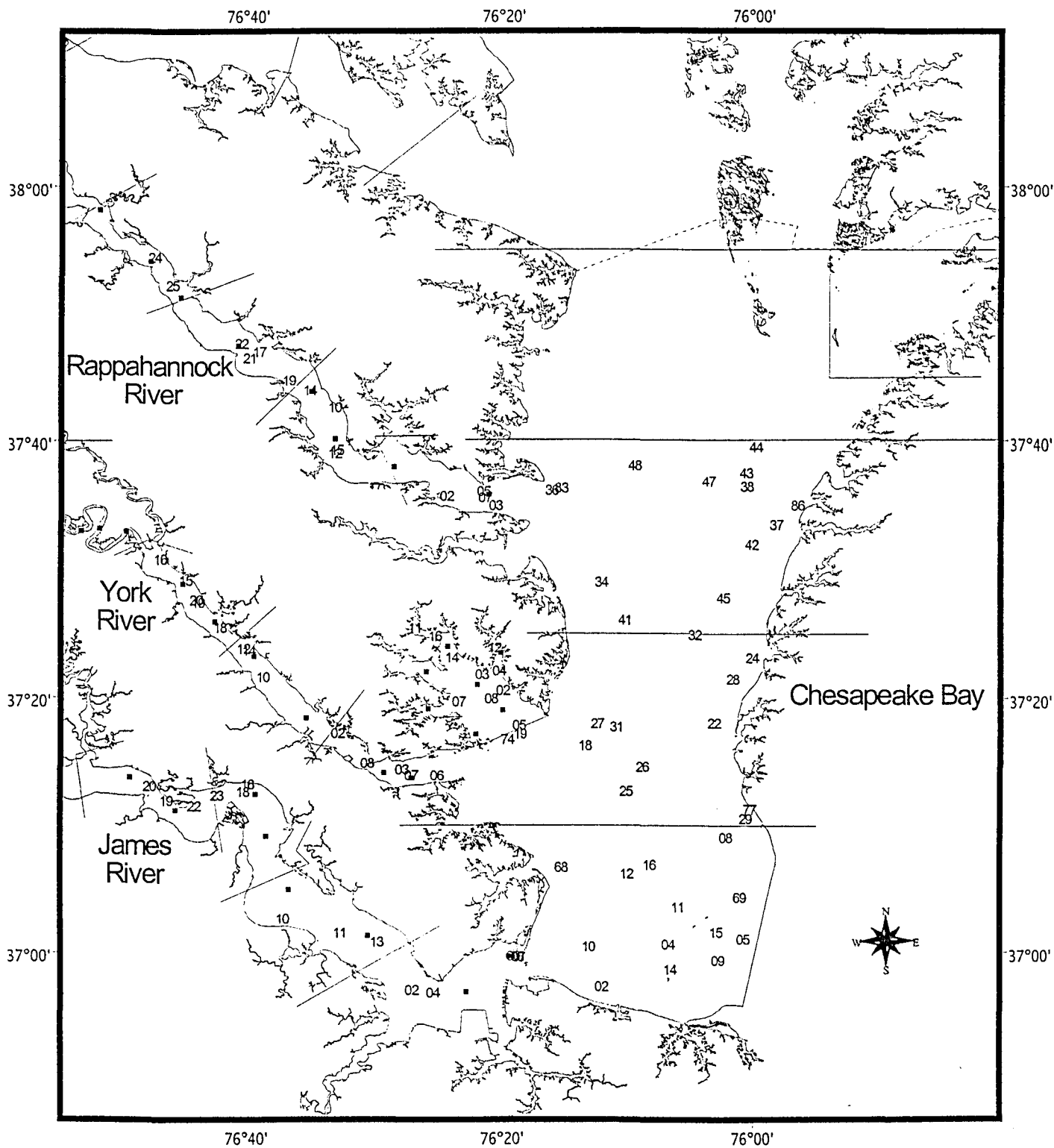
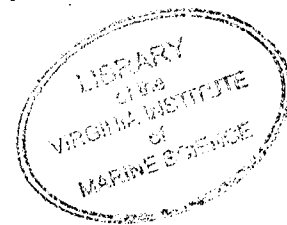
Trawl Survey Station Locations March, 1999



Note: Boxes indicate fixed river mile stations
and numbers indicate random stations.

Figure 5

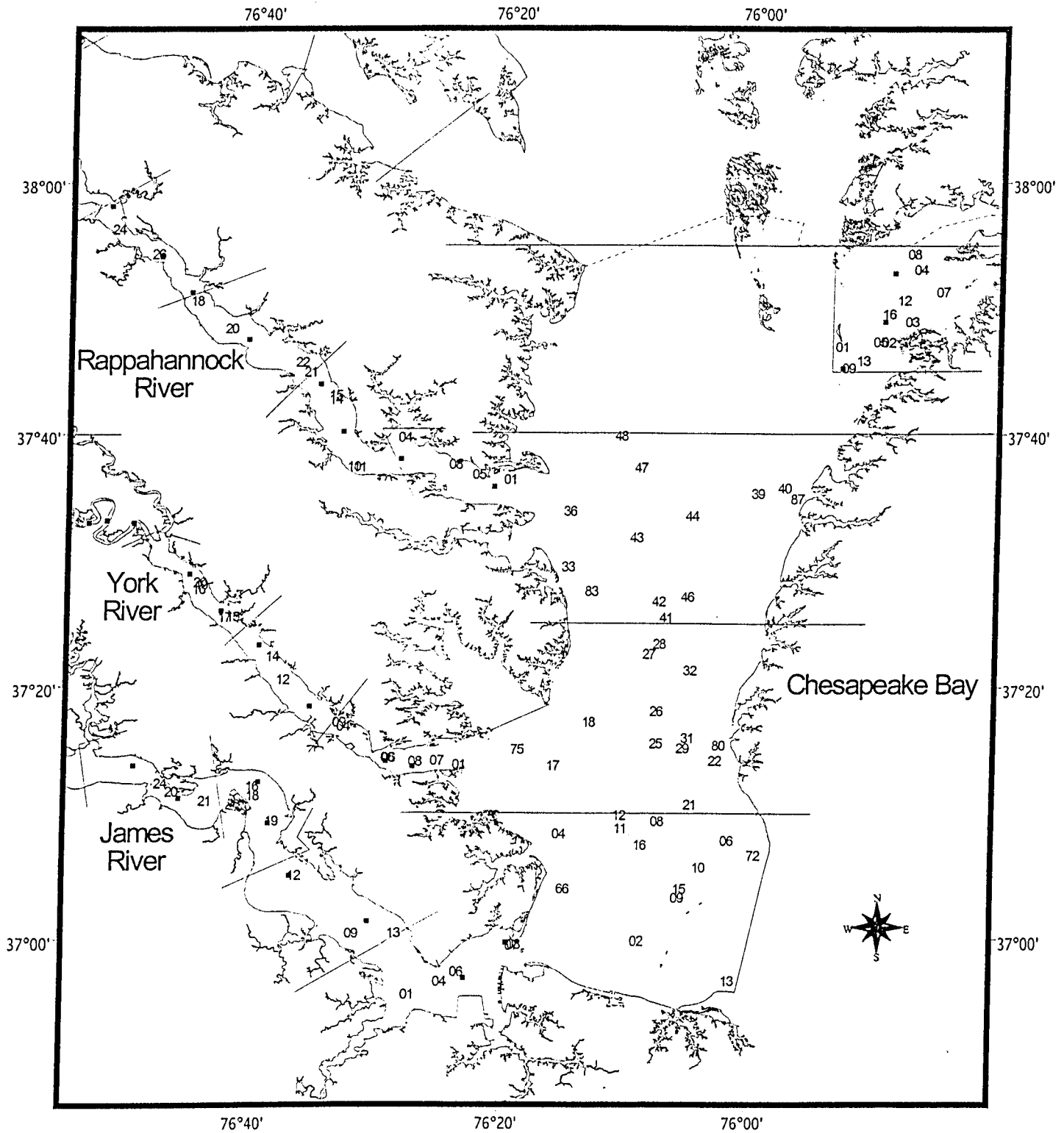
Trawl Survey Station Locations April, 1999



Note: Boxes indicate fixed river mile stations
and numbers indicate random stations.

Figure 6

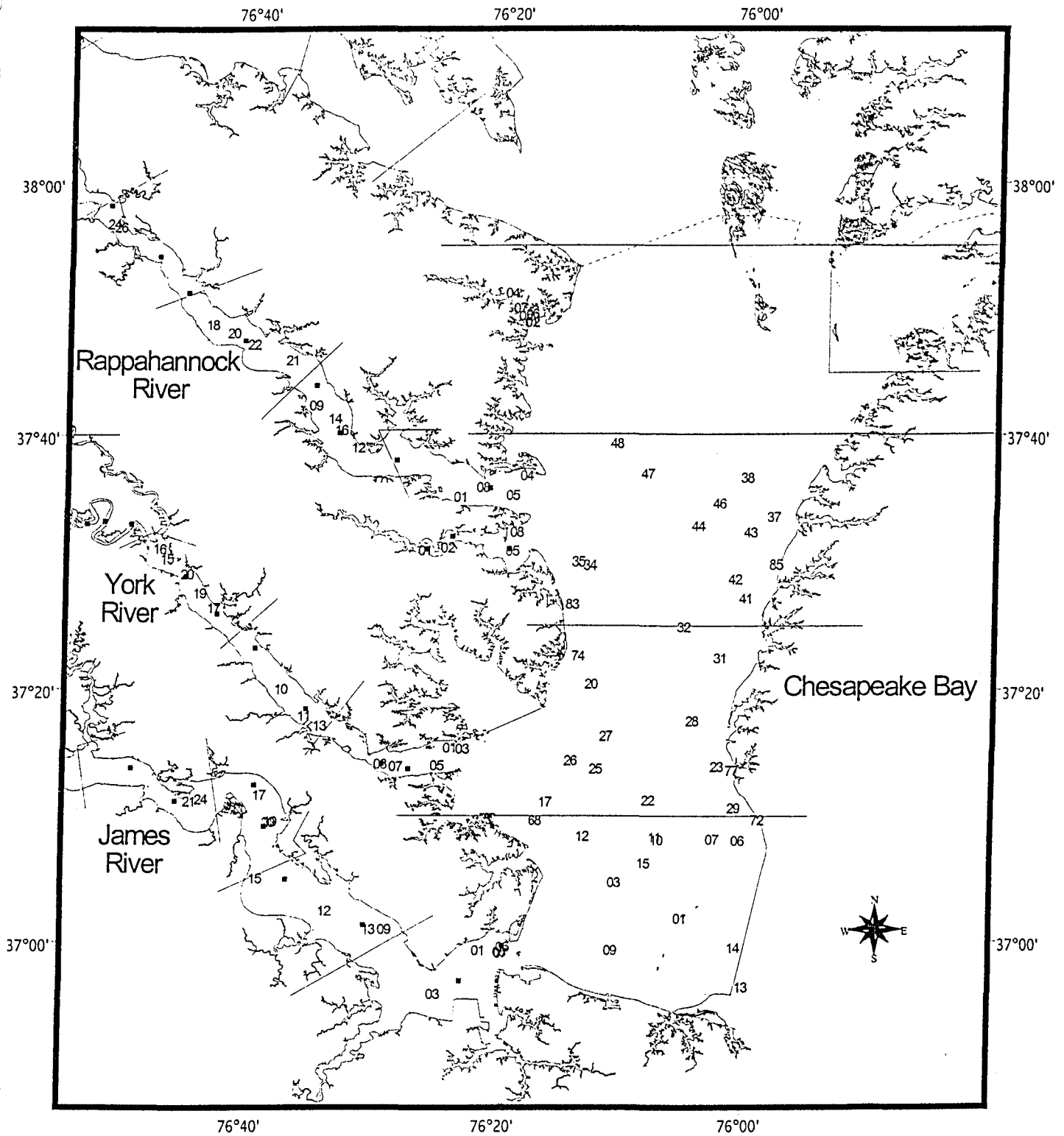
Trawl Survey Station Locations May, 1999



Note: Boxes indicate fixed river mile stations
and numbers indicate random stations.

Figure 7

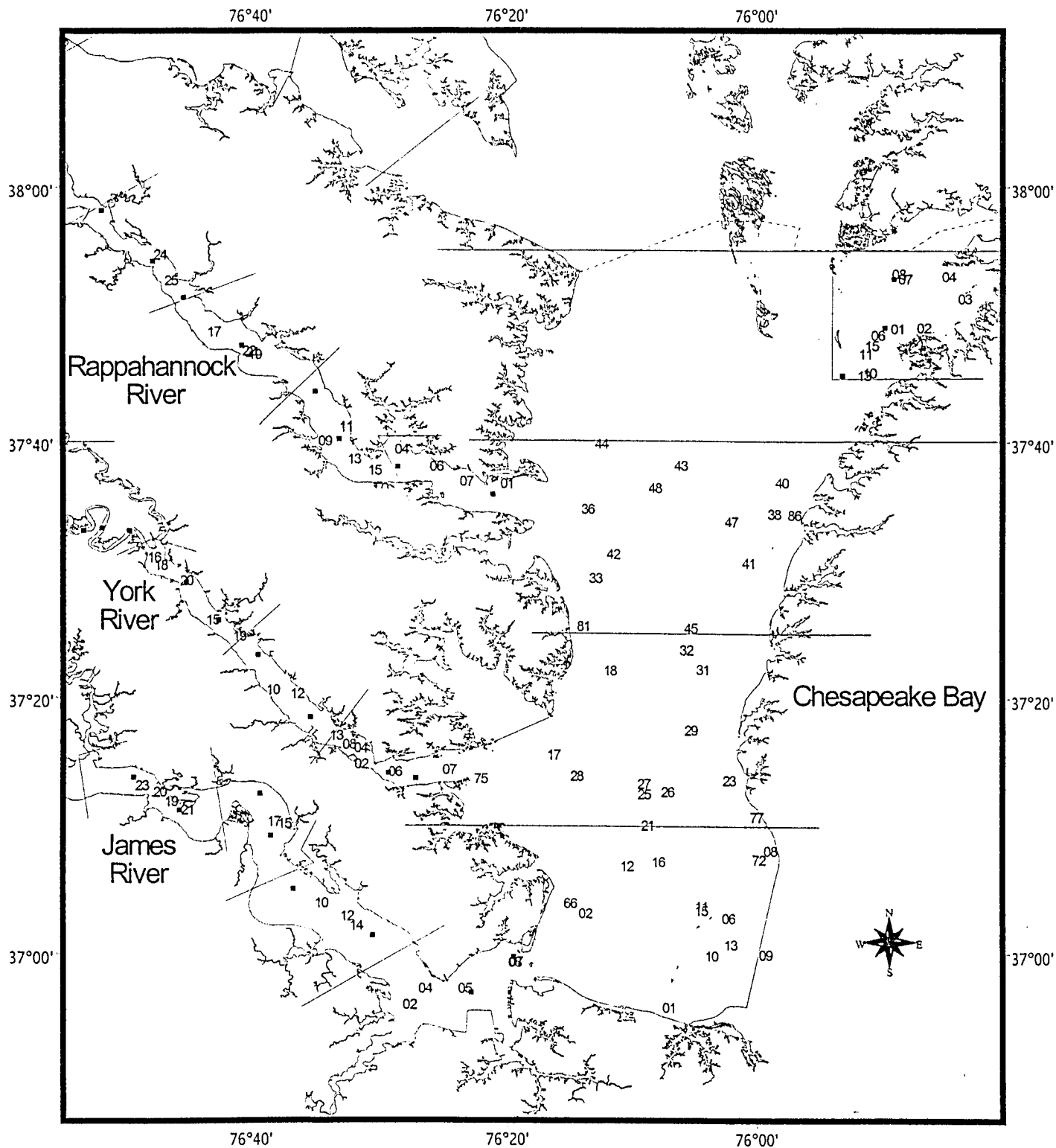
Trawl Survey Station Locations June, 1999



Note: Boxes indicate fixed river mile stations
and numbers indicate random stations.

Figure 8

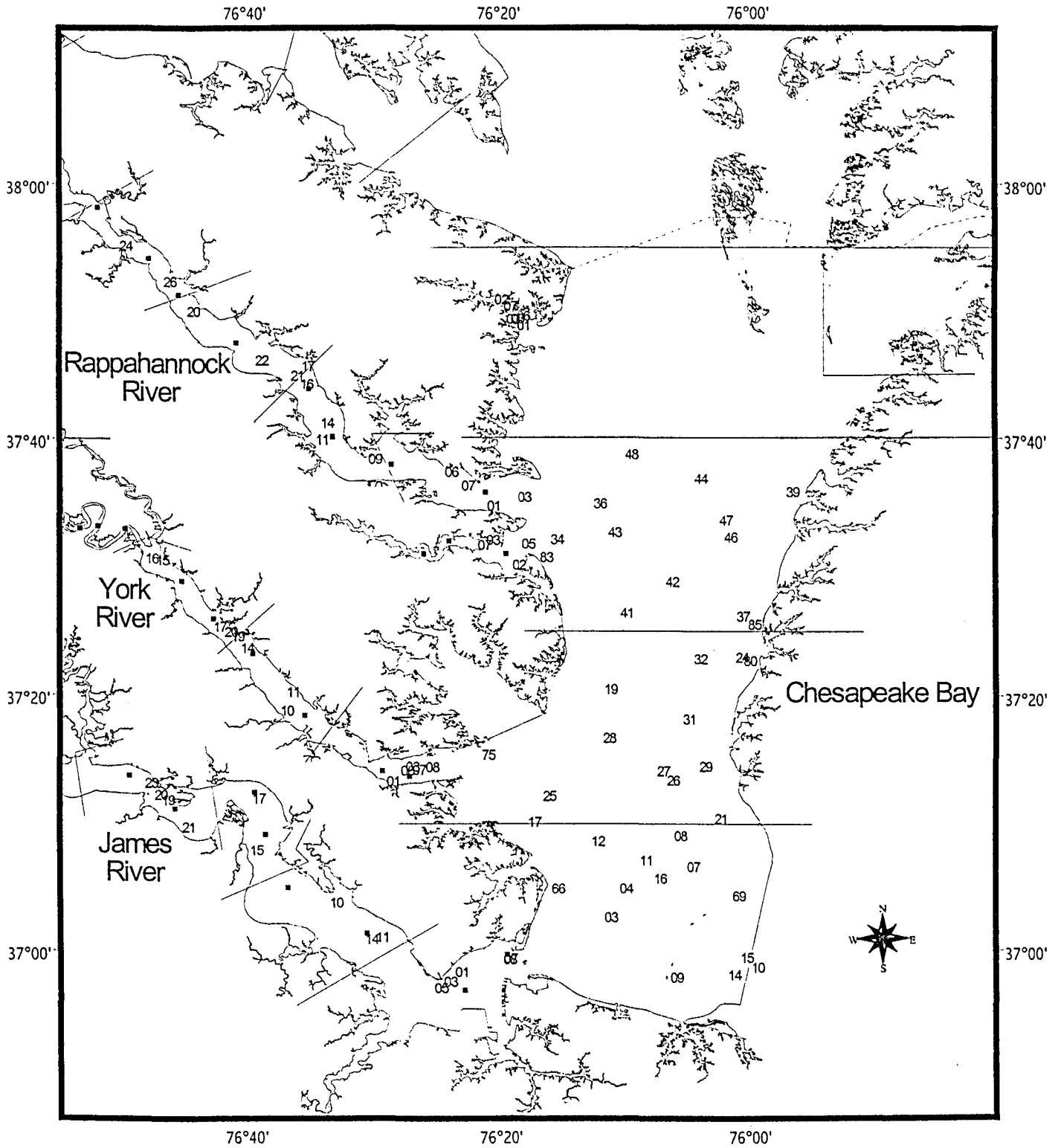
Trawl Survey Station Locations July, 1999



Note: Boxes indicate fixed river mile stations
and numbers indicate random stations.

Figure 9

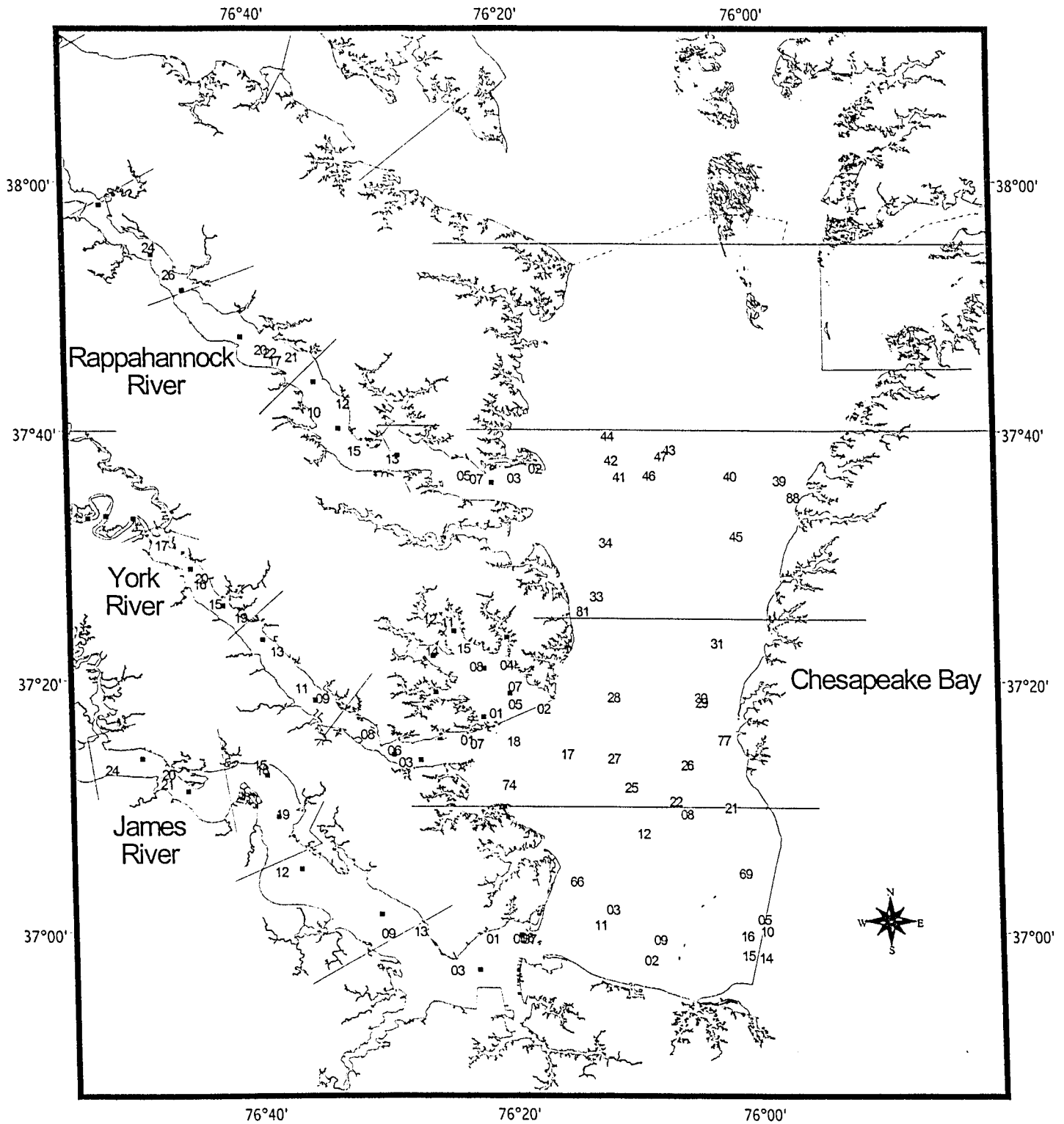
Trawl Survey Station Locations August, 1999



Note: Boxes indicate fixed river mile stations
and numbers indicate random stations.

Figure 10

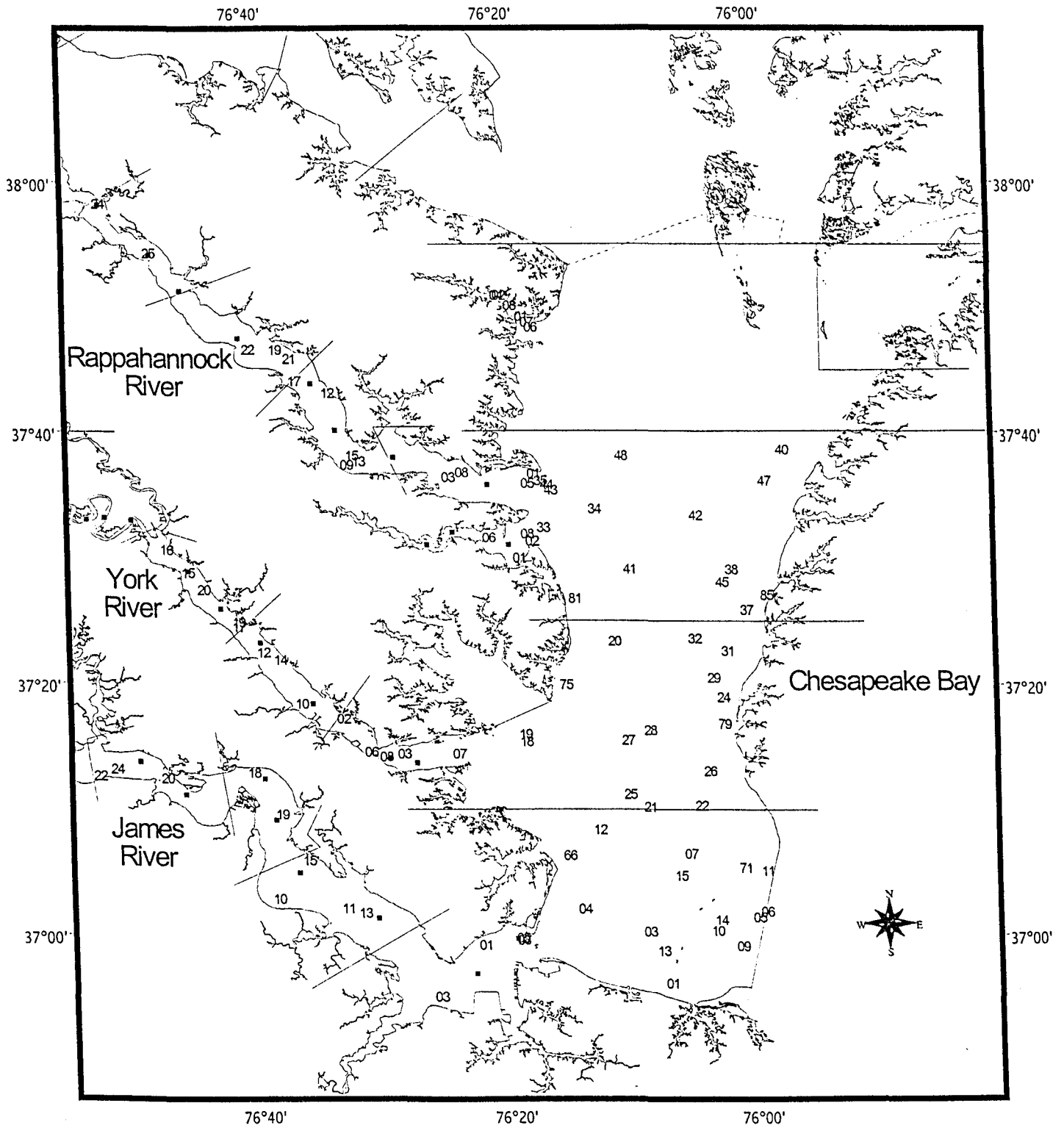
Trawl Survey Station Locations September, 1999



Note: Boxes indicate fixed river mile stations
and numbers indicate random stations.

Figure 11

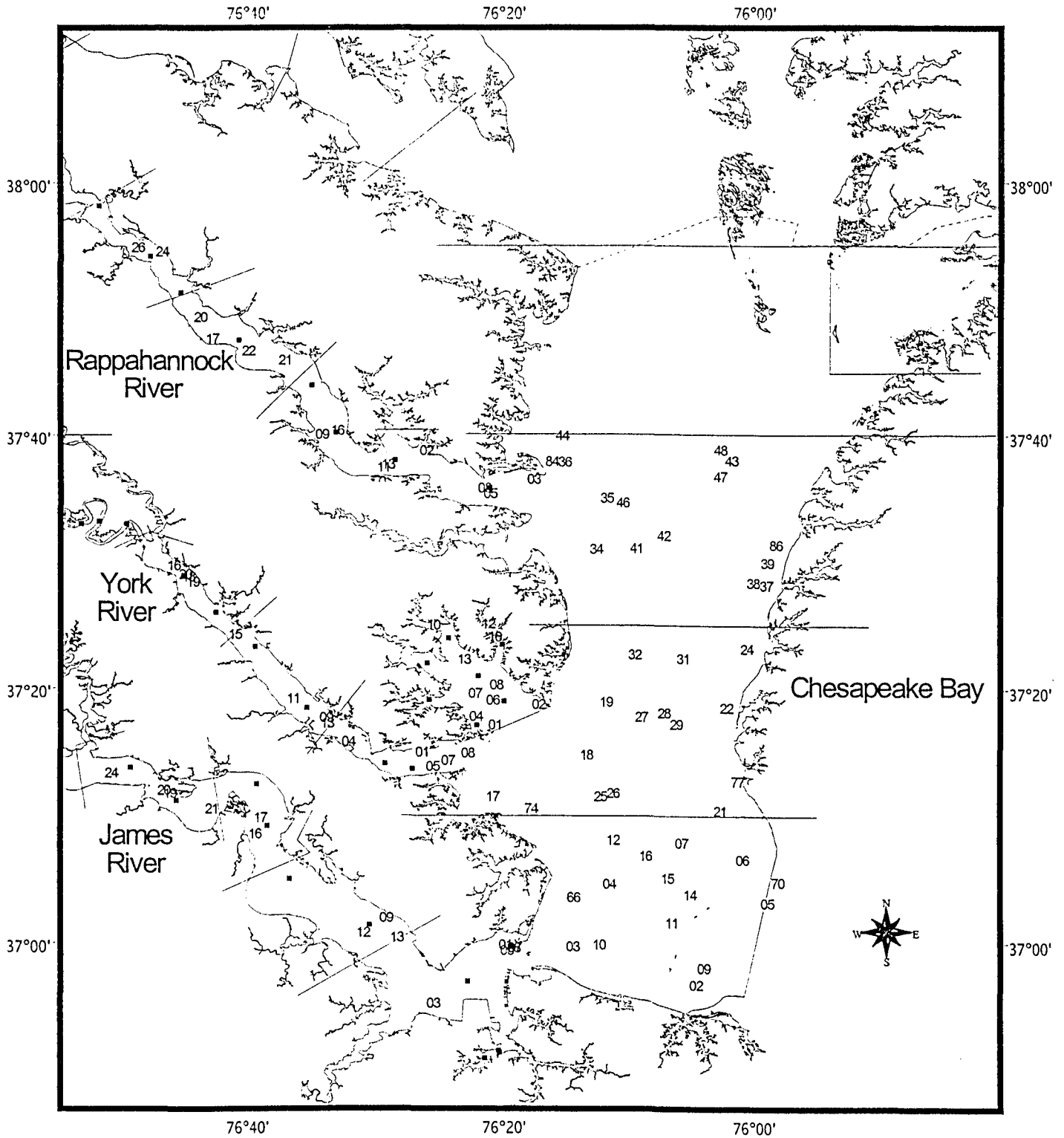
Trawl Survey Station Locations October, 1999



Note: Boxes indicate fixed river mile stations
and numbers indicate random stations.

Figure 12

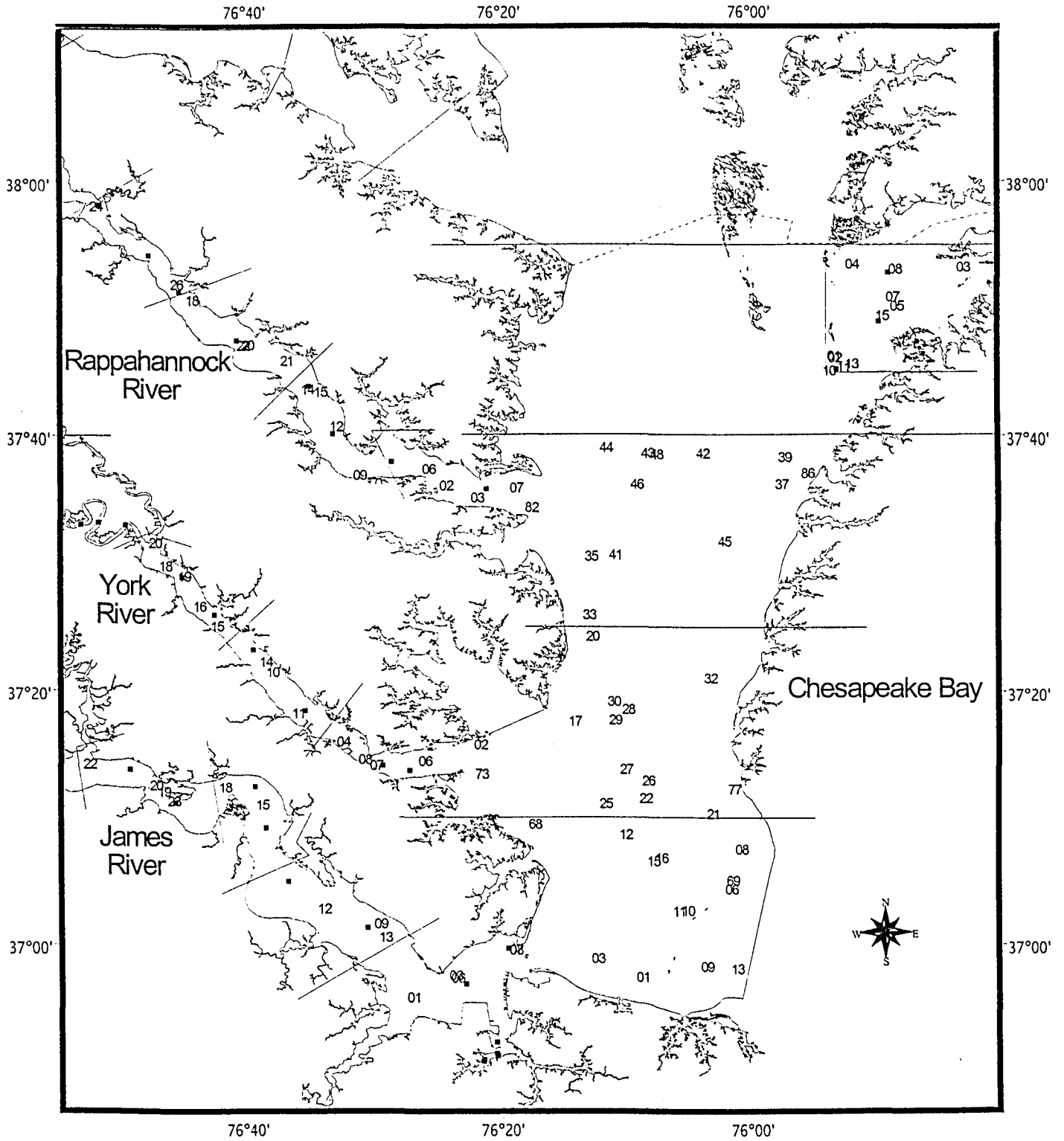
Trawl Survey Station Locations November, 1999



Note: Boxes indicate fixed river mile stations and numbers indicate random stations.

Figure 13

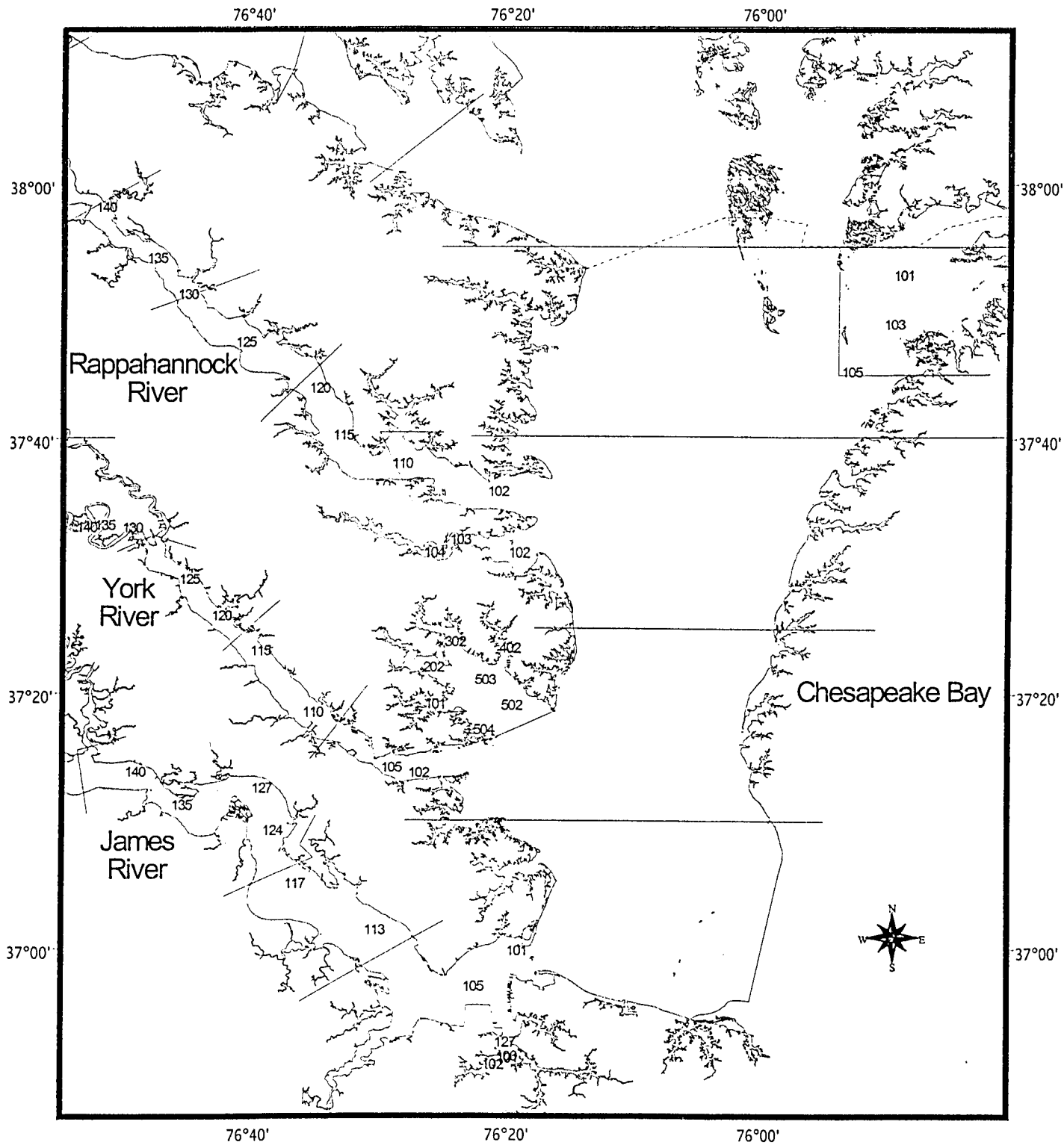
Trawl Survey Station Locations December, 1999



Note: Boxes indicate fixed river mile stations
and numbers indicate random stations.

Figure 14

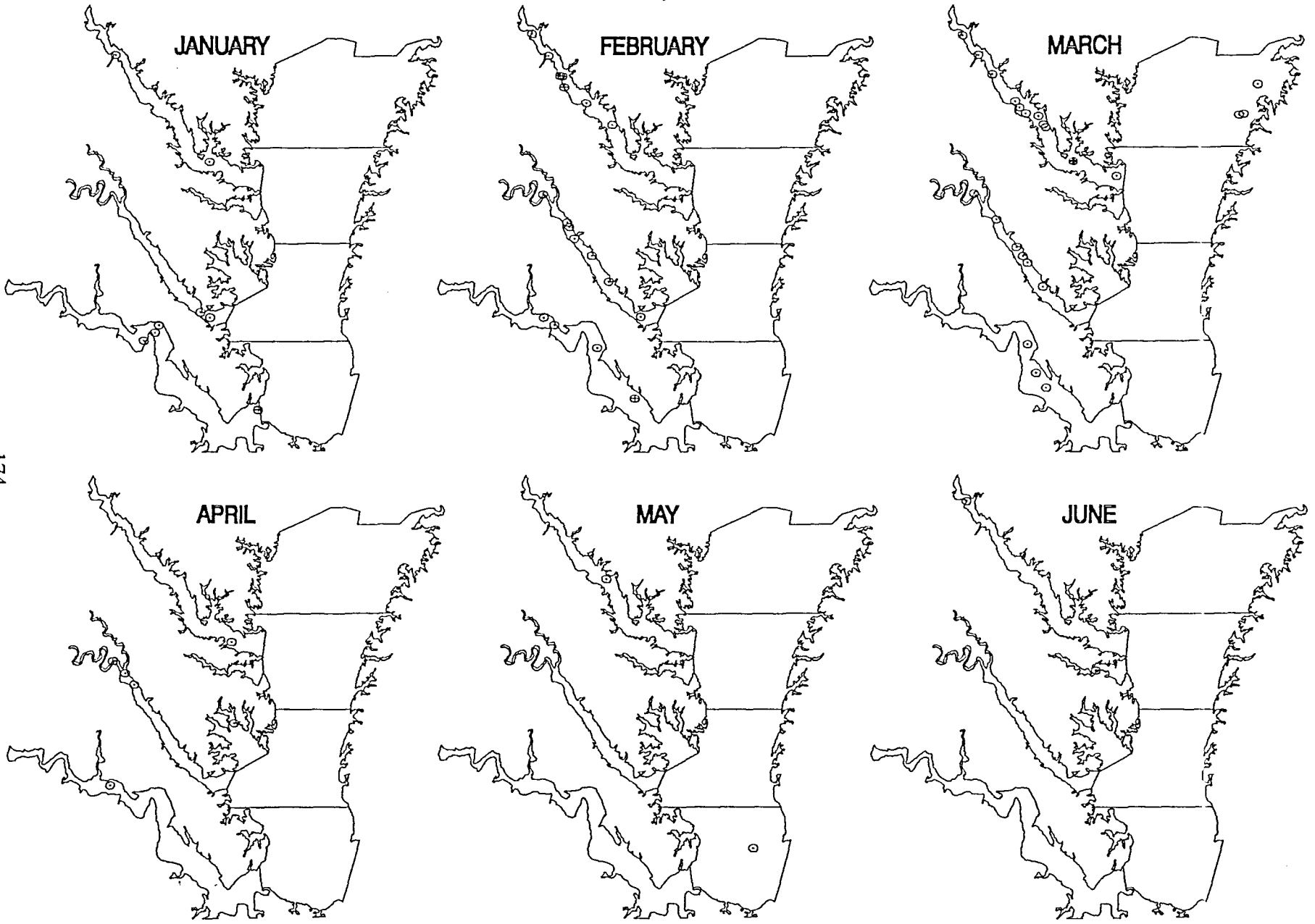
Trawl Survey Fixed Station Locations 1999



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

- Notes:
- A. Due to GPS 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 1999.
 - 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".

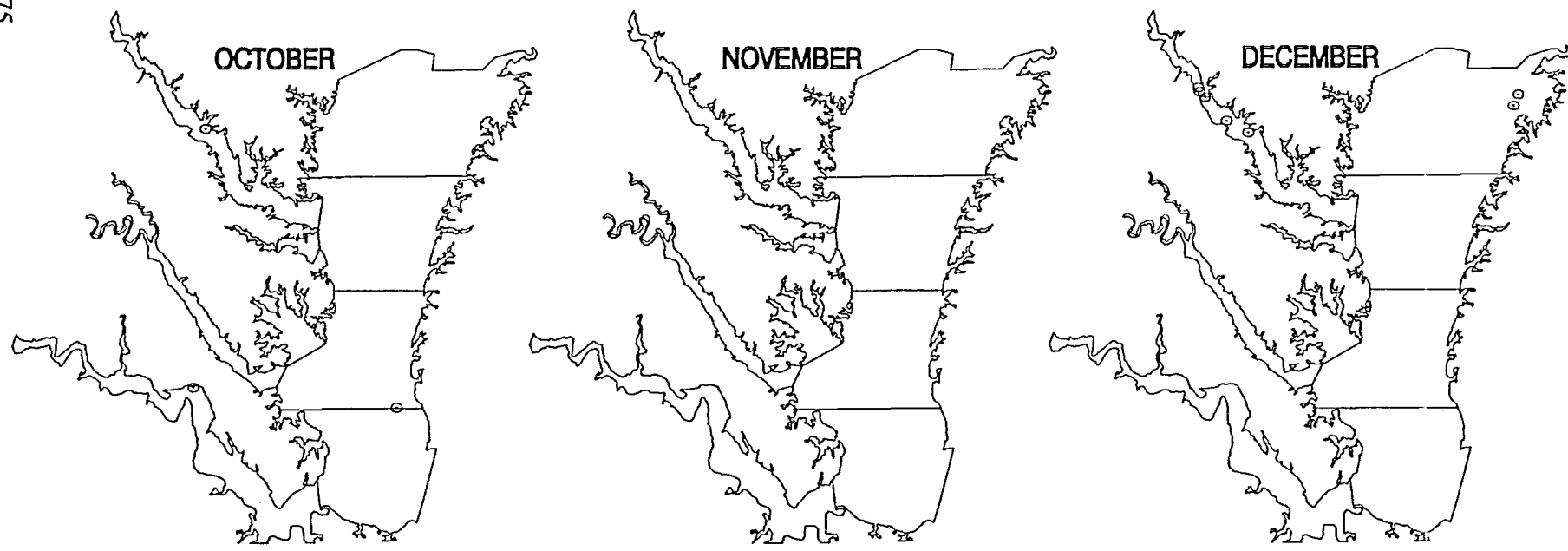
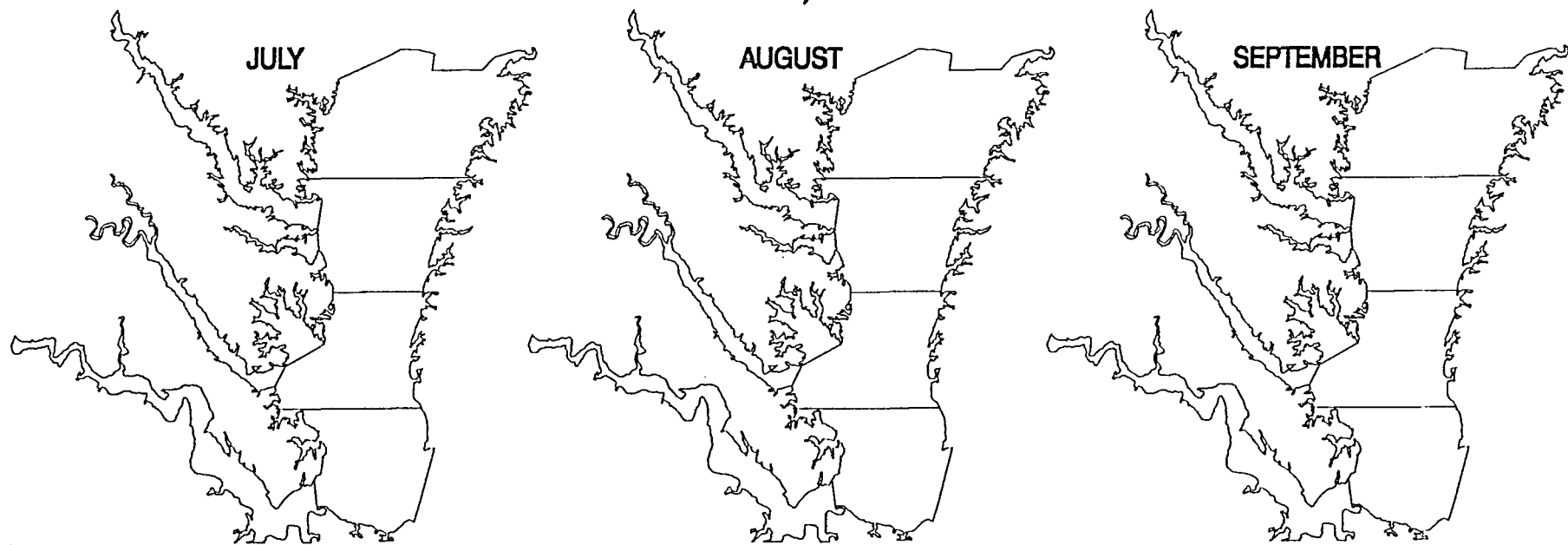
Alewife, 1999



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



Alewife, 1999

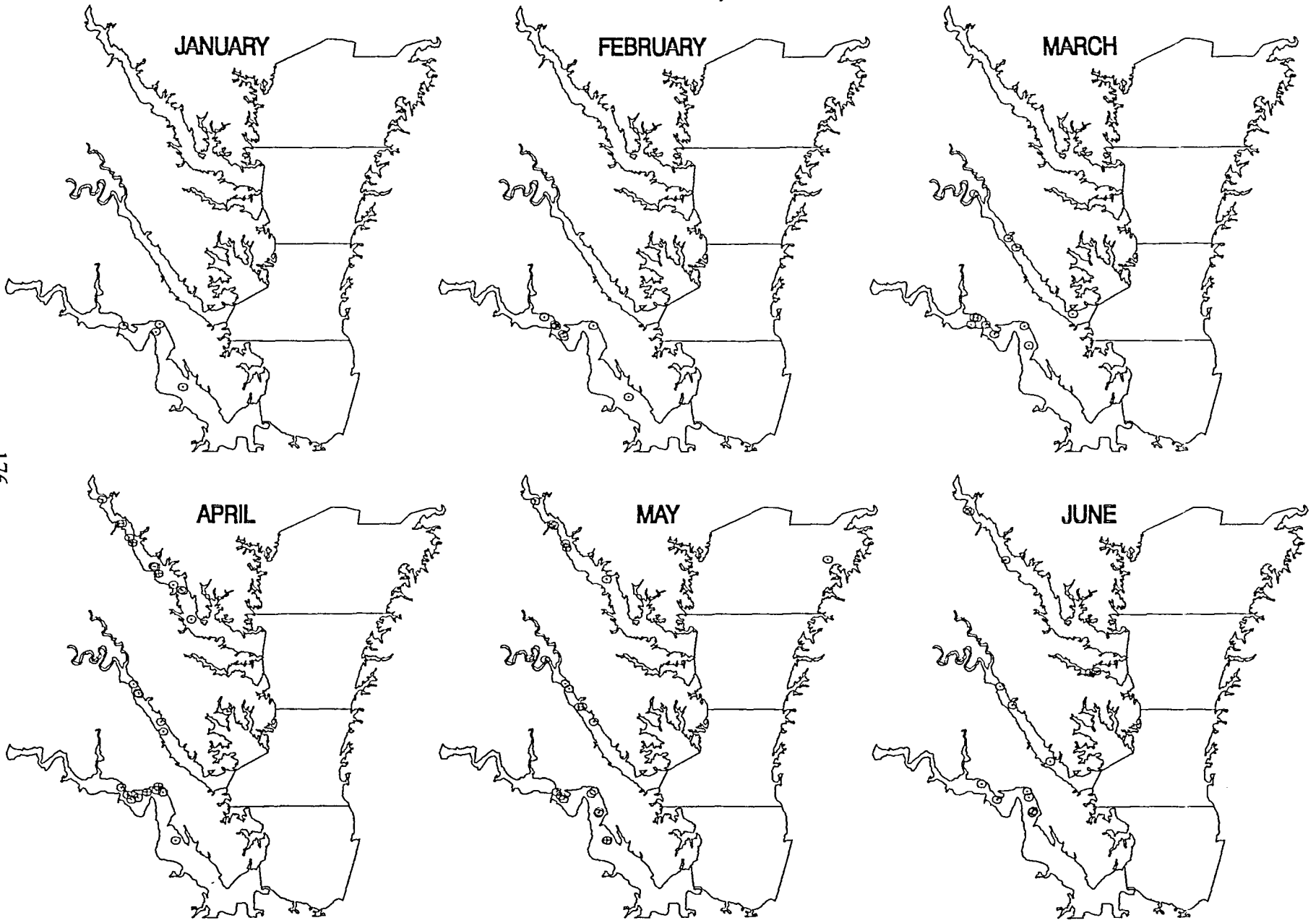


NUMBER CAUGHT: ⊙ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = ≥ 1,000

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Figure 15. (cont.)

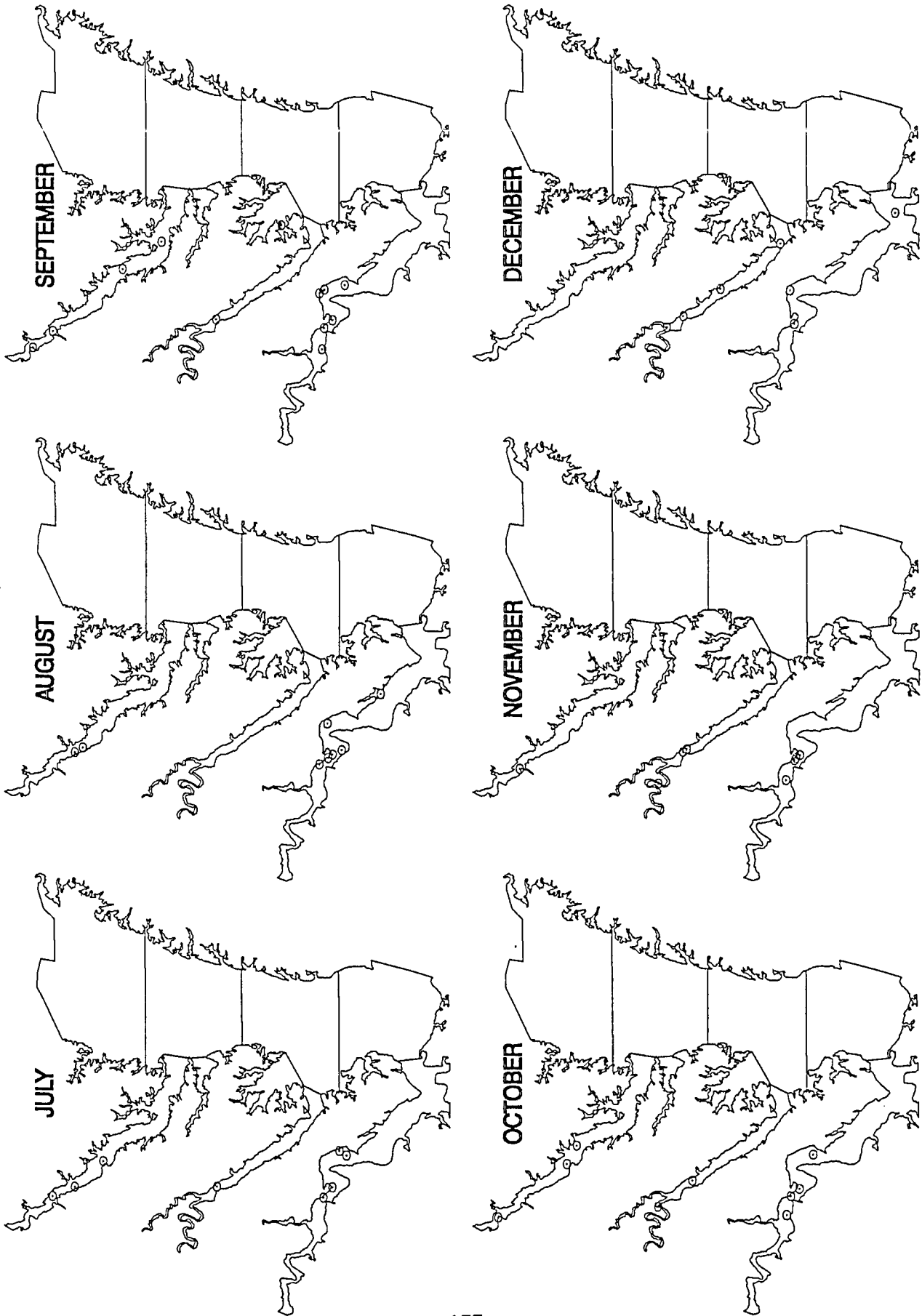
American Eel, 1999



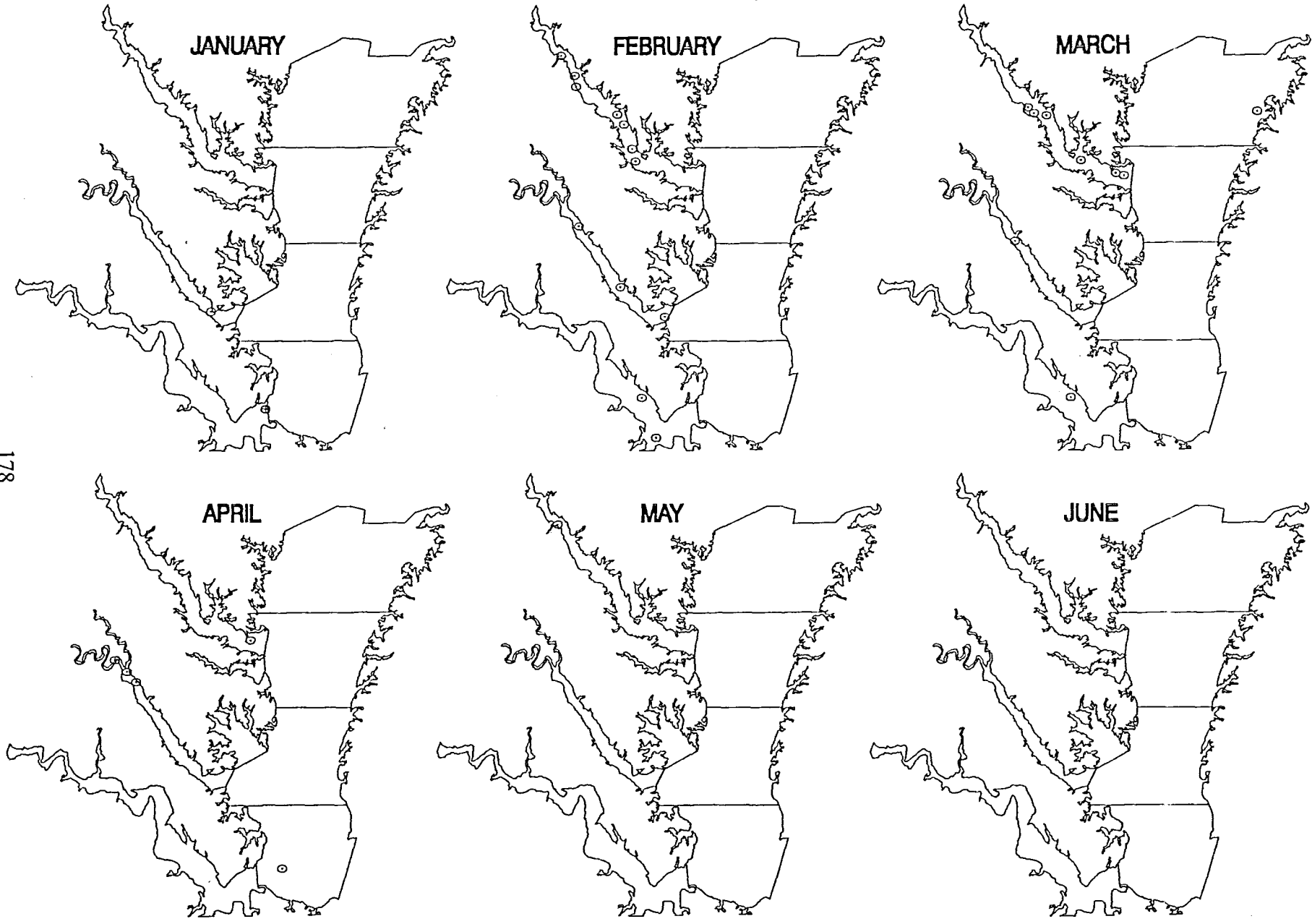
NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = ≥ 1,000



American Eel, 1999



American Shad, 1999



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



American Shad, 1999

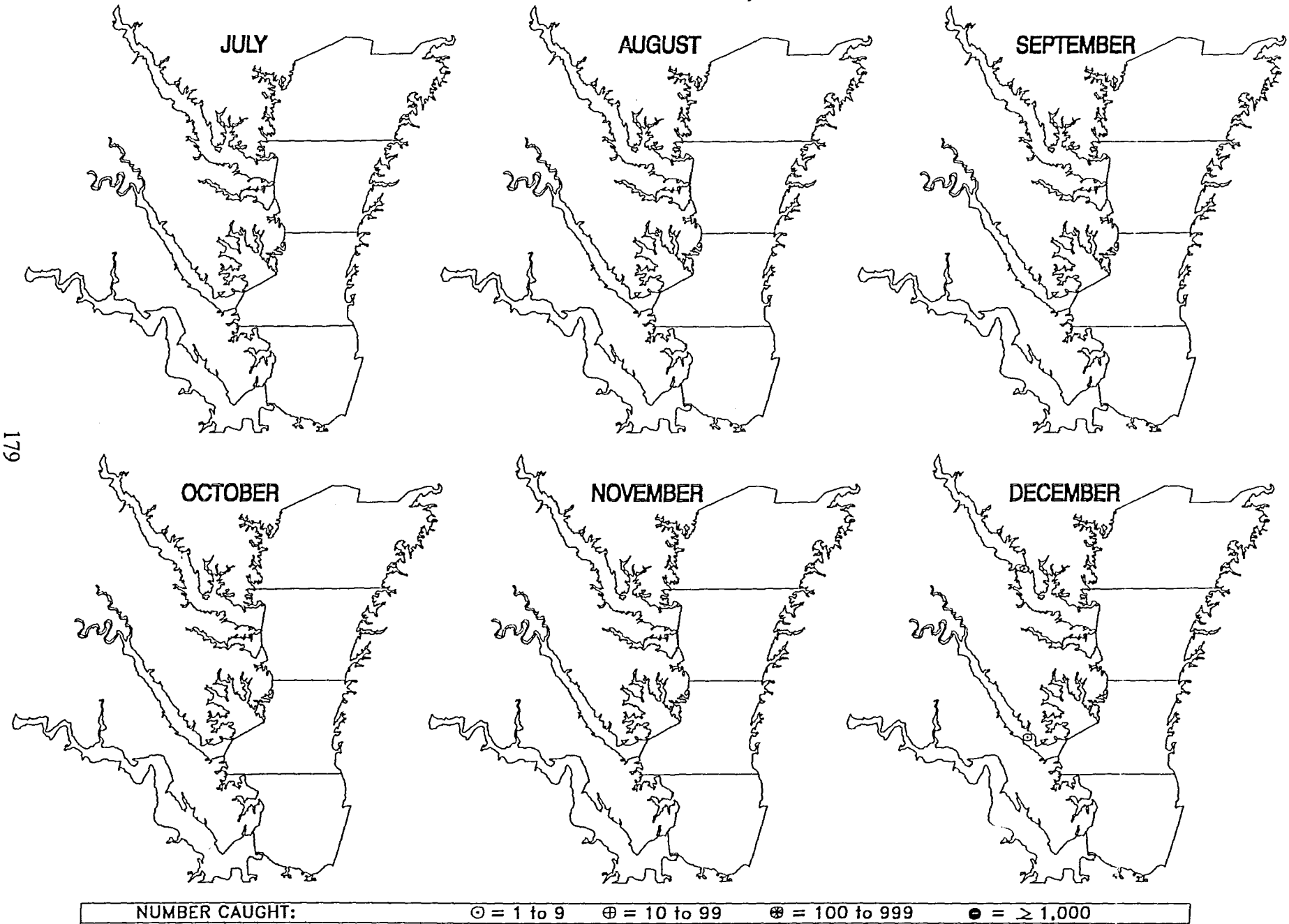


Figure 17. (cont.)

Atlantic Croaker, 1999

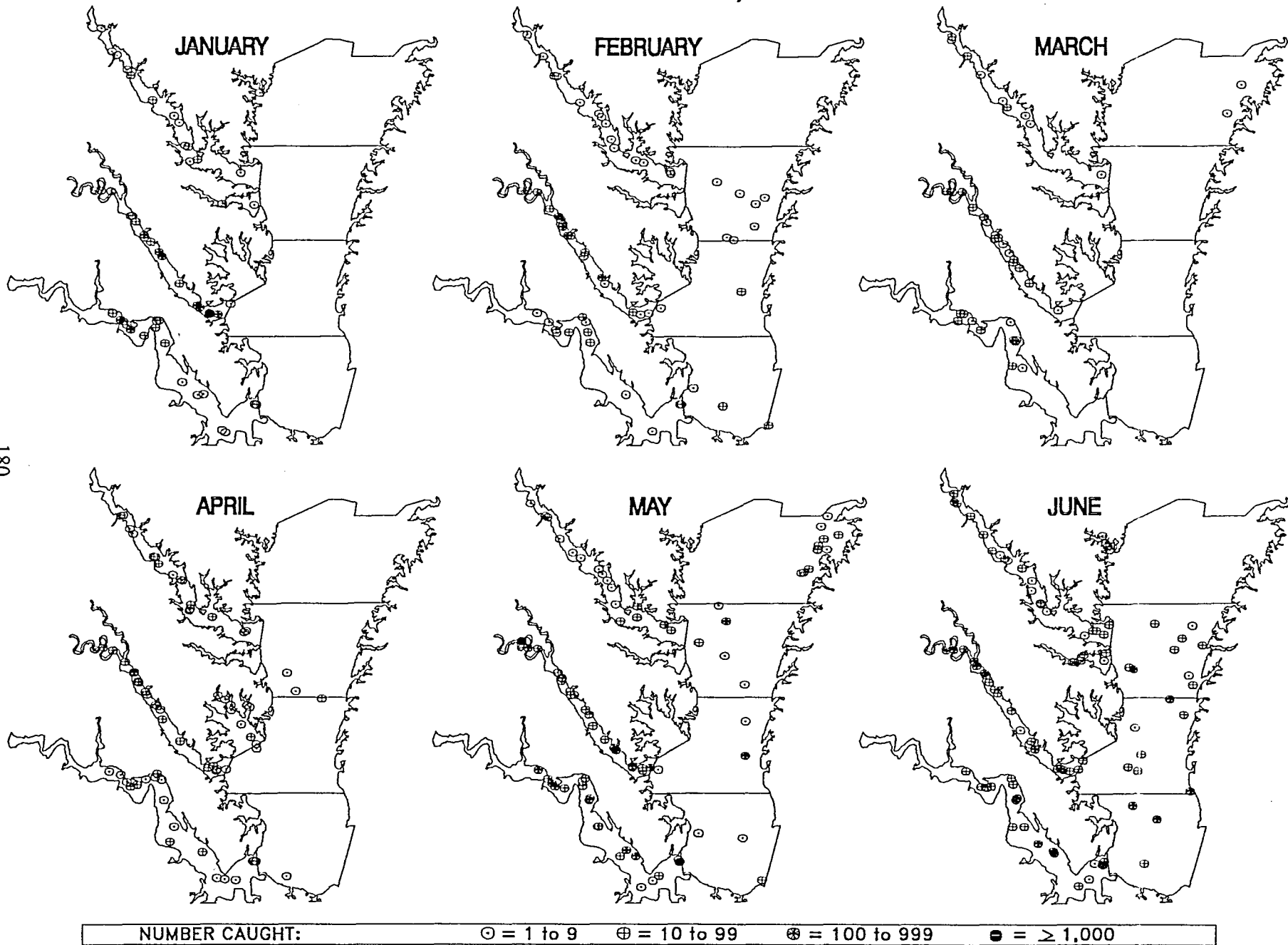
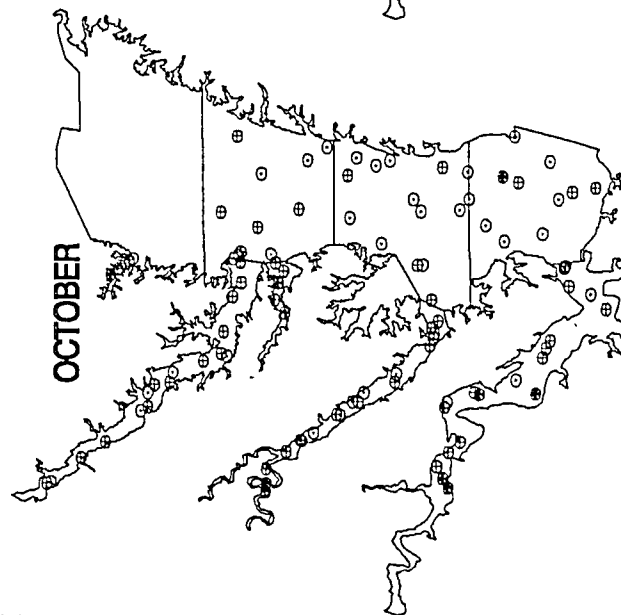
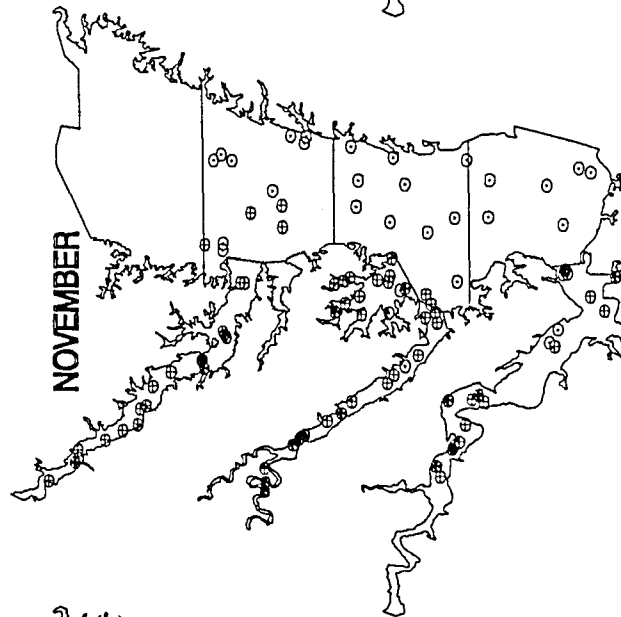
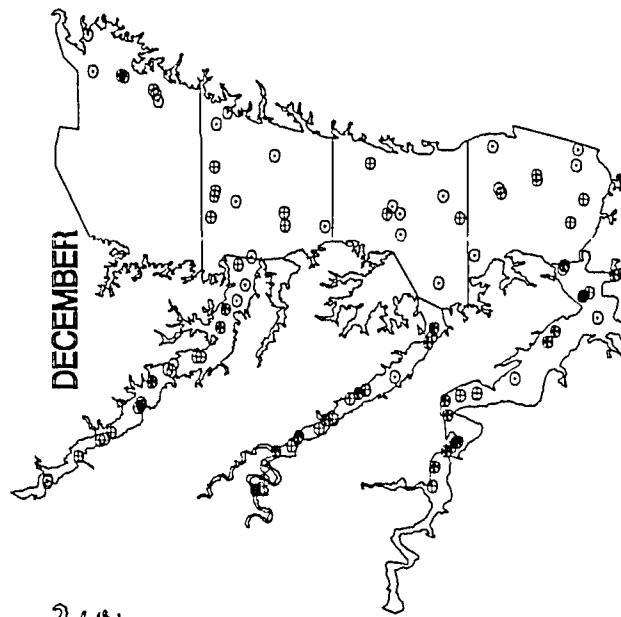
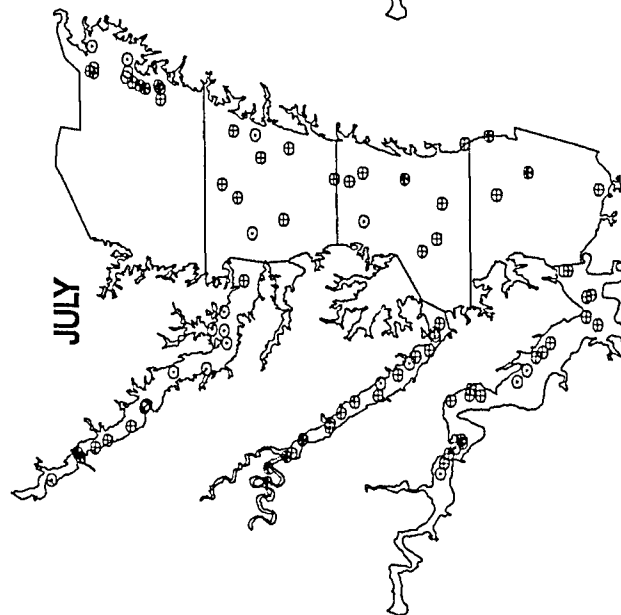
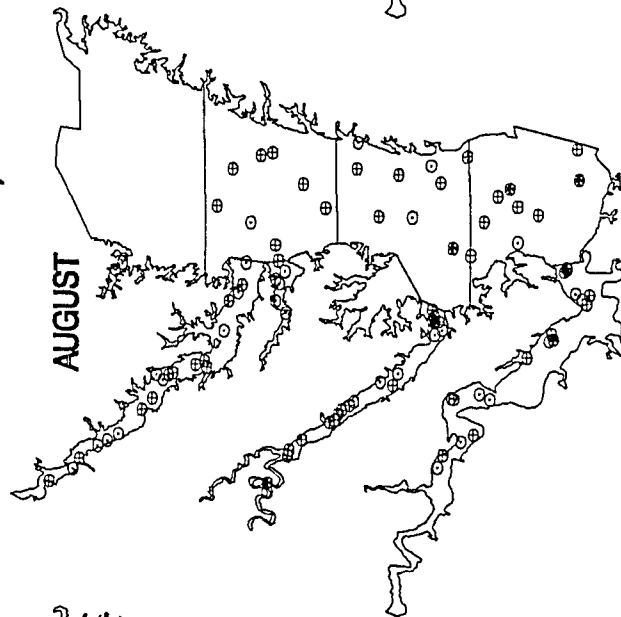
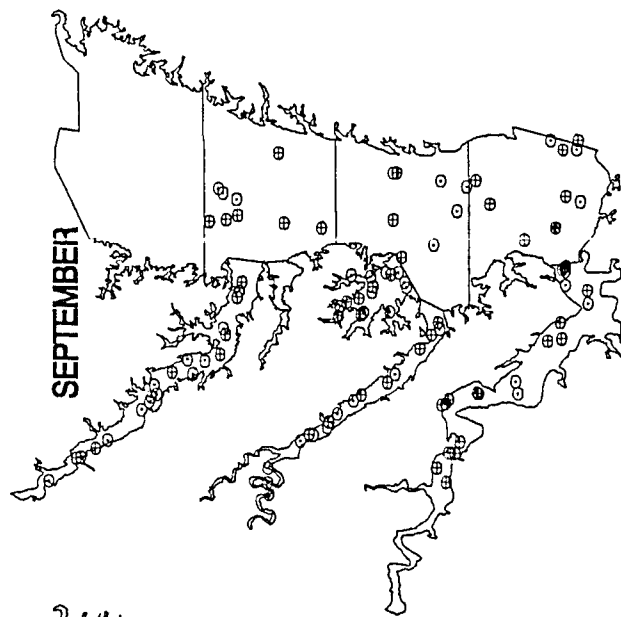


Figure 18.

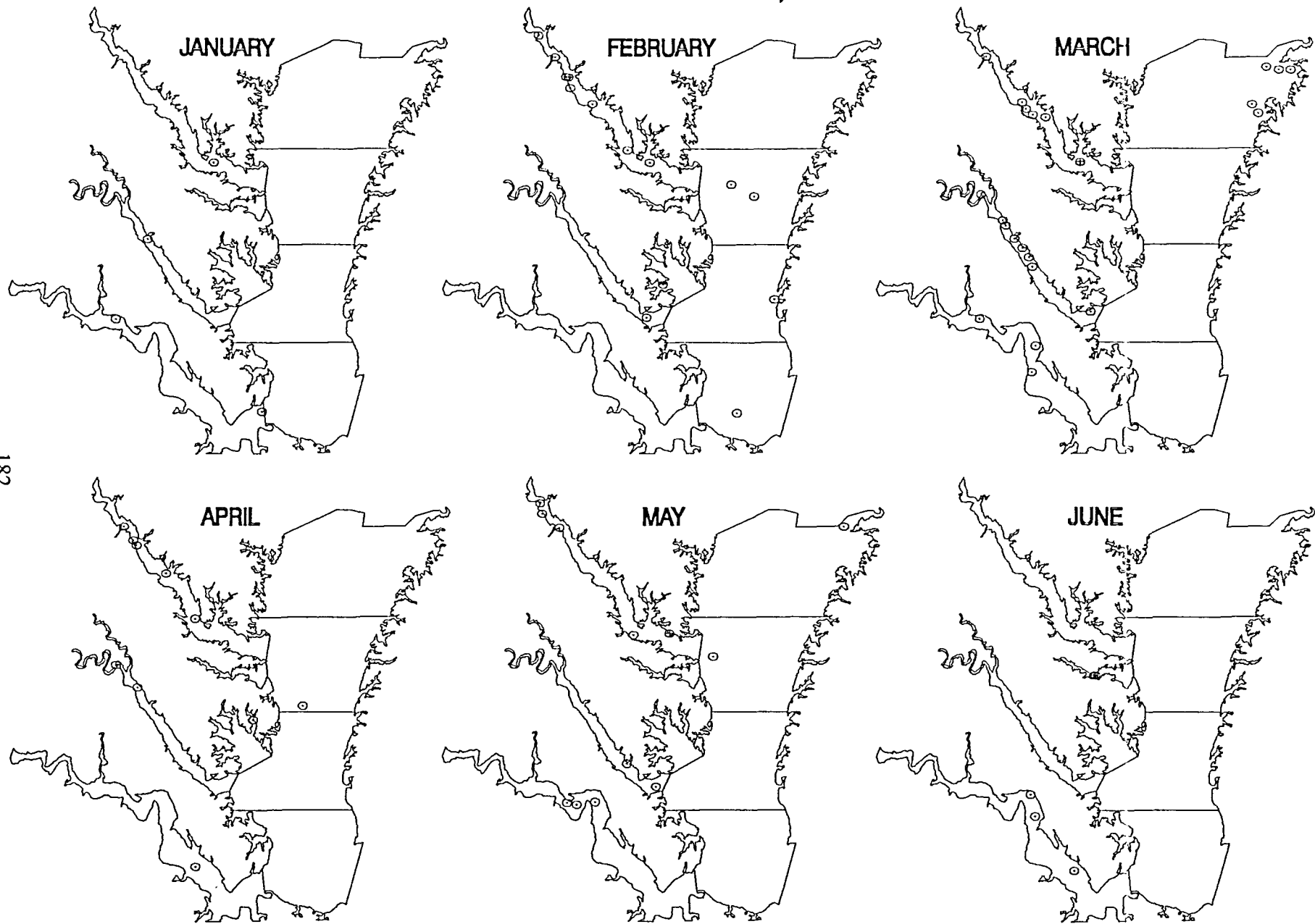


Atlantic Croaker, 1999



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

Atlantic Menhaden, 1999



NUMBER CAUGHT:

○ = 1 to 9

⊕ = 10 to 99

⊗ = 100 to 999

● = ≥ 1,000



Atlantic Menhaden, 1999

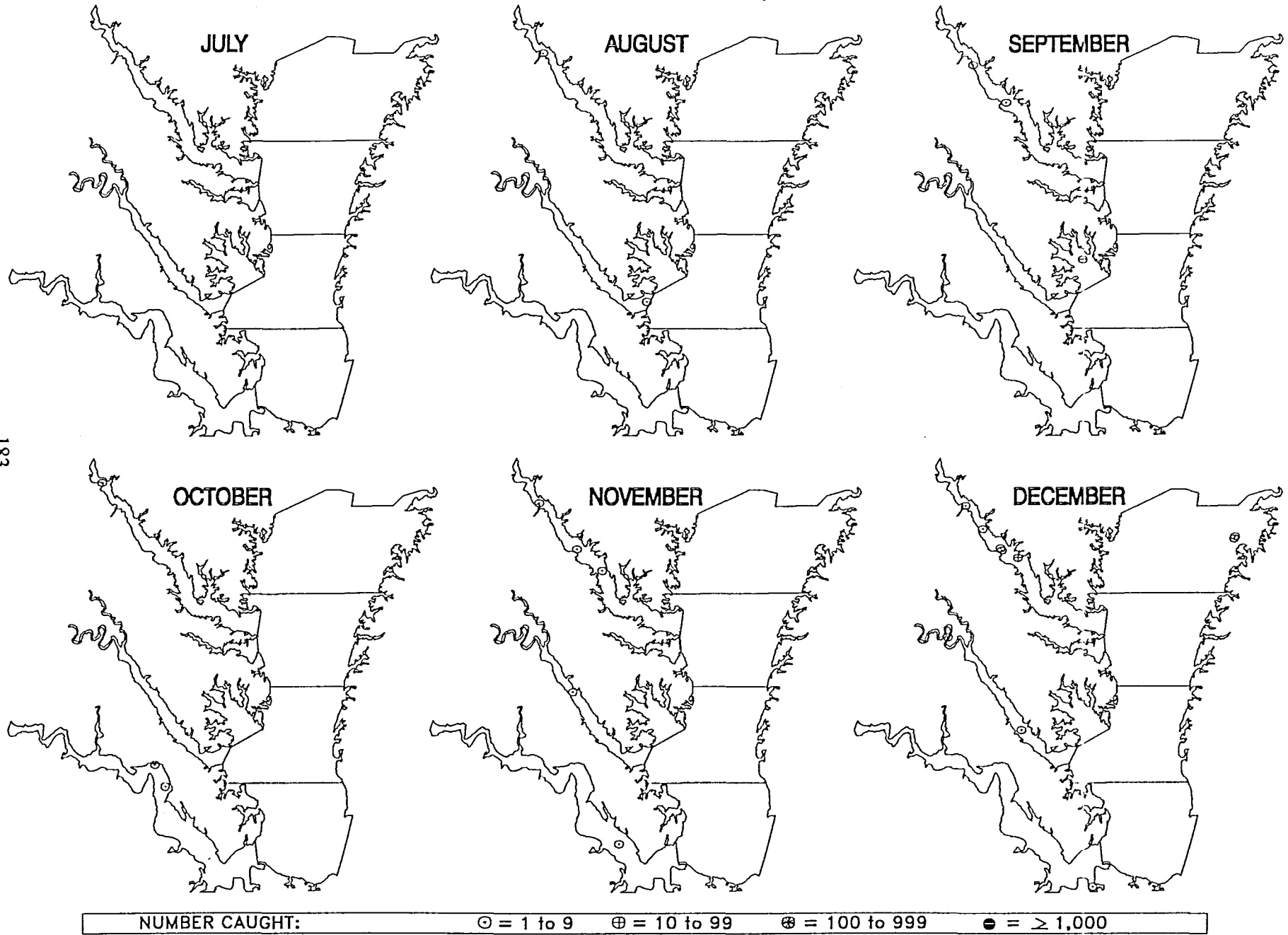
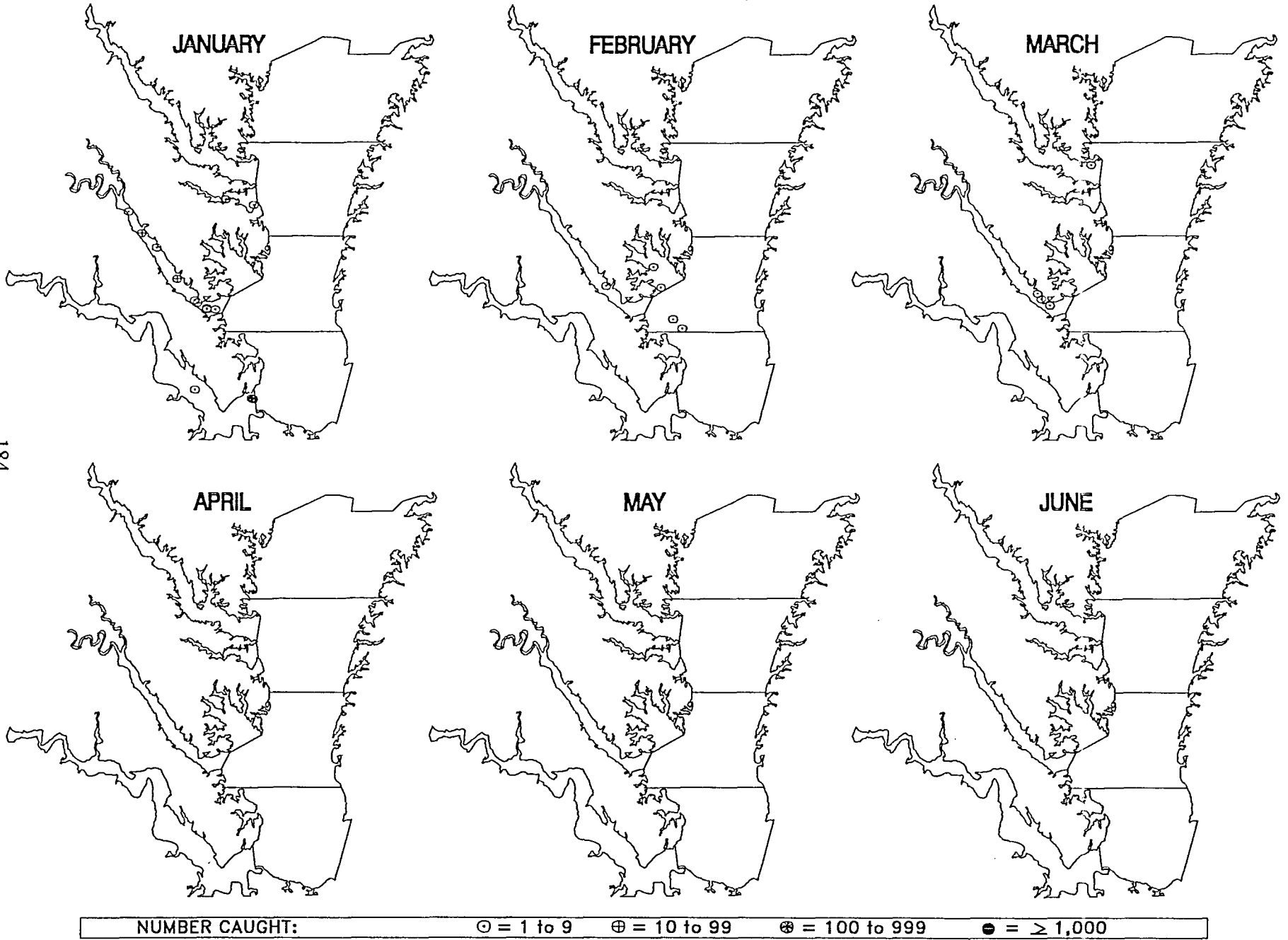


Figure 19. (cont.)

Atlantic Silverside, 1999



Atlantic Silverside, 1999

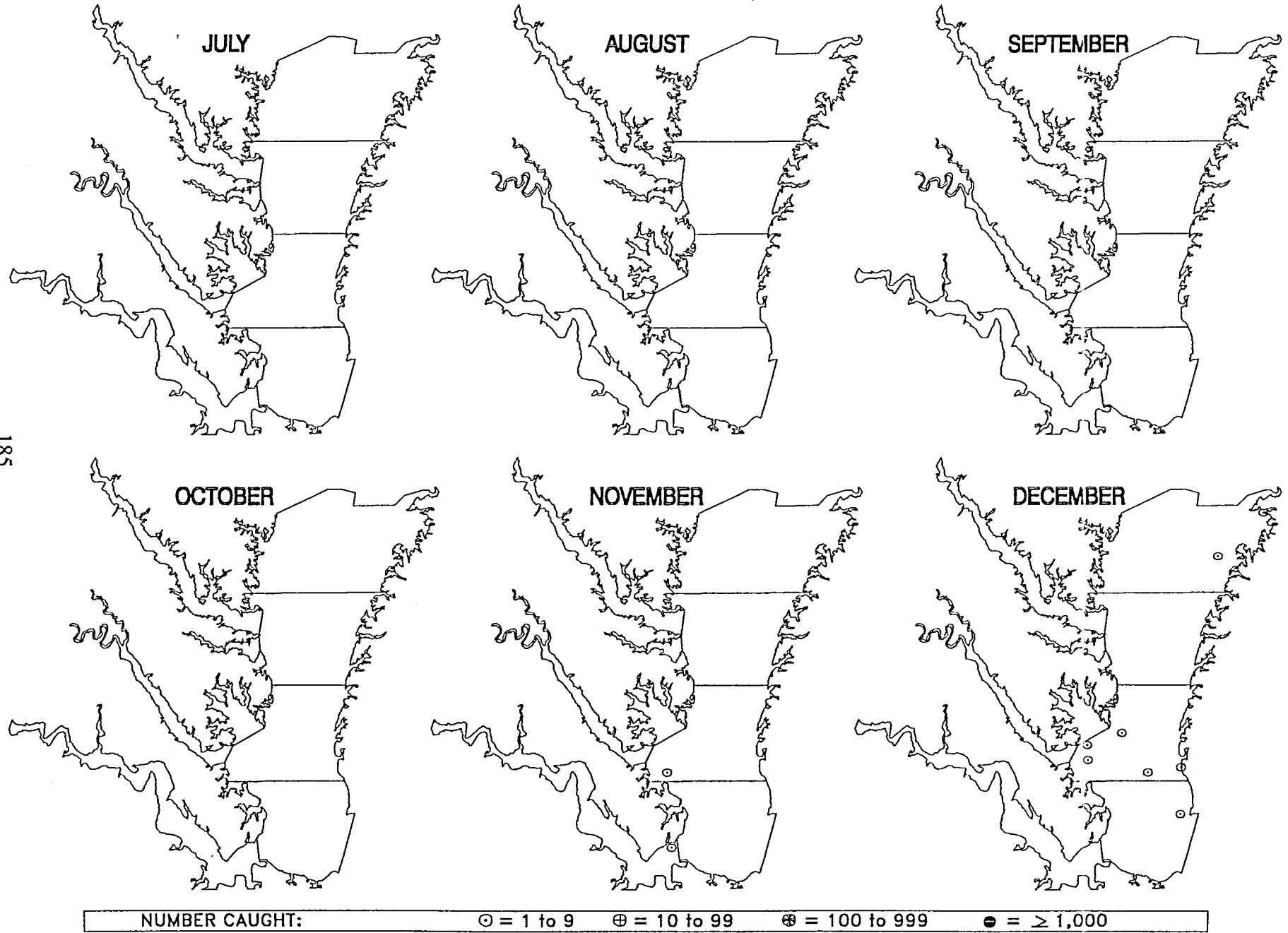
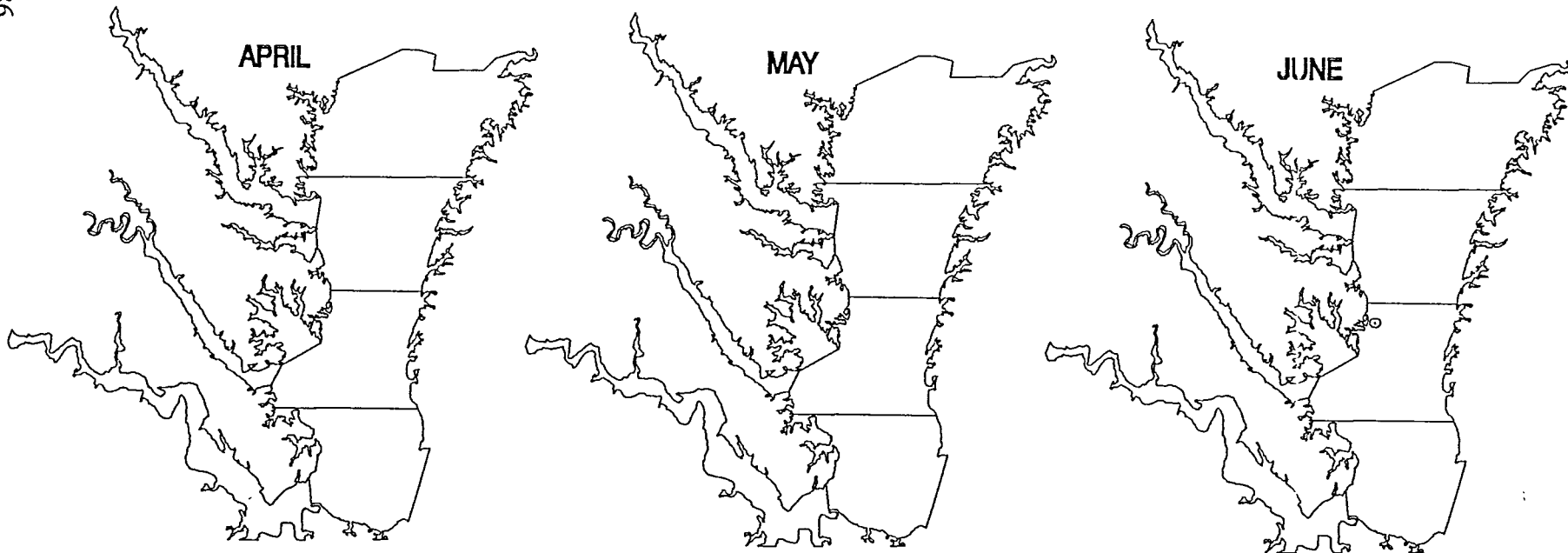
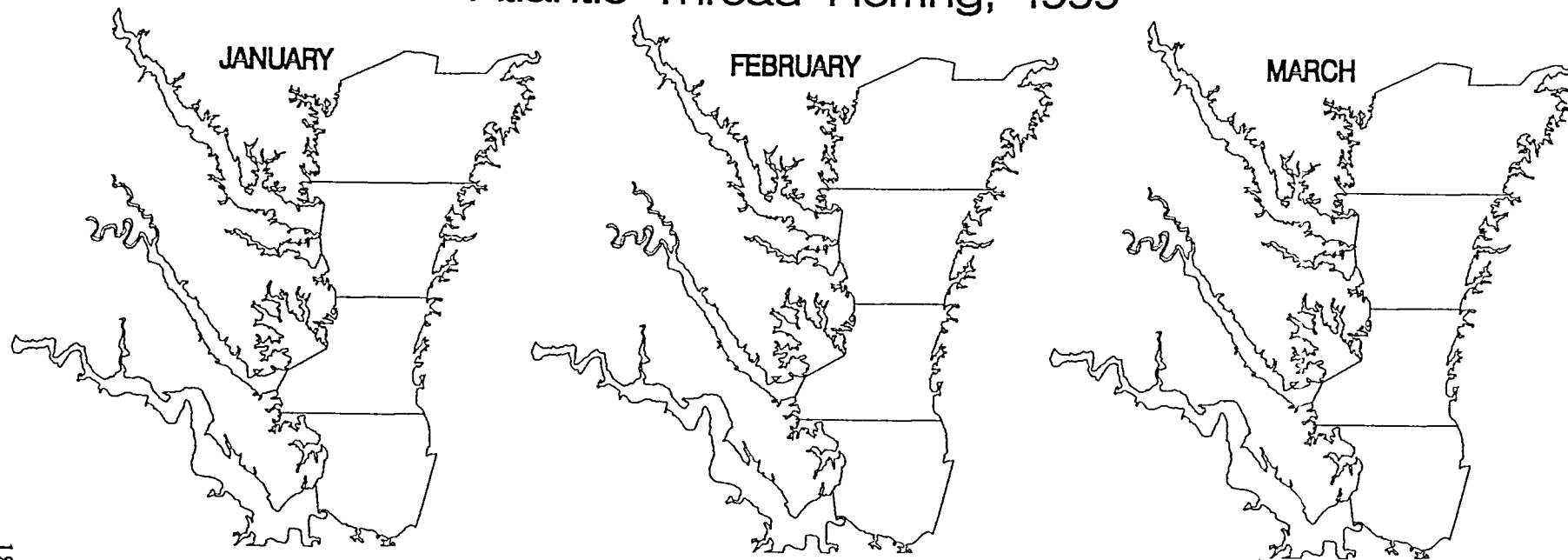


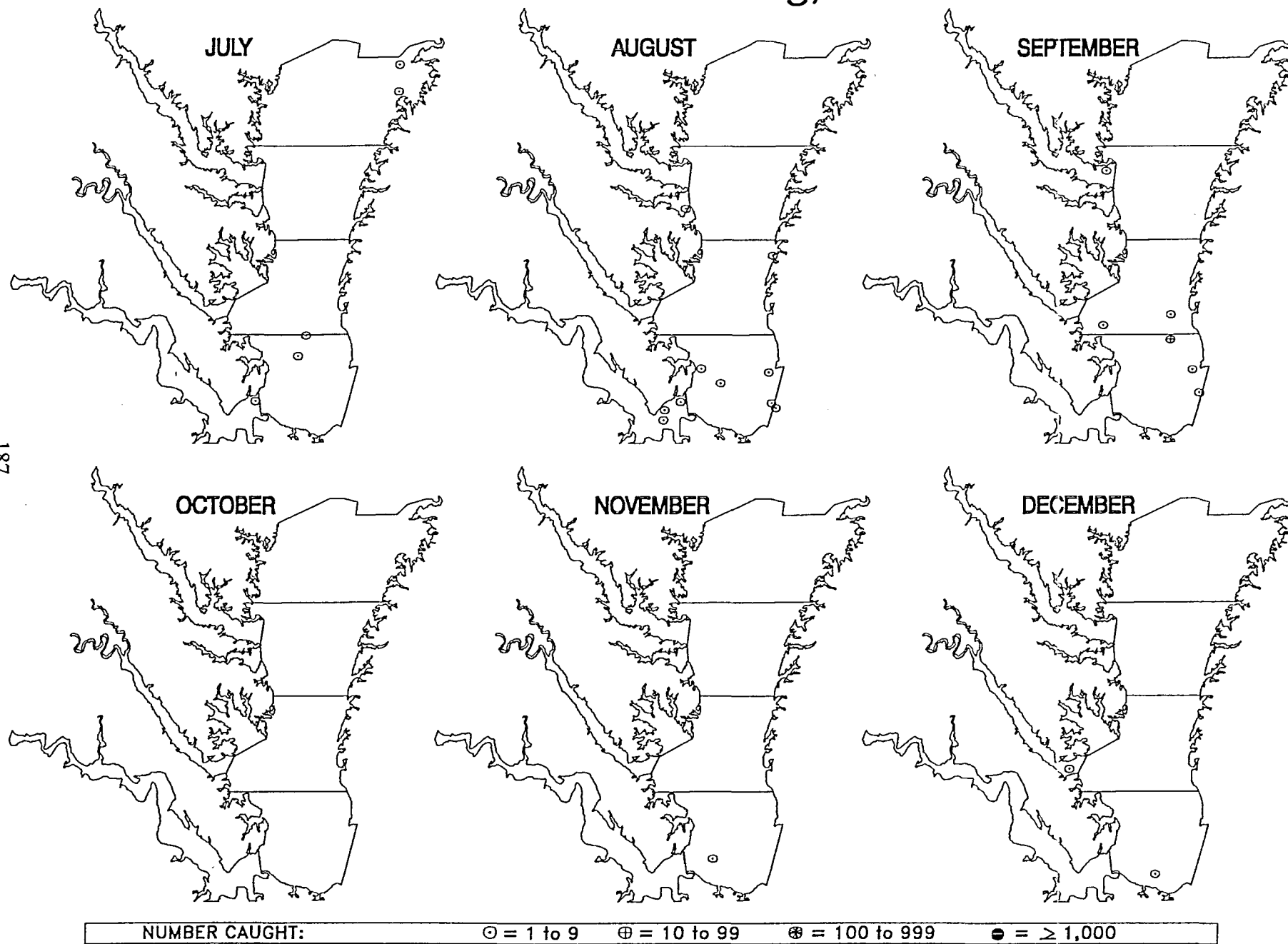
Figure 20. (cont.)

Atlantic Thread Herring, 1999

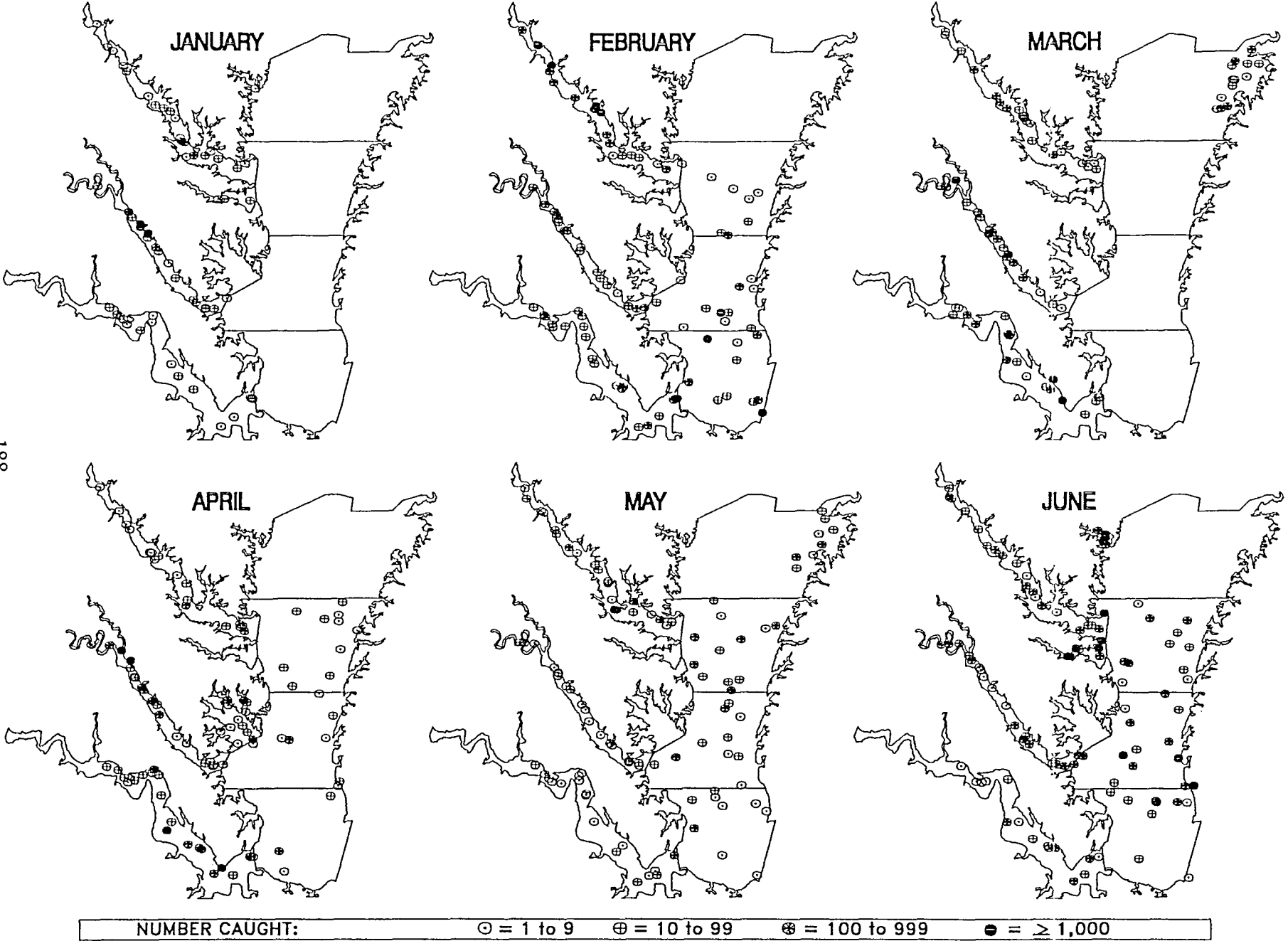


NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = ≥ 1,000

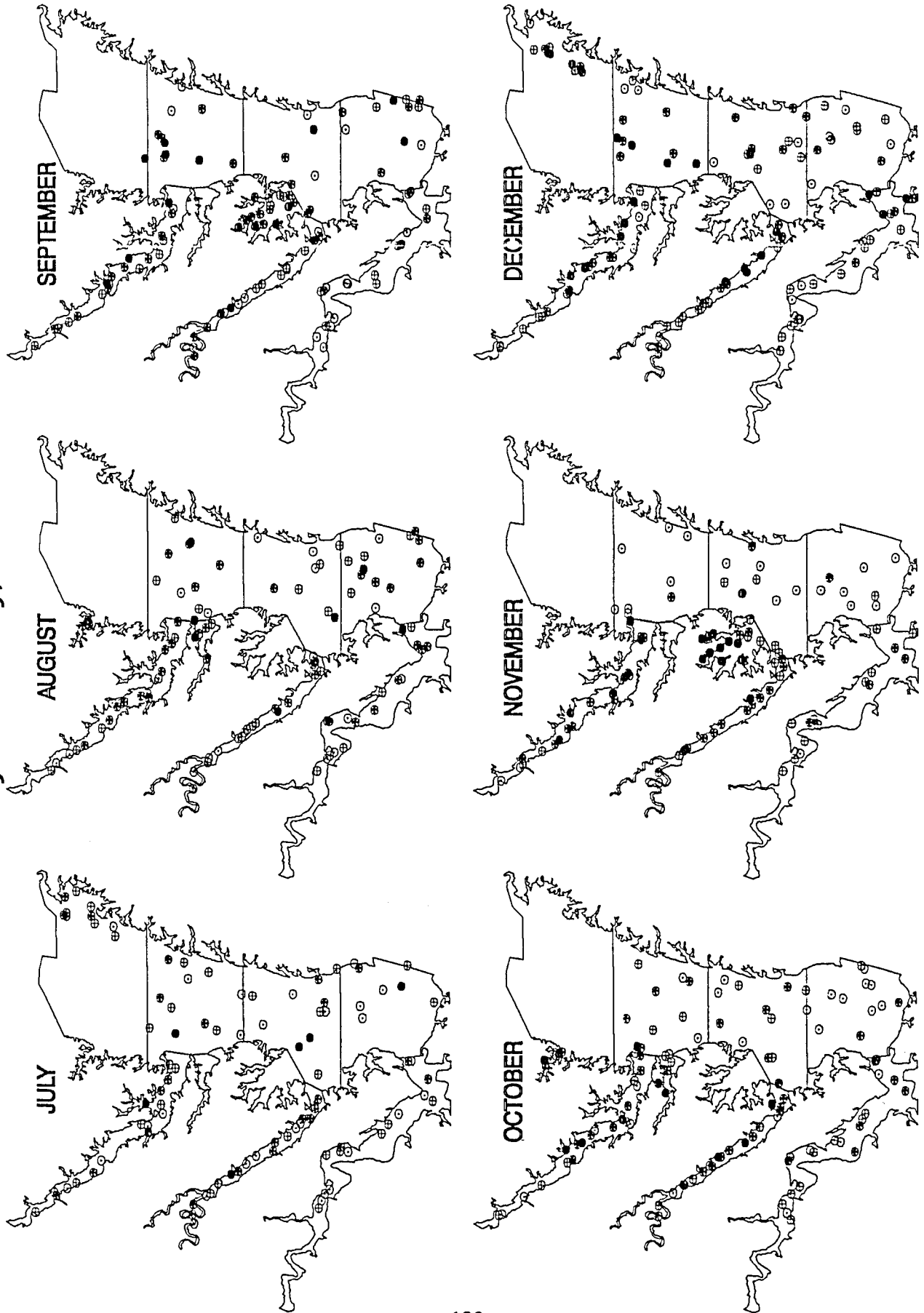
Atlantic Thread Herring, 1999



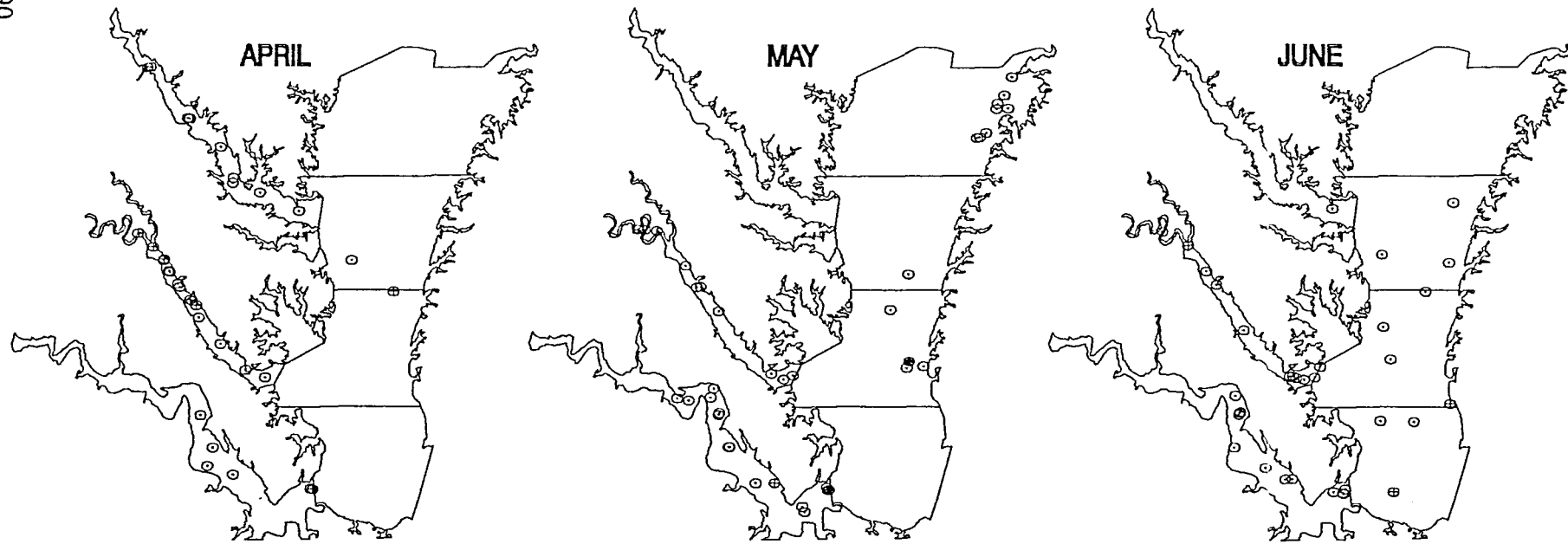
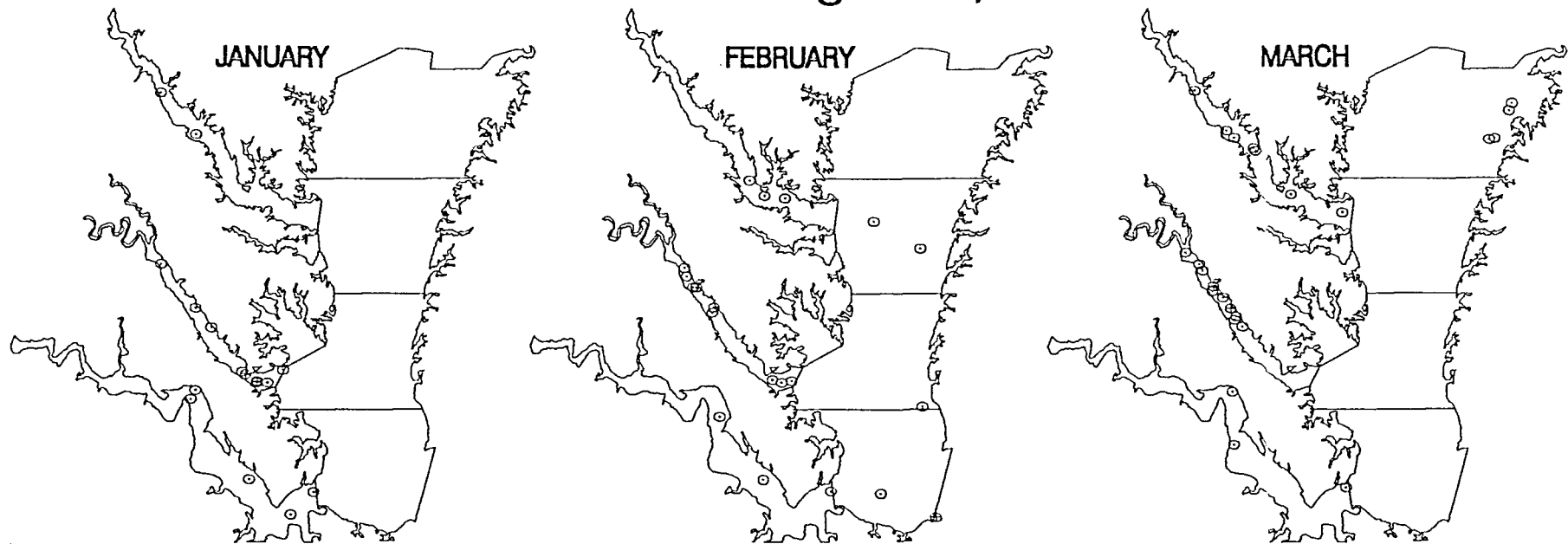
Bay Anchovy, 1999



Bay Anchovy, 1999



Blackcheek Tonguefish, 1999



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



Blackcheek Tonguefish, 1999

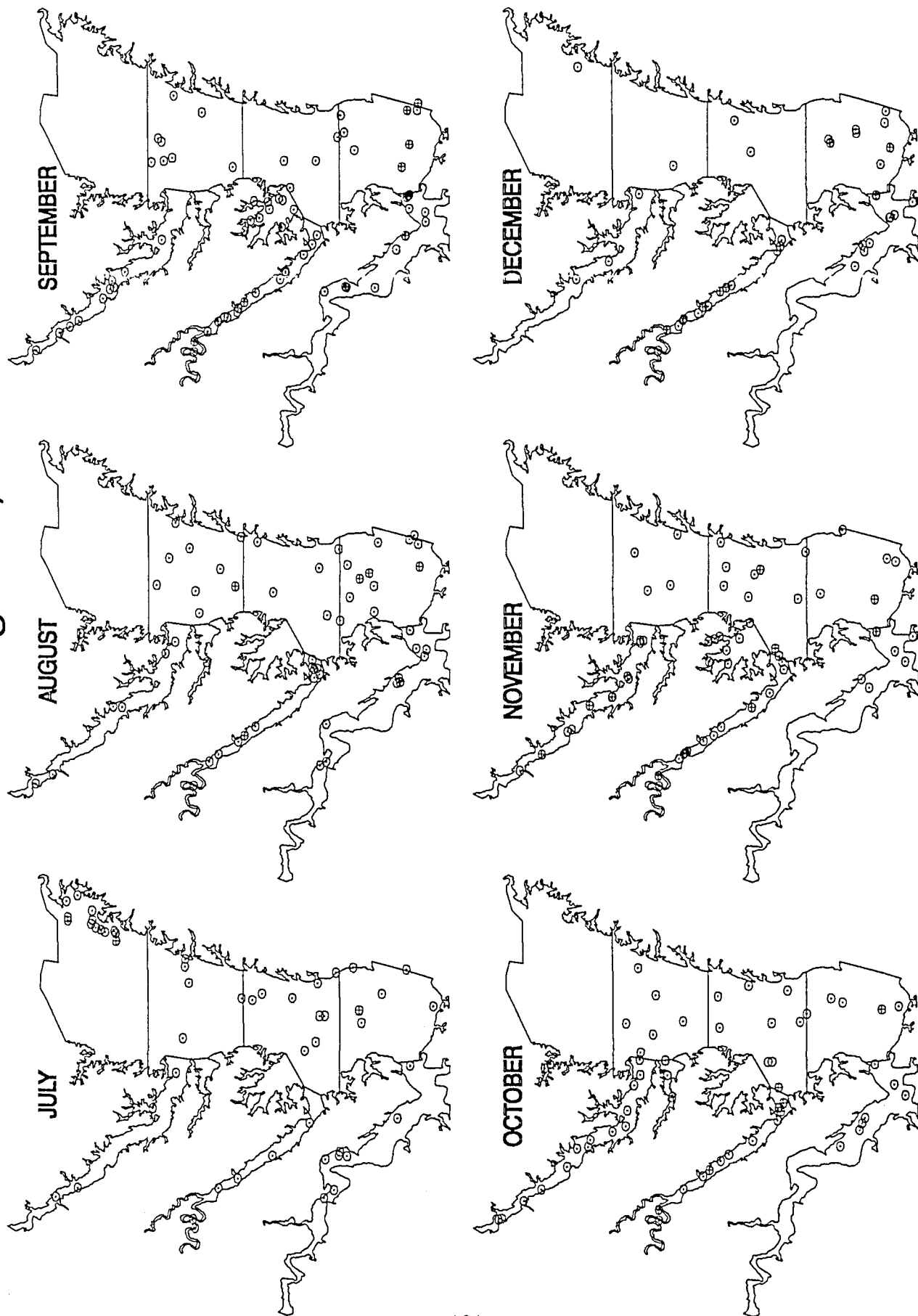
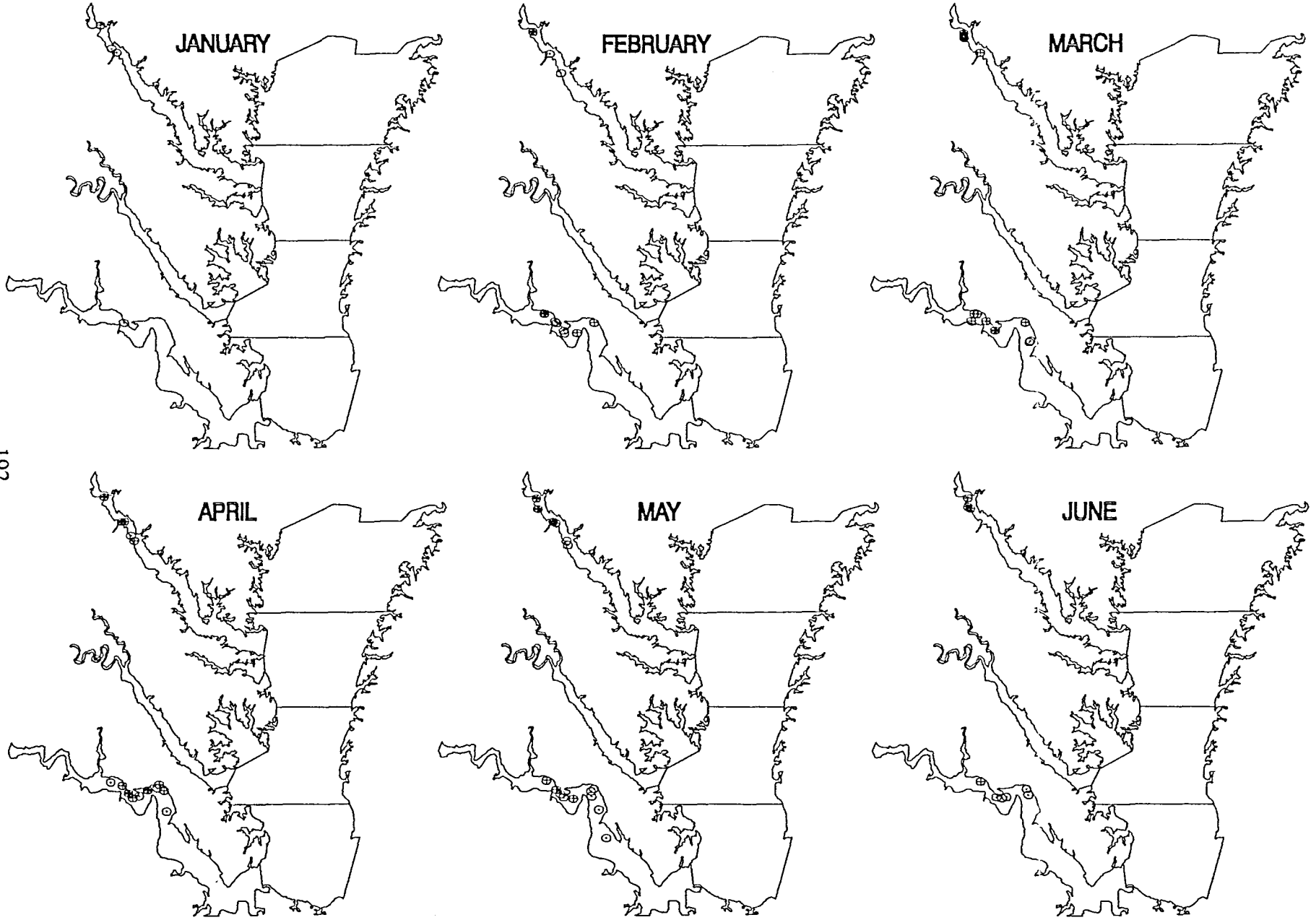


Figure 24.

Blue Catfish, 1999



NUMBER CAUGHT:

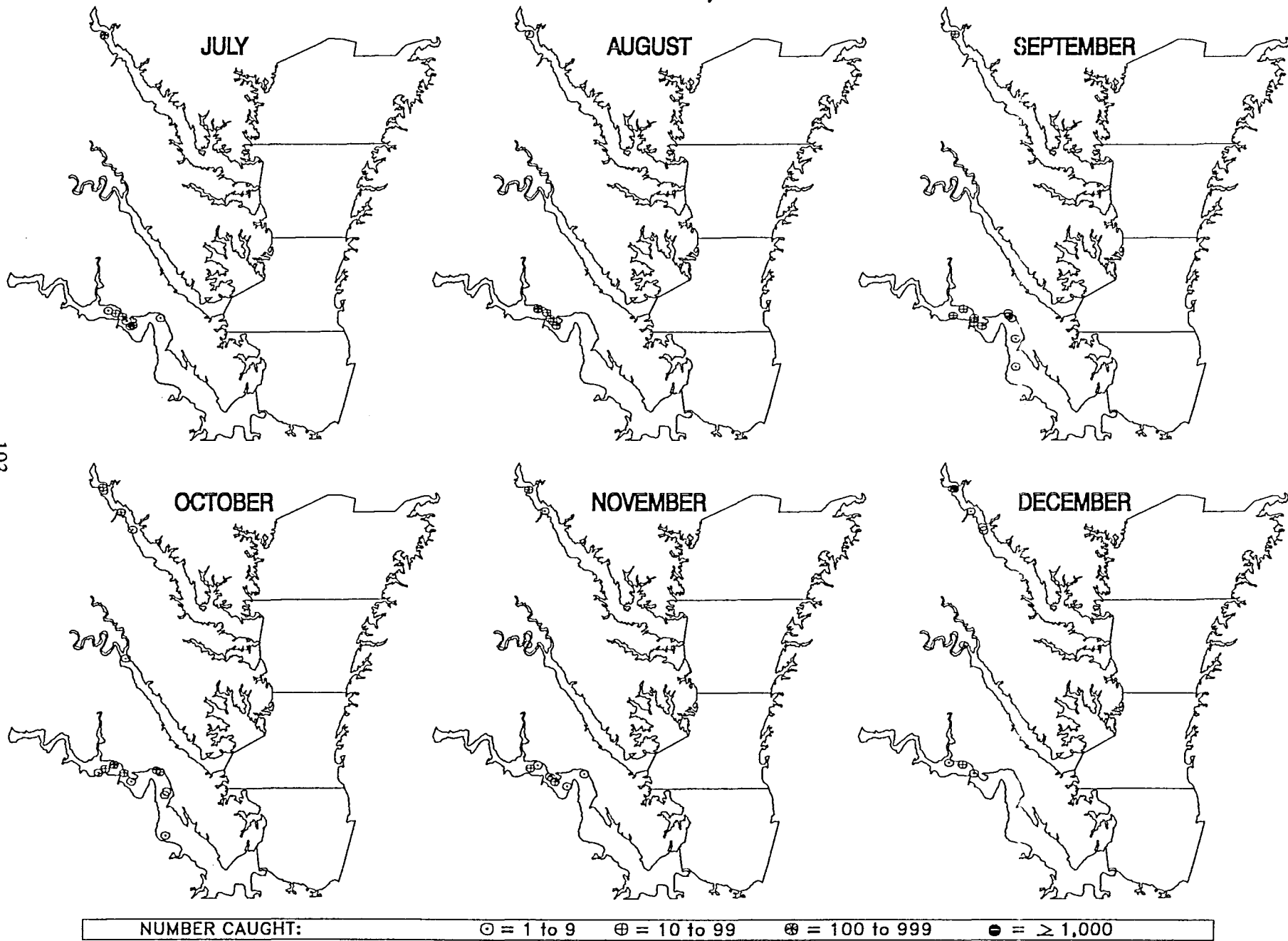
○ = 1 to 9

⊕ = 10 to 99

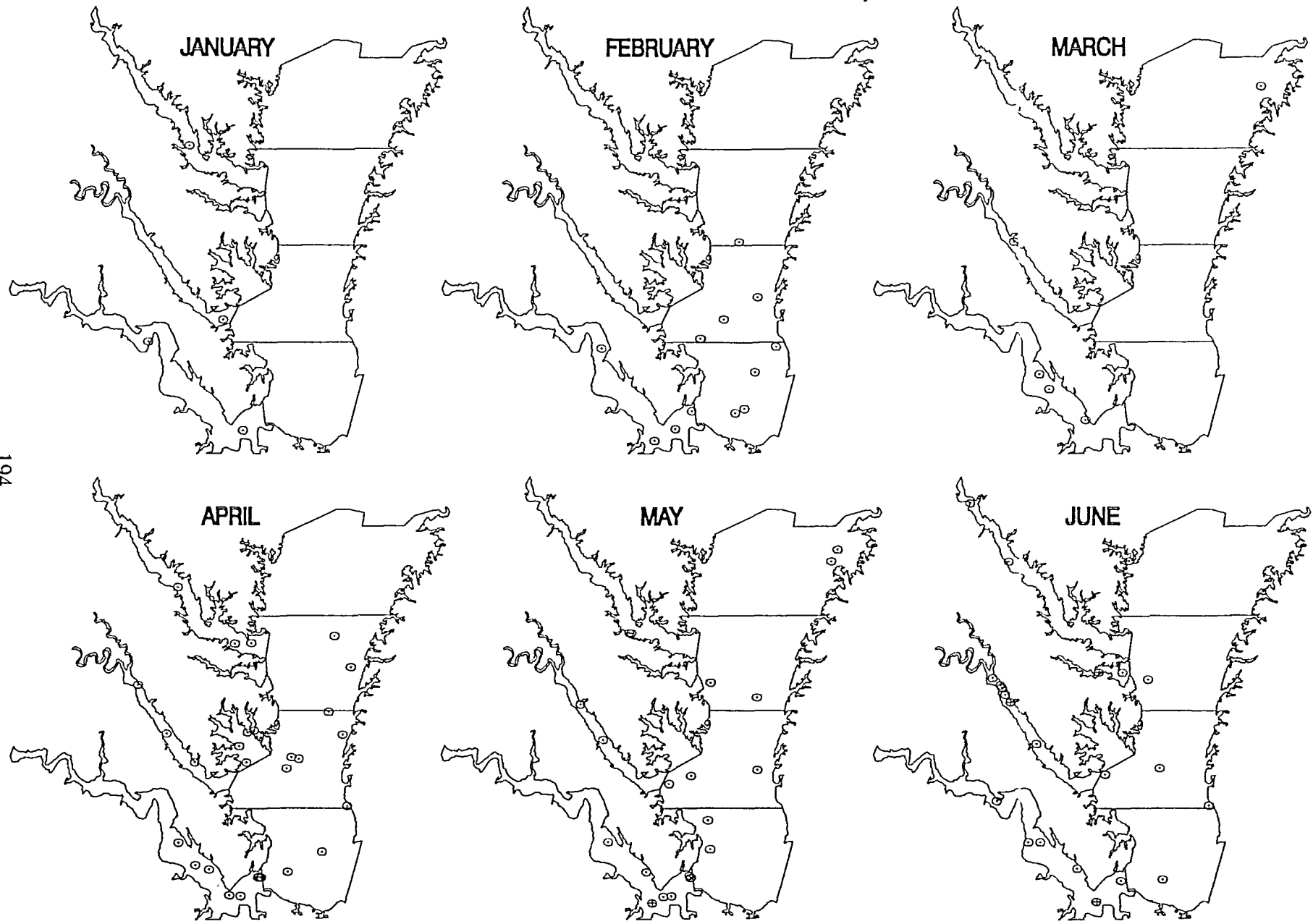
⊗ = 100 to 999

● = ≥ 1,000

Blue Catfish, 1999



Blue Crab — Adult Female, 1999



NUMBER CAUGHT:

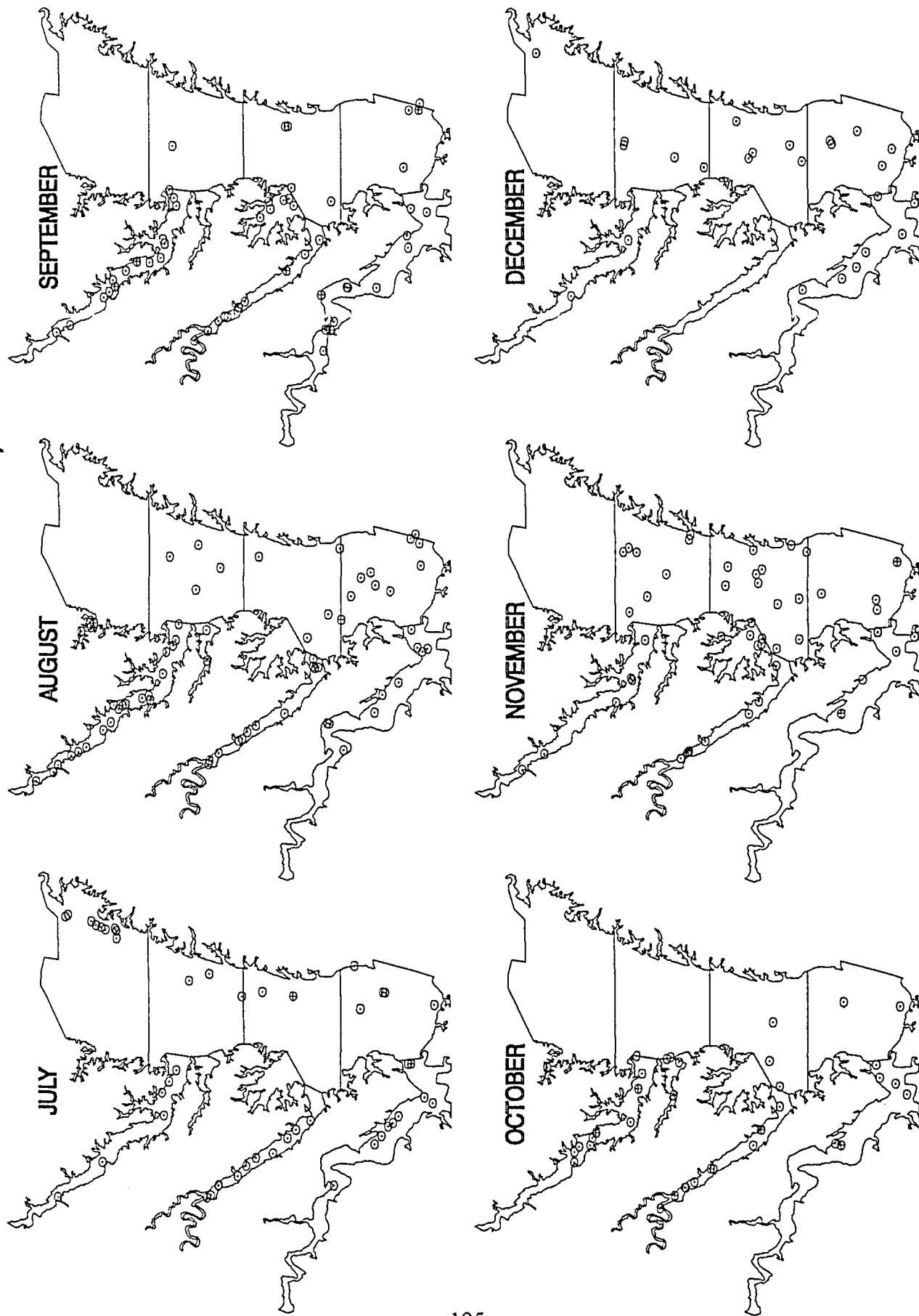
○ = 1 to 9

⊕ = 10 to 99

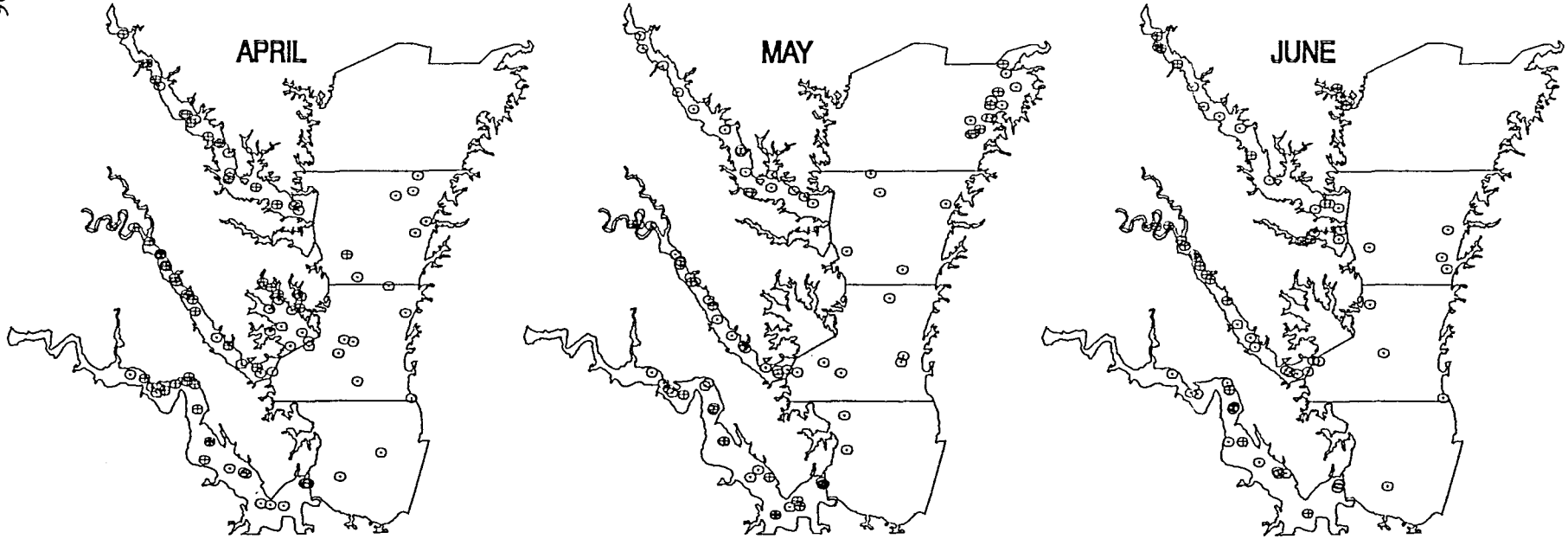
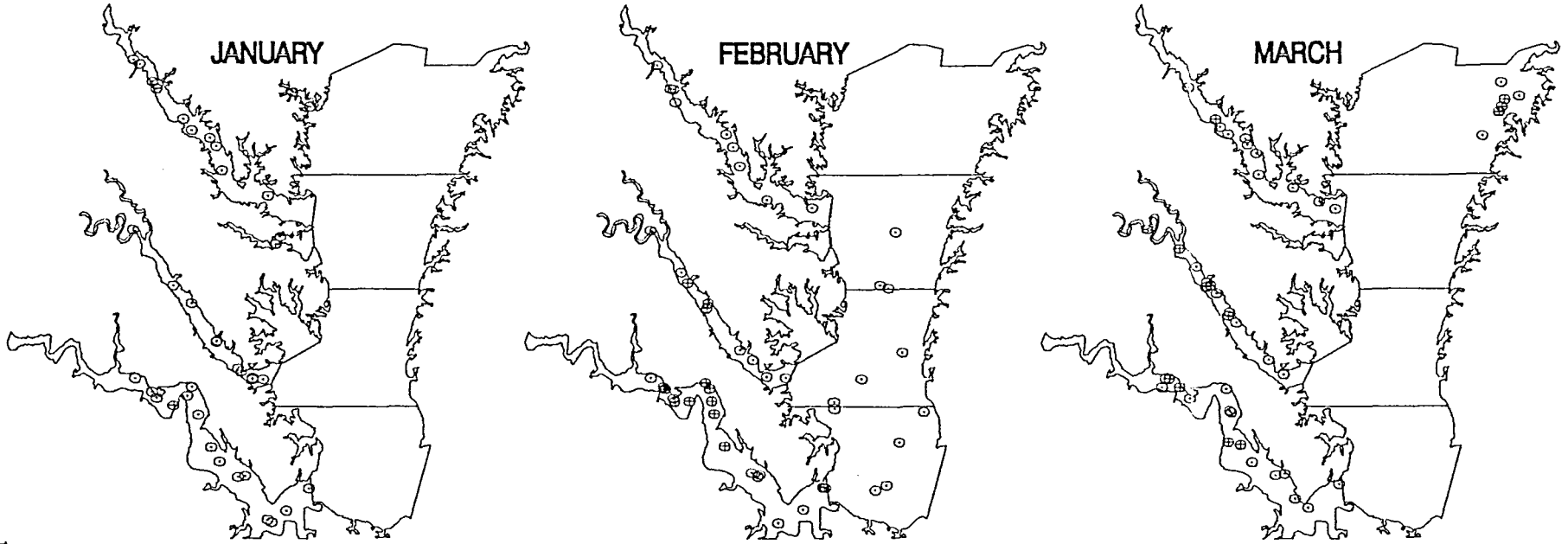
⊗ = 100 to 999

● = ≥ 1,000

Blue Crab — Adult Female, 1999



Blue Crab — All, 1999



NUMBER CAUGHT:

○ = 1 to 9

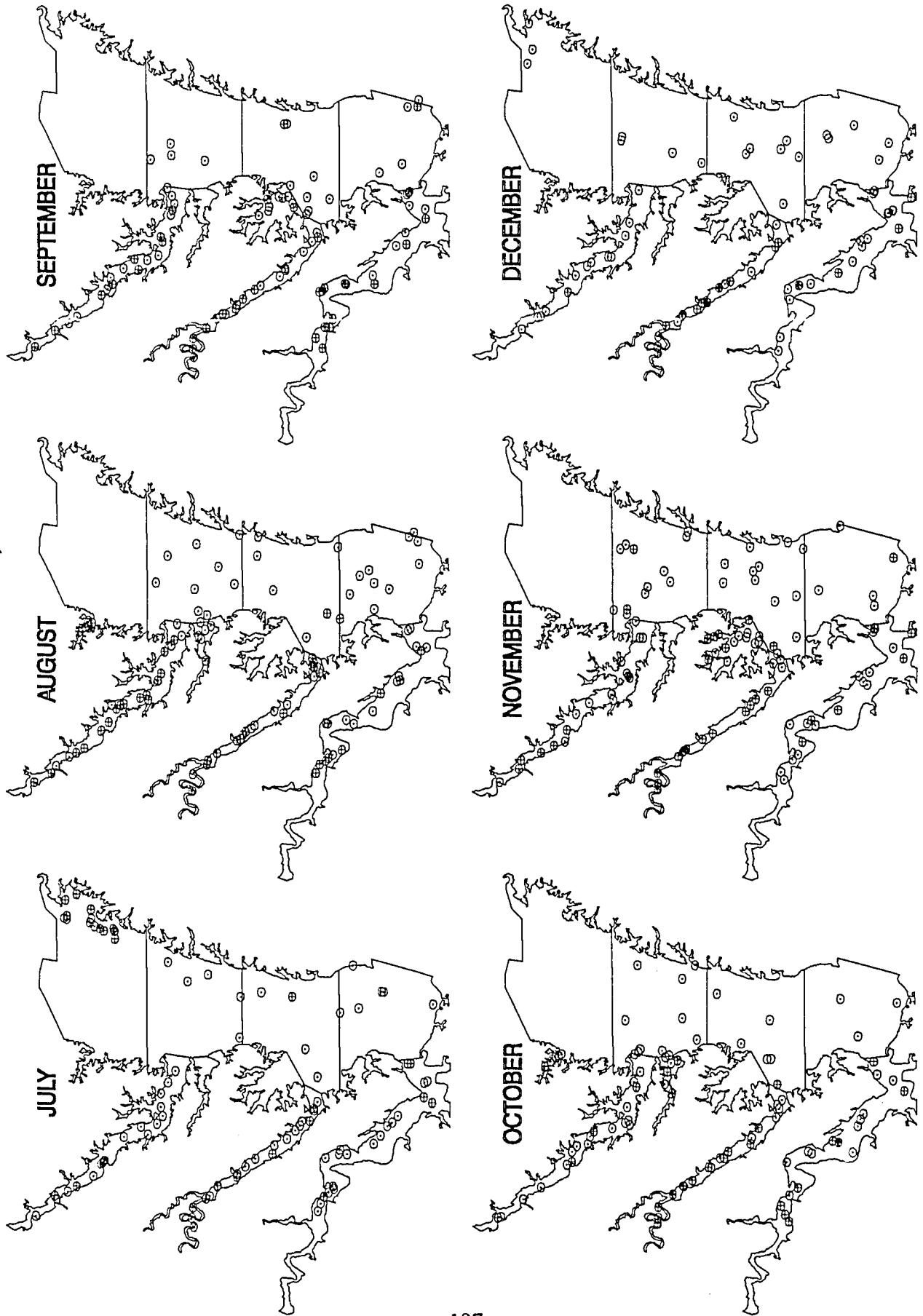
⊕ = 10 to 99

⊗ = 100 to 999

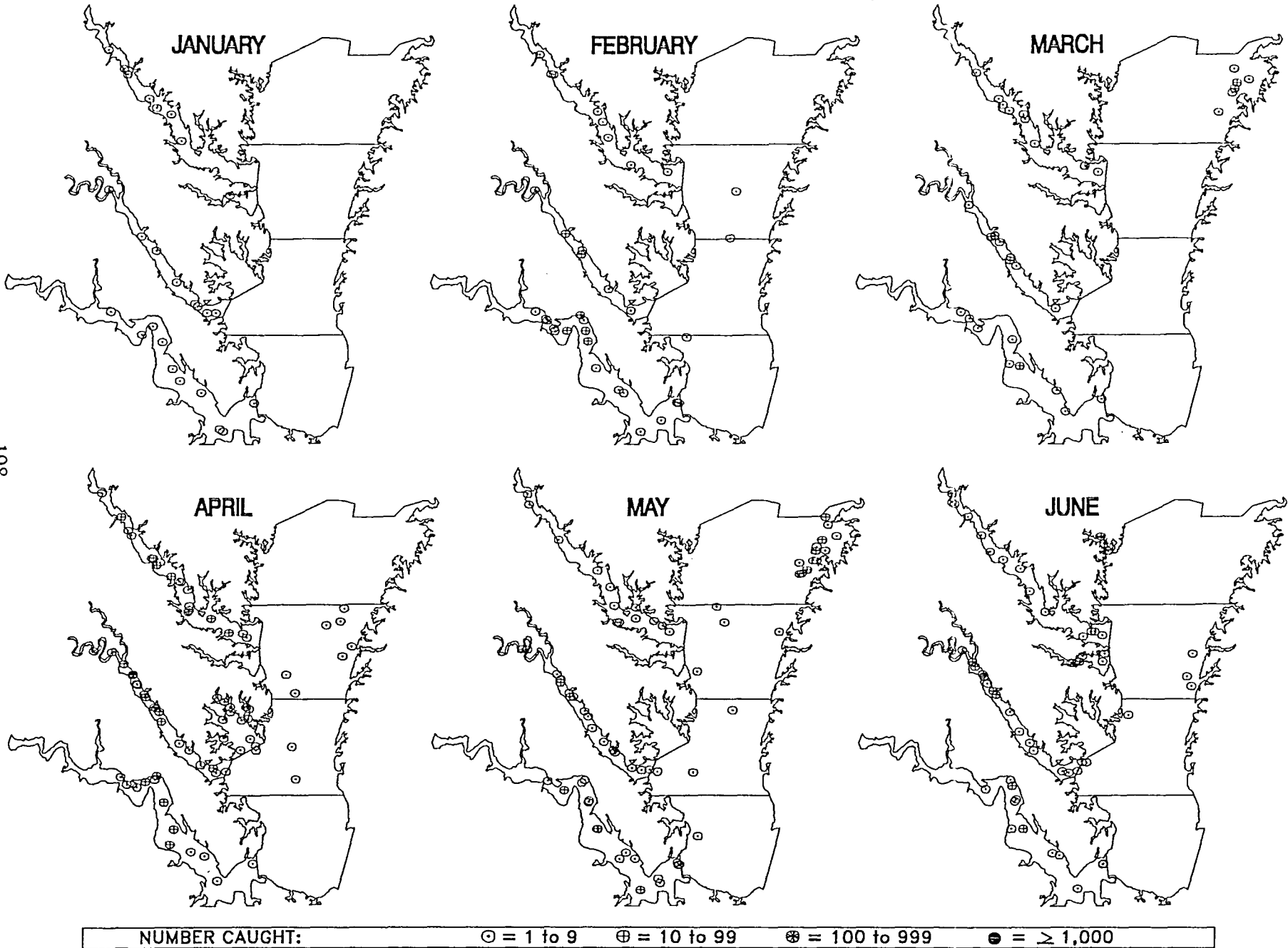
● = ≥ 1,000



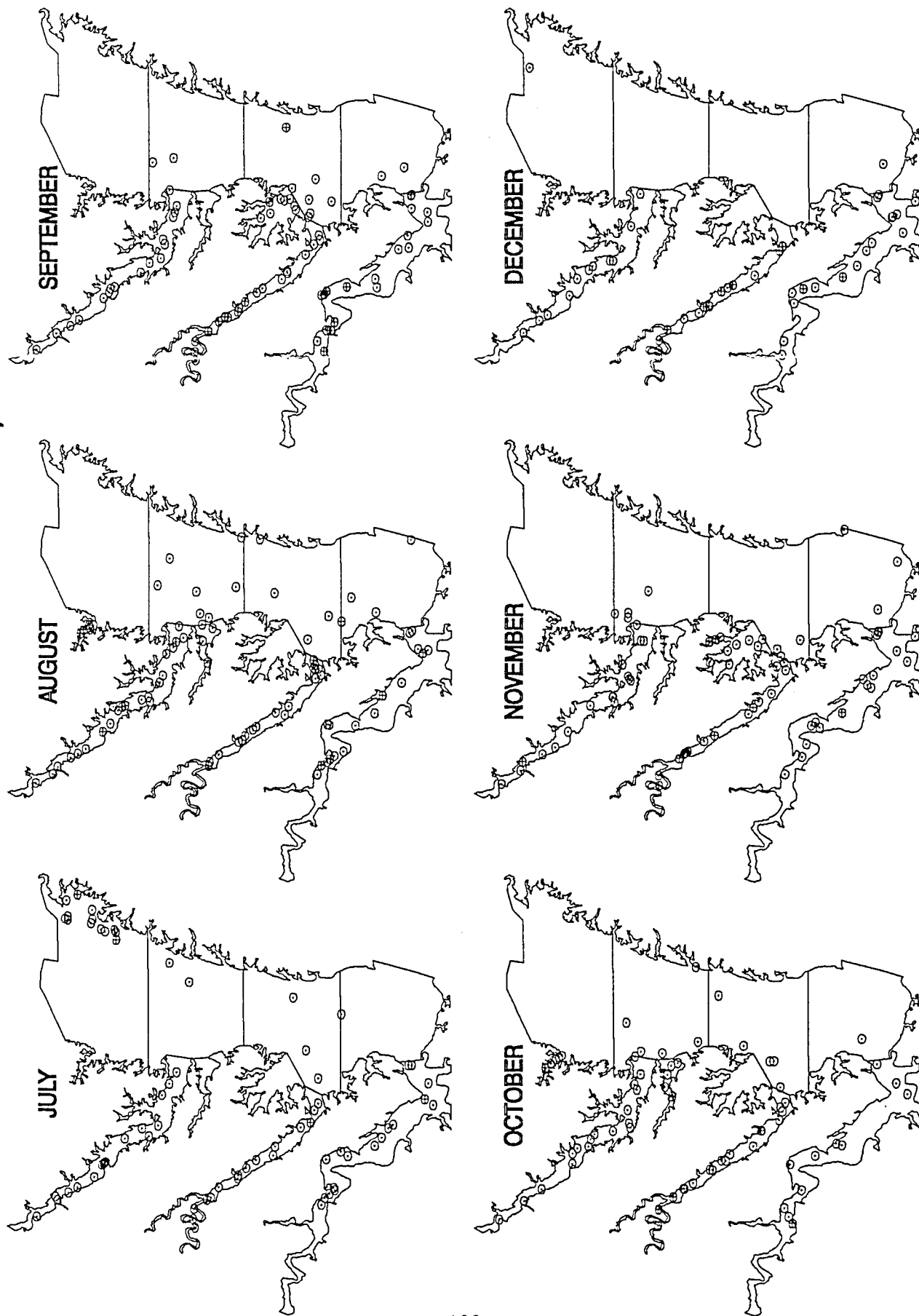
Blue Crab — All, 1999



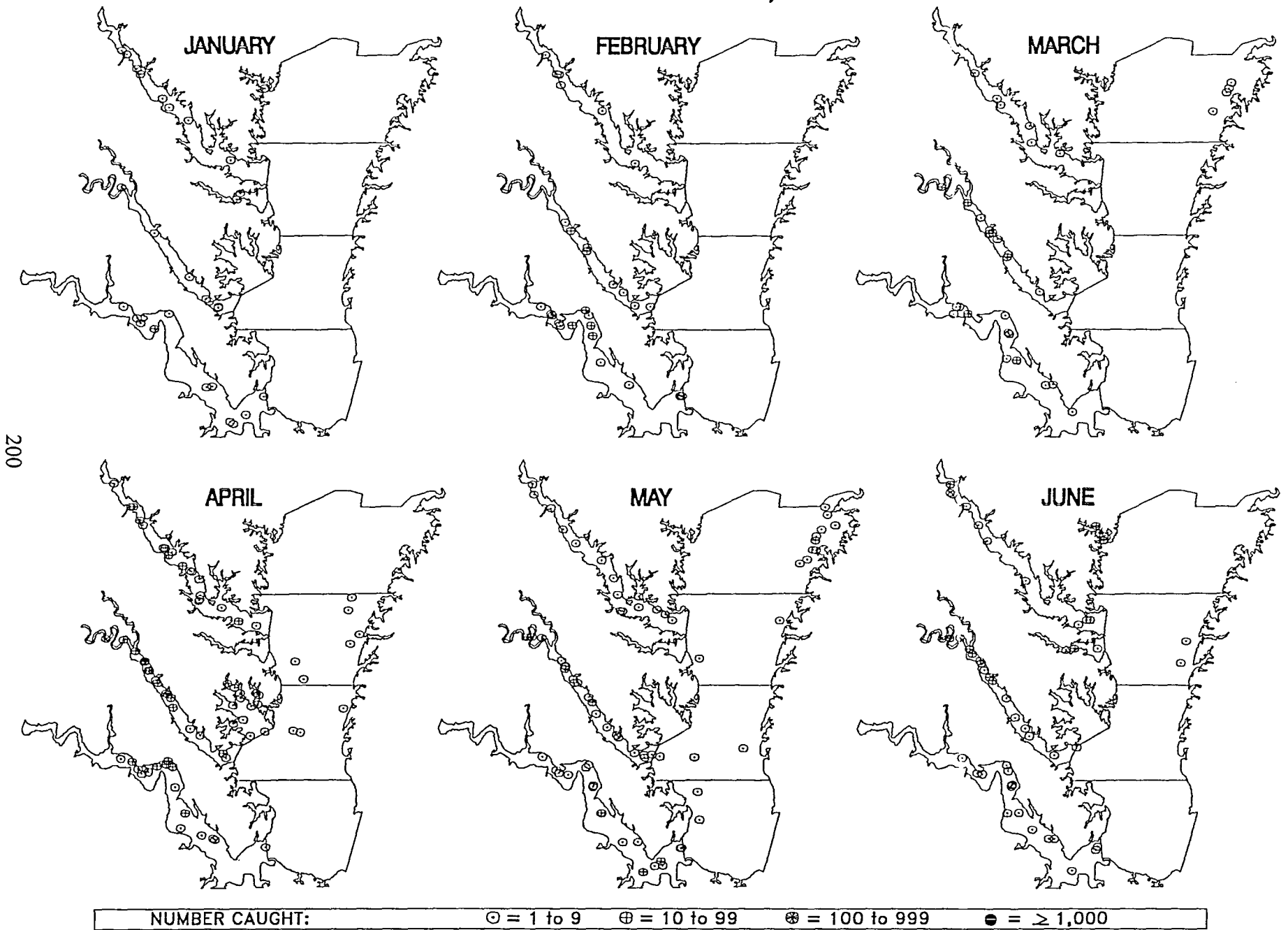
Blue Crab — Juvenile Female, 1999



Blue Crab - Juvenile Female, 1999



Blue Crab – Male, 1999

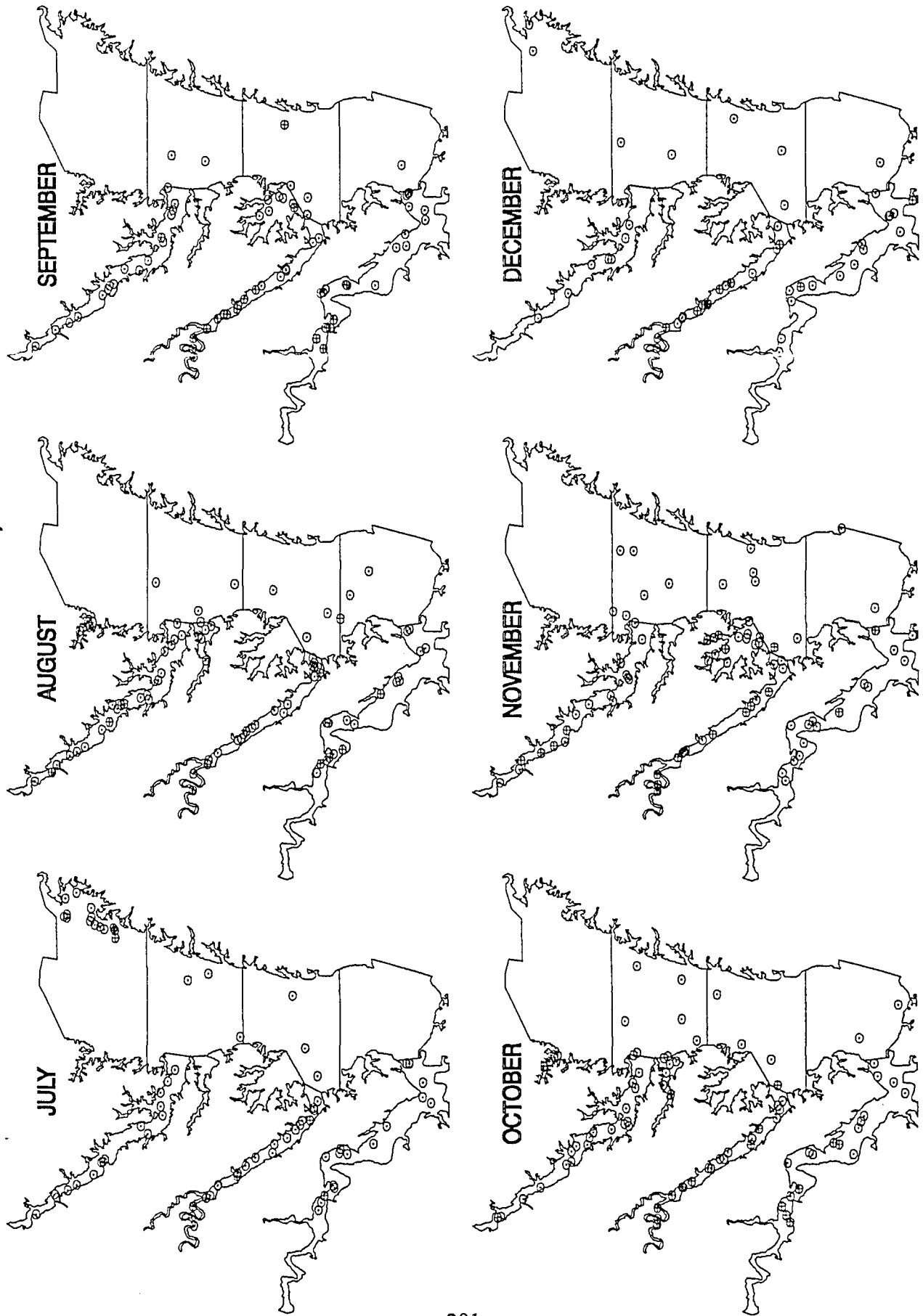


200

Figure 28.



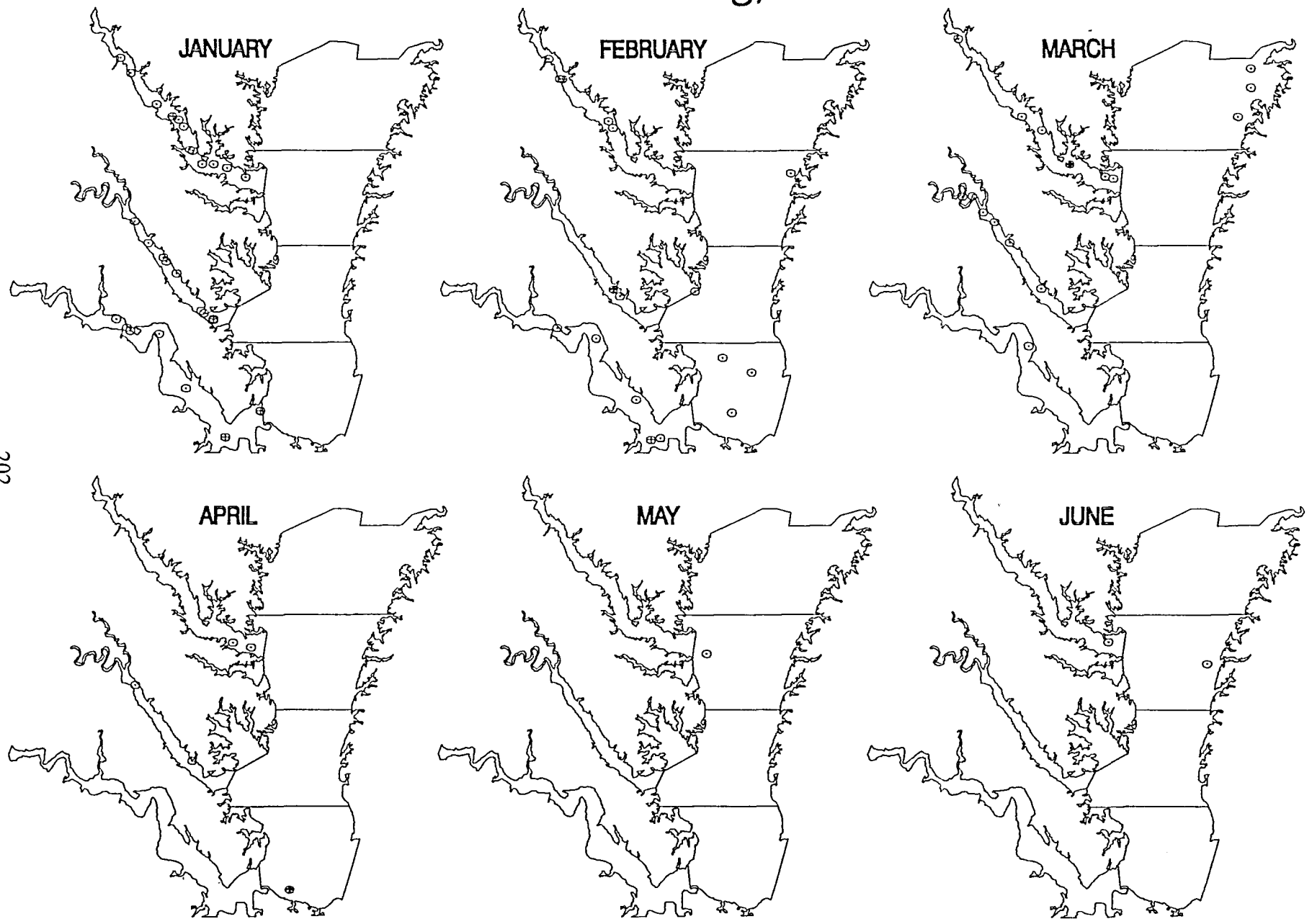
Blue Crab — Male, 1999



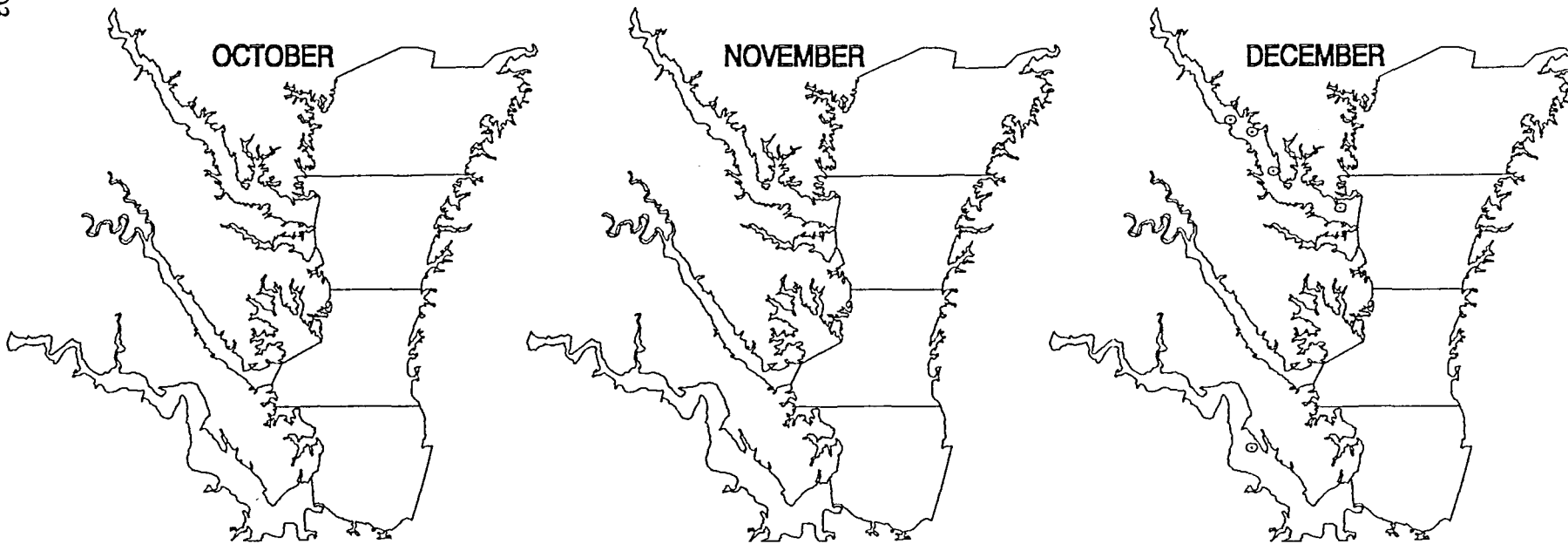
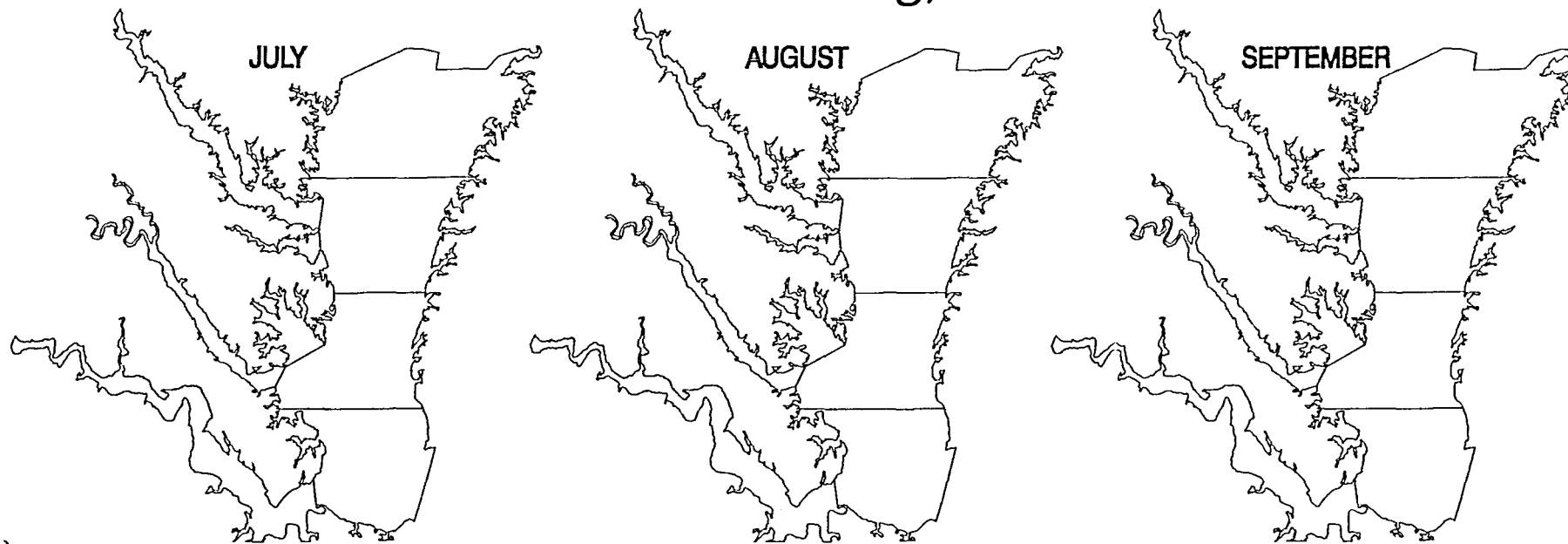
NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = ≥ 1,000

Figure 29.

Blueback Herring, 1999

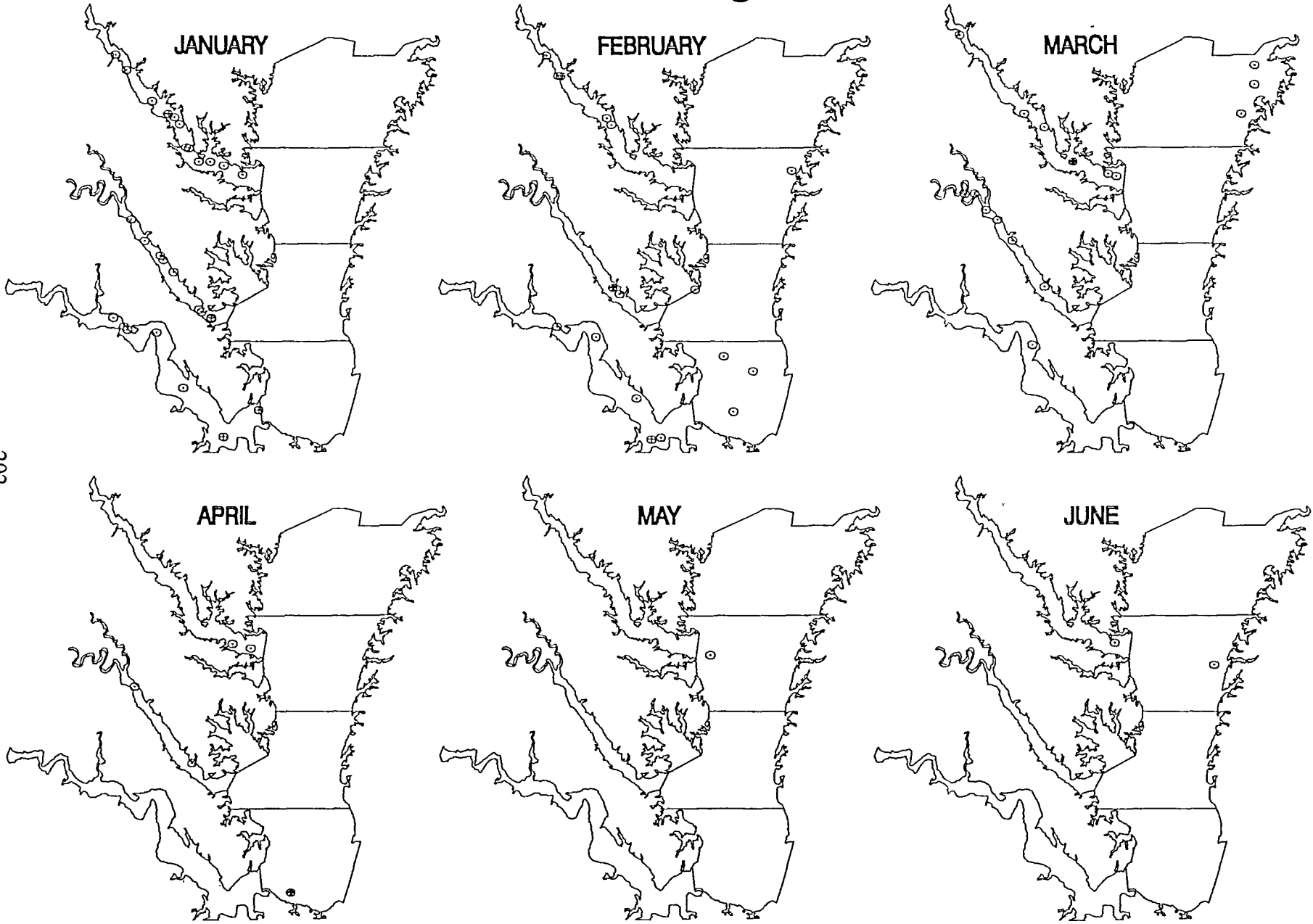


Blueback Herring, 1999



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

Blueback Herring, 1999



NUMBER CAUGHT:

⊙ = 1 to 9

⊕ = 10 to 99

⊗ = 100 to 999

● = ≥ 1,000



Blueback Herring, 1999

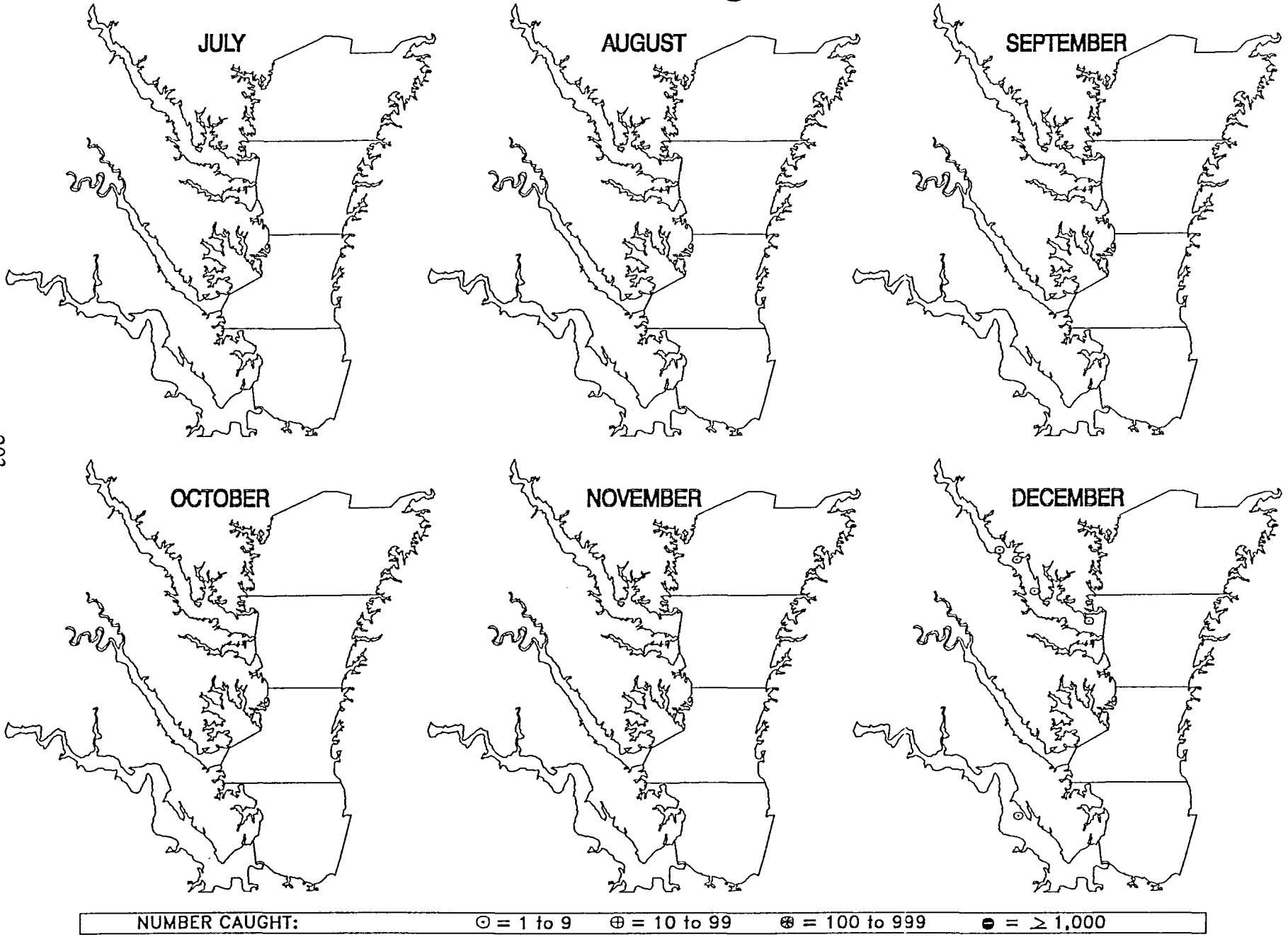
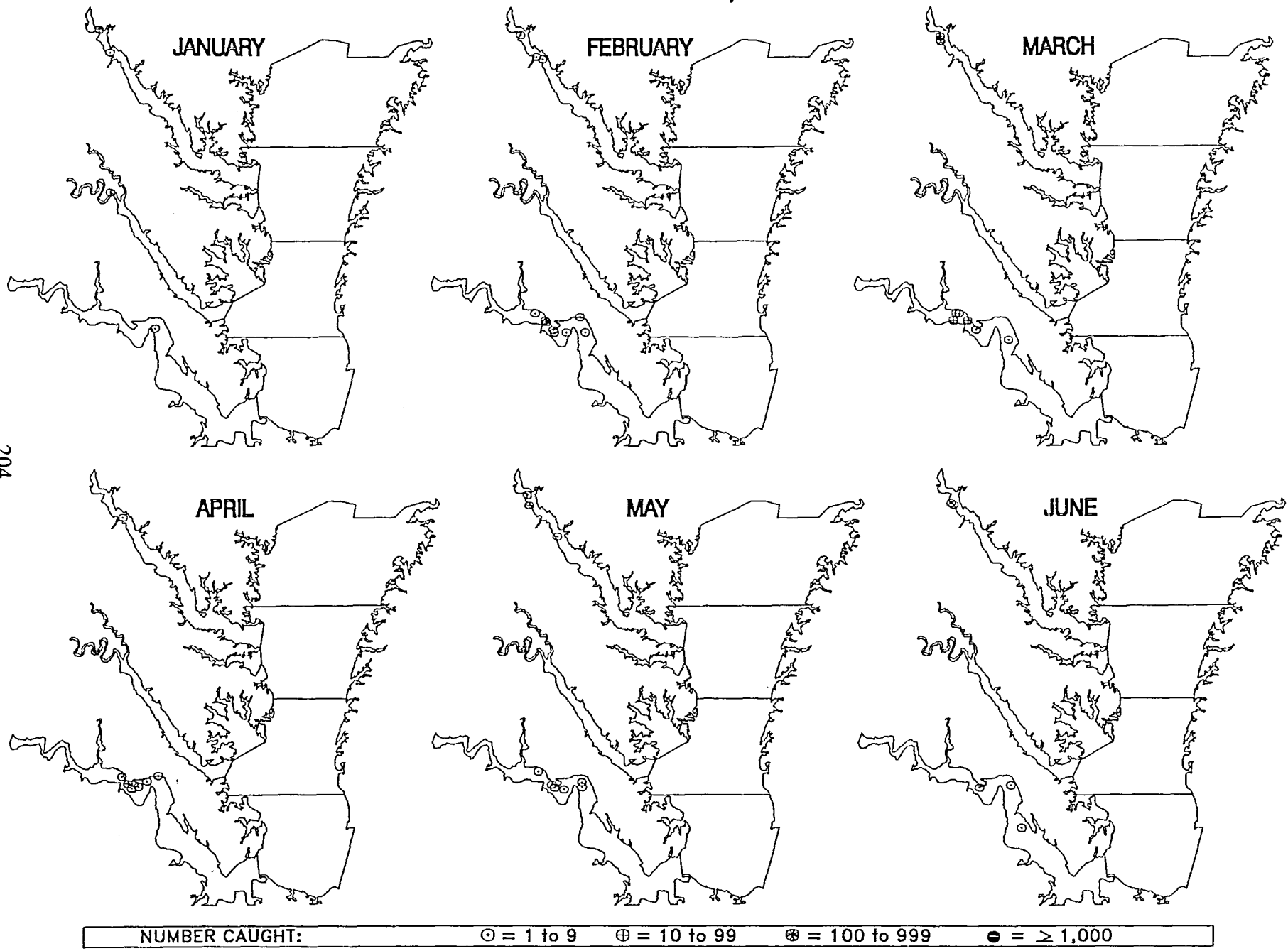
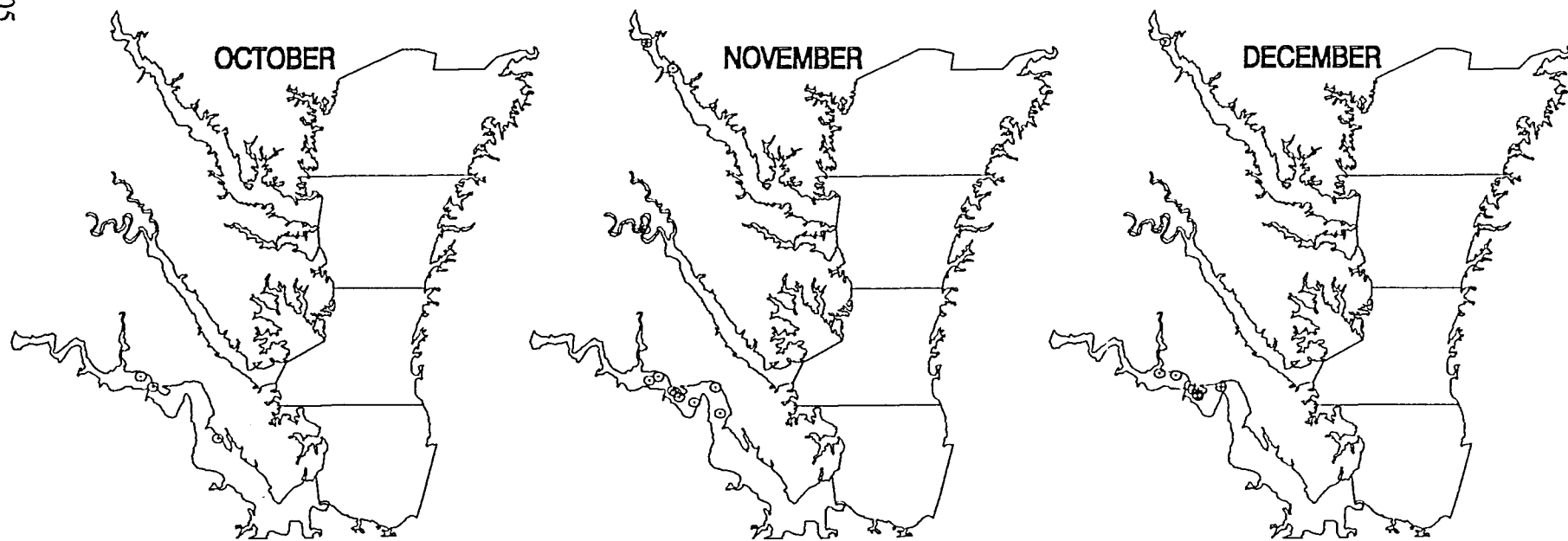
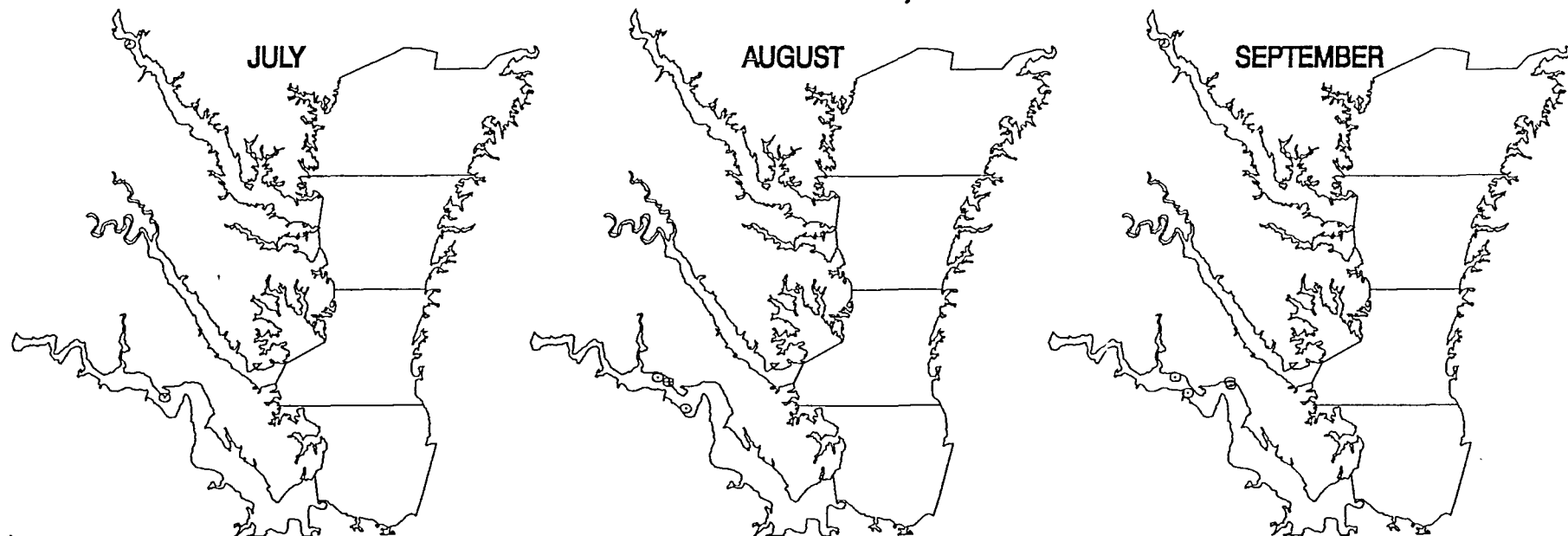


Figure 30.

Channel Catfish, 1999

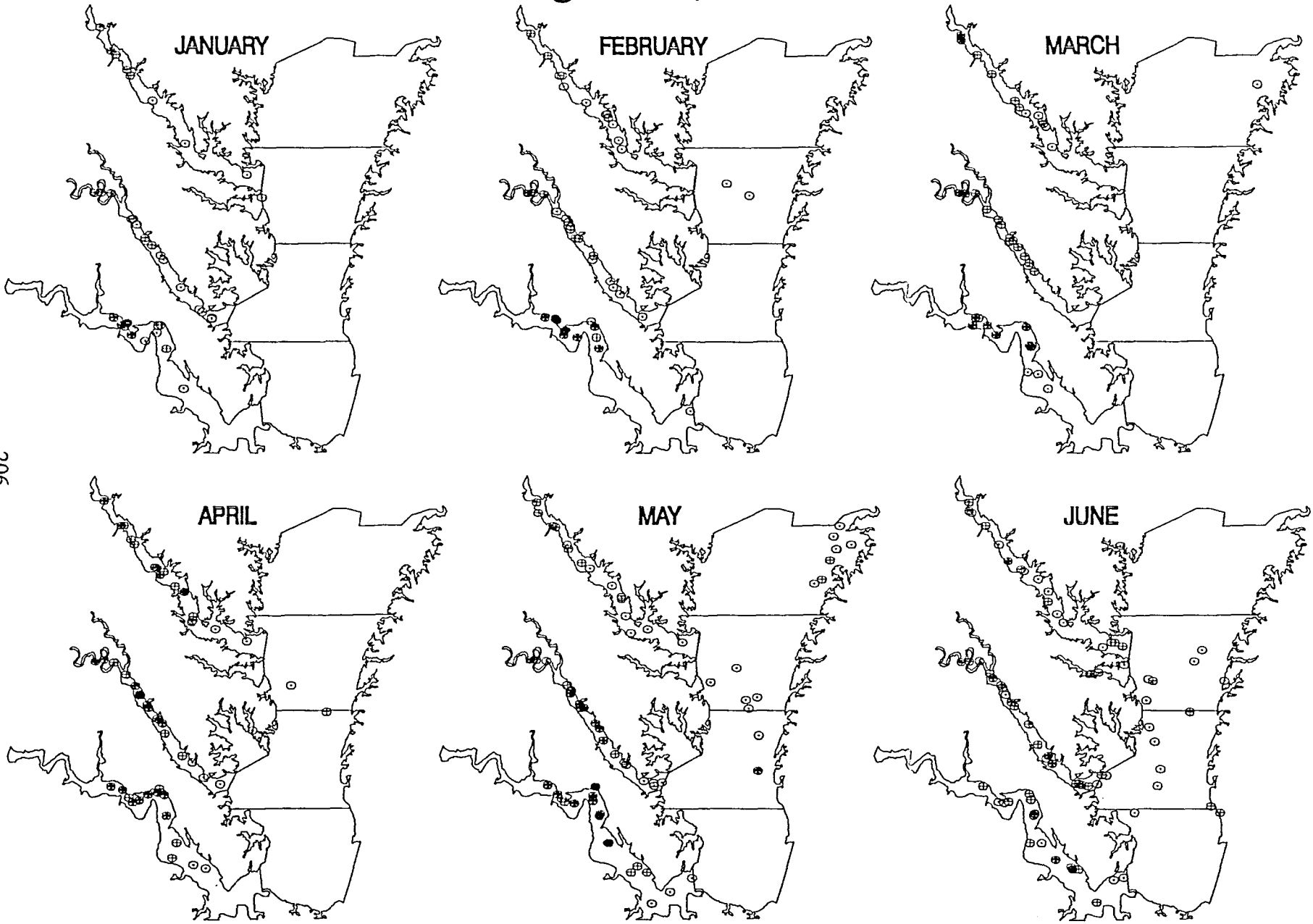


Channel Catfish, 1999



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

Hogchoker, 1999



NUMBER CAUGHT:

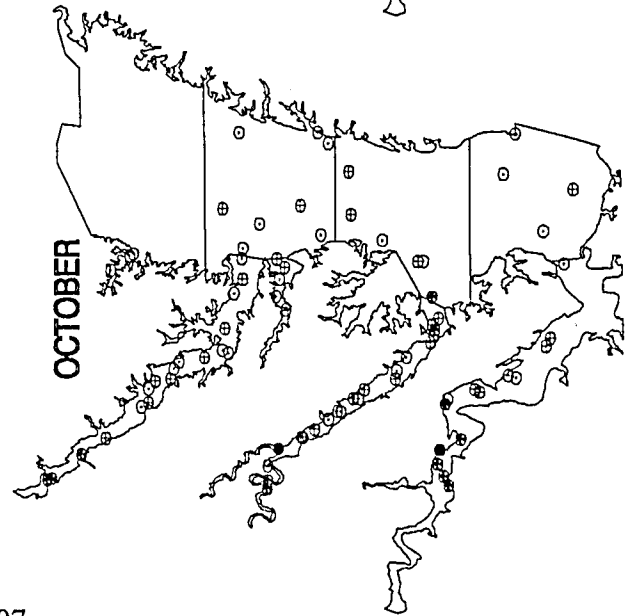
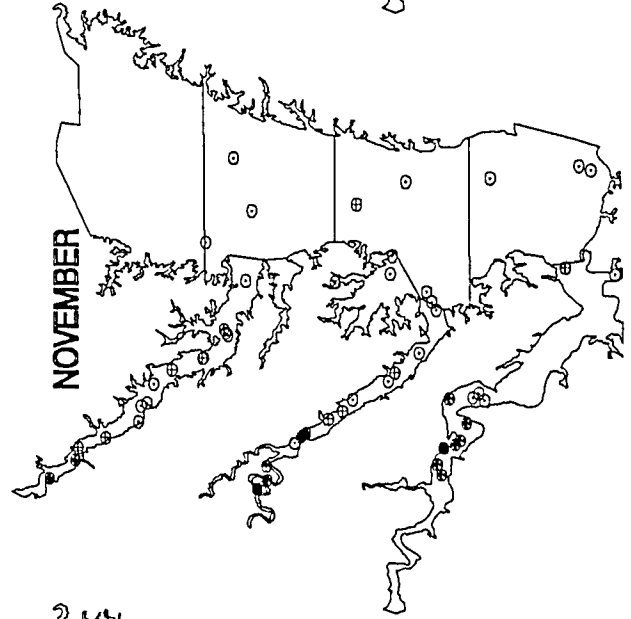
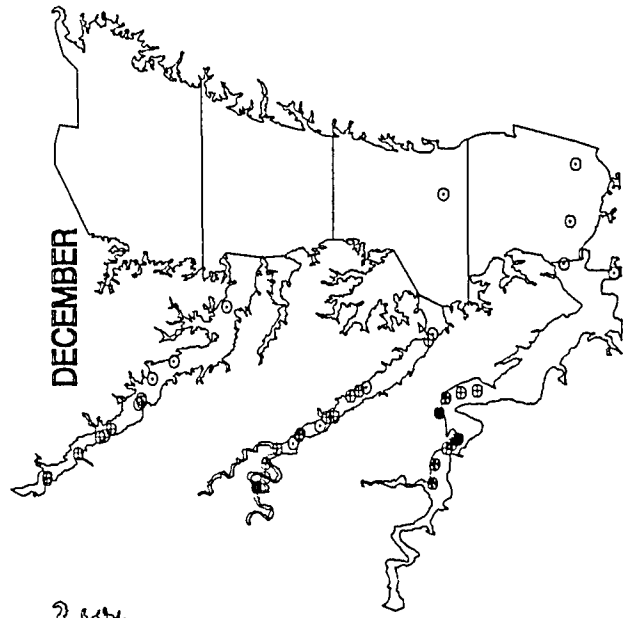
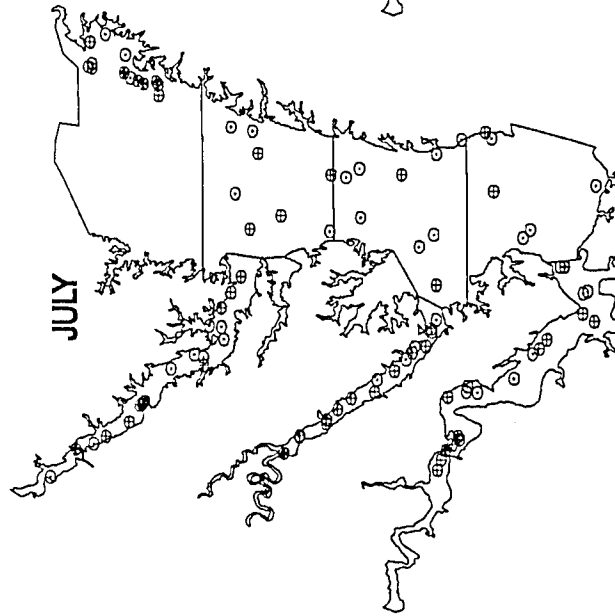
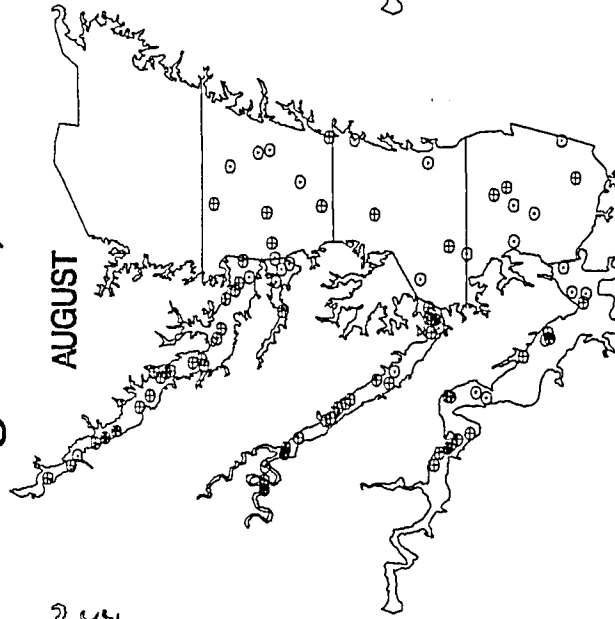
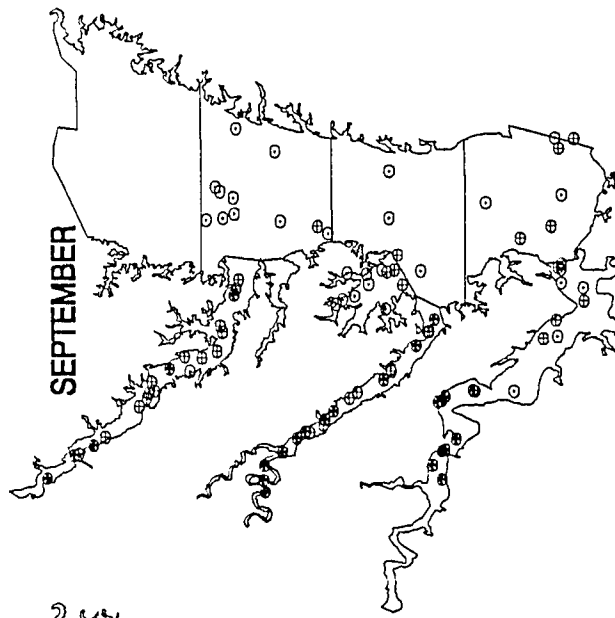
○ = 1 to 9

⊕ = 10 to 99

⊗ = 100 to 999

● = ≥ 1,000

Hogchoker, 1999



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

Kingfish, 1999

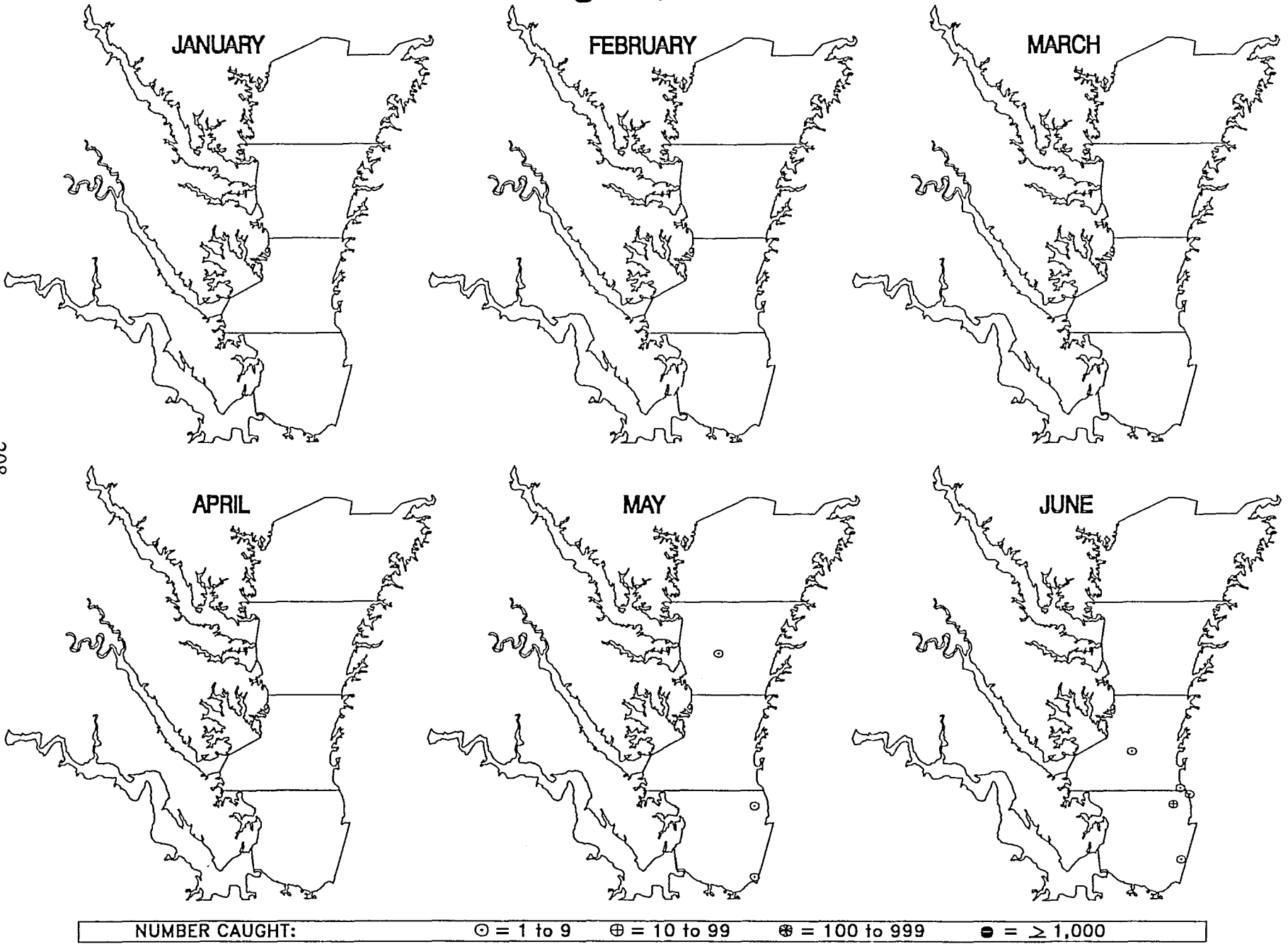
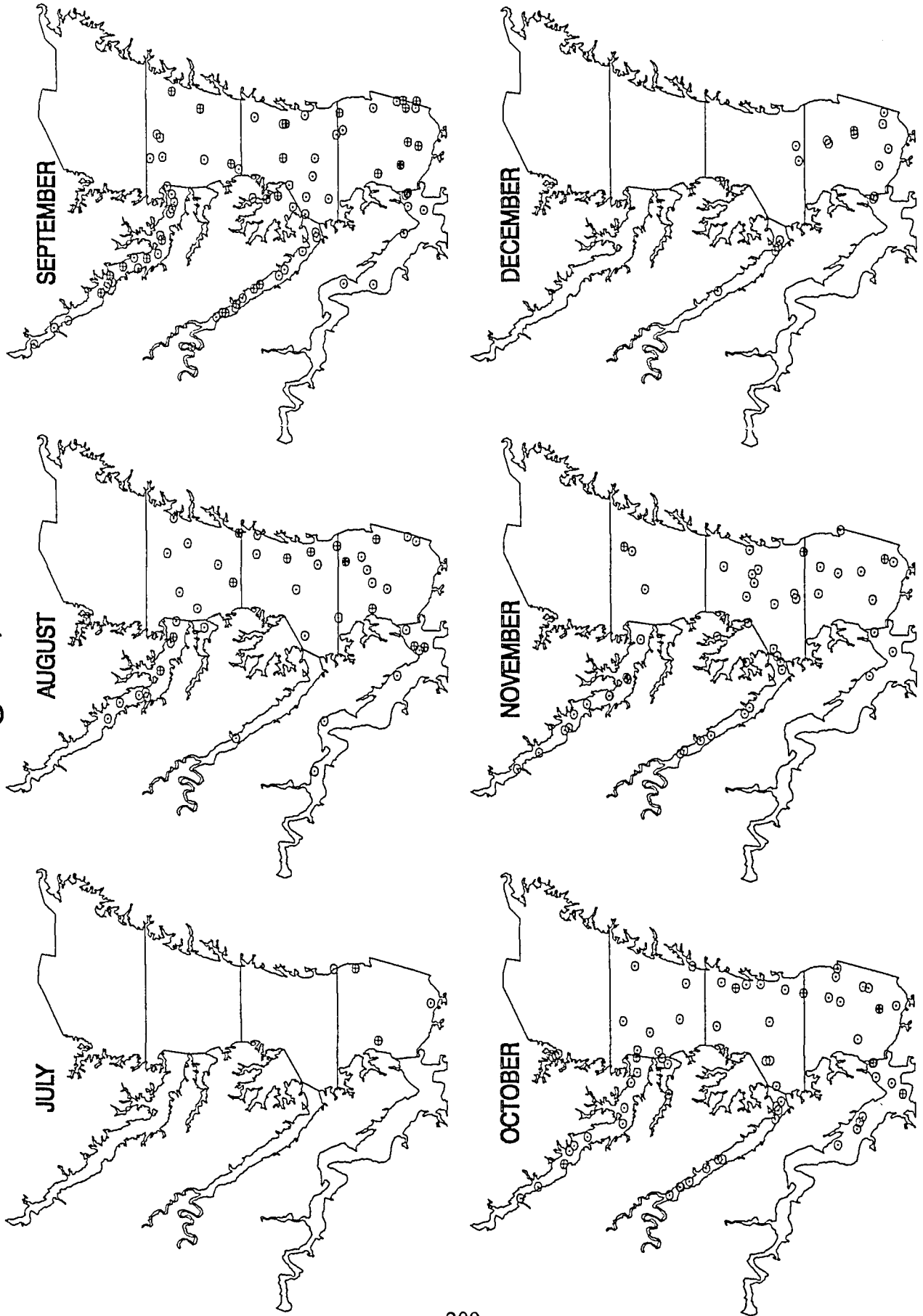
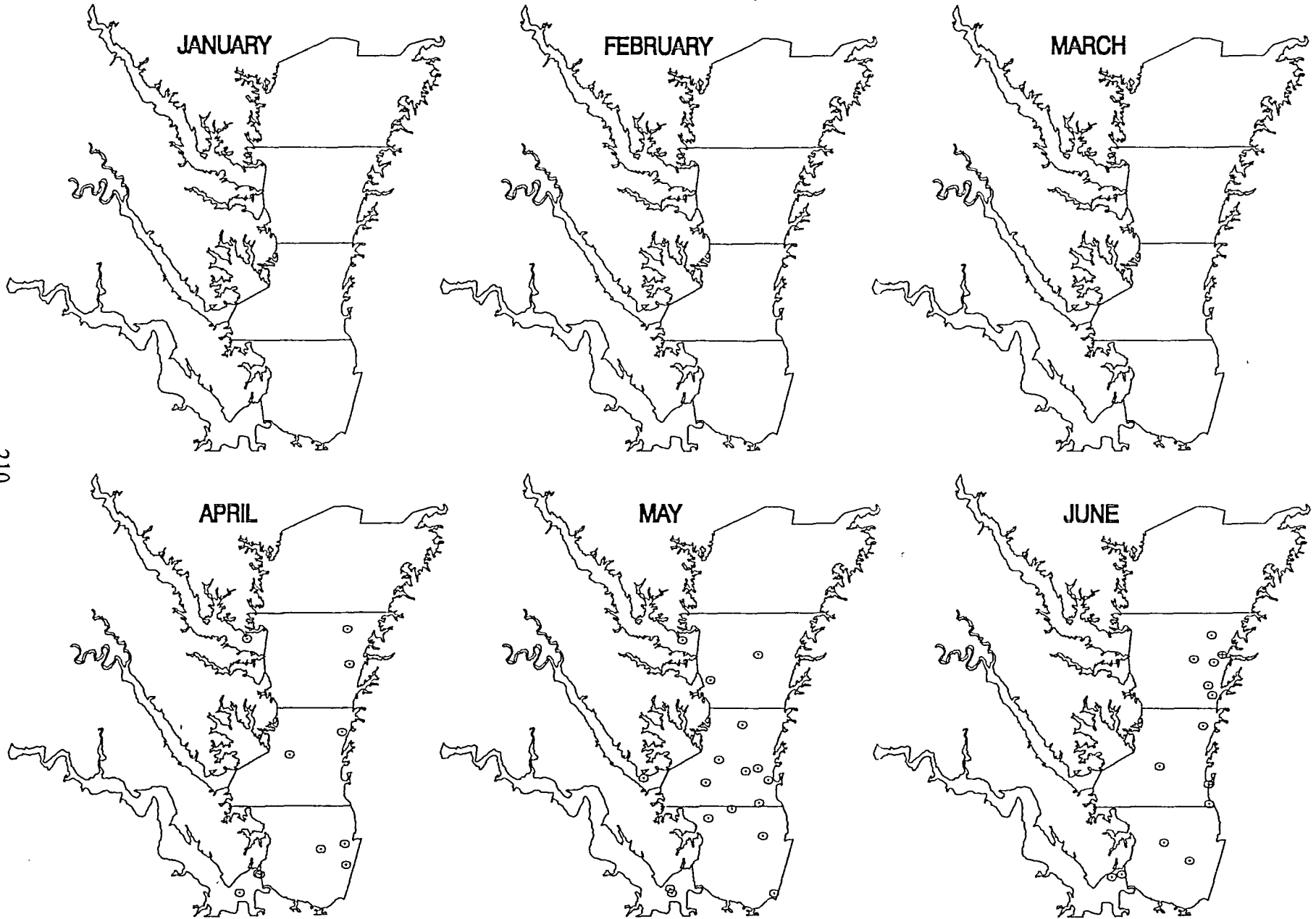


Figure 32. (cont.)

Kingfish, 1999



Black Sea Bass, 1999



NUMBER CAUGHT:

○ = 1 to 9

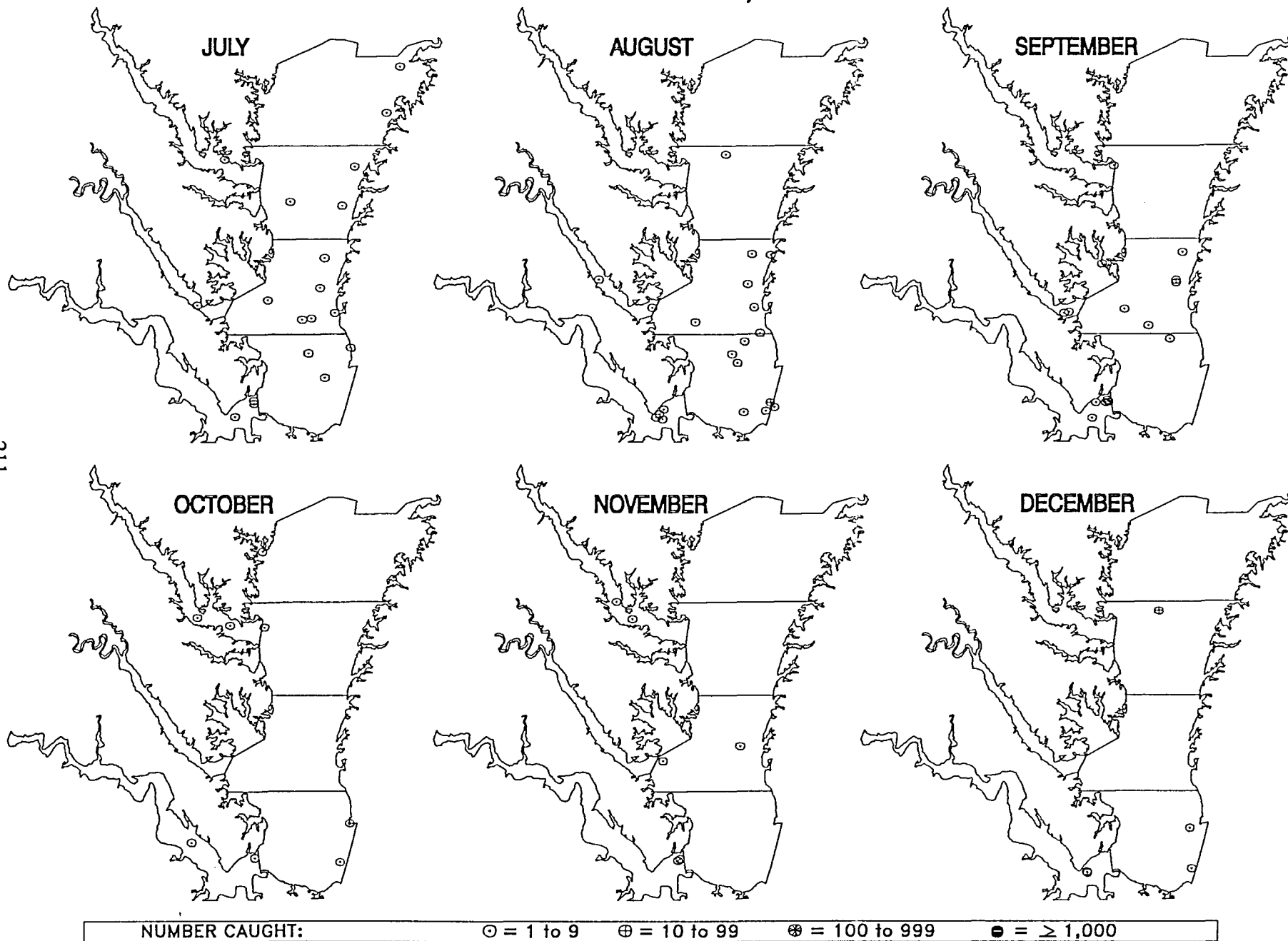
⊕ = 10 to 99

⊗ = 100 to 999

● = ≥ 1,000



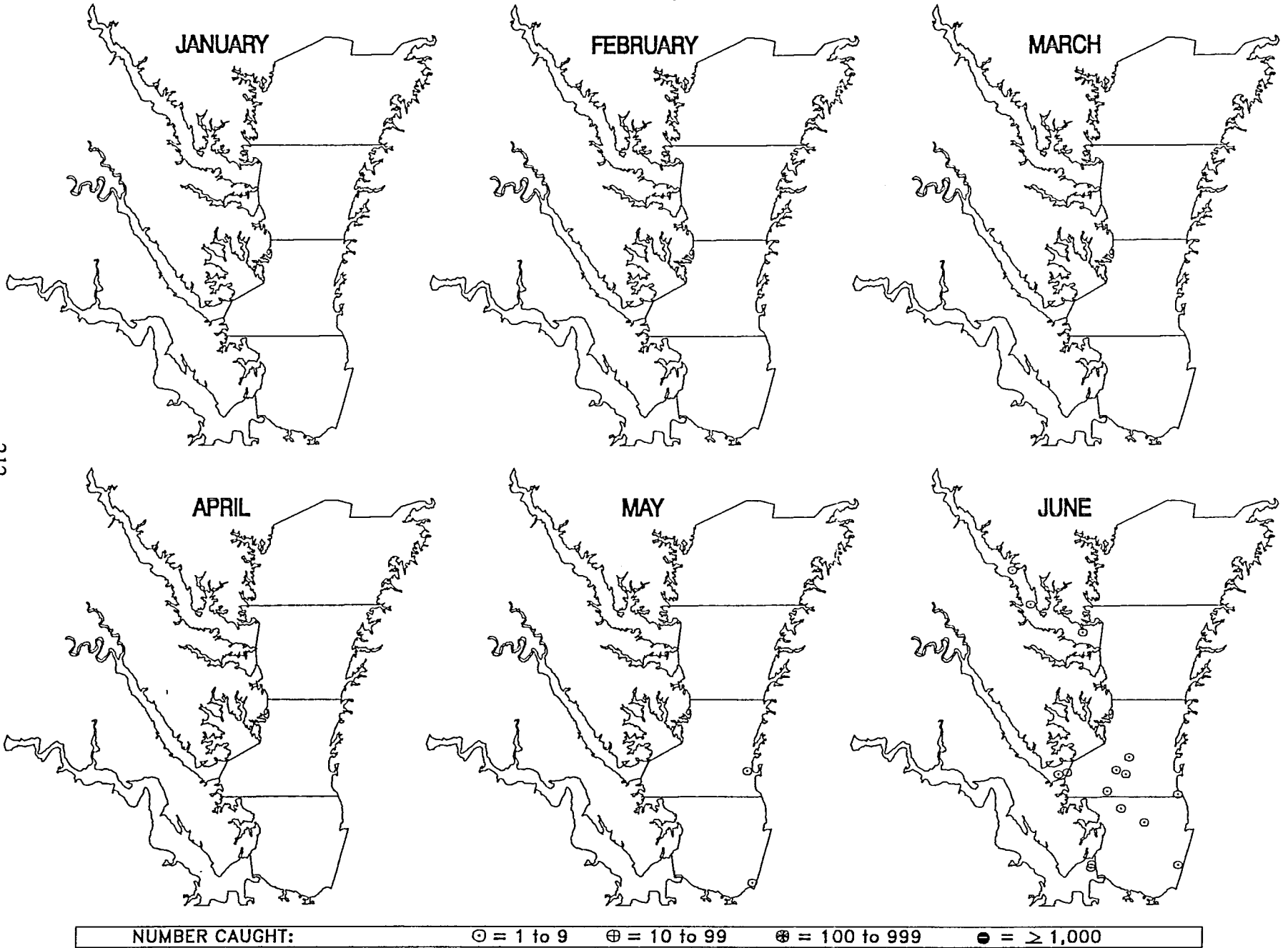
Black Sea Bass, 1999



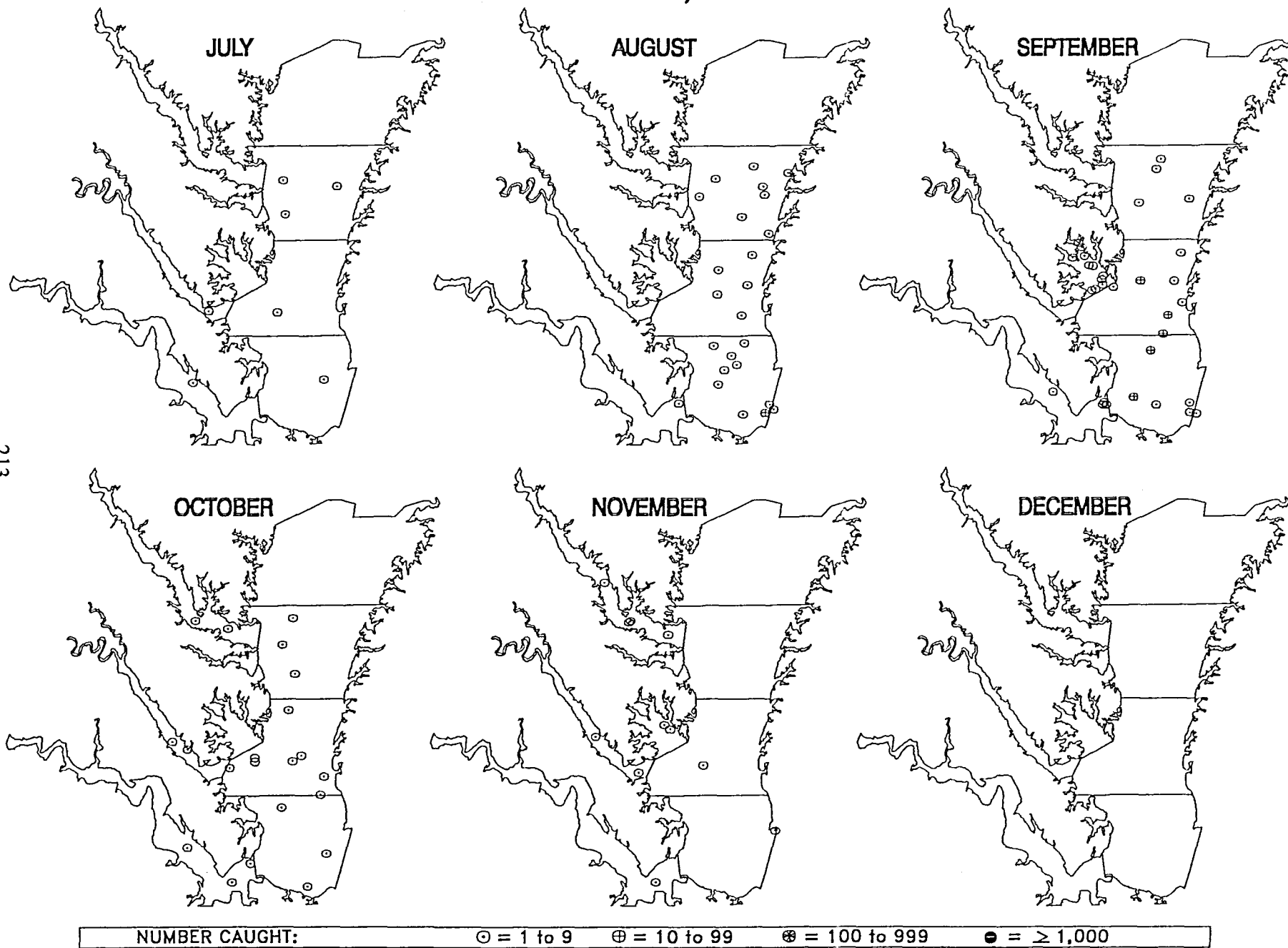
211

Figure 33. (cont.)

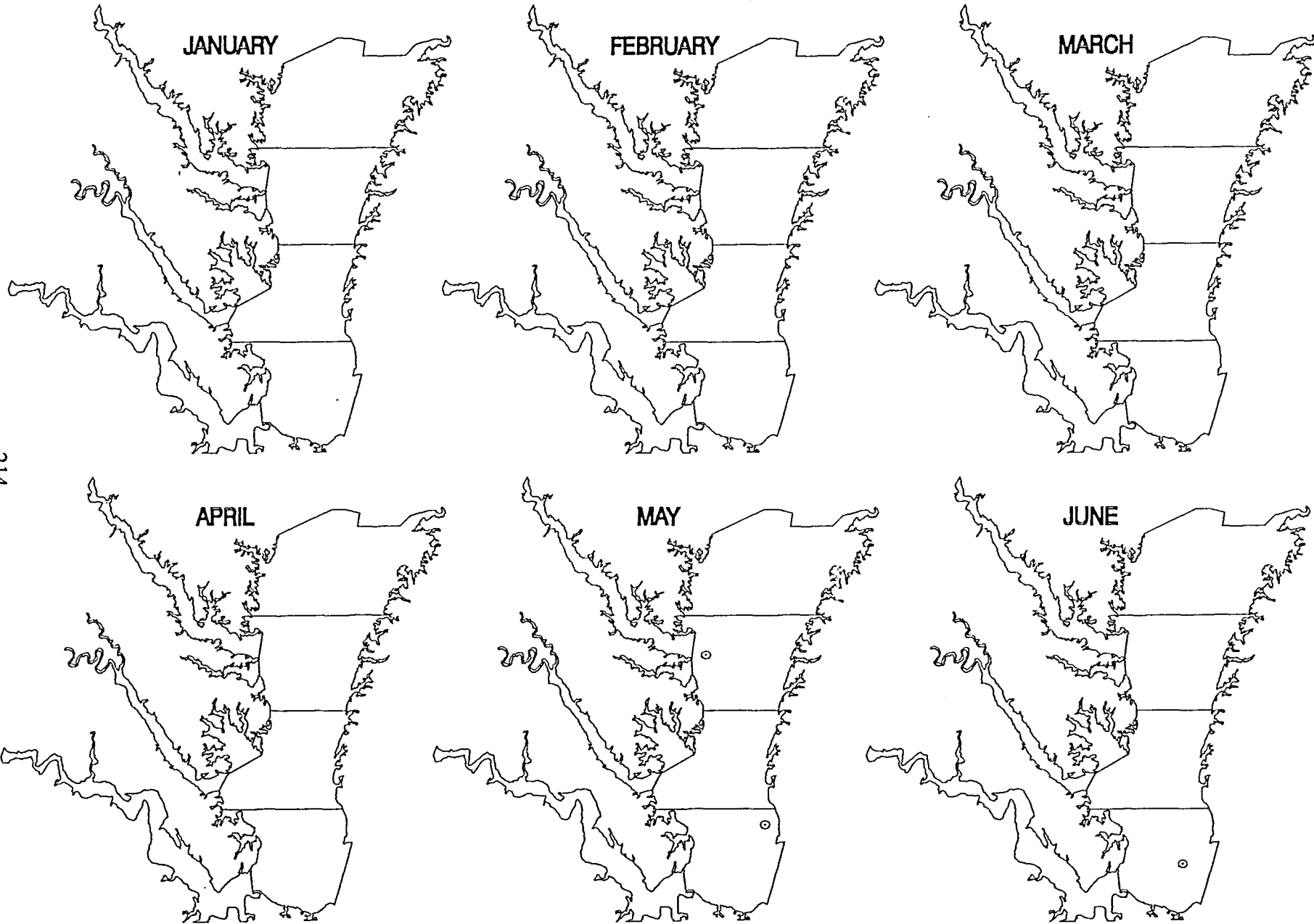
Butterfish, 1999



Butterfish, 1999



Northern Puffer, 1999



NUMBER CAUGHT:

○ = 1 to 9

⊕ = 10 to 99

⊕⊗ = 100 to 999

● = ≥ 1,000



Northern Puffer, 1999

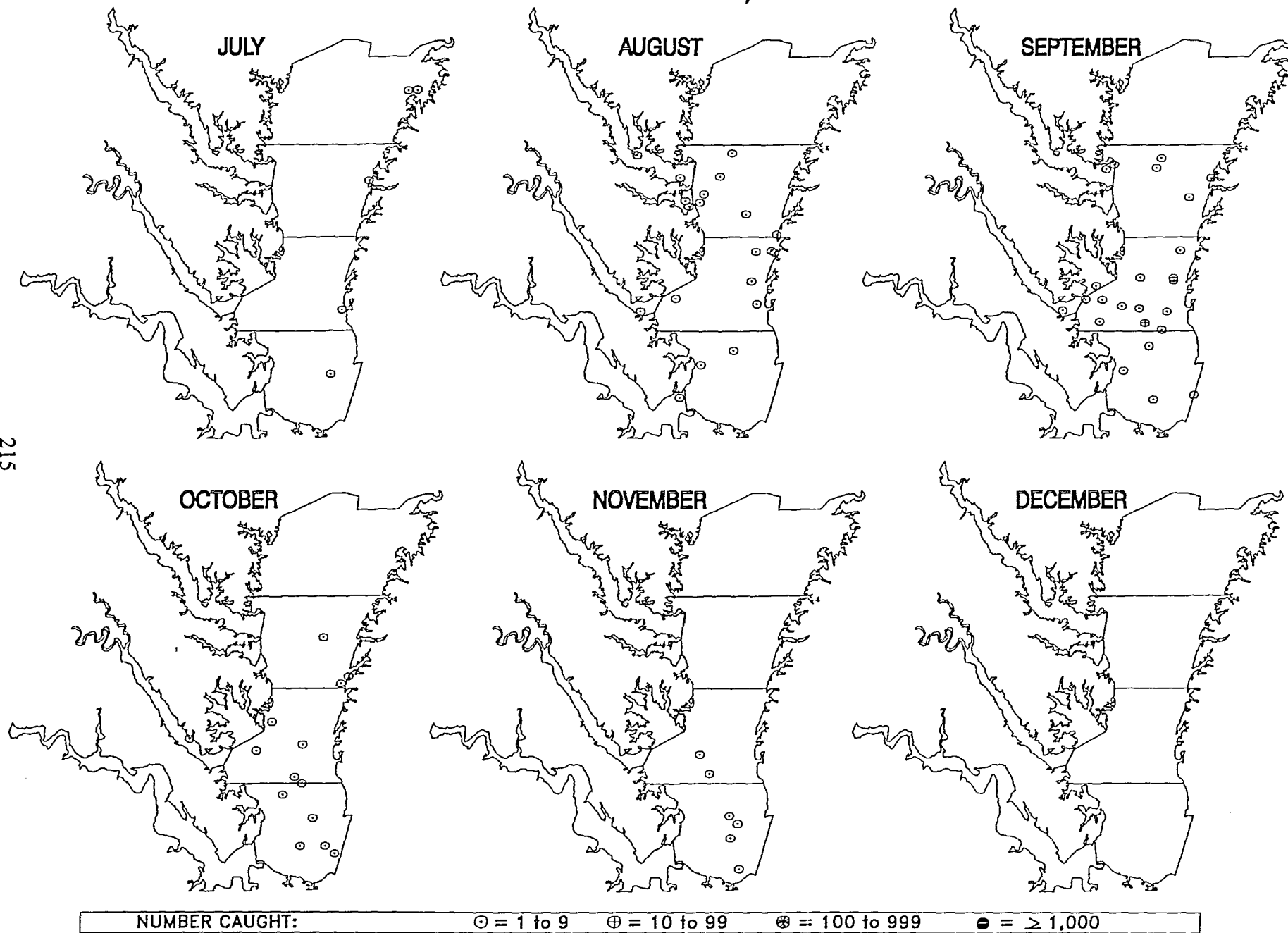
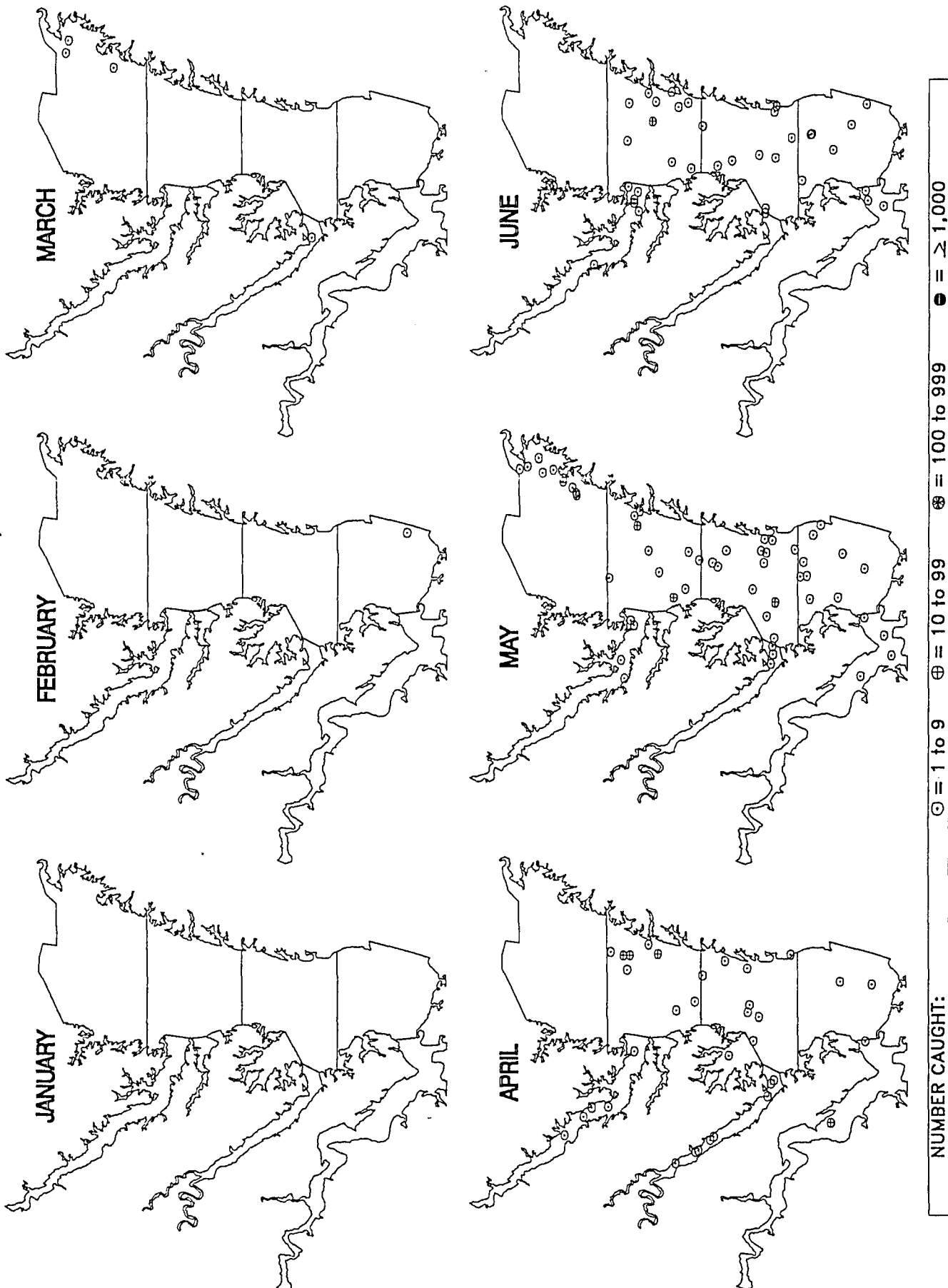
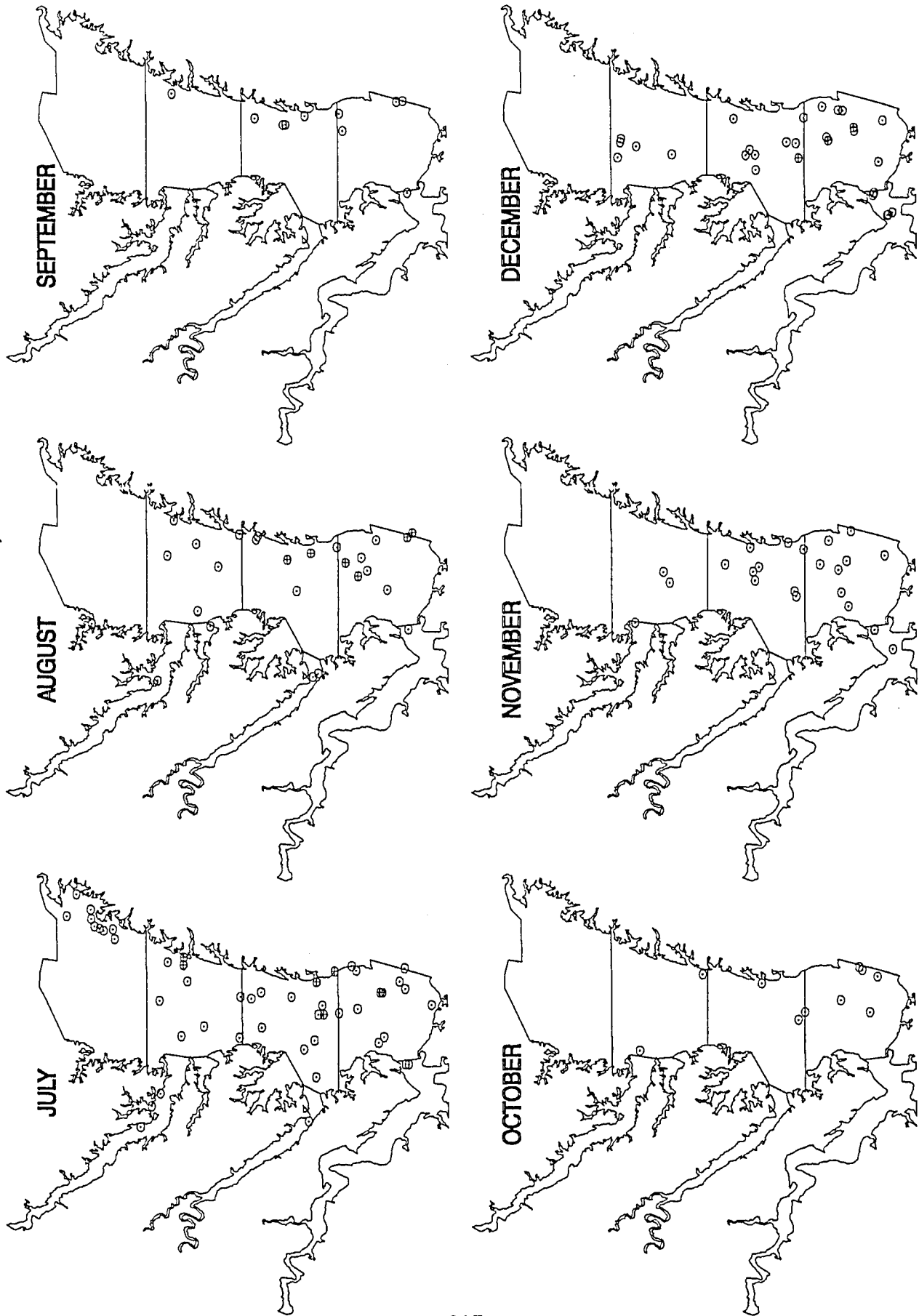


Figure 36.

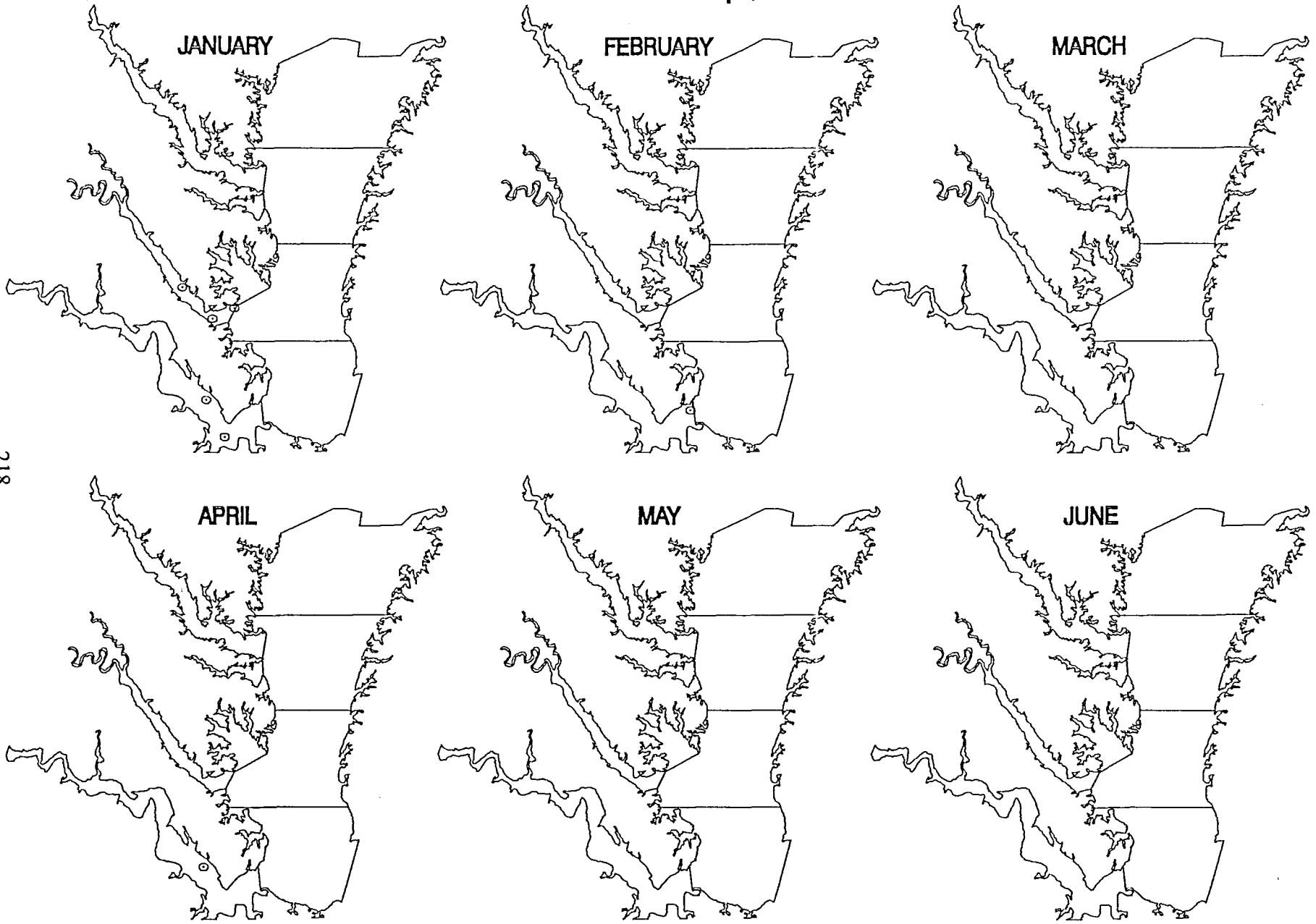
Northern Searobin, 1999



Northern Searobin, 1999



Penaeid Shrimp, 1999



NUMBER CAUGHT:

○ = 1 to 9

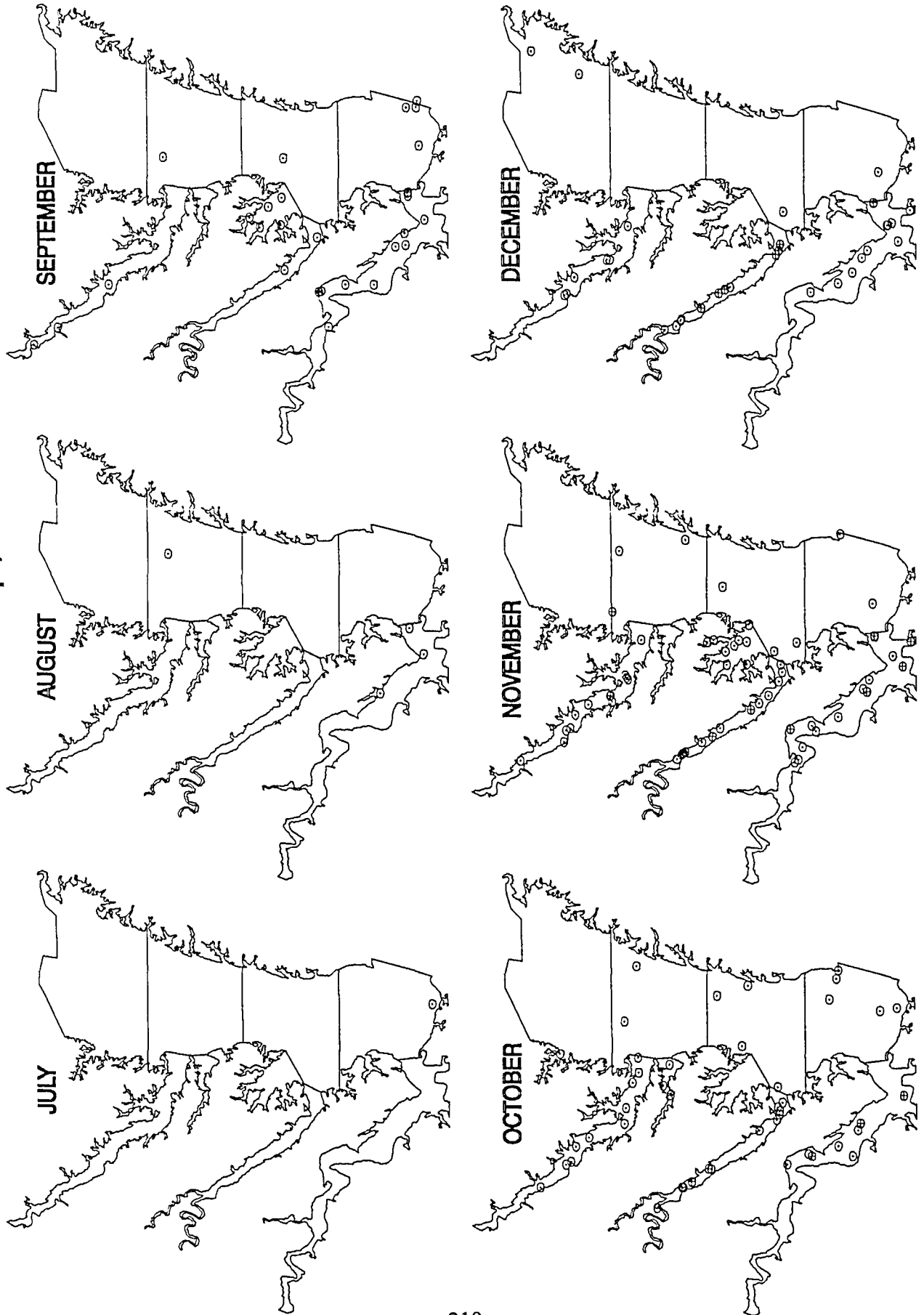
⊕ = 10 to 99

⊗ = 100 to 999

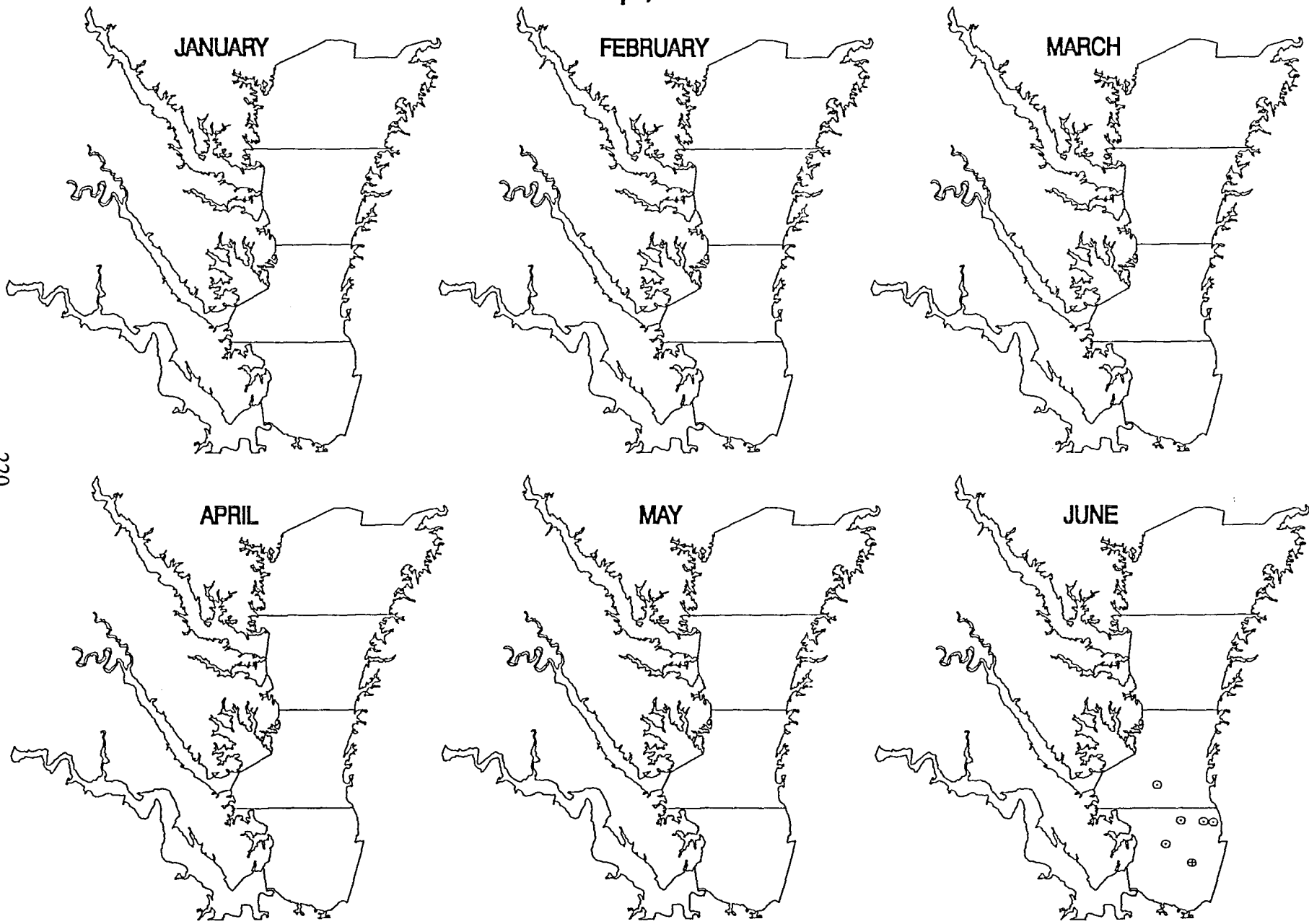
● = ≥ 1,000



Penaeid Shrimp, 1999



Scup, 1999



NUMBER CAUGHT:

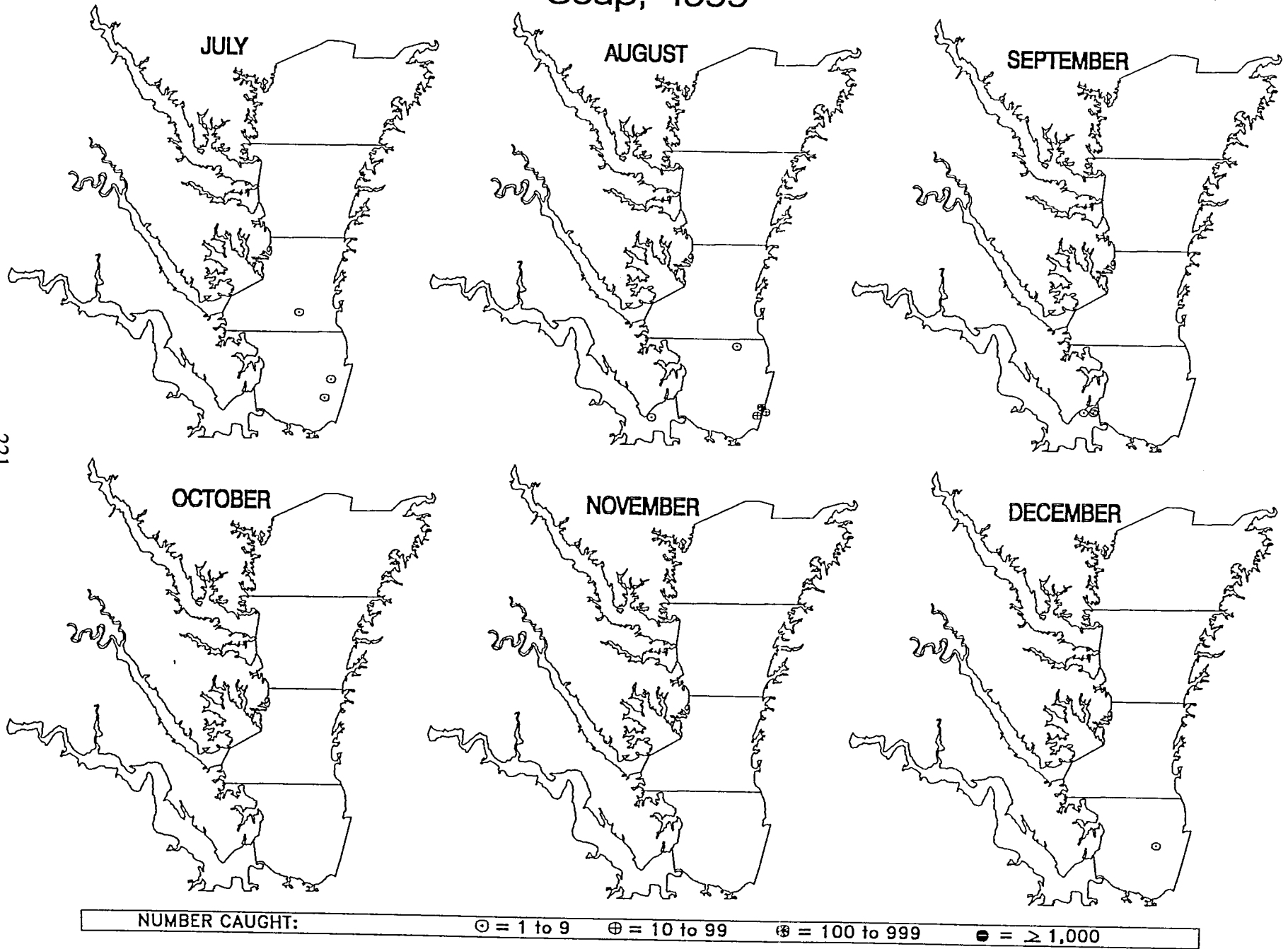
○ = 1 to 9

⊕ = 10 to 99

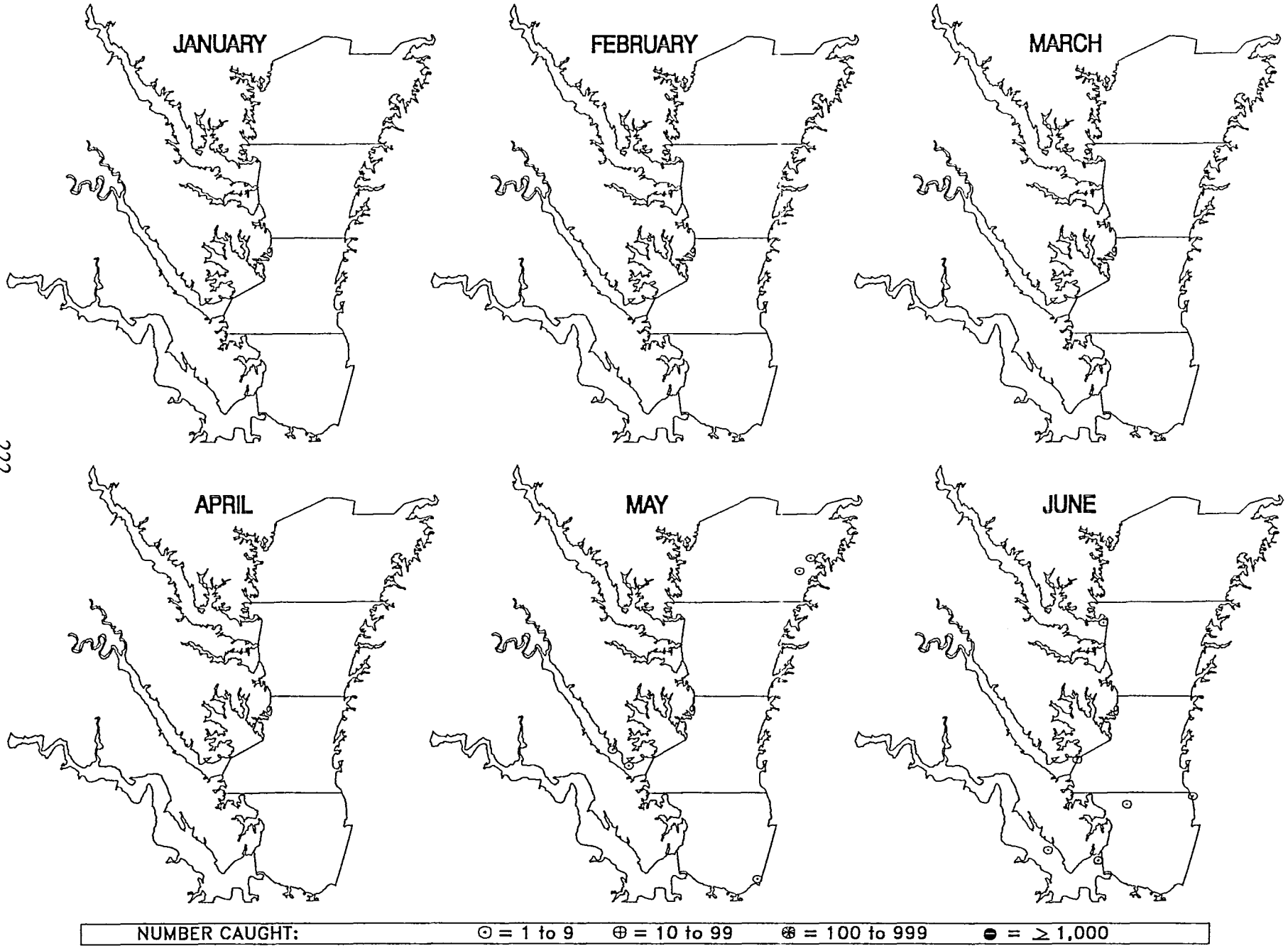
⊗ = 100 to 999

● = ≥ 1,000

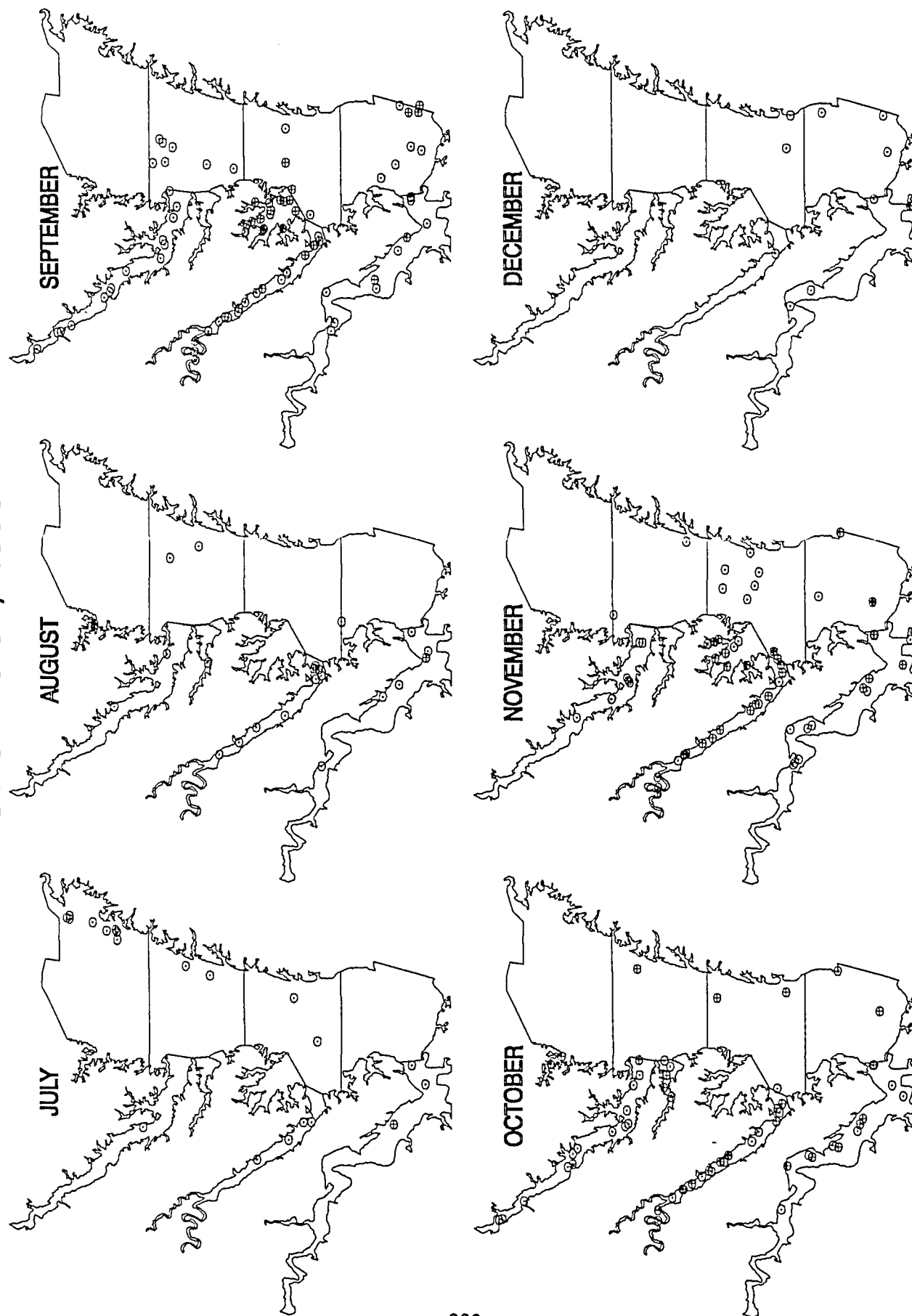
Scup, 1999



Silver Perch, 1999

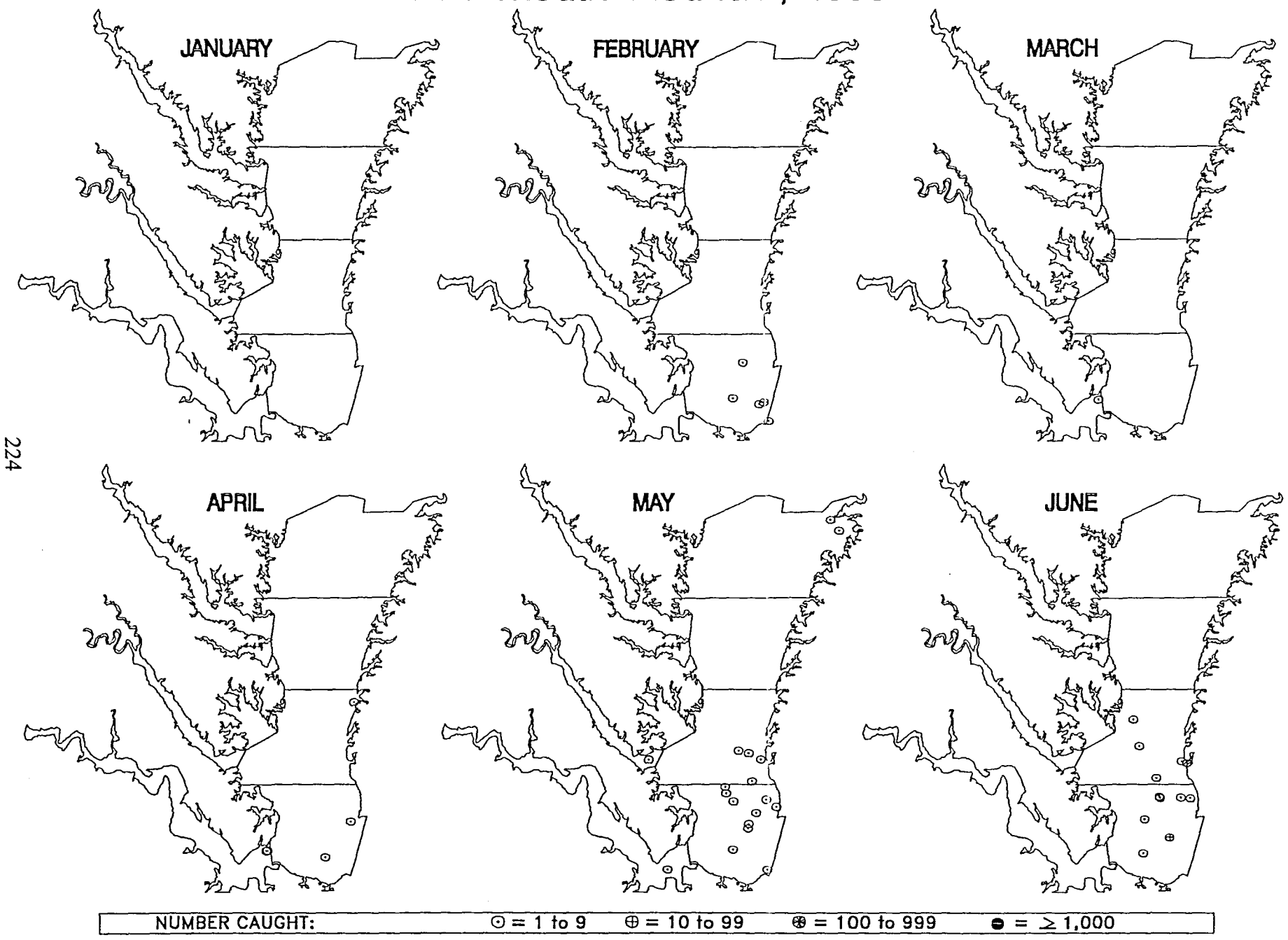


Silver Perch, 1999



Smallmouth Flounder, 1999

Figure 40.



Smallmouth Flounder, 1999

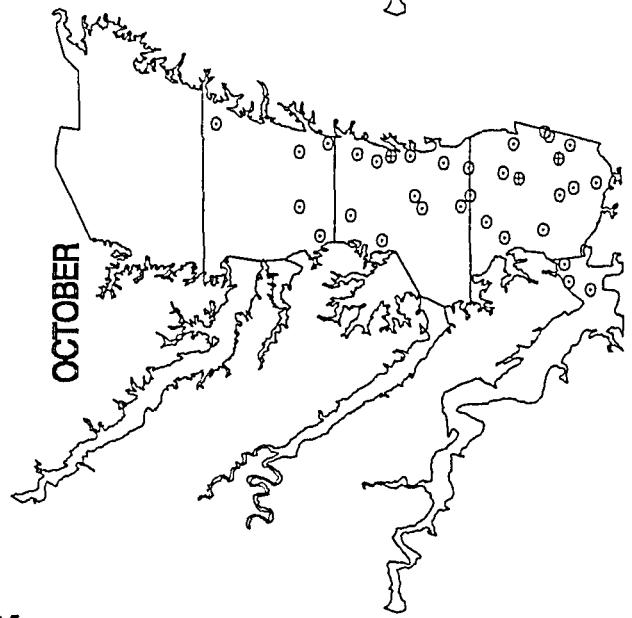
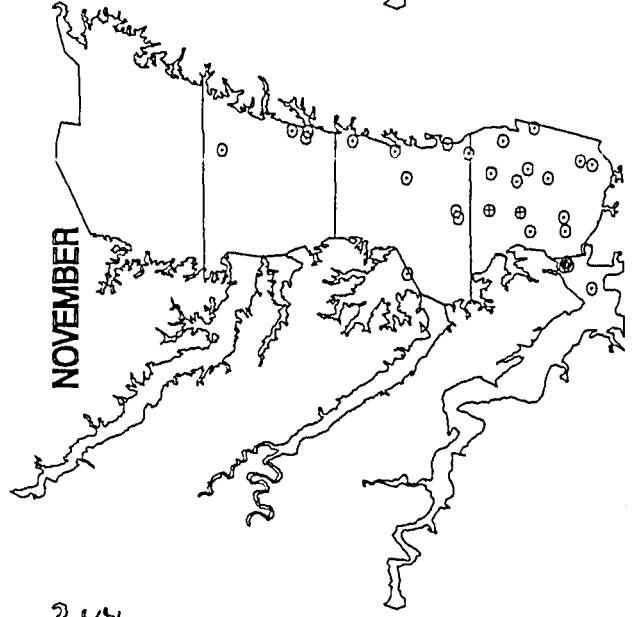
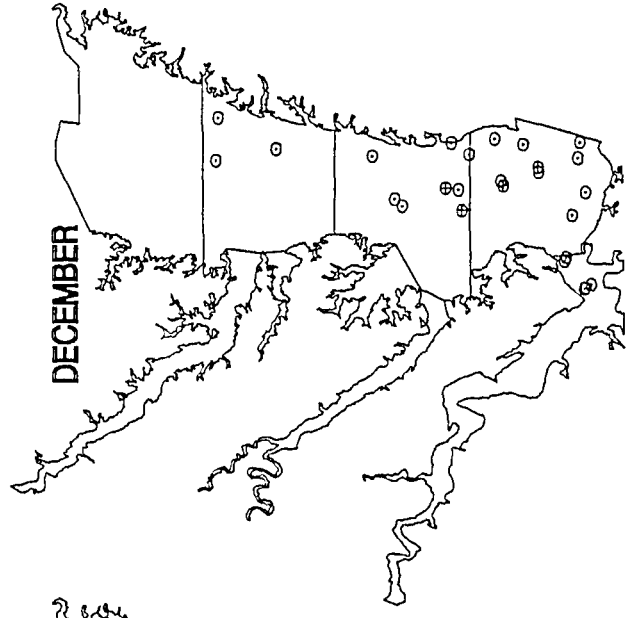
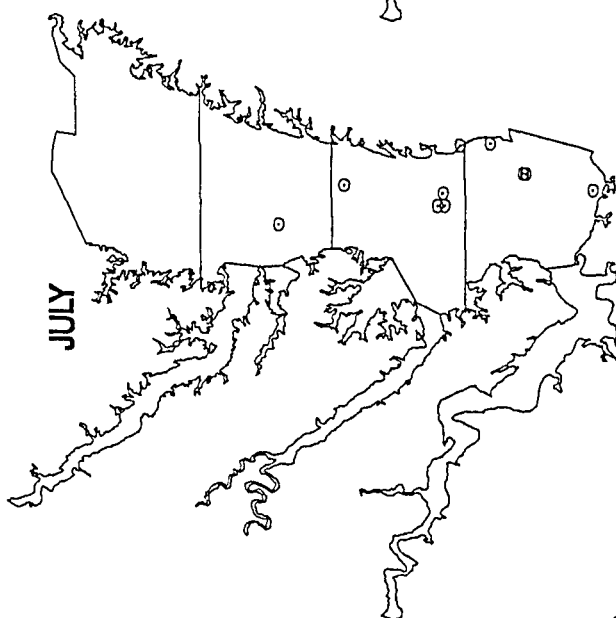
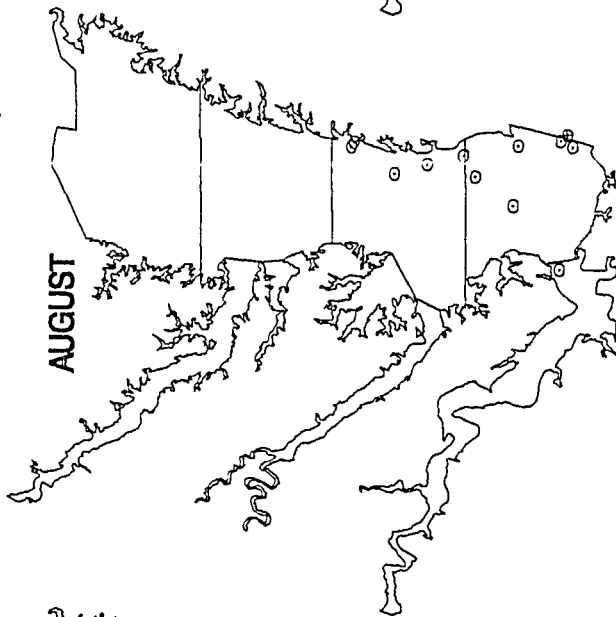
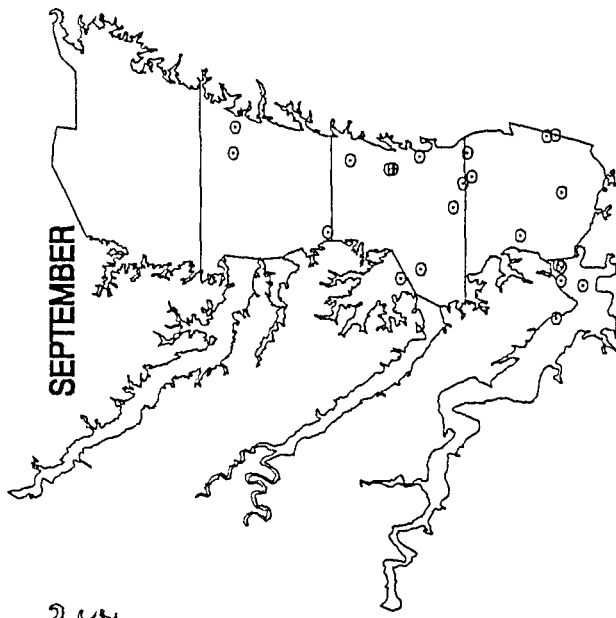
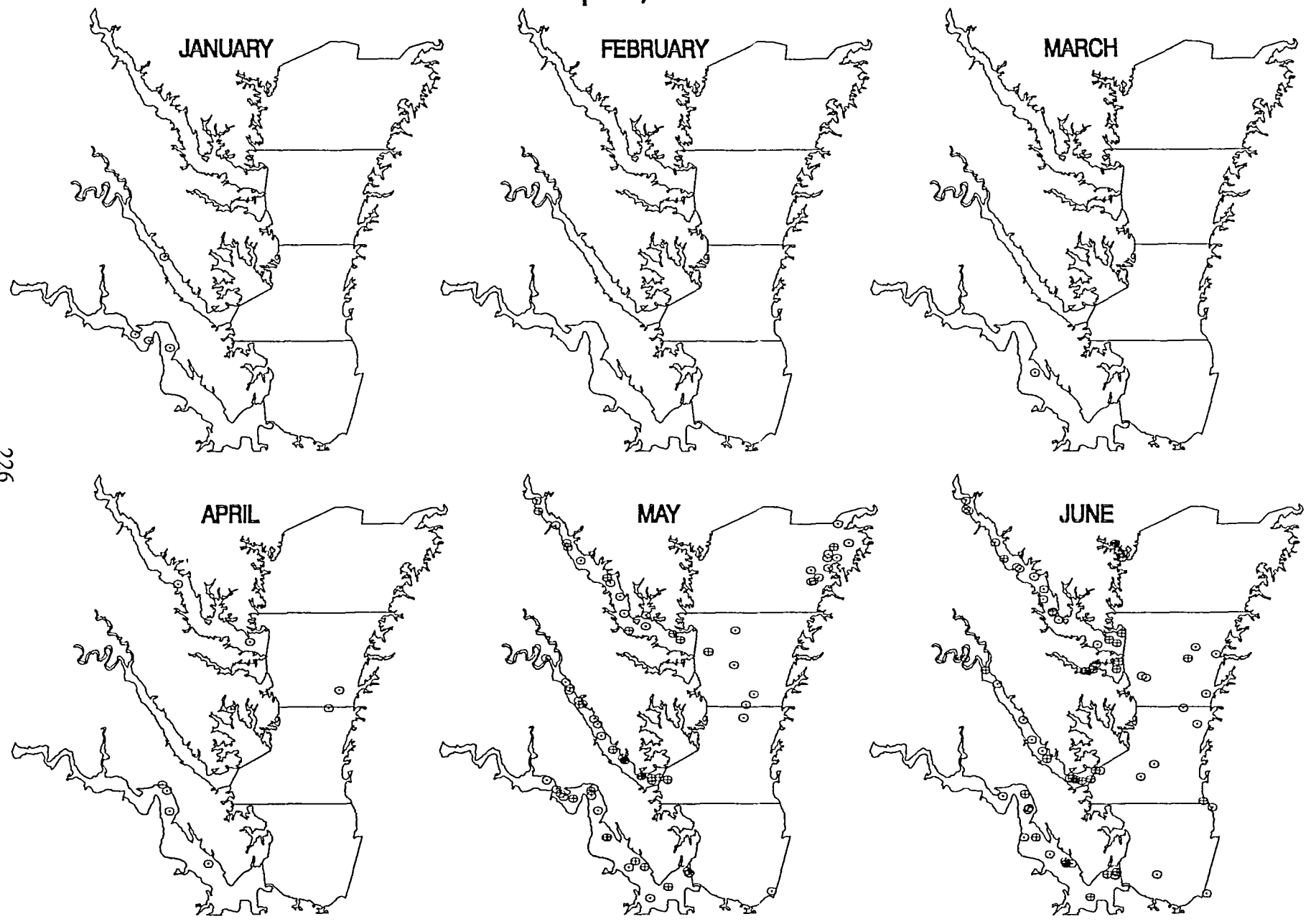


Figure 41.

Spot, 1999



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

Spot, 1999

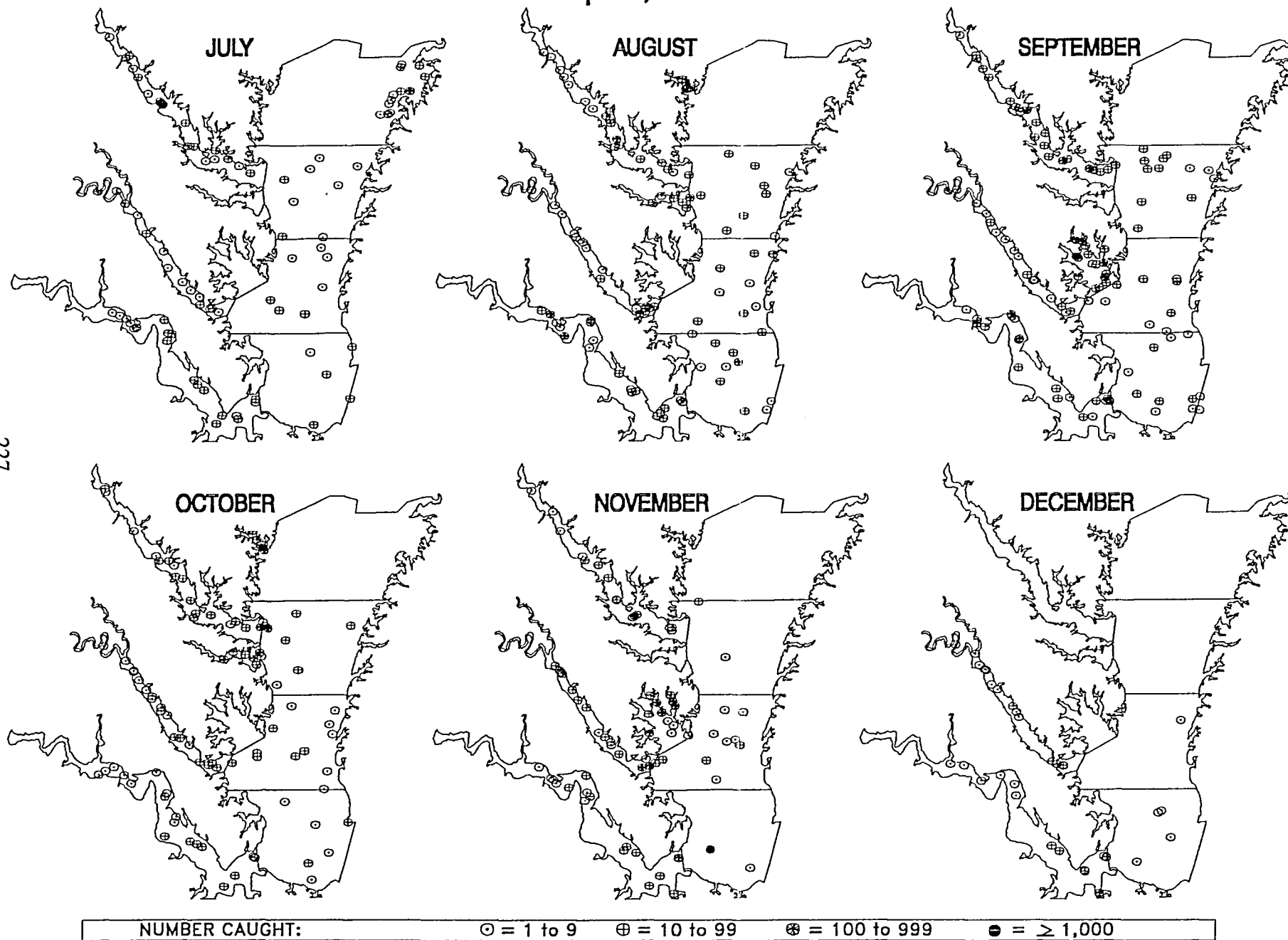
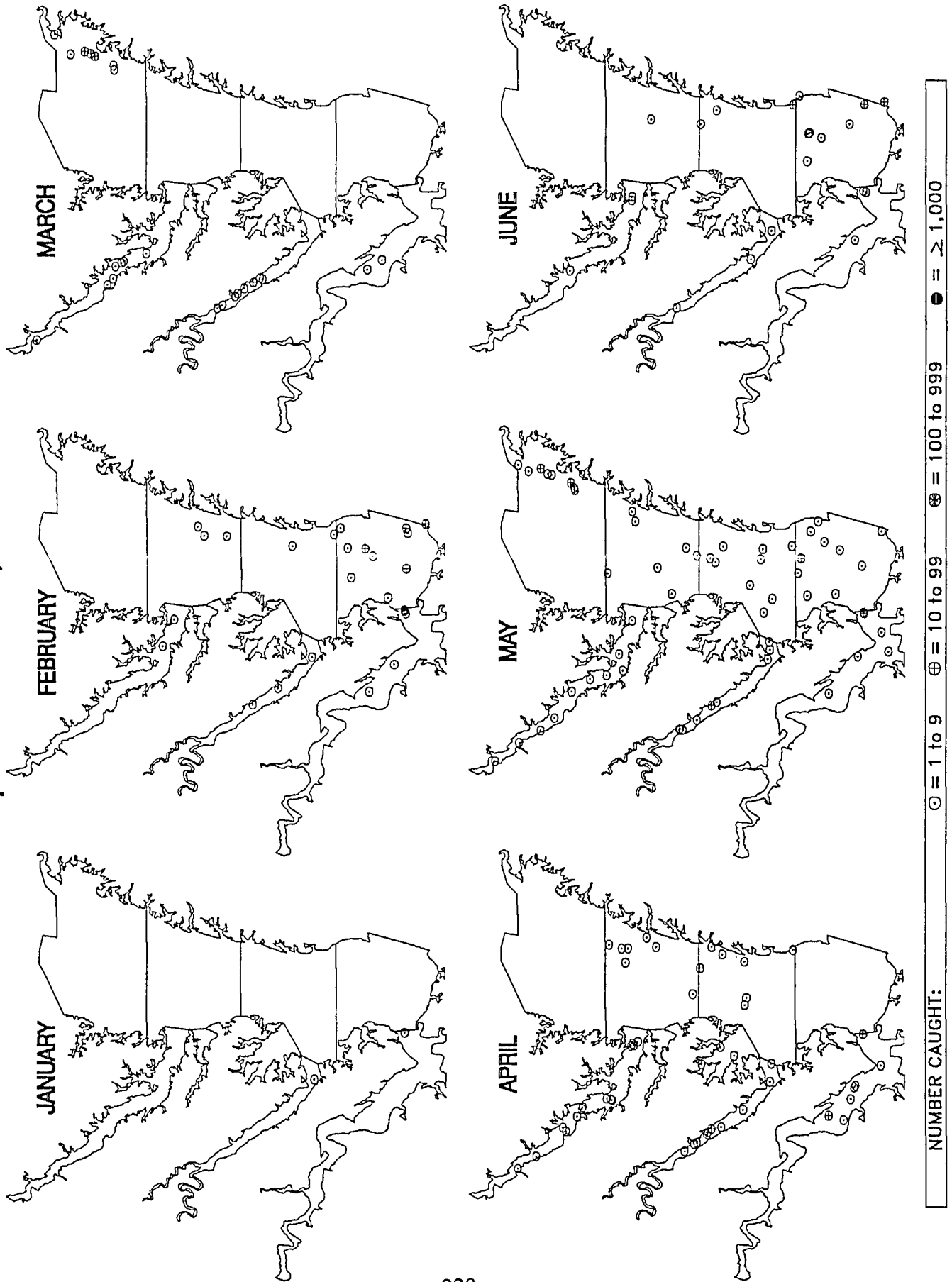
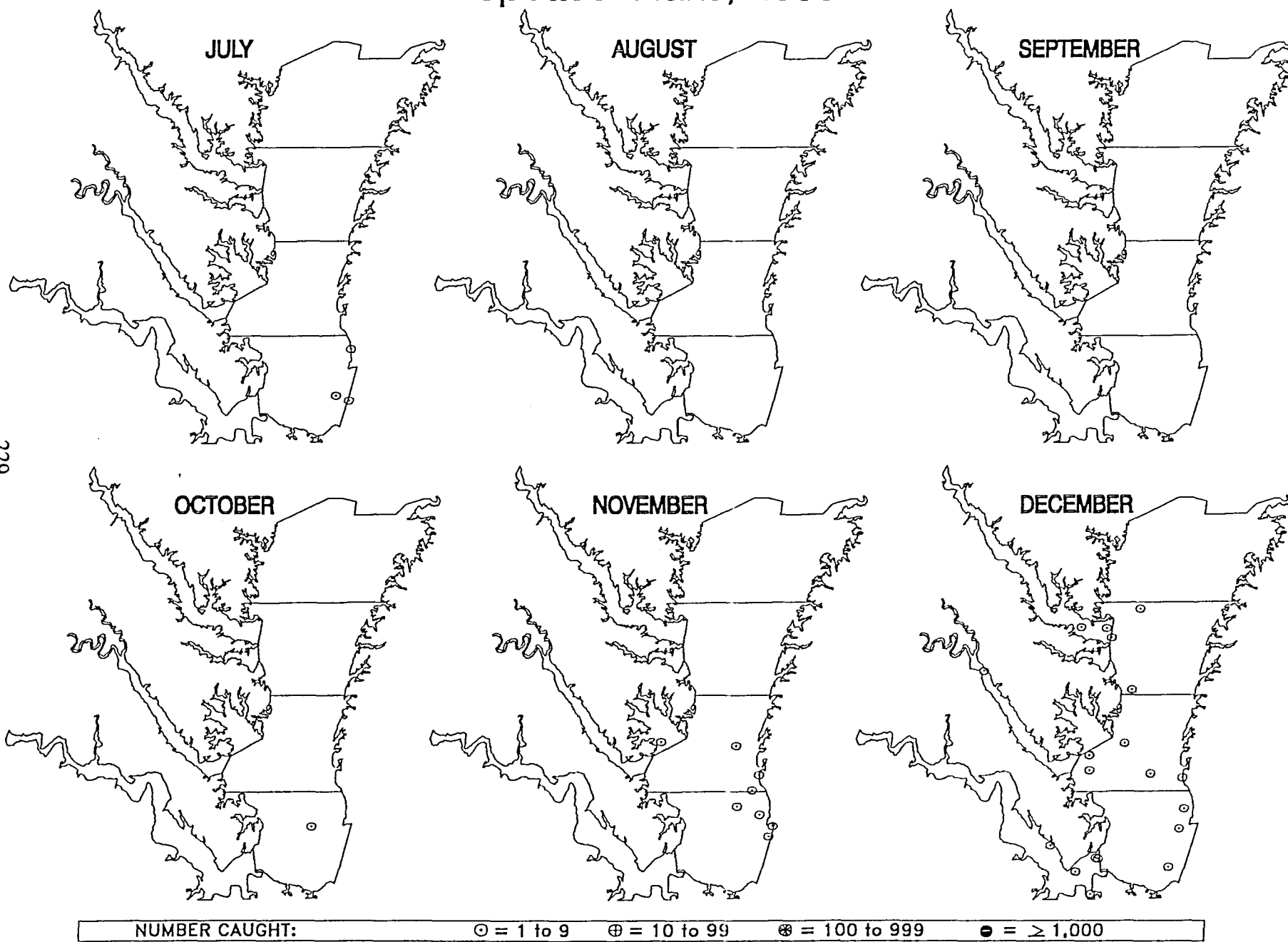


Figure 42.

Spotted Hake, 1999



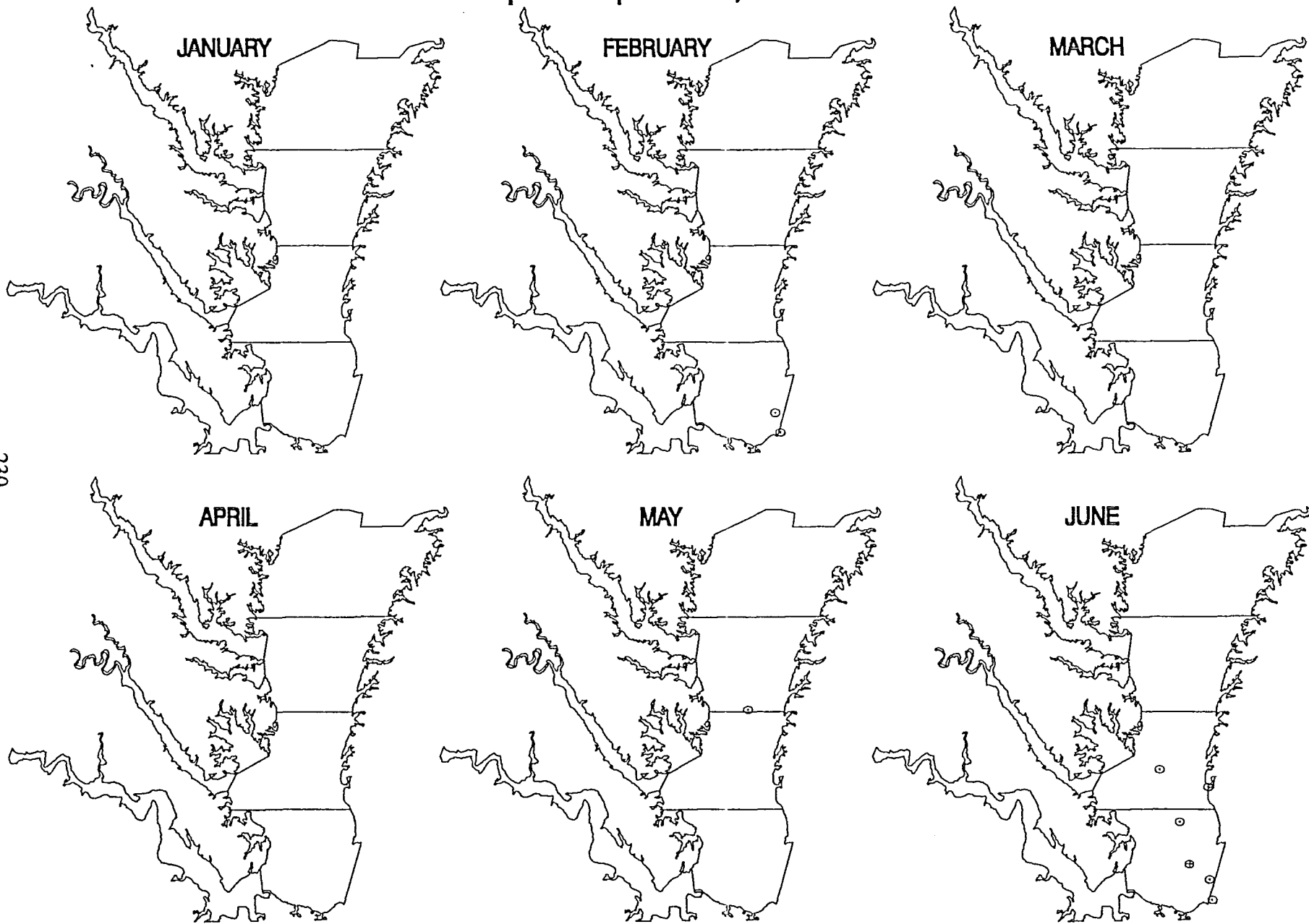
Spotted Hake, 1999



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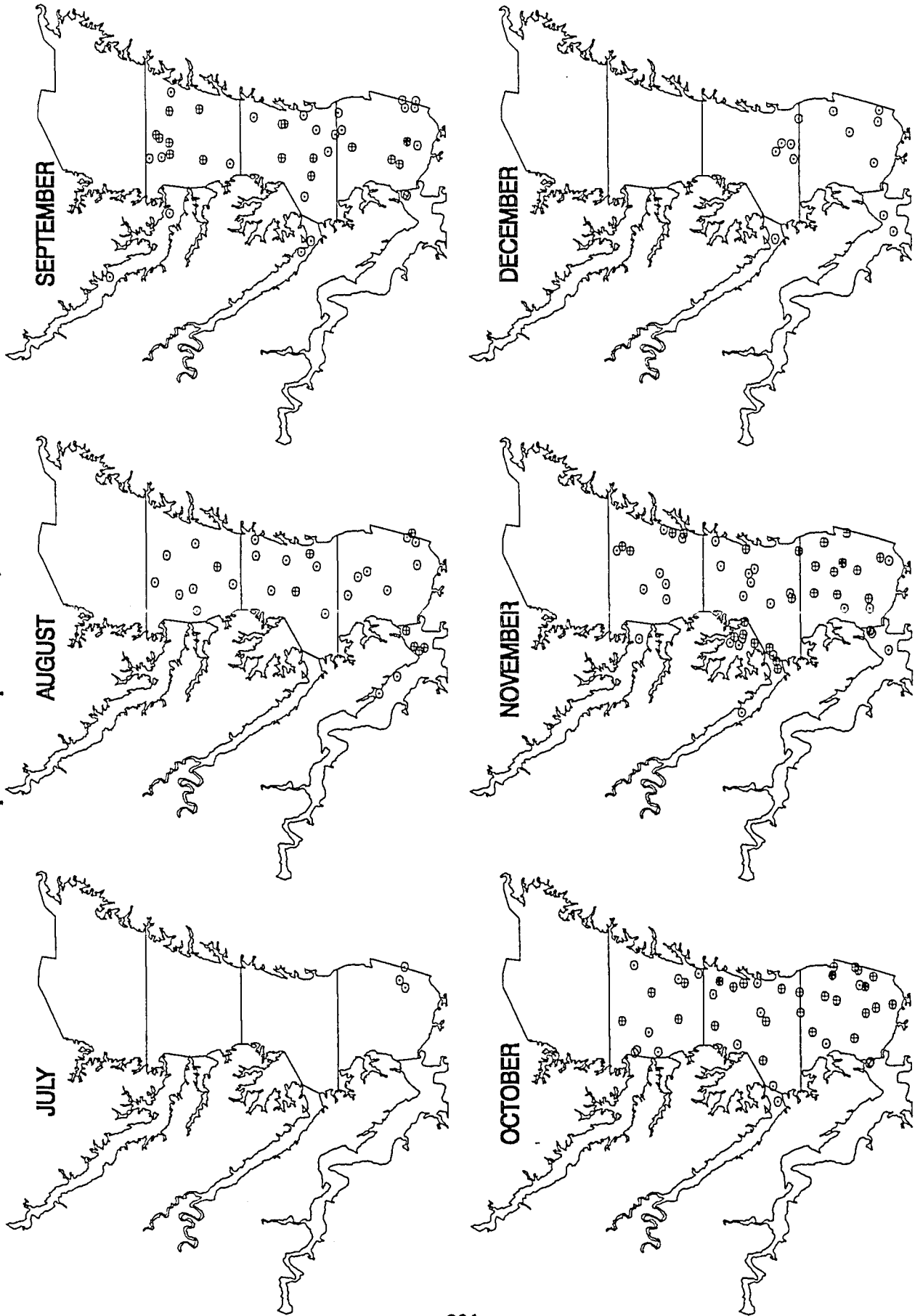
Figure 42. (cont.)

Squid Species, 1999

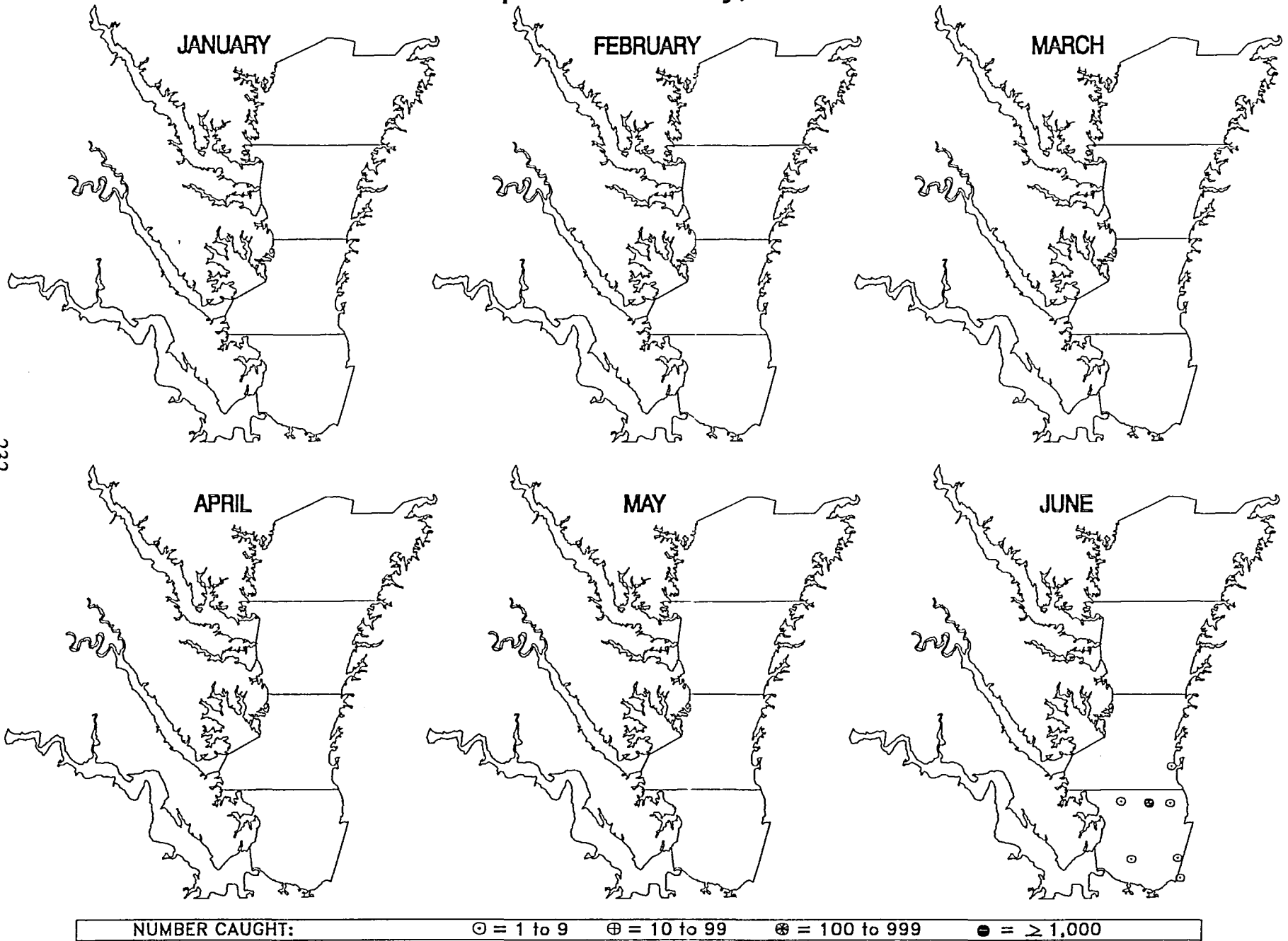


NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = $\geq 1,000$

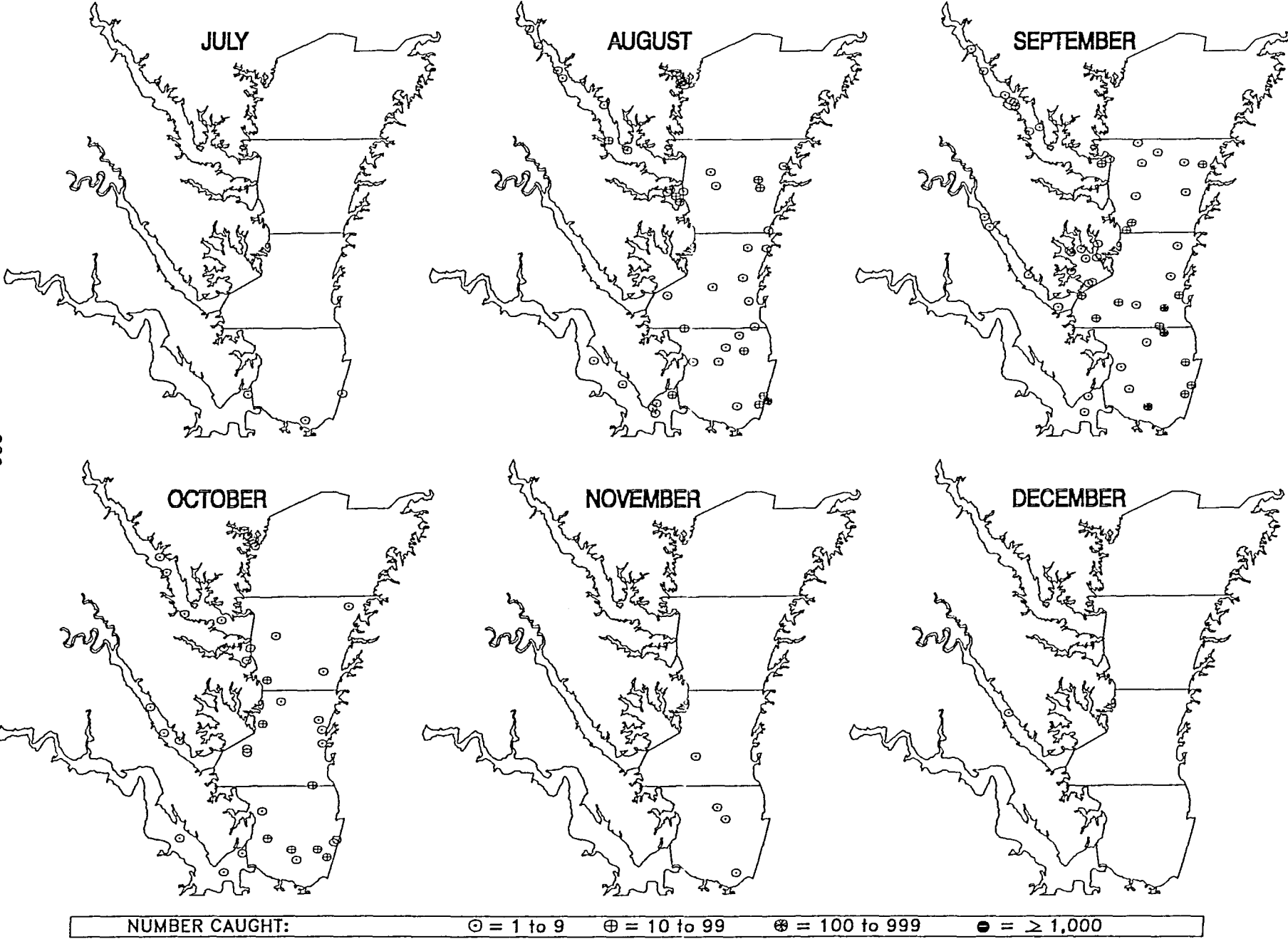
Squid Species, 1999



Striped Anchovy, 1999



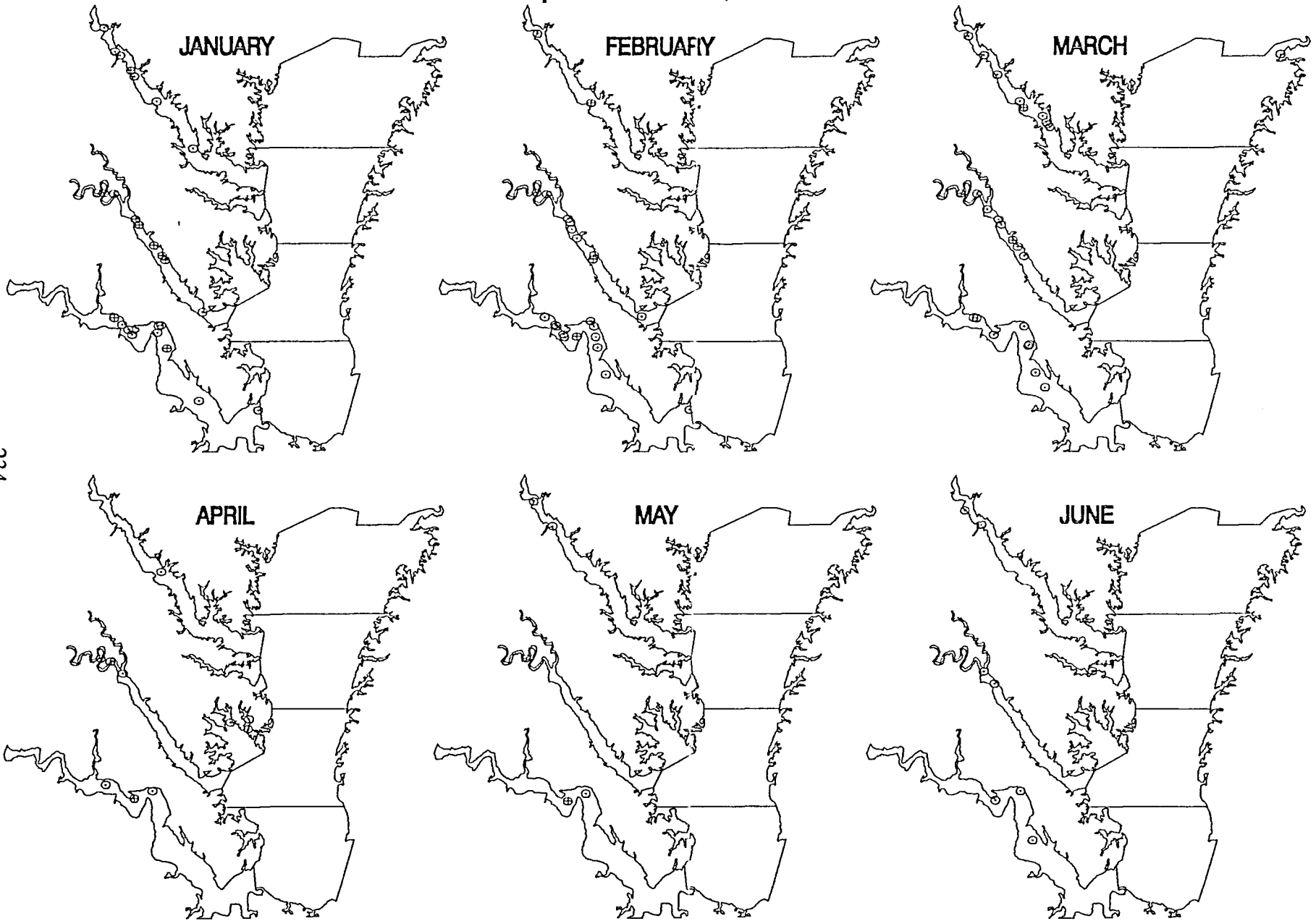
Striped Anchovy, 1999



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Figure 44. (cont.)

Striped Bass, 1999



NUMBER CAUGHT:

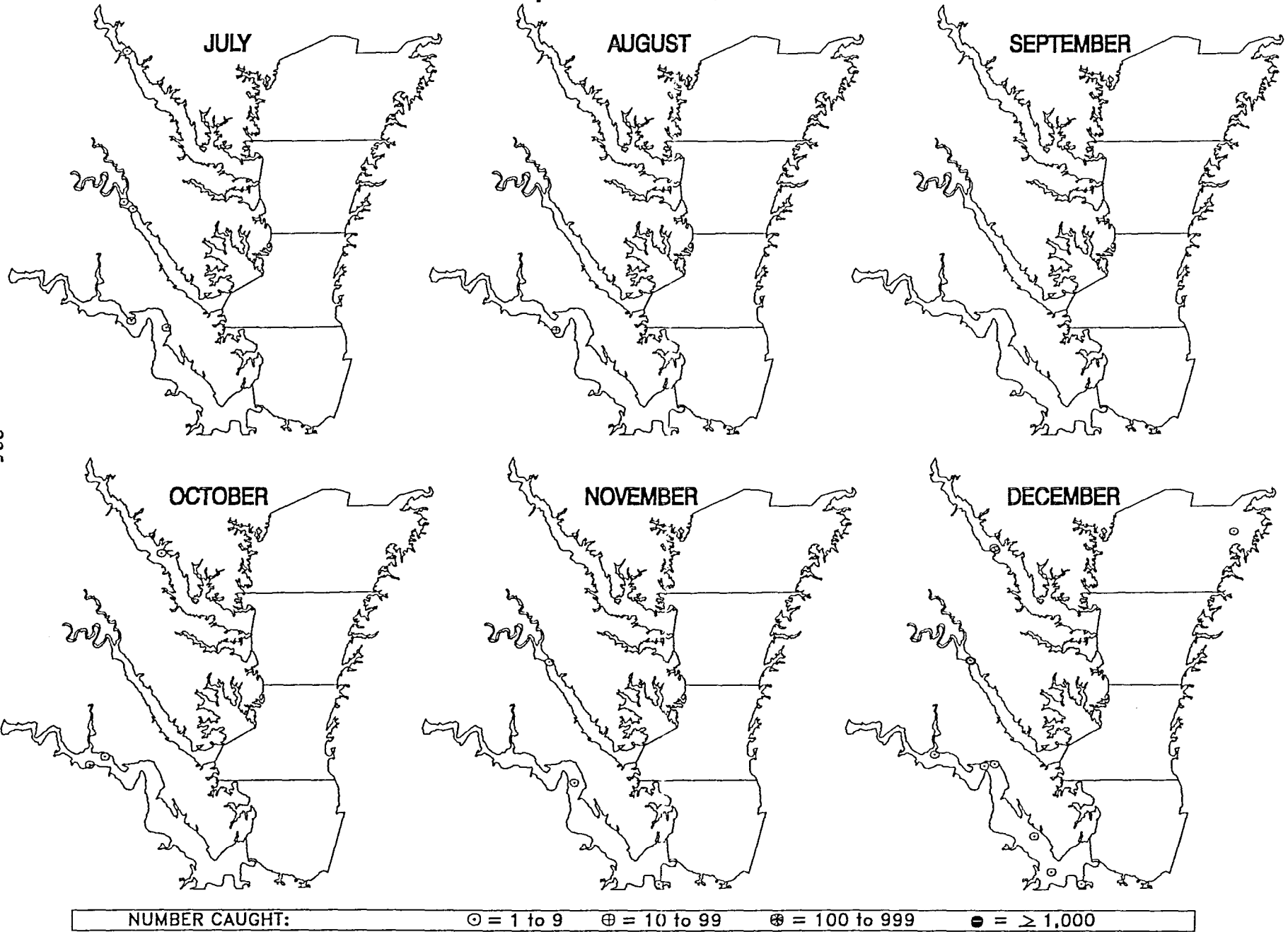
○ = 1 to 9

⊕ = 10 to 99

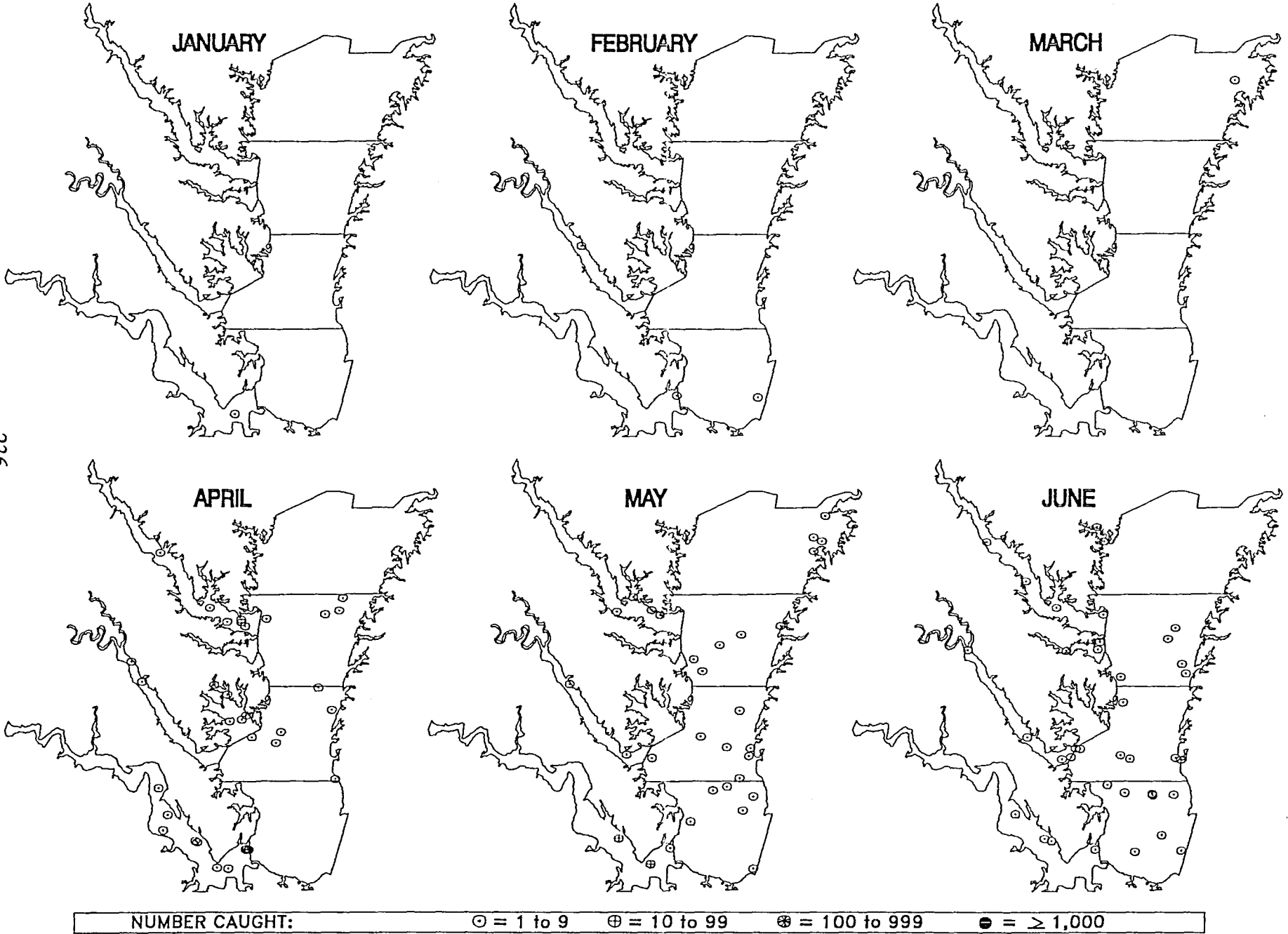
⊗ = 100 to 999

● = ≥ 1,000

Striped Bass, 1999



Summer Flounder, 1999



Summer Flounder, 1999

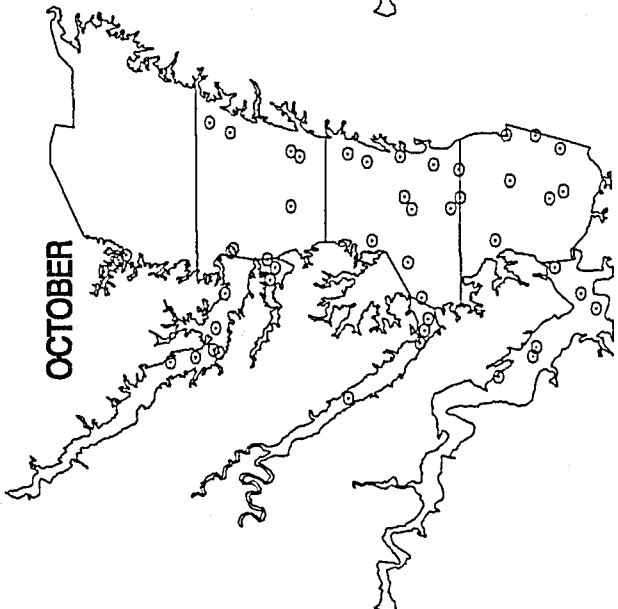
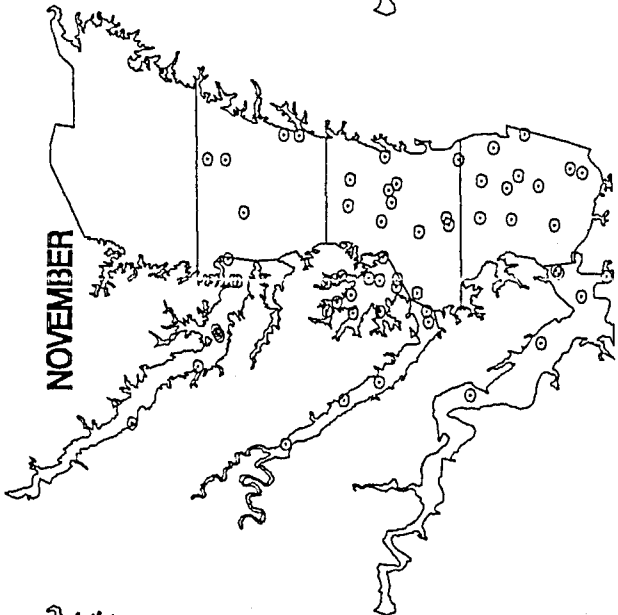
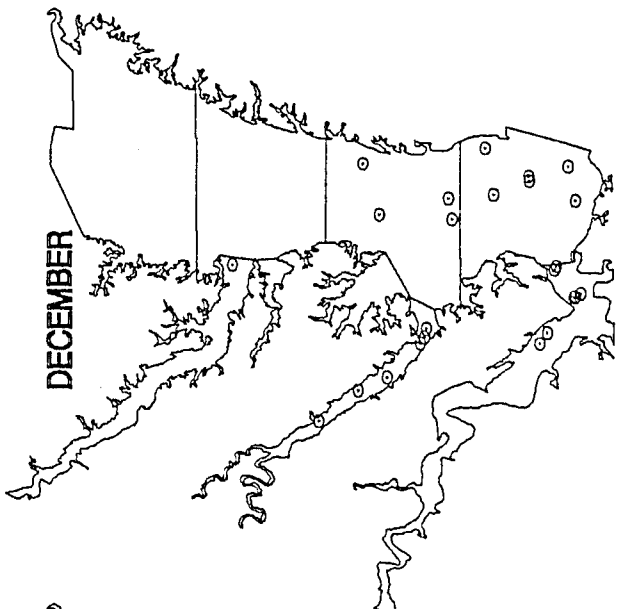
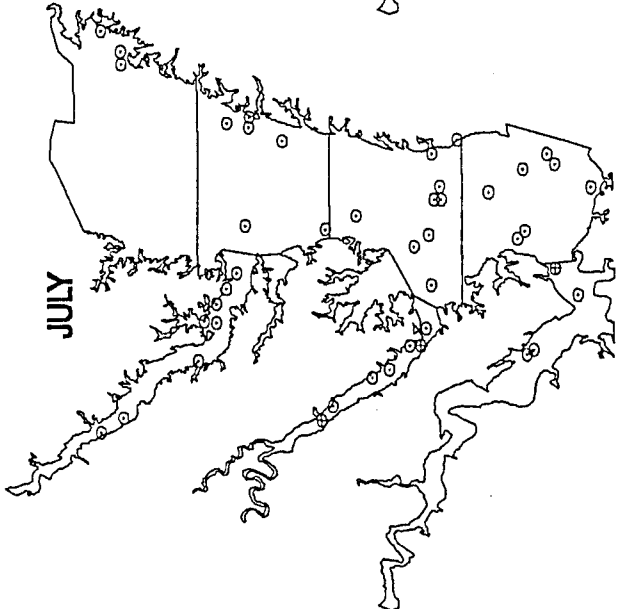
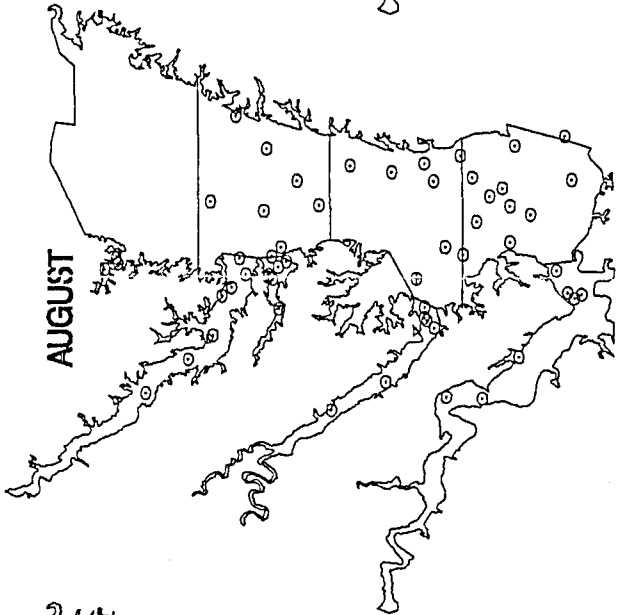
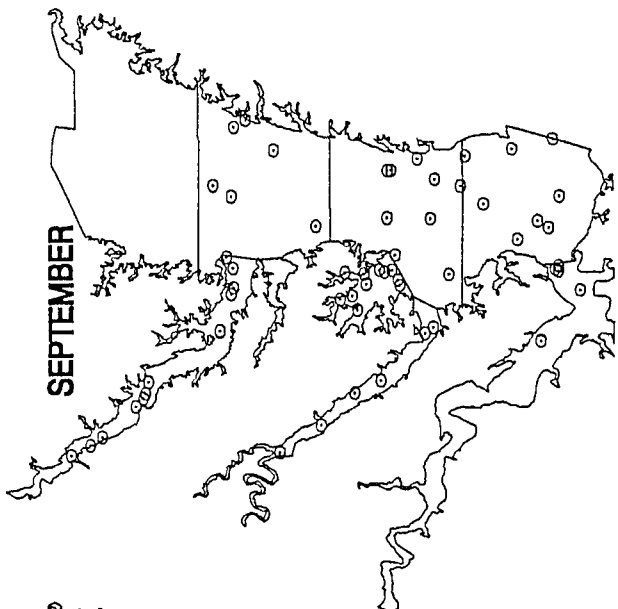
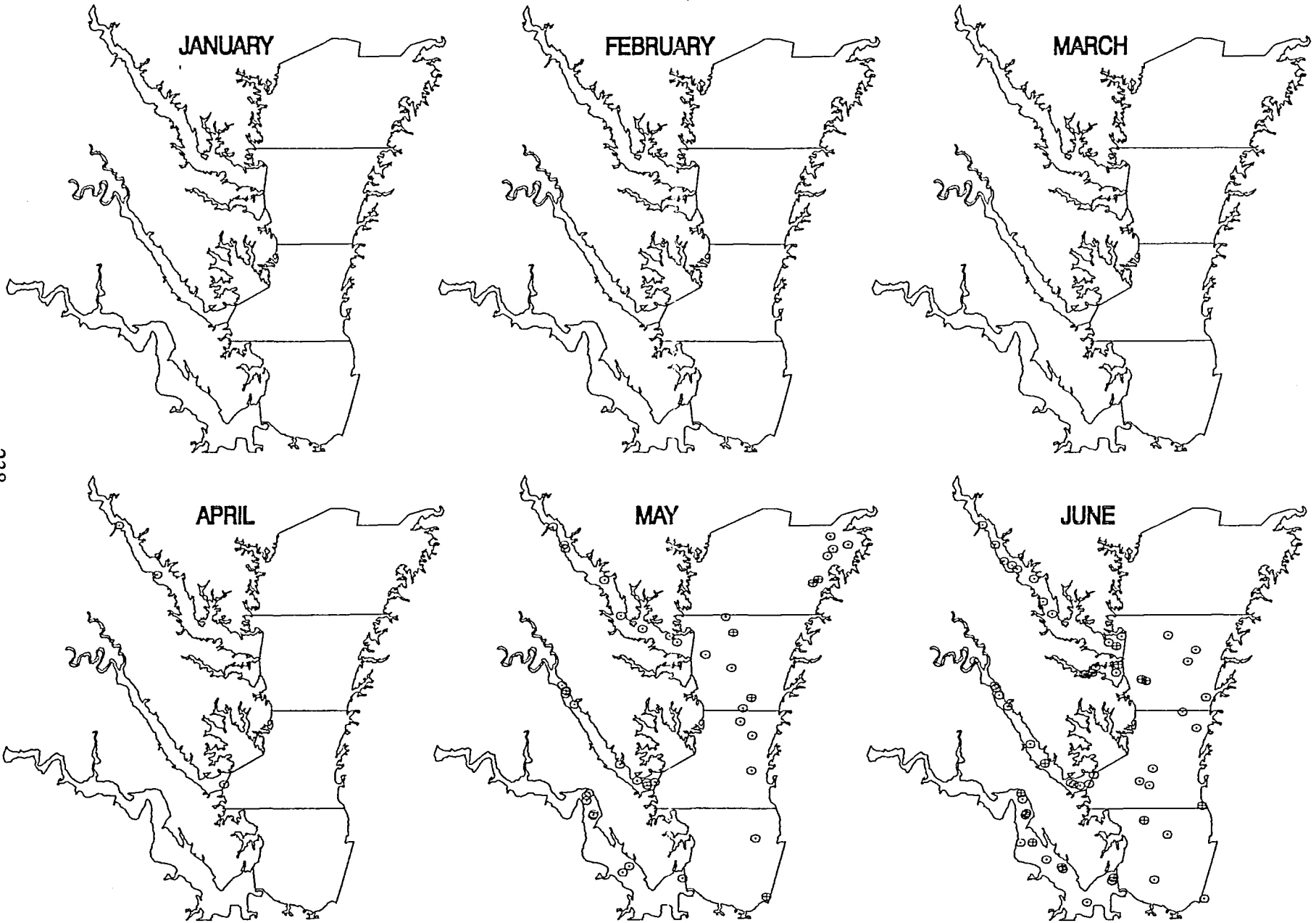


Figure 47.

Weakfish, 1999



NUMBER CAUGHT:

○ = 1 to 9

⊕ = 10 to 99

⊗ = 100 to 999

● = ≥ 1,000

Weakfish, 1999

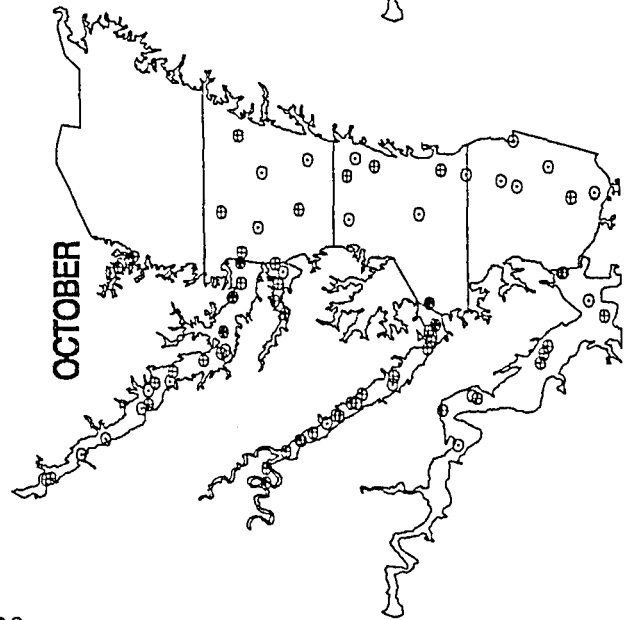
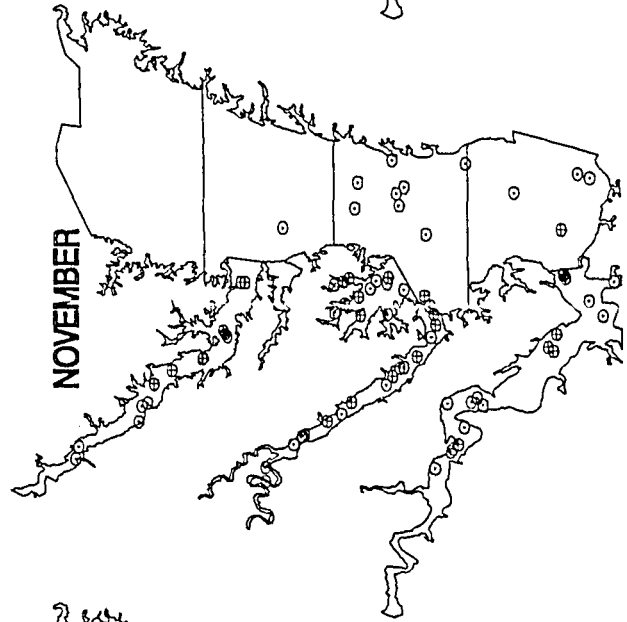
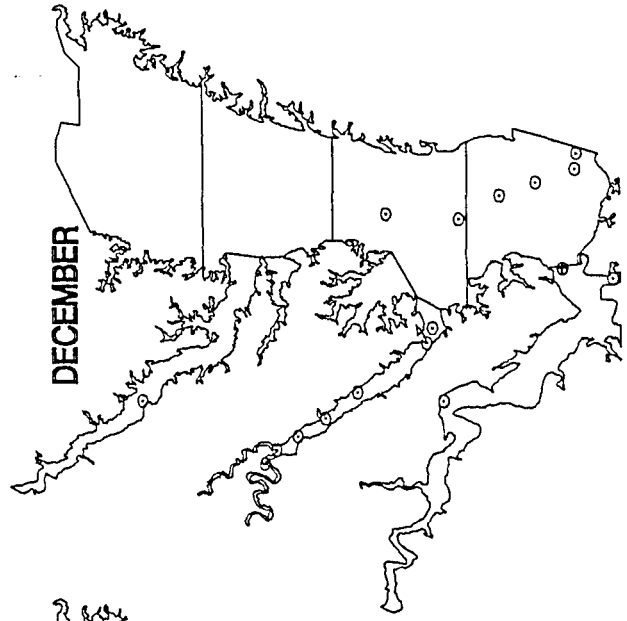
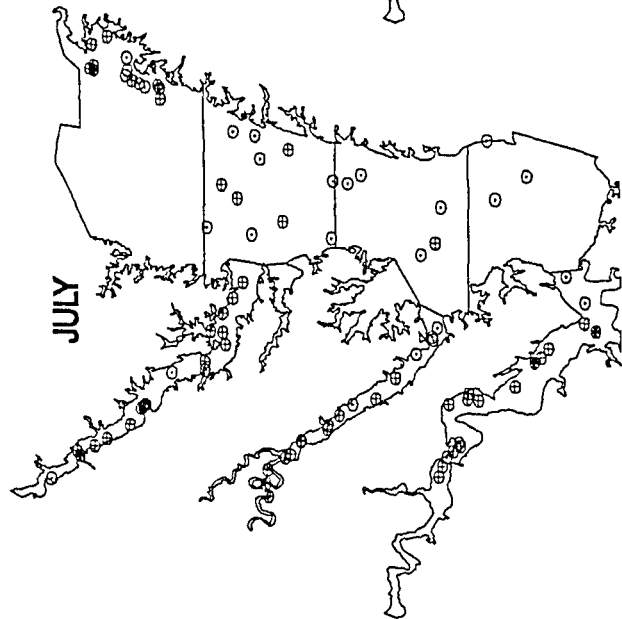
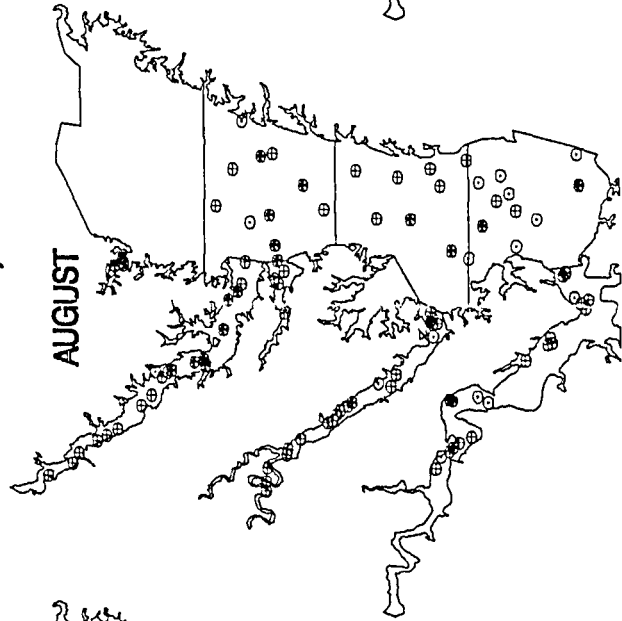
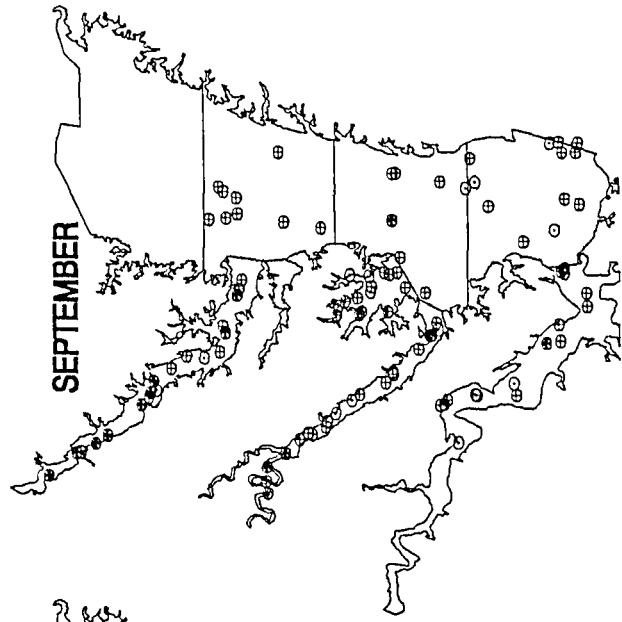
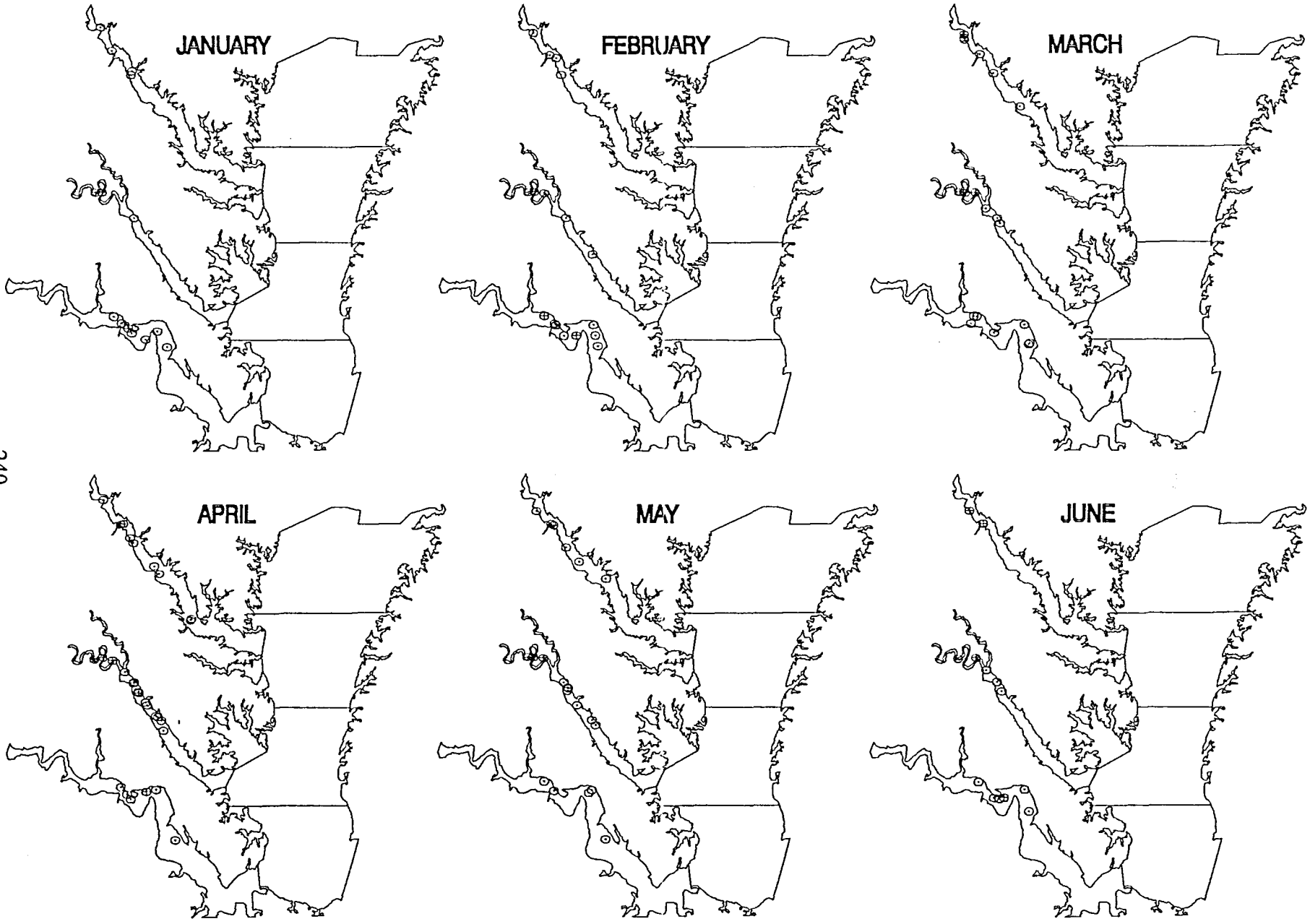


Figure 48.

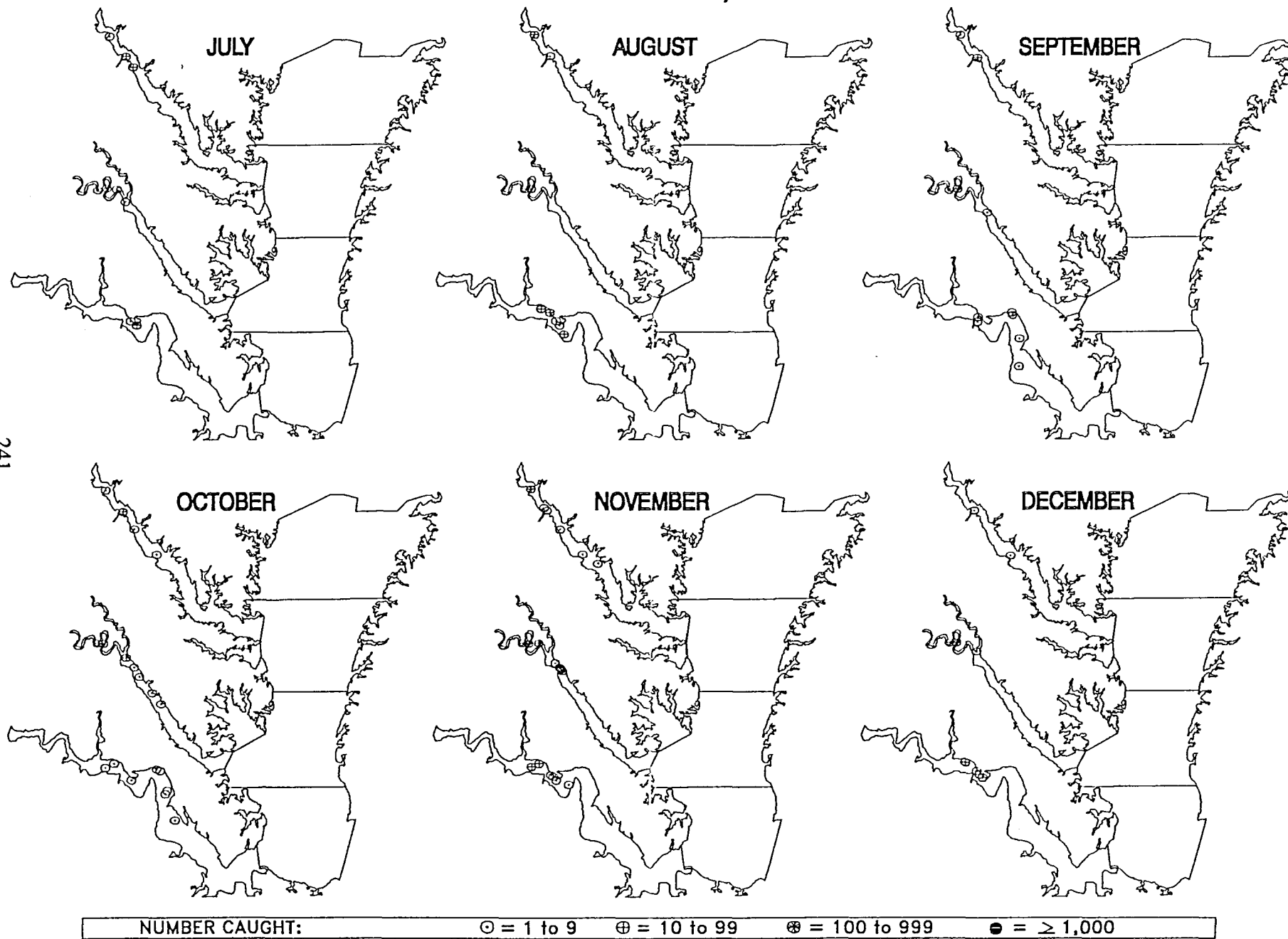
White Catfish, 1999



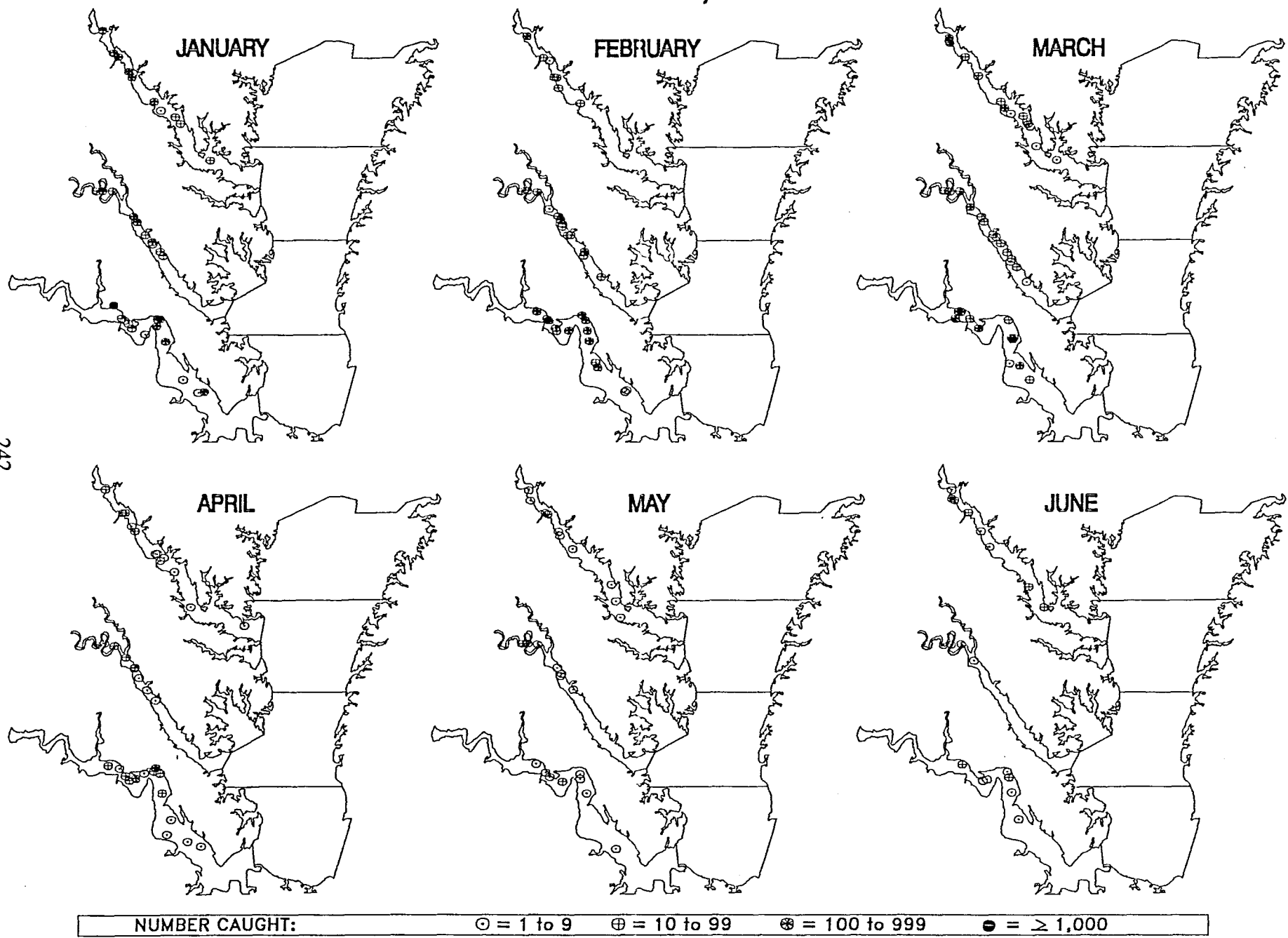
NUMBER CAUGHT: ○ = 1 to 9 ⊕ = 10 to 99 ⊗ = 100 to 999 ● = ≥ 1,000



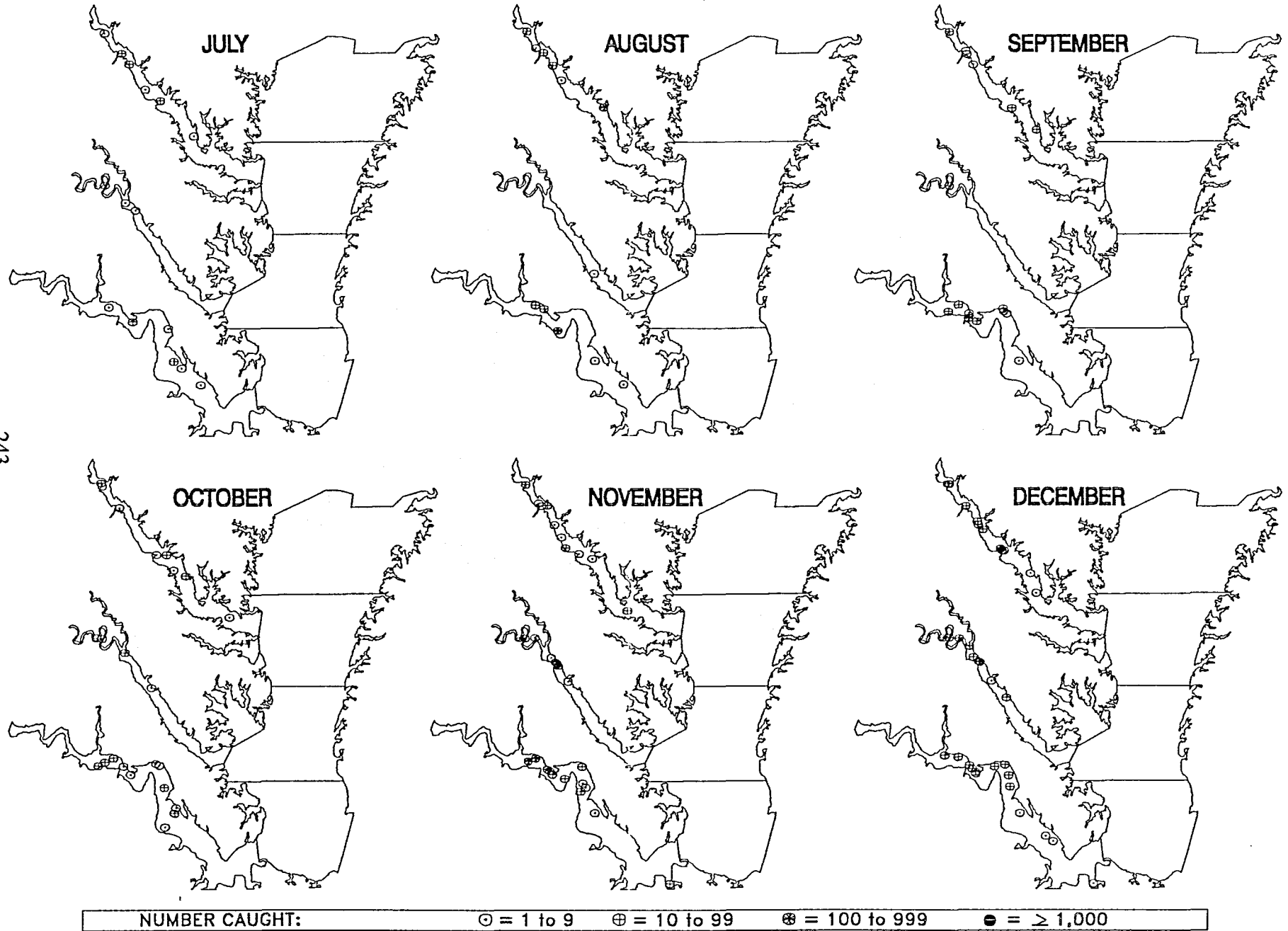
White Catfish, 1999



White Perch, 1999



White Perch, 1999

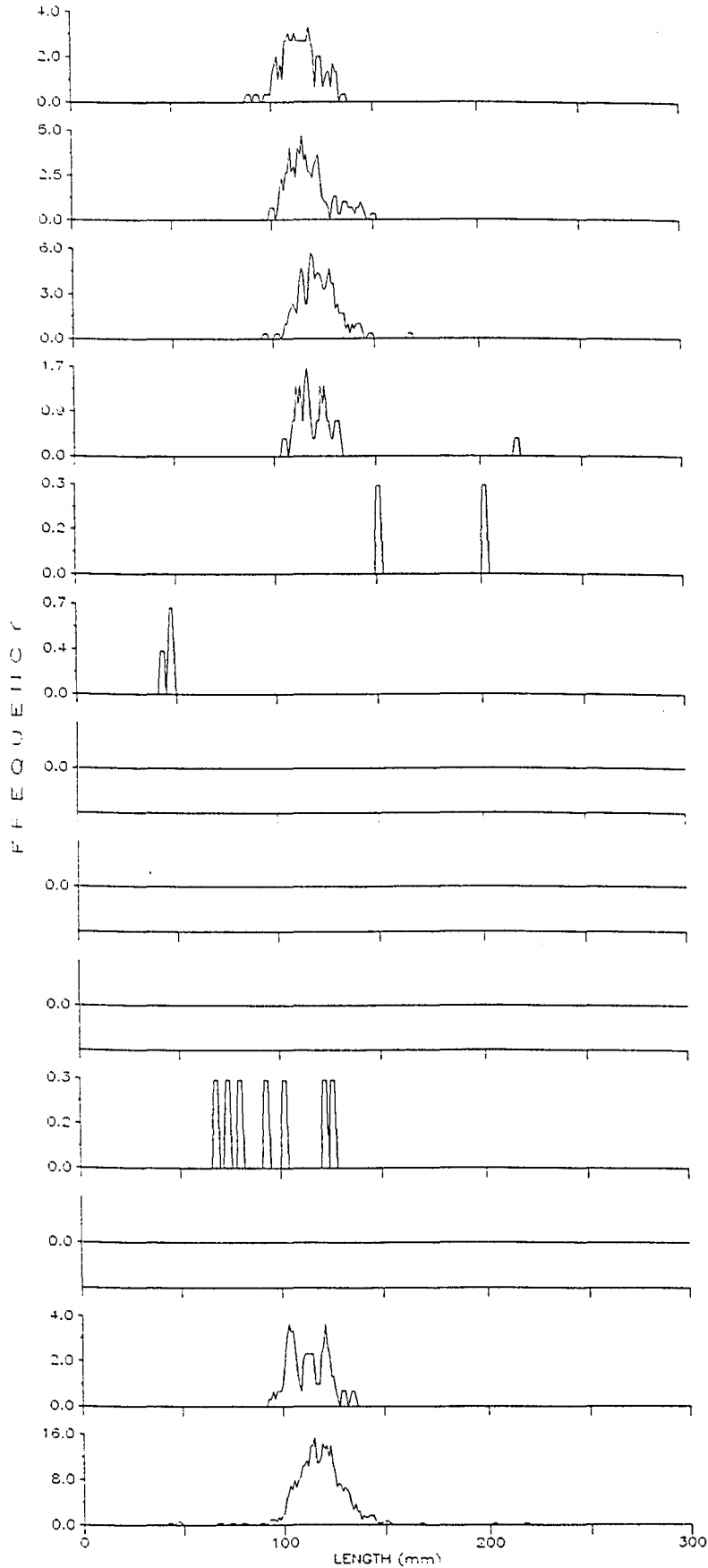


Figures 50-84. Monthly length frequency summaries for selected species.

- Explanations:
- A. These figures represent all specimens of each species sampled in 1999.
 - 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.

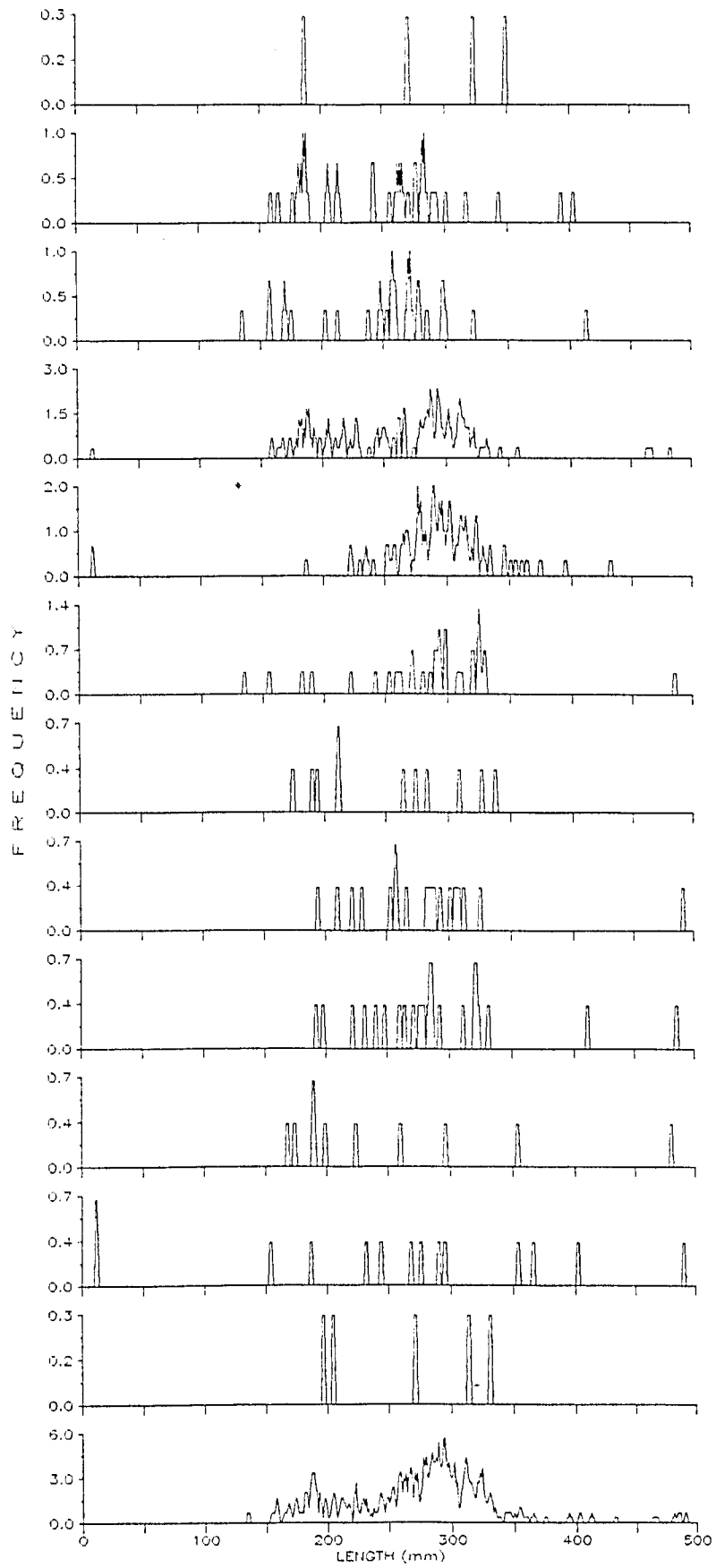
Alewife, 1999



JANUARY	990111	-	990121	
NO. CGHT.	-	70	MEAN SIZE	- 113.1
NO. MEAS.	-	70	S.E. SIZE	- 1.2
NO. HAULS	-	79	MIN. SIZE	- 87
CAT./HAUL	-	0.9	MAX. SIZE	- 134
FEBRUARY	990202	-	990216	
NO. CGHT.	-	83	MEAN SIZE	- 116.6
NO. MEAS.	-	83	S.E. SIZE	- 1.2
NO. HAULS	-	122	MIN. SIZE	- 98
CAT./HAUL	-	0.7	MAX. SIZE	- 148
MARCH	990301	-	990323	
NO. CGHT.	-	364	MEAN SIZE	- 120.7
NO. MEAS.	-	105	S.E. SIZE	- 1
NO. HAULS	-	80	MIN. SIZE	- 94
CAT./HAUL	-	4.6	MAX. SIZE	- 165
APRIL	990405	-	990419	
NO. CGHT.	-	23	MEAN SIZE	- 121
NO. MEAS.	-	23	S.E. SIZE	- 4.6
NO. HAULS	-	122	MIN. SIZE	- 103
CAT./HAUL	-	0.2	MAX. SIZE	- 216
MAY	990504	-	990519	
NO. CGHT.	-	2	MEAN SIZE	- 174.5
NO. MEAS.	-	2	S.E. SIZE	- 25.5
NO. HAULS	-	120	MIN. SIZE	- 149
CAT./HAUL	-	0	MAX. SIZE	- 200
JUNE	990601	-	990611	
NO. CGHT.	-	3	MEAN SIZE	- 44
NO. MEAS.	-	3	S.E. SIZE	- 1.5
NO. HAULS	-	118	MIN. SIZE	- 41
CAT./HAUL	-	0	MAX. SIZE	- 46
JULY	990701	-	990719	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	119	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
AUGUST	990804	-	990819	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	118	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
SEPTEMBER	990907	-	990924	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	122	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
OCTOBER	991004	-	991020	
NO. CGHT.	-	7	MEAN SIZE	- 93
NO. MEAS.	-	7	S.E. SIZE	- 8.6
NO. HAULS	-	124	MIN. SIZE	- 66
CAT./HAUL	-	0.1	MAX. SIZE	- 124
NOVEMBER	991101	-	991118	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	131	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
DECEMBER	991202	-	991215	
NO. CGHT.	-	64	MEAN SIZE	- 110.6
NO. MEAS.	-	64	S.E. SIZE	- 1.2
NO. HAULS	-	127	MIN. SIZE	- 92
CAT./HAUL	-	0.5	MAX. SIZE	- 133
JAN - DEC	990111	-	991215	
NO. CGHT.	-	616	MEAN SIZE	- 115.6
NO. MEAS.	-	357	S.E. SIZE	- 0.8
NO. HAULS	-	1382	MIN. SIZE	- 41
CAT./HAUL	-	0.4	MAX. SIZE	- 216

Figure 51.

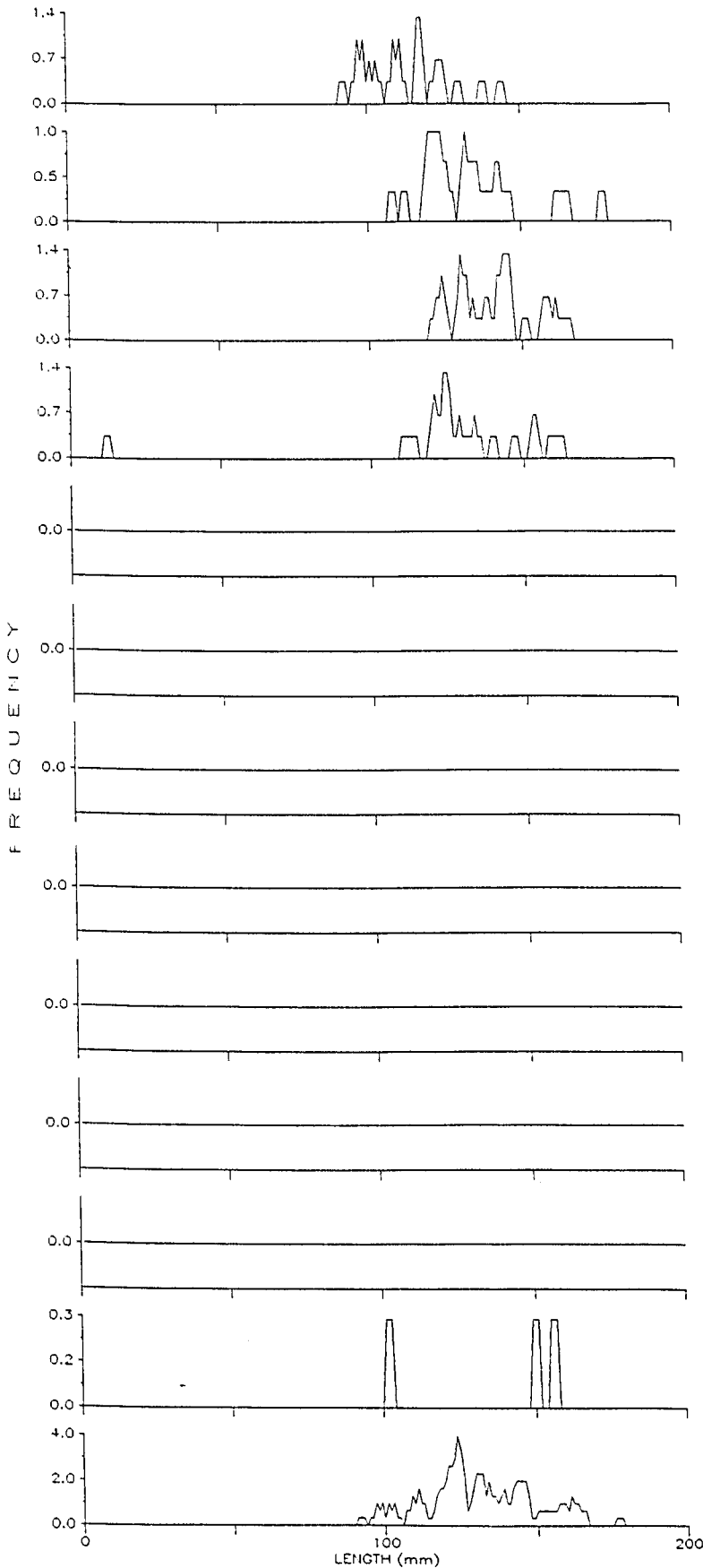
American Eel, 1999



JANUARY	990111	-	990121		
NO. CGHT.	-	4	MEAN SIZE	-	280.5
NO. MEAS.	-	4	S.E. SIZE	-	35.7
NO. HAULS	-	79	MIN. SIZE	-	185
CAT./HAUL	-	0.1	MAX. SIZE	-	347
FEBRUARY	990202	-	990216		
NO. CGHT.	-	34	MEAN SIZE	-	249.4
NO. MEAS.	-	34	S.E. SIZE	-	10.5
NO. HAULS	-	122	MIN. SIZE	-	157
CAT./HAUL	-	0.3	MAX. SIZE	-	401
MARCH	990301	-	990323		
NO. CGHT.	-	28	MEAN SIZE	-	246.5
NO. MEAS.	-	28	S.E. SIZE	-	11.3
NO. HAULS	-	80	MIN. SIZE	-	133
CAT./HAUL	-	0.4	MAX. SIZE	-	411
APRIL	990405	-	990419		
NO. CGHT.	-	128	MEAN SIZE	-	259.9
NO. MEAS.	-	128	S.E. SIZE	-	5.3
NO. HAULS	-	122	MIN. SIZE	-	156
CAT./HAUL	-	1	MAX. SIZE	-	480
MAY	990504	-	990519		
NO. CGHT.	-	87	MEAN SIZE	-	298.7
NO. MEAS.	-	87	S.E. SIZE	-	6.2
NO. HAULS	-	120	MIN. SIZE	-	184
CAT./HAUL	-	0.7	MAX. SIZE	-	705
JUNE	990601	-	990611		
NO. CGHT.	-	34	MEAN SIZE	-	297.6
NO. MEAS.	-	34	S.E. SIZE	-	15.6
NO. HAULS	-	118	MIN. SIZE	-	133
CAT./HAUL	-	0.3	MAX. SIZE	-	610
JULY	990701	-	990719		
NO. CGHT.	-	11	MEAN SIZE	-	250.4
NO. MEAS.	-	11	S.E. SIZE	-	17.7
NO. HAULS	-	119	MIN. SIZE	-	172
CAT./HAUL	-	0.1	MAX. SIZE	-	336
AUGUST	990804	-	990819		
NO. CGHT.	-	18	MEAN SIZE	-	280.2
NO. MEAS.	-	18	S.E. SIZE	-	15.1
NO. HAULS	-	118	MIN. SIZE	-	192
CAT./HAUL	-	0.2	MAX. SIZE	-	489
SEPTEMBER	990907	-	990924		
NO. CGHT.	-	22	MEAN SIZE	-	285.8
NO. MEAS.	-	22	S.E. SIZE	-	14
NO. HAULS	-	122	MIN. SIZE	-	190
CAT./HAUL	-	0.2	MAX. SIZE	-	483
OCTOBER	991004	-	991020		
NO. CGHT.	-	10	MEAN SIZE	-	251.4
NO. MEAS.	-	10	S.E. SIZE	-	31.4
NO. HAULS	-	124	MIN. SIZE	-	166
CAT./HAUL	-	0.1	MAX. SIZE	-	478
NOVEMBER	991101	-	991118		
NO. CGHT.	-	12	MEAN SIZE	-	294.5
NO. MEAS.	-	12	S.E. SIZE	-	27.1
NO. HAULS	-	131	MIN. SIZE	-	152
CAT./HAUL	-	0.1	MAX. SIZE	-	488
DECEMBER	991202	-	991215		
NO. CGHT.	-	7	MEAN SIZE	-	364.6
NO. MEAS.	-	7	S.E. SIZE	-	69.3
NO. HAULS	-	127	MIN. SIZE	-	195
CAT./HAUL	-	0.1	MAX. SIZE	-	644
JAN - DEC	990111	-	991215		
NO. CGHT.	-	395	MEAN SIZE	-	274.8
NO. MEAS.	-	395	S.E. SIZE	-	3.6
NO. HAULS	-	1382	MIN. SIZE	-	133
CAT./HAUL	-	0.3	MAX. SIZE	-	705

Figure 52.

American Shad, 1999



JANUARY			
990111 - 990121			
NO. CGHT.	- 21	MEAN SIZE	- 111.5
NO. MEAS.	- 21	S.E. SIZE	- 3
NO. HAULS	- 79	MIN. SIZE	- 90
CAT./HAUL	- 0.3	MAX. SIZE	- 142

FEBRUARY			
990202 - 990216			
NO. CGHT.	- 22	MEAN SIZE	- 131.7
NO. MEAS.	- 22	S.E. SIZE	- 3.7
NO. HAULS	- 122	MIN. SIZE	- 106
CAT./HAUL	- 0.2	MAX. SIZE	- 175

MARCH			
990301 - 990323			
NO. CGHT.	- 25	MEAN SIZE	- 138.9
NO. MEAS.	- 25	S.E. SIZE	- 2.6
NO. HAULS	- 80	MIN. SIZE	- 119
CAT./HAUL	- 0.3	MAX. SIZE	- 163

APRIL			
990405 - 990419			
NO. CGHT.	- 19	MEAN SIZE	- 131.1
NO. MEAS.	- 19	S.E. SIZE	- 3.5
NO. HAULS	- 122	MIN. SIZE	- 109
CAT./HAUL	- 0.2	MAX. SIZE	- 160

MAY			
990504 - 990519			
NO. CGHT.	- 1	MEAN SIZE	- 228
NO. MEAS.	- 1	S.E. SIZE	-
NO. HAULS	- 120	MIN. SIZE	- 228
CAT./HAUL	- 0	MAX. SIZE	- 228

JUNE			
990601 - 990611			
NO. CGHT.	- 0	MEAN SIZE	-
NO. MEAS.	- 0	S.E. SIZE	-
NO. HAULS	- 118	MIN. SIZE	-
CAT./HAUL	- 0	MAX. SIZE	-

JULY			
990701 - 990719			
NO. CGHT.	- 0	MEAN SIZE	-
NO. MEAS.	- 0	S.E. SIZE	-
NO. HAULS	- 119	MIN. SIZE	-
CAT./HAUL	- 0	MAX. SIZE	-

AUGUST			
990804 - 990819			
NO. CGHT.	- 0	MEAN SIZE	-
NO. MEAS.	- 0	S.E. SIZE	-
NO. HAULS	- 118	MIN. SIZE	-
CAT./HAUL	- 0	MAX. SIZE	-

SEPTEMBER			
990907 - 990924			
NO. CGHT.	- 0	MEAN SIZE	-
NO. MEAS.	- 0	S.E. SIZE	-
NO. HAULS	- 122	MIN. SIZE	-
CAT./HAUL	- 0	MAX. SIZE	-

OCTOBER			
991004 - 991020			
NO. CGHT.	- 0	MEAN SIZE	-
NO. MEAS.	- 0	S.E. SIZE	-
NO. HAULS	- 124	MIN. SIZE	-
CAT./HAUL	- 0	MAX. SIZE	-

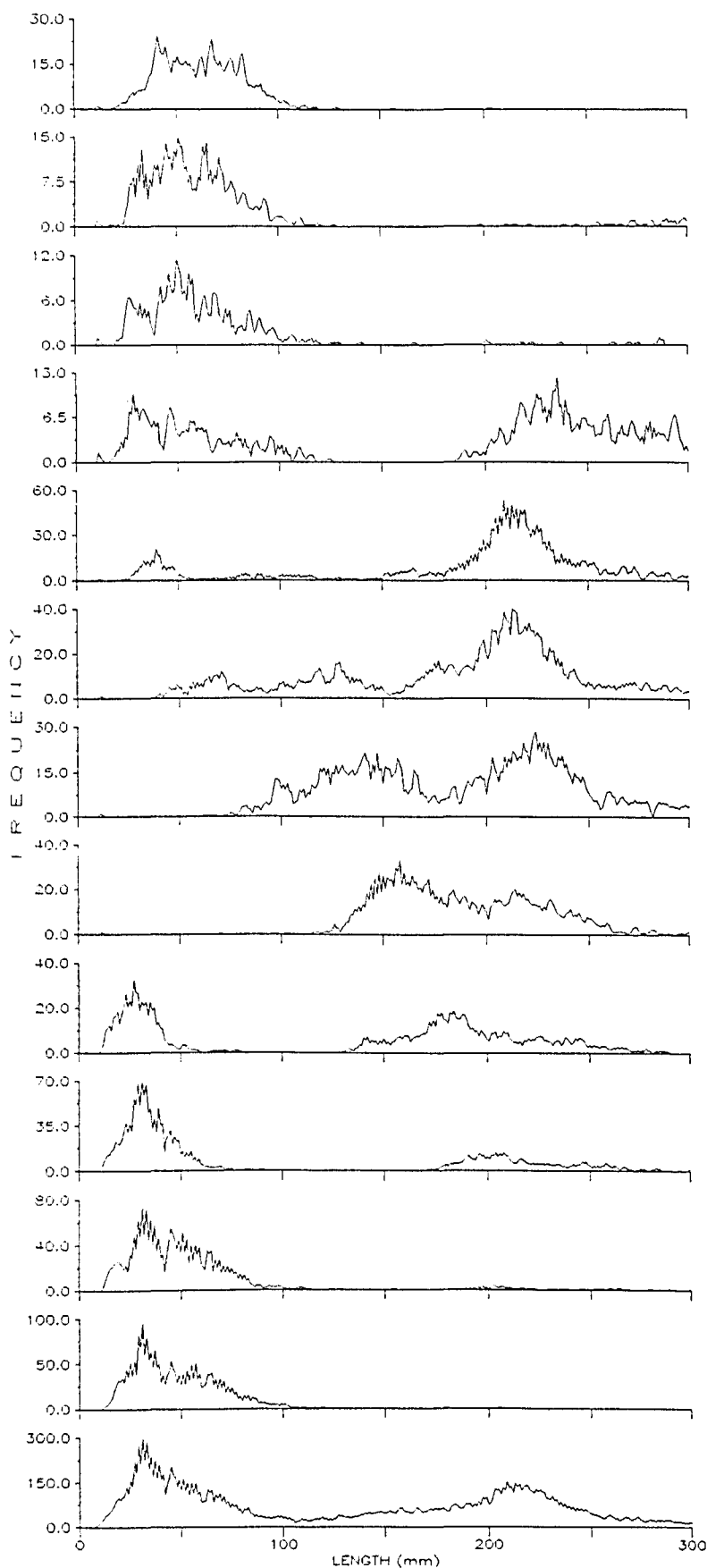
NOVEMBER			
991101 - 991118			
NO. CGHT.	- 0	MEAN SIZE	-
NO. MEAS.	- 0	S.E. SIZE	-
NO. HAULS	- 131	MIN. SIZE	-
CAT./HAUL	- 0	MAX. SIZE	-

DECEMBER			
991202 - 991215			
NO. CGHT.	- 3	MEAN SIZE	- 134
NO. MEAS.	- 3	S.E. SIZE	- 17.1
NO. HAULS	- 127	MIN. SIZE	- 100
CAT./HAUL	- 0	MAX. SIZE	- 154

JAN - DEC			
990111 - 991215			
NO. CGHT.	- 91	MEAN SIZE	- 130
NO. MEAS.	- 91	S.E. SIZE	- 2.2
NO. HAULS	- 1382	MIN. SIZE	- 90
CAT./HAUL	- 0.1	MAX. SIZE	- 228

Figure 53.

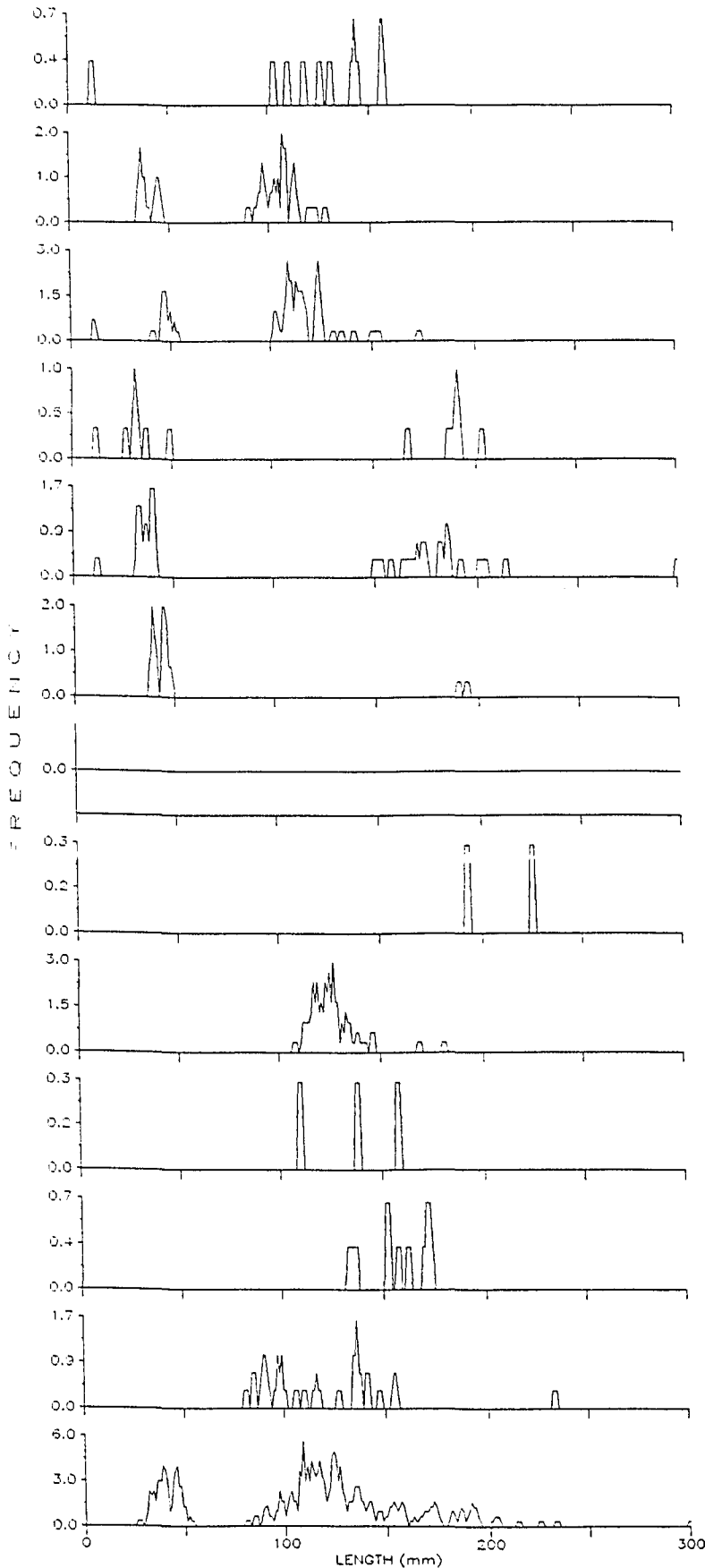
Atlantic Croaker, 1999



JANUARY	990111	-	990121		
NO. CGHT.	- 3129	MEAN SIZE	-	60.5	
NO. MEAS.	- 949	S.E. SIZE	-	0.7	
NO. HAULS	- 79	MIN. SIZE	-	18	
CAT./HAUL	- 39.6	MAX. SIZE	-	201	
FEBRUARY	990202	-	990216		
NO. CGHT.	- 1431	MEAN SIZE	-	92.2	
NO. MEAS.	- 671	S.E. SIZE	-	3.5	
NO. HAULS	- 122	MIN. SIZE	-	16	
CAT./HAUL	- 11.7	MAX. SIZE	-	383	
MARCH	990301	-	990323		
NO. CGHT.	- 570	MEAN SIZE	-	65	
NO. MEAS.	- 394	S.E. SIZE	-	2.4	
NO. HAULS	- 80	MIN. SIZE	-	19	
CAT./HAUL	- 7.1	MAX. SIZE	-	377	
APRIL	990405	-	990419		
NO. CGHT.	- 1305	MEAN SIZE	-	187.2	
NO. MEAS.	- 985	S.E. SIZE	-	3.3	
NO. HAULS	- 122	MIN. SIZE	-	16	
CAT./HAUL	- 10.7	MAX. SIZE	-	400	
MAY	990504	-	990519		
NO. CGHT.	- 6680	MEAN SIZE	-	196.5	
NO. MEAS.	- 2455	S.E. SIZE	-	1.4	
NO. HAULS	- 120	MIN. SIZE	-	18	
CAT./HAUL	- 55.7	MAX. SIZE	-	404	
JUNE	990601	-	990611		
NO. CGHT.	- 4462	MEAN SIZE	-	191.6	
NO. MEAS.	- 2725	S.E. SIZE	-	1.3	
NO. HAULS	- 118	MIN. SIZE	-	38	
CAT./HAUL	- 37.8	MAX. SIZE	-	420	
JULY	990701	-	990719		
NO. CGHT.	- 4483	MEAN SIZE	-	190.2	
NO. MEAS.	- 2550	S.E. SIZE	-	1.2	
NO. HAULS	- 119	MIN. SIZE	-	24	
CAT./HAUL	- 37.7	MAX. SIZE	-	414	
AUGUST	990804	-	990810		
NO. CGHT.	- 2921	MEAN SIZE	-	187.4	
NO. MEAS.	- 2015	S.E. SIZE	-	0.9	
NO. HAULS	- 118	MIN. SIZE	-	68	
CAT./HAUL	- 24.8	MAX. SIZE	-	383	
SEPTEMBER	990907	-	990924		
NO. CGHT.	- 1737	MEAN SIZE	-	129.8	
NO. MEAS.	- 1603	S.E. SIZE	-	2.2	
NO. HAULS	- 122	MIN. SIZE	-	6	
CAT./HAUL	- 14.2	MAX. SIZE	-	348	
OCTOBER	991004	-	991020		
NO. CGHT.	- 5790	MEAN SIZE	-	89.8	
NO. MEAS.	- 2102	S.E. SIZE	-	1.9	
NO. HAULS	- 124	MIN. SIZE	-	6	
CAT./HAUL	- 46.7	MAX. SIZE	-	394	
NOVEMBER	991101	-	991118		
NO. CGHT.	- 6010	MEAN SIZE	-	51.9	
NO. MEAS.	- 2367	S.E. SIZE	-	0.9	
NO. HAULS	- 131	MIN. SIZE	-	7	
CAT./HAUL	- 45.9	MAX. SIZE	-	346	
DECEMBER	991202	-	991215		
NO. CGHT.	- 10953	MEAN SIZE	-	45.1	
NO. MEAS.	- 2626	S.E. SIZE	-	0.4	
NO. HAULS	- 127	MIN. SIZE	-	7	
CAT./HAUL	- 86.2	MAX. SIZE	-	204	
JAN - DEC	990111	-	991215		
NO. CGHT.	- 49471	MEAN SIZE	-	132.2	
NO. MEAS.	- 21442	S.E. SIZE	-	0.6	
NO. HAULS	- 1382	MIN. SIZE	-	6	
CAT./HAUL	- 35.8	MAX. SIZE	-	420	

Figure 54.

Atlantic Menhaden, 1999



JANUARY	990111	-	990121	
NO. CGHT.	-	9	MEAN SIZE	- 129.9
NO. MEAS.	-	9	S.E. SIZE	- 6.5
NO. HAULS	-	79	MIN. SIZE	- 101
CAT./HAUL	-	0.1	MAX. SIZE	- 155

FEBRUARY	990202	-	990216	
NO. CGHT.	-	34	MEAN SIZE	- 91.1
NO. MEAS.	-	34	S.E. SIZE	- 8.7
NO. HAULS	-	122	MIN. SIZE	- 33
CAT./HAUL	-	0.3	MAX. SIZE	- 316

MARCH	990301	-	990323	
NO. CGHT.	-	47	MEAN SIZE	- 102.2
NO. MEAS.	-	47	S.E. SIZE	- 4.8
NO. HAULS	-	80	MIN. SIZE	- 39
CAT./HAUL	-	0.6	MAX. SIZE	- 171

APRIL	990405	-	990419	
NO. CGHT.	-	14	MEAN SIZE	- 140.6
NO. MEAS.	-	14	S.E. SIZE	- 28.9
NO. HAULS	-	122	MIN. SIZE	- 25
CAT./HAUL	-	0.1	MAX. SIZE	- 334

MAY	990504	-	990519	
NO. CGHT.	-	33	MEAN SIZE	- 128.6
NO. MEAS.	-	33	S.E. SIZE	- 14.6
NO. HAULS	-	120	MIN. SIZE	- 30
CAT./HAUL	-	0.3	MAX. SIZE	- 316

JUNE	990601	-	990611	
NO. CGHT.	-	17	MEAN SIZE	- 73.6
NO. MEAS.	-	17	S.E. SIZE	- 18.6
NO. HAULS	-	118	MIN. SIZE	- 36
CAT./HAUL	-	0.1	MAX. SIZE	- 302

JULY	990701	-	990719	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	119	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-

AUGUST	990804	-	990819	
NO. CGHT.	-	2	MEAN SIZE	- 207
NO. MEAS.	-	2	S.E. SIZE	- 16
NO. HAULS	-	118	MIN. SIZE	- 191
CAT./HAUL	-	0	MAX. SIZE	- 223

SEPTEMBER	990907	-	990924	
NO. CGHT.	-	45	MEAN SIZE	- 125.3
NO. MEAS.	-	45	S.E. SIZE	- 2
NO. HAULS	-	122	MIN. SIZE	- 106
CAT./HAUL	-	0.4	MAX. SIZE	- 179

OCTOBER	991004	-	991020	
NO. CGHT.	-	3	MEAN SIZE	- 133.3
NO. MEAS.	-	3	S.E. SIZE	- 13.9
NO. HAULS	-	124	MIN. SIZE	- 108
CAT./HAUL	-	0	MAX. SIZE	- 156

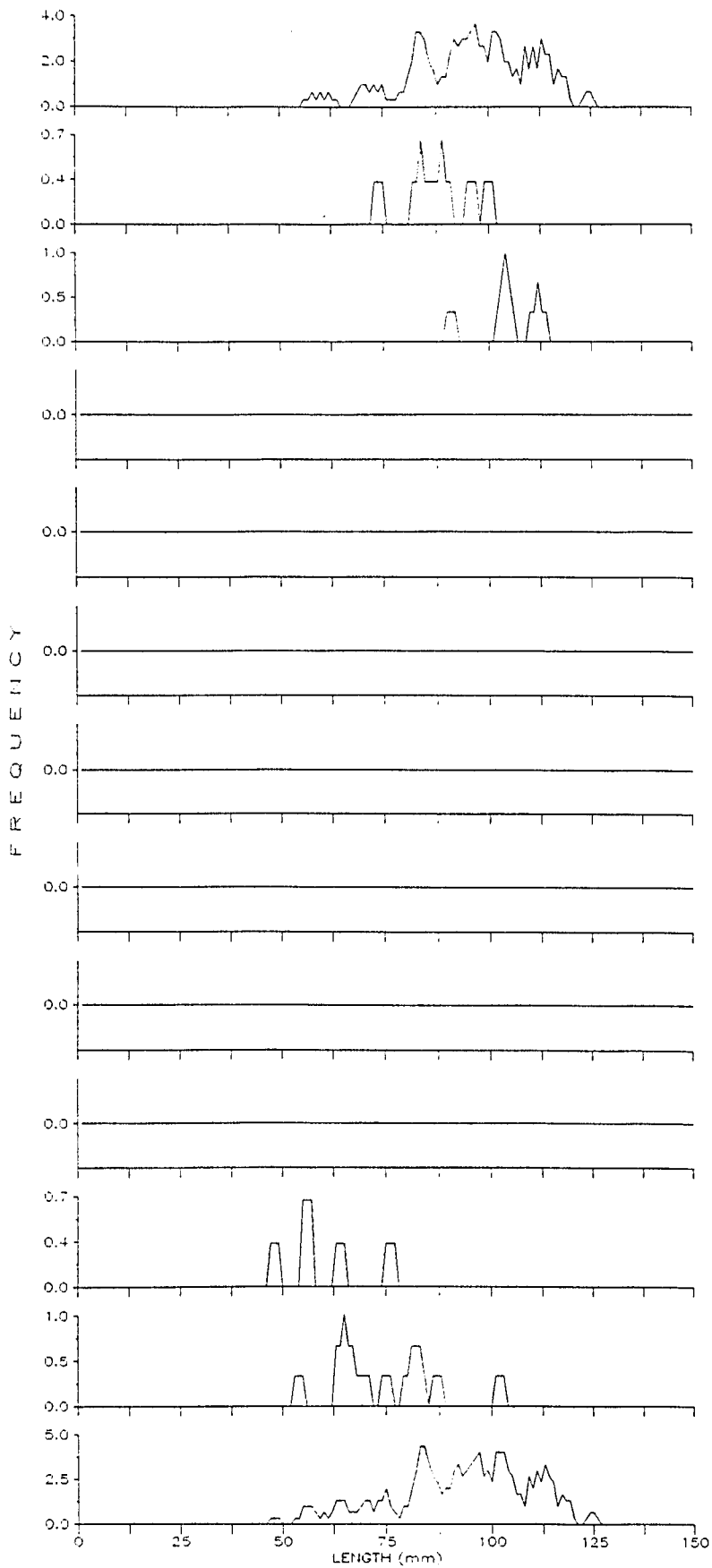
NOVEMBER	991101	-	991118	
NO. CGHT.	-	9	MEAN SIZE	- 154.3
NO. MEAS.	-	9	S.E. SIZE	- 4.9
NO. HAULS	-	131	MIN. SIZE	- 131
CAT./HAUL	-	0.1	MAX. SIZE	- 171

DECEMBER	991202	-	991215	
NO. CGHT.	-	27	MEAN SIZE	- 117.6
NO. MEAS.	-	27	S.E. SIZE	- 6.3
NO. HAULS	-	127	MIN. SIZE	- 79
CAT./HAUL	-	0.2	MAX. SIZE	- 231

JAN - DEC	990111	-	991215	
NO. CGHT.	-	240	MEAN SIZE	- 114.8
NO. MEAS.	-	240	S.E. SIZE	- 3.6
NO. HAULS	-	1382	MIN. SIZE	- 25
CAT./HAUL	-	0.2	MAX. SIZE	- 334

Figure 55.

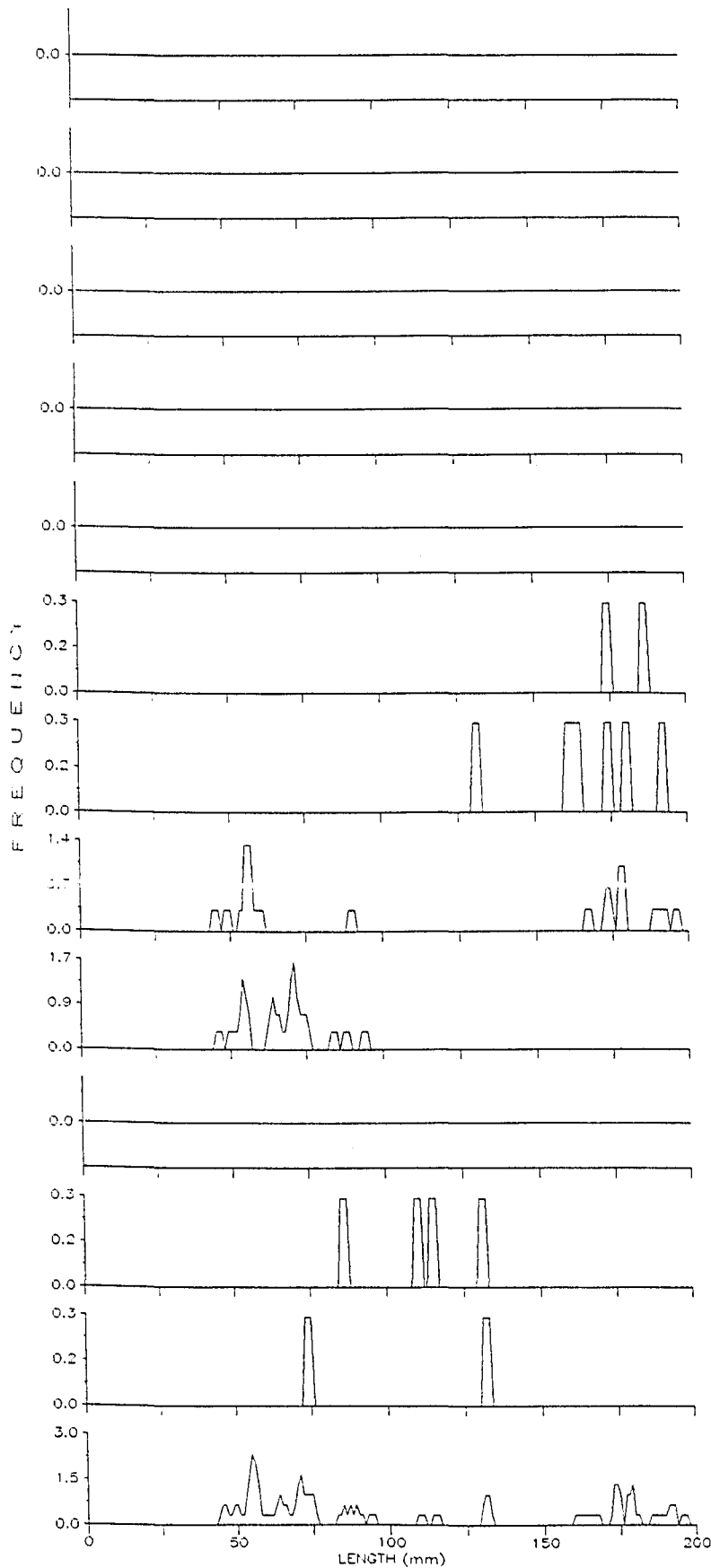
Atlantic Silverside, 1999



JANUARY	990111	-	990121		
NO. CGHT.	-	215	MEAN SIZE	-	94
NO. MEAS.	-	103	S.E. SIZE	-	1.5
NO. HAULS	-	79	MIN. SIZE	-	55
CAT./HAUL	-	2.7	MAX. SIZE	-	123
FEBRUARY	990202	-	990216		
NO. CGHT.	-	7	MEAN SIZE	-	86
NO. MEAS.	-	7	S.E. SIZE	-	3.2
NO. HAULS	-	122	MIN. SIZE	-	72
CAT./HAUL	-	0.1	MAX. SIZE	-	98
MARCH	990301	-	990323		
NO. CGHT.	-	6	MEAN SIZE	-	102.5
NO. MEAS.	-	6	S.E. SIZE	-	3.2
NO. HAULS	-	80	MIN. SIZE	-	89
CAT./HAUL	-	0.1	MAX. SIZE	-	111
APRIL	990405	-	990419		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	122	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
MAY	990504	-	990519		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	120	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
JUNE	990601	-	990611		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	118	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
JULY	990701	-	990719		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	119	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
AUGUST	990804	-	990819		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	118	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
SEPTEMBER	990907	-	990924		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	122	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
OCTOBER	991004	-	991020		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	124	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
NOVEMBER	991101	-	991118		
NO. CGHT.	-	5	MEAN SIZE	-	58
NO. MEAS.	-	5	S.E. SIZE	-	4.7
NO. HAULS	-	131	MIN. SIZE	-	46
CAT./HAUL	-	0	MAX. SIZE	-	74
DECEMBER	991202	-	991215		
NO. CGHT.	-	12	MEAN SIZE	-	72.5
NO. MEAS.	-	12	S.E. SIZE	-	3.8
NO. HAULS	-	127	MIN. SIZE	-	52
CAT./HAUL	-	0.1	MAX. SIZE	-	100
JAN - DEC	990111	-	991215		
NO. CGHT.	-	245	MEAN SIZE	-	90.7
NO. MEAS.	-	133	S.E. SIZE	-	1.4
NO. HAULS	-	1382	MIN. SIZE	-	46
CAT./HAUL	-	0.2	MAX. SIZE	-	123

Figure 56.

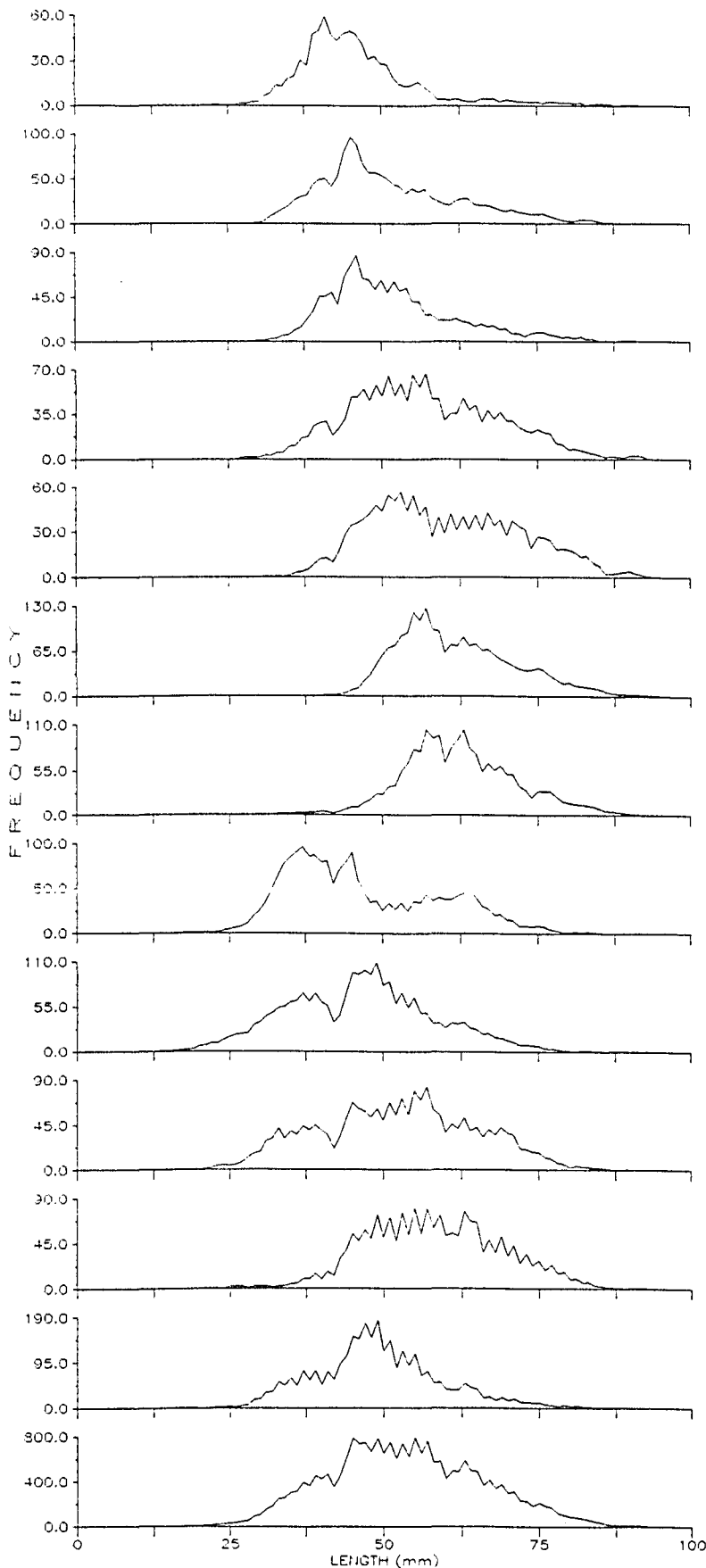
Atlantic Thread Herring, 1999



JANUARY	990111	990121		
NO. CGHT.	0	MEAN SIZE	-	
NO. MEAS.	0	S.E. SIZE	-	
NO. HAULS	79	MIN. SIZE	-	
CAT./HAUL	0	MAX. SIZE	-	
FEBRUARY	990202	990216		
NO. CGHT.	0	MEAN SIZE	-	
NO. MEAS.	0	S.E. SIZE	-	
NO. HAULS	122	MIN. SIZE	-	
CAT./HAUL	0	MAX. SIZE	-	
MARCH	990301	990323		
NO. CGHT.	0	MEAN SIZE	-	
NO. MEAS.	0	S.E. SIZE	-	
NO. HAULS	80	MIN. SIZE	-	
CAT./HAUL	0	MAX. SIZE	-	
APRIL	990405	990419		
NO. CGHT.	0	MEAN SIZE	-	
NO. MEAS.	0	S.E. SIZE	-	
NO. HAULS	122	MIN. SIZE	-	
CAT./HAUL	0	MAX. SIZE	-	
MAY	990504	990519		
NO. CGHT.	0	MEAN SIZE	-	
NO. MEAS.	0	S.E. SIZE	-	
NO. HAULS	120	MIN. SIZE	-	
CAT./HAUL	0	MAX. SIZE	-	
JUNE	990601	990611		
NO. CGHT.	2	MEAN SIZE	178	
NO. MEAS.	2	S.E. SIZE	6	
NO. HAULS	118	MIN. SIZE	172	
CAT./HAUL	0	MAX. SIZE	184	
JULY	990701	990719		
NO. CGHT.	6	MEAN SIZE	165	
NO. MEAS.	6	S.E. SIZE	8.5	
NO. HAULS	119	MIN. SIZE	129	
CAT./HAUL	0.1	MAX. SIZE	190	
AUGUST	990804	990819		
NO. CGHT.	18	MEAN SIZE	117.3	
NO. MEAS.	18	S.E. SIZE	15.1	
NO. HAULS	118	MIN. SIZE	43	
CAT./HAUL	0.2	MAX. SIZE	194	
SEPTEMBER	990907	990924		
NO. CGHT.	20	MEAN SIZE	65.1	
NO. MEAS.	20	S.E. SIZE	2.8	
NO. HAULS	122	MIN. SIZE	44	
CAT./HAUL	0.2	MAX. SIZE	92	
OCTOBER	991004	991020		
NO. CGHT.	0	MEAN SIZE	-	
NO. MEAS.	0	S.E. SIZE	-	
NO. HAULS	124	MIN. SIZE	-	
CAT./HAUL	0	MAX. SIZE	-	
NOVEMBER	991101	991118		
NO. CGHT.	4	MEAN SIZE	108.5	
NO. MEAS.	4	S.E. SIZE	9.3	
NO. HAULS	131	MIN. SIZE	84	
CAT./HAUL	0	MAX. SIZE	129	
DECEMBER	991202	991215		
NO. CGHT.	2	MEAN SIZE	101	
NO. MEAS.	2	S.E. SIZE	29	
NO. HAULS	127	MIN. SIZE	72	
CAT./HAUL	0	MAX. SIZE	130	
JAN - DEC	990111	991215		
NO. CGHT.	52	MEAN SIZE	103.8	
NO. MEAS.	52	S.E. SIZE	7.4	
NO. HAULS	1382	MIN. SIZE	43	
CAT./HAUL	0	MAX. SIZE	194	

Figure 57.

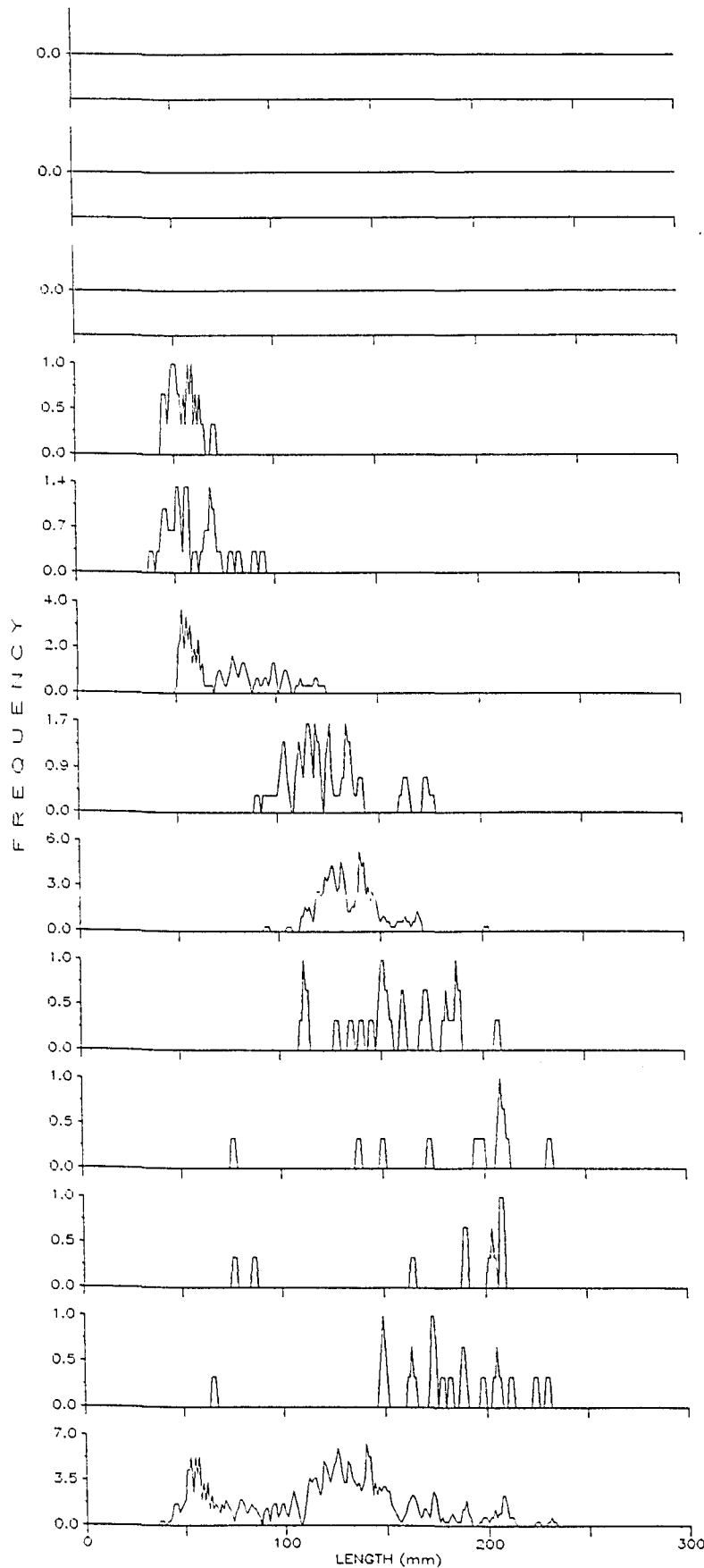
Bay Anchovy, 1999



JANUARY	990111	-	990121		
NO. CGHT.	- 7292	MEAN SIZE	-	44.1	
NO. MEAS.	- 874	S.E. SIZE	-	0.3	
NO. HAULS	- 79	MIN. SIZE	-	20	
CAT./HAUL	- 92.3	MAX. SIZE	-	88	
FEBRUARY	990202	-	990216		
NO. CGHT.	- 29847	MEAN SIZE	-	49.2	
NO. MEAS.	- 1570	S.E. SIZE	-	0.3	
NO. HAULS	- 122	MIN. SIZE	-	29	
CAT./HAUL	- 244.6	MAX. SIZE	-	92	
MARCH	990301	-	990323		
NO. CGHT.	- 14109	MEAN SIZE	-	49.6	
NO. MEAS.	- 1389	S.E. SIZE	-	0.3	
NO. HAULS	- 80	MIN. SIZE	-	28	
CAT./HAUL	- 176.4	MAX. SIZE	-	88	
APRIL	990405	-	990419		
NO. CGHT.	- 17216	MEAN SIZE	-	54.7	
NO. MEAS.	- 1670	S.E. SIZE	-	0.3	
NO. HAULS	- 122	MIN. SIZE	-	26	
CAT./HAUL	- 141.1	MAX. SIZE	-	89	
MAY	990504	-	990519		
NO. CGHT.	- 8469	MEAN SIZE	-	58.3	
NO. MEAS.	- 1470	S.E. SIZE	-	0.3	
NO. HAULS	- 120	MIN. SIZE	-	30	
CAT./HAUL	- 70.6	MAX. SIZE	-	90	
JUNE	990601	-	990611		
NO. CGHT.	- 30596	MEAN SIZE	-	59.9	
NO. MEAS.	- 2192	S.E. SIZE	-	0.2	
NO. HAULS	- 118	MIN. SIZE	-	39	
CAT./HAUL	- 259.3	MAX. SIZE	-	93	
JULY	990701	-	990719		
NO. CGHT.	- 19520	MEAN SIZE	-	60.5	
NO. MEAS.	- 1937	S.E. SIZE	-	0.2	
NO. HAULS	- 119	MIN. SIZE	-	26	
CAT./HAUL	- 164	MAX. SIZE	-	89	
AUGUST	990804	-	990819		
NO. CGHT.	- 51562	MEAN SIZE	-	44.9	
NO. MEAS.	- 2164	S.E. SIZE	-	0.3	
NO. HAULS	- 118	MIN. SIZE	-	12	
CAT./HAUL	- 437	MAX. SIZE	-	94	
SEPTEMBER	990907	-	990924		
NO. CGHT.	- 40595	MEAN SIZE	-	44.4	
NO. MEAS.	- 2442	S.E. SIZE	-	0.2	
NO. HAULS	- 122	MIN. SIZE	-	13	
CAT./HAUL	- 332.7	MAX. SIZE	-	86	
OCTOBER	991004	-	991020		
NO. CGHT.	- 42782	MEAN SIZE	-	50.2	
NO. MEAS.	- 2169	S.E. SIZE	-	0.3	
NO. HAULS	- 124	MIN. SIZE	-	20	
CAT./HAUL	- 345	MAX. SIZE	-	84	
NOVEMBER	991101	-	991118		
NO. CGHT.	- 53343	MEAN SIZE	-	56	
NO. MEAS.	- 1939	S.E. SIZE	-	0.2	
NO. HAULS	- 131	MIN. SIZE	-	19	
CAT./HAUL	- 407.2	MAX. SIZE	-	89	
DECEMBER	991202	-	991215		
NO. CGHT.	- 79893	MEAN SIZE	-	47.1	
NO. MEAS.	- 3083	S.E. SIZE	-	0.2	
NO. HAULS	- 127	MIN. SIZE	-	14	
CAT./HAUL	- 629.1	MAX. SIZE	-	85	
JAN - DEC	990111	-	991215		
NO. CGHT.	-395224	MEAN SIZE	-	51.5	
NO. MEAS.	- 22899	S.E. SIZE	-	0.1	
NO. HAULS	- 1382	MIN. SIZE	-	12	
CAT./HAUL	- 286	MAX. SIZE	-	94	

Figure 58.

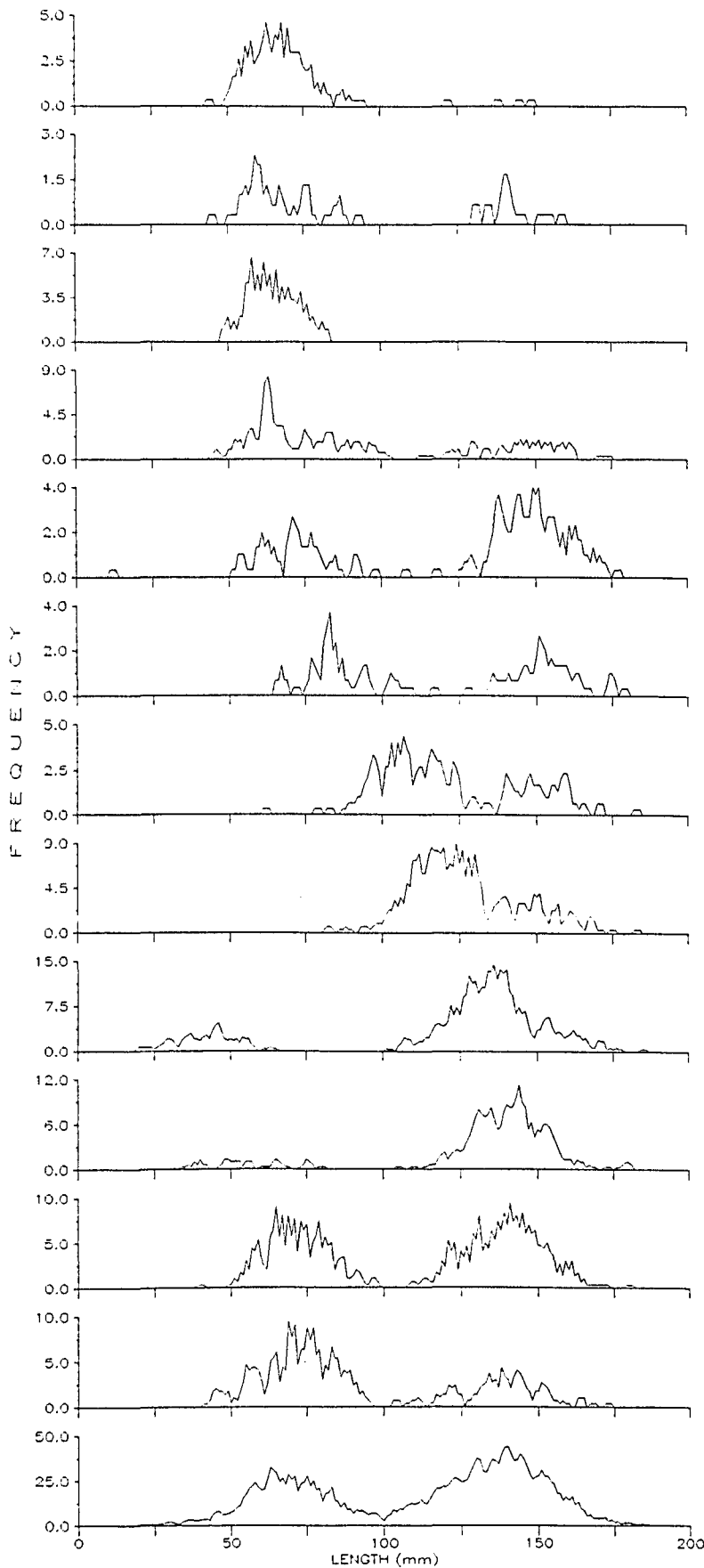
Black Sea Bass, 1999



JANUARY	990111	-	990121	
NO. CGHT.	0	MEAN SIZE	-	
NO. MEAS.	0	S.E. SIZE	-	
NO. HAULS	79	MIN. SIZE	-	
CAT./HAUL	0	MAX. SIZE	-	
FEBRUARY	990202	-	990216	
NO. CGHT.	0	MEAN SIZE	-	
NO. MEAS.	0	S.E. SIZE	-	
NO. HAULS	122	MIN. SIZE	-	
CAT./HAUL	0	MAX. SIZE	-	
MARCH	990301	-	990323	
NO. CGHT.	0	MEAN SIZE	-	
NO. MEAS.	0	S.E. SIZE	-	
NO. HAULS	80	MIN. SIZE	-	
CAT./HAUL	0	MAX. SIZE	-	
APRIL	990405	-	990419	
NO. CGHT.	15	MEAN SIZE	-	52.8
NO. MEAS.	15	S.E. SIZE	-	1.9
NO. HAULS	122	MIN. SIZE	-	43
CAT./HAUL	0.1	MAX. SIZE	-	68
MAY	990504	-	990513	
NO. CGHT.	28	MEAN SIZE	-	57.7
NO. MEAS.	23	S.E. SIZE	-	2.7
NO. HAULS	120	MIN. SIZE	-	36
CAT./HAUL	0.2	MAX. SIZE	-	92
JUNE	990601	-	990611	
NO. CGHT.	64	MEAN SIZE	-	73.7
NO. MEAS.	64	S.E. SIZE	-	2.7
NO. HAULS	118	MIN. SIZE	-	49
CAT./HAUL	0.5	MAX. SIZE	-	121
JULY	990701	-	990713	
NO. CGHT.	46	MEAN SIZE	-	122.8
NO. MEAS.	46	S.E. SIZE	-	3.1
NO. HAULS	119	MIN. SIZE	-	88
CAT./HAUL	0.4	MAX. SIZE	-	174
AUGUST	990804	-	990813	
NO. CGHT.	119	MEAN SIZE	-	133
NO. MEAS.	119	S.E. SIZE	-	1.4
NO. HAULS	113	MIN. SIZE	-	92
CAT./HAUL	1	MAX. SIZE	-	200
SEPTEMBER	990907	-	990924	
NO. CGHT.	23	MEAN SIZE	-	155
NO. MEAS.	23	S.E. SIZE	-	5.5
NO. HAULS	122	MIN. SIZE	-	109
CAT./HAUL	0.2	MAX. SIZE	-	205
OCTOBER	991004	-	991020	
NO. CGHT.	11	MEAN SIZE	-	179.7
NO. MEAS.	11	S.E. SIZE	-	13.5
NO. HAULS	124	MIN. SIZE	-	74
CAT./HAUL	0.1	MAX. SIZE	-	230
NOVEMBER	991101	-	991113	
NO. CGHT.	10	MEAN SIZE	-	171.6
NO. MEAS.	10	S.E. SIZE	-	16
NO. HAULS	131	MIN. SIZE	-	74
CAT./HAUL	0.1	MAX. SIZE	-	206
DECEMBER	991202	-	991215	
NO. CGHT.	19	MEAN SIZE	-	175.4
NO. MEAS.	19	S.E. SIZE	-	8.4
NO. HAULS	127	MIN. SIZE	-	63
CAT./HAUL	0.1	MAX. SIZE	-	228
JAN - DEC	990111	-	991215	
NO. CGHT.	335	MEAN SIZE	-	117
NO. MEAS.	335	S.E. SIZE	-	2.4
NO. HAULS	1382	MIN. SIZE	-	36
CAT./HAUL	0.2	MAX. SIZE	-	230

Figure 59.

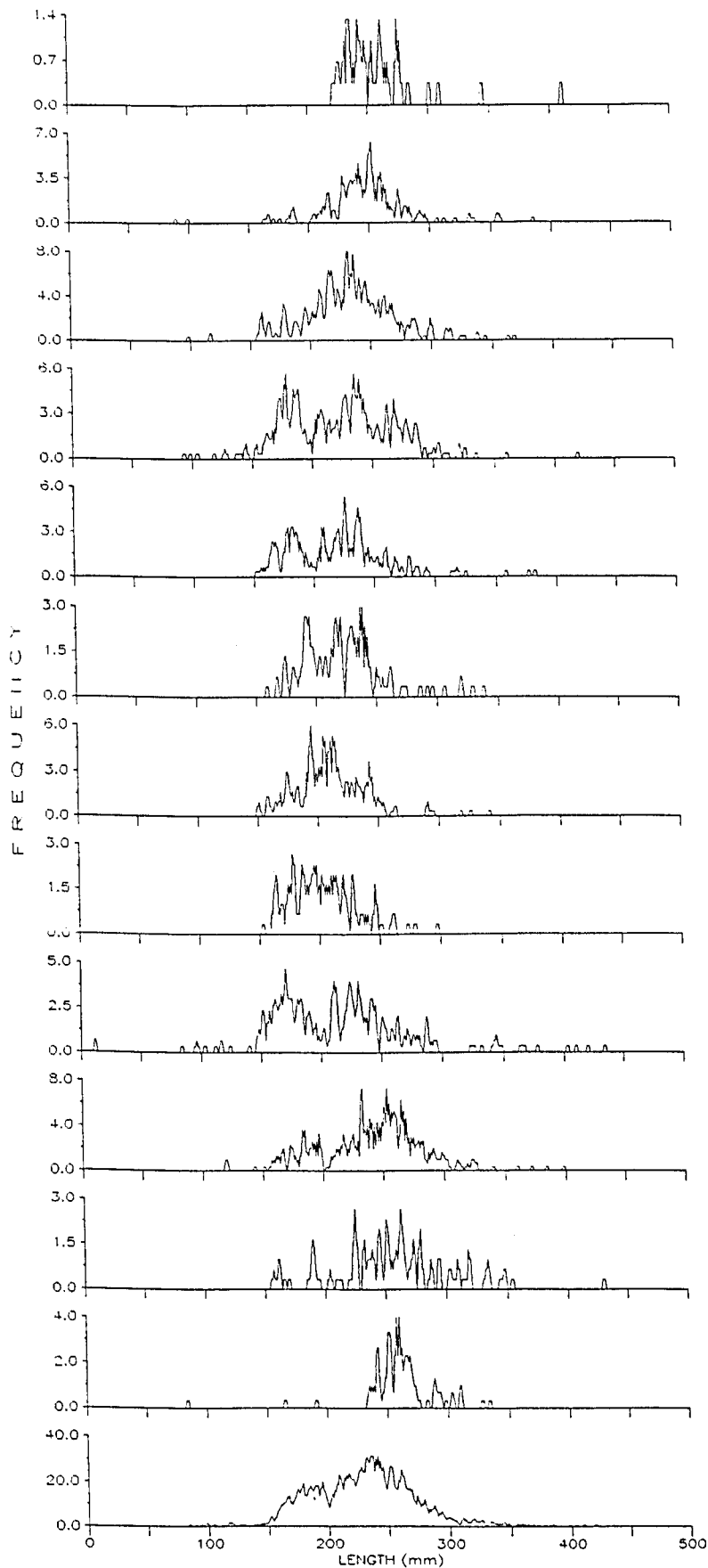
Blackcheek Tonguefish, 1999



JANUARY	990111 - 990121		
NO. CGHT.	- 98	MEAN SIZE	- 67.9
NO. MEAS.	- 98	S.E. SIZE	- 1.7
NO. HAULS	- 79	MIN. SIZE	- 42
CAT./HAUL	- 1.2	MAX. SIZE	- 147
FEBRUARY	990202 - 990216		
NO. CGHT.	- 49	MEAN SIZE	- 87.9
NO. MEAS.	- 49	S.E. SIZE	- 5.2
NO. HAULS	- 122	MIN. SIZE	- 43
CAT./HAUL	- 0.4	MAX. SIZE	- 157
MARCH	990301 - 990323		
NO. CGHT.	- 115	MEAN SIZE	- 62.8
NO. MEAS.	- 110	S.E. SIZE	- 0.8
NO. HAULS	- 30	MIN. SIZE	- 47
CAT./HAUL	- 1.4	MAX. SIZE	- 80
APRIL	990405 - 990419		
NO. CGHT.	- 168	MEAN SIZE	- 91.5
NO. MEAS.	- 168	S.E. SIZE	- 2.8
NO. HAULS	- 122	MIN. SIZE	- 43
CAT./HAUL	- 1.4	MAX. SIZE	- 172
MAY	990504 - 990519		
NO. CGHT.	- 287	MEAN SIZE	- 122.3
NO. MEAS.	- 138	S.E. SIZE	- 3.2
NO. HAULS	- 120	MIN. SIZE	- 50
CAT./HAUL	- 2.4	MAX. SIZE	- 175
JUNE	990601 - 990611		
NO. CGHT.	- 84	MEAN SIZE	- 119.4
NO. MEAS.	- 83	S.E. SIZE	- 4
NO. HAULS	- 118	MIN. SIZE	- 64
CAT./HAUL	- 0.7	MAX. SIZE	- 201
JULY	990701 - 990719		
NO. CGHT.	- 147	MEAN SIZE	- 120.4
NO. MEAS.	- 147	S.E. SIZE	- 1.9
NO. HAULS	- 119	MIN. SIZE	- 60
CAT./HAUL	- 1.2	MAX. SIZE	- 181
AUGUST	990804 - 990819		
NO. CGHT.	- 290	MEAN SIZE	- 124.7
NO. MEAS.	- 290	S.E. SIZE	- 1.1
NO. HAULS	- 118	MIN. SIZE	- 80
CAT./HAUL	- 2.5	MAX. SIZE	- 181
SEPTEMBER	990907 - 990924		
NO. CGHT.	- 450	MEAN SIZE	- 119.5
NO. MEAS.	- 450	S.E. SIZE	- 1.8
NO. HAULS	- 122	MIN. SIZE	- 18
CAT./HAUL	- 3.7	MAX. SIZE	- 183
OCTOBER	991004 - 991020		
NO. CGHT.	- 288	MEAN SIZE	- 130.2
NO. MEAS.	- 271	S.E. SIZE	- 1.7
NO. HAULS	- 124	MIN. SIZE	- 33
CAT./HAUL	- 2.3	MAX. SIZE	- 178
NOVEMBER	991101 - 991118		
NO. CGHT.	- 414	MEAN SIZE	- 107.7
NO. MEAS.	- 414	S.E. SIZE	- 1.8
NO. HAULS	- 131	MIN. SIZE	- 38
CAT./HAUL	- 3.2	MAX. SIZE	- 178
DECEMBER	991202 - 991215		
NO. CGHT.	- 358	MEAN SIZE	- 90.1
NO. MEAS.	- 301	S.E. SIZE	- 1.9
NO. HAULS	- 127	MIN. SIZE	- 40
CAT./HAUL	- 2.8	MAX. SIZE	- 171
JAN - DEC	990111 - 991215		
NO. CGHT.	- 2748	MEAN SIZE	- 109
NO. MEAS.	- 2519	S.E. SIZE	- 0.7
NO. HAULS	- 1382	MIN. SIZE	- 18
CAT./HAUL	- 2	MAX. SIZE	- 201

Figure 60.

Blue Catfish, 1999



JANUARY	990111	-	990121	
NO. CGHT.	-	42	MEAN SIZE	- 256.7
NO. MEAS.	-	42	S.E. SIZE	- 5.3
NO. HAULS	-	79	MIN. SIZE	- 220
CAT./HAUL	-	0.5	MAX. SIZE	- 408

FEBRUARY	990202	-	990216	
NO. CGHT.	-	484	MEAN SIZE	- 244.5
NO. MEAS.	-	198	S.E. SIZE	- 2.6
NO. HAULS	-	122	MIN. SIZE	- 87
CAT./HAUL	-	4	MAX. SIZE	- 383

MARCH	990301	-	990323	
NO. CGHT.	-	1062	MEAN SIZE	- 230.5
NO. MEAS.	-	384	S.E. SIZE	- 1.9
NO. HAULS	-	80	MIN. SIZE	- 96
CAT./HAUL	-	13.3	MAX. SIZE	- 366

APRIL	990405	-	990419	
NO. CGHT.	-	1040	MEAN SIZE	- 221.2
NO. MEAS.	-	356	S.E. SIZE	- 2.4
NO. HAULS	-	122	MIN. SIZE	- 91
CAT./HAUL	-	8.5	MAX. SIZE	- 417

MAY	990504	-	990519	
NO. CGHT.	-	995	MEAN SIZE	- 217.1
NO. MEAS.	-	221	S.E. SIZE	- 2.7
NO. HAULS	-	120	MIN. SIZE	- 150
CAT./HAUL	-	8.3	MAX. SIZE	- 380

JUNE	990601	-	990611	
NO. CGHT.	-	131	MEAN SIZE	- 220.1
NO. MEAS.	-	129	S.E. SIZE	- 2.9
NO. HAULS	-	118	MIN. SIZE	- 157
CAT./HAUL	-	1.1	MAX. SIZE	- 336

JULY	990701	-	990719	
NO. CGHT.	-	301	MEAN SIZE	- 209
NO. MEAS.	-	227	S.E. SIZE	- 2
NO. HAULS	-	119	MIN. SIZE	- 148
CAT./HAUL	-	2.5	MAX. SIZE	- 339

AUGUST	990804	-	990819	
NO. CGHT.	-	296	MEAN SIZE	- 201.5
NO. MEAS.	-	122	S.E. SIZE	- 2.5
NO. HAULS	-	118	MIN. SIZE	- 151
CAT./HAUL	-	2.5	MAX. SIZE	- 295

SEPTEMBER	990907	-	990924	
NO. CGHT.	-	309	MEAN SIZE	- 212.5
NO. MEAS.	-	289	S.E. SIZE	- 3.2
NO. HAULS	-	122	MIN. SIZE	- 82
CAT./HAUL	-	2.5	MAX. SIZE	- 432

OCTOBER	991004	-	991020	
NO. CGHT.	-	1025	MEAN SIZE	- 240.1
NO. MEAS.	-	368	S.E. SIZE	- 2.5
NO. HAULS	-	124	MIN. SIZE	- 117
CAT./HAUL	-	8.3	MAX. SIZE	- 589

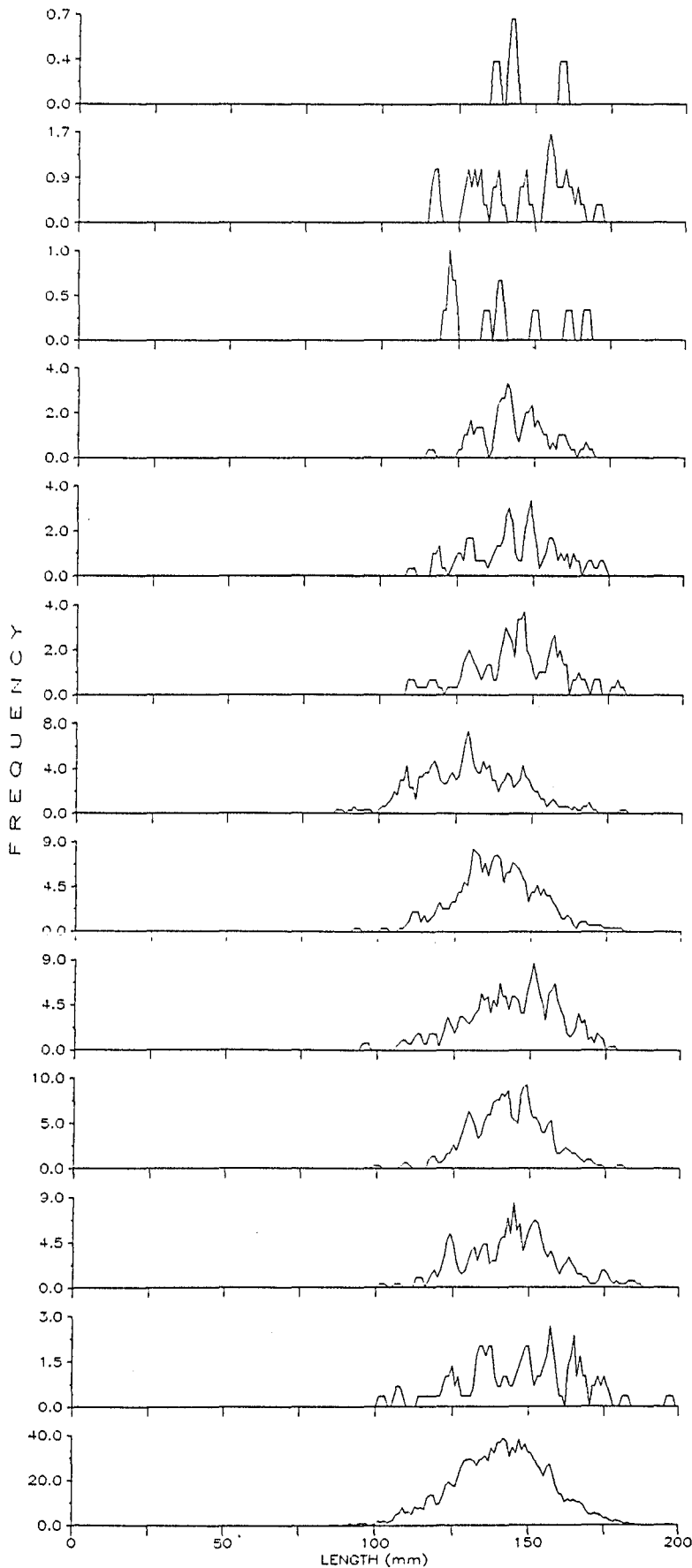
NOVEMBER	991101	-	991118	
NO. CGHT.	-	145	MEAN SIZE	- 253.7
NO. MEAS.	-	114	S.E. SIZE	- 4.5
NO. HAULS	-	131	MIN. SIZE	- 154
CAT./HAUL	-	1.1	MAX. SIZE	- 428

DECEMBER	991202	-	991215	
NO. CGHT.	-	642	MEAN SIZE	- 258.2
NO. MEAS.	-	93	S.E. SIZE	- 3.1
NO. HAULS	-	127	MIN. SIZE	- 82
CAT./HAUL	-	5.1	MAX. SIZE	- 332

JAN - DEC	990111	-	991215	
NO. CGHT.	-	6472	MEAN SIZE	- 227.1
NO. MEAS.	-	2543	S.E. SIZE	- 0.9
NO. HAULS	-	1382	MIN. SIZE	- 82
CAT./HAUL	-	4.7	MAX. SIZE	- 589

Figure 61.

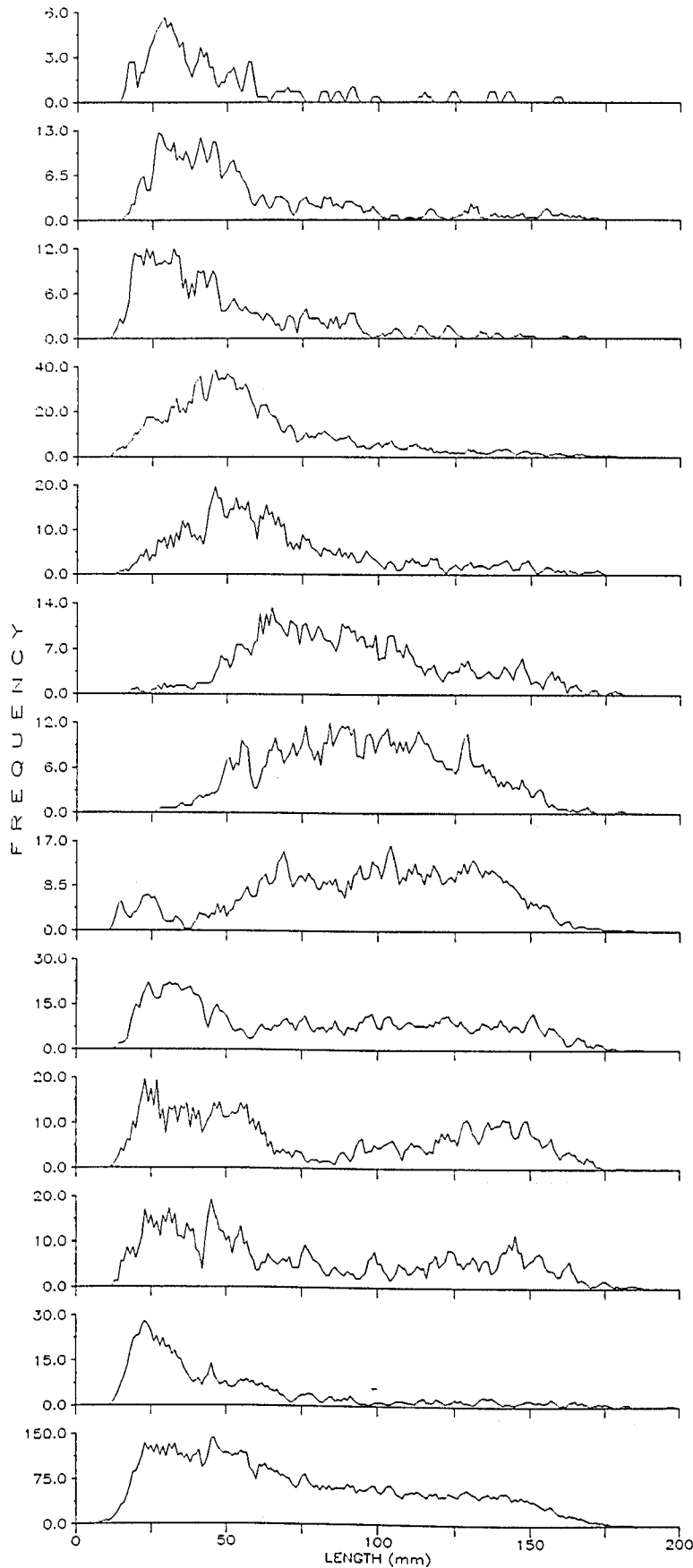
Blue Crab – Adult Female, 1999



JANUARY	990111	–	990121		
NO. CGHT.	–	4	MEAN SIZE	–	143.3
NO. MEAS.	–	4	S.E. SIZE	–	4.8
NO. HAULS	–	79	MIN. SIZE	–	135
CAT./HAUL	–	0.1	MAX. SIZE	–	157
FEBRUARY	990202	–	990216		
NO. CGHT.	–	27	MEAN SIZE	–	142.2
NO. MEAS.	–	27	S.E. SIZE	–	3.1
NO. HAULS	–	122	MIN. SIZE	–	115
CAT./HAUL	–	0.2	MAX. SIZE	–	169
MARCH	990301	–	990323		
NO. CGHT.	–	9	MEAN SIZE	–	137.6
NO. MEAS.	–	9	S.E. SIZE	–	5.6
NO. HAULS	–	80	MIN. SIZE	–	119
CAT./HAUL	–	0.1	MAX. SIZE	–	165
APRIL	990405	–	990419		
NO. CGHT.	–	56	MEAN SIZE	–	141.5
NO. MEAS.	–	52	S.E. SIZE	–	1.5
NO. HAULS	–	122	MIN. SIZE	–	114
CAT./HAUL	–	0.5	MAX. SIZE	–	166
MAY	990504	–	990519		
NO. CGHT.	–	61	MEAN SIZE	–	141.6
NO. MEAS.	–	61	S.E. SIZE	–	1.9
NO. HAULS	–	120	MIN. SIZE	–	108
CAT./HAUL	–	0.5	MAX. SIZE	–	171
JUNE	990601	–	990611		
NO. CGHT.	–	76	MEAN SIZE	–	142.4
NO. MEAS.	–	76	S.E. SIZE	–	1.7
NO. HAULS	–	118	MIN. SIZE	–	108
CAT./HAUL	–	0.6	MAX. SIZE	–	177
JULY	990701	–	990719		
NO. CGHT.	–	186	MEAN SIZE	–	127.8
NO. MEAS.	–	186	S.E. SIZE	–	1.2
NO. HAULS	–	119	MIN. SIZE	–	85
CAT./HAUL	–	1.6	MAX. SIZE	–	178
AUGUST	990804	–	990819		
NO. CGHT.	–	233	MEAN SIZE	–	136.9
NO. MEAS.	–	233	S.E. SIZE	–	0.9
NO. HAULS	–	118	MIN. SIZE	–	91
CAT./HAUL	–	2	MAX. SIZE	–	177
SEPTEMBER	990907	–	990924		
NO. CGHT.	–	225	MEAN SIZE	–	141.7
NO. MEAS.	–	225	S.E. SIZE	–	1
NO. HAULS	–	122	MIN. SIZE	–	94
CAT./HAUL	–	1.8	MAX. SIZE	–	175
OCTOBER	991004	–	991020		
NO. CGHT.	–	271	MEAN SIZE	–	141
NO. MEAS.	–	225	S.E. SIZE	–	0.8
NO. HAULS	–	124	MIN. SIZE	–	98
CAT./HAUL	–	2.2	MAX. SIZE	–	178
NOVEMBER	991101	–	991118		
NO. CGHT.	–	199	MEAN SIZE	–	142.4
NO. MEAS.	–	199	S.E. SIZE	–	1.1
NO. HAULS	–	131	MIN. SIZE	–	100
CAT./HAUL	–	1.5	MAX. SIZE	–	184
DECEMBER	991202	–	991215		
NO. CGHT.	–	69	MEAN SIZE	–	145.2
NO. MEAS.	–	69	S.E. SIZE	–	2.3
NO. HAULS	–	127	MIN. SIZE	–	100
CAT./HAUL	–	0.5	MAX. SIZE	–	195
JAN – DEC	990111	–	991215		
NO. CGHT.	–	1416	MEAN SIZE	–	139.2
NO. MEAS.	–	1366	S.E. SIZE	–	0.4
NO. HAULS	–	1382	MIN. SIZE	–	85
CAT./HAUL	–	1	MAX. SIZE	–	195

Figure 62.

Blue Crab - ALL, 1999



JANUARY	990111	-	990121	
NO. CGHT.	-	0	MEAN SIZE	- 43.8
NO. MEAS.	-	147	S.E. SIZE	- 2.4
NO. HAULS	-	79	MIN. SIZE	- 14
CAT./HAUL	-	0	MAX. SIZE	- 157

FEBRUARY	990202	-	990216	
NO. CGHT.	-	0	MEAN SIZE	- 53.3
NO. MEAS.	-	470	S.E. SIZE	- 1.5
NO. HAULS	-	122	MIN. SIZE	- 9
CAT./HAUL	-	0	MAX. SIZE	- 169

MARCH	990301	-	990323	
NO. CGHT.	-	0	MEAN SIZE	- 46
NO. MEAS.	-	460	S.E. SIZE	- 1.4
NO. HAULS	-	80	MIN. SIZE	- 10
CAT./HAUL	-	0	MAX. SIZE	- 165

APRIL	990405	-	990419	
NO. CGHT.	-	6	MEAN SIZE	- 56.9
NO. MEAS.	-	1662	S.E. SIZE	- 0.7
NO. HAULS	-	122	MIN. SIZE	- 5
CAT./HAUL	-	0	MAX. SIZE	- 175

MAY	990504	-	990519	
NO. CGHT.	-	0	MEAN SIZE	- 65.4
NO. MEAS.	-	833	S.E. SIZE	- 1.1
NO. HAULS	-	120	MIN. SIZE	- 13
CAT./HAUL	-	0	MAX. SIZE	- 171

JUNE	990601	-	990611	
NO. CGHT.	-	0	MEAN SIZE	- 88.4
NO. MEAS.	-	760	S.E. SIZE	- 1.1
NO. HAULS	-	118	MIN. SIZE	- 17
CAT./HAUL	-	0	MAX. SIZE	- 177

JULY	990701	-	990719	
NO. CGHT.	-	0	MEAN SIZE	- 94
NO. MEAS.	-	840	S.E. SIZE	- 1
NO. HAULS	-	119	MIN. SIZE	- 26
CAT./HAUL	-	0	MAX. SIZE	- 178

AUGUST	990804	-	990819	
NO. CGHT.	-	23	MEAN SIZE	- 94.6
NO. MEAS.	-	1180	S.E. SIZE	- 1.1
NO. HAULS	-	118	MIN. SIZE	- 7
CAT./HAUL	-	0.2	MAX. SIZE	- 181

SEPTEMBER	990907	-	990924	
NO. CGHT.	-	0	MEAN SIZE	- 78.1
NO. MEAS.	-	1483	S.E. SIZE	- 1.2
NO. HAULS	-	122	MIN. SIZE	- 6
CAT./HAUL	-	0	MAX. SIZE	- 184

OCTOBER	991004	-	991020	
NO. CGHT.	-	0	MEAN SIZE	- 78.9
NO. MEAS.	-	1138	S.E. SIZE	- 1.4
NO. HAULS	-	124	MIN. SIZE	- 7
CAT./HAUL	-	0	MAX. SIZE	- 178

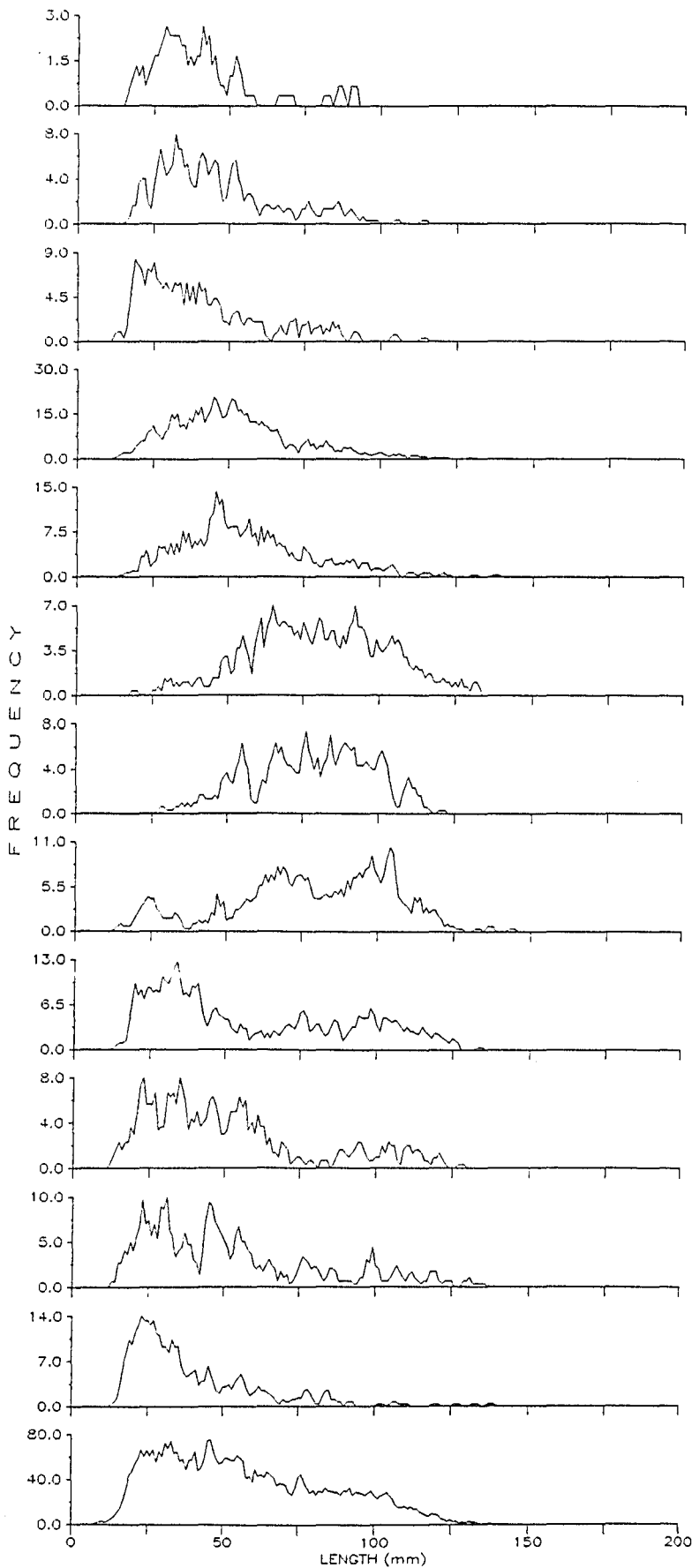
NOVEMBER	991101	-	991118	
NO. CGHT.	-	11	MEAN SIZE	- 76.6
NO. MEAS.	-	1087	S.E. SIZE	- 1.4
NO. HAULS	-	131	MIN. SIZE	- 9
CAT./HAUL	-	0.1	MAX. SIZE	- 184

DECEMBER	991202	-	991215	
NO. CGHT.	-	13	MEAN SIZE	- 49.7
NO. MEAS.	-	857	S.E. SIZE	- 1.3
NO. HAULS	-	127	MIN. SIZE	- 7
CAT./HAUL	-	0.1	MAX. SIZE	- 195

JAN - DEC	990111	-	991215	
NO. CGHT.	-	53	MEAN SIZE	- 72.5
NO. MEAS.	-	10917	S.E. SIZE	- 0.4
NO. HAULS	-	1382	MIN. SIZE	- 5
CAT./HAUL	-	0	MAX. SIZE	- 195

Figure 63.

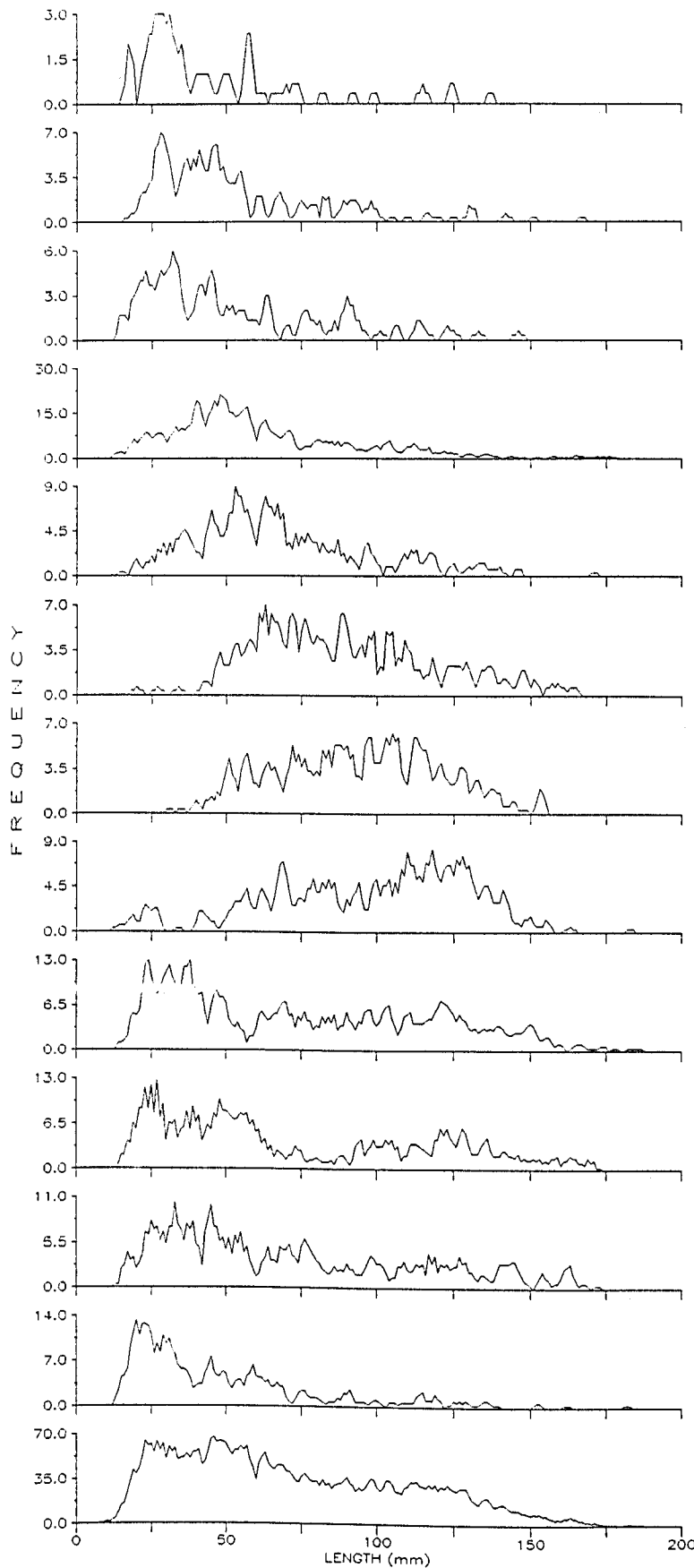
Blue Crab – Juvenile Female, 1999



JANUARY	990111	–	990121		
NO. CGHT.	–	67	MEAN SIZE	–	38.3
NO. MEAS.	–	67	S.E. SIZE	–	2.1
NO. HAULS	–	79	MIN. SIZE	–	15
CAT./HAUL	–	0.8	MAX. SIZE	–	89
FEBRUARY	990202	–	990216		
NO. CGHT.	–	220	MEAN SIZE	–	44.1
NO. MEAS.	–	220	S.E. SIZE	–	1.3
NO. HAULS	–	122	MIN. SIZE	–	15
CAT./HAUL	–	1.8	MAX. SIZE	–	112
MARCH	990301	–	990323		
NO. CGHT.	–	246	MEAN SIZE	–	38.7
NO. MEAS.	–	246	S.E. SIZE	–	1.3
NO. HAULS	–	80	MIN. SIZE	–	10
CAT./HAUL	–	3.1	MAX. SIZE	–	112
APRIL	990405	–	990419		
NO. CGHT.	–	961	MEAN SIZE	–	49
NO. MEAS.	–	748	S.E. SIZE	–	0.7
NO. HAULS	–	122	MIN. SIZE	–	7
CAT./HAUL	–	7.9	MAX. SIZE	–	128
MAY	990504	–	990519		
NO. CGHT.	–	416	MEAN SIZE	–	54.2
NO. MEAS.	–	416	S.E. SIZE	–	1.1
NO. HAULS	–	120	MIN. SIZE	–	13
CAT./HAUL	–	3.5	MAX. SIZE	–	136
JUNE	990601	–	990611		
NO. CGHT.	–	325	MEAN SIZE	–	77.7
NO. MEAS.	–	325	S.E. SIZE	–	1.2
NO. HAULS	–	118	MIN. SIZE	–	17
CAT./HAUL	–	2.8	MAX. SIZE	–	130
JULY	990701	–	990719		
NO. CGHT.	–	293	MEAN SIZE	–	75.7
NO. MEAS.	–	293	S.E. SIZE	–	1.2
NO. HAULS	–	119	MIN. SIZE	–	26
CAT./HAUL	–	2.5	MAX. SIZE	–	119
AUGUST	990804	–	990819		
NO. CGHT.	–	452	MEAN SIZE	–	76
NO. MEAS.	–	452	S.E. SIZE	–	1.3
NO. HAULS	–	118	MIN. SIZE	–	12
CAT./HAUL	–	3.8	MAX. SIZE	–	142
SEPTEMBER	990907	–	990924		
NO. CGHT.	–	504	MEAN SIZE	–	56.4
NO. MEAS.	–	504	S.E. SIZE	–	1.4
NO. HAULS	–	122	MIN. SIZE	–	6
CAT./HAUL	–	4.1	MAX. SIZE	–	132
OCTOBER	991004	–	991020		
NO. CGHT.	–	315	MEAN SIZE	–	49.5
NO. MEAS.	–	308	S.E. SIZE	–	1.6
NO. HAULS	–	124	MIN. SIZE	–	7
CAT./HAUL	–	2.5	MAX. SIZE	–	126
NOVEMBER	991101	–	991118		
NO. CGHT.	–	374	MEAN SIZE	–	49.9
NO. MEAS.	–	349	S.E. SIZE	–	1.5
NO. HAULS	–	131	MIN. SIZE	–	10
CAT./HAUL	–	2.9	MAX. SIZE	–	133
DECEMBER	991202	–	991215		
NO. CGHT.	–	484	MEAN SIZE	–	37.1
NO. MEAS.	–	362	S.E. SIZE	–	1.1
NO. HAULS	–	127	MIN. SIZE	–	7
CAT./HAUL	–	3.8	MAX. SIZE	–	136
JAN – DEC	990111	–	991215		
NO. CGHT.	–	4657	MEAN SIZE	–	55.3
NO. MEAS.	–	4290	S.E. SIZE	–	0.4
NO. HAULS	–	1382	MIN. SIZE	–	6
CAT./HAUL	–	3.4	MAX. SIZE	–	142

Figure 64.

Blue Crab — Male, 1999



JANUARY	990111	990121		
NO. CGHT.	76	MEAN SIZE	43.4	
NO. MEAS.	76	S.E. SIZE	3.2	
NO. HAULS	79	MIN. SIZE	14	
CAT./HAUL	1	MAX. SIZE	135	

FEBRUARY	990202	990216		
NO. CGHT.	223	MEAN SIZE	51.6	
NO. MEAS.	223	S.E. SIZE	1.9	
NO. HAULS	122	MIN. SIZE	9	
CAT./HAUL	1.8	MAX. SIZE	165	

MARCH	990301	990323		
NO. CGHT.	205	MEAN SIZE	50.6	
NO. MEAS.	205	S.E. SIZE	2.1	
NO. HAULS	80	MIN. SIZE	12	
CAT./HAUL	2.6	MAX. SIZE	145	

APRIL	990405	990419		
NO. CGHT.	1060	MEAN SIZE	58.8	
NO. MEAS.	856	S.E. SIZE	1	
NO. HAULS	122	MIN. SIZE	7	
CAT./HAUL	8.7	MAX. SIZE	175	

MAY	990504	990519		
NO. CGHT.	356	MEAN SIZE	65.5	
NO. MEAS.	356	S.E. SIZE	1.5	
NO. HAULS	120	MIN. SIZE	13	
CAT./HAUL	3	MAX. SIZE	169	

JUNE	990601	990611		
NO. CGHT.	391	MEAN SIZE	86.8	
NO. MEAS.	359	S.E. SIZE	1.6	
NO. HAULS	118	MIN. SIZE	17	
CAT./HAUL	3.3	MAX. SIZE	163	

JULY	990701	990719		
NO. CGHT.	361	MEAN SIZE	91.4	
NO. MEAS.	361	S.E. SIZE	1.4	
NO. HAULS	119	MIN. SIZE	29	
CAT./HAUL	3	MAX. SIZE	152	

AUGUST	990804	990819		
NO. CGHT.	472	MEAN SIZE	95.1	
NO. MEAS.	472	S.E. SIZE	1.5	
NO. HAULS	118	MIN. SIZE	11	
CAT./HAUL	4	MAX. SIZE	181	

SEPTEMBER	990907	990924		
NO. CGHT.	754	MEAN SIZE	73.7	
NO. MEAS.	754	S.E. SIZE	1.5	
NO. HAULS	122	MIN. SIZE	7	
CAT./HAUL	6.2	MAX. SIZE	184	

OCTOBER	991004	991020		
NO. CGHT.	621	MEAN SIZE	70.8	
NO. MEAS.	605	S.E. SIZE	1.8	
NO. HAULS	124	MIN. SIZE	12	
CAT./HAUL	5	MAX. SIZE	170	

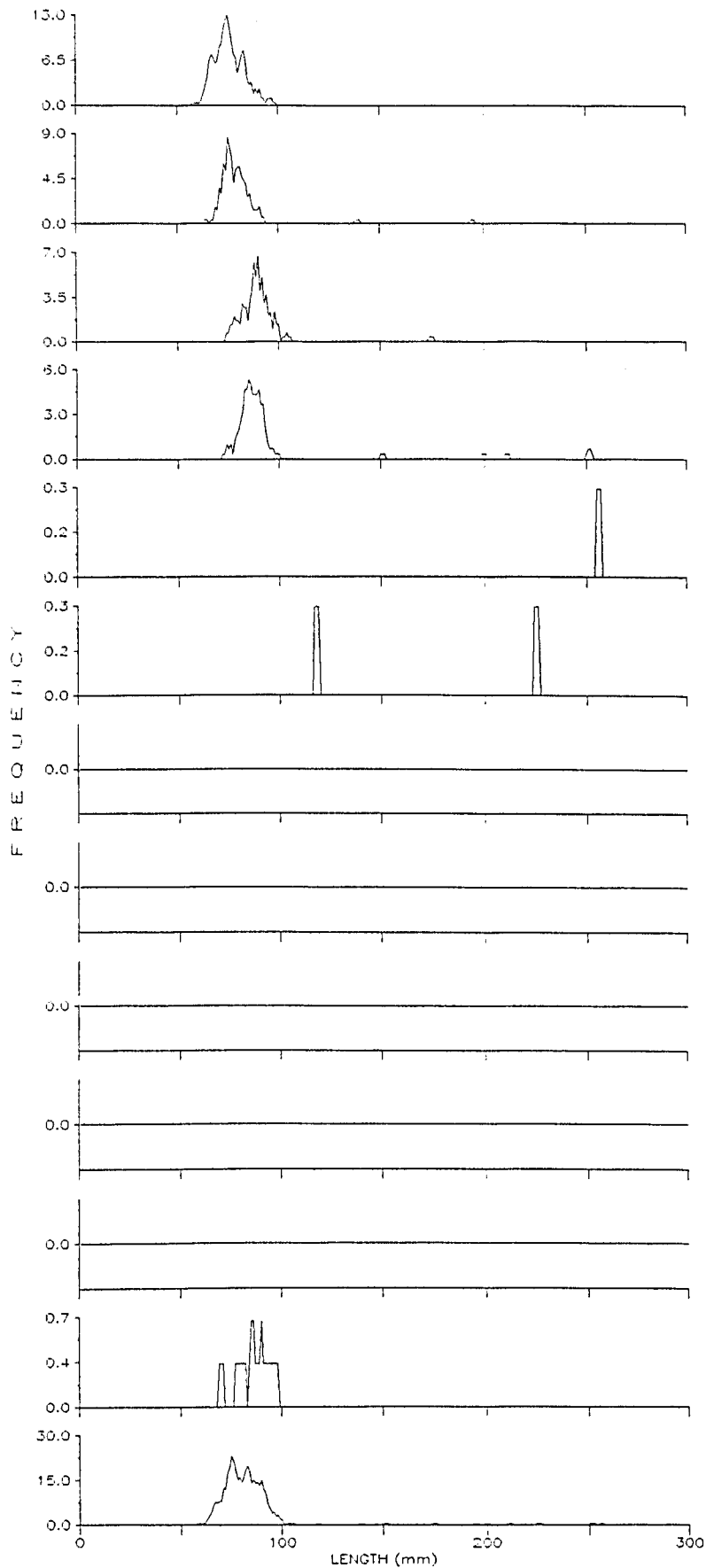
NOVEMBER	991101	991118		
NO. CGHT.	582	MEAN SIZE	70	
NO. MEAS.	532	S.E. SIZE	1.8	
NO. HAULS	131	MIN. SIZE	9	
CAT./HAUL	4.4	MAX. SIZE	170	

DECEMBER	991202	991215		
NO. CGHT.	551	MEAN SIZE	45.8	
NO. MEAS.	413	S.E. SIZE	1.5	
NO. HAULS	127	MIN. SIZE	12	
CAT./HAUL	4.3	MAX. SIZE	180	

JAN - DEC	990111	991215		
NO. CGHT.	5652	MEAN SIZE	69.5	
NO. MEAS.	5212	S.E. SIZE	0.5	
NO. HAULS	1382	MIN. SIZE	7	
CAT./HAUL	4.1	MAX. SIZE	184	

Figure 65.

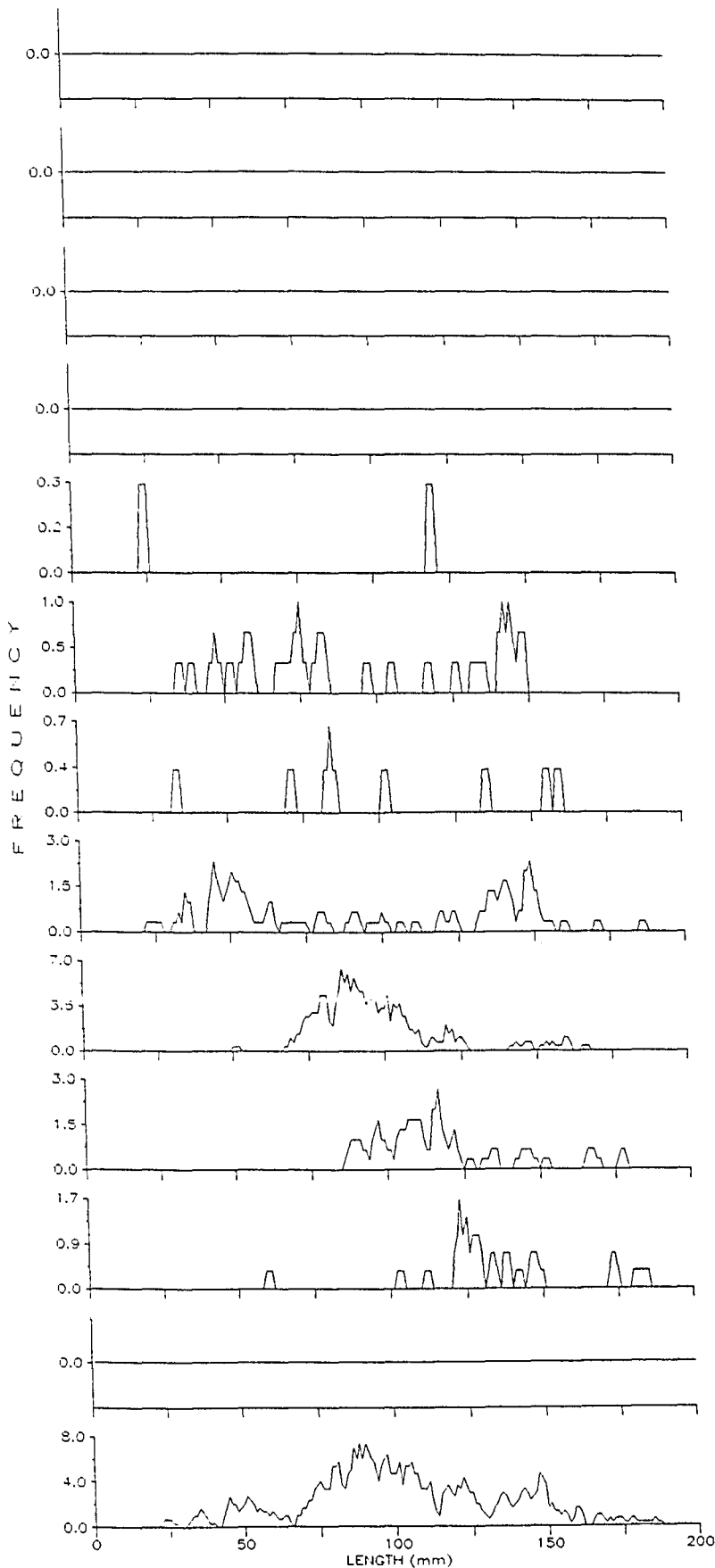
Blueback Herring, 1999



JANUARY	990111	-	990121		
NO. CGHT.	-	187	MEAN SIZE	-	74.1
NO. MEAS.	-	187	S.E. SIZE	-	0.5
NO. HAULS	-	79	MIN. SIZE	-	57
CAT./HAUL	-	2.4	MAX. SIZE	-	96
FEBRUARY	990202	-	990216		
NO. CGHT.	-	164	MEAN SIZE	-	78.4
NO. MEAS.	-	96	S.E. SIZE	-	1.5
NO. HAULS	-	122	MIN. SIZE	-	62
CAT./HAUL	-	1.3	MAX. SIZE	-	193
MARCH	990301	-	990323		
NO. CGHT.	-	118	MEAN SIZE	-	87.8
NO. MEAS.	-	75	S.E. SIZE	-	1.4
NO. HAULS	-	80	MIN. SIZE	-	73
CAT./HAUL	-	1.5	MAX. SIZE	-	173
APRIL	990405	-	990419		
NO. CGHT.	-	136	MEAN SIZE	-	93.1
NO. MEAS.	-	71	S.E. SIZE	-	4.1
NO. HAULS	-	122	MIN. SIZE	-	71
CAT./HAUL	-	1.1	MAX. SIZE	-	250
MAY	990504	-	990519		
NO. CGHT.	-	1	MEAN SIZE	-	254
NO. MEAS.	-	1	S.E. SIZE	-	.
NO. HAULS	-	120	MIN. SIZE	-	254
CAT./HAUL	-	0	MAX. SIZE	-	254
JUNE	990601	-	990611		
NO. CGHT.	-	2	MEAN SIZE	-	169.5
NO. MEAS.	-	2	S.E. SIZE	-	53.5
NO. HAULS	-	118	MIN. SIZE	-	116
CAT./HAUL	-	0	MAX. SIZE	-	223
JULY	990701	-	990719		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	119	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
AUGUST	990804	-	990819		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	118	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
SEPTEMBER	990907	-	990924		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	122	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
OCTOBER	991004	-	991020		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	124	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
NOVEMBER	991101	-	991118		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	131	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
DECEMBER	991202	-	991215		
NO. CGHT.	-	9	MEAN SIZE	-	83.7
NO. MEAS.	-	9	S.E. SIZE	-	2.8
NO. HAULS	-	127	MIN. SIZE	-	68
CAT./HAUL	-	0.1	MAX. SIZE	-	95
JAN - DEC	990111	-	991215		
NO. CGHT.	-	617	MEAN SIZE	-	81.5
NO. MEAS.	-	441	S.E. SIZE	-	1
NO. HAULS	-	1382	MIN. SIZE	-	57
CAT./HAUL	-	0.4	MAX. SIZE	-	254

Figure 66.

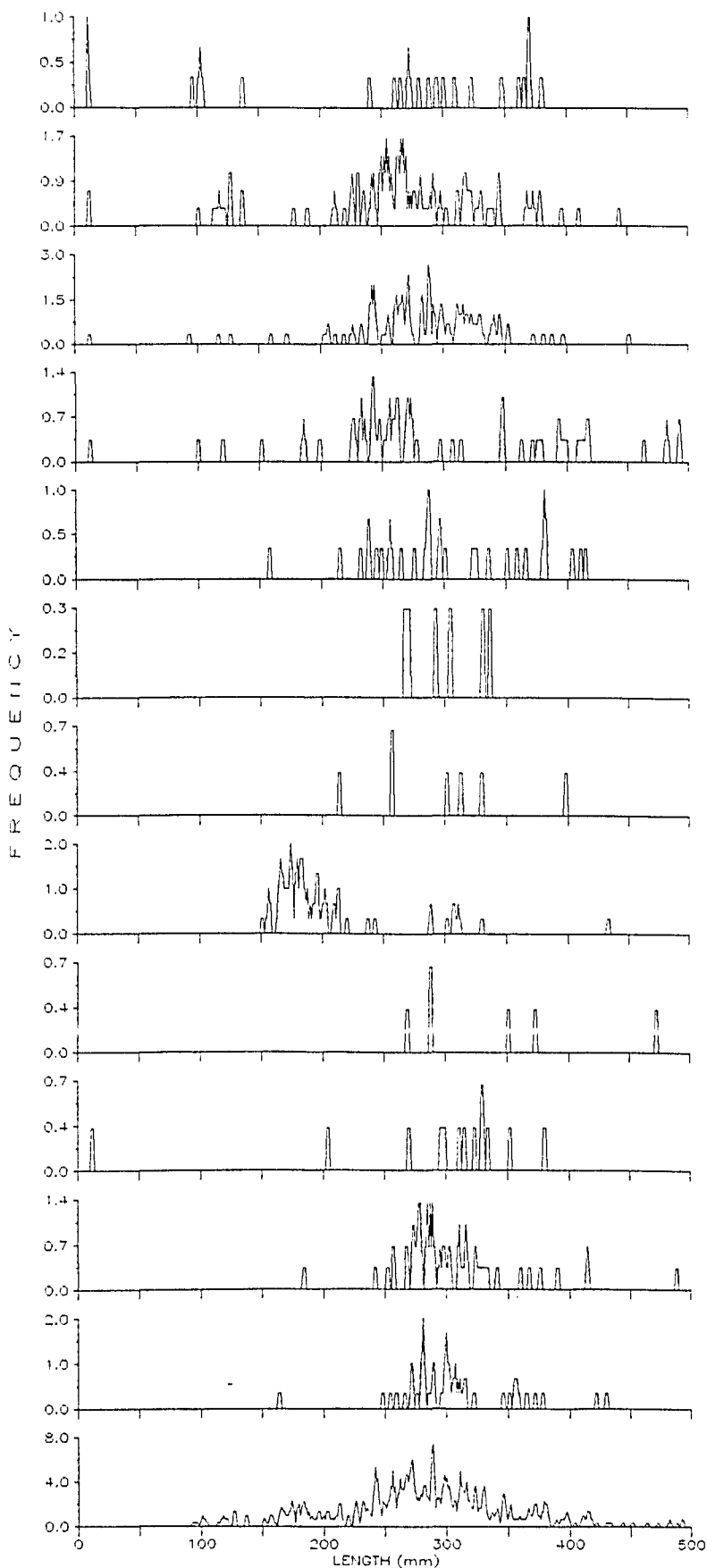
Butterfish, 1999



JANUARY	990111 - 990121		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	79	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
FEBRUARY	990202 - 990216		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	122	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
MARCH	990301 - 990323		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	80	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
APRIL	990405 - 990419		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	122	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
MAY	990504 - 990519		
NO. CGHT.	2	MEAN SIZE	69.5
NO. MEAS.	2	S.E. SIZE	47.5
NO. HAULS	120	MIN. SIZE	22
CAT./HAUL	0	MAX. SIZE	117
JUNE	990601 - 990611		
NO. CGHT.	29	MEAN SIZE	91.9
NO. MEAS.	29	S.E. SIZE	7.2
NO. HAULS	118	MIN. SIZE	33
CAT./HAUL	0.2	MAX. SIZE	146
JULY	990701 - 990719		
NO. CGHT.	8	MEAN SIZE	100.9
NO. MEAS.	8	S.E. SIZE	15.5
NO. HAULS	119	MIN. SIZE	31
CAT./HAUL	0.1	MAX. SIZE	157
AUGUST	990804 - 990819		
NO. CGHT.	81	MEAN SIZE	92.7
NO. MEAS.	81	S.E. SIZE	5.1
NO. HAULS	118	MIN. SIZE	21
CAT./HAUL	0.7	MAX. SIZE	184
SEPTEMBER	990907 - 990924		
NO. CGHT.	170	MEAN SIZE	94.5
NO. MEAS.	170	S.E. SIZE	1.3
NO. HAULS	122	MIN. SIZE	49
CAT./HAUL	1.4	MAX. SIZE	164
OCTOBER	991004 - 991020		
NO. CGHT.	57	MEAN SIZE	115.6
NO. MEAS.	57	S.E. SIZE	3
NO. HAULS	124	MIN. SIZE	85
CAT./HAUL	0.5	MAX. SIZE	176
NOVEMBER	991101 - 991118		
NO. CGHT.	25	MEAN SIZE	132.7
NO. MEAS.	25	S.E. SIZE	5.2
NO. HAULS	131	MIN. SIZE	58
CAT./HAUL	0.2	MAX. SIZE	182
DECEMBER	991202 - 991215		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	127	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
JAN - DEC	990111 - 991215		
NO. CGHT.	372	MEAN SIZE	99.7
NO. MEAS.	372	S.E. SIZE	1.7
NO. HAULS	1382	MIN. SIZE	21
CAT./HAUL	0.3	MAX. SIZE	184

Figure 67.

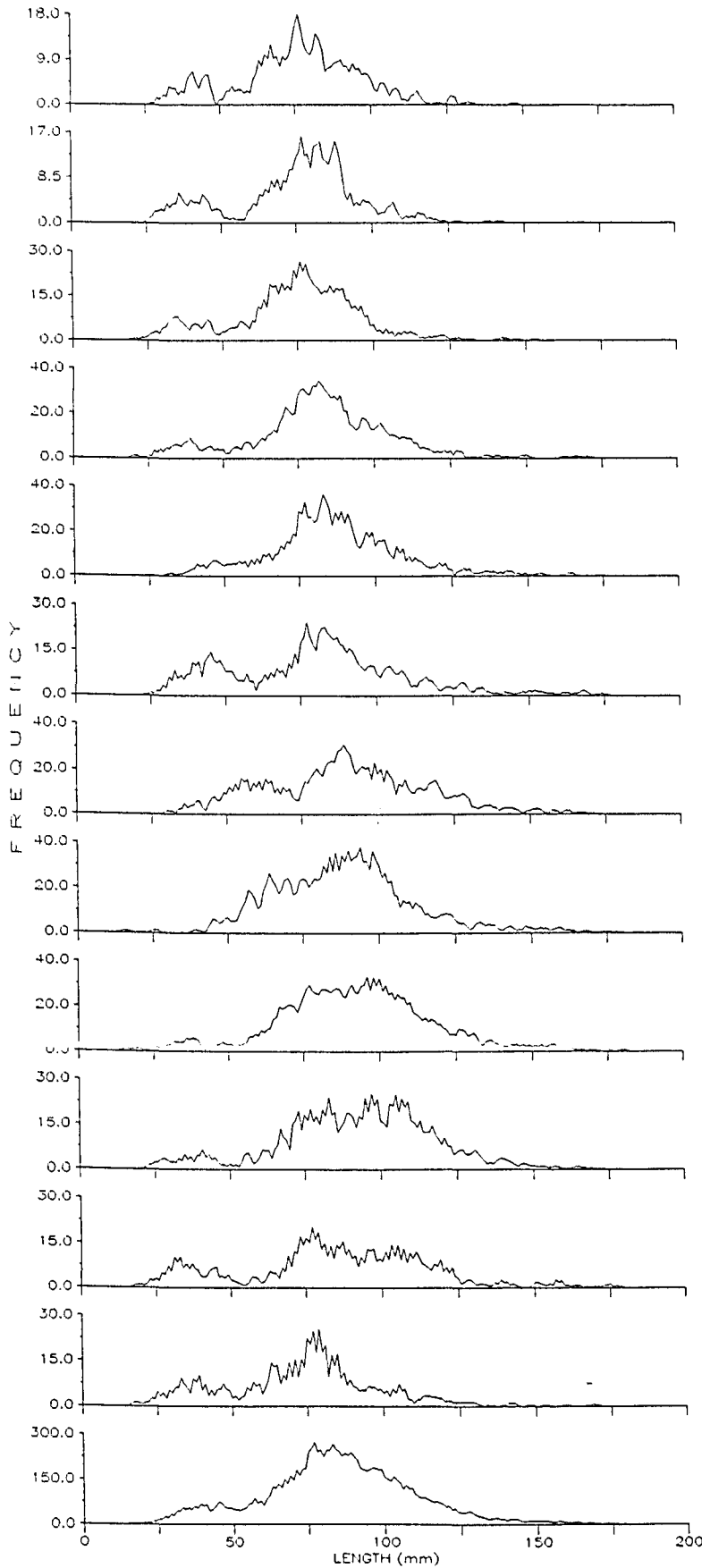
Channel Catfish, 1999



JANUARY	990111 - 990121		
NO. CGHT.	23	MEAN SIZE	286.3
NO. MEAS.	23	S.E. SIZE	21.3
NO. HAULS	79	MIN. SIZE	94
CAT./HAUL	0.3	MAX. SIZE	511
FEBRUARY	990202 - 990216		
NO. CGHT.	97	MEAN SIZE	274.2
NO. MEAS.	97	S.E. SIZE	8.5
NO. HAULS	122	MIN. SIZE	99
CAT./HAUL	0.8	MAX. SIZE	585
MARCH	990301 - 990323		
NO. CGHT.	148	MEAN SIZE	284.7
NO. MEAS.	112	S.E. SIZE	5.8
NO. HAULS	80	MIN. SIZE	91
CAT./HAUL	1.9	MAX. SIZE	501
APRIL	990405 - 990419		
NO. CGHT.	61	MEAN SIZE	302.2
NO. MEAS.	61	S.E. SIZE	12.4
NO. HAULS	122	MIN. SIZE	98
CAT./HAUL	0.5	MAX. SIZE	546
MAY	990504 - 990519		
NO. CGHT.	31	MEAN SIZE	311
NO. MEAS.	31	S.E. SIZE	14.8
NO. HAULS	120	MIN. SIZE	156
CAT./HAUL	0.3	MAX. SIZE	594
JUNE	990601 - 990611		
NO. CGHT.	6	MEAN SIZE	298.8
NO. MEAS.	6	S.E. SIZE	11.9
NO. HAULS	118	MIN. SIZE	266
CAT./HAUL	0.1	MAX. SIZE	335
JULY	990701 - 990719		
NO. CGHT.	7	MEAN SIZE	293.9
NO. MEAS.	7	S.E. SIZE	22.7
NO. HAULS	119	MIN. SIZE	212
CAT./HAUL	0.1	MAX. SIZE	396
AUGUST	990804 - 990819		
NO. CGHT.	64	MEAN SIZE	202
NO. MEAS.	64	S.E. SIZE	6.6
NO. HAULS	118	MIN. SIZE	149
CAT./HAUL	0.5	MAX. SIZE	431
SEPTEMBER	990907 - 990924		
NO. CGHT.	6	MEAN SIZE	338.2
NO. MEAS.	6	S.E. SIZE	31.1
NO. HAULS	122	MIN. SIZE	267
CAT./HAUL	0	MAX. SIZE	470
OCTOBER	991004 - 991020		
NO. CGHT.	12	MEAN SIZE	309.9
NO. MEAS.	12	S.E. SIZE	12.7
NO. HAULS	124	MIN. SIZE	202
CAT./HAUL	0.1	MAX. SIZE	378
NOVEMBER	991101 - 991118		
NO. CGHT.	50	MEAN SIZE	307.5
NO. MEAS.	50	S.E. SIZE	8
NO. HAULS	131	MIN. SIZE	182
CAT./HAUL	0.4	MAX. SIZE	502
DECEMBER	991202 - 991215		
NO. CGHT.	45	MEAN SIZE	303.5
NO. MEAS.	45	S.E. SIZE	6.9
NO. HAULS	127	MIN. SIZE	162
CAT./HAUL	0.4	MAX. SIZE	428
JAN - DEC	990111 - 991215		
NO. CGHT.	550	MEAN SIZE	281.5
NO. MEAS.	514	S.E. SIZE	3.5
NO. HAULS	1382	MIN. SIZE	91
CAT./HAUL	0.4	MAX. SIZE	594

Figure 68.

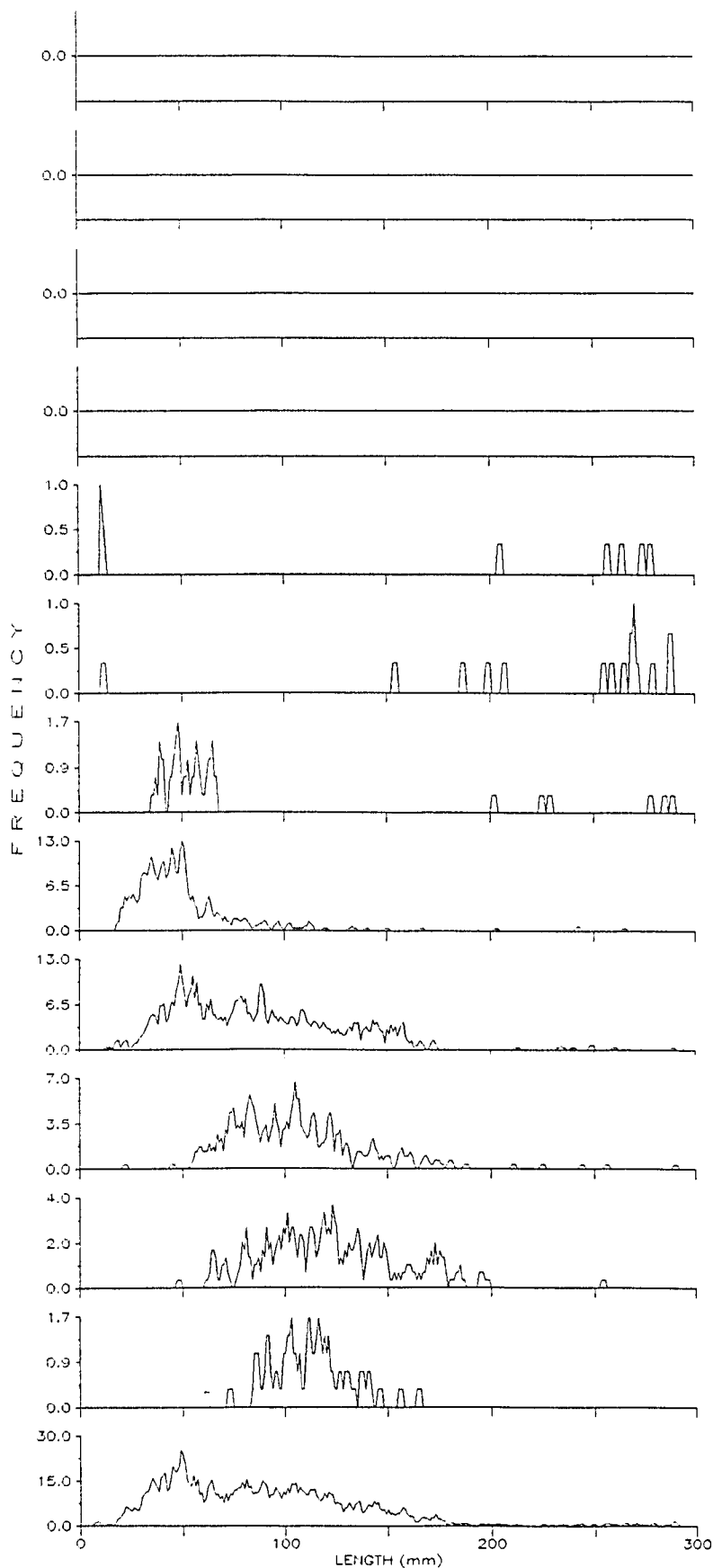
Hogcnoker, 1999



JANUARY	990111	-	990121		
NO. CGHT.	-	6098	MEAN SIZE	-	73.9
NO. MEAS.	-	522	S.E. SIZE	-	0.9
NO. HAULS	-	79	MIN. SIZE	-	26
CAT./HAUL	-	77.2	MAX. SIZE	-	145
FEBRUARY	990202	-	990216		
NO. CGHT.	-	9181	MEAN SIZE	-	73
NO. MEAS.	-	480	S.E. SIZE	-	1
NO. HAULS	-	122	MIN. SIZE	-	24
CAT./HAUL	-	75.3	MAX. SIZE	-	140
MARCH	990301	-	990323		
NO. CGHT.	-	3327	MEAN SIZE	-	72.2
NO. MEAS.	-	961	S.E. SIZE	-	0.7
NO. HAULS	-	80	MIN. SIZE	-	18
CAT./HAUL	-	41.6	MAX. SIZE	-	151
APRIL	990405	-	990419		
NO. CGHT.	-	6523	MEAN SIZE	-	79.8
NO. MEAS.	-	1206	S.E. SIZE	-	0.7
NO. HAULS	-	122	MIN. SIZE	-	18
CAT./HAUL	-	53.5	MAX. SIZE	-	169
MAY	990504	-	990519		
NO. CGHT.	-	8414	MEAN SIZE	-	84.2
NO. MEAS.	-	1179	S.E. SIZE	-	0.6
NO. HAULS	-	120	MIN. SIZE	-	23
CAT./HAUL	-	70.1	MAX. SIZE	-	172
JUNE	990601	-	990611		
NO. CGHT.	-	2106	MEAN SIZE	-	78.1
NO. MEAS.	-	964	S.E. SIZE	-	0.9
NO. HAULS	-	118	MIN. SIZE	-	22
CAT./HAUL	-	17.8	MAX. SIZE	-	173
JULY	990701	-	990719		
NO. CGHT.	-	2674	MEAN SIZE	-	87.2
NO. MEAS.	-	1369	S.E. SIZE	-	0.7
NO. HAULS	-	119	MIN. SIZE	-	27
CAT./HAUL	-	22.5	MAX. SIZE	-	186
AUGUST	990804	-	990819		
NO. CGHT.	-	4249	MEAN SIZE	-	86.7
NO. MEAS.	-	1668	S.E. SIZE	-	0.6
NO. HAULS	-	118	MIN. SIZE	-	12
CAT./HAUL	-	36	MAX. SIZE	-	183
SEPTEMBER	990907	-	990924		
NO. CGHT.	-	10568	MEAN SIZE	-	90
NO. MEAS.	-	1678	S.E. SIZE	-	0.6
NO. HAULS	-	122	MIN. SIZE	-	13
CAT./HAUL	-	86.6	MAX. SIZE	-	178
OCTOBER	991004	-	991020		
NO. CGHT.	-	7051	MEAN SIZE	-	90.1
NO. MEAS.	-	1216	S.E. SIZE	-	0.7
NO. HAULS	-	124	MIN. SIZE	-	20
CAT./HAUL	-	56.9	MAX. SIZE	-	176
NOVEMBER	991101	-	991118		
NO. CGHT.	-	7742	MEAN SIZE	-	82.5
NO. MEAS.	-	901	S.E. SIZE	-	1
NO. HAULS	-	131	MIN. SIZE	-	16
CAT./HAUL	-	59.1	MAX. SIZE	-	176
DECEMBER	991202	-	991215		
NO. CGHT.	-	6602	MEAN SIZE	-	70.7
NO. MEAS.	-	773	S.E. SIZE	-	0.9
NO. HAULS	-	127	MIN. SIZE	-	15
CAT./HAUL	-	52	MAX. SIZE	-	168
JAN - DEC	990111	-	991215		
NO. CGHT.	-	74535	MEAN SIZE	-	82.7
NO. MEAS.	-	12817	S.E. SIZE	-	0.2
NO. HAULS	-	1382	MIN. SIZE	-	12
CAT./HAUL	-	53.9	MAX. SIZE	-	186

Figure 69.

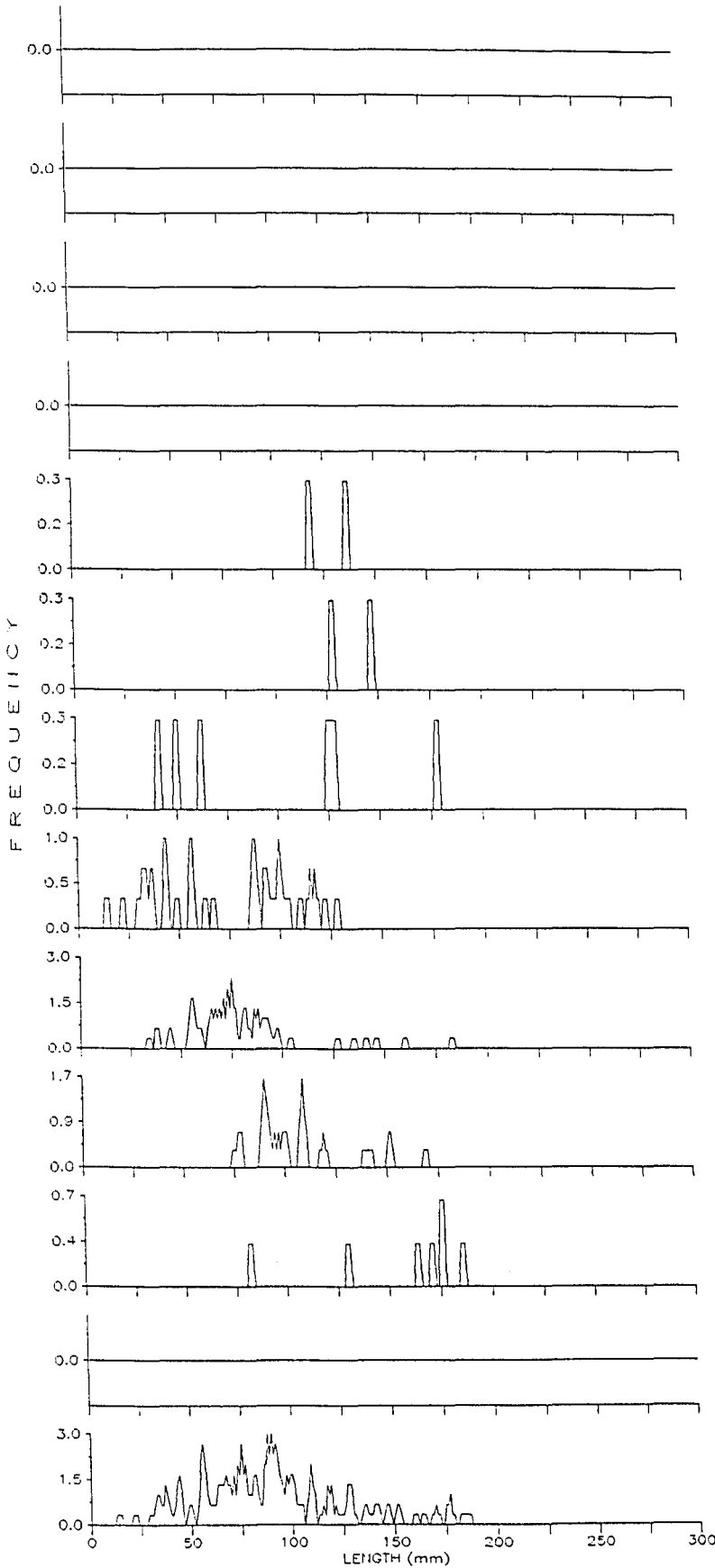
Kingfish, 1999



JANUARY	990111	-	990121		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	79	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
FEBRUARY	990202	-	990216		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	122	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
MARCH	990301	-	990323		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	80	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
APRIL	990405	-	990419		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	122	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
MAY	990504	-	990519		
NO. CGHT.	-	5	MEAN SIZE	-	253.6
NO. MEAS.	-	5	S.E. SIZE	-	13.2
NO. HAULS	-	120	MIN. SIZE	-	203
CAT./HAUL	-	0	MAX. SIZE	-	276
JUNE	990601	-	990611		
NO. CGHT.	-	16	MEAN SIZE	-	256.9
NO. MEAS.	-	16	S.E. SIZE	-	12.2
NO. HAULS	-	118	MIN. SIZE	-	152
CAT./HAUL	-	0.1	MAX. SIZE	-	330
JULY	990701	-	990719		
NO. CGHT.	-	80	MEAN SIZE	-	95.2
NO. MEAS.	-	32	S.E. SIZE	-	15.8
NO. HAULS	-	119	MIN. SIZE	-	34
CAT./HAUL	-	0.7	MAX. SIZE	-	306
AUGUST	990804	-	990819		
NO. CGHT.	-	874	MEAN SIZE	-	49
NO. MEAS.	-	367	S.E. SIZE	-	1.5
NO. HAULS	-	118	MIN. SIZE	-	17
CAT./HAUL	-	7.4	MAX. SIZE	-	263
SEPTEMBER	990907	-	990924		
NO. CGHT.	-	911	MEAN SIZE	-	85
NO. MEAS.	-	643	S.E. SIZE	-	1.6
NO. HAULS	-	122	MIN. SIZE	-	12
CAT./HAUL	-	7.5	MAX. SIZE	-	287
OCTOBER	991004	-	991020		
NO. CGHT.	-	454	MEAN SIZE	-	104.1
NO. MEAS.	-	276	S.E. SIZE	-	2.1
NO. HAULS	-	124	MIN. SIZE	-	20
CAT./HAUL	-	3.7	MAX. SIZE	-	288
NOVEMBER	991101	-	991118		
NO. CGHT.	-	185	MEAN SIZE	-	117.1
NO. MEAS.	-	185	S.E. SIZE	-	2.7
NO. HAULS	-	131	MIN. SIZE	-	6
CAT./HAUL	-	1.4	MAX. SIZE	-	252
DECEMBER	991202	-	991215		
NO. CGHT.	-	51	MEAN SIZE	-	110.7
NO. MEAS.	-	51	S.E. SIZE	-	2.7
NO. HAULS	-	127	MIN. SIZE	-	71
CAT./HAUL	-	0.4	MAX. SIZE	-	163
JAN - DEC	990111	-	991215		
NO. CGHT.	-	2576	MEAN SIZE	-	87.1
NO. MEAS.	-	1575	S.E. SIZE	-	1.2
NO. HAULS	-	1382	MIN. SIZE	-	6
CAT./HAUL	-	1.9	MAX. SIZE	-	330

Figure 70.

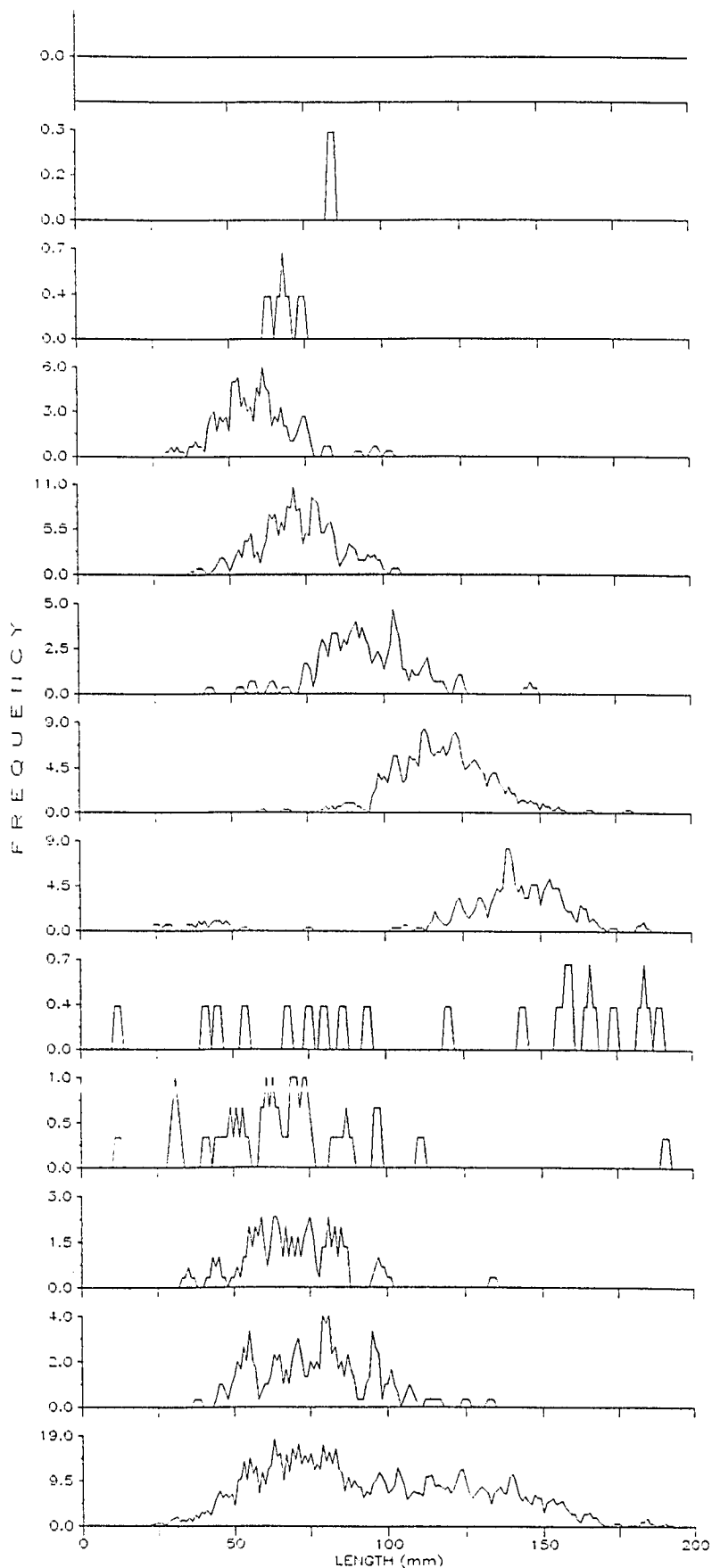
Northern Puffer, 1999



JANUARY	990111 - 990121		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	79	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
FEBRUARY	990202 - 990216		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	122	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
MARCH	990301 - 990323		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	80	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
APRIL	990405 - 990419		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	122	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
MAY	990504 - 990519		
NO. CGHT.	2	MEAN SIZE	125
NO. MEAS.	2	S.E. SIZE	9
NO. HAULS	120	MIN. SIZE	116
CAT./HAUL	0	MAX. SIZE	134
JUNE	990601 - 990611		
NO. CGHT.	2	MEAN SIZE	135.5
NO. MEAS.	2	S.E. SIZE	9.5
NO. HAULS	118	MIN. SIZE	126
CAT./HAUL	0	MAX. SIZE	145
JULY	990701 - 990719		
NO. CGHT.	6	MEAN SIZE	95.3
NO. MEAS.	6	S.E. SIZE	22.3
NO. HAULS	119	MIN. SIZE	39
CAT./HAUL	0.1	MAX. SIZE	176
AUGUST	990804 - 990819		
NO. CGHT.	33	MEAN SIZE	71.6
NO. MEAS.	33	S.E. SIZE	5.3
NO. HAULS	118	MIN. SIZE	12
CAT./HAUL	0.3	MAX. SIZE	126
SEPTEMBER	990907 - 990924		
NO. CGHT.	57	MEAN SIZE	78
NO. MEAS.	57	S.E. SIZE	3.8
NO. HAULS	122	MIN. SIZE	32
CAT./HAUL	0.5	MAX. SIZE	181
OCTOBER	991004 - 991020		
NO. CGHT.	26	MEAN SIZE	105.6
NO. MEAS.	26	S.E. SIZE	4.8
NO. HAULS	124	MIN. SIZE	73
CAT./HAUL	0.2	MAX. SIZE	167
NOVEMBER	991101 - 991112		
NO. CGHT.	7	MEAN SIZE	153
NO. MEAS.	7	S.E. SIZE	13.9
NO. HAULS	131	MIN. SIZE	80
CAT./HAUL	0.1	MAX. SIZE	184
DECEMBER	991202 - 991215		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	127	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
JAN - DEC	990111 - 991215		
NO. CGHT.	133	MEAN SIZE	89.1
NO. MEAS.	133	S.E. SIZE	3.2
NO. HAULS	1382	MIN. SIZE	12
CAT./HAUL	0.1	MAX. SIZE	184

Figure 71.

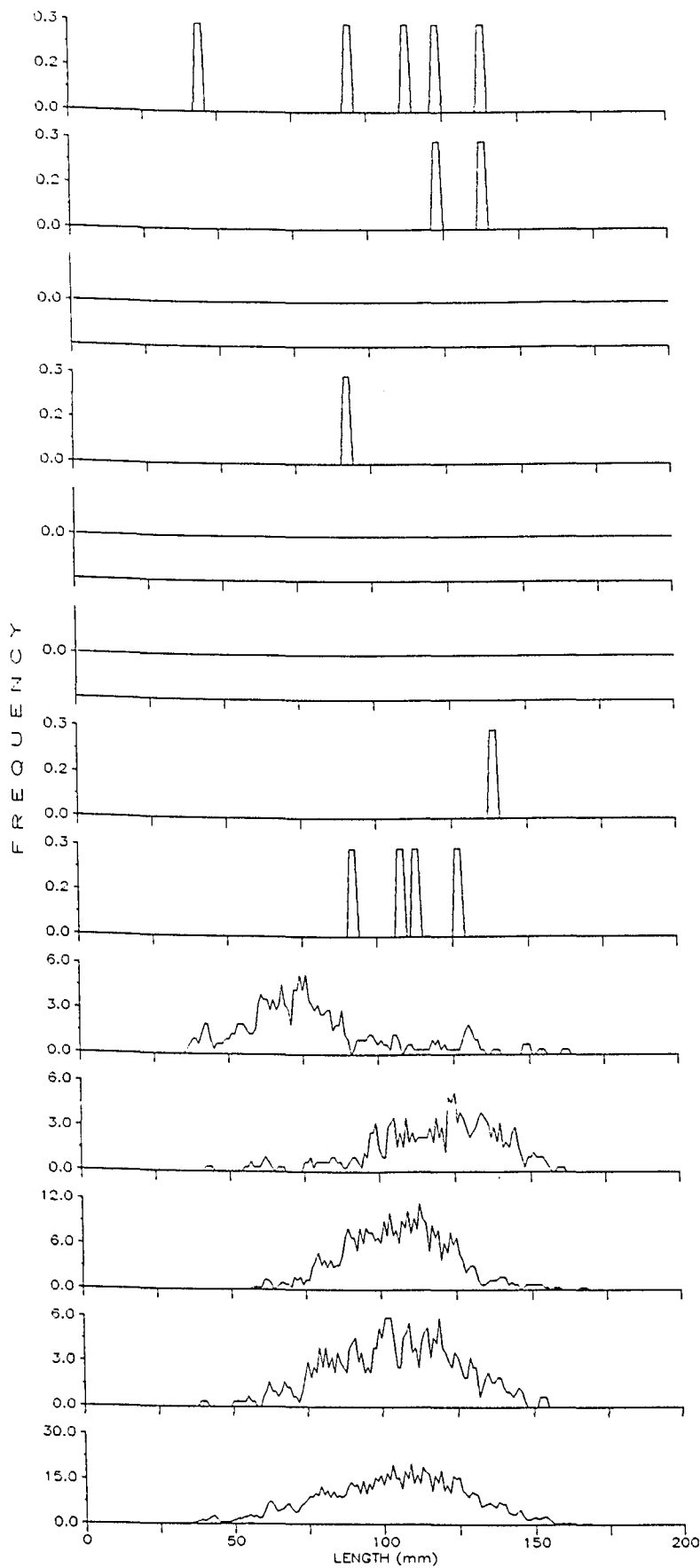
Northern Searobin, 1999



JANUARY	990111	990121		
NO. CGHT.	0	MEAN SIZE		
NO. MEAS.	0	S.E. SIZE		
NO. HAULS	79	MIN. SIZE		
CAT./HAUL	0	MAX. SIZE		
FEBRUARY	990202	990216		
NO. CGHT.	1	MEAN SIZE		82
NO. MEAS.	1	S.E. SIZE		
NO. HAULS	122	MIN. SIZE		82
CAT./HAUL	0	MAX. SIZE		82
MARCH	990301	990323		
NO. CGHT.	4	MEAN SIZE		66.3
NO. MEAS.	4	S.E. SIZE		2.3
NO. HAULS	80	MIN. SIZE		61
CAT./HAUL	0.1	MAX. SIZE		72
APRIL	990405	990419		
NO. CGHT.	114	MEAN SIZE		56.9
NO. MEAS.	114	S.E. SIZE		1.2
NO. HAULS	122	MIN. SIZE		28
CAT./HAUL	0.9	MAX. SIZE		100
MAY	990504	990519		
NO. CGHT.	229	MEAN SIZE		70.4
NO. MEAS.	229	S.E. SIZE		0.9
NO. HAULS	120	MIN. SIZE		36
CAT./HAUL	1.9	MAX. SIZE		102
JUNE	990601	990611		
NO. CGHT.	111	MEAN SIZE		91.5
NO. MEAS.	111	S.E. SIZE		1.6
NO. HAULS	118	MIN. SIZE		41
CAT./HAUL	0.9	MAX. SIZE		146
JULY	990701	990719		
NO. CGHT.	248	MEAN SIZE		116.5
NO. MEAS.	248	S.E. SIZE		1
NO. HAULS	119	MIN. SIZE		58
CAT./HAUL	2.1	MAX. SIZE		177
AUGUST	990804	990819		
NO. CGHT.	194	MEAN SIZE		131
NO. MEAS.	194	S.E. SIZE		2.4
NO. HAULS	118	MIN. SIZE		22
CAT./HAUL	1.6	MAX. SIZE		183
SEPTEMBER	990907	990924		
NO. CGHT.	19	MEAN SIZE		121.4
NO. MEAS.	19	S.E. SIZE		12
NO. HAULS	122	MIN. SIZE		39
CAT./HAUL	0.2	MAX. SIZE		187
OCTOBER	991004	991020		
NO. CGHT.	30	MEAN SIZE		72.1
NO. MEAS.	30	S.E. SIZE		7.2
NO. HAULS	124	MIN. SIZE		28
CAT./HAUL	0.2	MAX. SIZE		207
NOVEMBER	991101	991118		
NO. CGHT.	67	MEAN SIZE		69.5
NO. MEAS.	67	S.E. SIZE		2.9
NO. HAULS	131	MIN. SIZE		32
CAT./HAUL	0.5	MAX. SIZE		210
DECEMBER	991202	991215		
NO. CGHT.	112	MEAN SIZE		74.5
NO. MEAS.	108	S.E. SIZE		1.8
NO. HAULS	127	MIN. SIZE		36
CAT./HAUL	0.9	MAX. SIZE		131
JAN - DEC	990111	991215		
NO. CGHT.	1129	MEAN SIZE		93
NO. MEAS.	1125	S.E. SIZE		1
NO. HAULS	1382	MIN. SIZE		22
CAT./HAUL	0.8	MAX. SIZE		210

Figure 72.

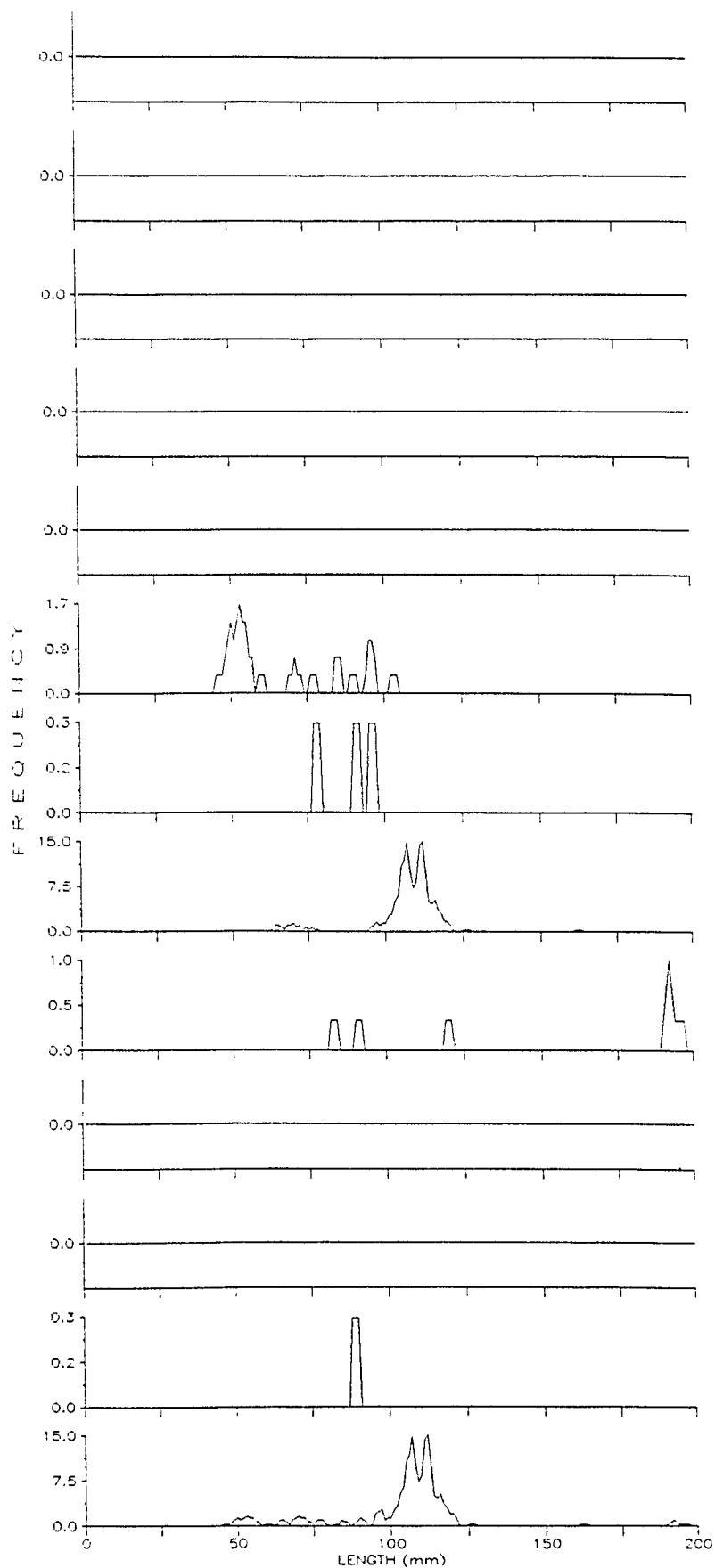
Penaeid Shrimp, 1999



JANUARY	990111	-	990121	
NO. CGHT.	-	1	MEAN SIZE	- 100.4
NO. MEAS.	-	5	S.E. SIZE	- 16.3
NO. HAULS	-	79	MIN. SIZE	- 42
CAT./HAUL	-	0	MAX. SIZE	- 136
FEBRUARY	990202	-	990216	
NO. CGHT.	-	0	MEAN SIZE	- 128.5
NO. MEAS.	-	2	S.E. SIZE	- 7.5
NO. HAULS	-	122	MIN. SIZE	- 121
CAT./HAUL	-	0	MAX. SIZE	- 136
MARCH	990301	-	990323	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	80	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
APRIL	990405	-	990419	
NO. CGHT.	-	0	MEAN SIZE	- 90
NO. MEAS.	-	1	S.E. SIZE	-
NO. HAULS	-	122	MIN. SIZE	- 90
CAT./HAUL	-	0	MAX. SIZE	- 90
MAY	990504	-	990519	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	120	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
JUNE	990601	-	990611	
NO. CGHT.	-	0	MEAN SIZE	-
NO. MEAS.	-	0	S.E. SIZE	-
NO. HAULS	-	118	MIN. SIZE	-
CAT./HAUL	-	0	MAX. SIZE	-
JULY	990701	-	990719	
NO. CGHT.	-	1	MEAN SIZE	- 137
NO. MEAS.	-	1	S.E. SIZE	-
NO. HAULS	-	119	MIN. SIZE	- 137
CAT./HAUL	-	0	MAX. SIZE	- 137
AUGUST	990804	-	990819	
NO. CGHT.	-	3	MEAN SIZE	- 108
NO. MEAS.	-	4	S.E. SIZE	- 7.2
NO. HAULS	-	118	MIN. SIZE	- 90
CAT./HAUL	-	0	MAX. SIZE	- 125
SEPTEMBER	990907	-	990924	
NO. CGHT.	-	53	MEAN SIZE	- 77.4
NO. MEAS.	-	167	S.E. SIZE	- 2
NO. HAULS	-	122	MIN. SIZE	- 35
CAT./HAUL	-	0.4	MAX. SIZE	- 160
OCTOBER	991004	-	991020	
NO. CGHT.	-	10	MEAN SIZE	- 115.0
NO. MEAS.	-	171	S.E. SIZE	- 1.7
NO. HAULS	-	124	MIN. SIZE	- 41
CAT./HAUL	-	0.1	MAX. SIZE	- 158
NOVEMBER	991101	-	991118	
NO. CGHT.	-	16	MEAN SIZE	- 103.5
NO. MEAS.	-	391	S.E. SIZE	- 0.9
NO. HAULS	-	131	MIN. SIZE	- 56
CAT./HAUL	-	0.1	MAX. SIZE	- 165
DECEMBER	991202	-	991215	
NO. CGHT.	-	2	MEAN SIZE	- 101.8
NO. MEAS.	-	251	S.E. SIZE	- 1.3
NO. HAULS	-	127	MIN. SIZE	- 38
CAT./HAUL	-	0	MAX. SIZE	- 151
JAN - DEC	990111	-	991215	
NO. CGHT.	-	86	MEAN SIZE	- 100.9
NO. MEAS.	-	993	S.E. SIZE	- 0.8
NO. HAULS	-	1382	MIN. SIZE	- 35
CAT./HAUL	-	0.1	MAX. SIZE	- 165

Figure 73.

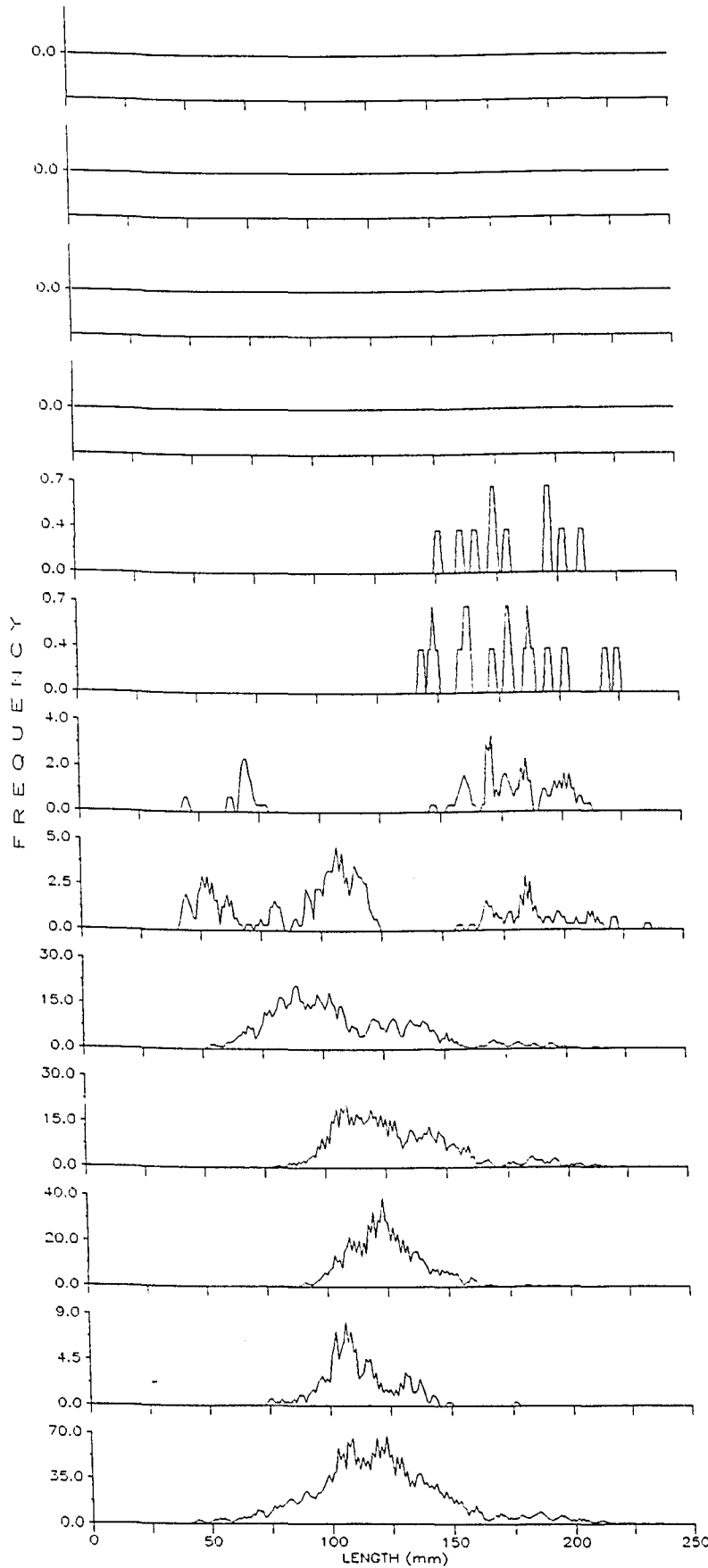
Scup, 1999



JANUARY	990111	-	990121		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	79	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
FEBRUARY	990202	-	990216		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	122	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
MARCH	990301	-	990323		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	80	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
APRIL	990405	-	990419		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	122	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
MAY	990504	-	990519		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	120	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
JUNE	990601	-	990611		
NO. CGHT.	-	23	MEAN SIZE	-	65.5
NO. MEAS.	-	23	S.E. SIZE	-	4
NO. HAULS	-	118	MIN. SIZE	-	44
CAT./HAUL	-	0.2	MAX. SIZE	-	101
JULY	990701	-	990719		
NO. CGHT.	-	3	MEAN SIZE	-	86.3
NO. MEAS.	-	3	S.E. SIZE	-	5.4
NO. HAULS	-	119	MIN. SIZE	-	76
CAT./HAUL	-	0	MAX. SIZE	-	94
AUGUST	990804	-	990819		
NO. CGHT.	-	297	MEAN SIZE	-	104.9
NO. MEAS.	-	165	S.E. SIZE	-	0.9
NO. HAULS	-	118	MIN. SIZE	-	62
CAT./HAUL	-	2.5	MAX. SIZE	-	160
SEPTEMBER	990907	-	990924		
NO. CGHT.	-	7	MEAN SIZE	-	150.3
NO. MEAS.	-	7	S.E. SIZE	-	19.7
NO. HAULS	-	122	MIN. SIZE	-	81
CAT./HAUL	-	0.1	MAX. SIZE	-	194
OCTOBER	991004	-	991020		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	124	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
NOVEMBER	991101	-	991118		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	131	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
DECEMBER	991202	-	991215		
NO. CGHT.	-	1	MEAN SIZE	-	87
NO. MEAS.	-	1	S.E. SIZE	-	
NO. HAULS	-	127	MIN. SIZE	-	87
CAT./HAUL	-	0	MAX. SIZE	-	87
JAN - DEC	990111	-	991215		
NO. CGHT.	-	331	MEAN SIZE	-	101.6
NO. MEAS.	-	199	S.E. SIZE	-	1.6
NO. HAULS	-	1382	MIN. SIZE	-	44
CAT./HAUL	-	0.2	MAX. SIZE	-	194

Figure 74.

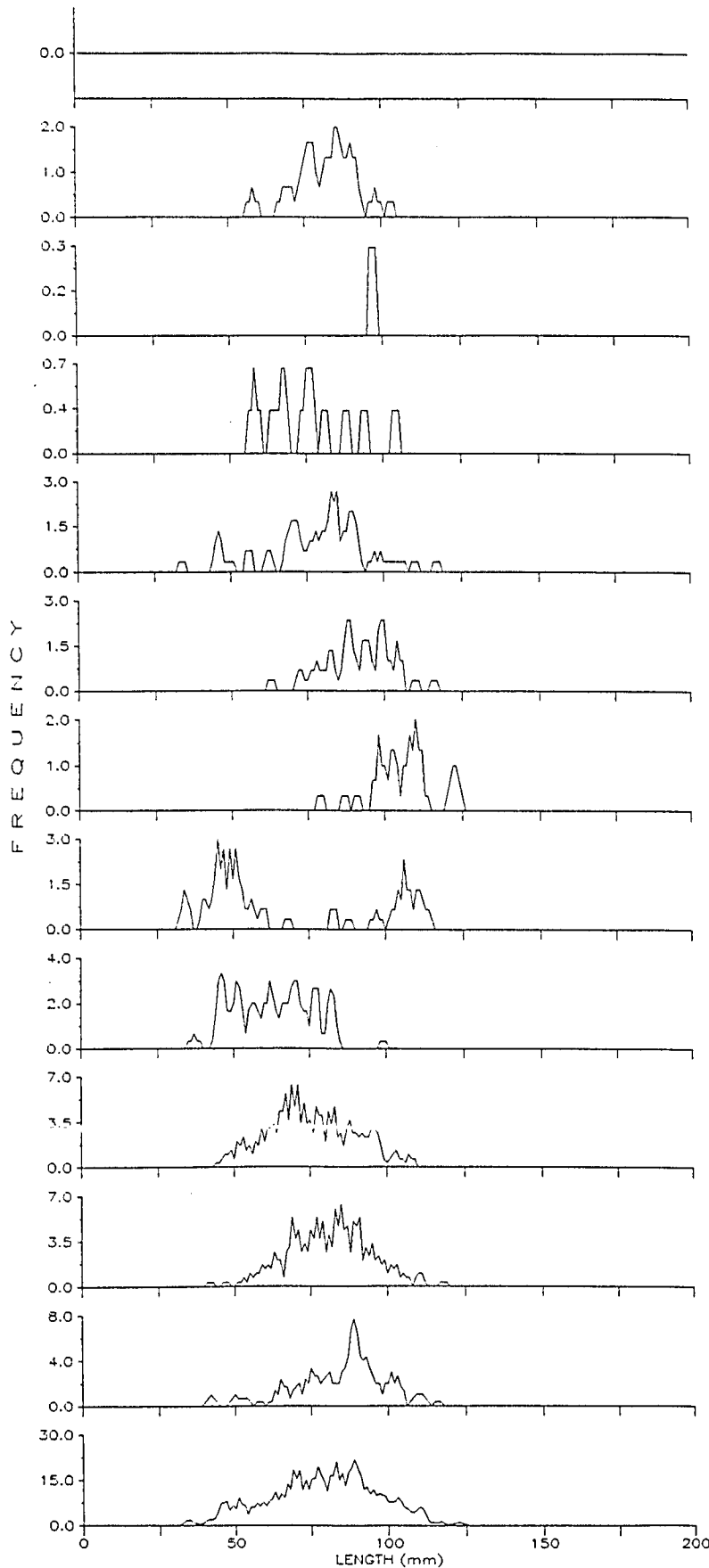
Silver Perch, 1999



JANUARY	990111 - 990121		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	79	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
FEBRUARY	990202 - 990216		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	122	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
MARCH	990301 - 990323		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	80	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
APRIL	990405 - 990419		
NO. CGHT.	0	MEAN SIZE	-
NO. MEAS.	0	S.E. SIZE	-
NO. HAULS	122	MIN. SIZE	-
CAT./HAUL	0	MAX. SIZE	-
MAY	990504 - 990519		
NO. CGHT.	10	MEAN SIZE	178.7
NO. MEAS.	10	S.E. SIZE	6.2
NO. HAULS	120	MIN. SIZE	149
CAT./HAUL	0.1	MAX. SIZE	208
JUNE	990601 - 990611		
NO. CGHT.	15	MEAN SIZE	175.7
NO. MEAS.	15	S.E. SIZE	6.5
NO. HAULS	118	MIN. SIZE	141
CAT./HAUL	0.1	MAX. SIZE	222
JULY	990701 - 990719		
NO. CGHT.	76	MEAN SIZE	153.6
NO. MEAS.	76	S.E. SIZE	5.8
NO. HAULS	119	MIN. SIZE	42
CAT./HAUL	0.6	MAX. SIZE	209
AUGUST	990804 - 990819		
NO. CGHT.	220	MEAN SIZE	113.1
NO. MEAS.	180	S.E. SIZE	3.7
NO. HAULS	118	MIN. SIZE	40
CAT./HAUL	1.9	MAX. SIZE	233
SEPTEMBER	990907 - 990924		
NO. CGHT.	957	MEAN SIZE	105.5
NO. MEAS.	957	S.E. SIZE	0.9
NO. HAULS	122	MIN. SIZE	51
CAT./HAUL	7.8	MAX. SIZE	210
OCTOBER	991004 - 991020		
NO. CGHT.	960	MEAN SIZE	108.6
NO. MEAS.	872	S.E. SIZE	0.8
NO. HAULS	124	MIN. SIZE	68
CAT./HAUL	7.7	MAX. SIZE	221
NOVEMBER	991101 - 991119		
NO. CGHT.	1769	MEAN SIZE	122.1
NO. MEAS.	910	S.E. SIZE	0.5
NO. HAULS	131	MIN. SIZE	71
CAT./HAUL	13.5	MAX. SIZE	200
DECEMBER	991202 - 991215		
NO. CGHT.	284	MEAN SIZE	109.9
NO. MEAS.	169	S.E. SIZE	1.2
NO. HAULS	127	MIN. SIZE	73
CAT./HAUL	2.2	MAX. SIZE	174
JAN - DEC	990111 - 991215		
NO. CGHT.	4291	MEAN SIZE	118.4
NO. MEAS.	3189	S.E. SIZE	0.5
NO. HAULS	1382	MIN. SIZE	40
CAT./HAUL	3.1	MAX. SIZE	233

Figure 75.

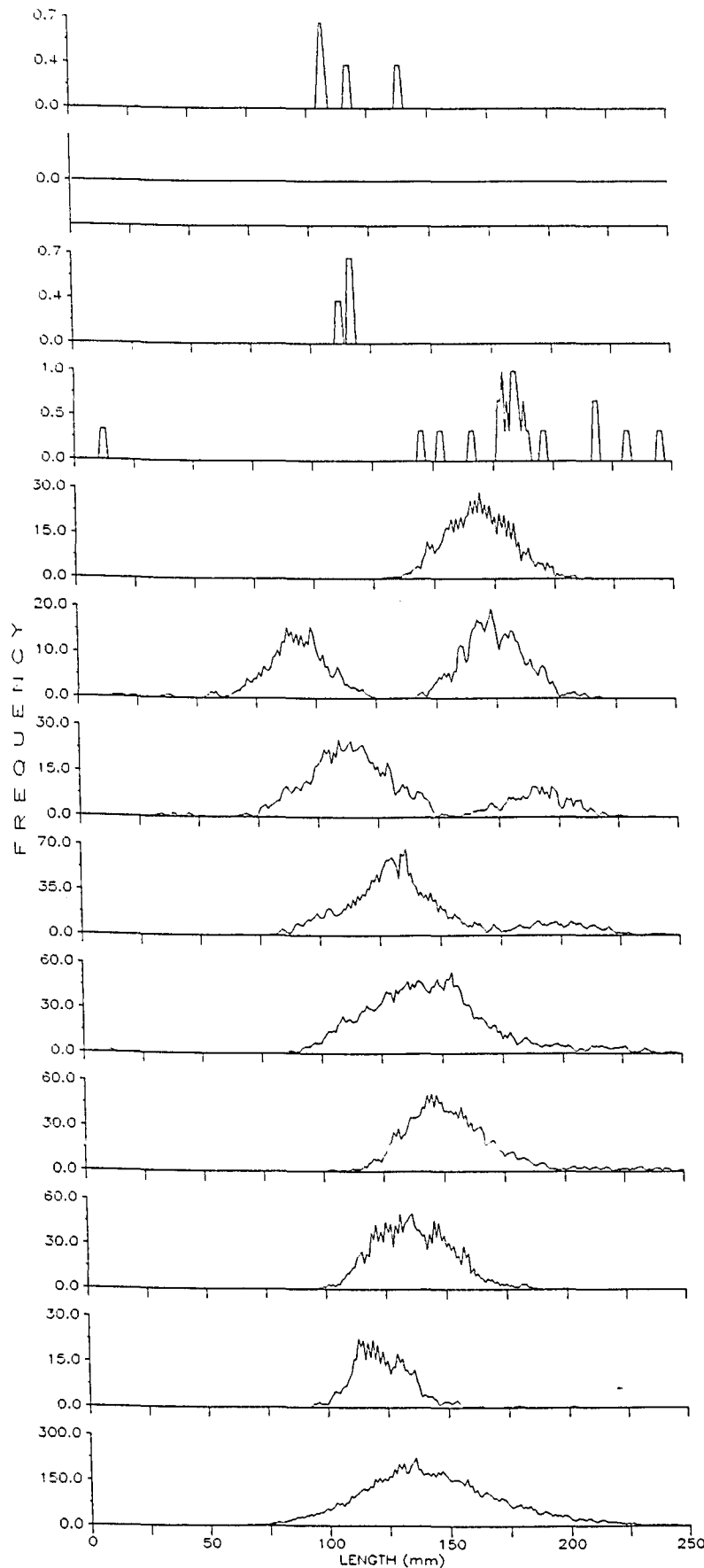
Smallmouth Flounder, 1999



JANUARY	990111	-	990121		
NO. CGHT.	-	0	MEAN SIZE	-	.
NO. MEAS.	-	0	S.E. SIZE	-	.
NO. HAULS	-	79	MIN. SIZE	-	.
CAT./HAUL	-	0	MAX. SIZE	-	.
FEBRUARY	990202	-	990216		
NO. CGHT.	-	37	MEAN SIZE	-	79.9
NO. MEAS.	-	37	S.E. SIZE	-	1.7
NO. HAULS	-	122	MIN. SIZE	-	55
CAT./HAUL	-	0.3	MAX. SIZE	-	101
MARCH	990301	-	990323		
NO. CGHT.	-	1	MEAN SIZE	-	95
NO. MEAS.	-	1	S.E. SIZE	-	.
NO. HAULS	-	80	MIN. SIZE	-	95
CAT./HAUL	-	0	MAX. SIZE	-	95
APRIL	990405	-	990419		
NO. CGHT.	-	12	MEAN SIZE	-	73.8
NO. MEAS.	-	12	S.E. SIZE	-	4.1
NO. HAULS	-	122	MIN. SIZE	-	55
CAT./HAUL	-	0.1	MAX. SIZE	-	102
MAY	990504	-	990519		
NO. CGHT.	-	54	MEAN SIZE	-	76.3
NO. MEAS.	-	54	S.E. SIZE	-	2.3
NO. HAULS	-	120	MIN. SIZE	-	32
CAT./HAUL	-	0.5	MAX. SIZE	-	115
JUNE	990601	-	990611		
NO. CGHT.	-	43	MEAN SIZE	-	89.6
NO. MEAS.	-	43	S.E. SIZE	-	1.7
NO. HAULS	-	118	MIN. SIZE	-	61
CAT./HAUL	-	0.4	MAX. SIZE	-	114
JULY	990701	-	990719		
NO. CGHT.	-	27	MEAN SIZE	-	103.5
NO. MEAS.	-	27	S.E. SIZE	-	2
NO. HAULS	-	119	MIN. SIZE	-	77
CAT./HAUL	-	0.2	MAX. SIZE	-	122
AUGUST	990804	-	990819		
NO. CGHT.	-	79	MEAN SIZE	-	66
NO. MEAS.	-	55	S.E. SIZE	-	3.8
NO. HAULS	-	118	MIN. SIZE	-	31
CAT./HAUL	-	0.7	MAX. SIZE	-	112
SEPTEMBER	990907	-	990924		
NO. CGHT.	-	87	MEAN SIZE	-	61.2
NO. MEAS.	-	87	S.E. SIZE	-	1.4
NO. HAULS	-	122	MIN. SIZE	-	34
CAT./HAUL	-	0.7	MAX. SIZE	-	97
OCTOBER	991004	-	991020		
NO. CGHT.	-	163	MEAN SIZE	-	73.4
NO. MEAS.	-	163	S.E. SIZE	-	1.1
NO. HAULS	-	124	MIN. SIZE	-	43
CAT./HAUL	-	1.3	MAX. SIZE	-	106
NOVEMBER	991101	-	991118		
NO. CGHT.	-	189	MEAN SIZE	-	79
NO. MEAS.	-	155	S.E. SIZE	-	1.1
NO. HAULS	-	131	MIN. SIZE	-	40
CAT./HAUL	-	1.4	MAX. SIZE	-	116
DECEMBER	991202	-	991215		
NO. CGHT.	-	129	MEAN SIZE	-	82.3
NO. MEAS.	-	129	S.E. SIZE	-	1.3
NO. HAULS	-	127	MIN. SIZE	-	39
CAT./HAUL	-	1	MAX. SIZE	-	114
JAN - DEC	990111	-	991215		
NO. CGHT.	-	821	MEAN SIZE	-	76.6
NO. MEAS.	-	763	S.E. SIZE	-	0.6
NO. HAULS	-	1382	MIN. SIZE	-	31
CAT./HAUL	-	0.6	MAX. SIZE	-	122

Figure 76.

Spot, 1999



JANUARY	990111	-	990121		
NO. CGHT.	-	4	MEAN SIZE	-	115
NO. MEAS.	-	4	S.E. SIZE	-	7.4
NO. HAULS	-	79	MIN. SIZE	-	104
CAT./HAUL	-	0.1	MAX. SIZE	-	136

FEBRUARY	990202	-	990216		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	122	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	

MARCH	990301	-	990323		
NO. CGHT.	-	3	MEAN SIZE	-	113.3
NO. MEAS.	-	3	S.E. SIZE	-	1.7
NO. HAULS	-	80	MIN. SIZE	-	110
CAT./HAUL	-	0	MAX. SIZE	-	115

APRIL	990405	-	990419		
NO. CGHT.	-	17	MEAN SIZE	-	187.4
NO. MEAS.	-	17	S.E. SIZE	-	6.3
NO. HAULS	-	122	MIN. SIZE	-	143
CAT./HAUL	-	0.1	MAX. SIZE	-	243

MAY	990504	-	990519		
NO. CGHT.	-	944	MEAN SIZE	-	166.7
NO. MEAS.	-	833	S.E. SIZE	-	0.5
NO. HAULS	-	120	MIN. SIZE	-	128
CAT./HAUL	-	7.9	MAX. SIZE	-	260

JUNE	990601	-	990611		
NO. CGHT.	-	995	MEAN SIZE	-	156.6
NO. MEAS.	-	940	S.E. SIZE	-	1.4
NO. HAULS	-	118	MIN. SIZE	-	13
CAT./HAUL	-	8.4	MAX. SIZE	-	215

JULY	990701	-	990719		
NO. CGHT.	-	1413	MEAN SIZE	-	127.7
NO. MEAS.	-	1269	S.E. SIZE	-	1
NO. HAULS	-	119	MIN. SIZE	-	29
CAT./HAUL	-	11.9	MAX. SIZE	-	237

AUGUST	990804	-	990819		
NO. CGHT.	-	3102	MEAN SIZE	-	137.5
NO. MEAS.	-	2540	S.E. SIZE	-	0.6
NO. HAULS	-	118	MIN. SIZE	-	64
CAT./HAUL	-	26.3	MAX. SIZE	-	247

SEPTEMBER	990907	-	990924		
NO. CGHT.	-	3705	MEAN SIZE	-	143.2
NO. MEAS.	-	2795	S.E. SIZE	-	0.5
NO. HAULS	-	122	MIN. SIZE	-	83
CAT./HAUL	-	30.4	MAX. SIZE	-	245

OCTOBER	991004	-	991020		
NO. CGHT.	-	2284	MEAN SIZE	-	153.2
NO. MEAS.	-	1924	S.E. SIZE	-	0.6
NO. HAULS	-	124	MIN. SIZE	-	100
CAT./HAUL	-	18.4	MAX. SIZE	-	279

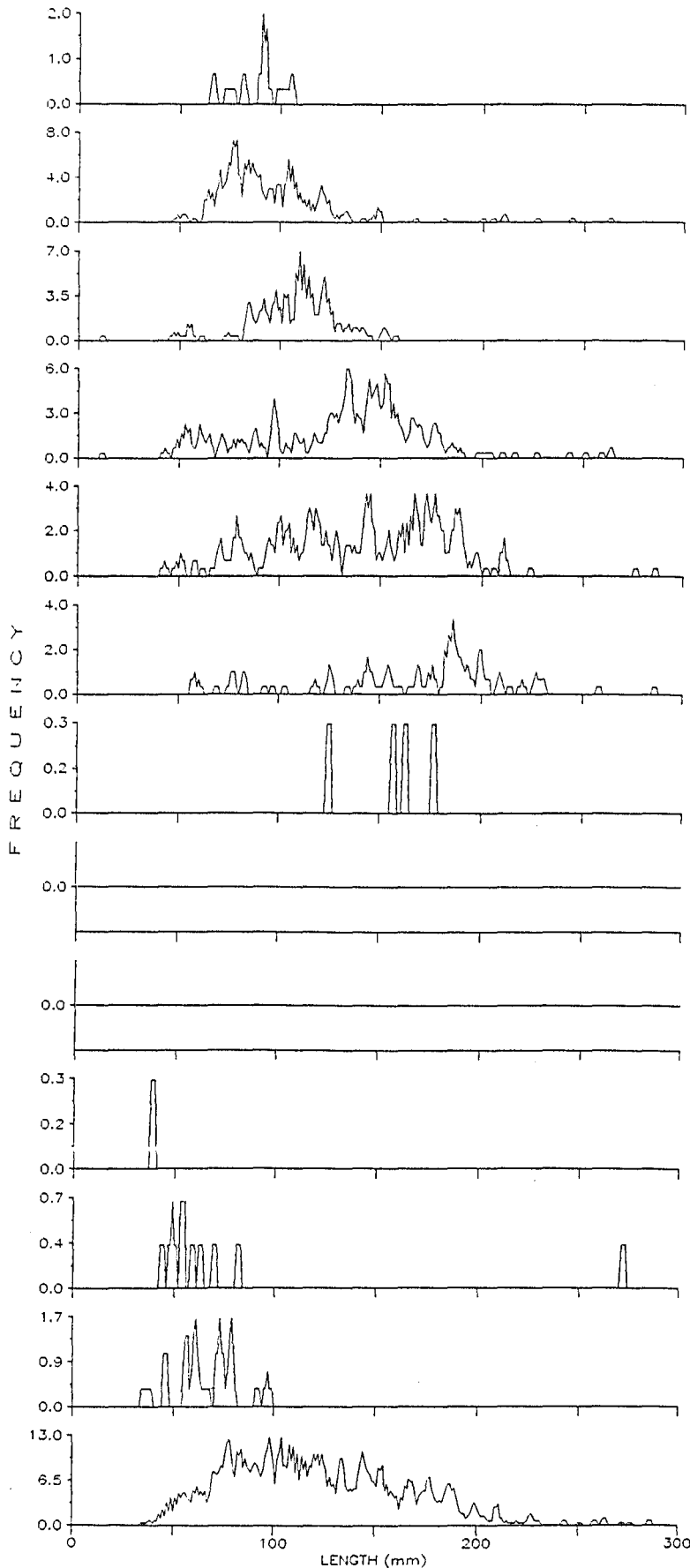
NOVEMBER	991101	-	991118		
NO. CGHT.	-	4028	MEAN SIZE	-	134.7
NO. MEAS.	-	1833	S.E. SIZE	-	0.4
NO. HAULS	-	131	MIN. SIZE	-	92
CAT./HAUL	-	30.7	MAX. SIZE	-	197

DECEMBER	991202	-	991215		
NO. CGHT.	-	592	MEAN SIZE	-	120.8
NO. MEAS.	-	554	S.E. SIZE	-	0.5
NO. HAULS	-	127	MIN. SIZE	-	93
CAT./HAUL	-	4.7	MAX. SIZE	-	200

JAN - DEC	990111	-	991215		
NO. CGHT.	-	17087	MEAN SIZE	-	140.8
NO. MEAS.	-	12712	S.E. SIZE	-	0.3
NO. HAULS	-	1382	MIN. SIZE	-	13
CAT./HAUL	-	12.4	MAX. SIZE	-	279

Figure 77.

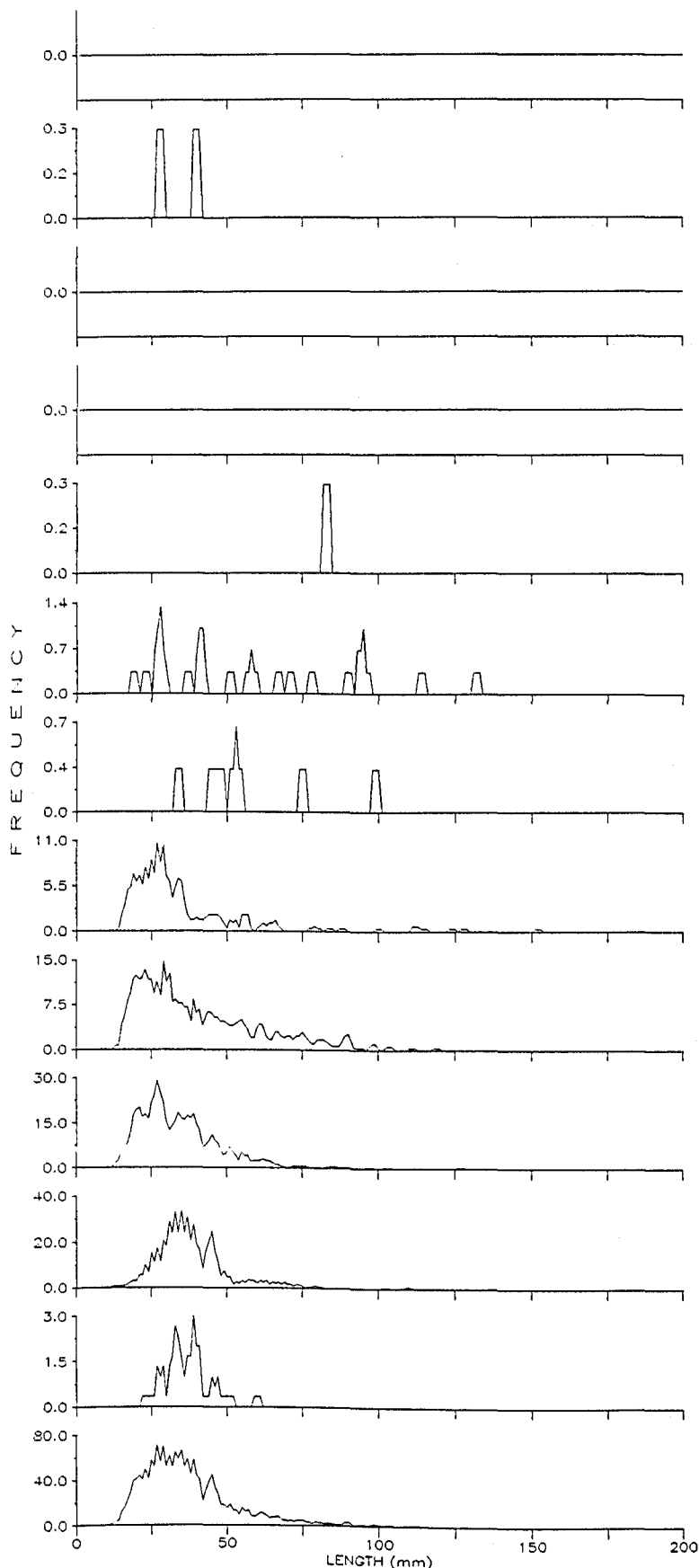
Spotted Hake, 1999



JANUARY	990111 - 990121		
NO. CGHT.	17	MEAN SIZE	86.2
NO. MEAS.	17	S.E. SIZE	3
NO. HAULS	79	MIN. SIZE	64
CAT./HAUL	0.2	MAX. SIZE	104
FEBRUARY	990202 - 990216		
NO. CGHT.	359	MEAN SIZE	94.4
NO. MEAS.	235	S.E. SIZE	2
NO. HAULS	122	MIN. SIZE	46
CAT./HAUL	2.9	MAX. SIZE	261
MARCH	990301 - 990323		
NO. CGHT.	166	MEAN SIZE	105.1
NO. MEAS.	166	S.E. SIZE	1.6
NO. HAULS	80	MIN. SIZE	44
CAT./HAUL	2.1	MAX. SIZE	155
APRIL	990405 - 990419		
NO. CGHT.	277	MEAN SIZE	129.7
NO. MEAS.	277	S.E. SIZE	2.6
NO. HAULS	122	MIN. SIZE	40
CAT./HAUL	2.3	MAX. SIZE	329
MAY	990504 - 990519		
NO. CGHT.	230	MEAN SIZE	137.9
NO. MEAS.	230	S.E. SIZE	2.9
NO. HAULS	120	MIN. SIZE	40
CAT./HAUL	1.9	MAX. SIZE	317
JUNE	990601 - 990611		
NO. CGHT.	96	MEAN SIZE	162.1
NO. MEAS.	96	S.E. SIZE	4.9
NO. HAULS	118	MIN. SIZE	55
CAT./HAUL	0.8	MAX. SIZE	284
JULY	990701 - 990719		
NO. CGHT.	4	MEAN SIZE	153.5
NO. MEAS.	4	S.E. SIZE	11
NO. HAULS	119	MIN. SIZE	123
CAT./HAUL	0	MAX. SIZE	175
AUGUST	990804 - 990819		
NO. CGHT.	0	MEAN SIZE	.
NO. MEAS.	0	S.E. SIZE	.
NO. HAULS	118	MIN. SIZE	.
CAT./HAUL	0	MAX. SIZE	.
SEPTEMBER	990907 - 990924		
NO. CGHT.	0	MEAN SIZE	.
NO. MEAS.	0	S.E. SIZE	.
NO. HAULS	122	MIN. SIZE	.
CAT./HAUL	0	MAX. SIZE	.
OCTOBER	991004 - 991020		
NO. CGHT.	1	MEAN SIZE	37
NO. MEAS.	1	S.E. SIZE	.
NO. HAULS	124	MIN. SIZE	37
CAT./HAUL	0	MAX. SIZE	37
NOVEMBER	991101 - 991118		
NO. CGHT.	10	MEAN SIZE	77.6
NO. MEAS.	10	S.E. SIZE	21.7
NO. HAULS	131	MIN. SIZE	42
CAT./HAUL	0.1	MAX. SIZE	270
DECEMBER	991202 - 991215		
NO. CGHT.	31	MEAN SIZE	64.3
NO. MEAS.	30	S.E. SIZE	2.9
NO. HAULS	127	MIN. SIZE	33
CAT./HAUL	0.2	MAX. SIZE	96
JAN - DEC	990111 - 991215		
NO. CGHT.	1191	MEAN SIZE	119.8
NO. MEAS.	1066	S.E. SIZE	1.4
NO. HAULS	1382	MIN. SIZE	33
CAT./HAUL	0.9	MAX. SIZE	329

Figure 78.

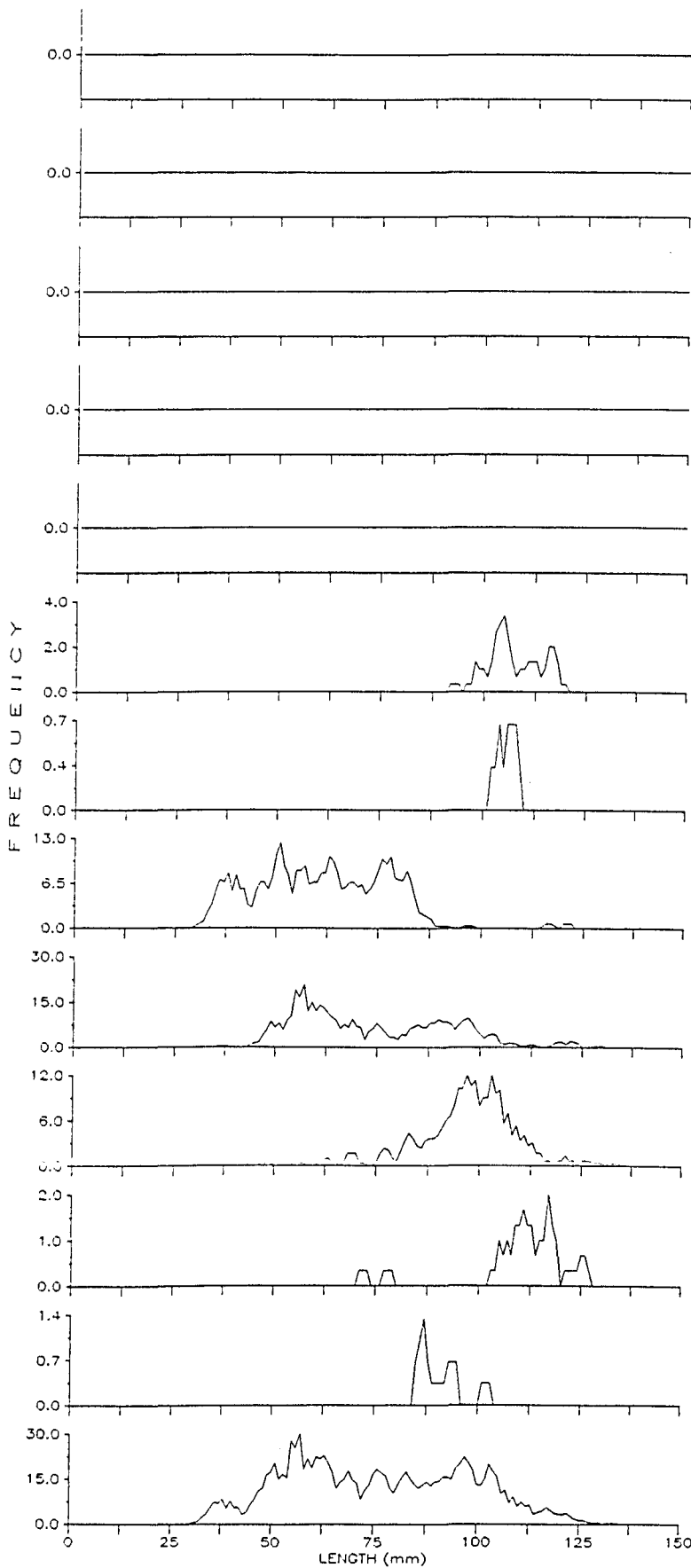
Squid Species, 1999



JANUARY	990111	990121		
NO. CGHT.	0	MEAN SIZE		
NO. MEAS.	0	S.E. SIZE		
NO. HAULS	79	MIN. SIZE		
CAT./HAUL	0	MAX. SIZE		
FEBRUARY	990202	990216		
NO. CGHT.	2	MEAN SIZE	32	
NO. MEAS.	2	S.E. SIZE	6	
NO. HAULS	122	MIN. SIZE	26	
CAT./HAUL	0	MAX. SIZE	38	
MARCH	990301	990323		
NO. CGHT.	0	MEAN SIZE		
NO. MEAS.	0	S.E. SIZE		
NO. HAULS	80	MIN. SIZE		
CAT./HAUL	0	MAX. SIZE		
APRIL	990405	990419		
NO. CGHT.	0	MEAN SIZE		
NO. MEAS.	0	S.E. SIZE		
NO. HAULS	122	MIN. SIZE		
CAT./HAUL	0	MAX. SIZE		
MAY	990504	990519		
NO. CGHT.	1	MEAN SIZE	81	
NO. MEAS.	1	S.E. SIZE		
NO. HAULS	120	MIN. SIZE	81	
CAT./HAUL	0	MAX. SIZE	81	
JUNE	990601	990611		
NO. CGHT.	22	MEAN SIZE	57.9	
NO. MEAS.	22	S.E. SIZE	6.9	
NO. HAULS	118	MIN. SIZE	17	
CAT./HAUL	0.2	MAX. SIZE	130	
JULY	990701	990719		
NO. CGHT.	7	MEAN SIZE	56.1	
NO. MEAS.	7	S.E. SIZE	8.3	
NO. HAULS	119	MIN. SIZE	32	
CAT./HAUL	0.1	MAX. SIZE	97	
AUGUST	990804	990819		
NO. CGHT.	211	MEAN SIZE	33.6	
NO. MEAS.	188	S.E. SIZE	1.6	
NO. HAULS	118	MIN. SIZE	13	
CAT./HAUL	1.8	MAX. SIZE	150	
SEPTEMBER	990907	990924		
NO. CGHT.	599	MEAN SIZE	38.4	
NO. MEAS.	407	S.E. SIZE	1	
NO. HAULS	122	MIN. SIZE	9	
CAT./HAUL	4.9	MAX. SIZE	117	
OCTOBER	991004	991020		
NO. CGHT.	1505	MEAN SIZE	32.2	
NO. MEAS.	592	S.E. SIZE	0.6	
NO. HAULS	124	MIN. SIZE	10	
CAT./HAUL	12.1	MAX. SIZE	123	
NOVEMBER	991101	991118		
NO. CGHT.	934	MEAN SIZE	36.4	
NO. MEAS.	601	S.E. SIZE	0.5	
NO. HAULS	131	MIN. SIZE	11	
CAT./HAUL	7.1	MAX. SIZE	135	
DECEMBER	991202	991215		
NO. CGHT.	33	MEAN SIZE	35	
NO. MEAS.	33	S.E. SIZE	1.3	
NO. HAULS	127	MIN. SIZE	21	
CAT./HAUL	0.3	MAX. SIZE	58	
JAN - DEC	990111	991215		
NO. CGHT.	3314	MEAN SIZE	35.5	
NO. MEAS.	1853	S.E. SIZE	0.4	
NO. HAULS	1382	MIN. SIZE	9	
CAT./HAUL	2.4	MAX. SIZE	150	

Figure 79.

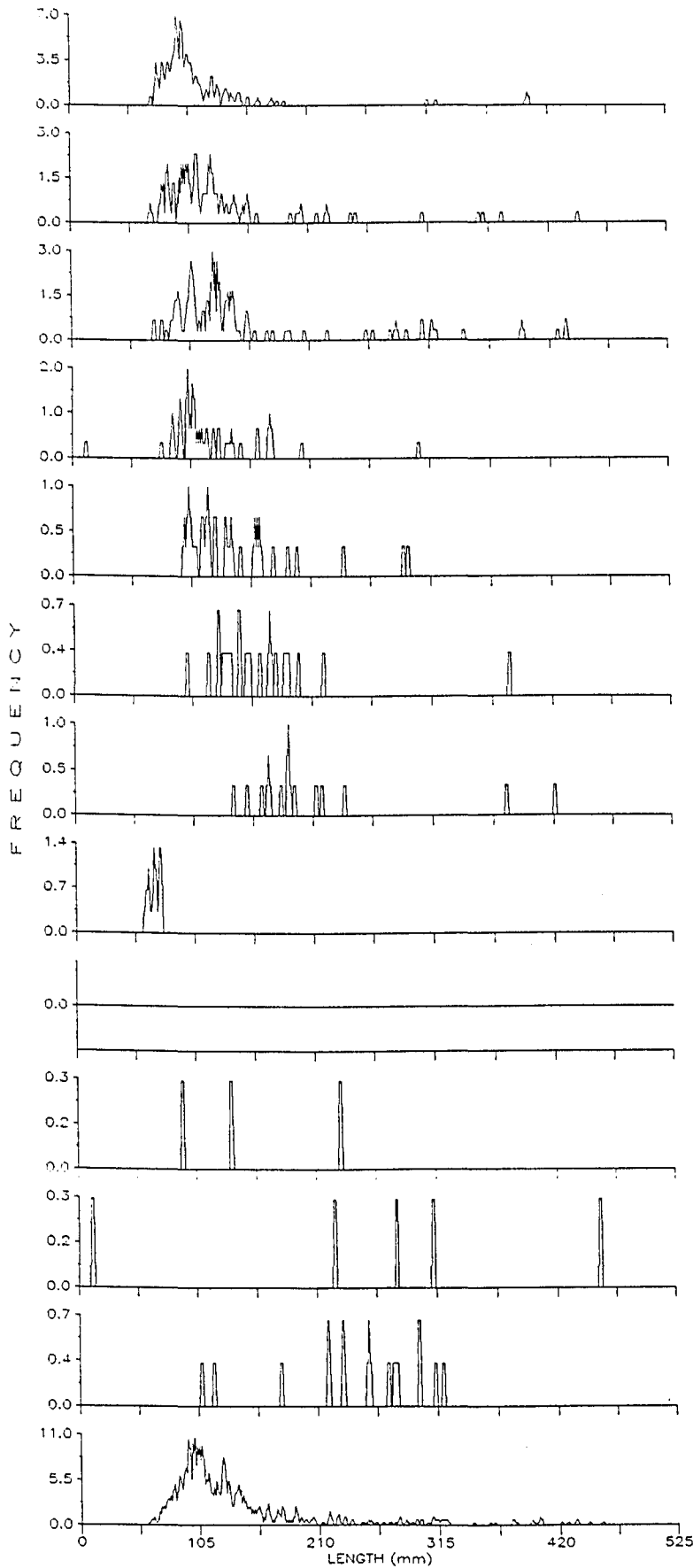
Striped Anchovy, 1999



JANUARY	990111	-	990121		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	79	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
FEBRUARY	990202	-	990216		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	122	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
MARCH	990301	-	990323		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	80	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
APRIL	990405	-	990419		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	122	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
MAY	990504	-	990519		
NO. CGHT.	-	0	MEAN SIZE	-	
NO. MEAS.	-	0	S.E. SIZE	-	
NO. HAULS	-	120	MIN. SIZE	-	
CAT./HAUL	-	0	MAX. SIZE	-	
JUNE	990601	-	990611		
NO. CGHT.	-	34	MEAN SIZE	-	105.4
NO. MEAS.	-	34	S.E. SIZE	-	1.1
NO. HAULS	-	118	MIN. SIZE	-	91
CAT./HAUL	-	0.3	MAX. SIZE	-	117
JULY	990701	-	990719		
NO. CGHT.	-	4	MEAN SIZE	-	103.8
NO. MEAS.	-	4	S.E. SIZE	-	1.1
NO. HAULS	-	119	MIN. SIZE	-	101
CAT./HAUL	-	0	MAX. SIZE	-	106
AUGUST	990804	-	990819		
NO. CGHT.	-	650	MEAN SIZE	-	59
NO. MEAS.	-	378	S.E. SIZE	-	0.8
NO. HAULS	-	118	MIN. SIZE	-	29
CAT./HAUL	-	5.5	MAX. SIZE	-	119
SEPTEMBER	990907	-	990924		
NO. CGHT.	-	1961	MEAN SIZE	-	71.7
NO. MEAS.	-	484	S.E. SIZE	-	0.8
NO. HAULS	-	122	MIN. SIZE	-	35
CAT./HAUL	-	16.1	MAX. SIZE	-	127
OCTOBER	991004	-	991020		
NO. CGHT.	-	238	MEAN SIZE	-	95.2
NO. MEAS.	-	238	S.E. SIZE	-	0.8
NO. HAULS	-	124	MIN. SIZE	-	46
CAT./HAUL	-	1.9	MAX. SIZE	-	131
NOVEMBER	991101	-	991118		
NO. CGHT.	-	23	MEAN SIZE	-	108.5
NO. MEAS.	-	23	S.E. SIZE	-	2.6
NO. HAULS	-	131	MIN. SIZE	-	70
CAT./HAUL	-	0.2	MAX. SIZE	-	124
DECEMBER	991202	-	991215		
NO. CGHT.	-	8	MEAN SIZE	-	89
NO. MEAS.	-	8	S.E. SIZE	-	2
NO. HAULS	-	127	MIN. SIZE	-	84
CAT./HAUL	-	0.1	MAX. SIZE	-	100
JAN - DEC	990111	-	991215		
NO. CGHT.	-	2918	MEAN SIZE	-	74.3
NO. MEAS.	-	1169	S.E. SIZE	-	0.6
NO. HAULS	-	1382	MIN. SIZE	-	29
CAT./HAUL	-	2.1	MAX. SIZE	-	131

Figure 80.

Striped Bass, 1999



JANUARY 990111 - 990121
 NO. CGHT. - 187 MEAN SIZE - 111.1
 NO. MEAS. - 187 S.E. SIZE - 3.6
 NO. HAULS - 79 MIN. SIZE - 70
 CAT./HAUL - 2.4 MAX. SIZE - 401

FEBRUARY 990202 - 990216
 NO. CGHT. - 100 MEAN SIZE - 133.5
 NO. MEAS. - 100 S.E. SIZE - 6.7
 NO. HAULS - 122 MIN. SIZE - 68
 CAT./HAUL - 0.8 MAX. SIZE - 444

MARCH 990301 - 990323
 NO. CGHT. - 107 MEAN SIZE - 154.8
 NO. MEAS. - 107 S.E. SIZE - 8.2
 NO. HAULS - 80 MIN. SIZE - 71
 CAT./HAUL - 1.3 MAX. SIZE - 433

APRIL 990405 - 990419
 NO. CGHT. - 41 MEAN SIZE - 124.6
 NO. MEAS. - 41 S.E. SIZE - 6.4
 NO. HAULS - 122 MIN. SIZE - 77
 CAT./HAUL - 0.3 MAX. SIZE - 303

MAY 990504 - 990519
 NO. CGHT. - 31 MEAN SIZE - 158.7
 NO. MEAS. - 31 S.E. SIZE - 16.1
 NO. HAULS - 120 MIN. SIZE - 96
 CAT./HAUL - 0.3 MAX. SIZE - 558

JUNE 990601 - 990611
 NO. CGHT. - 20 MEAN SIZE - 165.1
 NO. MEAS. - 20 S.E. SIZE - 13.1
 NO. HAULS - 118 MIN. SIZE - 98
 CAT./HAUL - 0.2 MAX. SIZE - 380

JULY 990701 - 990719
 NO. CGHT. - 15 MEAN SIZE - 212
 NO. MEAS. - 15 S.E. SIZE - 20.6
 NO. HAULS - 119 MIN. SIZE - 138
 CAT./HAUL - 0.1 MAX. SIZE - 419

AUGUST 990804 - 990819
 NO. CGHT. - 13 MEAN SIZE - 67.3
 NO. MEAS. - 13 S.E. SIZE - 1.4
 NO. HAULS - 118 MIN. SIZE - 59
 CAT./HAUL - 0.1 MAX. SIZE - 73

SEPTEMBER 990907 - 990924
 NO. CGHT. - 0 MEAN SIZE -
 NO. MEAS. - 0 S.E. SIZE -
 NO. HAULS - 122 MIN. SIZE -
 CAT./HAUL - 0 MAX. SIZE -

OCTOBER 991004 - 991020
 NO. CGHT. - 3 MEAN SIZE - 151.7
 NO. MEAS. - 3 S.E. SIZE - 41.1
 NO. HAULS - 124 MIN. SIZE - 91
 CAT./HAUL - 0 MAX. SIZE - 230

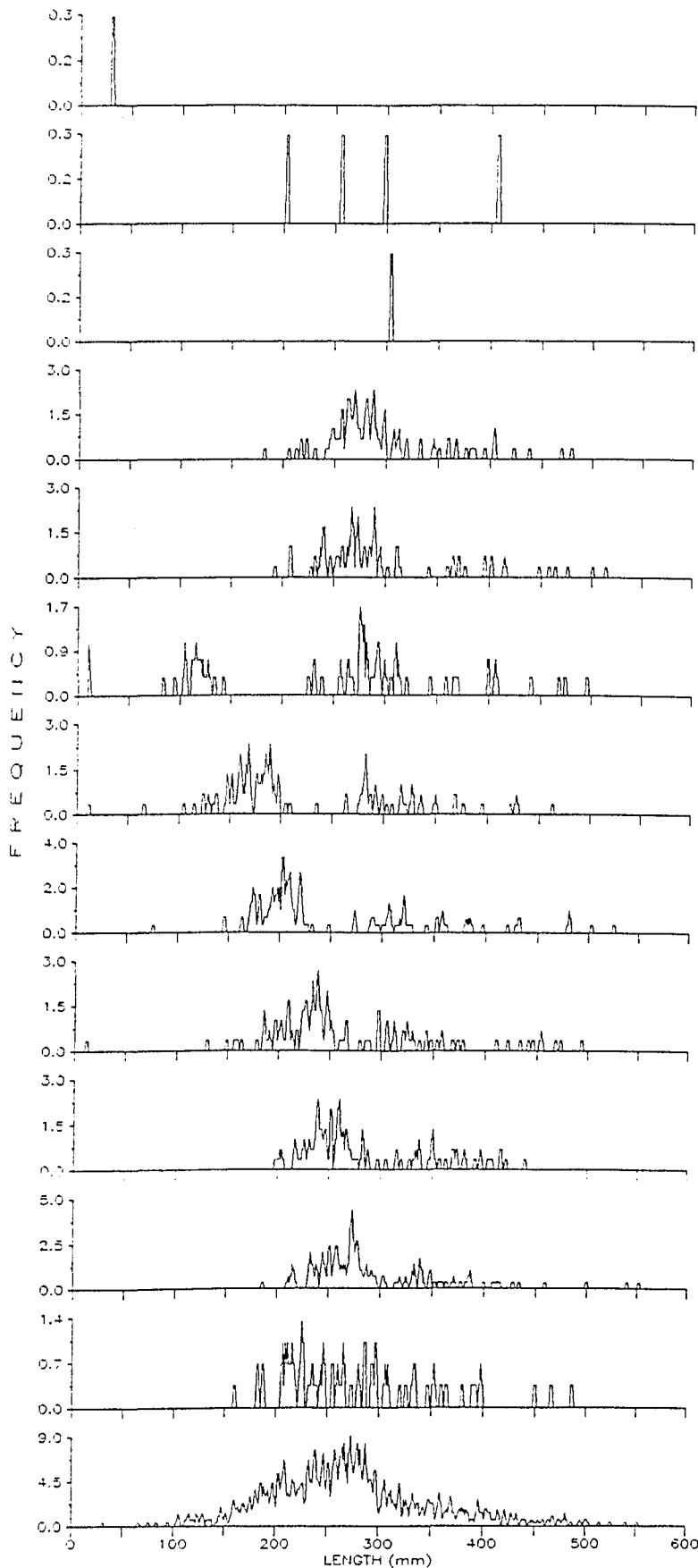
NOVEMBER 991101 - 991118
 NO. CGHT. - 4 MEAN SIZE - 317
 NO. MEAS. - 4 S.E. SIZE - 49.6
 NO. HAULS - 131 MIN. SIZE - 224
 CAT./HAUL - 0 MAX. SIZE - 456

DECEMBER 991202 - 991215
 NO. CGHT. - 17 MEAN SIZE - 260.6
 NO. MEAS. - 17 S.E. SIZE - 25.1
 NO. HAULS - 127 MIN. SIZE - 106
 CAT./HAUL - 0.1 MAX. SIZE - 584

JAN - DEC 990111 - 991215
 NO. CGHT. - 538 MEAN SIZE - 138
 NO. MEAS. - 538 S.E. SIZE - 3.3
 NO. HAULS - 1382 MIN. SIZE - 59
 CAT./HAUL - 0.4 MAX. SIZE - 584

Figure 81.

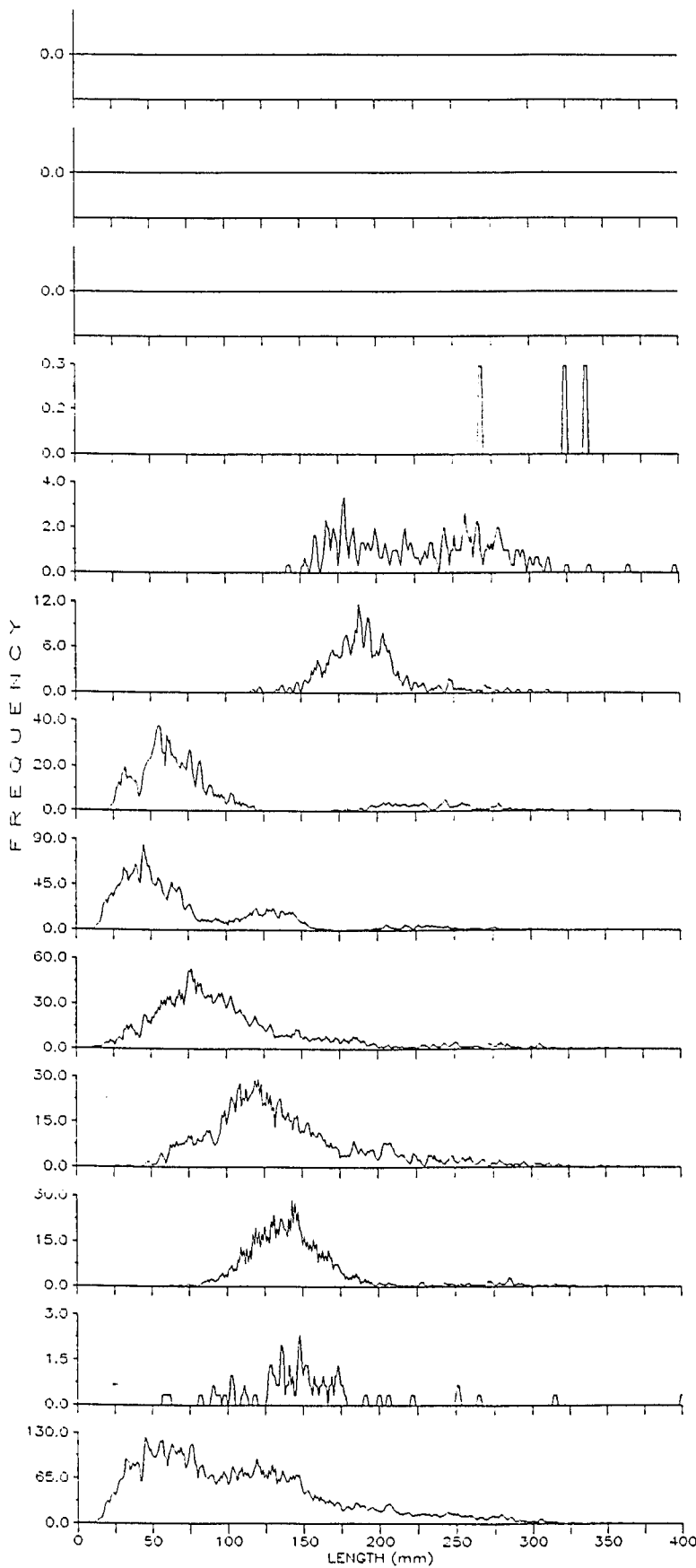
Summer Flounder, 1999



JANUARY	990111	990121		
NO. CGHT.	1	MEAN SIZE	29	
NO. MEAS.	1	S.E. SIZE		
NO. HAULS	79	MIN. SIZE	29	
CAT./HAUL	0	MAX. SIZE	29	
FEBRUARY	990202	990216		
NO. CGHT.	4	MEAN SIZE	289	
NO. MEAS.	4	S.E. SIZE	43.3	
NO. HAULS	122	MIN. SIZE	201	
CAT./HAUL	0	MAX. SIZE	405	
MARCH	990301	990323		
NO. CGHT.	1	MEAN SIZE	302	
NO. MEAS.	1	S.E. SIZE		
NO. HAULS	80	MIN. SIZE	302	
CAT./HAUL	0	MAX. SIZE	302	
APRIL	990405	990419		
NO. CGHT.	104	MEAN SIZE	290.7	
NO. MEAS.	104	S.E. SIZE	5.3	
NO. HAULS	122	MIN. SIZE	180	
CAT./HAUL	0.9	MAX. SIZE	477	
MAY	990504	990519		
NO. CGHT.	83	MEAN SIZE	297.1	
NO. MEAS.	83	S.E. SIZE	7.7	
NO. HAULS	120	MIN. SIZE	191	
CAT./HAUL	0.7	MAX. SIZE	512	
JUNE	990601	990611		
NO. CGHT.	64	MEAN SIZE	256.5	
NO. MEAS.	64	S.E. SIZE	13.3	
NO. HAULS	118	MIN. SIZE	82	
CAT./HAUL	0.5	MAX. SIZE	494	
JULY	990701	990719		
NO. CGHT.	115	MEAN SIZE	231.5	
NO. MEAS.	115	S.E. SIZE	9.7	
NO. HAULS	119	MIN. SIZE	64	
CAT./HAUL	1	MAX. SIZE	642	
AUGUST	990804	990819		
NO. CGHT.	134	MEAN SIZE	251.3	
NO. MEAS.	134	S.E. SIZE	7.8	
NO. HAULS	118	MIN. SIZE	74	
CAT./HAUL	1.1	MAX. SIZE	608	
SEPTEMBER	990907	990924		
NO. CGHT.	118	MEAN SIZE	265	
NO. MEAS.	118	S.E. SIZE	7	
NO. HAULS	122	MIN. SIZE	128	
CAT./HAUL	1	MAX. SIZE	492	
OCTOBER	991004	991020		
NO. CGHT.	103	MEAN SIZE	286.2	
NO. MEAS.	103	S.E. SIZE	6.7	
NO. HAULS	124	MIN. SIZE	196	
CAT./HAUL	0.8	MAX. SIZE	615	
NOVEMBER	991101	991118		
NO. CGHT.	147	MEAN SIZE	289.5	
NO. MEAS.	147	S.E. SIZE	5.1	
NO. HAULS	131	MIN. SIZE	184	
CAT./HAUL	1.1	MAX. SIZE	550	
DECEMBER	991202	991215		
NO. CGHT.	68	MEAN SIZE	277.1	
NO. MEAS.	68	S.E. SIZE	8.7	
NO. HAULS	127	MIN. SIZE	158	
CAT./HAUL	0.5	MAX. SIZE	484	
JAN - DEC	990111	991215		
NO. CGHT.	942	MEAN SIZE	271	
NO. MEAS.	942	S.E. SIZE	2.7	
NO. HAULS	1382	MIN. SIZE	29	
CAT./HAUL	0.7	MAX. SIZE	642	

Figure 82.

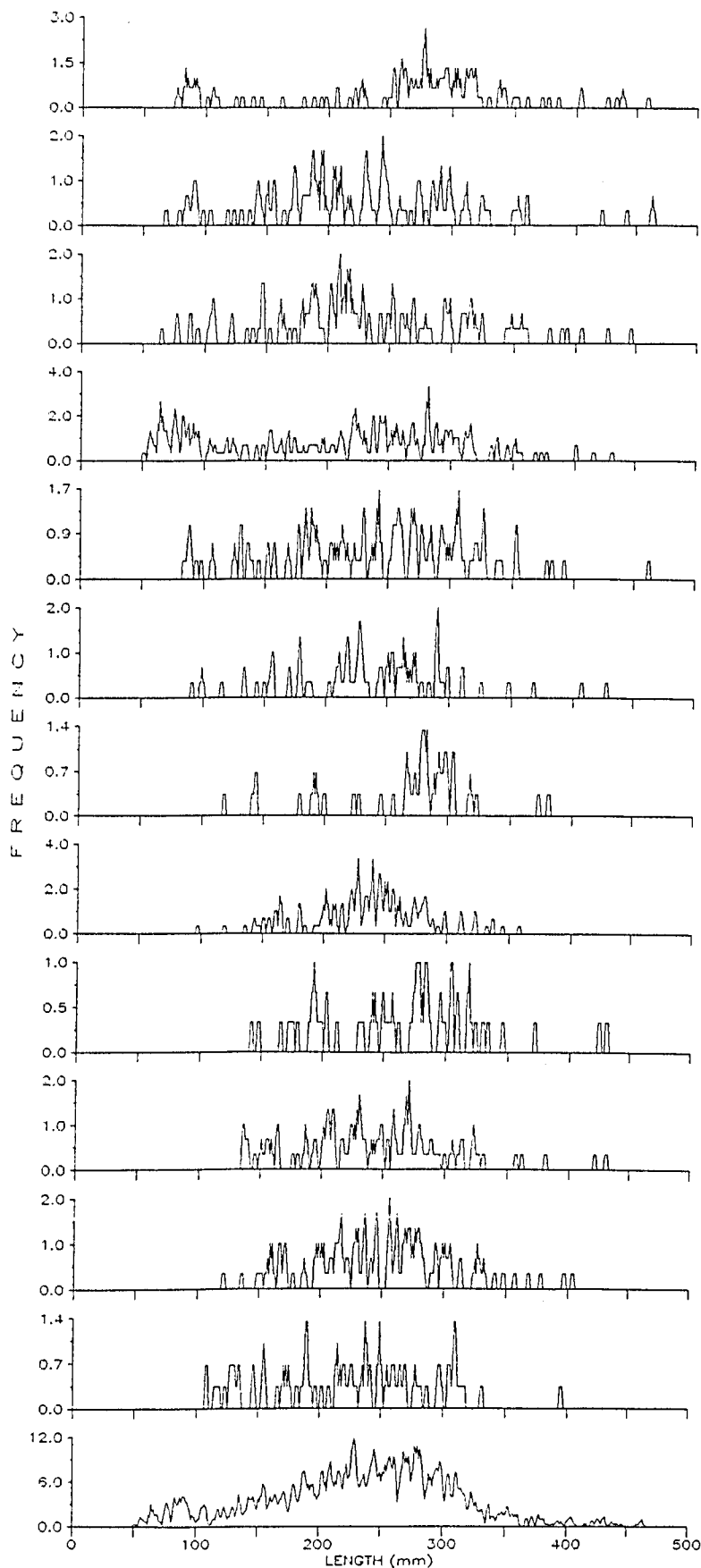
Weakfish, 1999



JANUARY	990111 - 990121		
NO. CGHT.	- 0	MEAN SIZE	- .
NO. MEAS.	- 0	S.E. SIZE	- .
NO. HAULS	- 79	MIN. SIZE	- .
CAT./HAUL	- 0	MAX. SIZE	- .
FEBRUARY	990202 - 990216		
NO. CGHT.	- 0	MEAN SIZE	- .
NO. MEAS.	- 0	S.E. SIZE	- .
NO. HAULS	- 122	MIN. SIZE	- .
CAT./HAUL	- 0	MAX. SIZE	- .
MARCH	990301 - 990323		
NO. CGHT.	- 0	MEAN SIZE	- .
NO. MEAS.	- 0	S.E. SIZE	- .
NO. HAULS	- 80	MIN. SIZE	- .
CAT./HAUL	- 0	MAX. SIZE	- .
APRIL	990405 - 990419		
NO. CGHT.	- 3	MEAN SIZE	- 308
NO. MEAS.	- 3	S.E. SIZE	- 21.4
NO. HAULS	- 122	MIN. SIZE	- 266
CAT./HAUL	- 0	MAX. SIZE	- 336
MAY	990504 - 990519		
NO. CGHT.	- 177	MEAN SIZE	- 228
NO. MEAS.	- 177	S.E. SIZE	- 3.6
NO. HAULS	- 120	MIN. SIZE	- 140
CAT./HAUL	- 1.5	MAX. SIZE	- 395
JUNE	990601 - 990611		
NO. CGHT.	- 395	MEAN SIZE	- 190.4
NO. MEAS.	- 395	S.E. SIZE	- 1.4
NO. HAULS	- 118	MIN. SIZE	- 116
CAT./HAUL	- 3.3	MAX. SIZE	- 309
JULY	990701 - 990719		
NO. CGHT.	- 2083	MEAN SIZE	- 88.2
NO. MEAS.	- 1663	S.E. SIZE	- 1.7
NO. HAULS	- 119	MIN. SIZE	- 21
CAT./HAUL	- 17.6	MAX. SIZE	- 366
AUGUST	990804 - 990819		
NO. CGHT.	- 7713	MEAN SIZE	- 75.8
NO. MEAS.	- 4021	S.E. SIZE	- 0.9
NO. HAULS	- 118	MIN. SIZE	- 6
CAT./HAUL	- 65.4	MAX. SIZE	- 382
SEPTEMBER	990907 - 990924		
NO. CGHT.	- 5290	MEAN SIZE	- 100.4
NO. MEAS.	- 3404	S.E. SIZE	- 0.9
NO. HAULS	- 122	MIN. SIZE	- 5
CAT./HAUL	- 43.4	MAX. SIZE	- 358
OCTOBER	991004 - 991020		
NO. CGHT.	- 2558	MEAN SIZE	- 137.7
NO. MEAS.	- 2101	S.E. SIZE	- 1.2
NO. HAULS	- 124	MIN. SIZE	- 25
CAT./HAUL	- 20.6	MAX. SIZE	- 431
NOVEMBER	991101 - 991118		
NO. CGHT.	- 1305	MEAN SIZE	- 144.3
NO. MEAS.	- 1254	S.E. SIZE	- 1.1
NO. HAULS	- 131	MIN. SIZE	- 61
CAT./HAUL	- 10	MAX. SIZE	- 348
DECEMBER	991202 - 991215		
NO. CGHT.	- 70	MEAN SIZE	- 150.9
NO. MEAS.	- 70	S.E. SIZE	- 6.3
NO. HAULS	- 127	MIN. SIZE	- 56
CAT./HAUL	- 0.6	MAX. SIZE	- 398
JAN - DEC	990111 - 991215		
NO. CGHT.	- 19594	MEAN SIZE	- 106.3
NO. MEAS.	- 13088	S.E. SIZE	- 0.6
NO. HAULS	- 1382	MIN. SIZE	- 5
CAT./HAUL	- 14.2	MAX. SIZE	- 431

Figure 83.

White Catfish, 1999



JANUARY 990111 - 990121
 NO. CGHT. - 125 MEAN SIZE - 259.4
 NO. MEAS. - 125 S.E. SIZE - 8.3
 NO. HAULS - 79 MIN. SIZE - 74
 CAT./HAUL - 1.6 MAX. SIZE - 539

FEBRUARY 990202 - 990216
 NO. CGHT. - 128 MEAN SIZE - 221.4
 NO. MEAS. - 128 S.E. SIZE - 7.1
 NO. HAULS - 122 MIN. SIZE - 66
 CAT./HAUL - 1 MAX. SIZE - 462

MARCH 990301 - 990323
 NO. CGHT. - 143 MEAN SIZE - 227.7
 NO. MEAS. - 122 S.E. SIZE - 7.3
 NO. HAULS - 80 MIN. SIZE - 63
 CAT./HAUL - 1.8 MAX. SIZE - 444

APRIL 990405 - 990419
 NO. CGHT. - 285 MEAN SIZE - 201.9
 NO. MEAS. - 242 S.E. SIZE - 6
 NO. HAULS - 122 MIN. SIZE - 49
 CAT./HAUL - 2.3 MAX. SIZE - 429

MAY 990504 - 990519
 NO. CGHT. - 122 MEAN SIZE - 233.9
 NO. MEAS. - 122 S.E. SIZE - 6.9
 NO. HAULS - 120 MIN. SIZE - 82
 CAT./HAUL - 1 MAX. SIZE - 460

JUNE 990601 - 990611
 NO. CGHT. - 80 MEAN SIZE - 232.9
 NO. MEAS. - 80 S.E. SIZE - 7.2
 NO. HAULS - 118 MIN. SIZE - 89
 CAT./HAUL - 0.7 MAX. SIZE - 426

JULY 990701 - 990719
 NO. CGHT. - 46 MEAN SIZE - 262.7
 NO. MEAS. - 46 S.E. SIZE - 8.4
 NO. HAULS - 119 MIN. SIZE - 116
 CAT./HAUL - 0.4 MAX. SIZE - 379

AUGUST 990804 - 990819
 NO. CGHT. - 153 MEAN SIZE - 234.1
 NO. MEAS. - 153 S.E. SIZE - 3.9
 NO. HAULS - 118 MIN. SIZE - 95
 CAT./HAUL - 1.3 MAX. SIZE - 356

SEPTEMBER 990907 - 990924
 NO. CGHT. - 56 MEAN SIZE - 262
 NO. MEAS. - 56 S.E. SIZE - 8.3
 NO. HAULS - 122 MIN. SIZE - 140
 CAT./HAUL - 0.5 MAX. SIZE - 429

OCTOBER 991004 - 991020
 NO. CGHT. - 104 MEAN SIZE - 239.6
 NO. MEAS. - 104 S.E. SIZE - 5.9
 NO. HAULS - 124 MIN. SIZE - 134
 CAT./HAUL - 0.8 MAX. SIZE - 429

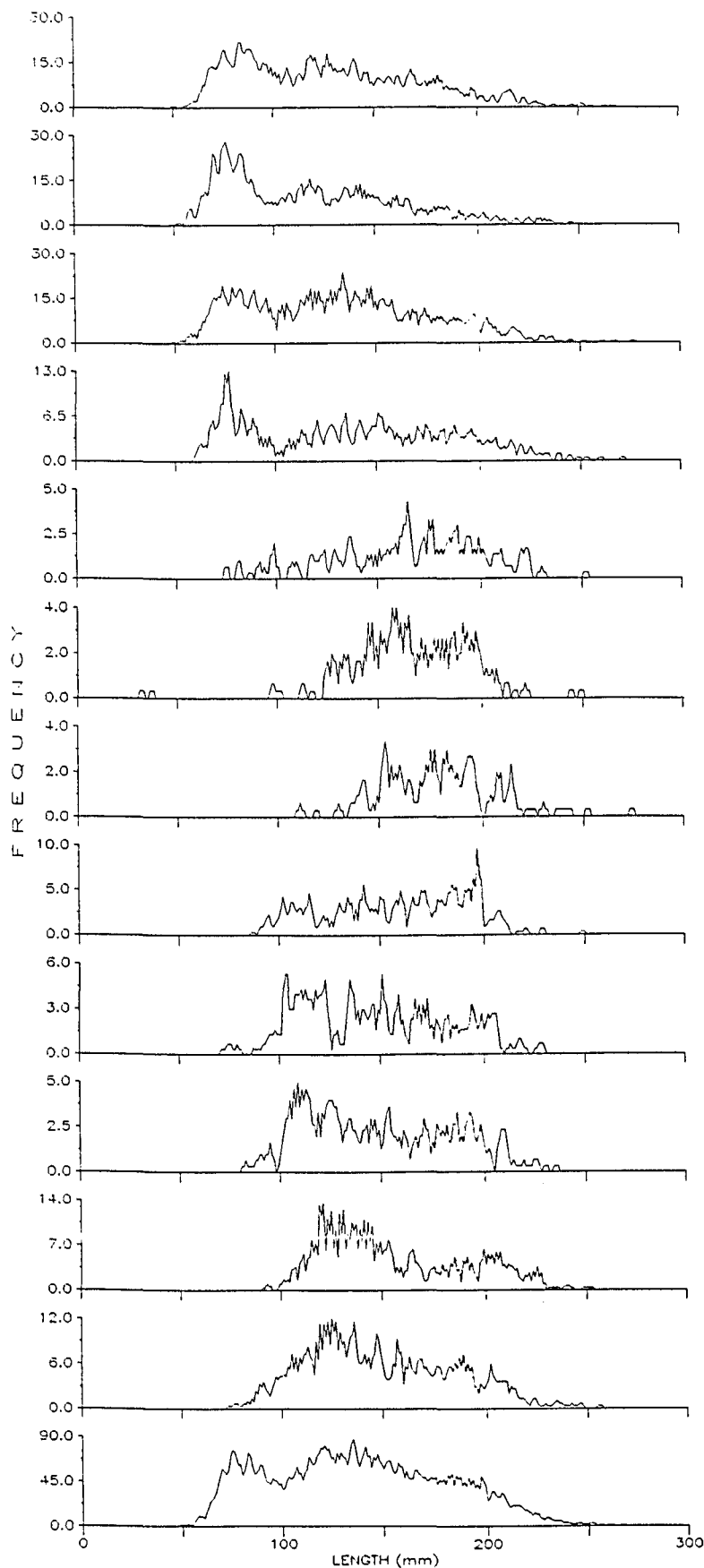
NOVEMBER 991101 - 991118
 NO. CGHT. - 119 MEAN SIZE - 246.5
 NO. MEAS. - 119 S.E. SIZE - 5.2
 NO. HAULS - 131 MIN. SIZE - 119
 CAT./HAUL - 0.9 MAX. SIZE - 402

DECEMBER 991202 - 991215
 NO. CGHT. - 79 MEAN SIZE - 221.6
 NO. MEAS. - 79 S.E. SIZE - 7.2
 NO. HAULS - 127 MIN. SIZE - 106
 CAT./HAUL - 0.6 MAX. SIZE - 393

JAN - DEC 990111 - 991215
 NO. CGHT. - 1440 MEAN SIZE - 231.8
 NO. MEAS. - 1376 S.E. SIZE - 2.1
 NO. HAULS - 1382 MIN. SIZE - 49
 CAT./HAUL - 1 MAX. SIZE - 539

Figure 84.

White Perch, 1999



JANUARY	990111 - 990121		
NO. CGHT.	- 5695	MEAN SIZE	- 125.1
NO. MEAS.	- 1642	S.E. SIZE	- 1.1
NO. HAULS	- 79	MIN. SIZE	- 48
CAT./HAUL	- 72.1	MAX. SIZE	- 265
FEBRUARY	990202 - 990216		
NO. CGHT.	- 2549	MEAN SIZE	- 115.8
NO. MEAS.	- 1476	S.E. SIZE	- 1.1
NO. HAULS	- 122	MIN. SIZE	- 47
CAT./HAUL	- 20.9	MAX. SIZE	- 248
MARCH	990301 - 990323		
NO. CGHT.	- 2329	MEAN SIZE	- 128.7
NO. MEAS.	- 1791	S.E. SIZE	- 1
NO. HAULS	- 80	MIN. SIZE	- 47
CAT./HAUL	- 29.1	MAX. SIZE	- 274
APRIL	990405 - 990419		
NO. CGHT.	- 1046	MEAN SIZE	- 135.1
NO. MEAS.	- 646	S.E. SIZE	- 1.9
NO. HAULS	- 122	MIN. SIZE	- 58
CAT./HAUL	- 8.6	MAX. SIZE	- 269
MAY	990504 - 990519		
NO. CGHT.	- 187	MEAN SIZE	- 161.9
NO. MEAS.	- 187	S.E. SIZE	- 2.7
NO. HAULS	- 120	MIN. SIZE	- 73
CAT./HAUL	- 1.6	MAX. SIZE	- 250
JUNE	990601 - 990611		
NO. CGHT.	- 191	MEAN SIZE	- 163.1
NO. MEAS.	- 191	S.E. SIZE	- 2.2
NO. HAULS	- 118	MIN. SIZE	- 30
CAT./HAUL	- 1.6	MAX. SIZE	- 247
JULY	990701 - 990719		
NO. CGHT.	- 139	MEAN SIZE	- 176.7
NO. MEAS.	- 139	S.E. SIZE	- 2.4
NO. HAULS	- 119	MIN. SIZE	- 108
CAT./HAUL	- 1.2	MAX. SIZE	- 272
AUGUST	990804 - 990819		
NO. CGHT.	- 789	MEAN SIZE	- 155.6
NO. MEAS.	- 381	S.E. SIZE	- 1.8
NO. HAULS	- 118	MIN. SIZE	- 85
CAT./HAUL	- 6.7	MAX. SIZE	- 247
SEPTEMBER	990907 - 990924		
NO. CGHT.	- 340	MEAN SIZE	- 145
NO. MEAS.	- 309	S.E. SIZE	- 2
NO. HAULS	- 122	MIN. SIZE	- 70
CAT./HAUL	- 2.8	MAX. SIZE	- 227
OCTOBER	991004 - 991020		
NO. CGHT.	- 298	MEAN SIZE	- 146.4
NO. MEAS.	- 293	S.E. SIZE	- 2.1
NO. HAULS	- 124	MIN. SIZE	- 80
CAT./HAUL	- 2.4	MAX. SIZE	- 233
NOVEMBER	991101 - 991118		
NO. CGHT.	- 845	MEAN SIZE	- 152.7
NO. MEAS.	- 657	S.E. SIZE	- 1.4
NO. HAULS	- 131	MIN. SIZE	- 90
CAT./HAUL	- 6.5	MAX. SIZE	- 250
DECEMBER	991202 - 991215		
NO. CGHT.	- 872	MEAN SIZE	- 146.3
NO. MEAS.	- 778	S.E. SIZE	- 1.3
NO. HAULS	- 127	MIN. SIZE	- 72
CAT./HAUL	- 6.9	MAX. SIZE	- 254
JAN - DEC	990111 - 991215		
NO. CGHT.	- 15280	MEAN SIZE	- 134.4
NO. MEAS.	- 8490	S.E. SIZE	- 0.5
NO. HAULS	- 1382	MIN. SIZE	- 30
CAT./HAUL	- 11.1	MAX. SIZE	- 274



APPENDICES



Appendix A. Common and scientific names of species captured in 1999, 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 bumper	<i>Chloroscombrus chrysurus</i>	<i>Alosa sapidissima</i>	American shad
Atlantic croaker	<i>Micropogonias undulatus</i>	<i>Alpheus heterochaelis</i>	big-clawed snapping shrimp (P)
Atlantic cutlassfish	<i>Trichiurus lepturus</i>	<i>Amphipoda sp.</i>	Amphipod spp (P)
Atlantic herring	<i>Clupea harengus</i>	<i>Anadara ovalis</i>	blood ark/clam (P)
Atlantic menhaden	<i>Brevoortia tyrannus</i>	<i>Anadara transversa</i>	transverse ark (clam) (P)
Atlantic moonfish	<i>Selene setapinnis</i>	<i>Anchoa hepsetus</i>	striped anchovy
Atlantic silverside	<i>Menidia menidia</i>	<i>Anchoa mitchilli</i>	bay anchovy
Atlantic spadefish	<i>Chaetodipterus faber</i>	<i>Anguilla rostrata</i>	American eel
Atlantic stingray	<i>Dasyatis sabina</i>	<i>Annelida-(Polychaeta)</i>	worm spp (P)
Atlantic sturgeon	<i>Acipenser oxyrhynchus</i>	<i>Anthozoa</i>	sea anemone spp (P)
Atlantic thread herring	<i>Opisthonema oglinum</i>	<i>Archosargus probatocephalus</i>	sheepshead
banded drum	<i>Larimus fasciatus</i>	<i>Arenaeus cribrarius</i>	speckled crab (C)
bay anchovy	<i>Anchoa mitchilli</i>	<i>Asterias forbesii</i>	forbes common sea star (P)
bent mussel (P)	<i>Ischadium recurvum</i>	<i>Astroscopus guttatus</i>	northern stargazer
big-clawed snapping shrimp (P)	<i>Alpheus heterochaelis</i>	<i>Bairdiella chrysoura</i>	silver perch
bighead searobin	<i>Prionotus tribulus</i>	<i>Brevoortia tyrannus</i>	Atlantic menhaden
black drum	<i>Pogonius cromis</i>	<i>Busycon canaliculatus</i>	channel (smooth) whelk (C)
black seabass	<i>Centropristis striata</i>	<i>Busycon carica</i>	knobbed whelk (C)
blackcheek tonguefish	<i>Symphurus plagiusa</i>	<i>Callinectes ornatus</i>	shelligs blue crab (C)
blood ark/clam (P)	<i>Anadara ovalis</i>	<i>Callinectes sapidus</i>	blue crab, sex unknown
blotched swimming crab (C)	<i>Portunus spinimanus</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>Callinectes similis</i>	lesser blue crab (C)
blue crab, male	<i>Callinectes sapidus, male</i>	<i>Cancer irroratus</i>	rock crab
blue crab, sex unknown	<i>Callinectes sapidus</i>	<i>Caprellidae sp</i>	skeleton shrimp spp (P)
blue mussel (P)	<i>Mytilus edulis</i>	<i>Caranx crysos</i>	blue runner
blue runner	<i>Caranx crysos</i>	<i>Centropristis striata</i>	black seabass
blueback herring	<i>Alosa aestivalis</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>Chaetodon ocellatus</i>	spotfin butterflyfish
bluegill	<i>Lepomis macrochirus</i>	<i>Chasmodes bosquianus</i>	striped blenny
bluespotted cornetfish	<i>Fistularia tabacaria</i>	<i>Chilomycterus schoepfi</i>	striped burrfish
bluntnose stingray	<i>Dasyatis sayi</i>	<i>Chloroscombrus chrysurus</i>	Atlantic bumper
brittle/serpent star spp (P)	<i>Ophiuroidea</i>	<i>Clupea harengus</i>	Atlantic herring
brown bullhead	<i>Ictalurus nebulosus</i>	<i>Conger oceanicus</i>	conger eel
brown shrimp	<i>Penaeus aztecus</i>	<i>Crangon septemspinosa</i>	sand shrimp (P)
butterfish	<i>Peprilus triacanthus</i>	<i>Crassostrea virginica</i>	oyster, common (P)
channel (smooth) whelk (C)	<i>Busycon canaliculatus</i>	<i>Crepidula spp.</i>	slipper shell spp (P)
channel catfish	<i>Ictalurus punctatus</i>	<i>Cynoscion nebulosus</i>	spotted seatrout
clearnose skate	<i>Raja eglanteria</i>	<i>Cynoscion nothus</i>	silver seatrout
coarse hand lady crab (C)	<i>Ovalipes stephensoni</i>	<i>Cynoscion regalis</i>	weakfish
commensal crab spp (P)	<i>Pinnixa sp.</i>	<i>Cyprinus carpio</i>	common carp
common carp	<i>Cyprinus carpio</i>	<i>Dasyatis americana</i>	southern stingray
conger eel	<i>Conger oceanicus</i>	<i>Dasyatis sabina</i>	Atlantic stingray
cownose ray	<i>Rhinoptera bonasus</i>	<i>Dasyatis sayi</i>	bluntnose stingray
drill & snail spp (P)	<i>drill & snail spp</i>	<i>Dorosoma cepedianum</i>	gizzard shad
false angel wing (P)	<i>Petricola pholadiformes</i>	<i>Dorosoma petenense</i>	threadfin shad
feather blenny	<i>Hypsoblennius hentzi</i>	<i>drill & snail spp</i>	drill & snail spp (P)
flat-browed mud shrimp (P)	<i>Upogebia affinis</i>	<i>Echeneis naucrates</i>	sharksucker
forbes common sea star (P)	<i>Asterias forbesii</i>	<i>Echinarachnius parma</i>	sand dollar (P)
fringed flounder	<i>Etropus crossotus</i>	<i>Etheostoma olmstedii</i>	tessellated darter
gizzard shad	<i>Dorosoma cepedianum</i>	<i>Etropus crossotus</i>	fringed flounder
glassy lyonsia (P)	<i>Lyonsia hyalina</i>	<i>Etropus microstomus</i>	smallmouth flounder
grass shrimp spp (P)	<i>Palaemonetes spp.</i>	<i>Eucinostomus argenteus</i>	spotfin mojarra
gray snapper	<i>Lutjanus griseus</i>	<i>Eucinostomus gula</i>	silver jenny
green goby	<i>Microgobius thalassinus</i>	<i>Fistularia tabacaria</i>	bluespotted cornetfish
harvestfish	<i>Peprilus alepidotus</i>	<i>Fundulus majalis</i>	striped killifish
hickory shad	<i>Alosa mediocris</i>	<i>gelatinous zooplankton</i>	jellyfish spp (C)
hogchoker	<i>Trinectes maculatus</i>	<i>Gobiesox strumosus</i>	skilletfish
horseshoe crab	<i>Limulus polyphemus</i>	<i>Gobiosoma bosci</i>	naked goby
inshore lizardfish	<i>Synodus foetens</i>	<i>Gobiosoma ginsburgi</i>	seaboard goby
iridescent swimming crab (C)	<i>Portunus gibbesii</i>	<i>Gymnura altavela</i>	spiny butterfly ray

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			
jellyfish spp (C)	<i>gelatinous zooplankton</i>	<i>Gymnura micrura</i>	smooth butterfly ray
kingfish spp	<i>Menticirrhus spp.</i>	<i>Hippocampus erectus</i>	lined seahorse
knobbed whelk (C)	<i>Busycon carica</i>	<i>Holothuroidea</i>	sea cucumber spp (P)
lady crab (C)	<i>Ovalipes ocellatus</i>	<i>Hypsoblennius hentzi</i>	feather blenny
leech spp (P)	<i>leech spp</i>	<i>Ictalurus catus</i>	white catfish
lesser blue crab (C)	<i>Callinectes similis</i>	<i>Ictalurus furcatus</i>	blue catfish
lined seahorse	<i>Hippocampus erectus</i>	<i>Ictalurus nebulosus</i>	brown bullhead
little (dwarf) surf clam (P)	<i>Mulinia lateralis</i>	<i>Ictalurus punctatus</i>	channel catfish
longnose gar	<i>Lepisosteus osseus</i>	<i>Ischadium recurvum</i>	bent mussel (P)
lookdown	<i>Selene vomer</i>	<i>Lagodon rhomboides</i>	pinfish
macoma clam spp (P)	<i>Macoma spp.</i>	<i>Larimus fasciatus</i>	banded drum
mantis shrimp	<i>Squilla empusa</i>	<i>leech spp</i>	leech spp (P)
moon snail (P)	<i>Polinices heros</i>	<i>Leiostomus xanthurus</i>	spot
mud crab spp (P)	<i>Xanthidae</i>	<i>Lepisosteus osseus</i>	longnose gar
mysid shrimp (P)	<i>Mysidopsis bigelowi</i>	<i>Lepomis macrochirus</i>	bluegill
naked goby	<i>Gobiosoma boscii</i>	<i>Libinia dubia</i>	spider crab, 6 spine (C)
Northern dwarf tellin (P)	<i>Tellina agilis</i>	<i>Libinia emarginata</i>	spider crab, common (C)
northern pipefish	<i>Syngnathus fuscus</i>	<i>Limulus polyphemus</i>	horseshoe crab
northern puffer	<i>Sphoeroides maculatus</i>	<i>Loligo spp.</i>	squid spp
northern searobin	<i>Prionotus carolinus</i>	<i>Lutjanus griseus</i>	gray snapper
northern sennet	<i>Sphyraena borealis</i>	<i>Lyonsia hyalina</i>	glassy lyonsia (P)
northern stargazer	<i>Astroscopus guttatus</i>	<i>Macoma spp.</i>	macoma clam spp (P)
oyster toadfish	<i>Opsanus tau</i>	<i>Macrobrachium ohione</i>	river shrimp (P)
oyster, common (P)	<i>Crassostrea virginica</i>	<i>Menidia menidia</i>	Atlantic silverside
pigfish	<i>Orthopristis chrysoptera</i>	<i>Menticirrhus spp.</i>	kingfish spp
pinfish	<i>Lagodon rhomboides</i>	<i>Mercenaria mercenaria</i>	quahog clam (P)
pink shrimp	<i>Penaeus duorarum</i>	<i>Merluccius bilinearis</i>	silver hake
Portunid spp (C)	<i>Portunids</i>	<i>Microgobius thalassinus</i>	green goby
purplish tagelus (P)	<i>Tagelus divisus</i>	<i>Micropogonias undulatus</i>	Atlantic croaker
quahog clam (P)	<i>Mercenaria mercenaria</i>	<i>Modiolus demissus</i>	ribbed mussel (P)
red drum	<i>Sciaenops ocellatus</i>	<i>Morone americana</i>	white perch
red hake	<i>Urophycis chuss</i>	<i>Morone saxatilis</i>	striped bass
ribbed mussel (P)	<i>Modiolus demissus</i>	<i>Mulinia lateralis</i>	little (dwarf) surf clam (P)

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>Mya arenaria</i>	soft-shell clam (P)
river shrimp (P)	<i>Macrobrachium ohione</i>	<i>Mysidopsis bigelowi</i>	mysid shrimp (P)
rock crab	<i>Cancer irroratus</i>	<i>Mytilus edulis</i>	blue mussel (P)
roughneck shrimp (C)	<i>Trachypenaeus constrictus</i>	<i>Notropis hudsonius</i>	spottail shiner
sand dollar (P)	<i>Echinarachnius parma</i>	<i>Ophidion marginatum</i>	striped cusk-eel
sand shrimp (P)	<i>Crangon septemspinosa</i>	<i>Ophiuroidea</i>	brittle/serpent star spp (P)
sargassum swimming crab (C)	<i>Portunus sayi</i>	<i>Opisthonema oglinum</i>	Atlantic thread herring
scup	<i>Stenotomus chrysops</i>	<i>Opsanus tau</i>	oyster toadfish
sea anenome spp (P)	<i>Anthozoa</i>	<i>Orthopristis chrysoptera</i>	pigfish
sea cucumber spp (P)	<i>Holothuroidea</i>	<i>Ovalipes ocellatus</i>	lady crab (C)
sea lamprey	<i>Petromyzon marinus</i>	<i>Ovalipes stephensi</i>	coarse hand lady crab (C)
seaboard goby	<i>Gobiosoma ginsburgi</i>	<i>Pagurus spp.</i>	right-hand hermit crab spp (P)
sharksucker	<i>Echeneis naucrates</i>	<i>Palaemonetes spp.</i>	grass shrimp spp (P)
sheepshead	<i>Archosargus probatocephalus</i>	<i>Paralichthys dentatus</i>	summer flounder
shelligs blue crab (C)	<i>Callinectes ornatus</i>	<i>Penaeus aztecus</i>	brown shrimp
silver hake	<i>Merluccius bilinearis</i>	<i>Penaeus duorarum</i>	pink shrimp
silver jenny	<i>Eucinostomus gula</i>	<i>Penaeus setiferus</i>	white shrimp
silver perch	<i>Bairdiella chrysoura</i>	<i>Peprilus alepidotus</i>	harvestfish
silver seatrout	<i>Cynoscion nothus</i>	<i>Peprilus triacanthus</i>	butterfish
skeleton shrimp spp (P)	<i>Caprellidae sp</i>	<i>Petricola pholadiformes</i>	false angel wing (P)
skilletfish	<i>Gobiesox strumosus</i>	<i>Petromyzon marinus</i>	sea lamprey
slipper shell spp (P)	<i>Crepidula spp.</i>	<i>Pinnixa sp.</i>	commensal crab spp (P)
smallmouth flounder	<i>Etropus microstomus</i>	<i>Pogonius cromis</i>	black drum
smooth butterfly ray	<i>Gymnura micrura</i>	<i>Polinices heros</i>	moon snail (P)
soft-shell clam (P)	<i>Mya arenaria</i>	<i>Pomatomus saltatrix</i>	bluefish
southern stingray	<i>Dasyatis americana</i>	<i>Portunids</i>	Portunid spp (C)
Spanish mackerel	<i>Scomberomorus maculatus</i>	<i>Portunus gibbesii</i>	iridescent swimming crab (C)
speckled crab (C)	<i>Arenaeus cribrarius</i>	<i>Portunus sayi</i>	sargassum swimming crab (C)
spider crab, 6 spine (C)	<i>Libinia dubia</i>	<i>Portunus spinimanus</i>	blotched swimming crab (C)
spider crab, common (C)	<i>Libinia emarginata</i>	<i>Prionotus carolinus</i>	northern searobin
spiny butterfly ray	<i>Gymnura altavela</i>	<i>Prionotus evolans</i>	striped searobin
spot	<i>Leiostomus xanthurus</i>	<i>Prionotus tribulus</i>	bighead searobin
spotfin butterflyfish	<i>Chaetodon ocellatus</i>	<i>Pseudopleuronectes americanus</i>	winter flounder

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			
spotfin mojarra	<i>Eucinostomus argenteus</i>	<i>Raja eglanteria</i>	clearnose skate
spottail shiner	<i>Notropis hudsonius</i>	<i>Rangia cuneata</i>	wedge rangia clam (P)
spotted hake	<i>Urophycis regia</i>	<i>Rapana venosa</i>	veined rapa whelk (C)
spotted seatrout	<i>Cynoscion nebulosus</i>	<i>Rhinoptera bonasus</i>	cownose ray
squid spp	<i>Loligo spp.</i>	<i>Sciaenops ocellatus</i>	red drum
star drum	<i>Stellifer lanceolatus</i>	<i>Scomberomorus maculatus</i>	Spanish mackerel
stout razor clam (tagelus) (P)	<i>Tagelus plebeius</i>	<i>Scophthalmus aquosus</i>	windowpane
striped anchovy	<i>Anchoa hepsetus</i>	<i>Selene setapinnis</i>	Atlantic moonfish
striped bass	<i>Morone saxatilis</i>	<i>Selene vomer</i>	lookdown
striped blenny	<i>Chasmodes bosquianus</i>	<i>Sphoeroides maculatus</i>	northern puffer
striped burrfish	<i>Chilomycterus schoepfi</i>	<i>Sphyraena borealis</i>	northern sennet
striped cusk-eel	<i>Ophidion marginatum</i>	<i>Squilla empusa</i>	mantis shrimp
striped killifish	<i>Fundulus majalis</i>	<i>Stellifer lanceolatus</i>	star drum
striped searobin	<i>Prionotus evolans</i>	<i>Stenotomus chrysops</i>	scup
summer flounder	<i>Paralichthys dentatus</i>	<i>Symphurus plagiusa</i>	blackcheek tonguefish
tautog	<i>Tautoga onitis</i>	<i>Syngnathus fuscus</i>	northern pipefish
tessellated darter	<i>Etheostoma olmstedi</i>	<i>Synodus foetens</i>	inshore lizardfish
threadfin shad	<i>Dorosoma petenense</i>	<i>Tagelus divisus</i>	purplish tagelus (P)
transverse ark (clam) (P)	<i>Anadara transversa</i>	<i>Tagelus plebeius</i>	stout razor clam (tagelus) (P)
veined rapa whelk (C)	<i>Rapana venosa</i>	<i>Tautoga onitis</i>	tautog
weakfish	<i>Cynoscion regalis</i>	<i>Tellina agilis</i>	Northern dwarf tellin (P)
wedge rangia clam (P)	<i>Rangia cuneata</i>	<i>Trachypenaeus constrictus</i>	roughneck shrimp (C)
white catfish	<i>Ictalurus catus</i>	<i>Trichiurus lepturus</i>	Atlantic cutlassfish
white perch	<i>Morone americana</i>	<i>Trinectes maculatus</i>	hogchoker
white shrimp	<i>Penaeus setiferus</i>	<i>Upogebia affinis</i>	flat-browed mud shrimp (P)
windowpane	<i>Scophthalmus aquosus</i>	<i>Urophycis chuss</i>	red hake
winter flounder	<i>Pseudopleuronectes americanus</i>	<i>Urophycis regia</i>	spotted hake
worm spp (P)	<i>Annelida-(Polychaeta)</i>	<i>Xanthidae</i>	mud crab spp (P)
yoldia spp. (clam) (P)	<i>Yoldia spp.</i>	<i>Yoldia spp.</i>	yoldia spp. (clam) (P)

Appendix B. Trawl Survey sample data sheets.

1. Data Sheet from August 1999 in the Chesapeake Bay.
2. Habitat data sheet for the given sampling day.
3. Invertebrate data sheet for the given sampling day.

May 4, 1999

VIMS TRAWL SURVEY STATION DATA RECORD

Cruise Number:

CL990810

Station Date:

99	/	8	/	10
Year		Month		Day

STATION DATA

Tow/Station #	River	River Mile	Latitude Beginning	Longitude Beginning	Depth		Tide	Tow Dir 1	Tow Dir 2	Time Beginning	Time Ending
46	CL	+	3732.35	7601.60	46.0	14.0	5	1	2	1305	1310
Stratum	Compass	Gear	Latitude Ending	Longitude Ending	Engine RPMs	Secchi Depth	Tow Duration	Tow Distance		Remarks	
012	350	108	3732.58	7601.65	900	1.9	5.0	+		104	
Sia	Scope		Speed Over								
Type	feet	meters	Net Number	Ground (knots)							
R	160	48.8	A15	2.5							

HYDRO DATA

	ParCode Temp	Water Temp - Deg C	ParCode DO	D.O.	ParCode Salinity	Salinity
Surface:	HL	28.06	HL	6.71	HL	22.3
Bottom:	HL	27.32	HL	4.33	HL	25.0

ATMOS DATA

ParCode Temp	Air Temp - Deg C	ParCode Wind	Wind Speed	Wind Direction	ParCode Weather	Weather	ParCode Seastate	Seastate
WS	27.4	WS	02	25	0B	I	VI	2
			2.2	WSW				

CRUISE DATA

Cruise Number	Cruise Begin Date	Time Begin	Vessel
CL990810	19990810	0815	FH
Data Base Number	Cruise End Date	Time End	Vessel name
TS990804			

COMMENTS**RETOW / 2nd TOW**

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

CREW DATA

Chief Scientist	OWENS
Captain	SEAVER
Transcriber	OWENS
	MATHES
	LOWERY

CODES

Tow Direction 1:	TOW DIRECTION RELATIVE TO STREAM 1: Upstream 2: Downstream 3: Slack
Tow Direction 2:	TOW 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:	WAVE HEIGHT 0: Calm/glassy 0m 3: Slight 0.5 - 1.25m 1: Clam/rippled 0 - 0.1m 4: Moderate 1.25 - 2.5 m 2: Smooth/wavelets 0.1 - 0.5m
Weather:	OBSERVED WEATHER 0: Clear 5: Drizzle 1: Partly Cloudy 6: Rain 2: Overcast 7: Snow, sno. 8: Snow, slush 3: Snow, slush 9: Snow, slush

Cruise: CL990810Date: 8-10-99LDCEName: TS990804

Inv:\hdb\datasheet.xls\INVERTS02399

Common	Scientific	Code	STATION NUMBER															
			75	28	27	26	29	31	32	24	80	85	37	46	47	39	44	48
amphipod sp.	<i>Amphipoda sp.</i>	0841																
bent mussel	<i>Ischadium recurbum</i>	0842																
big-clawed snapping shrimp	<i>Alpheus heterochaekis</i>	0591																
blood ark	<i>Anadara ovalis</i>	0826		✓													✓	
blue mussel	<i>Mytilus edulis</i>	0802																
Cragnon / sand shrimp	<i>Cragnon septemspinosa</i>	0604																
drill sp. (snail)		0884																
flat-browed mud shrimp	<i>Upogebia affinis</i>	0590																
flatworm and leech sp.	<i>flatworm and leech spp.</i>	0883																
forbes common sea star	<i>Asterias forbesi</i>	0700																
hermit crab (right-hand) sp.	<i>Pagurus spp.</i>	0758	✓	✓			✓	✓	✓	✓								
jellyfish sp. (gallons or liters)	<i>gelatinous zooplankton</i>	0900	.5	4	1	.5			1		24	6				42		
little surf clam	<i>Mulinia lateralis</i>	0882																
Macoma clam sp.	<i>Macoma spp.</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 spp.</i>	0594						✓									✓	
Mya arenaria / soft-shell clam	<i>Mya arenaria</i>	0801																
mysid shrimp sp.	<i>Mysidopsis spp.</i>	0740																
oyster, common	<i>Crassostrea virginica</i>	0819																
Paleomonetes / grass shrimp	<i>Paleomonetes sp.</i>	0620		✓			✓						✓					
sand dollar	<i>Echinorhinus parma</i>	0702					✓	✓										
sea cucumber sp.	<i>Holothuroidea</i>	0828																
skeleton shrimp sp.	<i>Caprella sp.</i>	0658																
wedge rangia clam	<i>Rangia cuneata</i>	0837																
worm sp.	<i>Annelida</i>	0775												✓			✓	
? 150 pid slippershell		881		✓			✓	✓		✓								
TRANSVERSE ARK		886																✓
channel/smooth whelk	<i>Busycon canaliculatum</i>	0829																
knobbed whelk	<i>Busycon carica</i>	0830																
lady crab	<i>Ovalipes ocellatus</i>	0612																
portunid crab sp.	<i>portunus sp.</i>	0839																
<i>Portunus gibesii</i>	<i>Portunus gibesii</i>	0607						1					1					
spider crab, 6 spine	<i>Libinia dubia</i>	0593	2	4			1		2			1				1		
spider crab, common	<i>Libinia emarginata</i>	0605																
roughneck shrimp	<i>Trachypaneus constrictus</i>	0595				1	3	3									1	

blue crab, nanaeid shrimp, squid, mantis shrimp (0621), horseshoe crab (0603) and rock crab (0656) measured. Species on bottom of page are counted.

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 et. al., 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

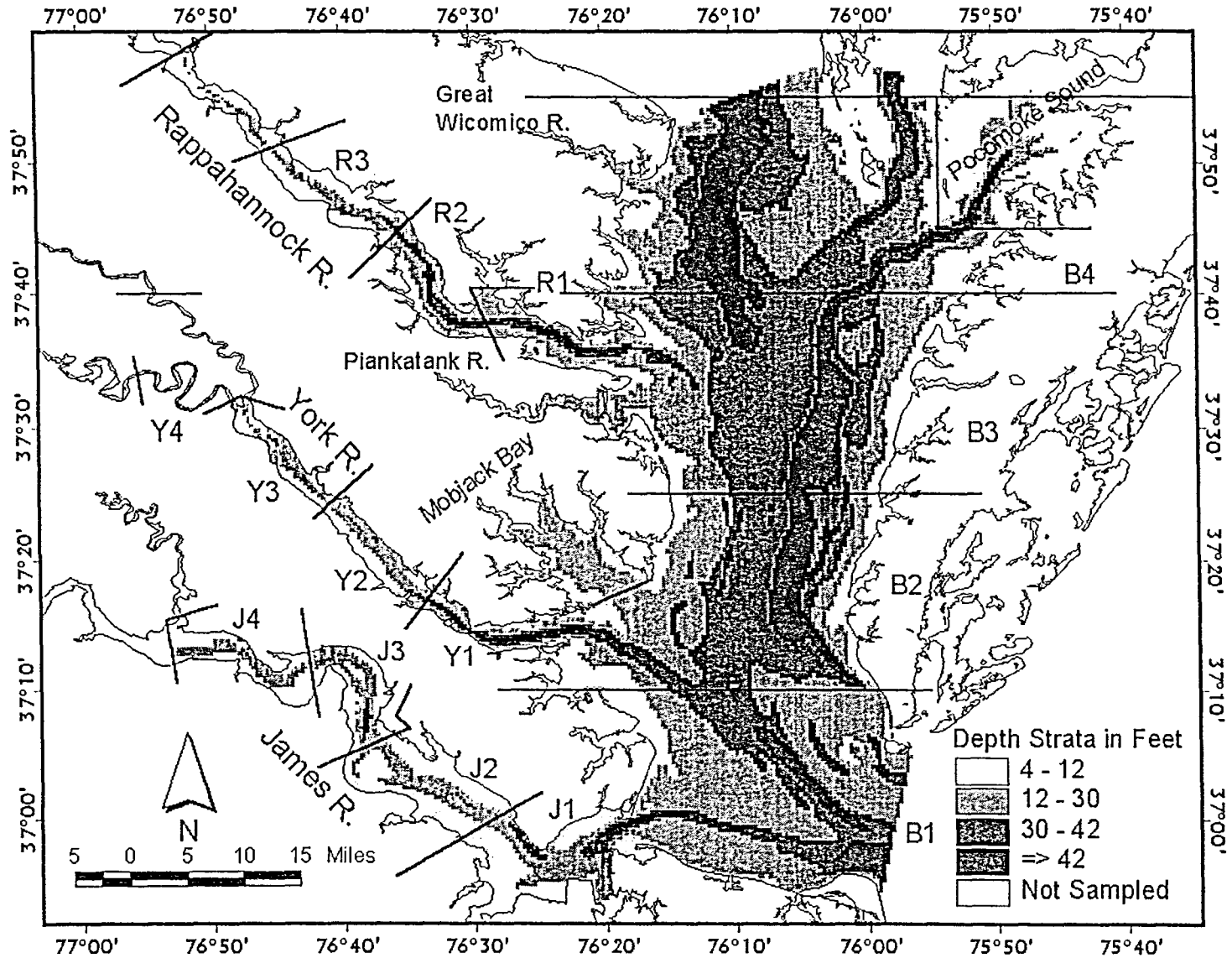
* Stratum 040 is not sampled with random stations due to its small area. There are 3 non-random fixed stations used to represent this stratum.

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.



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