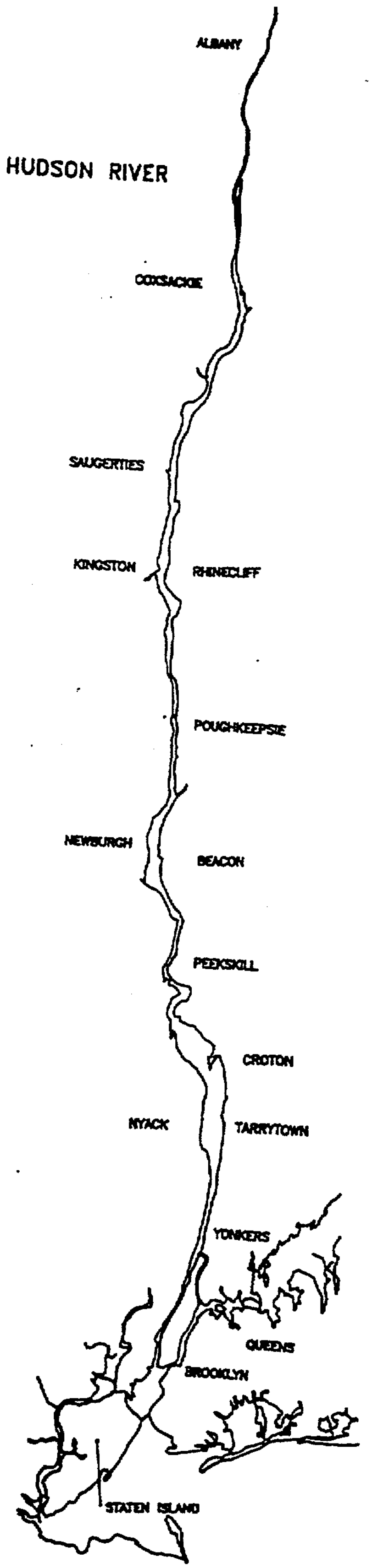

1996 *YEAR CLASS REPORT*

for the Hudson River Estuary Monitoring Program

Prepared by

Applied Science Associates

Jointly Funded by

Central Hudson Gas and Electric Corporation
Consolidated Edison Company of New York, Inc.
New York Power Authority
Niagara Mohawk Power Corporation
Southern Energy New York

DRAFT

1996 Year Class Report for the Hudson River Estuary Monitoring Program

Prepared by

Applied Science Associates
New Hampton, New York

Prepared for

Central Hudson Gas & Electric Corporation
Poughkeepsie, New York

Jointly Funded by

Central Hudson Gas and Electric Corporation
Consolidated Edison Company of New York, Inc.
New York Power Authority
Niagara Mohawk Power Corporation
Orange and Rockland Utilities, Inc.

December 1999

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CHAPTER 1
INTRODUCTION

Since 1973, an annual Year Class Report has been prepared for five utilities: Central Hudson Gas and Electric Corporation; Consolidated Edison Company of New York, Inc.; New York Power Authority; Niagara Mohawk Power Corporation; and Orange and Rockland Utilities, Inc (collectively referred to as the "Utilities"). The main purpose of the reports has been to present and analyze data on the distribution and abundance of early life stages of selected fish species based on surveys conducted throughout the Hudson River estuary.

The first report, First Multiplant Report (TI 1975), summarized estuary-wide data collected to estimate the impact of five electric generating stations on striped bass, white perch, and Atlantic tomcod. The multiplant effort was refined and renamed the Year Class Report for the 1974 data (TI 1977). Patterns of abundance and distribution of early life stages were examined in greater detail in the 1975 report, but impacts of station operations were not estimated (TI 1978). The 1976 report (TI 1979) expanded the focus to include ecological relationships of selected fish populations. In the 1977 and 1978 reports (TI 1980a,b), the life histories and distributional information on 9 additional fish species were included. Data analysis of the 1979 report (TI 1981) was also extended to include predictions of environmental impact based on fish population age structure and age-specific survival. Further statistical analyses of biocharacteristics data available from 1973 to 1979 were included for the 3 initial key species.

The Hudson River Settlement Agreement among the Utilities, the U.S. Environmental Protection Agency, and other interested parties was announced in 1980 and became effective in May 1981 (Sandler and Schoenhard 1981). The 1980 and 1981 Year Class Report (Battelle 1983), the first one prepared after execution of the Settlement Agreement, continued the presentation of life history and population dynamics studies of selected Hudson River estuary fish species. The 1981 study program was also the first in which the length of the sampling season was reduced to focus on the period when most Hudson River fish were maturing from the larval to juvenile stage. The 1982 Year Class Report (NAI 1985a) was similar in content to the 1980-1981 report, but the estimation of year class strength was extended to include a fall index. In addition to the basic survey results, the 1983 report (NAI 1985b) included data on the first recaptures of fish released from a striped bass hatchery that began operation in 1983. This report also examined the relationship between environmental variables and the early life histories of striped bass, white perch, and American shad. The 1984 Year Class Report (MMES 1986) contained the types of information presented in the 1982 and 1983 reports, but placed additional emphasis on the indices of year class strength and their interpretation.

The 1985 Year Class Report (Versar 1987) described the results from the 1985 Longitudinal River Ichthyoplankton Survey (LRS), Fall Shoals Survey (FSS), and Beach Seine Survey (BSS). This report focused on: (1) the spatiotemporal distributions for 12 fish species with respect to life history and prevailing environmental factors; (2) year class strength indices, including development of a new index of year class strength for white perch, striped bass, American shad, and bay anchovy; and (3) factors that may influence year class strength for these 4 species.

The 1986 and 1987 Year Class Report (LMS 1989) described the results from the 1986 and 1987 LRS, FSS, and BSS. This report continued the description of the spatiotemporal distribution for 12 selected species, as well as an assessment of trends in year class abundance and growth for a limited number of species as in the previous year class reports. In addition, this report described the historical patterns of variability in selected physical/chemical parameters which may influence fish distribution and abundance, estimated the influence of inclusion of previously unsampled regions on abundance and standing crop estimates, and described changes in the fish community of the Hudson River estuary over time.

The 1988, 1989, 1990, and 1991 Year Class reports (EA 1990, 1991; LMS 1992, 1996) describe the results of the 1988, 1989, 1990, and 1991 LRS, FSS, and BSS. These reports focused on physical/chemical parameter patterns and spatiotemporal distribution for 12 selected species (rainbow smelt was added in the 1991 Year Class Report, for a total of 13 species), as well as assessments of trends in year class abundance and growth for a limited number of species following the pattern established in previous year class reports.

The 1992, 1993, 1994 and 1995 Year Class reports (Con Edison 1996, 1997a,b; EA 1996) presented results from the 1992, 1993, 1994 and 1995 LRS, FSS, and BSS. The reports described the physical/chemical parameter patterns in the Hudson River estuary and the spatiotemporal distribution of 16 selected species of fish. Three additional species (bluefish, hogchoker, and gizzard shad) were added to these reports since they were of interest to the New York State Department of Environmental Conservation (NYSDEC).

The present report adds to the historical database by describing the results of the LRS, FSS, and BSS for 1996. The 1996 Year Class Report presents basic abundance and distribution data with the following objectives:

- Describe the patterns and variability of environmental parameters that may have affected fish distribution and abundance in the Hudson River estuary in 1996.
- Describe the distribution and abundance of 16 selected species of fish (Table 1-1) in the Hudson River estuary in 1996.
- Describe the fish community of the Hudson River estuary in 1996.
- Describe patterns in growth for the 1996 year class of key species.
- In an appendix section, summarize the results of the Atlantic tomcod food habit study.

This report is organized into four chapters with supporting appendixes. Data collection and analysis methods are described in Chapter 2. Physical and chemical parameters are described in Chapter 3, and spatiotemporal distribution of selected fish species and fish community analysis are presented in Chapter 4. Detailed data tables supporting report analyses are contained within the appendix section as follows: Appendix A - Quality Control Report for the 1996 Hudson River Ichthyoplankton Laboratory Program and 1996 Fall Juvenile Survey; Appendix B - Physical/Chemical Parameters; Appendix C - Numbers of Fish Collected in the Long River (1988-1996), Fall Shoals (1985-1996), and Beach Seine (1985-1996) Surveys; Appendix D - Density and Standing Crop Estimates; Appendix E - Length Frequency Distribution; and Appendix F - Atlantic tomcod Food Habit Study.

TABLE 1-1 FISH SPECIES[a] TREATED IN DEPTH IN THE 1996 YEAR CLASS REPORT

Common Name	Scientific Name[b]
Alewife	*Alosa pseudoharengus*
American shad	*Alosa sapidissima*
Atlantic sturgeon	*Acipenser oxyrhynchus*
Atlantic tomcod	*Microgadus tomcod*
Bay anchovy	*Anchoa mitchilli*
Blueback herring	*Alosa aestivalis*
Bluefish	*Pomatomus saltatrix*
Gizzard shad	*Dorosoma cepedianum*
Hogchoker	*Trinectes maculatus*
Rainbow smelt	*Osmerus mordax*
Shortnose sturgeon	*Acipenser brevirostrum*
Spottail shiner	*Notropis hudsonius*
Striped bass	*Morone saxatilis*
Weakfish	*Cynoscion regalis*
White catfish	*Ameiurus catus*
White perch	*Morone americana*

a. Species identified by the New York State Department of Environmental Conservation of interest for discharge permitting purposes.
b. Names recognized by American Fisheries Society (Robins et al. 1991).

CHAPTER 2
MATERIALS AND METHODS

2.1 SAMPLING DESIGN

Several fishery techniques were employed in three separate sampling surveys to obtain comprehensive information on the abundance and distribution of selected larval, juvenile or young-of-year (YOY), and adult fish species in the Hudson River estuary. Temporally, the monitoring program covered spring through fall, the period of greatest biological activity in north temperate waters. Survey-specific techniques were employed to adequately sample all habitats and permit the determination of spatial distribution patterns. The three surveys followed the same general design and employed gear similar to that of previous Hudson River monitoring programs.

The three sampling surveys that made up the overall monitoring program and their objectives were:

1. **Longitudinal River Ichthyoplankton Survey** (LRS or Long River Survey)—The entire length of the Hudson River estuary, from River Mile (RM) 1 at the Battery in Manhattan to RM 152 at the Federal Dam in Troy, was sampled to provide ichthyoplankton data that would allow calculations of standing crop, temporal, and geographic indices and growth rates for selected Hudson River fish species. The primary species were Atlantic tomcod (*Microgadus tomcod*), American shad (*Alosa sapidissima*), striped bass (*Morone saxatilis*), white perch (*M. americana*) and bay anchovy (*Anchoa mitchilli*). LRS sampling was concentrated during the spring, summer, and early fall when eggs and larvae of the primary species were usually abundant.

2. **Fall Shoals Survey** (FSS or Fall Juvenile Survey)—Samples were collected every other week from the Battery to the Troy Dam in mid-summer and fall. The objective was to provide data on YOY fish that would allow calculation of standing crop, temporal, and geographic indices for selected Hudson River fish species. The target species were Atlantic tomcod, American shad, striped bass, and white perch.

3. **Beach Seine Survey** (BSS)—Beach seine samples were collected in alternate weeks with the FSS at stations from the George Washington Bridge (RM 12) to the Troy Dam. The objective was to obtain distribution and relative abundance information on YOY American shad, Atlantic tomcod, striped bass, and white perch while they were concentrated primarily in the shallow, near-shore region. The survey was conducted from mid-June through October, when YOY of these species were utilizing the shorezone nursery.

Sampling for all surveys was conducted according to a stratified random design in which the Hudson River estuary from the Battery (RM 1) to the Federal Dam at Troy (RM 152) was divided into 13 regions (Figure 2-1). Each region was further divided into "strata" on the basis of river depth. The strata based on river depth are graphically presented in Figure 2-2 and defined below:

- **Shore**—That portion of the Hudson River estuary extending from the shore to a depth of 10 ft (the stratum defined only for BSS).

- **Shoal**—That portion of the Hudson River estuary extending from the shore to a depth of 20 ft at mean low tide.

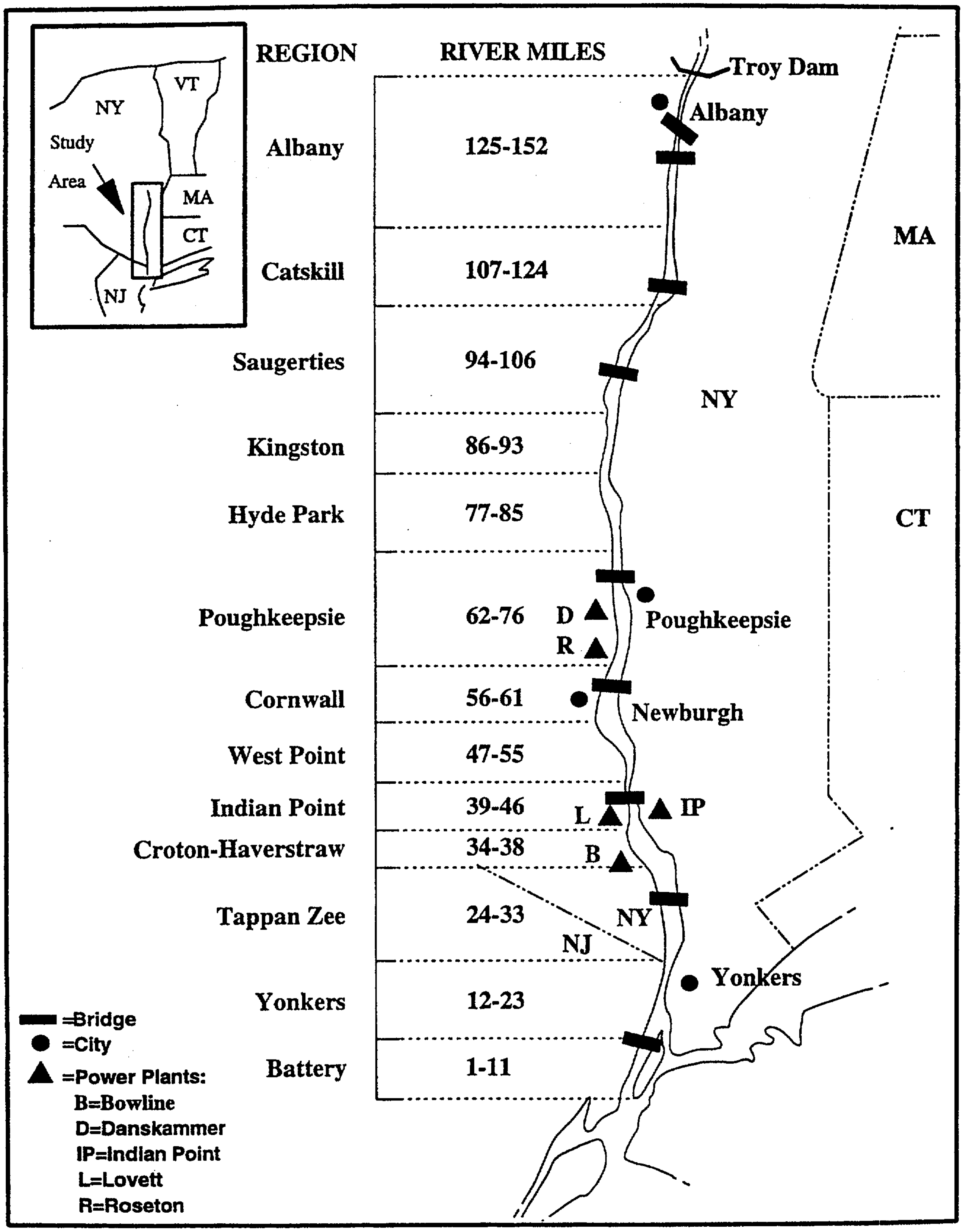

Figure 2-1. Location of 13 geographic regions (with river mile boundaries) sampled during the 1996 biological monitoring program in the Hudson River estuary.

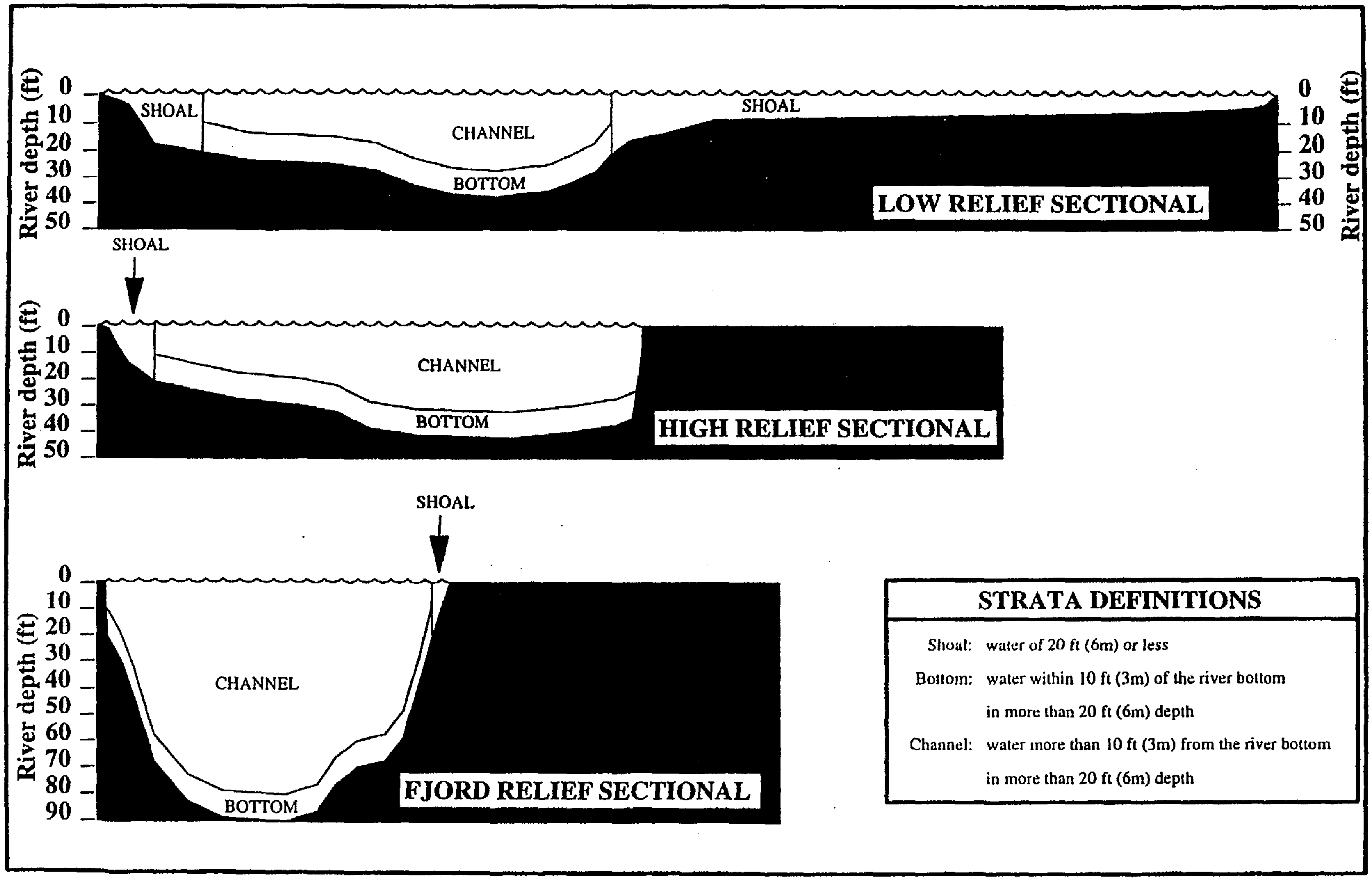

Figure 2-2. Cross sections of the Hudson River estuary showing locations and typical proportional relationships of the shoal, bottom, and channel strata.

- **Bottom**—That portion of the Hudson River estuary extending from the bottom to 10 ft above the bottom where river depth is greater than 20 ft at mean low tide.

- **Channel**—That portion of the Hudson River estuary not considered bottom where river depth is greater than 20 ft at mean low tide.

The proportional relationships of the shoal, bottom, and channel strata vary over the length of the Hudson River estuary. Presented in Figure 2-2 are three types of cross-sectional views. The low relief sectional is characteristic of the Tappan Zee and Croton-Haverstraw regions, the high relief sectional is exemplified by the Yonkers and Poughkeepsie regions, and the fjord relief sectional represents the West Point region.

A minimum of two samples was assigned to each stratum in most regions for the LRS. However, no samples were scheduled in the Poughkeepsie through Albany regions during the first 3 sampling weeks of the LRS (4 March - 5 April) nor in the Hyde Park through Albany regions during the final 7 sampling weeks of the LRS (15 July - 11 October). A minimum of three samples was assigned to each stratum in each region for the FSS and a minimum of three samples was also taken in each region for the BSS. The strata actually sampled in each region during the 1996 survey period are given in Table 2-1. Shoal strata samples were not assigned in upriver regions nor were shoal or shore strata samples assigned in the Battery region.

A general summary of the three sampling surveys for the annual monitoring program is presented in Table 2-2. The field and laboratory methods used for each survey are described in detail in the following sections.

2.2 LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY

2.2.1 Field Methods

The 1996 LRS covered 32 weeks from 4 March to 11 October (Table 2-2 and Figure 2-3). For the first 5 weeks, sampling was scheduled to be conducted biweekly between RM 1 and RM 61 with all samples collected during the day. Due to a major snowstorm and below freezing air temperatures, River Run 1 was not completed as scheduled during the week of 4 March 1996. As a result, River Run 2 scheduled for the week of 18 March was collected during the week of 11 March, and River Run 3 was collected during the week of 25 March. A substitue effort for the samples not collected during River Run 1 was conducted during the week of 1 April. During that week, 13 epibenthic sled samples and 11 oblique Tucker trawl samples were collected between the upper New York Harbor and the Indian Point region. Because the requisite number of samples to fulfill the stratified random sampling design was not collected during River Run 1 and the week of 1 April, those samples are excluded from the distributional analysis presented in Chapter 4.

For the rest of the sampling season, samples were collected as scheduled. For 13 consecutive weeks beginning the week of 8 April, sampling encompassed RM 1 - RM 152 and all samples were collected at night. Beginning the week of 15 July and ending the week of 7 October, sampling was conducted biweekly between RM 1 and RM 76 with all samples collected at night. Between 20 May and 5 July, approximately 20 additional trawl (channel strata) samples were collected per week. The samples were preserved so that aging of striped bass larvae using daily otolith rings could be conducted.

The allocation of sampling effort among river regions and strata was temporally adjusted in response to the projected presence and distribution of target species and life stages. The 1996 LRS sampling program was

TABLE 2-1 STRATA SAMPLED WITHIN THE 13 GEOGRAPHIC REGIONS OF THE HUDSON RIVER ESTUARY DURING 1996

Region	Abbreviation	River Miles	River Kilometers	1996 Survey			
				Shore	Shoal	Channel	Bottom
Battery	BT	1-11	1-19	--	--	X	X
Yonkers	YK	12-23	19-39	X	X	X	X
Tappan Zee	TZ	24-33	39-55	X	X	X	X
Croton-Haverstraw	CH	34-38	55-63	X	X	X	X
Indian Point	IP	39-46	63-76	X	X	X	X
West Point	WP	47-55	76-90	X	--	X	X
Cornwall	CW	56-61	90-100	X	X	X	X
Poughkeepsie	PK	62-76	100-124	X	--	X	X
Hyde Park	HP	77-85	124-138	X	--	X	X
Kingston	KG	86-93	138-151	X	--	X	X
Saugerties	SG	94-106	151-172	X	--	X	X
Catskill	CS	107-124	172-201	X	--	X	X
Albany	AL	125-152	201-246	X	--	X	X

NOTE: Dashes (--) indicate no sampling scheduled.

TABLE 2-2 SUMMARY OF 1996 HUDSON RIVER SURVEYS

	Sampling Schedule					Sample Number			
						Collection		Lab	
Program Phase	Start Date	End Date	Number of River Runs	Sampling Frequency	Strata Sampled	Projected	Actual	Analysis	Sampling Gear
Longitudinal River Ichthyoplankton Survey	6 MAR	9 OCT	23	Weekly/ Biweekly	Shoal	588	566[b]	533[b]	1.0-m^2 net on epibenthic sled or 1.0-m^2 Tucker trawl
					Channel	1,686[a]	1,663[b]	889[b]	1.0-m^2 Tucker trawl
					Bottom	1,389	1,335[b]	941[b]	1.0-m^2 net on epibenthic sled
Fall Shoals Survey	10 JUL	17 OCT	8	Biweekly	Shoal	456	456		3.0-m beam trawl
					Channel	488	484		1.0-m^2 Tucker trawl
					Bottom	728	729		3.0-m beam trawl
Beach Seine Survey	18 JUN	23 OCT	10	Biweekly	Shore	1,000	1,000		30.5-m beach seine

a. Includes 141 samples collected for striped bass otolith analysis.
b. Excludes any samples collected or analyzed during River Run 1 and the week of 1 April.

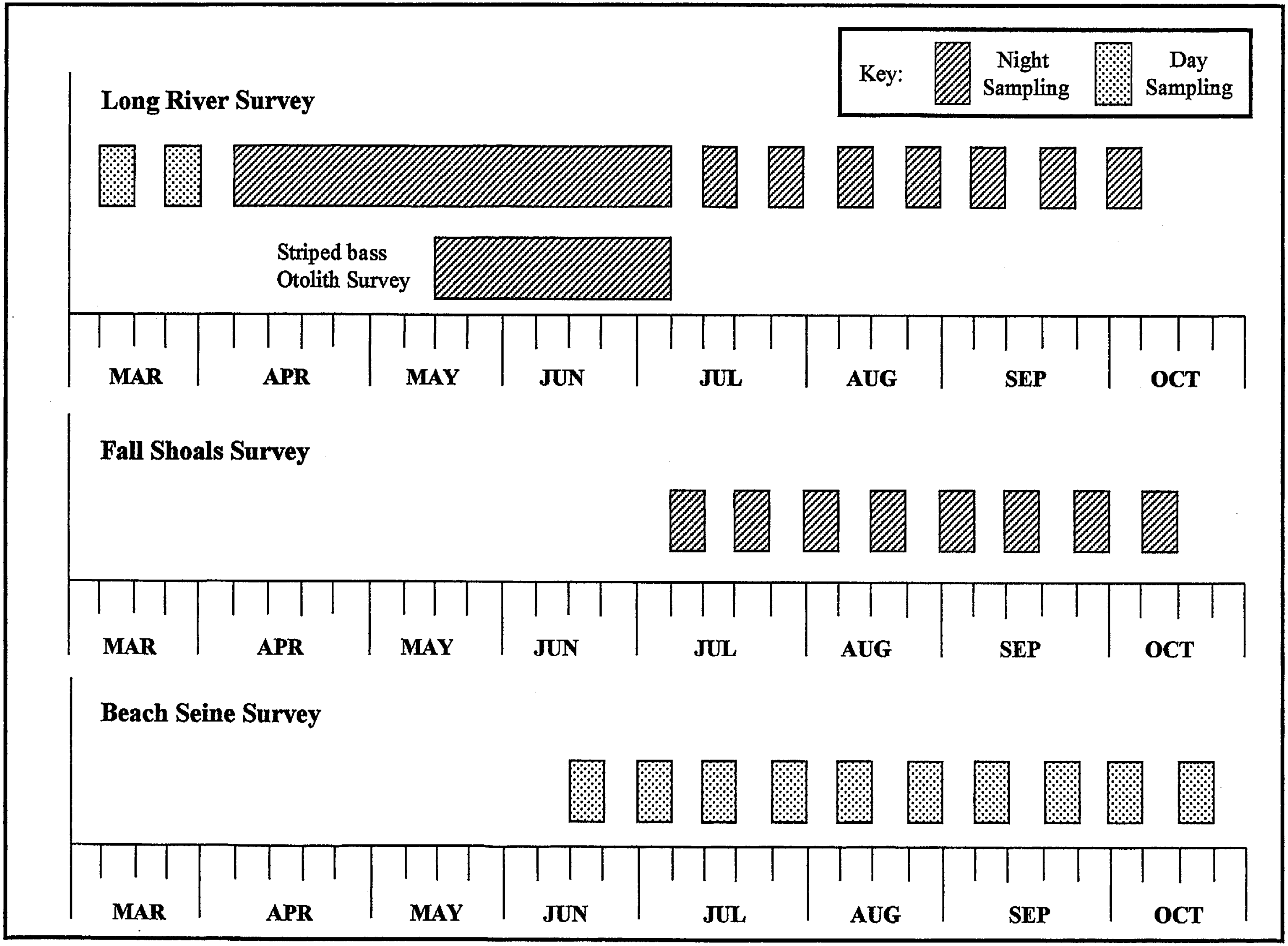

Figure 2-3. Completed sampling schedule for 1996.

scheduled as 6 separate multiweek efforts. The first, which covered March and the first week of April, sampled biweekly, was directed toward the collection of Atlantic tomcod post yolk-sac larvae (PYSL). The second effort which covered the last 3 weeks of April was directed toward the collection of American shad eggs. The third effort covered the first 3 weeks of May and was designed to collect eggs of *Morone* spp. and American shad. The fourth effort encompassed the next 3 weeks from the middle of May through the beginning of June and targeted *Morone* spp. and American shad yolk-sac larvae (YSL). The fifth effort consisted of 4 weeks extending from the middle of June through the first week in July. This sampling effort was designed to collect *Morone* spp. and American shad PYSL. The LRS sampling program concluded with a 13-week period, sampled biweekly, from the middle of July to early October. The final sampling effort was designed to collect all life stages of bay anchovy.

The allocation of sampling effort among regions and strata is given in Table 2-3. During 1996, 3,663 ichthyoplankton samples (including 141 striped bass otolith aging samples) were scheduled for collection; 3,564 samples (which excludes those collected during River Run 1 and the substitute samples collected during the week of 1 April) were collected, accounting for 97.30 percent of the scheduled total.

Two gear types were used to sample the shoal, channel, and bottom strata in the LRS: a 1.0-m^2 Tucker trawl (Figure 2-4) to sample the channel strata, an epibenthic sled-mounted 1.0-m^2 net similar in design to the Tucker trawl (Figure 2-5) to sample the bottom strata, and both gear types to sample the shoal strata. Table 2-4 presents design specifications for the sampling gear.

Both gear types were towed against the prevailing current for 5 minutes. The tow started with the remote opening of the net and terminated with its remote closing. If the river depth was 20 ft or less, an open set and retrieval of the net was allowed. The tow speed for the trawl was approximately 0.9 m/second; for the epibenthic sled-mounted net, approximately 1.0 m/second. An electronic flowmeter mounted along the side of the research vessel and equipped with an on-deck readout display was used to establish and maintain tow speed. A calibrated digital flowmeter mounted in the center of the net mouth was used to calculate the volume of water filtered for each sample.

Following net washing and sample concentration in the codend bucket, the samples were examined for yearling and older fish. All of these fish were identified, enumerated, and returned to the Hudson River estuary. Special care was taken for sturgeon and for marked and tagged fish. After yearling and older fish were removed, the remaining sample was placed in container(s) so that the sample occupied no more than 25 percent of the container volume. The containers were filled with 10 percent formalin.

In situ measurements of water temperature (°C), dissolved oxygen (mg/L), and specific conductance (microsieman/cm at 25°C) were taken with calibrated meters at fixed river mile and strata stations in conjunction with the biological sampling. Physical/chemical sampling locations, by river mile and strata, are presented in Table 2-5 for the 1996 LRS. Physical/chemical measurements were recorded from surface, mid-depth, and bottom water depth at channel stations and from the surface and bottom water depth at shoal stations. During the 23 collection weeks of the 1996 LRS, 3,520 samples were scheduled, with 3,486 samples actually collected, which includes water quality samples collected during River Run 1 and the week of 1 April.

Ichthyoplankton samples collected for striped bass otolith aging were handled in the same manner as regularly scheduled LRS samples except that the preservative was 95 percent ethanol. Within 48 hours, the samples were drained and placed in fresh 95 percent ethanol.

TABLE 2-3 SUMMARY OF 1996 SAMPLE COLLECTION INFORMATION BY RIVER REGION AND STRATUM FOR THE LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY

	5-Week Period from 4 MAR to 5 APR[a]					3-Week Period from 8 APR to 26 APR					3-Week Period from 29 APR to 17 MAY				
	Shoal		Channel	Bottom		Shoal		Channel	Bottom		Shoal		Channel	Bottom	
Region	Sled	Trawl	Trawl	Sled	Total	Sled	Trawl	Trawl	Sled	Total	Sled	Trawl	Trawl	Sled	Total
Battery	--	--	10	10	20	--	--	18	24	42	--	--	18	18	36
Yonkers	4	4	12	12	32	6	6	15	21	48	6	6	15	21	48
Tappan Zee	6	4	12	12	34	18	12	12	12	54	18	13	12	12	55
Croton-Haverstraw	6	4	12	12	34	12	9	12	12	45	12	9	12	12	45
Indian Point	4	4	12	12	32	6	6	12	12	36	6	6	30	18	60
West Point	--	--	10	10	20	--	--	15	15	30	--	--	45	18	63
Cornwall	4	4	8	8	24	9	6	9	9	33	9	6	15	24	54
Poughkeepsie	--	--	--	--	--	--	--	9	9	18	--	--	30	30	60
Hyde Park	--	--	--	--	--	--	--	21	9	30	--	--	33	27	60
Kingston	--	--	--	--	--	--	--	18	24	42	--	--	21	18	39
Saugerties	--	--	--	--	--	--	--	18	24	42	--	--	15	9	24
Catskill	--	--	--	--	--	--	--	21	48	69	--	--	15	9	24
Albany	--	--	--	--	--	--	--	30	60	90	--	--	15	15	30
Total	24	20	76	76	196	51	39	210	279	579	51	40	276	231	598

	3-Week Period from 20 MAY to 7 JUN					4-Week Period from 10 JUN to 5 JUL					13-Week Period from 15 JUL to 11 OCT				
	Shoal		Channel	Bottom		Shoal		Channel	Bottom		Shoal		Channel	Bottom	
Region	Sled	Trawl	Trawl	Sled	Total	Sled	Trawl	Trawl	Sled	Total	Sled	Trawl	Trawl	Sled	Total
Battery	--	--	12	24	36	--	--	16	24	40	--	--	48	36	84
Yonkers	6	3	12	18	39	8	8	28	24	68	12	16	34	36	98
Tappan Zee	12	6	12	12	42	8	8	28	20	64	18	24	32	24	98
Croton-Haverstraw	12	6	16	12	46	12	8	32	24	76	18	24	28	28	98
Indian Point	6	5	46	18	75	12	8	78	21	119	21	21	28	28	98
West Point	--	--	61	21	82	--	--	116	32	148	--	--	28	27	55
Cornwall	9	6	22	24	61	8	8	60	48	124	14	14	21	21	70
Poughkeepsie	--	--	67	36	103	--	--	72	28	100	--	--	21	21	42
Hyde Park	--	--	38	21	59	--	--	44	20	64	--	--	--	--	--
Kingston	--	--	18	12	30	--	--	24	16	40	--	--	--	--	--
Saugerties	--	--	9	15	24	--	--	8	16	24	--	--	--	--	--
Catskill	--	--	9	9	18	--	--	12	12	24	--	--	--	--	--
Albany	--	--	9	9	18	--	--	12	12	24	--	--	--	--	--
Total	45	26	331	231	633	48	40	530	297	915	83	99	240	221	643

NOTE: Dashes (--) indicate no sampling scheduled.

a. Excludes samples collected during River Run 1 and the week of 1 April.

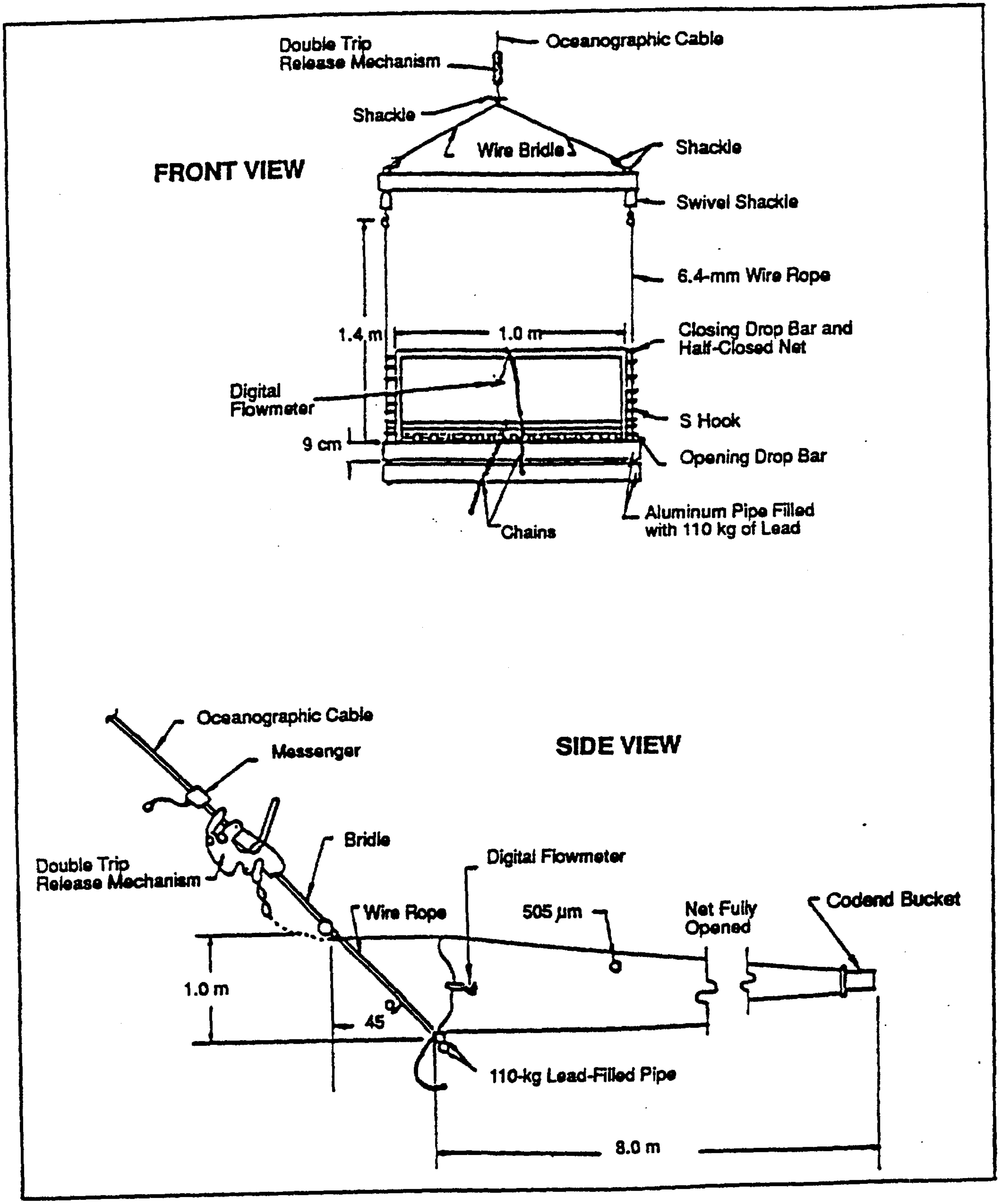

Figure 2-4. Design and dimensions of 1.0-m^2 Tucker trawl.

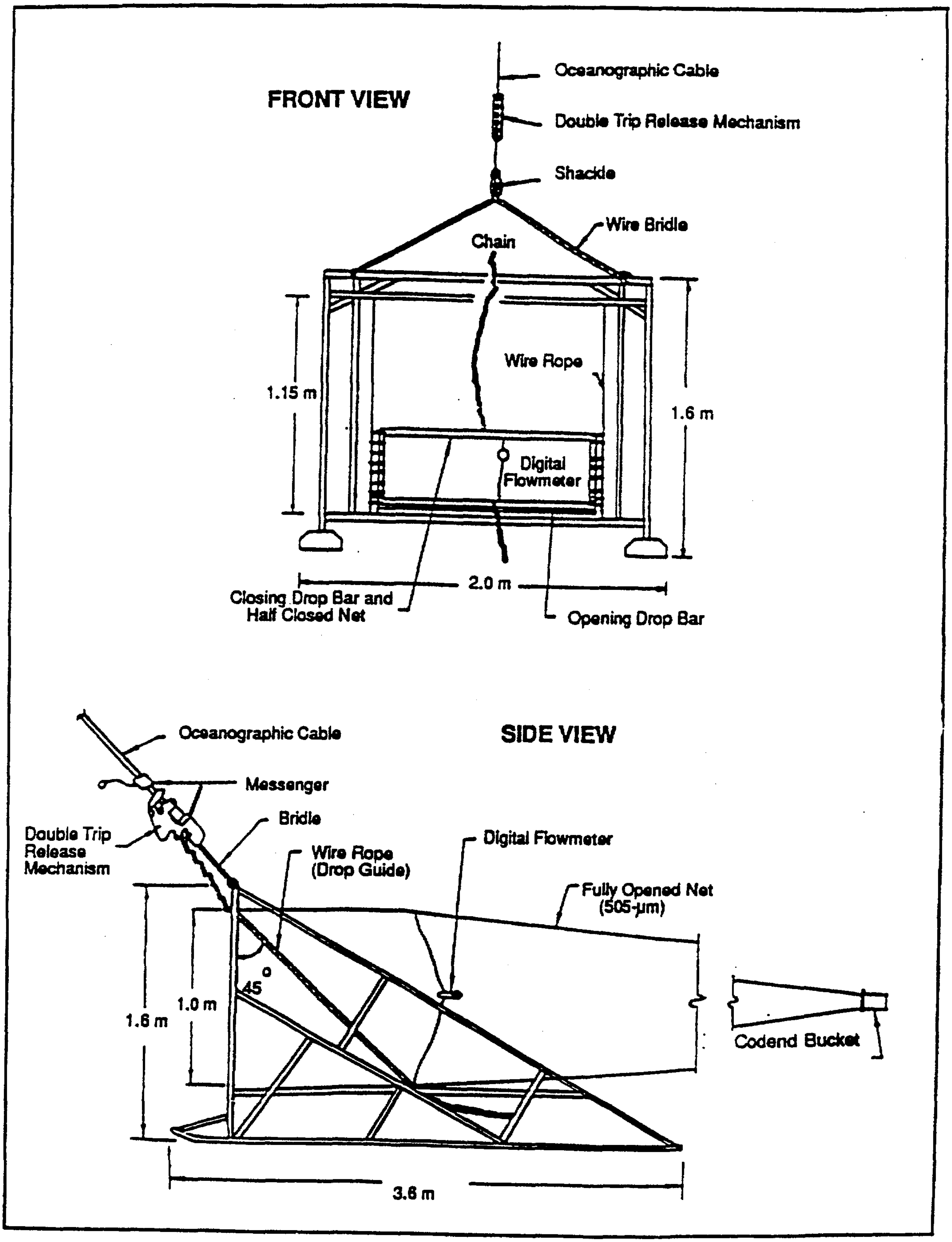

Figure 2-5. Design and dimensions of 1.0-m^2 Tucker trawl mounted on an epibenthic sled.

TABLE 2-4 SPECIFICATIONS OF SAMPLING GEAR USED DURING THE 1996 LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY

1.0-m^2 Tucker Trawl	
Length	8.0 m
Mouth (width)	1.0 m
Mouth (height)	1.4 m
Mesh size	500 µm
Net material	Nytex (monofilament nylon)
Collection cup	
Length	30 cm
Length with net-retaining ring	37 cm
Mesh size	500 µm
Net material	Nytex (monofilament nylon)

1.0-m^2 Net Mounted on Epibenthic Sled	
Length	8.0 m
Mouth (width)	1.0 m
Mouth (height)	1.4 m
Mesh size	500 µm
Net material	Nytex (monofilament nylon)
Collection cup	
Length	30 cm
Length with net-retaining ring	37 cm
Mesh size	500 µm
Net material	Nytex (monofilament nylon)

TABLE 2-5 WATER QUALITY SAMPLING LOCATIONS DURING THE 1996 LONGITUDINAL RIVER ICHTHYOPLANKTON AND FALL SHOALS SURVEYS

	Scheduled Sampling Locations (RM)		Number of Water Quality Samples Scheduled Per Region Per River Run			
River Region	Shoals[a]	Channel	LRS River Runs 1-3	LRS River Runs 4-16	LRS River Runs 17-23	FSS River Runs 1-8
Battery	--	1, 3, 6, 9	12	12	12	12
Yonkers	19	12, 14, 17, 19, 22	19	19	19	19
Tappan Zee	29	25, 27, 29, 32	16	16	16	16
Croton-Haverstraw	36	35, 36, 37, 38	16	16	16	16
Indian Point	43	40, 42, 43, 46	16	16	16	16
West Point	--	49, 51, 53, 55	12	12	12	12
Cornwall	59	56, 57, 59, 61	16	16	16	16
Poughkeepsie	--	63, 67, 71, 75	--	12	12	12
Hyde Park	--	78, 80, 82, 84	--	12	--	12
Kingston	--	87, 89, 91, 93	--	12	--	12
Saugerties	--	96, 99, 102, 105	--	12	--	12
Catskill	--	109, 114, 118, 122	--	12	--	12
Albany	--	126, 131, 135, 138, 142	--	15	--	15
Total per River Run			107	182	119	182

NOTE: Dashes (--) indicate no sampling scheduled.
a. Sample collected from east and west shoals at designated river mile.

2.2.2 Laboratory Methods

In 1996, approximately 70 percent of the regular LRS samples were scheduled for analysis. Selection of samples for laboratory analysis began with the grouping of all samples according to river run, region, and strata. Based on these groupings, samples were selected based on one of the following criteria:

1. If there were less than 6 samples in the group, then all were selected for analysis.

2. If there were between 6 and 12 samples in the group, then 50 percent of the samples were randomly selected for analysis.

3. If there were more than 12 samples in the group, then 20 percent of the samples were randomly selected for analysis.

The allocation of samples for laboratory analysis among regions, strata, and gear types based on these criteria is listed in Table 2-6. The total number of analyzed samples was 2,363, comprising 66 percent of the collected samples (excluding those collected for otolith analysis).

In 1996, as in previous years, splitting (or subsampling) was permitted. A trained technician first determined, by visual inspection, if the sample needed splitting. Any sample containing large numbers of eggs may have been split so that eggs were only sorted from one or more splits containing a total of at least 250 eggs (all species combined).

There were two different sets of criteria for subsampling larvae, depending on the river run. Beginning with the river run in which striped bass PYSL first appeared, and for the next 8 river runs (a total of 9 consecutive river runs), a minimum of 500 *Morone* larvae (i.e., the combined total of YSL, PYSL, and YOY of striped bass, white perch, and unidentified *Morone*) was sorted from the entire sample and a minimum of 50 non-*Morone* larvae was also sorted. Because some of the more difficult distinctions between species (e.g., striped bass versus white perch) or between life stages could not be made reliably during sorting, samples from these 9 river runs were usually sorted in their entirety for larvae (i.e., YSL, PYSL, and YOY combined) of all species combined. An exception to this may have been made, at the discretion of the laboratory supervisor, under the following circumstances: when extremely large numbers of non-*Morone* larvae occurred in the sample and a qualified identifier had verified that sufficient numbers of both *Morone* larvae and non-*Morone* larvae were sorted to meet their respective subsampling quotas. The purpose of this exception was to allow splitting before sorting of taxa such as clupeids which could readily be distinguished from *Morone* by sorters.

The second set of criteria for subsampling larvae applied to the 14 other river runs not covered in the previous paragraph (before and after the period of striped bass abundance). Any sample from these river runs may have been subsampled so that larvae were sorted from one or more splits containing at least 100 larvae (i.e., YSL, PYSL, and YOY combined) of all species combined.

To eliminate any chance of bias, some steps in the splitting procedure were performed by an assistant so that the sorter had no prior knowledge of which splits were to be used for the analysis. This procedure is explained in Figure 2-6. Randomness of the splitting procedure was monitored and controlled by testing selected samples to determine whether splits from the same sample differed by more than random variation. Samples were selected to test for randomness by a continuous sampling plan, shown in Figure 2-7 (CSP-V from MIL-STD-1235B, AQL = 10 percent).

TABLE 2-6 SUMMARY OF 1996 SAMPLE ANALYSIS INFORMATION BY RIVER REGION AND STRATUM FOR THE LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY

	5-Week Period from 4 MAR to 5 APR[a]					3-Week Period from 8 APR to 26 APR					3-Week Period from 29 APR to 17 MAY				
	Shoal		Channel	Bottom		Shoal		Channel	Bottom		Shoal		Channel	Bottom	
Region	Sled	Trawl	Trawl	Sled	Total	Sled	Trawl	Trawl	Sled	Total	Sled	Trawl	Trawl	Sled	Total
Battery	--	--	10	10	20	--	--	9	12	21	--	--	9	9	18
Yonkers	4	4	6	6	20	6	6	15	12	39	6	6	15	12	39
Tappan Zee	6	4	6	6	22	9	12	12	12	45	9	13	12	12	46
Croton-Haverstraw	6	4	6	6	22	12	8	12	12	44	12	9	12	12	45
Indian Point	4	4	6	6	20	6	6	12	12	36	6	6	15	9	36
West Point	--	--	10	10	20	--	--	15	15	30	--	--	9	9	18
Cornwall	4	4	8	8	24	9	6	9	9	33	9	6	15	12	42
Poughkeepsie	--	--	--	--	--	--	--	9	9	18	--	--	15	15	30
Hyde Park	--	--	--	--	--	--	--	12	9	21	--	--	18	15	33
Kingston	--	--	--	--	--	--	--	9	12	21	--	--	12	9	21
Saugerties	--	--	--	--	--	--	--	9	12	21	--	--	15	9	24
Catskill	--	--	--	--	--	--	--	12	9	21	--	--	15	9	24
Albany	--	--	--	--	--	--	--	15	12	27	--	--	15	15	30
Total	24	20	52	52	148	42	38	150	147	377	42	40	177	147	406

	3-Week Period from 20 MAY to 7 JUN					4-Week Period from 10 JUN to 5 JUL					13-Week Period from 15 JUL to 11 OCT				
	Shoal		Channel	Bottom		Shoal		Channel	Bottom		Shoal		Channel	Bottom	
Region	Sled	Trawl	Trawl	Sled	Total	Sled	Trawl	Trawl	Sled	Total	Sled	Trawl	Trawl	Sled	Total
Battery	--	--	12	12	24	--	--	16	12	28	--	--	24	18	42
Yonkers	6	3	12	9	30	8	8	16	12	44	12	16	31	18	77
Tappan Zee	12	6	12	12	42	8	8	20	20	56	12	23	32	24	91
Croton-Haverstraw	12	6	13	12	43	12	8	12	12	44	18	24	28	27	97
Indian Point	6	5	18	9	38	12	8	12	18	50	14	21	28	28	91
West Point	--	--	9	12	21	--	--	20	16	36	--	--	28	27	55
Cornwall	9	6	15	12	42	8	8	24	24	64	14	14	21	21	70
Poughkeepsie	--	--	12	18	30	--	--	12	16	28	--	--	21	21	42
Hyde Park	--	--	15	12	27	--	--	20	20	40	--	--	--	--	--
Kingston	--	--	9	12	21	--	--	12	16	28	--	--	--	--	--
Saugerties	--	--	9	15	24	--	--	8	16	24	--	--	--	--	--
Catskill	--	--	9	9	18	--	--	12	12	24	--	--	--	--	--
Albany	--	--	8	9	17	--	--	12	12	24	--	--	--	--	--
Total	45	26	153	153	377	48	40	196	206	490	70	98	213	184	565

NOTE: Dashes (--) indicate no sampling scheduled.
a. Excludes samples analyzed from River Run 1 and the week of 1 April.

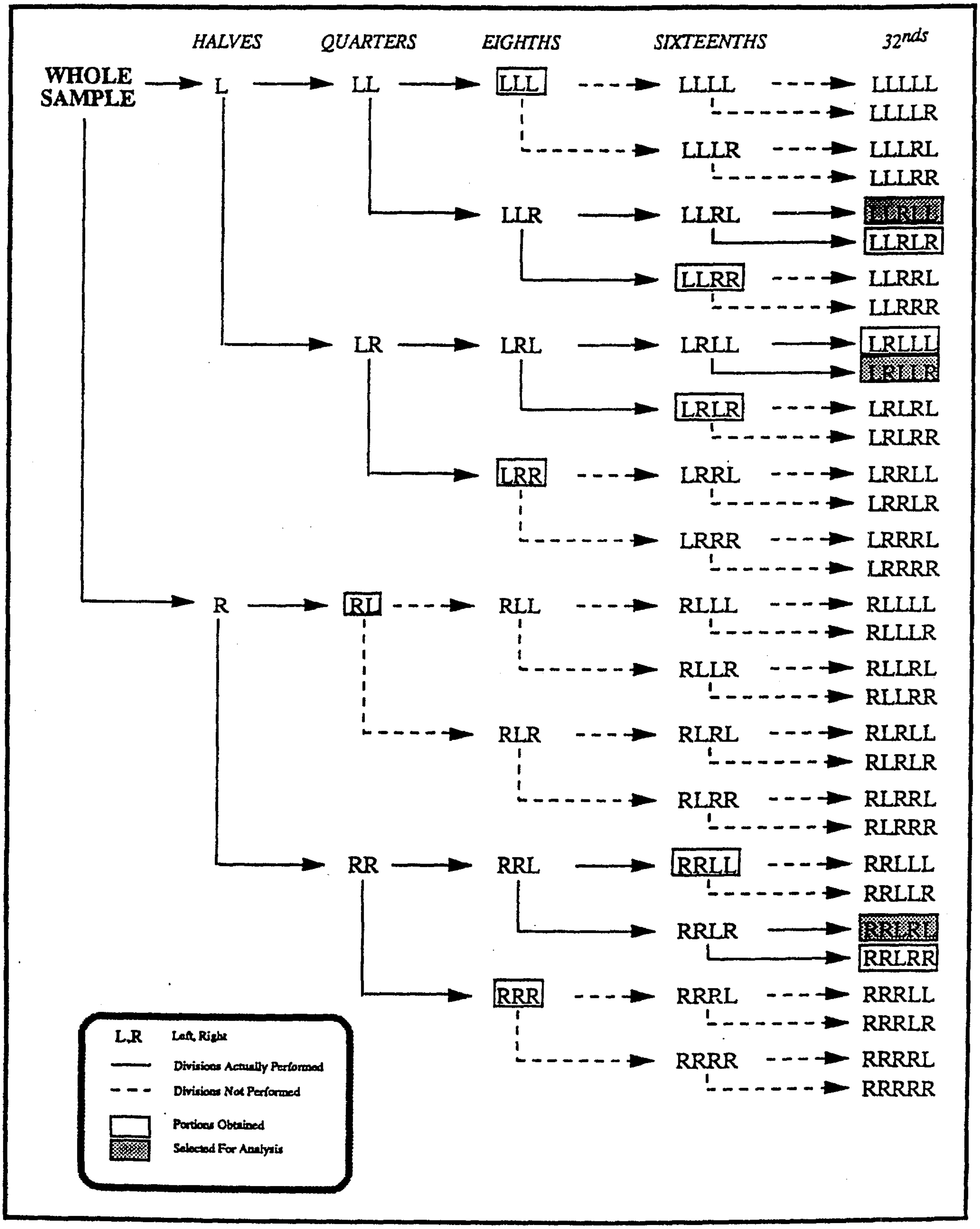

Figure 2-6. Conceptual diagram of the splitting process.

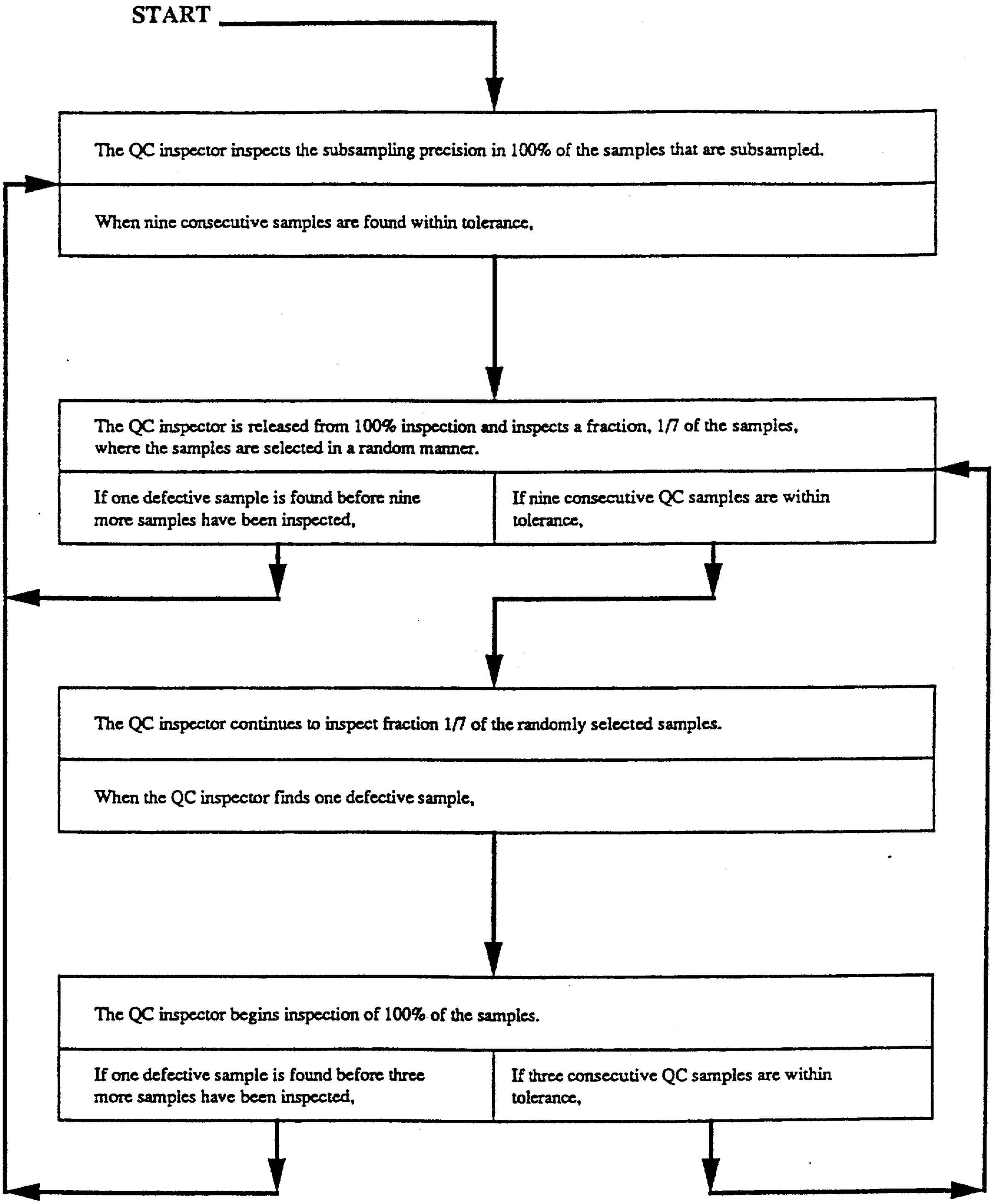

Figure 2-7. Inspection plan for evaluation of splitting precision.

For each split sample evaluated, three fractions of the same size were sorted and compared by the chi-square test according to the following procedure. The counts of the three splits (including any quality control [QC] finds) were averaged to obtain the expected value for the sample. Chi-square was calculated as:

$$\textit{chi square} = \frac{(O_1 - E)^2}{E} + \frac{(O_2 - E)^2}{E} + \frac{(O_3 - E)^2}{E}$$

where

O_1, O_2, and O_3 = Observed counts for splits 1, 2, and 3.
E = Expected value for the sample (average of O_1, O_2, and O_3).

If the calculated value for chi-square was less than 5.99, then the splits of that sample were considered random, and the sample passed the split QC (5.99 was the critical value of chi-square with two degrees of freedom at an alpha level of 0.05). If a sample was split for both eggs and larvae, then both stages were tested separately. The sample passed the split QC only if chi-square was below the critical value for both life stages.

Eggs and larvae were separated from detrital material, sorted by major taxonomic group and life stage, counted, and placed in vials containing 5 percent formalin or in alcohol. Sorted samples were evaluated by a trained technician under magnification and all organisms were identified and enumerated. The following life stage designations were used in identification:

Life Stage	Description
Egg	Embryonic stage from spawning to hatching
YSL	From hatching to development of a complete and functional digestive system
PYSL	From development of a complete digestive system to acquisition of a full complement of adult fin rays
YOY	From acquisition of a full complement of adult fin rays to 31 December of the year spawned.

Whenever possible, a maximum of 30 striped bass, 30 white perch, 30 American shad, 30 Atlantic tomcod, and 30 bay anchovy per sample were measured. Organisms were chosen at random from each taxon regardless of life stage until the required number were obtained; life stages to be included were YSL, PYSL, and YOY. The total length of YSL and PYSL was measured to the nearest 0.1 mm and to the nearest 1 mm for YOY. Measurements were recorded on the laboratory data sheet. Selection of specimens for measuring was randomized by spreading them uniformly in a gridded container, selecting a starting point in the grid by means of a random number table, and then measuring the first 30 measurable specimens encountered in a predetermined pattern commencing at the starting point. Every grid space had an equal probability of being selected as the starting point, so every specimen had an equal probability of being included in the subsample.

Continuous sampling inspection was employed during the sort and identification procedures to ensure an average outgoing quality of <0.1. Two sampling modes were required in the continuous sampling plan (CSP-1):

> **Mode 1**—The first eight samples sorted or analyzed for larval identification by an individual are subject to 100 percent QC reanalysis. If all eight pass the reanalysis, i.e., if $\leq$10 percent of the ichthyoplankton are missed or misidentified per sample, the individual is placed in CSP Mode 2. If any sample fails during Mode 1, then Mode 1 is continued until eight consecutive samples pass. For example, if a sample with QC No. 7 fails, then samples with QC Nos. 8 through 15 are subject to QC resorting.
>
> **Mode 2**—Lots of seven consecutive samples per individual are assigned. One sample from each lot is randomly chosen for QC analysis. If a sample fails (>10 percent of organisms missed or misidentified) during Mode 2, that individual is placed back into Mode 1. For example, if a sample with QC No. 6 fails in a lot of seven samples, then samples with QC Nos. 7 through 14 are subject to QC reanalysis. If samples 7 through 14 pass, the individual is again placed in Mode 2.

Results of the 1996 CSP-1 Quality Control Program are contained in Appendix A.

2.3 FALL SHOALS SURVEY

2.3.1 Field Methods

A 1.0-m^2 Tucker trawl and a 3.0-m beam trawl were used to collect YOY fish in the 1996 FSS. The Tucker trawl with 3.0-mm mesh was used to collect samples in the channel stratum, while the beam trawl (Figure 2-8) was used to sample the shoal and bottom strata. The latter gear was first used in this capacity in the 1985 FSS; prior to 1985, an epibenthic sled-mounted Tucker trawl was used. Design specifications for both trawl types currently in use are listed in Table 2-7.

Both gear types were towed against the prevailing current for approximately 5 minutes. For the Tucker trawl, vessel speed was adjusted as necessary to achieve and maintain a 45° wire angle; the resultant tow speed was recorded. The beam trawl was towed at a speed of approximately 1.5 m/second.

Tow speed was established and maintained by use of an electronic flowmeter mounted along the side of the research vessel and equipped with an on-deck readout display. Tucker trawl samples taken in over 20 ft of river depth were remotely opened and closed at sampling depth. A calibrated digital flowmeter mounted in the center of the net mouth was used to calculate the volume of water filtered for each sample.

The 1996 FSS biweekly sampling program covered 15 weeks from 8 July to 18 October (Figure 2-3), with all samples collected at night. Table 2-8 presents the distribution of the FSS sampling effort among the 13 river regions by stratum. In 1996, FSS samples were first collected in the Battery region. Of the 1,672 samples scheduled for collection; 1,669 samples, or 99.82 percent of the scheduled number, were actually collected.

Calibrated meters were used to measure water temperature (°C), dissolved oxygen (mg/L), and specific conductance (microsieman/cm at 25°C) at fixed river mile and strata stations in conjunction with field sampling. Sampling locations were the same as those used for the 1996 LRS sampling program (Table 2-5). Measurements of physical/chemical parameters were recorded during each biweekly FSS sampling period from surface, mid-, and bottom water depths at channel stations and from surface and

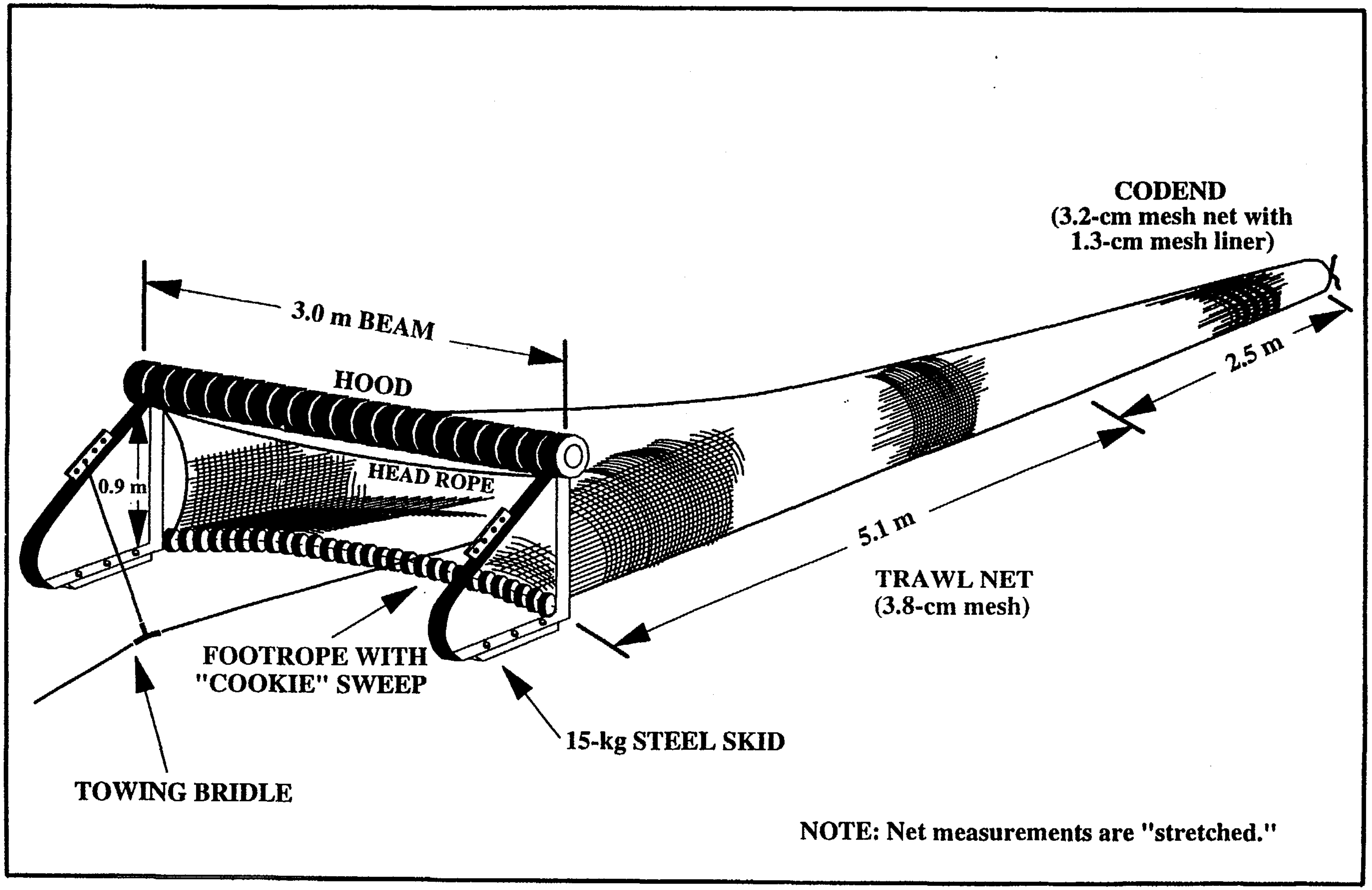

Figure 2-8. Design and dimensions of the 3.0-m beam trawl.

TABLE 2-7 SPECIFICATIONS OF SAMPLING GEAR USED DURING THE 1996 FALL SHOALS SURVEY

	1.0-m^2 Tucker Trawl
Length	8.0 m
Mouth (width)	1.0 m
Mesh size	3.0 mm
Collection cage (codend)	
Length	81 cm
Diameter	41 cm
Mesh size	3.0 mm

	3.0-m Beam Trawl
Length	7.6 m
Beam width	3.0 m
Net body	3.8-cm mesh (stretch)
Codend	3.2-cm mesh (stretch) net with 1.3-cm mesh (stretch) liner
Hood	3.8-cm mesh (stretch)
Footrope	Equipped with 5.1-cm rollers
Headrope	Equipped with three floats
Mouth area	2.7 m^2

TABLE 2-8 NUMBER OF BIWEEKLY SAMPLES COLLECTED DURING THE 1996 FALL SHOALS SURVEY

8 July - 18 October

Region	Strata: Shoal (Beam Trawl)	Strata: Channel (Tucker Trawl)	Strata: Bottom (Beam Trawl)	Total
Battery	--	48	57	105
Yonkers	56	39	40	135
Tappan Zee	192	64	64	320
Croton-Haverstraw	120	24	56	200
Indian Point	48	23	40	111
West Point	--	24	40	64
Cornwall	40	24	40	104
Poughkeepsie	--	24	40	64
Hyde Park	--	31	48	79
Kingston	--	47	64	111
Saugerties	--	48	88	136
Catskill	--	48	88	136
Albany	--	40	64	104
Total	456	484	729	1,669[a]

NOTE: Dashes (--) indicate no sampling scheduled.
a. All samples collected at night.

bottom water depths at shoal stations. During the 8 collection weeks of the 1996 FSS, 1,456 samples were scheduled for collection and 1,456 samples, or 100 percent of the number scheduled, were actually collected.

Because of the difficulty in differentiating some species, especially YOY *Morone* (striped bass, white perch) and *Alosa* (alewife, blueback herring), samples collected during the first two sampling periods (River Runs 1 and 2) for the 1996 FSS program were preserved with 10 percent formalin at the time of collection and returned to the laboratory for analysis. Before preservation, samples were examined for fish determined to be yearling or older, based on length categorization; live fish were returned to the river after length and count data were determined.

Samples collected following the second biweekly sampling period were evaluated in the field; only fish required to fill length measurement quotas were returned to the laboratory. The quota was to be 20 specimens of a selected species from each river region per river run; because of the necessity of returning fish to the river alive, the first 20 specimens of a selected species were brought to the laboratory for length measurements. In 1996, the Hyde Park through Albany regions were considered one region for the purpose of filling length measurement quotas during the entire FSS and during River Runs 4 through 10 of the BSS. Also for the BSS during River Runs 1 through 3, the Yonkers through West Point regions were considered as one region for the same purpose. In river regions where fewer than 10 samples were collected per survey, no more than 10 specimens of each selected species from an individual sample were used to fill the length measurement quota. This criterion was used in the following surveys by river region:

Sampling Program	Region
BSS	YK, IP, WP, CW, PK
FSS	WP, PK

In all other regions, when the sample schedule resulted in 10 or more samples per survey, no more than 5 specimens per species in a sample were used to fill the length measurement quotas. If more specimens of a species were collected than needed, the individuals used to fill the quotas were randomly selected.

All fish not returned to the laboratory were identified and enumerated into length classes as described in the following section. All Atlantic sturgeon, shortnose sturgeon, and striped bass were examined for external and internal magnetic tags. All sturgeon were measured to the nearest millimeter, weighed to the nearest gram, and, if alive, returned to the river or, if dead, frozen and saved for the NYSDEC. All striped bass with external streamer tags were measured and a scale sample was taken.

2.3.2 Laboratory Methods

Fish from the FSS in both the field and laboratory were identified and enumerated into the following length classes:

Length Class 1—Less than or equal to the YOY length limit ("Division 1"), which was obtained from the field contractor on a weekly basis for each species.

Length Class 2—Greater than Division 1 and less than or equal to the yearling length limit ("Division 2"); set at 150 mm for most species, also obtained weekly from the field contractor. From 1 January through 31 May, Division 2 represents the upper length limit for yearling fish for all species. From 1 June through 31 December, Division 2 is assigned a static value of 150 mm total length for all species except alewife, American shad, blueback herring, striped bass, Atlantic tomcod, and white perch. For these species, Division 2 is maintained as a dynamic upper length limit for yearling fish throughout the year.

Length Class 3—Greater than Division 2 and less than or equal to 250 mm.

Length Class 4—Greater than 250 mm.

Twenty specimens of the following selected species collected in each river region per river run were measured for total length (nearest millimeter) in the laboratory:

- Alewife
- American shad
- Atlantic sturgeon
- Atlantic tomcod
- Bay anchovy
- Blueback herring
- Shortnose sturgeon
- Spottail shiner
- Striped bass
- Weakfish
- White catfish
- White perch.

2.4 BEACH SEINE SURVEY

2.4.1 Field Methods

The BSS utilized a 30.5-m bag beach seine to collect YOY fish in the shorezone of each region, except the Battery region. Table 2-9 presents specifications for the beach seine. One end of the net was held on shore and the other end was towed perpendicularly away from the shore by boat. The seine was then hauled, clockwise if possible, in a semicircular path toward shore. The complete tow swept an area of approximately 450 m^2 (TI 1981). All BSS samples were collected on a diurnal schedule during alternate weeks of the FSS.

The 1996 BSS biweekly sampling program was conducted from 17 June through 25 October (Figure 2-3). Ten of the 19 weeks in this time period were collection weeks with 100 beach seine samples per river run scheduled for collection. Allocation of the total number of samples by river region collected for the 1996 BSS are presented in Table 2-10. All of the scheduled 1,000 samples projected for collection in 1996 were collected.

Measurements of water temperature (°C), dissolved oxygen (mg/L), and specific conductance (microsieman/cm at 25°C) were taken with each beach seine sample. Physical/chemical measurements were taken 1 ft below the water surface and approximately 50 ft from the shoreline. During the 10 collection weeks of the 1996 BSS, 1,000 water quality samples were scheduled and 1,000 samples were actually collected.

YOY fishes collected during the first 3 beach seine river runs in 1996 were processed in the laboratory because of the difficulty in distinguishing species at the YOY life stage, adults were processed in the field. All samples collected following River Run 3 were field processed; 20 specimens of the selected species from each region per run were collected (as described in Section 2.3.1) for length determination in the laboratory. Samples maintained for laboratory analysis were preserved using 10 percent formalin. Fish from the BSS in both the field and laboratory were identified and enumerated into length classes as described in Section 2.3.2. All sturgeon collected during the BSS in 1996 were measured to the nearest 1 mm and weighed to the nearest 1 g. Fish that remained alive were returned to the Hudson River estuary;

TABLE 2-9 SPECIFICATIONS OF SAMPLING GEAR USED DURING THE 1996 BEACH SEINE SURVEY

30.5-m Beach Seine	
Number of wings	2
Length of wings	12.0 m
Depth of wings	2.4 m
Wing mesh (bar)	1.0 cm
Length of bag	6.1 m
Depth of bag	3.0 m
Bag mesh (bar)	0.5 cm
Sampling area	450 m^2

TABLE 2-10 NUMBER OF BIWEEKLY SAMPLES COLLECTED DURING THE 1996 BEACH SEINE SURVEY

17 June - 25 October

Region	Number of Beaches Sampled Per Region for River Runs 1-3	Number of Beaches Sampled Per Region for River Runs 4-10	Total
Yonkers	9	35	44
Tappan Zee	33	168	201
Croton-Haverstraw	21	98	119
Indian Point	9	35	44
West Point	9	35	44
Cornwall	9	42	51
Poughkeepsie	24	35	59
Hyde Park	24	35	59
Kingston	24	35	59
Saugerties	45	63	108
Catskill	57	70	127
Albany	36	49	85
Total	300	700	1,000

dead fish were frozen and held for NYSDEC. All sturgeon and striped bass were examined for external and internal magnetic tags. Striped bass with external tags were measured and a scale sample was taken.

2.4.2 Laboratory Methods

All fish returned to the laboratory were measured for total length to the nearest 1.0 mm. Laboratory analysis was conducted in the same manner as described for samples collected during the FSS.

2.5 ANALYTICAL METHODS

2.5.1 Physical/Chemical Parameters

To display the spatial and temporal patterns of temperature, salinity, and dissolved oxygen, a mean of each parameter for each sampling location and sampling week, weighted by stratum volume, was calculated. Equation 1 was used to compute these means for the standard physical/chemical stations sampled in conjunction with the LRS and FSS. Equation 2 was used for data taken in conjunction with the BSS. Salinity data were computed from conductivity data (microsieman/cm at 25°C) using Equation 3 (TI 1976). This equation differs from that used in some of the previous Year Class reports in that pressure data are not required. The maximum deviation between this equation and the previous equation is 0.1 percent (TI 1976).

$$W_{lw} = \sum_{k=1}^{n_{lw}} P_{kr} \left[1/n_{klw} \sum_{d=1}^{n_{klw}} \left(1/n_{dklw} \sum_{i=1}^{n_{dklw}} W_{idklw} \right) \right] \quad (1)$$

where

W_{lw} = Weighted mean of a physical/chemical parameter at sampling location l during week w of the LRS and FSS.

W_{idklw} = Physical/chemical measurement for location i at depth d in stratum k at sampling location l during week w.

P_{kr} = Proportion of the river volume of region r containing sampling location l that is contained by stratum k (bottom and channel strata were combined for water quality analysis).

n_{dklw} = Number of sites at which measurements were made at depth d in stratum k at sampling location l during week w.

n_{klw} = Number of depths sampled in stratum k at sampling location l during week w.

n_{lw} = Number of strata sampled at sampling location l during week w.

$$W_{rw} = 1/n_{rw} \sum_{i=1}^{n_{rw}} W_{irw} \quad (2)$$

where

W_{rw} = Mean of a physical/chemical parameter at river mile r during biweek w of the BSS.

W_{irw} = Physical/chemical measurement for location i at river mile r during biweek w.

n_{rw} = Number of physical/chemical measurements taken at river mile r during biweek w.

$$\text{Salinity} = -100\, ln \left(1 - C_{25}/178.5 \right) \quad (3)$$

where

C_{25} = Conductivity (millisieman/cm at 25°C).

2.5.2 Spatiotemporal Distribution Indices

2.5.2.1 Density and Catch-Per-Unit-Effort Estimates

Estimates of population densities were made for the LRS and FSS. For these two surveys the number of fish (by species and life stage) in individual samples was first converted to density (no./m^3 of water sampled) using Equation 4. The mean density and the standard error of the mean were calculated for each stratum, region, and sampling week using Equations 5 and 6. To obtain a mean density and standard error for each region during each sampling week, the stratum densities were weighted by the proportion of the regional river volume found in the stratum (Equations 7 and 8). If a stratum was not sampled, its volume was added to the volume of an adjacent stratum that was sampled. Stratum volume adjustments were made according to the following rules:

If This Stratum Was Not Sampled	Its Volume Was Added To This Stratum
Shoal	Bottom
Bottom	Channel

$$D_{ikrw} = \frac{C_{ikrw}}{V_{ikrw}} \quad (4)$$

where

D_{ikrw} = Density (for a life stage and species)/m^3 for sample i in stratum k in region r during week w.

C_{ikrw} = Number of fish caught in sample i in stratum k in region r during week w.

V_{ikrw} = Volume sampled (m^3) by sample i in stratum k in region r during week w.

$$D_{krw} = \frac{1}{n_{krw}} \sum_{i=1}^{n_{krw}} D_{ikrw} \tag{5}$$

where

D_{krw} = Average density in stratum k in region r during week w.

D_{ikrw} = Sample density calculated in Equation 4.

n_{krw} = Number of samples taken in stratum k in region r during week w.

$$SE(D_{krw}) = \sqrt{\frac{\sum_{i=1}^{n_{krw}} (D_{ikrw} - D_{krw})^2}{(n_{krw})(n_{krw} - 1)}} \tag{6}$$

where

$SE(D_{krw})$ = Standard error of the average density in stratum k in region r during week w.

D_{ikrw} = Sample density calculated in Equation 4.

D_{krw} = Average stratum density calculated in Equation 5.

$$D_{rw} = \sum_{k=1}^{n_{rw}} (D_{krw})(P_k) \tag{7}$$

where

D_{rw} = Average density in region r during week w.

D_{krw} = Average stratum density calculated in Equation 5.

P_k^* = Proportion of the regional river volume found in stratum k (Table 2-11).

n_{rw} = Number of strata sampled in region r during week w.

$$SE(D_{rw}) = \sqrt{\sum_{k=1}^{n_{rw}} \left[SE(D_{krw})^2 (P_k)^2\right]} \qquad (8)$$

where

$SE(D_{rw})$ = Standard error of average density in region r during week w.

$SE(D_{krw})$ = Standard error of the average stratum density calculated in Equation 6.

Catches from the BSS were reported as number caught per seine haul (catch-per-unit-effort [CPUE]) by life stage and species. The average CPUE for a region and its standard error were calculated using Equations 9 and 10:

$$C_{rw} = \frac{1}{n_{rw}} \sum_{i=1}^{n_{rw}} C_{irw} \qquad (9)$$

where

C_{rw} = Average CPUE in region r during week w.

C_{irw} = CPUE for sample i in region r during week w.

n_{rw} = Number of samples taken in region r during week w.

$$SE(C_{rw}) = \frac{\sum_{i=1}^{n_{rw}} (C_{irw} - C_{rw})^2}{n_{rw}(n_{rw} - 1)} \qquad (10)$$

where

$SE(C_{rw})$ = Standard error of average CPUE in region r during week w.

C_{rw} = Average regional CPUE calculated in Equation 9.

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* When a stratum is missing, P_k for the sampled stratum is equal to the sum of the P_k for the sampled stratum and the P_k for the unsampled stratum.

TABLE 2-11 STRATUM AND REGION VOLUMES (m^3) AND SURFACE AREAS (m^2) USED IN ANALYSIS OF 1996 HUDSON RIVER ESTUARY DATA

Geographic Region	Channel Volume	Bottom Volume	Shoal Volume	Region Volume	Shorezone Surface Area
Battery	141,809,822	48,455,129	18,747,833	209,012,784	(a)
Yonkers	143,452,543	59,312,978	26,654,767	229,420,288	3,389,000
Tappan Zee	138,000,768	62,125,705	121,684,992	321,811,465	20,446,000
Croton-Haverstraw	61,309,016	32,517,633	53,910,105	147,736,754	12,101,000
Indian Point	162,269,471	33,418,632	12,648,163	208,336,266	4,147,000
West Point	178,830,022	25,977,862	2,647,885	207,455,769	1,186,000
Cornwall	94,882,267	36,768,629	8,140,123	139,791,019	4,793,000
Poughkeepsie	228,975,052	63,168,132	5,990,260	298,133,444	3,193,000
Hyde Park	131,165,041	32,012,000	2,307,625	165,484,666	558,000
Kingston	93,657,021	35,479,990	12,332,868	141,469,879	3,874,000
Saugerties	113,143,296	42,845,077	20,307,338	176,295,711	7,900,000
Catskill	83,924,081	42,281,206	34,526,456	160,731,743	8,854,000
Albany	32,025,080	13,517,183	25,606,842	71,149,105	6,114,000
Total	1,603,443,480	527,880,156	345,505,257	2,476,828,893	76,555,000

a. Shorezone surface area is unknown and not used in data analysis as no beach seine sampling is performed in the Battery region. Estimation of strata volumes for the Battery Region is described in the 1989 Year Class Report (EA 1990).

2.5.2.2 Standing Crop Estimates

An index of standing crop (the number of fish in an area at a particular time) was estimated by life stage and species for each of the three surveys. Standing crop indices and the associated standard errors were calculated for each stratum in a region by taking the product of the average stratum density (or the standard error) and the volume of water contained in that stratum (Equations 11 and 12 for the LRS and FSS) (Table 2-11). The regional standing crop index was then estimated as the sum of the stratum index values (Equations 13 and 14). Similarly, an estimate of the standing crop index for the Hudson River estuary for each week was calculated by summing the standing crops for the 13 (12 for the BSS) river regions (Equations 15 and 16). This value is an index rather than an absolute standing crop value because no adjustment was applied for collection efficiency.

$$SC_{krw} = (V_{kr})(D_{krw}) \qquad (11)$$

where

SC_{krw} = Standing crop index for stratum k in region r during week w.

V_{kr} = River volume contained by stratum k in region r.

D_{krw} = Average stratum density calculated in Equation 5.

$$SE(SC_{krw}) = (V_{kr})[SE(D_{krw})] \qquad (12)$$

where

$SE(SC_{krw})$ = Standard error of the standing crop index for stratum k in region r during week w.

$SE(D_{krw})$ = Standard error of average stratum density calculated in Equation 6.

$$SC_{rw}^{**} = \sum_{k=1}^{3} SC_{krw} \qquad (13)$$

where

SC_{rw} = Standing crop index for region r during week w.

SC_{krw} = Stratum standing crop index calculated in Equation 11.

** Volumes of unsampled strata were added to the volumes of an adjacent stratum according to the rules for stratum volumes in Section 2.5.2.

$$SE(SC)_{rw}{}^{**} = \sqrt{\sum_{k=1}^{3}[SE(SC_{krw})]^2} \tag{14}$$

where

$SE(SC_{rw})$ = Standard error of standing crop index for region r during week w.

$SE(SC_{krw})$ = Standard error of stratum standing crop index calculated in Equation 12.

$$SC_w = \sum_{r=1}^{12} SC_{rw} \tag{15}$$

where

SC_w = Standing crop index for week w. For the LRS and FSS, regional standing crop indices include the Battery Region (r=0).

SC_{rw} = Regional standing crop index calculated in Equations 13 or 17.

$$SE(SC_w) = \sqrt{\sum_{r=1}^{12}[SE(SC_{rw})]^2} \tag{16}$$

where

$SE(SC_w)$ = Standard error of standing crop index for week w. For the LRS and FSS, regional standing crop indices include the Battery Region (r=0).

$SE(SC_{rw})$ = Standard error of regional standing crop index calculated in Equations 14 or 18.

An index of regional standing crop (and standard error) for the BSS was obtained by multiplying CPUE and the surface area of the shorezone and dividing by the empirically derived estimate of the area sampled by the 30.5-m beach seine (Equations 17 and 18). The weekly index of standing crop for the shorezone was calculated as the sum of the 12 regional standing crops (Equations 15 and 16).

$$SC_{rw} = (C_{rw} A_r) / A \tag{17}$$

where

** Volumes of unsampled strata were added to the volumes of an adjacent stratum according to the rules for stratum volumes in Section 2.5.2.

SC_{rw} = Standing crop index for the shorezone in region r during week w.

C_{rw} = Average regional CPUE calculated in Equation 9.

A_r = Surface area (m^2) of the shorezone in region r.

A = Surface area (m^2) sampled by the beach seine (450 m^2) (TI 1981).

$$SE(SC_{rw}) = \frac{[SE(C_{rw})]\,(A_r)}{A} \qquad (18)$$

where

$SE(SC_{rw})$ = Standard error of standing crop index for the shorezone in region r during week w.

$SE(C_{rw})$ = Standard error of average regional CPUE calculated in Equation 10.

2.5.2.3 Temporal and Geographic Distribution Indices

Distribution indices were computed to facilitate presentation of changes in distribution of selected species and life stages through time and space. To allow comparisons of 1996 data with historical data, only data from samples collected from Weeks 18 to 27 (where Week 1 begins with the first Monday in January) were used for LRS (except for bay anchovy which used Weeks 18-40); data from Weeks 33 to 40 were used for the FSS and BSS. In all cases, data were used only when Regions 1-12 were sampled (except for bay anchovy which included Region 0).

The LRS was used for calculating the temporal and geographic indices for early life stages of striped bass, white perch, Atlantic tomcod, bay anchovy, American shad, *Alosa* spp., and rainbow smelt. The BSS was used to calculate geographical distribution indices for striped bass, white perch, bay anchovy, American shad, alewife, blueback herring, gizzard shad, spottail shiner, and bluefish. The FSS was used to calculate geographical distribution indices for hogchoker, white catfish, and weakfish.

The periods used for the LRS and BSS spanned 1974-1996, whereas the time period for the FSS extended from 1979 (when the FSS sampled the river from RM 12 to RM 152) through 1996. Temporal and geographic indices for bay anchovy from the LRS used the period from 1988 to 1996, when the sampling design included the Battery region.

A geographic index that collapses data over weeks was calculated for LRS, FSS, and BSS data as the relative standing crop in each region. This geographic index was calculated as follows:

$$G_{ry} = \frac{\sum_{w=1}^{n_y} SC_{rwy}}{\sum_{r=1}^{12} \sum_{w=1}^{n_y} SC_{rwy}} \qquad (19)$$

where

G_{ry} = Geographic index for region r in year y.

SC_{rwy} = Regional standing crop index for region r in week w in year y calculated in Equations 13 or 17.

n_y = Number of weeks sampled in year y.

A temporal index that collapses data for the entire Hudson River estuary was computed for early life stages from LRS standing crop indices (Equation 20):

$$T_{wy} = \frac{SC_{wy}}{\sum_{w=1}^{n_y} SC_{wy}} \qquad (20)$$

where

T_{wy} = Temporal index for week w in year y.

SC_{wy} = Weekly standing crop index in year y calculated in Equation 15.

n_y = Number of weeks sampled in year y.

CHAPTER 3
PHYSICAL/CHEMICAL PARAMETERS

This chapter provides information on the parameters of temperature, salinity, and dissolved oxygen as measured during the 1996 surveys. Although parameters were measured with the BSS, emphasis will be placed on data from the LRS/FSS because these surveys encompassed the entire fish sampling period. In addition, freshwater flow data obtained from the U.S. Geological Survey for the Green Island Dam near Troy, New York, and daily water temperature data from the Poughkeepsie Waterworks are discussed. Physical and chemical parameters are presented in Appendix B.

3.1 GREEN ISLAND DAM FLOWS

During 1996, daily freshwater flow estimated by the U.S. Geological Survey for the gauging station at Green Island, New York, ranged from approximately 150 to 3,900 m^3/sec/day (Figure 3-1). The primary peak in daily flows occurred in late January with flows reaching 2,500 to 3,900 m^3/sec/day. Secondary peaks in flow occurred in May and November/December reaching 1,000-2,000 m^3/sec/day. Periods of low daily flows of 100-200 m^3/sec/day began in August and continued through October (Figure 3-1, Appendix Table B-1). The 1996 monthly freshwater flow rates were similar to the long-term (1947-1995) monthly average flow rates, except in December when the 1996 monthly mean exceeded all the long-term averages for that month (Figure 3-1, Appendix Table B-2). The monthly average flow rate in May 1996 (1,081 m^3/sec/day) was the highest observed for May since the Hudson River surveys began in 1974 (Appendix Table B-3).

3.2 POUGHKEEPSIE WATERWORKS TEMPERATURES

Long-term (1951-1996) daily temperature records are available from the Poughkeepsie Waterworks, located just north of the City of Poughkeepsie, New York, at RM 76. The lowest recorded temperature in 1996 was 0.0°C in February (Appendix Table B-4). Water temperatures in 1996 remained relatively low (<4°C) through mid-March, then began increasing in April and reached a high of 25.6°C in August. Temperatures started to decline in September (Figure 3-2).

The 1996 mean water temperature profile generally resembled the long-term (1951-1995) pattern in the winter, spring, and fall (Figure 3-2). However, in the early summer of 1996, water temperatures quickly warmed to about 23°C and then remained at this level for much of the summer, which was considerably cooler than the long-term pattern. A late summer warming trend pushed water temperatures to 25°C until mid-September, which was considerably warmer for this time of year than observed in the long-term pattern.

3.3 HUDSON RIVER SURVEYS

3.3.1 Spatiotemporal Pattern in Temperature

Average weekly water temperature measured during the 1996 LRS/FSS increased from the beginning of sampling in March until mid-June, remained relatively constant until mid-September, and then decreased steadily until the end of the sampling program in October (Figure 3-3). This temporal pattern observed throughout the Hudson River estuary closely reflected that recorded at Poughkeepsie Waterworks.

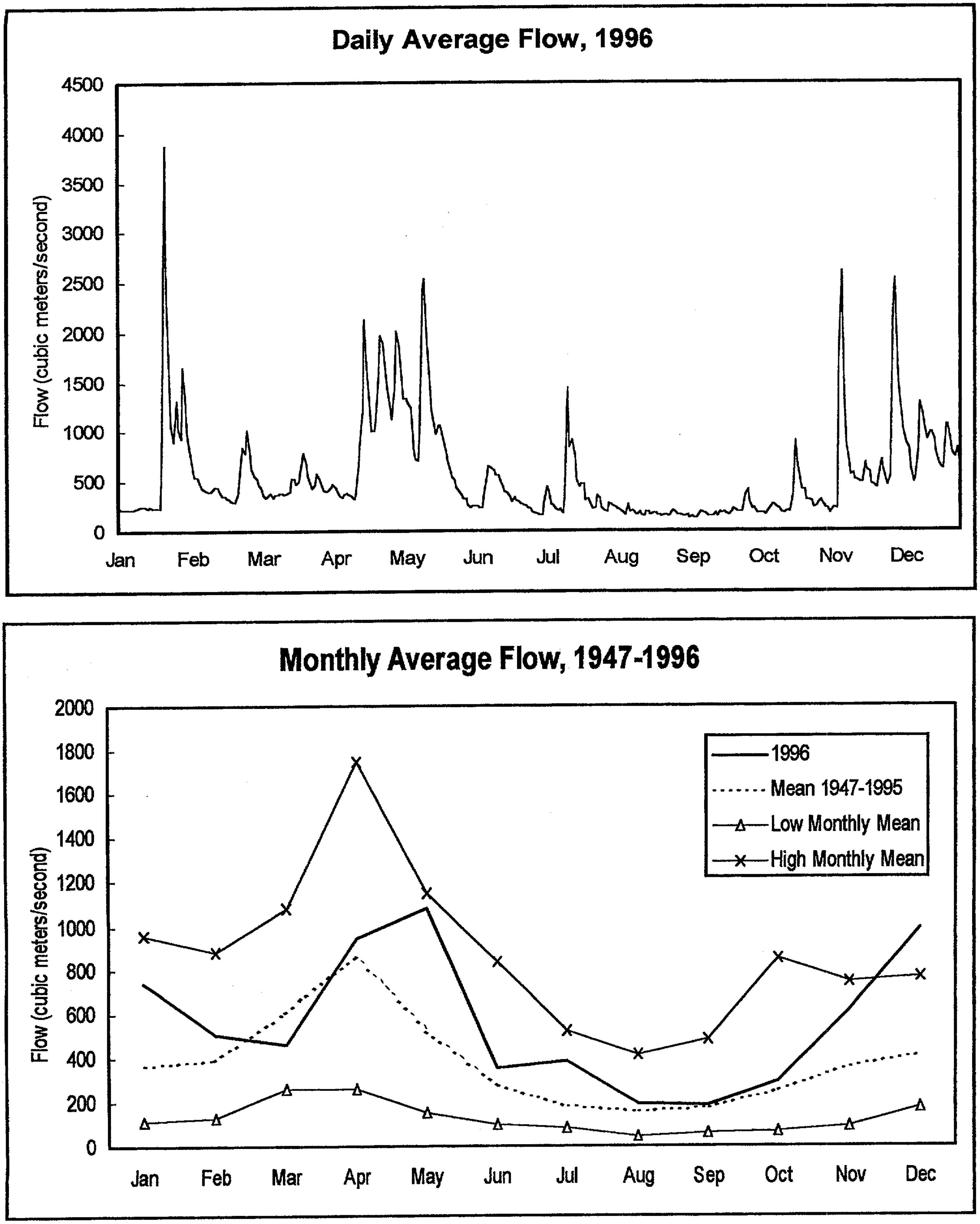


Figure 3-1. Hudson River daily average flow rate in 1996 and monthly average flow rates from 1947 to 1996, Green Island, New York.

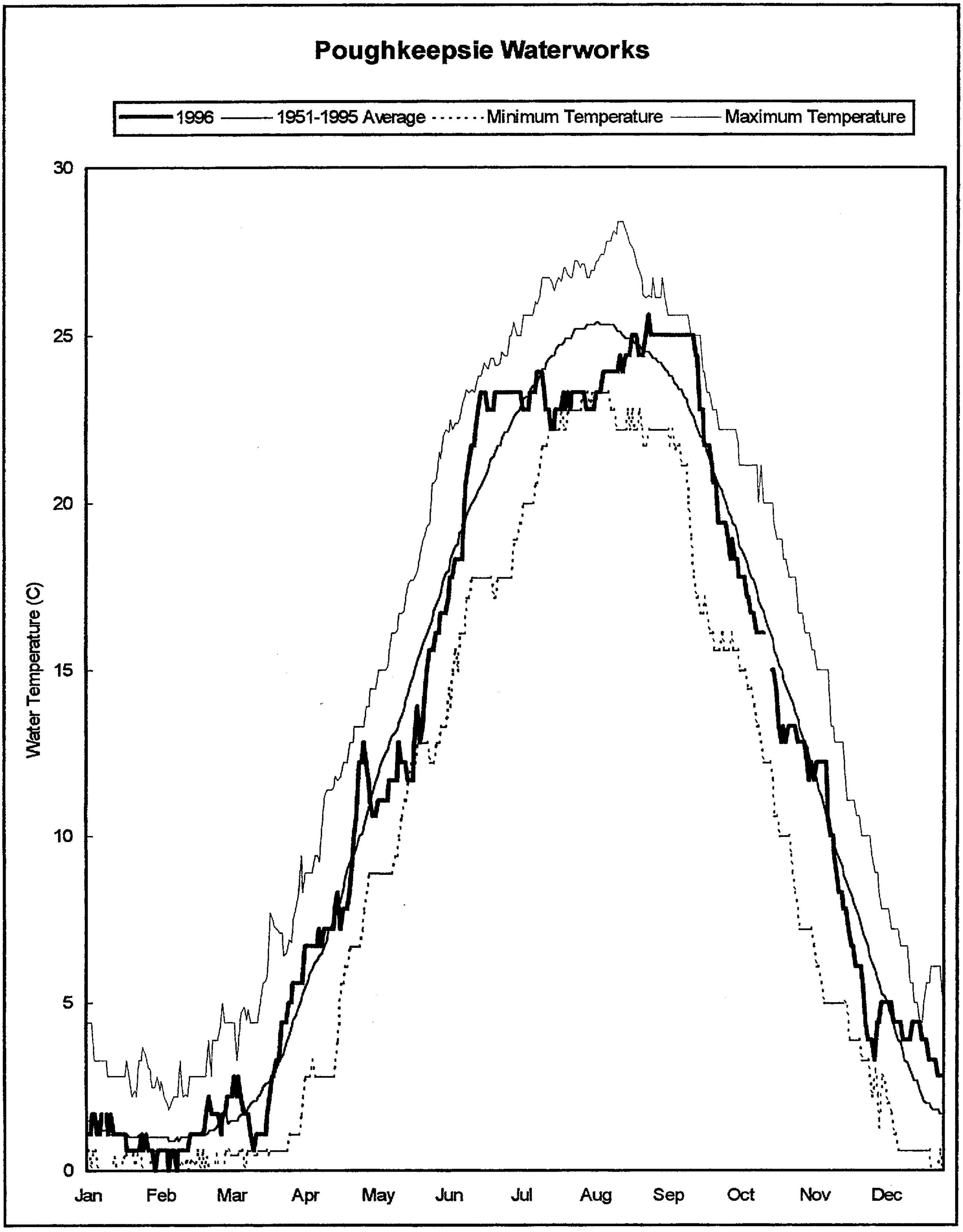


Figure 3-2. Seasonal variations in water temperature from 1951 to 1996 as measured at Poughkeepsie Waterworks.

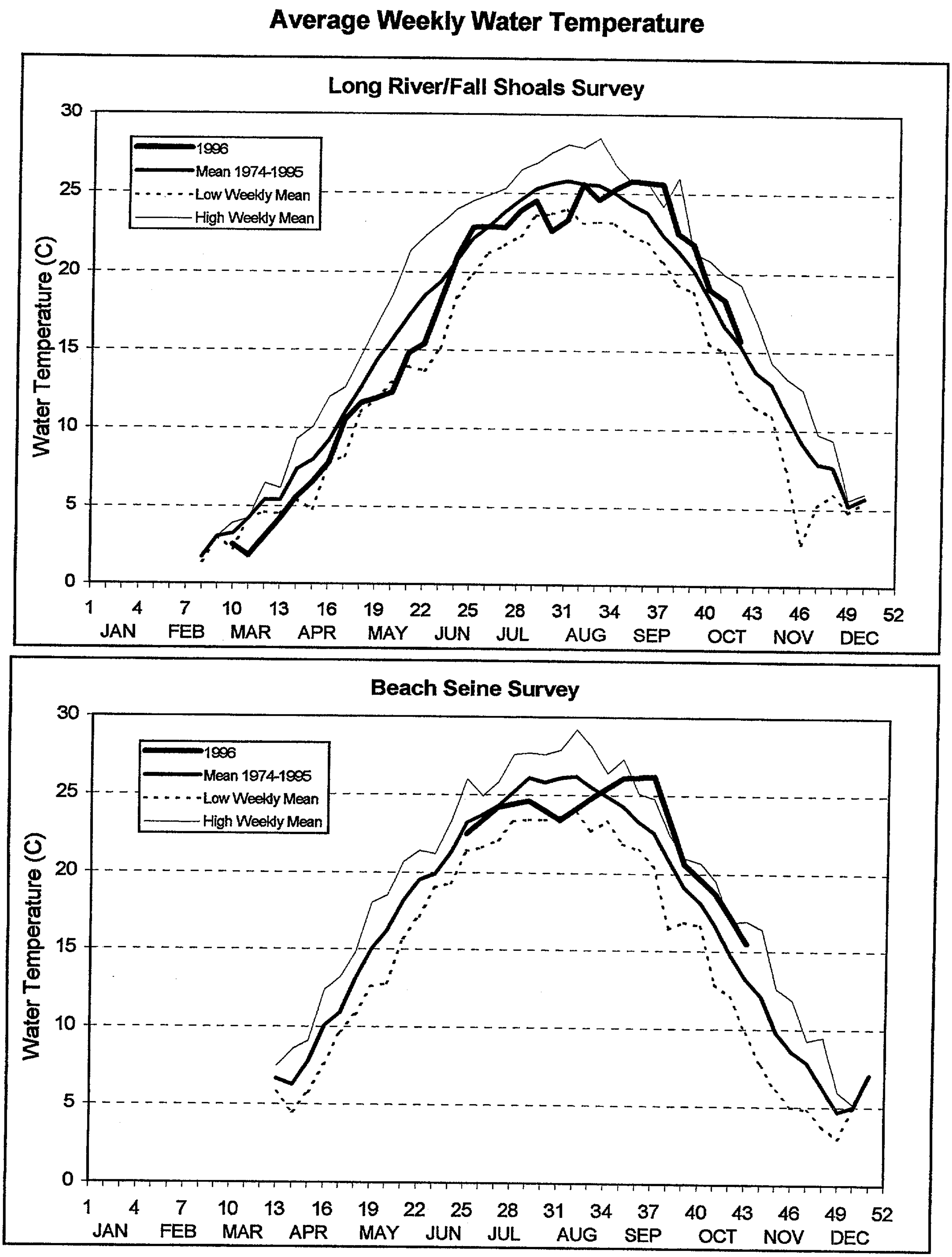


Figure 3-3. Seasonal variations in water temperature from the Hudson River surveys, 1974-1996.

Average weekly temperatures measured during the LRS/FSS were similar to concurrent Poughkeepsie Waterworks temperatures. Peak river temperatures occurred later than usual, as with Poughkeepsie Waterworks, during the week of 2 September when the river-wide mean temperature was 25.8°C and regional mean values were between 23.9 and 26.9°C (Appendix Table B-5). Lowest values occurred during the week of 11 March when the mean temperature in the lower river was 1.8°C and regional mean temperatures from Battery to Cornwall ranged from 0.9 to 2.6°C (Poughkeepsie Waterworks daily temperatures were 0.6-1.1°C for this week). Spring and early summer temperatures in 1996 were cooler than the long-term (1974-1995) average temperatures observed in previous Hudson River surveys, but the late summer and early fall temperatures in 1996 were among some of the highest observed since 1974 (Figure 3-3).

Temporal patterns in the 1996 BSS temperature data resembled the pattern observed with LRS/FSS measurements: early summer temperatures were cooler than the long-term average and late summer temperatures were among the highest observed since the BSS began in 1974 (Figure 3-3). Mean weekly regional temperatures reached a peak near 27°C in the Croton-Haverstraw, Indian Point, and Poughkeepsie regions during the 9 September sampling week (Appendix Table B-6). BSS mean temperatures in 1996 decreased steadily from the summer peak into fall, but were still warmer than the long-term (1974-1995) average temperatures (Figure 3-3). Minimum mean temperatures of 12-14°C were recorded from the uppermost river regions during the last week of sampling that began on 21 October.

3.3.2 Spatiotemporal Pattern in Salinity

Seasonal variations in salinity in 1996 generally resembled the pattern observed in previous years of the Hudson River surveys: decreased salinity in the spring in response to increased freshwater flows, increasing summer levels as freshwater input slows, and finally, decreased salinity in the fall as freshwater discharges increase again. In 1996, salinity values measured during the LRS/FSS were lowest from mid-April to mid-May with salinity levels less than 0.3 ppt in the Yonkers region (Figure 3-4). Salinity values rebounded quickly in late May and remained relatively uniform through the end of sampling in October (Figure 3-4, Appendix Table B-7). The typical fall decrease in salinity was not observed in 1996 even though freshwater flows were near normal for this time of year (Figure 3-1). The northernmost edge of the salt front (i.e., salinity greater than 0.3 ppt) in the Hudson River estuary remained in the Cornwall or West Point regions in 1996.

The spatiotemporal pattern of salinity observed during the 1996 BSS resembled that typically observed during the Hudson River surveys: increasing salinity during the summer and decreasing levels in the fall. Actual salinity measured during the BSS was lower than during the LRS/FSS because of the tendency for the denser, saline water to follow the deeper channel rather than the shorezone area. The shallower, shorezone areas are more responsive to changes in physical/chemical parameters as exemplified by a drop in salinity to less than 1 ppt in the Yonkers region after a sudden increase in freshwater flow during mid-July (Appendix Table B-8). Salinity levels then increased to a late summer peak during the week of 26 August (9.7-1.7 ppt from Yonkers to Indian Point) and decreased slightly during October (Appendix Table B-8). Mean weekly regional salinity was highest in the Yonkers region and decreased upstream.

3.3.3 Spatiotemporal Pattern in Dissolved Oxygen

Dissolved oxygen concentration changes inversely with changes in temperature and salinity. The seasonal pattern of dissolved oxygen typically observed during the Hudson River surveys consists of high concentrations in the spring, declining to minimum values in the summer, and increasing levels in the fall. As temperatures rose in the Spring and Summer of 1996, dissolved oxygen, as recorded in the

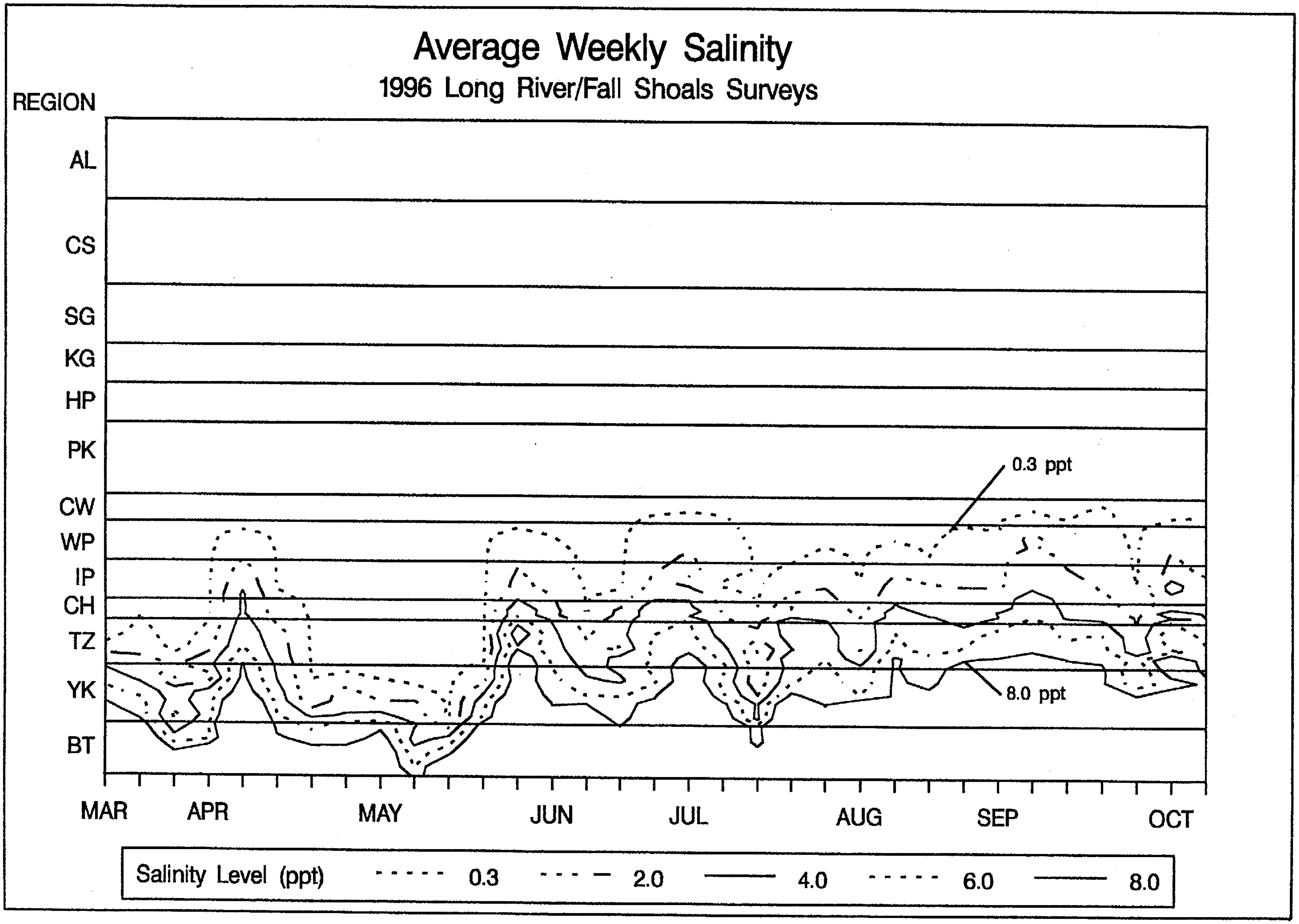


Figure 3-4. Seasonal variations in salinity from the 1996 Long River/Fall Shoals surveys, average weekly values.

LRS/FSS, declined from peak mean weekly regional values of 11.0-12.9 mg/L on 11 March to minimum mean levels of 4.6-6.4 mg/L on 9 September when temperatures and salinity were elevated (Figure 3-5, Appendix Table B-9). Because of the higher temperatures in late summer and fall in 1996, dissolved oxygen concentrations in 1996 were slightly below the long-term (1974-1995) mean values in these seasons (Figure 3-5).

Percent oxygen saturation relates the theoretical limit of oxygen saturation, based on temperature and salinity, to the observed dissolved oxygen concentrations. Mean weekly regional percent saturation based on measurements taken during the LRS/FSS was usually above 85 percent during the spring and early summer, but dropped to between 60-70 percent in the late summer especially in the downriver regions (Appendix Table B-11). Individual mean weekly regional values were never lower than 55 percent, the minimum recorded during the week of 19 August from the Yonkers region.

Data collected in the 1996 BSS (Figure 3-5, Appendix Tables B-10 and B-12) indicated slightly higher mean regional dissolved oxygen and percent oxygen saturation than recorded in the LRS/FSS during the early summer and fall. In many instances, mean regional percent oxygen saturation indicated supersaturated conditions. Turbulence from wave action and oxygen released as a by-product of photosynthesis could be two causes of this supersaturation. However, during the late summer in 1996, percent oxygen saturation levels measured in the BSS were on par with LRS/FSS levels of 60-70 percent. This may be attributed to higher than normal temperatures and dissolved oxygen levels that were among the lowest observed since the inception of the BSS in 1974 (Figure 3-5).

Average Weekly Dissolved Oxygen

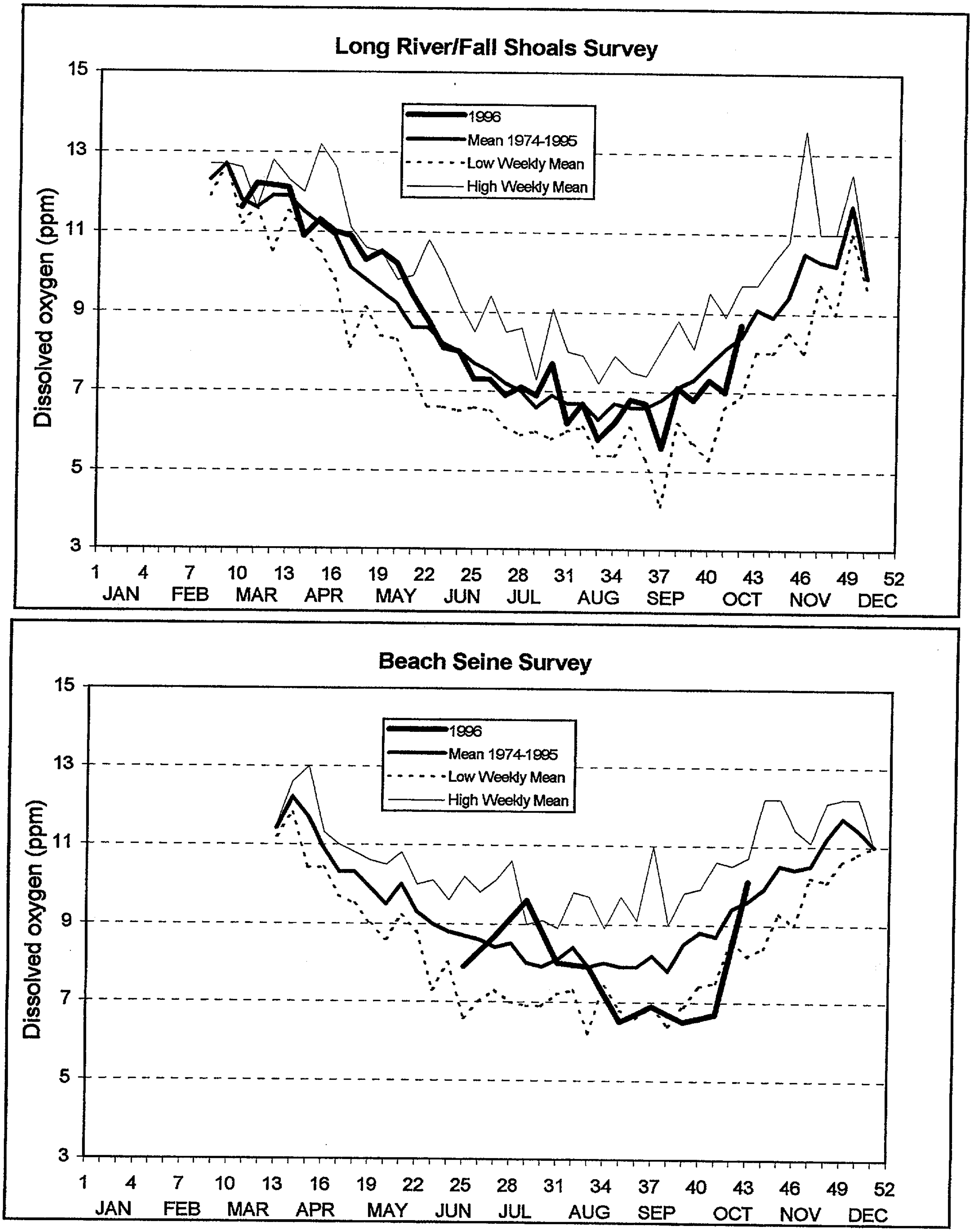


Figure 3-5. Seasonal variations in dissolved oxygen from the Hudson River surveys, 1974-1996.

CHAPTER 4
SPATIOTEMPORAL DISTRIBUTION OF SELECTED SPECIES OF HUDSON RIVER ESTUARY FISHES

4.1 FISH COMMUNITY

4.1.1 General Description of the Fish Community

The fish community of the Hudson River estuary reflects the convergence of the two primary fish habitats: fresh water and salt water. Fish are generally confined to one or the other habitat, but a relatively small number of estuarine and migratory species can pass from one to the other, or live in the narrow zone where there is a gradient between fresh and salt water. As a result of this convergence of different habitats in estuaries such as the Hudson, many species can be found in a relatively small area. The Hudson River estuary's species diversity is enhanced by its mid-latitude location on the Atlantic Coast. Southern tropical marine forms enter the Hudson River during the summer, and a number of northern fishes are near their southern limit.

Smith and Lake (1990) documented the Hudson River fish fauna, including the river upstream of the dam at Green Island and the Mohawk River subsystem. They report 201 species, including 3 known from contiguous waters but not yet reported from the Hudson. Beebe and Savidge (1988), based on sampling through 1980, reported 140 fish species in the Hudson south of the dam at Green Island. Smith and Lake (1990) classified the probable origin of each species, showing that the fish community, particularly in the estuarine reach, is a mixture of both temperate and tropical marine forms, freshwater forms, and intentional and accidental introductions.

The estuary and its tributary streams provide a wide range of chemical, physical, and biological habitat conditions. This diversity is reflected in the range of migratory and movement patterns, reproductive strategies, and food preferences among the members of the fish community. Daniels and Lawrence (1991) grouped 71 Hudson River estuary fish species collected in a variety of sampling programs from 1936 through 1991 into 8 trophic categories (feeding behavior) developed by Grossman et al. (1982): surface feeders, water column feeders, soft-bottom benthic feeders, rocky-bottom feeders, ooze feeders, algae feeders, macrocarnivores, and omnivores. Although this analysis did not include all recorded fish species from the estuary, it illustrates the broad range of feeding behaviors among the members of the Hudson River estuary fish community. Such an array of feeding behaviors reflects a diversity of habitat conditions.

Carlson (1986) identified assemblages of fish species based on 6 habitat types for the freshwater portion of the Hudson River estuary: vegetated backwaters, tributaries, rock pile, shore, offshore shoals and channel, and tailwater. Carlson's assemblages illustrate the diversity of physical habitats in the estuary. A similar analysis for the middle and lower regions of the estuary would show additional physical habitat types, including man-made habitats such as riprap shoreline, bulkheading, and piling clusters associated with piers and docking facilities.

Because many fish species are tolerant of a wide range of habitat conditions and because there are no well-defined boundaries between habitat types, it is useful to classify the fish community into assemblages based on migratory behavior (anadromous and catadromous) and salinity preference (freshwater, estuarine, and marine). In the Hudson River, only the American eel is catadromous; thus discussion is focused on the other four assemblages.

4.1.2 Species Occurrence Through Time

The Hudson River estuary's fish community is species rich. The total number of fish species collected in the Utilities' monitoring program in the Hudson River estuary has varied from 64 to 93 between 1974 and 1996 (Table 4-1). Such high levels of species richness are often used as an indicator of a healthy ecosystem in which habitat and other water quality conditions allow a wide variety of species to occupy the habitat.

Despite the large number of species which can occasionally be found in the estuary, most of the fish are from a limited number of species. In fact, only 10 – 15 percent of the species collected typically account for more than 99 percent of the catch. In an environmentally stable system, low species diversity is often associated with environmental stress. However in highly dynamic and unstable systems like the Hudson River estuary, the biological communities are typically dominated by a few species well adapted to such naturally dynamic systems. Most of the energy in estuaries is directed towards production of a few species, many of which have considerable commercial and recreational importance to man.

In each of the four major fish assemblages (anadromous, freshwater, estuarine, and marine), the persistence of most of the species over long periods of time shows broad-scale suitability of the environment for each assemblage. The fish community in brackish areas of the estuary is dominated by marine species whereas in tidal freshwater areas the fish community is dominated by anadromous species as larvae and young of year and by freshwater and estuarine species as yearling and older. Marine species appear largely limited to areas with salinities greater than 1 ppt, which in the Hudson River typically includes areas downstream from Region 6. Most of the fish production in low salinity brackish and freshwater areas of the estuary during spring and summer is directed towards anadromous species including river herring (alewife and blueback herring), striped bass, and American shad. These anadromous fish leave the estuary in fall of their first year of life leaving the community of older individuals consisting primarily of resident species.

Although the estuarine and anadromous assemblages have fluctuated very little over time, there have been some minor changes in the freshwater and marine assemblages. The disappearance or appearance of species may indicate some change has taken place, such as degradation or improvement of environmental conditions, introduction of competing or exotic species, and overexploitation or proper fisheries management. In the Hudson River estuary, significant changes in habitat (expansion of water chestnut beds), water quality (improvement in New York City wastewater treatment), and fisheries management practices (striped bass) may have contributed to changes in fish assemblages.

The freshwater assemblage has shown fewer species in recent years compared to the years from 1974 to 1980 (Table 4-1). However, the fewest species in this assemblage occurred in 1982 and 1983, and numbers have increased slowly since then. When the individual species in the freshwater assemblage are examined, there are several species that occurred consistently in the early years and not in the later years, such as bluntnose minnow, blacknose dace, redfin pickerel, and trout perch. Conversely, there are several species that were not present in the early years but have been recorded recently, such as brook silverside, channel catfish, and freshwater drum. The cause for the decline in the number of freshwater species sampled in the estuary since the 1970s is not clear, and in fact may be due to changes in the temporal extent of the sampling. In the 1970s, the BSS program began in April and continued through November. In the 1980s, the program typically ran from July or August to October. Alternatively, the expansion of water chestnut beds following cessation of herbicide treatments in the 1970s may have changed the availability of

TABLE 4-1 SPECIES COMPOSITION OF FISH COLLECTED DURING HUDSON RIVER STUDIES FROM 1974 TO 1996

Common Name	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Fresh Water																							
Banded killifish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Black bullhead				X				X			X	X											
Black crappie	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Blacknose dace	X	X	X	X	X	X	X					X		X	X								
Bluegill		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Bluntnose minnow	X	X	X	X	X	X	X														X		X
Bridle shiner	X		X						X														
Brook silverside																					X	X	X
Brook stickleback	X	X	X	X				X								X							
Brook trout				X	X													X					
Brown bullhead	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brown trout			X	X	X	X	X	X				X					X	X	X		X	X	
Carp			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Central mudminnow			X				X							X									
Chain pickerel	X	X	X	X	X	X	X	X	X		X					X			X			X	X
Channel catfish	X							X					X	X	X	X	X	X	X	X	X	X	X
Comely shiner	X						X													X			
Common shiner	X	X	X	X	X	X	X	X		X					X		X		X	X			
Creek chub		X	X	X	X	X	X			X		X						X		X		X	X
Cutlips minnow	X	X	X	X	X	X									X	X							
Eastern mudminnow		X					X																
Emerald shiner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Fallfish		X	X	X	X	X	X	X	X	X				X				X	X	X	X	X	X
Fathead minnow	X	X	X	X	X	X	X					X	X			X					X		X
Freshwater drum																X			X	X	X	X	X
Gizzard shad	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Golden shiner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Goldfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Grass pickerel	X				X												X						
Green sunfish		X		X			X								X								
Largemouth bass	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Logperch	X		X	X		X	X			X					X	X			X	X			X
Longear sunfish																	X						
Longnose dace		X	X	X	X				X			X											
Margined madtom														X				X			X		
Mimic shiner	X																						X
Northern hog sucker	X		X	X	X		X	X			X			X	X		X	X	X				X
Northern pike	X	X	X	X	X	X	X		X				X	X	X	X	X	X	X	X	X		X
Pugnose shiner																		X					
Pumpkinseed	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rainbow trout						X																X	
Redbreast sunfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Redfin pickerel	X	X	X	X	X	X	X	X	X		X				X			X					X
Rock bass	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
Rosyface shiner	X																						
Satinfin shiner	X	X	X	X	X	X	X				X	X	X		X		X			X		X	X
Shield darter							X																
Silvery minnow	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Smallmouth bass	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

TABLE 4-1 (Continued)

Common Name	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Spotfin shiner	X	X	X	X	X	X	X	X			X	X	X	X	X					X	X	X	X
Spottail shiner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Swallowtail shiner																			X				
Tessellated darter	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tiger muskellunge																			X			X	X
Trout perch	X	X	X	X	X	X					X												
Walleye			X	X	X	X				X	X			X		X		X	X	X	X		X
White bass				X																			
White catfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
White crappie	X	X	X	X	X	X	X	X			X		X	X	X		X	X	X		X		
White sucker	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Yellow bullhead		X						X								X						X	
Yellow perch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total	39	39	42	44	40	38	40	32	25	25	29	28	27	29	32	30	29	31	33	31	32	31	37
Marine																							
American sandlance													X	X	X	X	X	X	X		X	X	X
Ammodytes sp.		X	X	X	X	X	X	X				X											
Atlantic cod							X							X	X								
Atlantic croaker			X	X		X						X	X	X		X	X		X	X	X	X	X
Atlantic herring		X	X		X	X			X				X	X	X	X	X	X	X	X	X	X	X
Atlantic mackerel															X			X	X				X
Atlantic menhaden	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic needlefish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic silverside	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Bay anchovy	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Black seabass					X							X			X						X		
Blackcheek tonguefish																			X				
Bluefish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Butterfish	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Conger eel						X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Crevalle jack	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cunner									X	X	X	X	X		X	X	X	X	X	X	X	X	X
Fourbeard rockling						X	X								X	X	X	X	X	X	X	X	X
Fourspot flounder	X						X	X			X	X	X		X	X	X				X		
Goosefish																		X	X				
Gray snapper							X					X	X	X									
Grubby													X		X	X	X	X	X	X	X	X	X
Hickory shad		X			X	X				X			X									X	X
Inshore lizardfish	X					X	X	X			X	X			X	X		X	X	X	X	X	
Lined seahorse															X		X	X				X	
Longhorn sculpin	X	X								X						X				X			
Lookdown	X	X	X	X		X	X	X				X	X	X	X	X	X				X		
Moonfish			X										X	X		X			X		X		
Naked goby	X		X								X	X	X	X	X	X	X	X	X	X	X	X	X
Northern kingfish	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Northern pipefish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Northern puffer		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Northern searobin			X		X		X	X	X		X		X	X	X	X	X	X		X	X	X	X
Northern stargazer	X						X		X	X	X	X			X		X	X	X	X	X	X	X

TABLE 4-1 (Continued)

Common Name	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Orangespotted filefish													X										
Oyster toadfish																			X			X	X
Permit																			X	X			
Pinfish																						X	
Pollack		X																					
Red hake	X		X			X	X	X			X	X			X	X	X		X	X			X
Rock gunnel			X	X											X	X	X	X	X			X	X
Rough silverside		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Scup	X																					X	
Sea raven							X																
Searobin unidentified		X	X		X		X	X							X		X	X					
Seaboard goby		X	X				X								X			X	X	X		X	
Sharptail goby																	X						
Sheepshead								X															
Silver hake	X	X		X									X		X	X	X	X					X
Silver perch	X					X					X	X	X		X			X	X	X	X	X	X
Smallmouth flounder						X	X		X		X	X			X		X	X	X	X	X	X	X
Spanish mackerel																	X	X		X	X		
Speckled worm eel					X		X				X			X	X								X
Spot	X	X	X	X			X		X	X		X	X	X	X		X	X	X	X	X		X
Spotfin butterflyfish									X			X										X	
Spotfin mojarra									X												X		
Spotted goatfish																				X			
Spotted hake							X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
Striped anchovy		X				X			X			X							X	X	X	X	X
Striped cuskeel							X					X	X	X	X	X		X	X	X		X	X
Striped killifish			X																X				
Striped mullet	X		X	X		X	X	X	X	X	X	X	X	X	X			X				X	
Striped burrfish													X										
Striped searobin		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Summer flounder	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Tautog		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Weakfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
White mullet	X	X	X	X	X	X	X		X	X	X	X	X			X	X	X		X			
Windowpane	X	X		X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Winter flounder	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Witch flounder																							X
Yellowtail flounder	X																		X		X	X	X
Total	27	29	29	24	22	31	37	28	29	24	32	39	40	32	45	37	40	43	44	40	39	43	42
Estuarine																							
Fat sleeper													X										
Fourspine stickleback	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hogchoker	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

TABLE 4-1 (Continued)

Common Name	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Inland silverside	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mummichog	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shortnose sturgeon	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Threespine stickleback	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
White perch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total	7	6	7	7	6	7	7	7	7	7	7	7	8	7	7	7	7	7	7	7	6	7	7
Catadromous																							
American eel	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Anadromous																							
Alewife	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
American shad	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic sturgeon	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic tomcod	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Blueback herring	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rainbow smelt	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Sea lamprey	X	X				X	X	X			X				X		X						
Striped bass	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total	8	8	7	7	7	8	8	8	7	7	8	7	7	7	8	7	8	7	7	7	7	7	6
All Categories																							
Total	82	83	85	82	75	84	93	75	68	64	76	81	82	75	93	82	85	89	92	86	85	89	93

preferred habitat for some species in shallow freshwater areas of the estuary, which may have been a contributing factor to the apparent decline in species richness.

The dominant freshwater species collected in the Utilities' monitoring program were spottail shiner and tessellated darter (Appendix Tables C-1 through C-3). These two species also dominated the freshwater assemblages of near-shore collections in fisheries surveys conducted in 1936 and 1990 (Daniels and Lawrence 1991), but ranked density for these species especially from upper regions of the Hudson River has been lower in recent years than in the earlier years of the monitoring program (Pace et al. 1993). There is a general perception among some Hudson River fishermen and the lay public that abundance of several species of fish, amphibians, and invertebrates in the upper areas of the estuary has declined severely from prior levels. However, independent investigators analyzing the abundance levels of seven species from the Utilities' monitoring data concluded that there was no general pattern of abundance over time, suggesting that there has been no river wide fish decline (Pace et al. 1993).

The number of species in the marine assemblage shows more year-to-year variation, but overall there is a trend toward more marine species (Table 4-1). As expected, the largest increase in marine species occurred in the downstream sampling regions. Among the recent recruits to the marine assemblage are cunner, grubby, spotted hake, and naked goby. The opposing trends in the number of freshwater and marine species could be related to the shift in annual freshwater inflow. During the 1970s, when the number of freshwater species was relatively high, freshwater flow was higher than normal. In the 1980s, freshwater flow was typically below normal, and freshwater species declined while the number of marine species increased. Additionally, due to increased treatment of sewage in New York City, dissolved oxygen levels have increased at the mouth of the Hudson, increasing the potential for movement of marine fish into the estuary. Extension of the LRS sampling program in 1988 and the FSS sampling program in 1996 into the more saline portion of the Hudson River estuary, the Battery region, also increased the possibility of collecting more marine species.

The dominant marine species collected in the Utilities' monitoring program was bay anchovy (Appendix Tables C-1 through C-3). Likewise, in 1968, bay anchovy was the principal species in trawl collections south of the Indian Point region (RM 40) (Carlson and McCann 1969). Overall abundance has increased in brackish areas of the estuary since the monitoring program began in 1974, largely as a result of recent increases in the abundance of bay anchovy and Atlantic silverside, both important prey species in inshore marine systems. Reasons for these apparent changes are unknown. However, much of the change appears to have occurred since 1990, a date which coincides with completion of major wastewater treatment facility upgrades in New York City. Perhaps improvements in water quality contributed to increased overall abundance of these two species.

Estuarine species are generally euryhaline, year-round residents of the Hudson River fish community. Dominant species in the estuarine assemblage as collected in the Utilities' monitoring program included white perch, banded killifish, Atlantic silverside, and hogchoker (Appendix Tables C-1 through C-3). White perch and banded killifish were also dominant in near-shore collections in 1936 and 1990 (Daniels and Lawrence 1991) as well as 1966 (Carlson and McCann 1969). Abundance of Atlantic silverside, as noted above, has been increasing in recent years, whereas banded killifish have been found in lower abundance in recent years (Pace et al. 1993).

Perhaps the most important fish assemblage in the Hudson River estuary is composed of the anadromous species, which use the estuary as spawning and nursery grounds. Adult fish enter the estuary in the spring and migrate upstream to low salinity brackish and freshwaters areas to spawn. The young fish then use the near-shore shoal areas for food and habitat as they make their way downstream and generally leave the estuary in the fall. Most of the energy in the Hudson River estuary is directed towards the production of these anadromous species: striped bass, blueback herring, alewife, American shad, and Atlantic tomcod. The early life stages of these species have dominated catches in the Utilities' monitoring program (Appendix Tables C-1 through C-3). Other investigators have noted that these ubiquitous species, especially blueback herring, comprise the numerically most important species in their study areas (MRL 1970; Heller et al. 1969; Carlson and McCann 1969; Daniels and Lawrence 1991). Curiously, Daniels (undated), in summarizing a 1936 fisheries survey in the Hudson River, noted the near absence of blueback herring from the sampling sites. In the last three decades, blueback herring have been the numerical dominant in most of the summer catches at near-shore sites.

Other species of the anadromous assemblage have shown fluctuations in abundance over the years. Striped bass and perhaps American shad appear to have increased over the period 1974-1989, especially at the larval stage (Pace et al. 1993). Despite their numerical dominance in catches, the overall abundance of blueback herring has declined from 1974 to 1996. Declines in the abundance of this anadromous species appear to have occurred to all stocks throughout their geographic range and appear a result of factors outside of the Hudson, including overfishing in open ocean waters.

In all, it appears that the Hudson River estuary has a healthy and robust fish population. Species richness is high for all life stages as a result of the estuary serving as an interface between fresh and saltwater and between warmer and temperate climatic conditions. On the other hand, species diversity is relatively low reflecting the fact that the individual members of this community are comprised primarily of a limited number of species which are well adapted to the highly dynamic estuarine conditions. Spatially, the composition and abundance of the fish community is largely influenced by salinity with the interface between a marine-dominated and a freshwater-dominated fish community occurring in the reach of the estuary through the Hudson Highlands. However, considerable overlap in the spatial distribution of individual species occurs. There is no evidence of any substantial long-term changes in composition or abundance of the fish community over the 23-year period, 1974-1996.

4.1.3 Species Collected in 1996

Of the 93 species of fish collected in the monitoring program in 1996, 37 were freshwater species, slightly more than in recent years and the most since 1980 (Table 4-1). The marine species in 1996 numbered 42, on par with recent years but considerably more than during the 1970s. The only new species in 1996 was a marine fish, witch flounder, collected in the LRS. The estuarine and diadromous assemblages in 1996 were nearly identical to similar assemblages collected since 1974, with 6 to 8 species in each. The notable exception in 1996 was the absence of rainbow smelt, one of the species selected for in-depth analysis, in any of the surveys. The number of rainbow smelt collected in the last decade has been highly variable, with the FSS collecting between 34 and 2,500 fish and the LRS collecting between 767 and 60,000 organisms (Appendix Tables C-1 and C-2). Other investigators have observed a recent decline in rainbow smelt (Daniels and Lawrence 1991).

Each of the surveys sampled a different habitat within the Hudson River estuary and, therefore, collected different assemblages of fish. More freshwater taxa were collected in the BSS than in the other two surveys and more marine species were captured in the LRS (Table 4-2). Thirty of the 93 species recorded during 1996 were collected in all three sampling surveys, while 40 of the remaining 63 species were collected in only one of the surveys. Of the 37 freshwater species, 14 (38 percent) of them were collected only in the BSS. Likewise, 19 (45 percent) of the 42 marine species were only collected in the LRS.

TABLE 4-2 SPECIES COMPOSITION OF FISH COLLECTED IN EACH OF THE HUDSON RIVER SURVEYS DURING 1996

Common Name	BSS	FSS	LRS
Anadromous			
Alewife	X	X	X
American shad	X	X	X
Atlantic sturgeon		X	X
Atlantic tomcod	X	X	X
Blueback herring	X	X	X
Striped bass	X	X	X
Total	5	6	6
Catadromous			
American eel	X	X	X
Total	1	1	1
Estuarine			
Fourspine stickleback	X	X	X
Hogchoker	X	X	X
Inland silverside	X		X
Mummichog	X		
Shortnose sturgeon		X	X
Threespine stickleback	X		X
White perch	X	X	X
Total	6	4	6
Freshwater			
Banded killifish	X		X
Black crappie	X		X
Bluegill	X	X	
Bluntnose minnow	X		
Brook silverside	X		
Brown bullhead	X	X	X
Carp	X	X	X
Chain pickerel			X
Channel catfish		X	X
Creek chub	X		
Emerald shiner	X		
Fallfish	X		
Fathead minnow	X		
Freshwater drum		X	X
Gizzard shad	X		X
Golden shiner	X	X	X
Goldfish	X		X
Largemouth bass	X	X	
Logperch	X		X
Mimic shiner	X		
Northern hog sucker	X		
Northern pike	X		
Pumpkinseed	X	X	
Redbreast sunfish	X		
Redfin pickerel	X		

TABLE 4-2 (Continued)

Common Name	BSS	FSS	LRS
Freshwater (Continued)			
Rock bass	X		
Satinfin shiner	X	X	X
Silvery minnow	X	X	X
Smallmouth bass	X		
Spotfin shiner	X		
Spottail shiner	X	X	X
Tesselated darter	X	X	X
Tiger muskellunge			X
Walleye	X		X
White catfish	X	X	X
White sucker	X	X	X
Yellow perch	X		X
Total	33	14	20
Marine			
American sand lance			X
Atlantic croaker		X	X
Atlantic herring			X
Atlantic mackerel			X
Atlantic menhaden	X	X	X
Atlantic needlefish	X		
Atlantic silverside	X	X	X
Bay anchovy	X	X	X
Bluefish	X	X	X
Butterfish		X	X
Conger eel		X	X
Crevalle jack	X	X	X
Cunner			X
Fourbeard rockling			X
Grubby			X
Hickory shad	X	X	X
Naked goby			X
Northern kingfish	X		
Northern pipefish	X	X	X
Northern puffer			X
Northern searobin		X	X
Northern stargazer	X		
Oyster toadfish		X	
Red hake			X
Rock gunnel			X
Rough silverside			X
Silver hake			X
Silver perch	X	X	
Smallmouth flounder			X
Speckled worm eel			X
Spot	X	X	X
Spotted hake		X	X
Striped anchovy	X		X
Striped cuskeel			X

TABLE 4-2 (Continued)

Common Name	BSS	FSS	LRS
Marine (Continued)			
Striped searobin			X
Summer flounder	X	X	X
Tautog			X
Weakfish	X	X	X
Windowpane	X	X	X
Winter flounder	X	X	X
Witch flounder			X
Yellowtail flounder			X
Total	17	19	37
Undetermined			
Atherinidae			X
Centrarchidae	X		X
Clupeidae	X	X	X
Cyprinidae		X	X
Fundulus sp.			X
Gobiidae			X
Labridae			X
Menidia sp.			X
Morone sp.	X		X
Minnow	X	X	
Sucker	X		
Total	5	3	9

The dominant species in the monitoring program since the mid-1980s, when the spatial and temporal extent of the programs have been relatively uniform, have remained stable. The early life stages of bay anchovy, striped bass, *Alosa* spp., and white perch dominated the 1996 LRS, as they have in the previous 8 years (Appendix Table C-1). In the LRS, 1996 was a strong year for striped bass, weakfish, Atlantic herring, and Atlantic mackerel. The 1996 FSS was dominated by bay anchovy, blueback herring, hogchoker, and *Alosa* spp. (Appendix Table C-2). These species, along with white perch, striped bass, and Atlantic tomcod, have dominated FSS collections since 1985. In the FSS, 1996 was a strong year for *Alosa* spp., the majority of which were probably blueback herring. Similarly, *Alosa* spp. was the dominant species in the 1996 BSS, with blueback herring and American shad also prevalent (Appendix Table C-3). Other species that were collected in large numbers in the BSS since 1985 included Atlantic silverside, spottail shiner, bay anchovy, white perch, striped bass, and banded killifish. As well as for *Alosa* spp., 1996 was a strong year for American shad and silvery minnow in the BSS.

4.2 STRIPED BASS

Striped bass (*Morone saxatilis*) are anadromous (i.e., they spend most of their life in the marine environment but return to fresh water to reproduce) members of the temperate bass family (the Percichthyidae). They are native to North America and range along the Atlantic Coast from the St. Lawrence River in Canada to the St. Johns River in northern Florida and from western Florida to Louisiana along the coast of the Gulf of Mexico. They were introduced in the Sacramento-San Joaquin River system in 1879 and are now found from British Columbia to Ensalada, Mexico. Striped bass have also been successfully introduced into the inland waters of at least 24 states. The U.S. East Coast rivers and bays that support the principal spawning populations are the Hudson River; Delaware Bay and Delaware River; Chesapeake Bay and tributaries; the Roanoke and Chowan rivers and Albermarle Sound, North Carolina; the Santee River, South Carolina; and the St. Johns River, Florida. Small spawning populations also occur in several river systems in eastern Canada. From 1983 to 1995, the Utilities' striped bass hatchery provided larvae for rearing and stocking by the State of Maine in its efforts to establish striped bass in the Kennebec River.

On the Atlantic Coast adult striped bass, which commonly reach 30 lb and can weigh over 50 lb, feed in nearshore waters from summer through late winter. During the warmer months fish typically travel north and return south as the coastal waters cool in the fall. Northward migration of Hudson River fish extends as far north as the Bay of Fundy, Nova Scotia, and older fish tend to travel farther north. Over the winter adult striped bass tend to aggregate near the mouths of their natal rivers. Once water temperatures rise in the spring, native adults (ages 4 and older) begin moving upriver to spawning areas in the freshwater portions of the estuaries.

Spawning begins in the spring when water temperatures are rising rapidly and reach about 57°F. Peak spawning occurs at about 60-65 °F in freshwater areas where currents are moderate to swift (Albrecht 1964; Setzler et al. 1980). In the Hudson River spawning occurs primarily between mid-May and mid-June in the middle portion of the Hudson River estuary. Depending on their age and size, females produce up to several million semibuoyant eggs that are suspended by currents. The eggs are relatively large (average 1/10 in. in diameter after water hardening), but vary with the size of the female. Older, larger females tend to have larger eggs.

In 1-4 days, depending on temperature, YSL hatch from the eggs. Typically 1/8 in. long, they initially drift with the current but can swim for short bursts. During the YSL stage the eyes become pigmented, the jaws and digestive tract form, fin buds appear, and they at least partially absorb the yolk-sac and oil globule.

Older YSL are mobile and exhibit a positive phototaxis, or movement toward light (Doroshev 1970). The end of the yolk-sac stage is marked by the completion of the digestive tract, although some of the yolk-sac and oil globule may still remain.

During 1996, striped bass YSL were most abundant mid-river, slightly downriver of the location of egg abundance (Figure 4-1; supporting density and standing crop tables for all species are presented in Appendix D). In other years in the Hudson River, however, the peak in yolk-sac abundance was often further upriver than the peak in eggs. The difference in distribution may mean that YSL migrate upriver using tidal currents, although other explanations have been proposed (Polgar et al. 1976; Fay et al. 1983).

Transformation to the PYSL stage occurs from 4 to 9 days after hatching, when the larvae are 1/4 in. long. The remainder of the yolk-sac and oil globule are absorbed, body pigmentation becomes noticeable, fins begin to form, the gas bladder is inflated, and larvae begin to feed actively on zooplankton. This stage lasts approximately one month or longer, ending when the fin rays are fully developed, which occurs when the fish are just over 1/2 in. long. During 1996, striped bass PYSL were most abundant in the lower and middle sections of the estuary (Figure 4-2), but typically they are found throughout the estuary.

Toward the end of the PYSL stage, young striped bass begin moving out of the middle estuary into the lower estuary, which is broader, shallower, and may be more productive, and they feed on copepods and amphipods. This downriver movement of juveniles is evident in the 1996 spatiotemporal distribution pattern seen in both the LRS (Figure 4-2), and BSS and FSS (Figure 4-3). Larger juveniles, over 2-1/2 in. long, feed on insect larvae, worms, opossum shrimps, crabs, and small fish (Gardinier and Hoff 1982). Low numbers of yearling striped bass (and rarely, older-than-yearling fish) were collected in the BSS and FSS throughout the estuary during 1996 (Figures 4-4 and 4-5).

Comparing the temporal distribution of early life stages of striped bass in 1996 with previous years (1974-1995), peak egg density in 1996 corresponded to the historical pattern of peak occurrence in mid- to late May (Figure 4-6). YSL and PYSL abundance in 1996 lagged slightly behind the historical trend, extending into mid-June. YOY abundance fit the temporal composition of the historical pattern, however most of the YOY were collected later in 1996, beyond the temporal limits of this comparison.

Striped bass eggs in the 1996 LRS were primarily in the Hyde Park and Kingston regions with a downriver distribution of eggs to West Point, similar to that observed in the historical trend (Figure 4-7). The YSL and PYSL distribution in 1996 was generally consistent with the pattern seen across years of greatest distribution in the middle estuary. YOY were distributed throughout the Hudson River estuary in 1996 as in previous years, with slightly more YOY found in the West Point region in 1996. The 1996 geographical distribution of YOY, or juvenile, striped bass in the BSS was consistent with the long-term trend (based on data from 1974 to 1995), with the main distribution centered in the Tappan Zee and Croton-Haverstraw regions (Figure 4-8). At the end of their first summer, many of the juvenile striped bass move to the southern extreme of the estuary and are found in New York Harbor, western Long Island Sound, and along the south shore of Long Island (McKown 1992). Yearling and older-than-yearling striped bass in the 1996 BSS were also more prevalent in the lower estuary although a substantial portion of yearlings were found in the middle estuary (Figure 4-8).

Weekly length statistics for young-of-year striped bass collected in 1996 show relatively steady growth from mid-June through the end of BSS/FSS collections in October (Figure 4-9, Appendix Tables E-1 through E-3). Slight variances in the growth curve may reflect size selectivity of the various gears used in

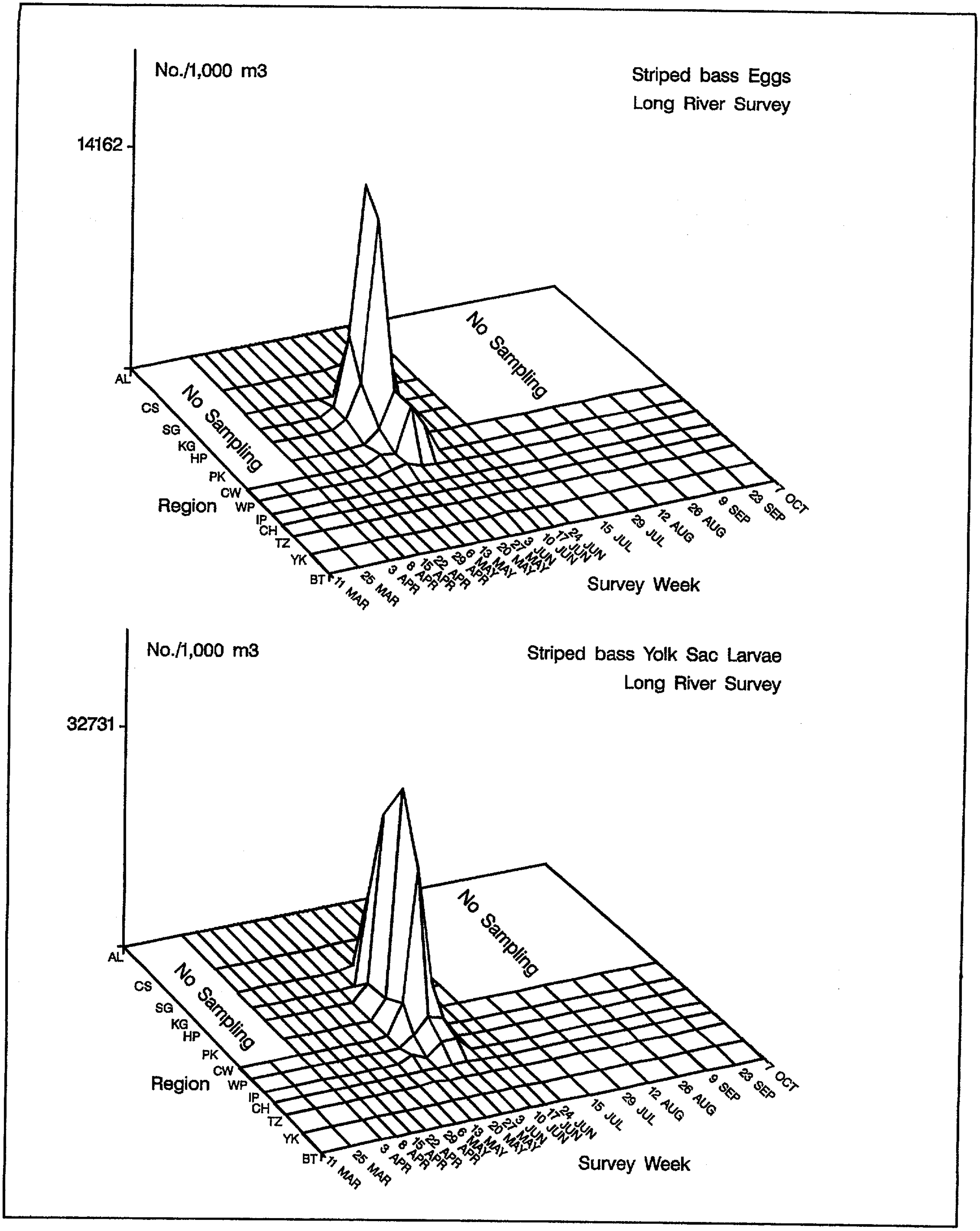


Figure 4-1. Spatiotemporal distribution of eggs and yolk sac larval striped bass in the Hudson River estuary based on the 1996 Long River Survey.

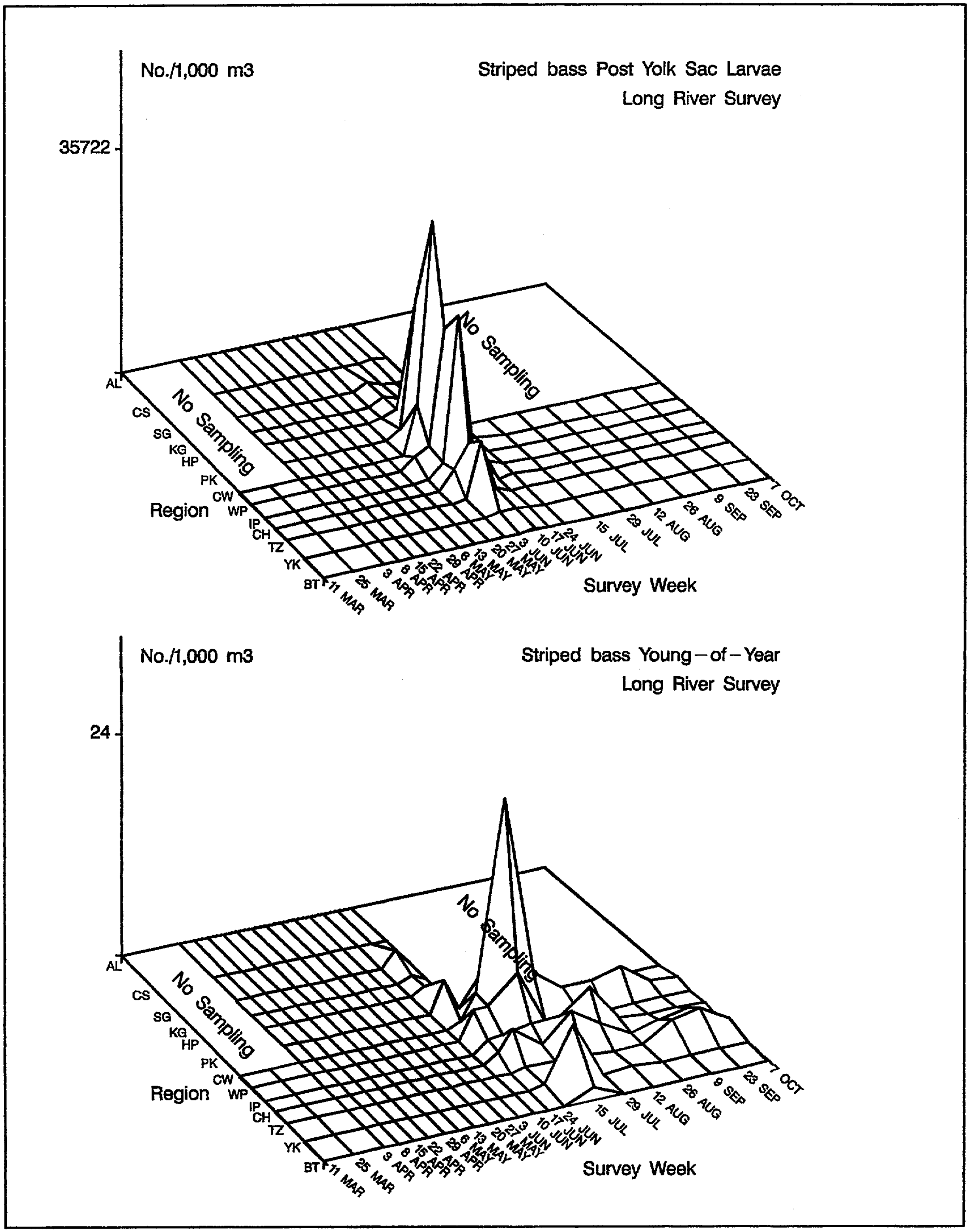


Figure 4-2. Spatiotemporal distribution of post yolk sac larval and young-of-year striped bass in the Hudson River estuary based on the 1996 Long River Survey.

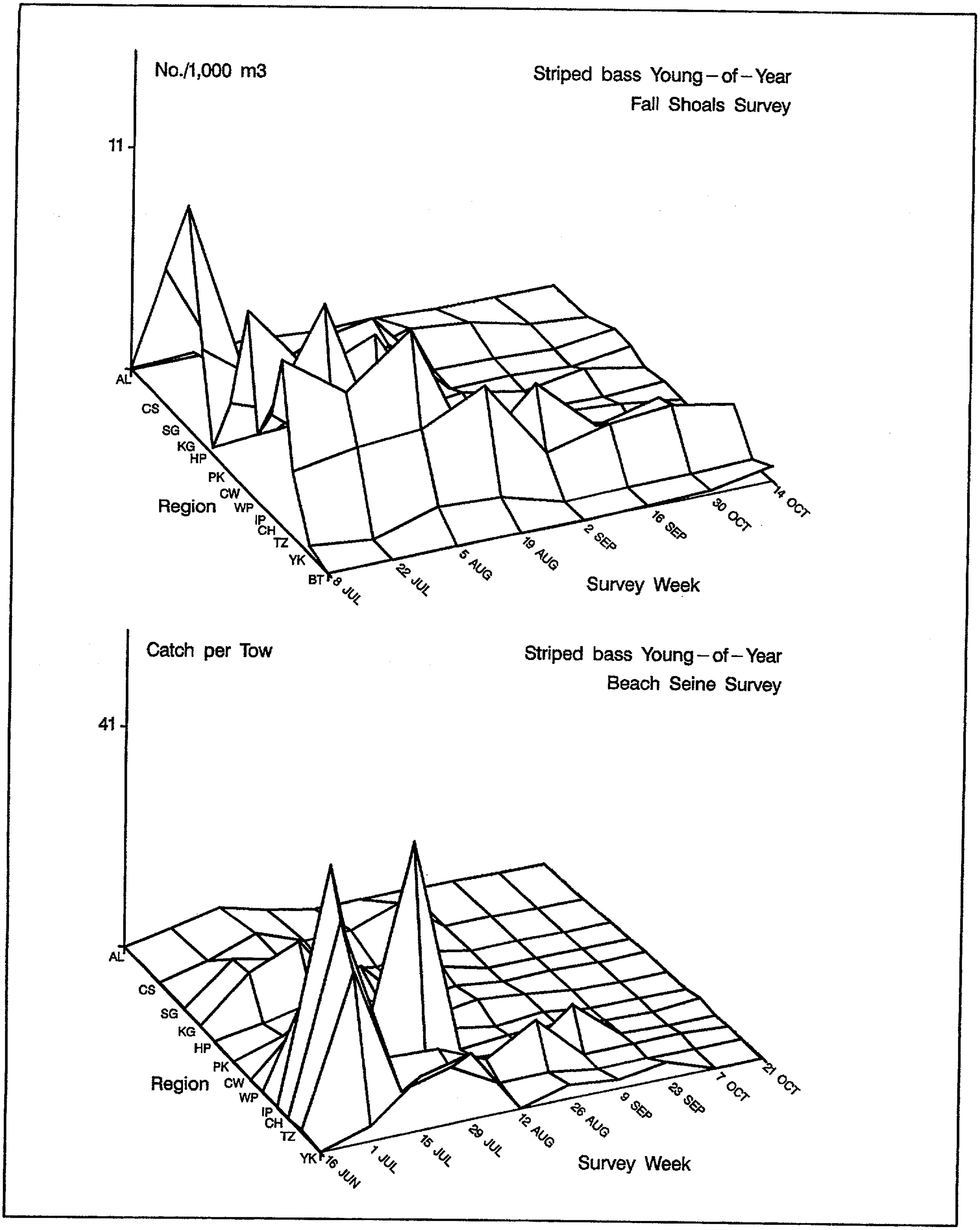


Figure 4-3. Spatiotemporal distribution of young-of-year striped bass in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

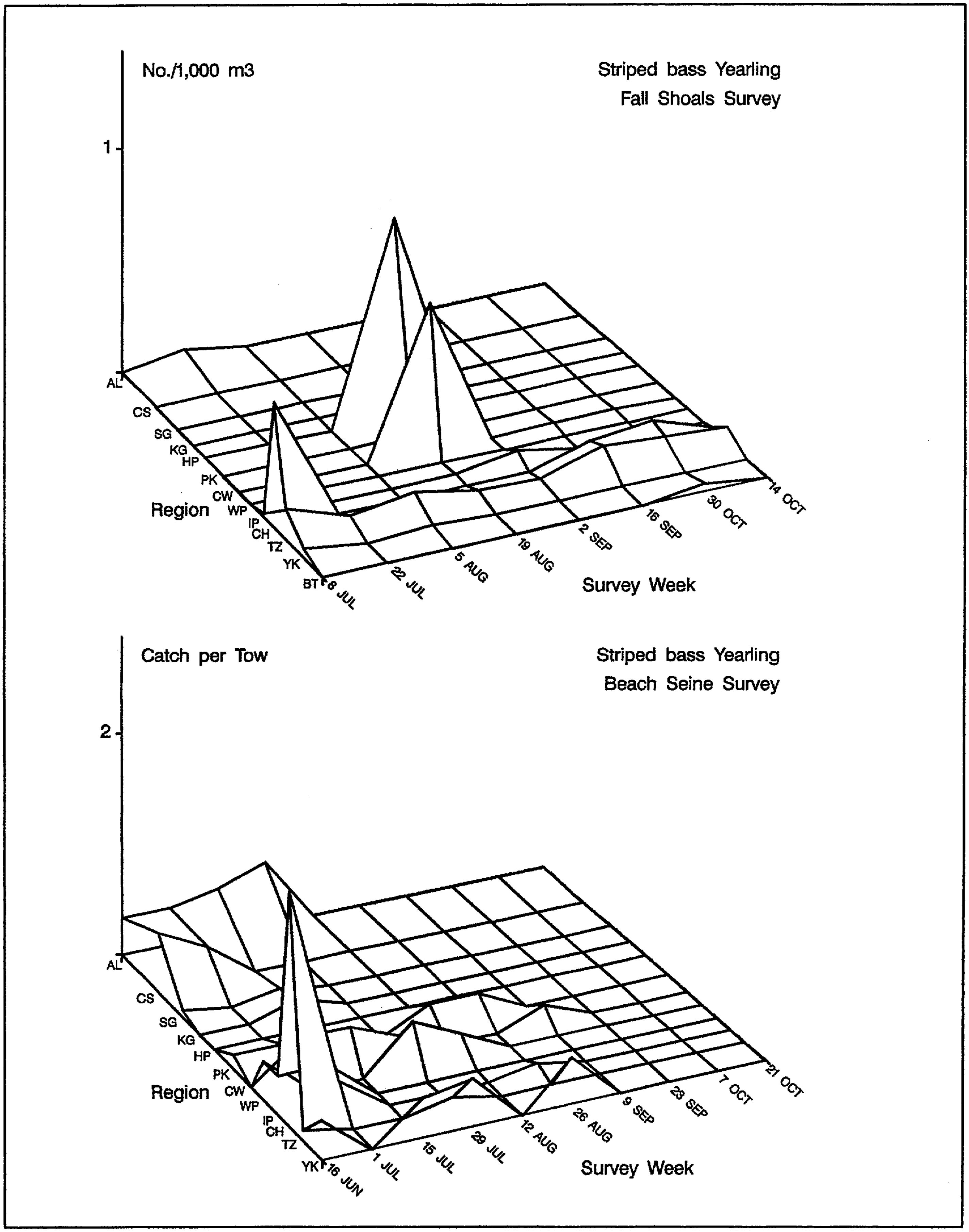


Figure 4–4. Spatiotemporal distribution of yearling striped bass in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

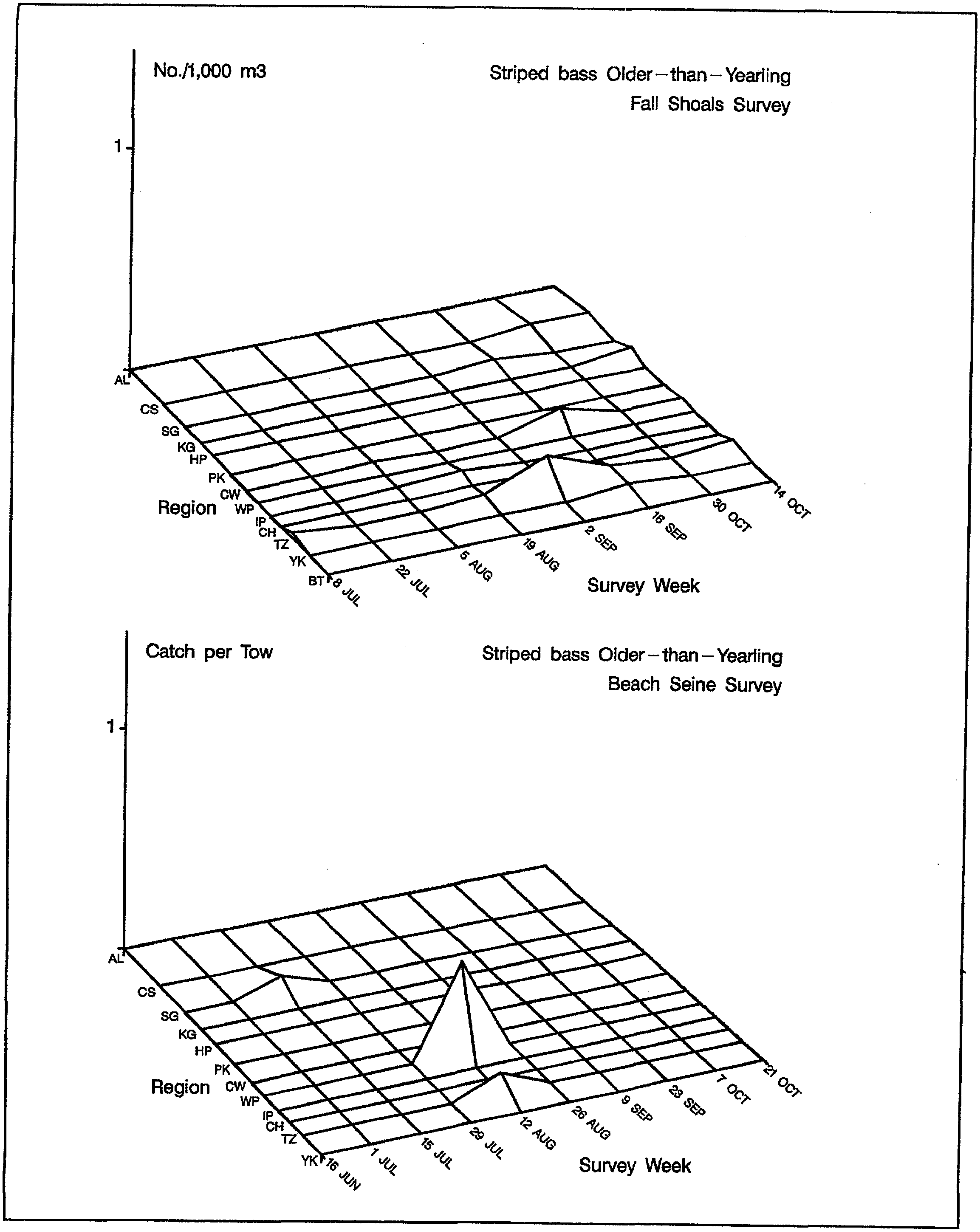


Figure 4-5. Spatiotemporal distribution of older-than-yearling striped bass in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

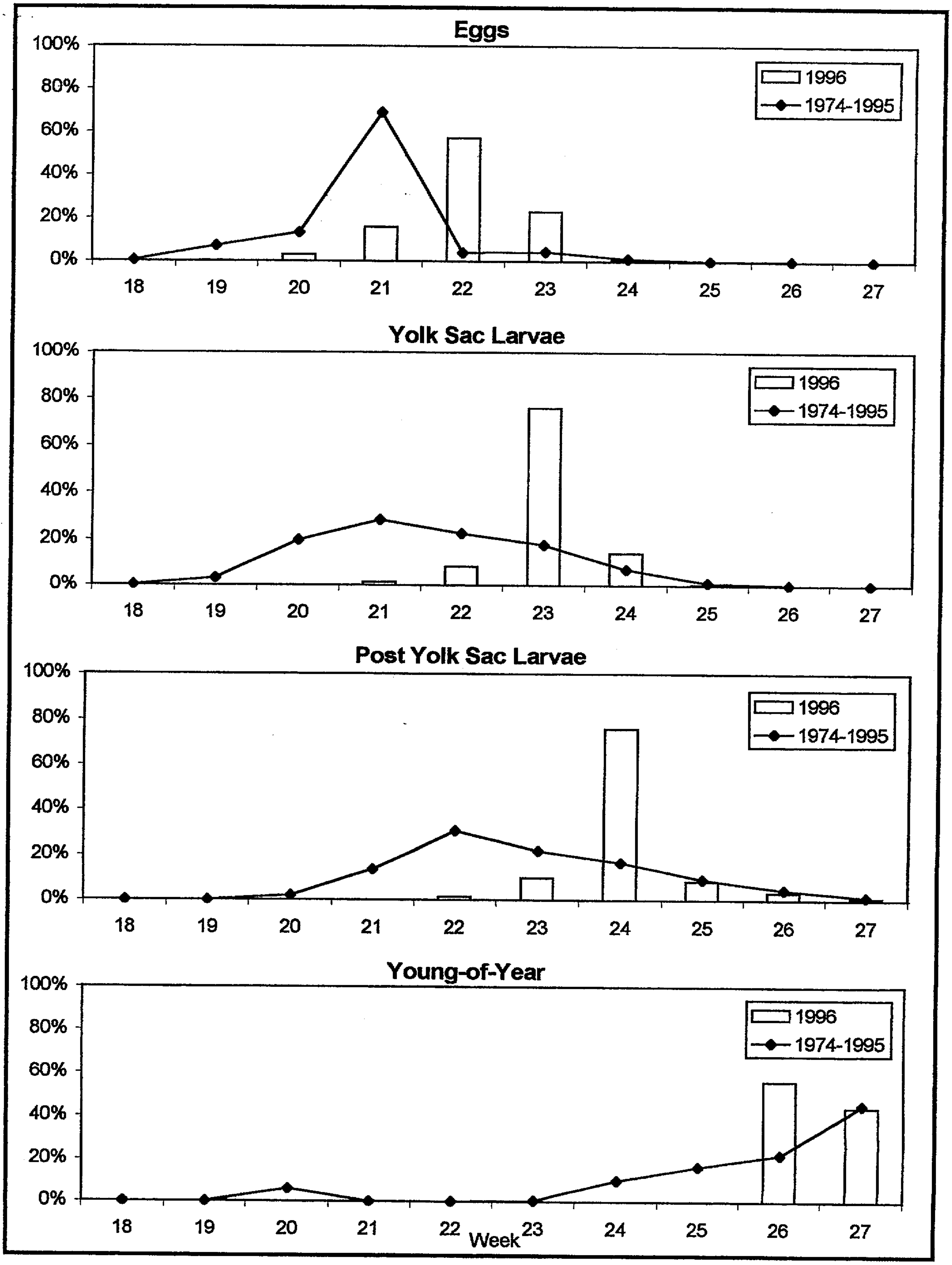


Figure 4-6. Temporal distribution indices for striped bass collected during Long River surveys of the Hudson River estuary, 1974-1996.

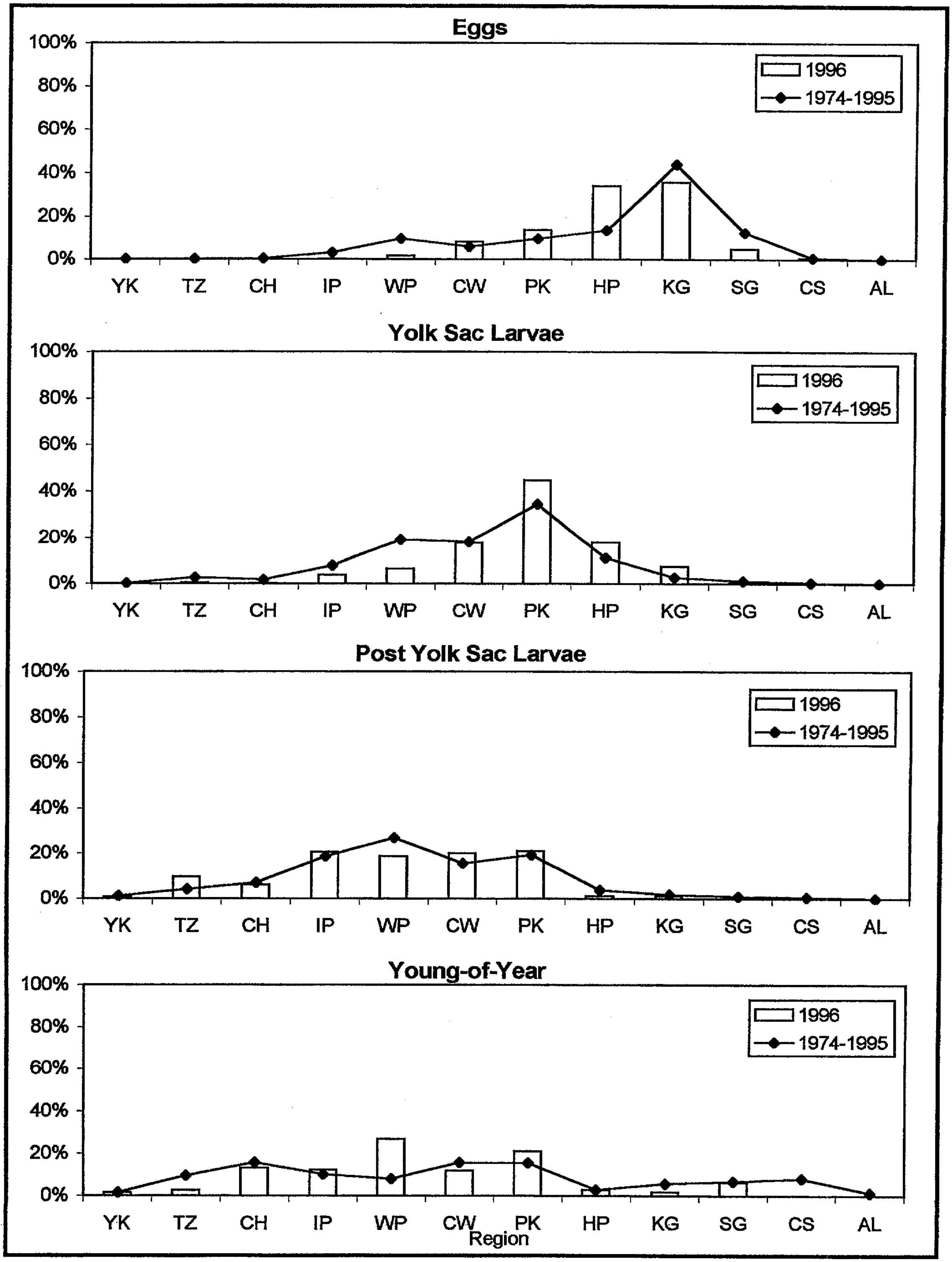


Figure 4-7. Geographic distribution indices for striped bass collected during Long River surveys of the Hudson River estuary, 1974-1996.

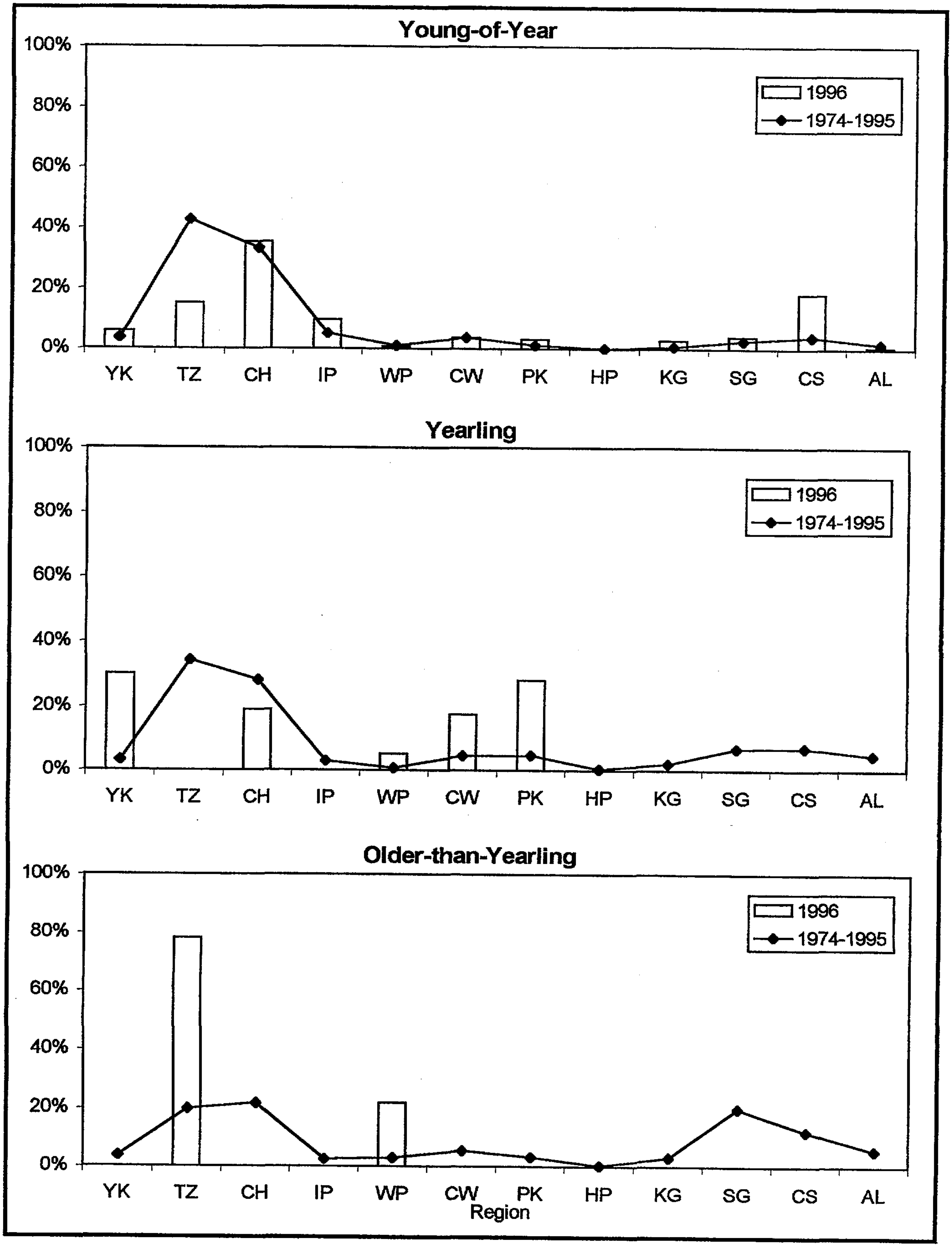


Figure 4-8. Geographic distribution indices for striped bass collected during Beach Seine surveys of the Hudson River estuary, 1974-1996.

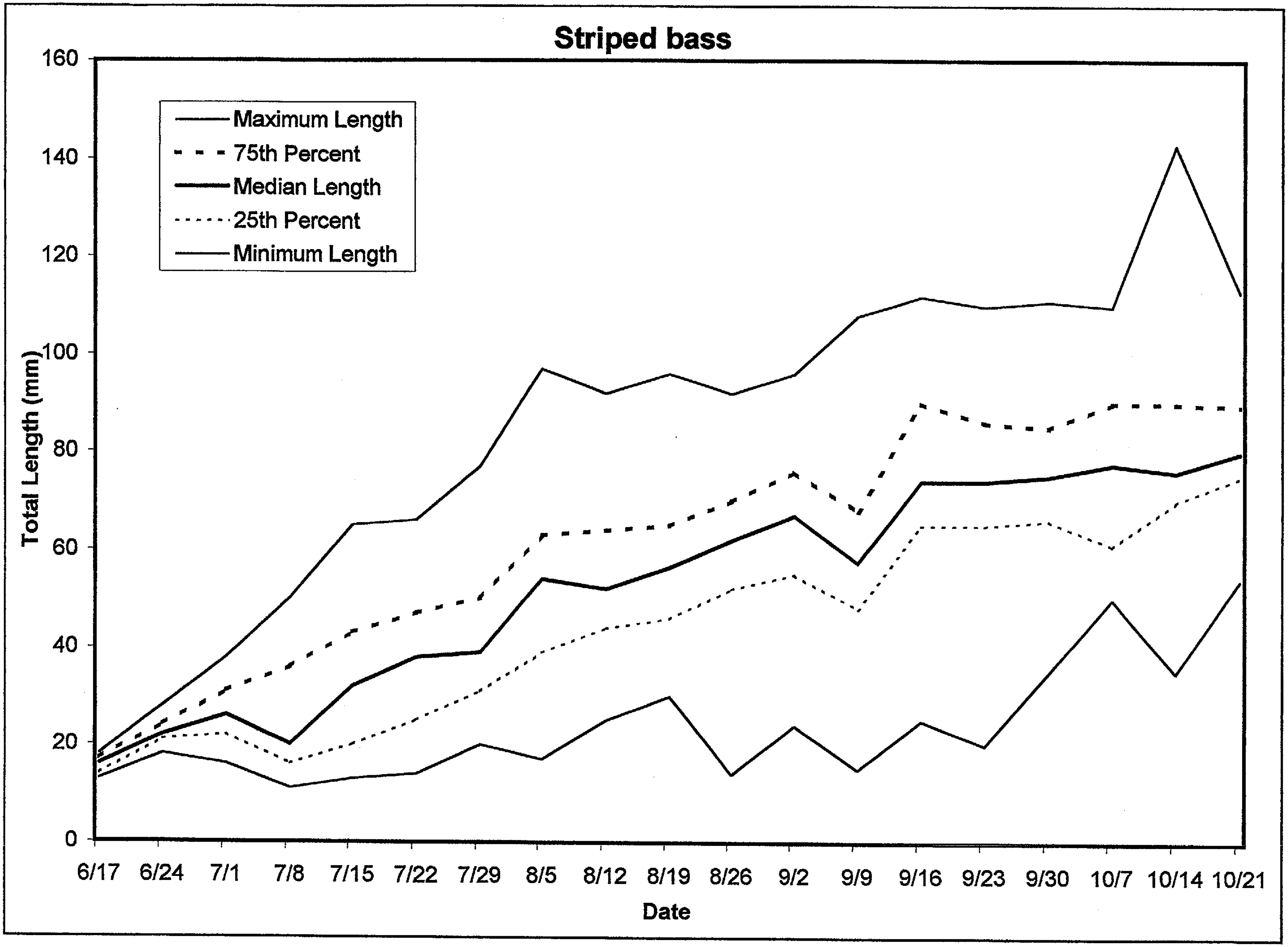


Figure 4-9. Weekly length statistics for young-of-year striped bass in the Hudson River estuary, 1996.

the surveys. As striped bass grow, fish become an increasingly important component of their diet. Juvenile striped bass are also preyed upon by some marine and estuarine predator species.

At age 2 or 3, striped bass leave Atlantic Coast estuaries and begin the typical seasonal migration, northward during the spring and summer and southward during the fall. Adult striped bass are at the top of the food chain and have few natural enemies other than man. Since they rarely go more than 10 mi offshore, they are typically available to sport and commercial fishermen all along their migration route.

4.3 WHITE PERCH

White perch (*Morone americana*) resemble the closely related striped bass in general form and structure but are deeper bodied, more laterally compressed, and have no stripes. Adult white perch are much smaller than adult striped bass, averaging less than 10 in. in length and less than 3 lb in weight. Coloration ranges from dark olive to dark gray on the dorsal surface, shading to silvery white on the belly.

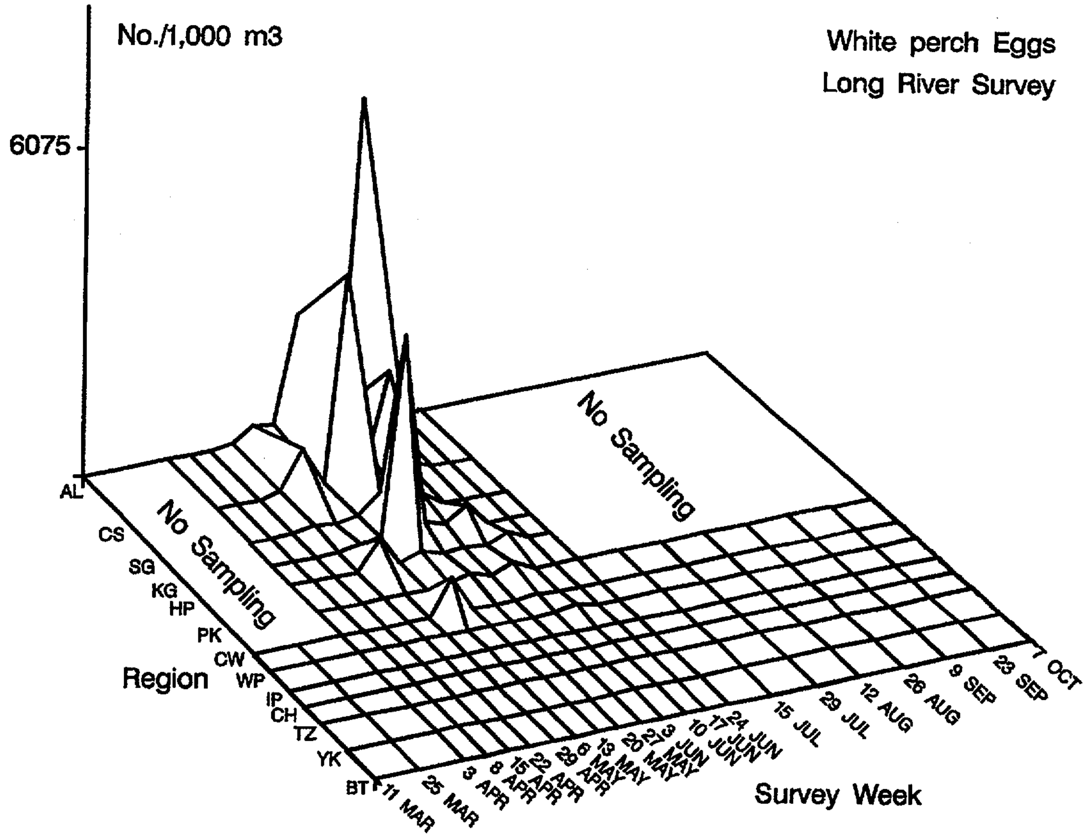
The natural range of this species extends along the Atlantic Coast of North America from the southern Maritime Provinces of Canada and the St. Lawrence River to South Carolina in brackish and freshwater areas near the Coast. White perch are essentially estuarine, but landlocked populations exist in fresh water throughout their range (Mansueti 1964). Freshwater populations predominate in the northern part of the range and white perch are uncommon in salt water north of Cape Cod (Rounsefell 1975). Probably as a result of dispersal through canals, they are now found in Lakes Ontario and Erie (Hubbs and Lagler 1958). They have also been introduced accidentally into the Missouri River drainage (Hergenrader and Bliss 1971).

Coastal populations overwinter in the deeper waters of middle and lower estuaries (Mansueti 1957; Markle 1976). White perch spawn in shallow water following upstream migrations to areas of fresh or slightly brackish waters during the spring and early summer. Spawning also occurs in tributary streams. After spawning, adult white perch generally return to the lower reaches of estuaries. In the Hudson River estuary, spawning occurs from early May to early July, primarily north of Croton Bay. After spawning, many adults move downriver to areas of higher salinity in Haverstraw Bay and the Tappan Zee region.

Female Hudson River white perch produce from 16,000 to 161,000 eggs (Bath and O'Connor 1982). White perch eggs do not contain an oil globule and are small, 1/16 in. in diameter. They sink to the bottom and, because they are very adhesive, stick to each other and to anything else they contact (Mansueti 1964). In the Hudson River during 1996, white perch eggs were most abundant in the upper estuary, but extended to the Cornwall region (Figure 4-10).

Hatching occurs in 1.5-6 days, with development occurring faster at higher temperatures. Newly hatched YSL are from 1/16 to 1/8 in. long. They remain on or near the bottom for 3-5 days and do not move about actively until the yolk-sac is absorbed (Mansueti 1964). White perch YSL were abundant in the upper and middle estuary during 1996, slightly downriver of the location of egg abundance (Figure 4-10). The yolk-sac is completely absorbed when the larvae are a little over 1/8 in. long; the end of the PYSL stage occurs when the adult fin complement develops, usually about one month after hatching and when the young white perch are about 1 in. in length. During 1996, white perch PYSL were present throughout the estuary, but were most abundant in the upper regions (Figure 4-11). In the middle estuary, white perch PYSL co-occur extensively with striped bass PYSL.

White perch reach the juvenile stage beginning in mid-June; and during 1996, YOY fish were found primarily in the middle estuary between the Hyde Park and West Point regions, but occurred throughout the



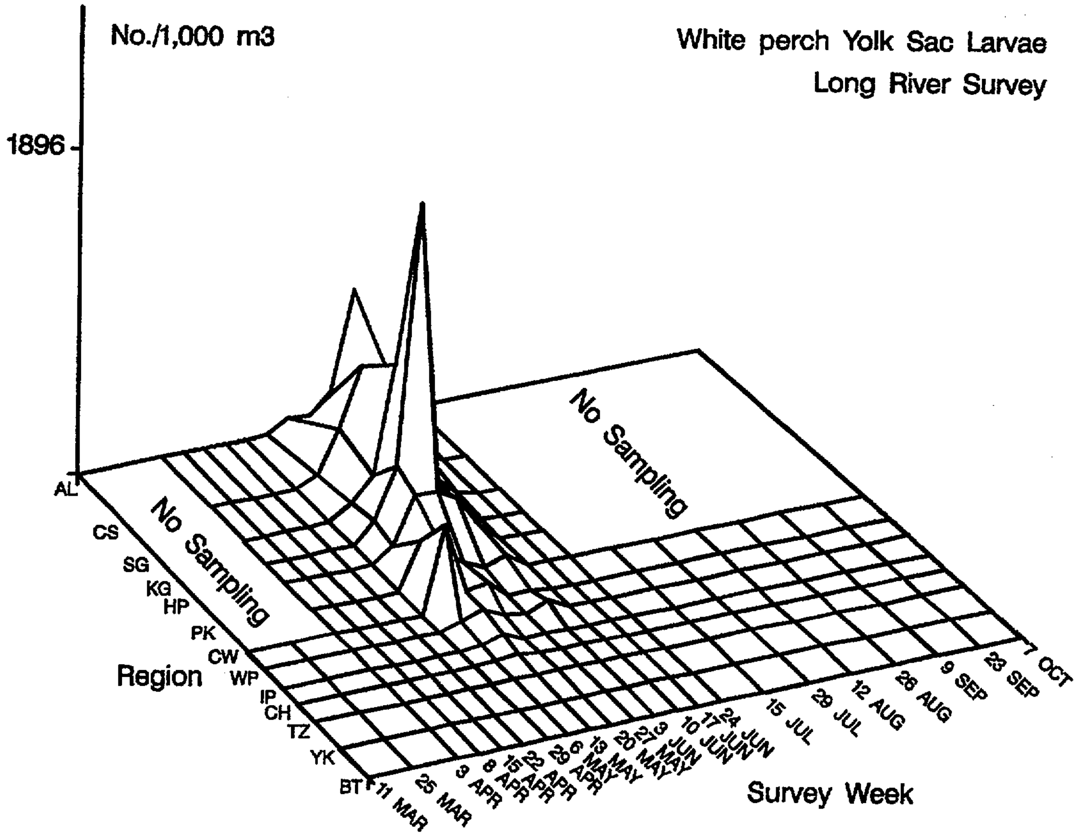


Figure 4–10. Spatiotemporal distribution of eggs and yolk sac larval white perch in the Hudson River estuary based on the 1996 Long River Survey.

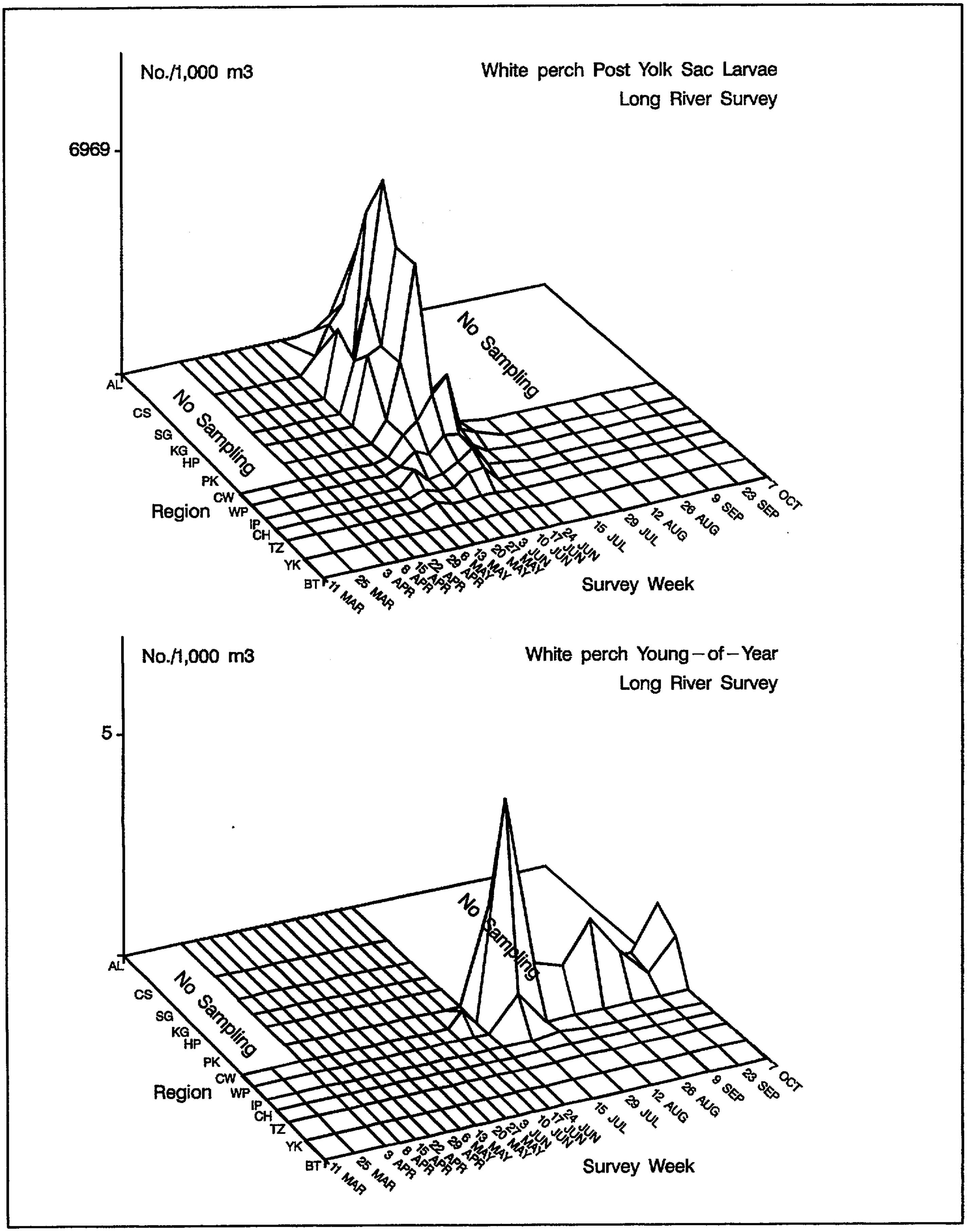


Figure 4-11. Spatiotemporal distribution of post yolk sac larval and young-of-year white perch in the Hudson River estuary based on the 1996 Long River Survey.

entire estuary (Figure 4-12). Juvenile white perch are about 3 in. long by the end of their first summer (Klauda et al. 1988a). They are prey for larger predators (including adult white perch and striped bass). Based on the 1996 monitoring program, yearling and older-than-yearling white perch were distributed throughout the Hudson River (Figures 4-13 and 4-14). In the Hudson River estuary some white perch of both sexes become sexually mature at age 2, but all males and females are mature by ages 4 and 5, respectively (Klauda et al. 1988a).

Comparing the temporal distribution of early life stages of white perch in 1996 with previous years (1974-1995), the 1996 distribution was similar to the long-term record, but more concentrated in single weeks. The majority of eggs occurred from early May to early June, peak YSL abundance was in mid-May, and PYSL were present from late May through late June (Figure 4-15).

White perch eggs in the 1996 LRS were primarily in the Catskill region which is consistent with that observed in the historical trend (Figure 4-16). YSL and PYSL distributions in 1996 were also consistent with patterns seen across years with the majority of larvae between Poughkeepsie and Catskill. Historically, the geographical distribution of YOY, yearling, and older-than-yearling white perch in the BSS has shown the main distribution center to be in the Tappan Zee and Croton-Haverstraw regions and a secondary distribution in the upriver region of Catskill (Figure 4-17). This pattern was also representative of the 1996 collections of white perch in the BSS.

Weekly length statistics for young-of-year white perch collected in 1996 show increasing but erratic growth from June through October (Figure 4-18, Appendix Tables E-4 through E-6). The erratic pattern may be attributed to the size-selectivity of the various gears used in the alternating weeks of the FSS and BSS.

4.4 ATLANTIC TOMCOD

Nineteen members of the codfish family (Gadidae) are found along the Atlantic Coast of Canada and the United States, but only the Atlantic tomcod (*Microgadus tomcod*), an inshore species that ranges from Labrador to the Chesapeake Bay, is anadromous; the southern limit of its spawning range is the Hudson River (Grabe 1978). In Canada, the Atlantic tomcod occurs in the mid- to lower St. Lawrence River and is landlocked in at least two freshwater lakes (Scott and Crossman 1973).

Atlantic tomcod enter coastal estuaries and rivers to spawn in shallow fresh or brackish water during mid-winter. In the Hudson River estuary, adult Atlantic tomcod occur at least as far north as the Saugerties region during spawning runs; the largest concentrations, however, are consistently found in the middle estuary between West Point and Poughkeepsie. After spawning in late December or early January, Atlantic tomcod return to coastal waters.

The Hudson River population is the southernmost major breeding population (Dew and Hecht 1976). No spawning has been documented in either the Connecticut River (Marcy 1976) or Long Island Sound (Richards 1959), and limited spawning may occur in the Raritan River and/or Raritan Bay (IA 1977). Unlike more northern populations, age 1 fish constitute most of the Hudson River spawning stock.

Atlantic tomcod eggs are about 1/16 in. in diameter and non-adhesive. The average number of eggs per female in the Hudson River population has ranged from 12,400 to 22,500 eggs at age 1 and from 32,500 to 53,100 eggs at age 2 (NAI 1992). In the Hudson River water temperatures are generally less than 37°F when spawning occurs, and the eggs take at least a month to hatch.

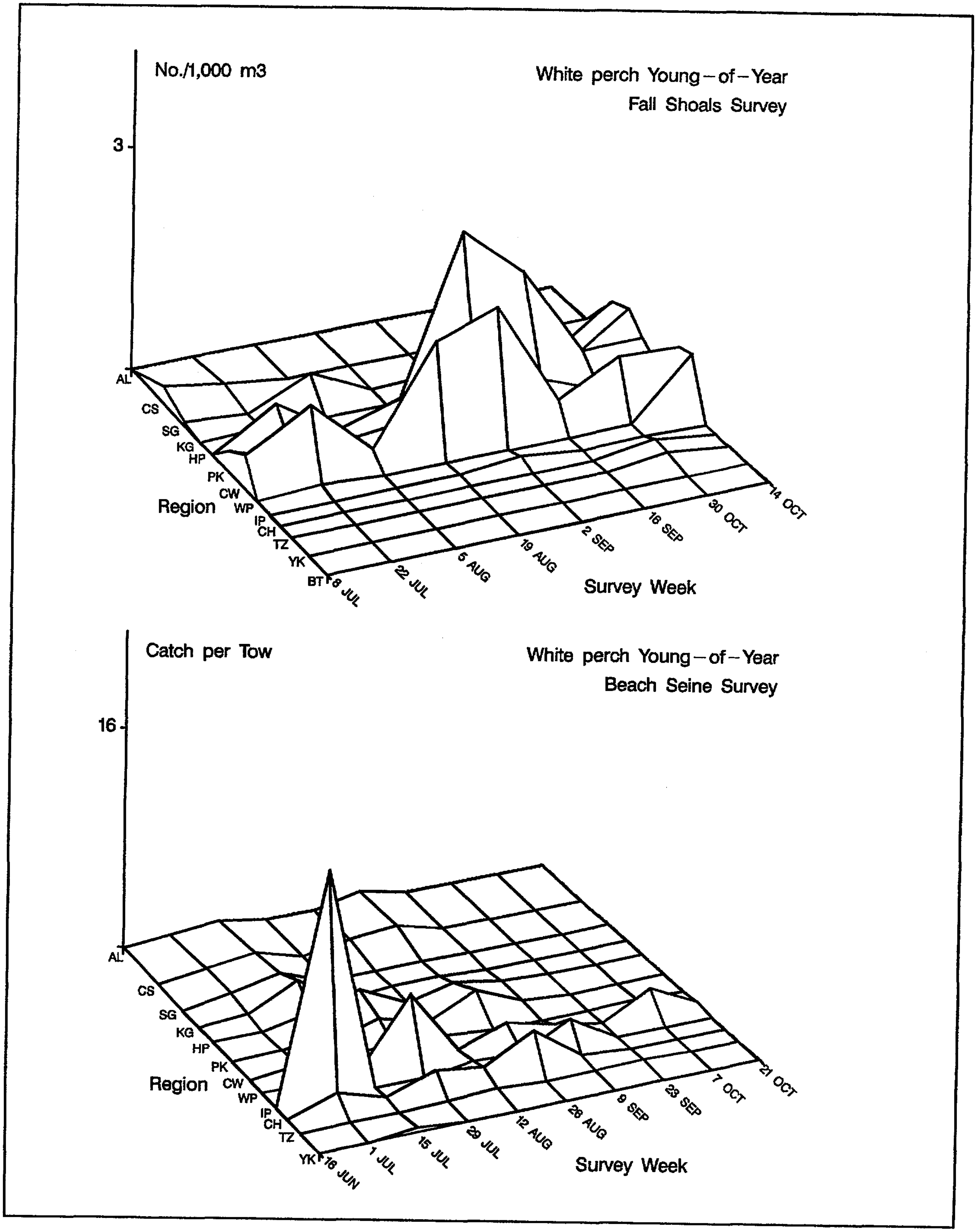


Figure 4-12. Spatiotemporal distribution of young-of-year white perch in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

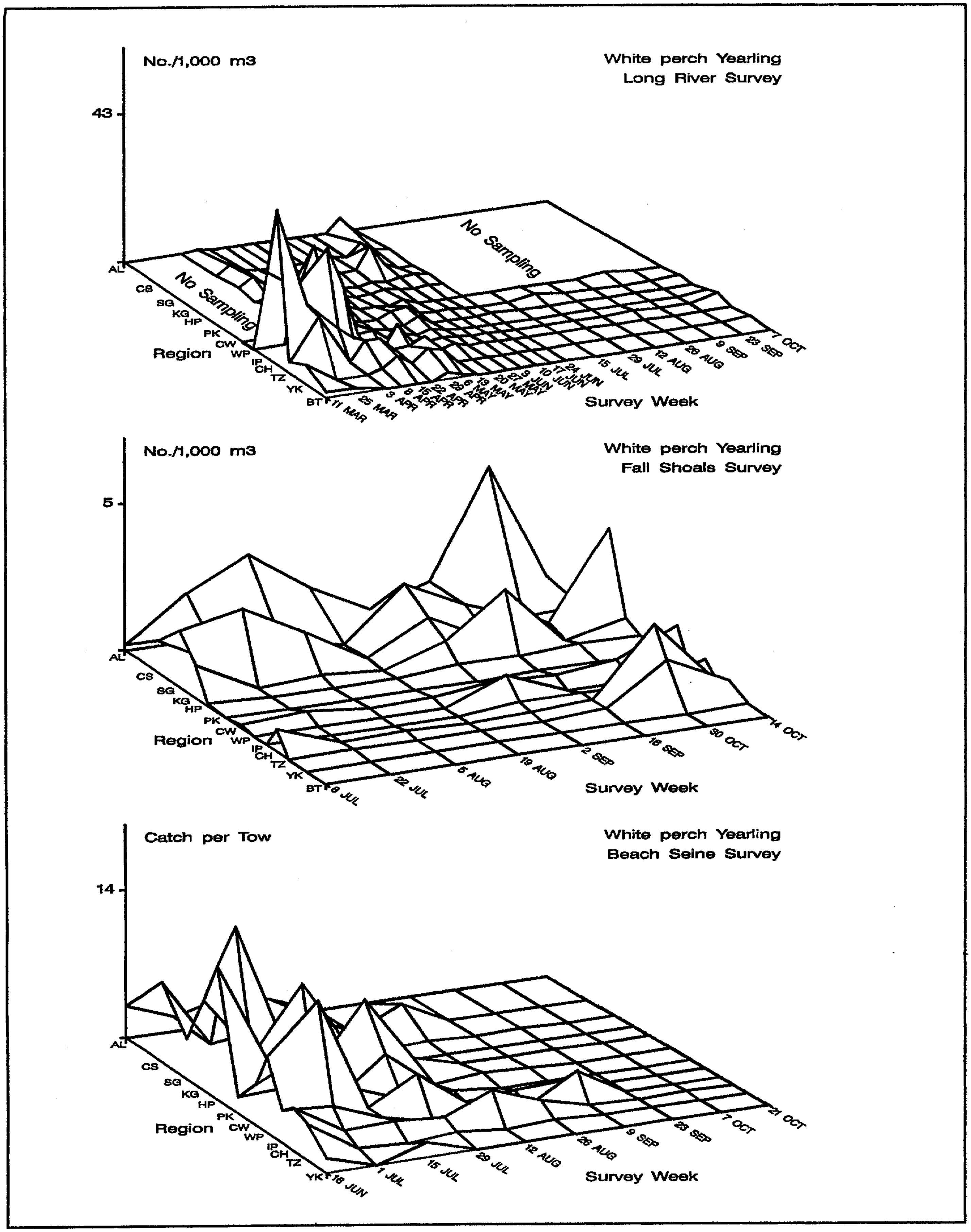


Figure 4–13. Spatiotemporal distribution of yearling white perch in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

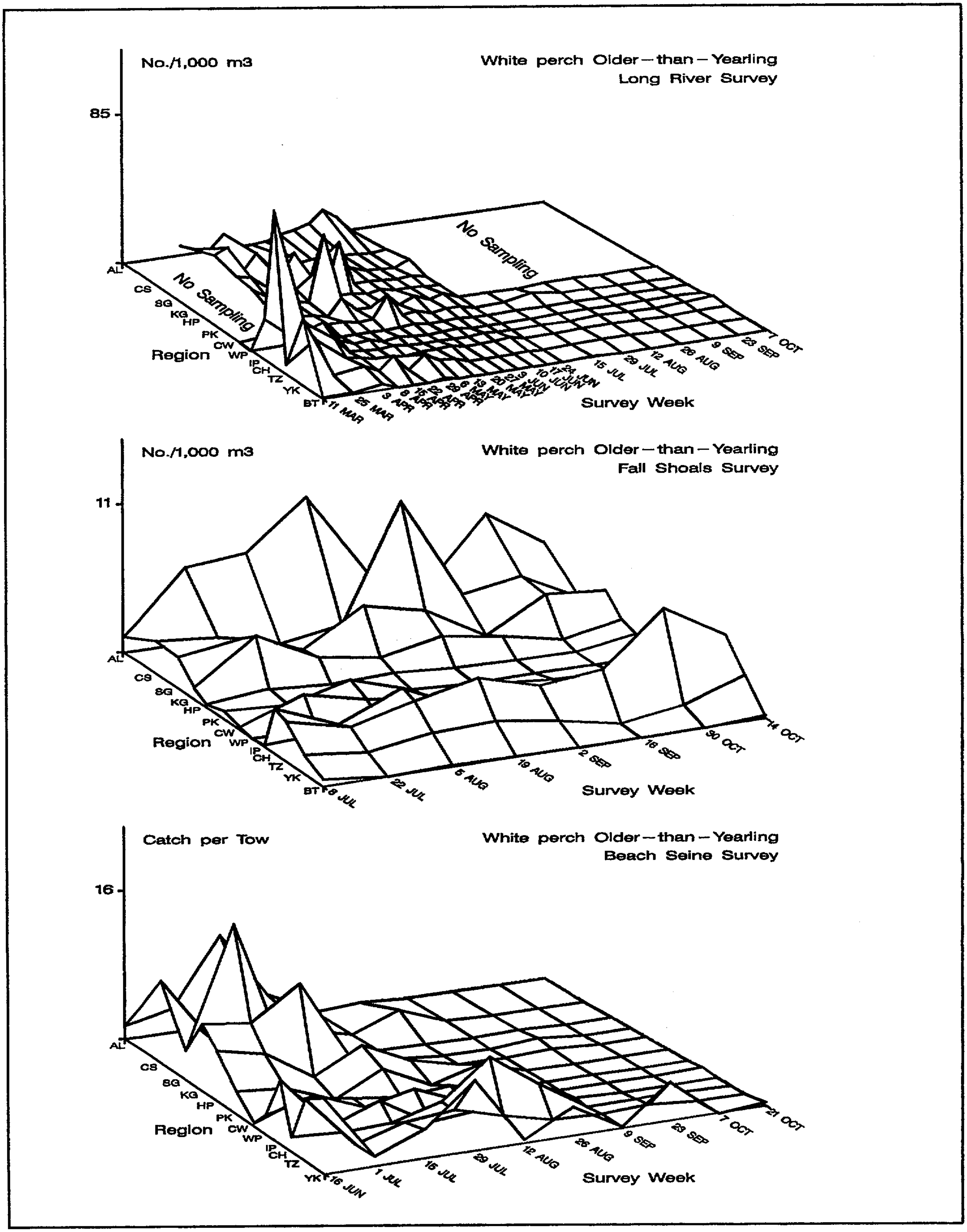


Figure 4-14. Spatiotemporal distribution of older-than-yearling white perch in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

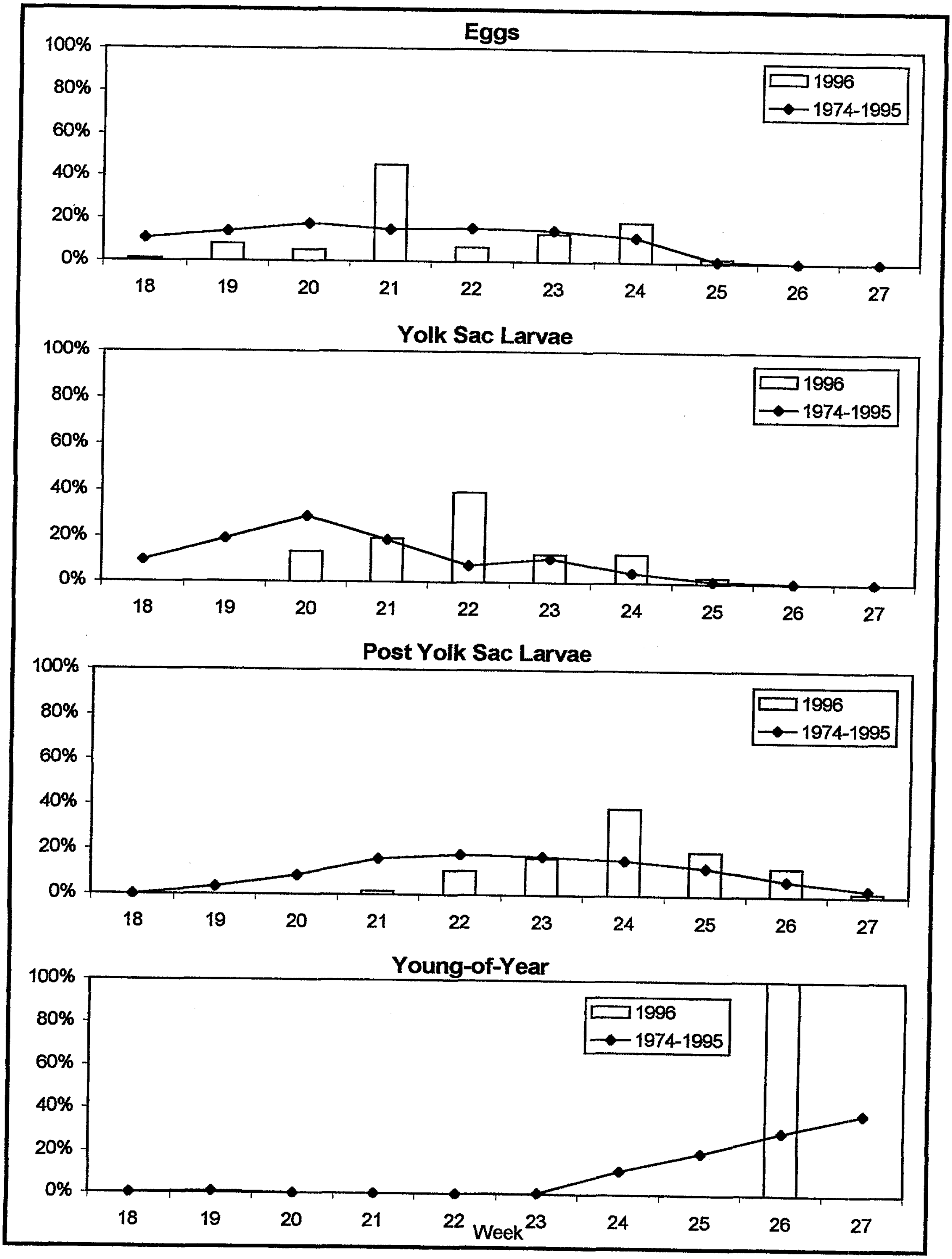


Figure 4-15. Temporal distribution indices for white perch collected during Long River surveys of the Hudson River estuary, 1974-1996.

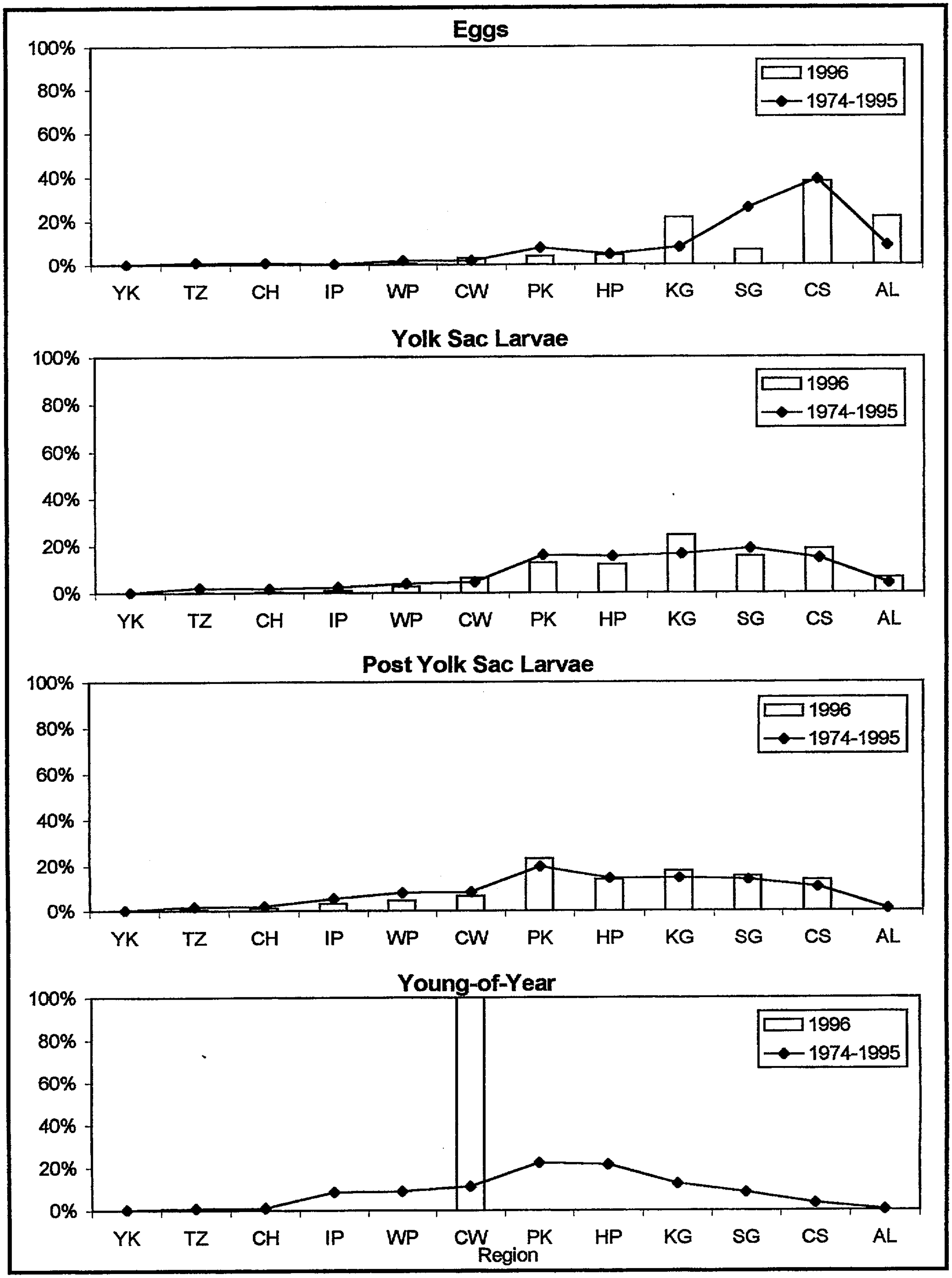


Figure 4-16. Geographic distribution indices for white perch collected during Long River surveys of the Hudson River estuary, 1974-1996.

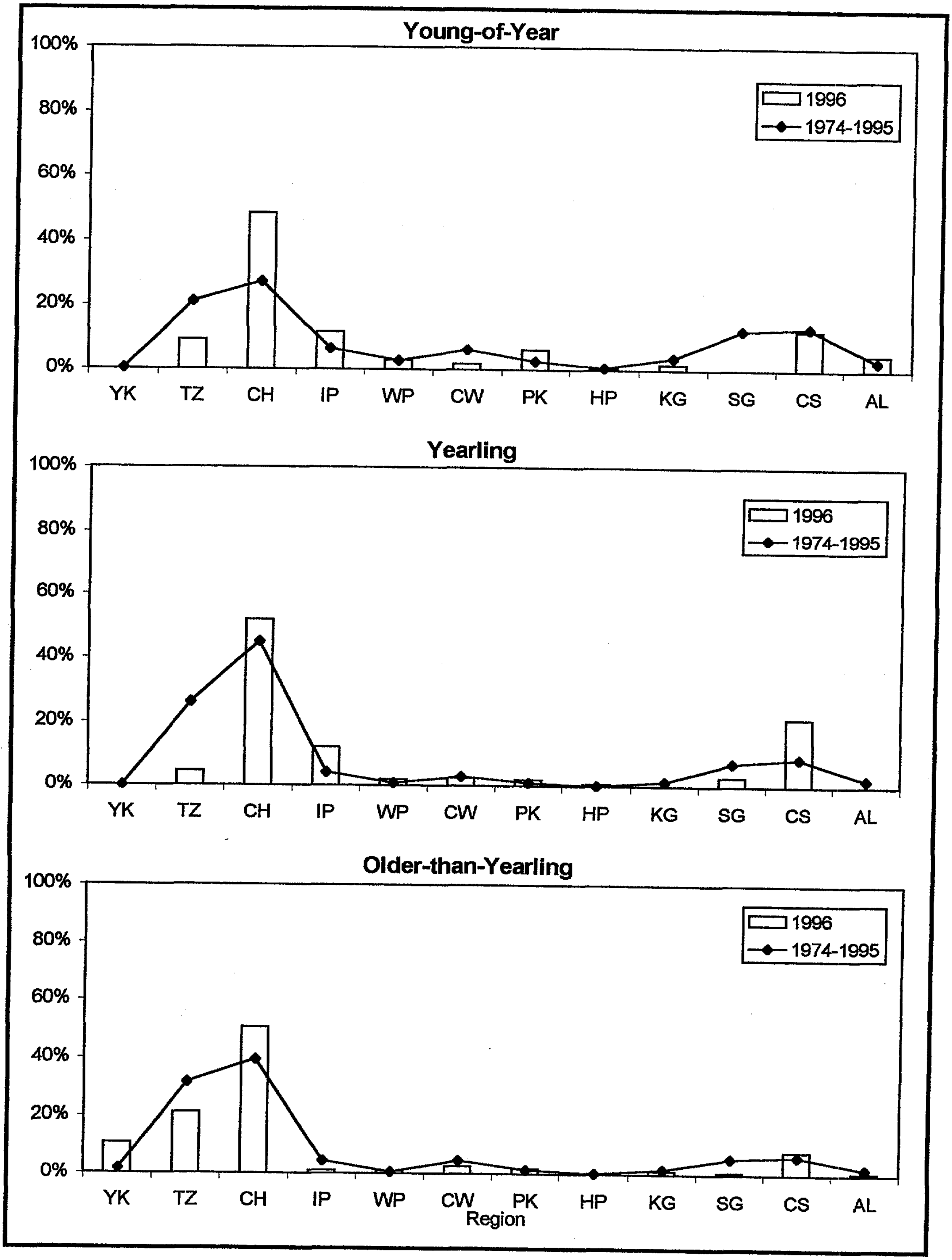


Figure 4-17. Geographic distribution indices for white perch collected during Beach Seine surveys of the Hudson River estuary, 1974-1996.

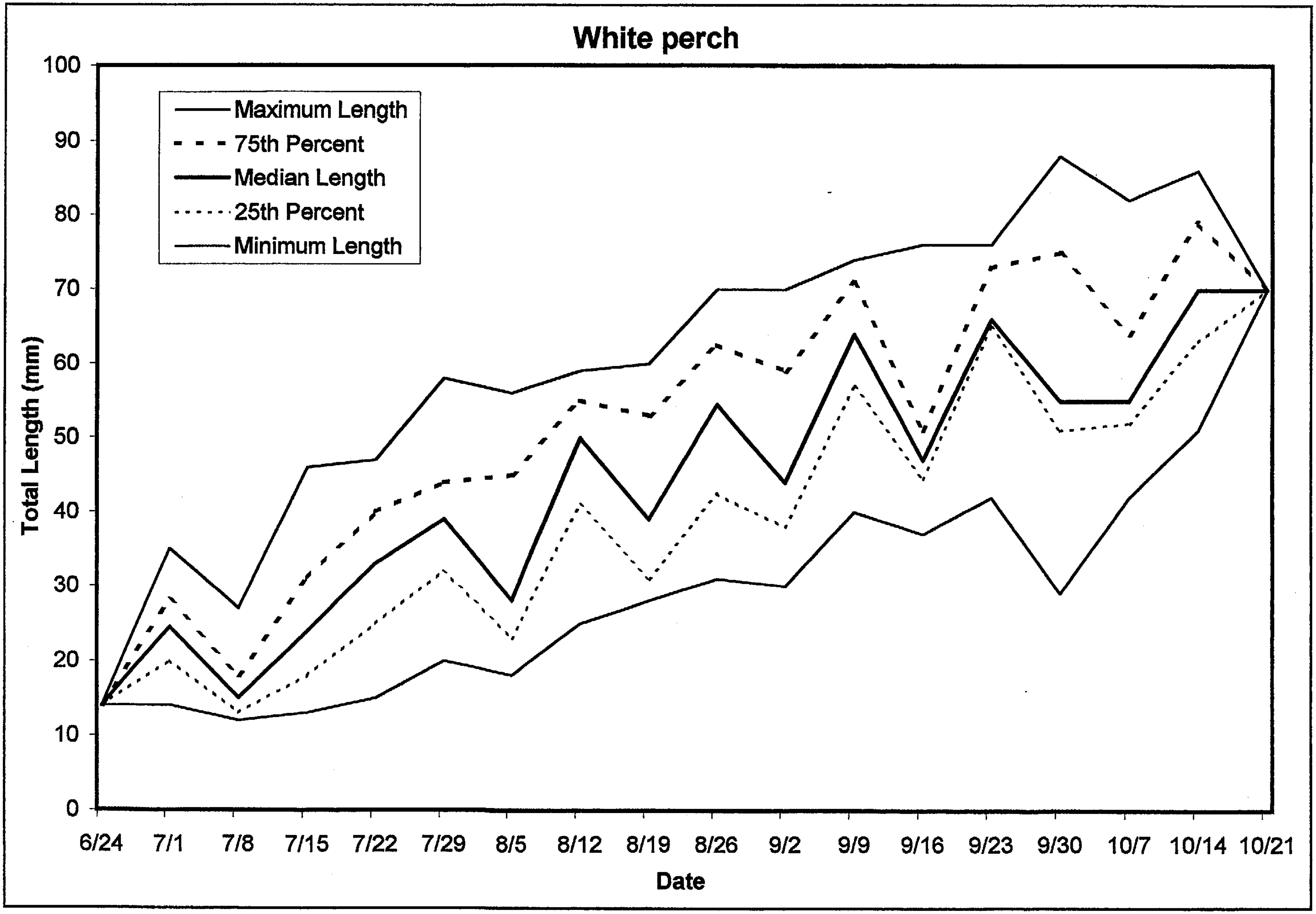


Figure 4-18. Weekly length statistics for young-of-year white perch in the Hudson River estuary, 1996.

Atlantic tomcod larvae are about 1/5 in. long at hatching. YSL are pelagic and move downstream as they develop. The yolk-sac is absorbed by 1/4 in., and onset of feeding by PYSL may depend on water temperatures. In the Hudson River, the abundance of YSL peaks in March. YSL are found throughout the lower half of the estuary, whereas PYSL are concentrated in the Yonkers and Tappan Zee regions.

Early March sampling in the 1996 LRS collected YSL from the Battery to Cornwall regions, the northern extent of sampling in March (Figure 4-19). PYSL were collected from March through early May predominantly in the Tappan Zee and Yonkers regions, but ranging as far north as Albany. Juvenile Atlantic tomcod collected in the LRS were most abundant from late April to late May, from the Battery to Tappan Zee regions. Although some juvenile tomcod remain in the Hudson River throughout the summer, some proportion of the population may move out of the lower estuary into New York Bay and Raritan Bay when water temperatures rise during late May and June. The 1996 FSS collected juvenile Atlantic tomcod primarily in the Indian Point through Cornwall regions during August and the 1996 BSS collected a few Atlantic tomcod south of Indian Point during July (Figure 4-20). A few yearling and older Atlantic tomcod were collected in the FSS and they were found in the lower half of the estuary (Figure 4-21).

Comparing the temporal distribution of early life stages of Atlantic tomcod in 1996 with the long-term database (beginning in early May) available from previous years (1974-1995), the 1996 PYSL distribution was consistent with the long-term record with nearly 80 percent of the PYSL collected in early May (Figure 4-22). The 1996 YOY occurrence, which agrees with the historical trend, was primarily in early and mid-May and extended to late June. The peak geographical distributions of PYSL and juveniles collected in the 1996 LRS were more concentrated in the Yonkers region than shown in the long-term distribution pattern (Figure 4-23). The geographical distribution index based on the 1996 FSS for YOY Atlantic tomcod showed a primary peak in West Point, which is the location of a secondary peak in the long-term distribution (Figure 4-24). Fewer Atlantic tomcod were collected in the lower estuary regions of Yonkers and Tappan Zee in 1996 than in previous years.

Juvenile growth slows or ceases in summer (Grabe 1978; Klauda et al. 1988b). Growth slows at temperatures above 66°F and essentially stops in early July when temperatures exceed 71°F. It begins again when water temperatures fall below 77°F during late August and early September (TI 1978). During 1996, the weekly length statistics obtained from the monitoring program showed more rapid growth in the spring and fall than during the summer (Figure 4-25, Appendix Tables E-7 through E-9). Juvenile tomcod generally double their summer length by December to a mean total length approximately 6 in. Most of the juvenile Atlantic tomcod in the Hudson River are sexually mature by the end of December and reproduce in early January. Following the period of rapid growth during the fall, mature YOY migrate upriver to spawn.

4.5 BAY ANCHOVY

Bay anchovy (*Anchoa mitchilli*) is a small, slender fish, from 1.5- to 4-in. long, that is ubiquitous in shallow coastal waters of North America from southern Maine to the Yucatan Peninsula. They have a wide salinity tolerance from fresh water to more than twice the salinity of normal sea water, but they prefer salinities found at seaward ends of estuaries. Where temperatures do not drop below 41°F during the winter, bay anchovy remain in the estuaries throughout the year (Wang and Kernehan 1979).

However, north of Delaware Bay, where water temperatures go below 41°F during the winter, National Marine Fisheries Service trawl data indicate a movement of bay anchovy out of coastal estuaries and

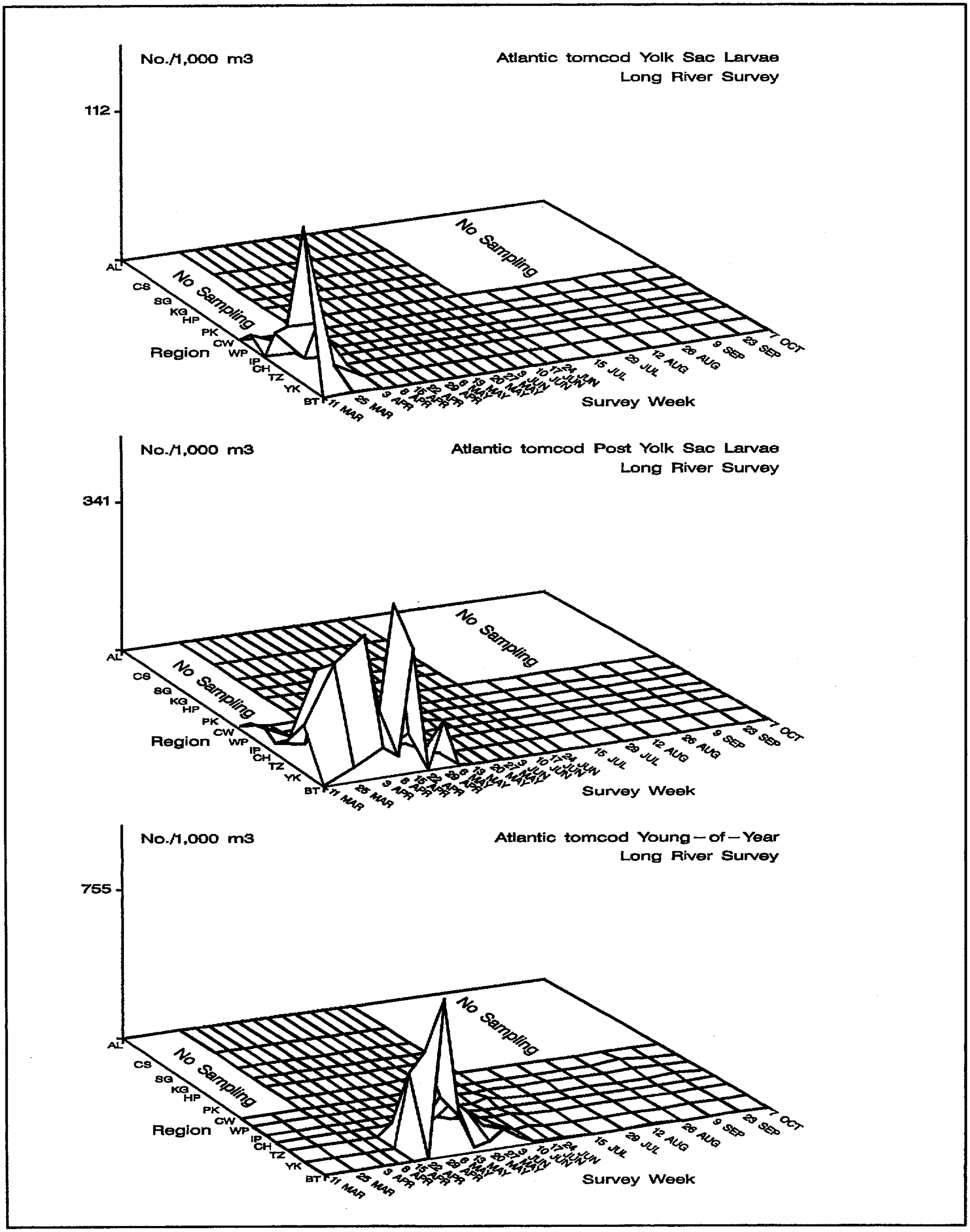


Figure 4-19. Spatiotemporal distribution of yolk sac larval, post yolk sac larval, and young-of-year Atlantic tomcod in the Hudson River estuary based on the 1996 Long River Survey.

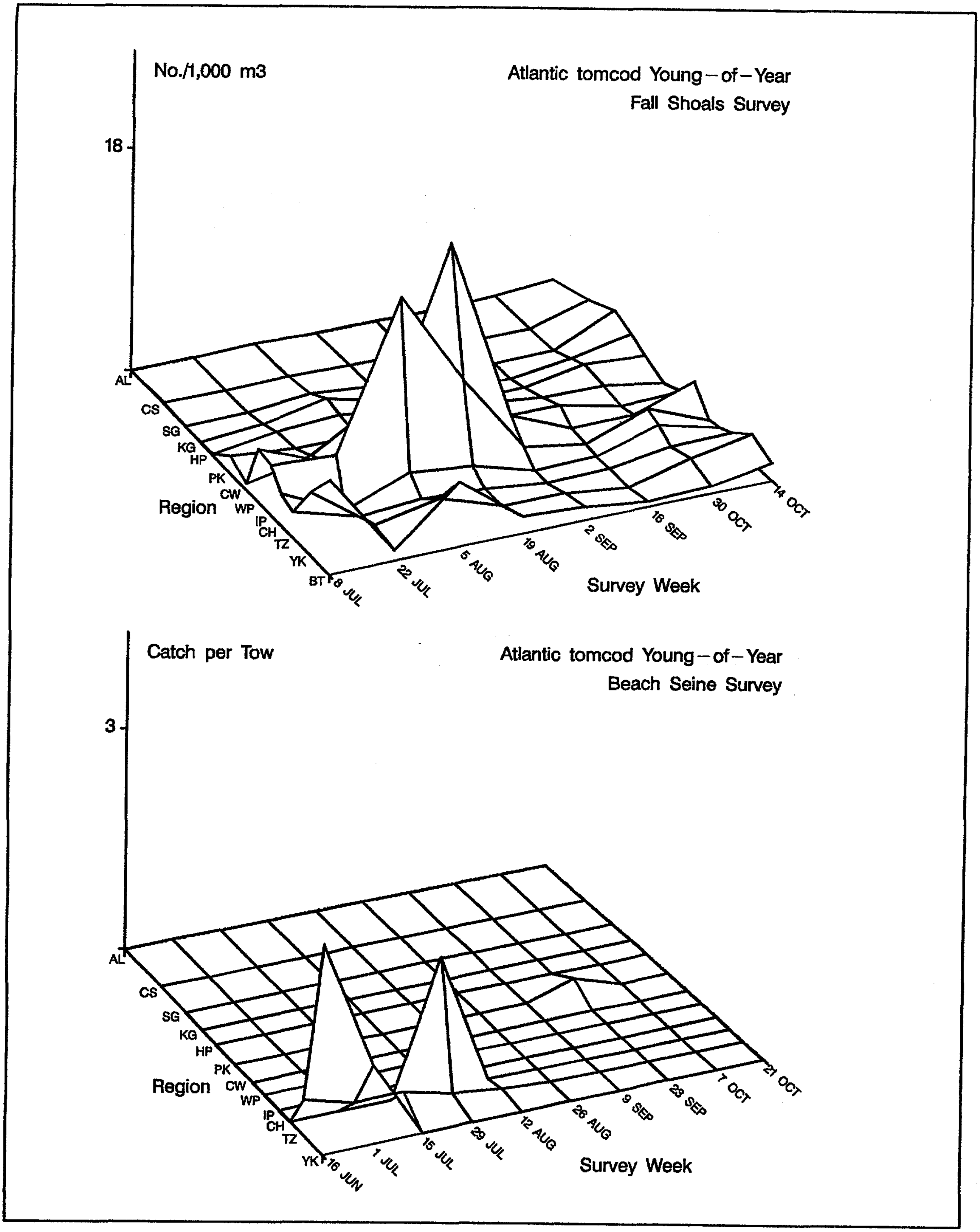


Figure 4-20. Spatiotemporal distribution of young-of-year Atlantic tomcod in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

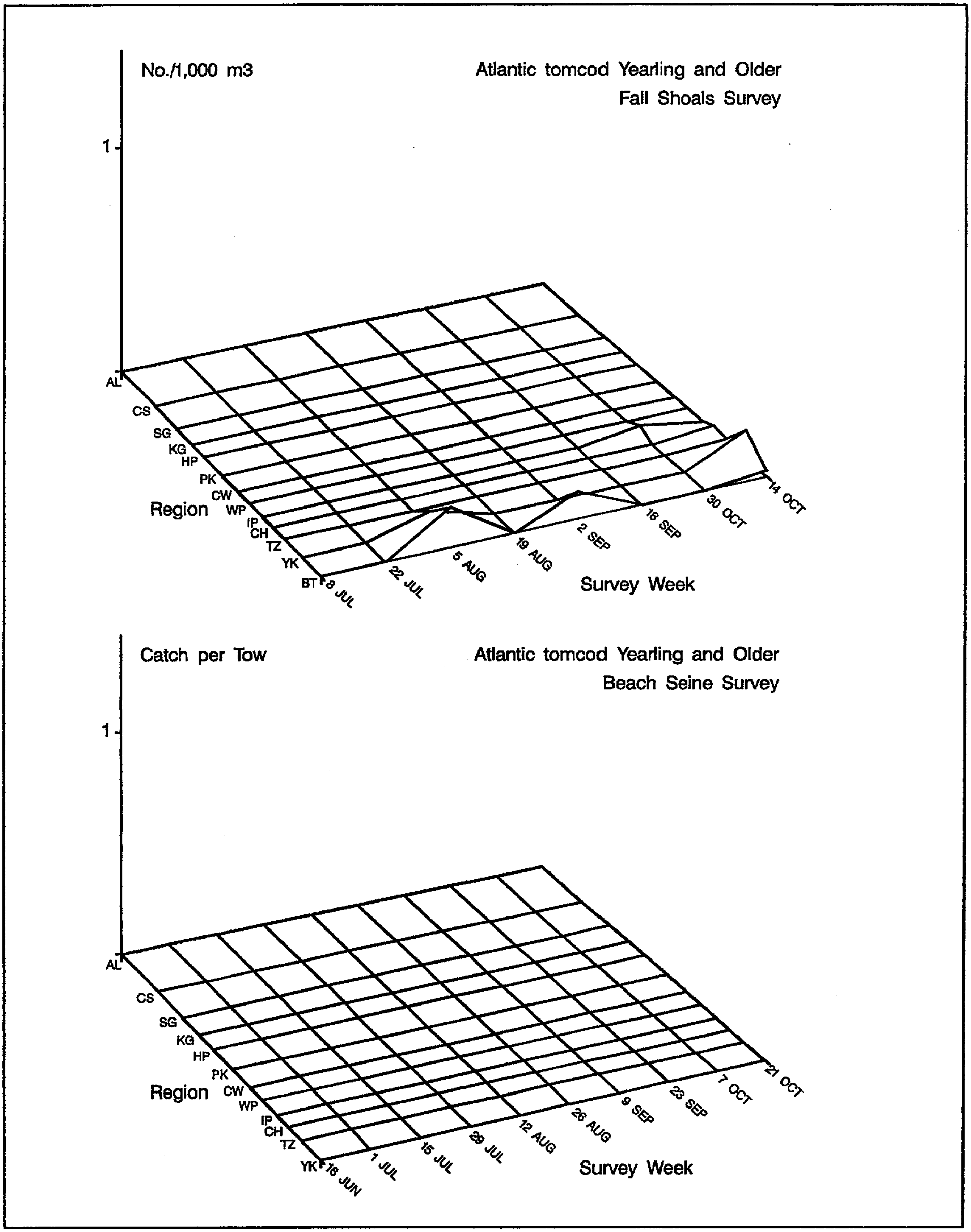


Figure 4−21. Spatiotemporal distribution of yearling and older Atlantic tomcod in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

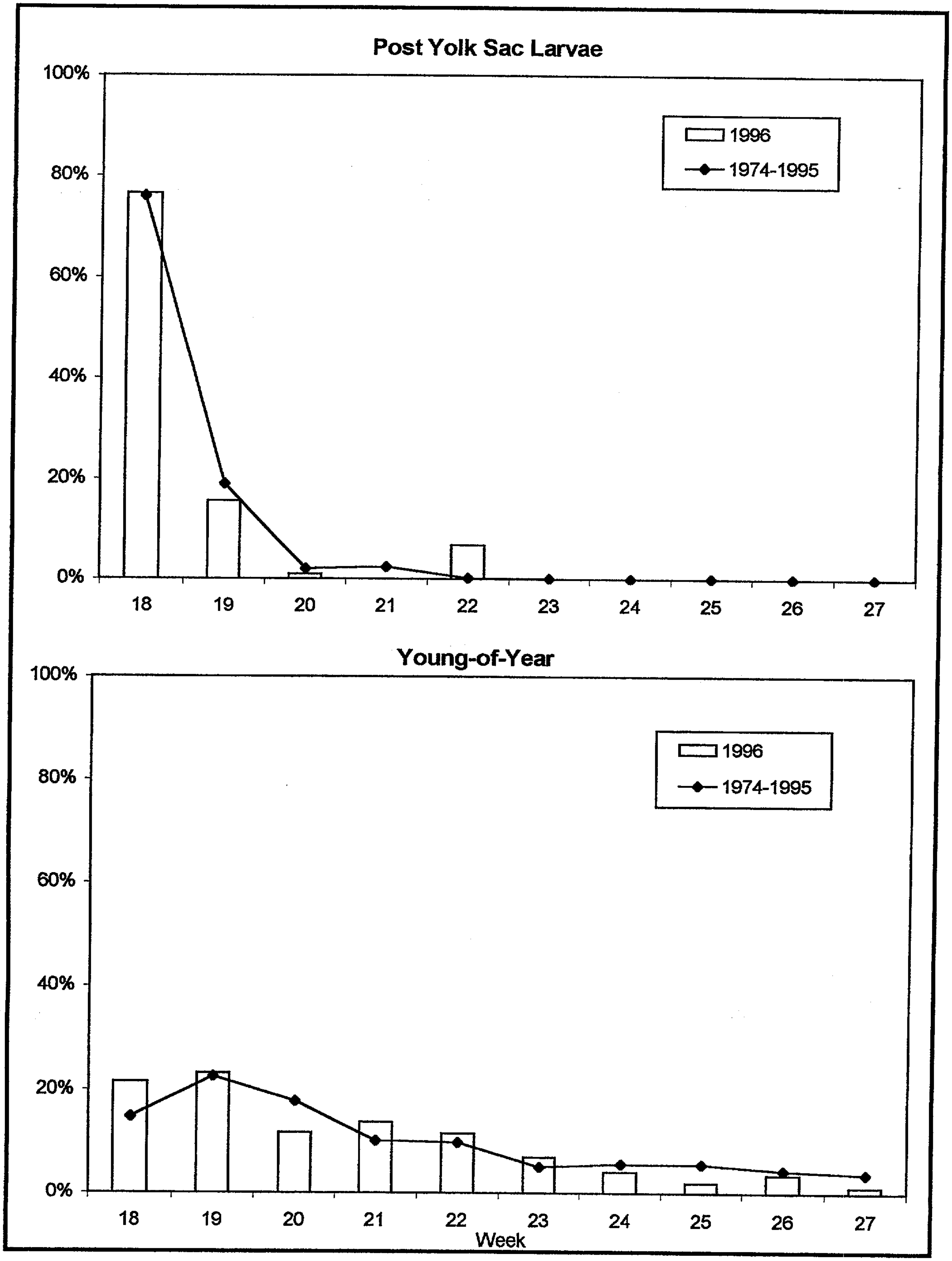


Figure 4-22. Temporal distribution indices for Atlantic tomcod collected during Long River surveys of the Hudson River estuary, 1974-1996.

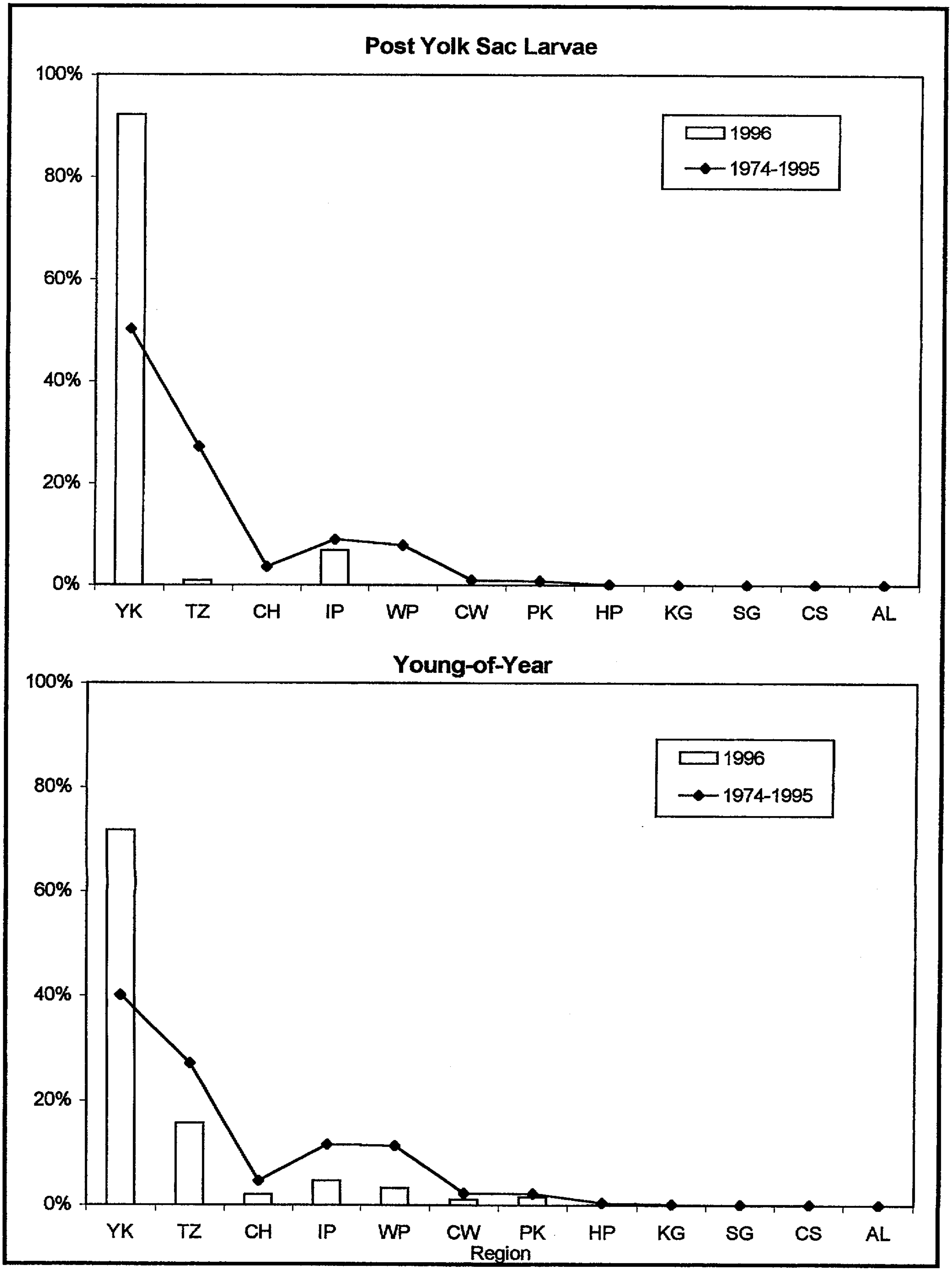


Figure 4-23. Geographic distribution indices for Atlantic tomcod collected during Long River surveys of the Hudson River estuary, 1974-1996.

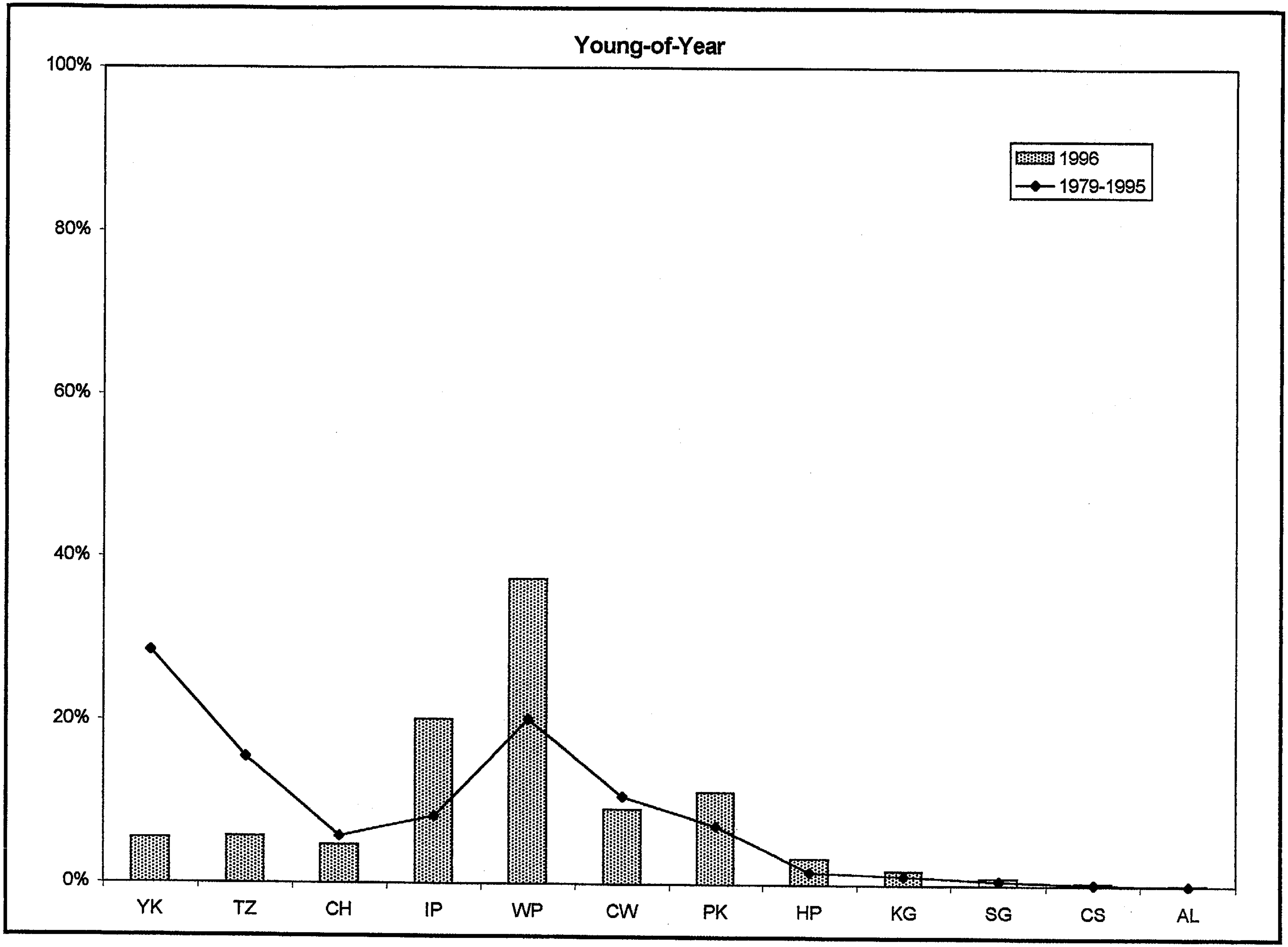


Figure 4-24. Geographic distribution indices for Atlantic tomcod collected during Fall Shoals surveys of the Hudson River estuary, 1979-1996.

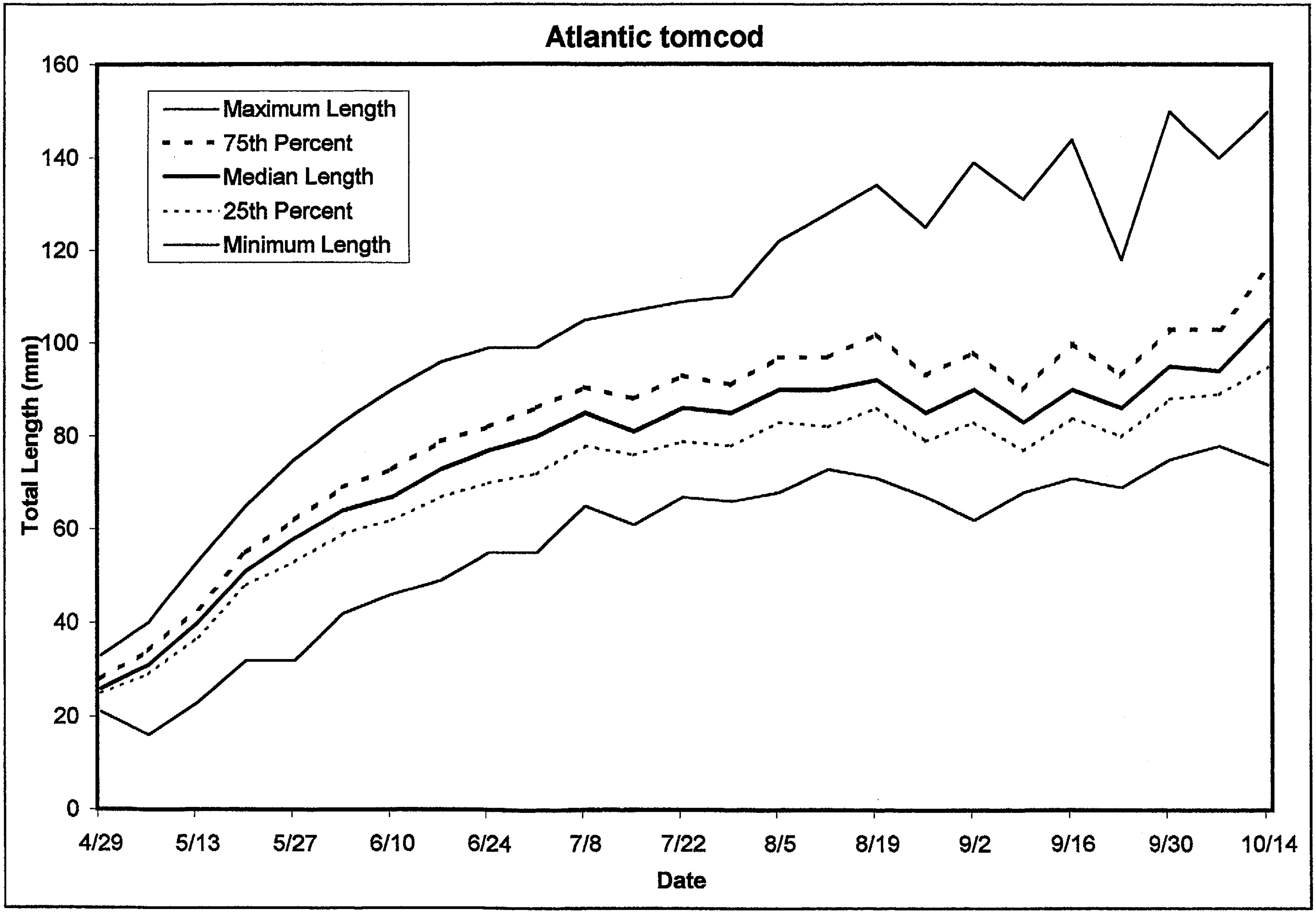


Figure 4-25. Weekly length statistics for young-of-year Atlantic tomcod in the Hudson River estuary, 1996.

southward during the fall, resulting in an overwintering distribution ranging from Cape Hatteras to Delaware Bay and the virtual absence of bay anchovy from the inshore continental shelf of New York and New Jersey during the winter months (Vouglitois et al. 1987).

Bay anchovy school in large numbers and feed on plankton as they swim. Their mouths are large relative to their small size, which enables them to pass relatively large quantities of water through their gill rakers (long, slender projections on their gills) and filter out their prey. They feed throughout the water column and primarily eat invertebrates. Larval bay anchovy feed on a variety of microzooplankton, including the larval stages of crustaceans and mollusks. Juvenile and adult bay anchovy feed on larger macro-zooplankton, including copepods, cladocerans, amphipods, and mysids.

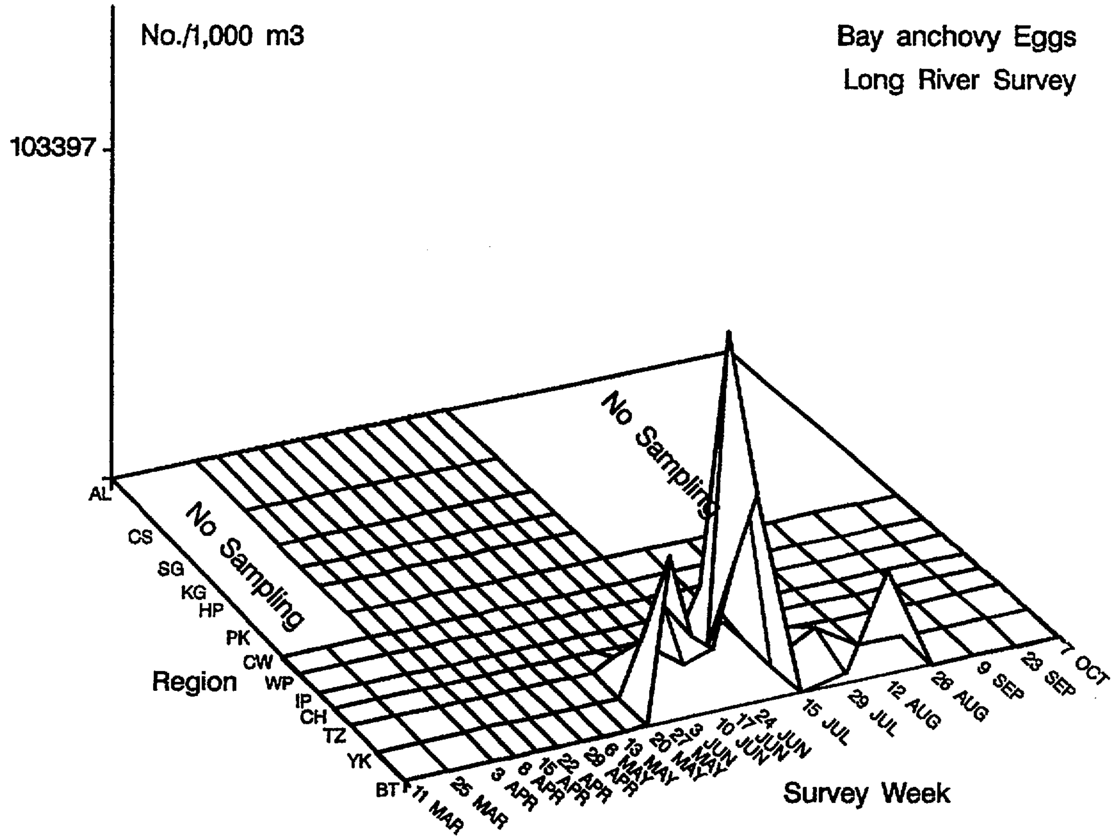
Bay anchovy rarely survive more than 2 years. They grow rapidly and mature at a size of 1-2 in. In warm waters, they may mature within 3 months of hatching, but in cooler, northern waters they usually mature in their second summer, 11-14 months after hatching. They are also very prolific; individual females may spawn 50 or more times per year, averaging about 1,100 eggs per spawn (Houde and Zastrow 1991). Partially as a result of this early maturity and high fecundity, bay anchovy may be the most abundant fish species in the western north Atlantic (McHugh 1967).

Bay anchovy spawn in lower estuarine and inshore coastal waters throughout the warmer months of the year. In the New York Bight spawning occurs from May through September, with peak egg abundance occurring in late June or early July when water temperatures exceed 70°F. Adults spawn in areas where the salinity is greater than 10 ppt. Egg abundance is typically highest in waters with salinities greater than 20 ppt, and egg viability apparently declines at salinities lower than 8 ppt. Spawning occurs throughout all areas of the Hudson-Raritan Bay complex, including Raritan and Newark bays, Arthur Kill, Kill Van Kill, and the Upper and Lower New York bays as well as throughout Long Island Sound.

Within the Hudson River, bay anchovy eggs are most abundant in the Battery through Tappan Zee regions (Figure 4-26). The eggs, which are about 1/16 in. long, are transparent and initially buoyant, but sink after 12-16 hours of floating. Hatching occurs approximately 24 hours after spawning. Newly hatched YSL are approximately 1/16-1/8 in. long, transparent, and drift along the bottom with the tidal currents. The YSL stage is very brief, and typically lasts less than 1 day. Due to their small size, short duration, and epibenthic nature, few YSL are collected in the Utilities' ichthyoplankton samples. The PYSL stage is longer, and lasts about a month. In the Hudson River the peak abundance of PYSL occurs during June and July and the center of their distribution shifts slightly upriver compared to that of eggs and YSL (Figure 4-27).

Bay anchovy are about 1/2 in. long at the beginning of the juvenile stage. Juvenile bay anchovy are found in the Hudson River estuary from mid-August through October and as far upriver as Albany (Schmidt 1992). During 1996, most of the juvenile population was located downstream of the Cornwall region (Figures 4-27 and 4-28). Yearling and older bay anchovy were much less abundant in collections than juveniles (Figure 4-29). They were caught more frequently early in the summer than during fall.

Comparing the temporal distribution of early life stages of bay anchovy in 1996 with the prior 8-year period (1988-1995) when LRS sampling included the Battery region (RM 0-12), the 1996 bay anchovy egg distribution was consistent with the long-term trend, but the early July peak in egg abundance was slightly later than previously seen (Figure 4-30). By contrast, peak PYSL occurrence was slightly earlier than normal with the peak abundance in late June. Juvenile temporal distribution in the 1996 LRS was within



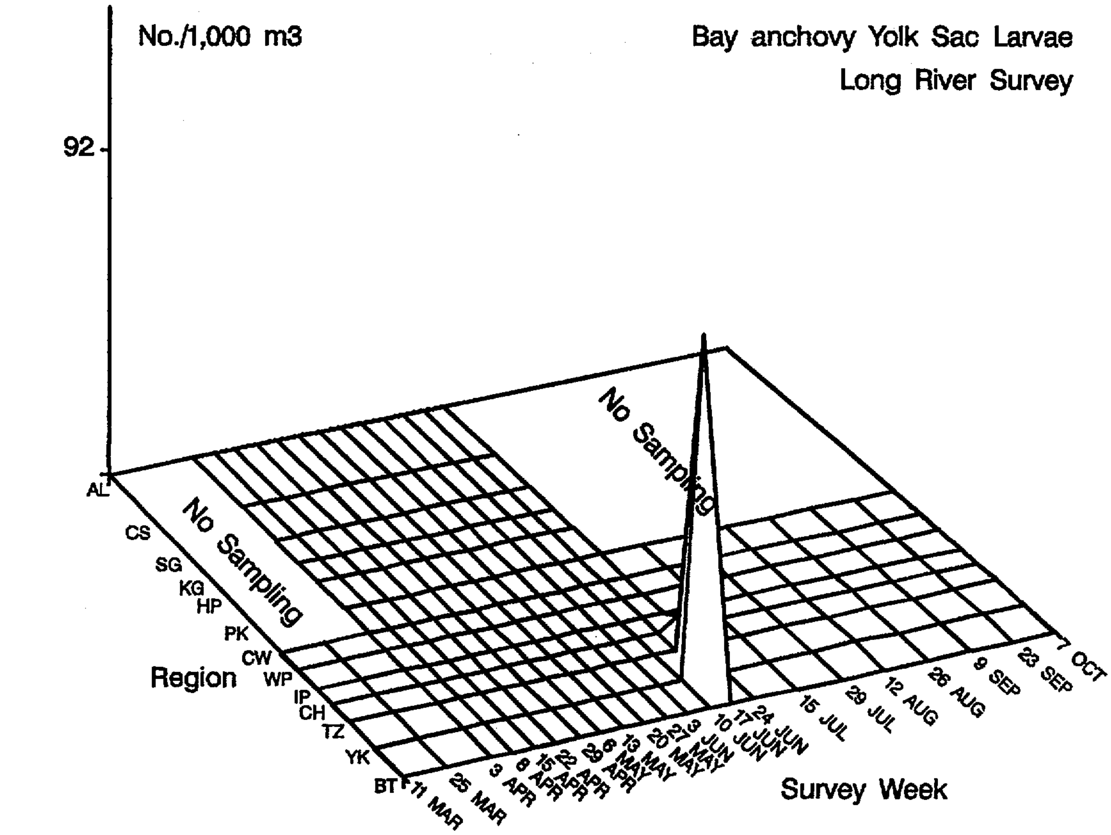


Figure 4-26. Spatiotemporal distribution of eggs and yolk sac larval bay anchovy in the Hudson River estuary based on the 1996 Long River Survey.

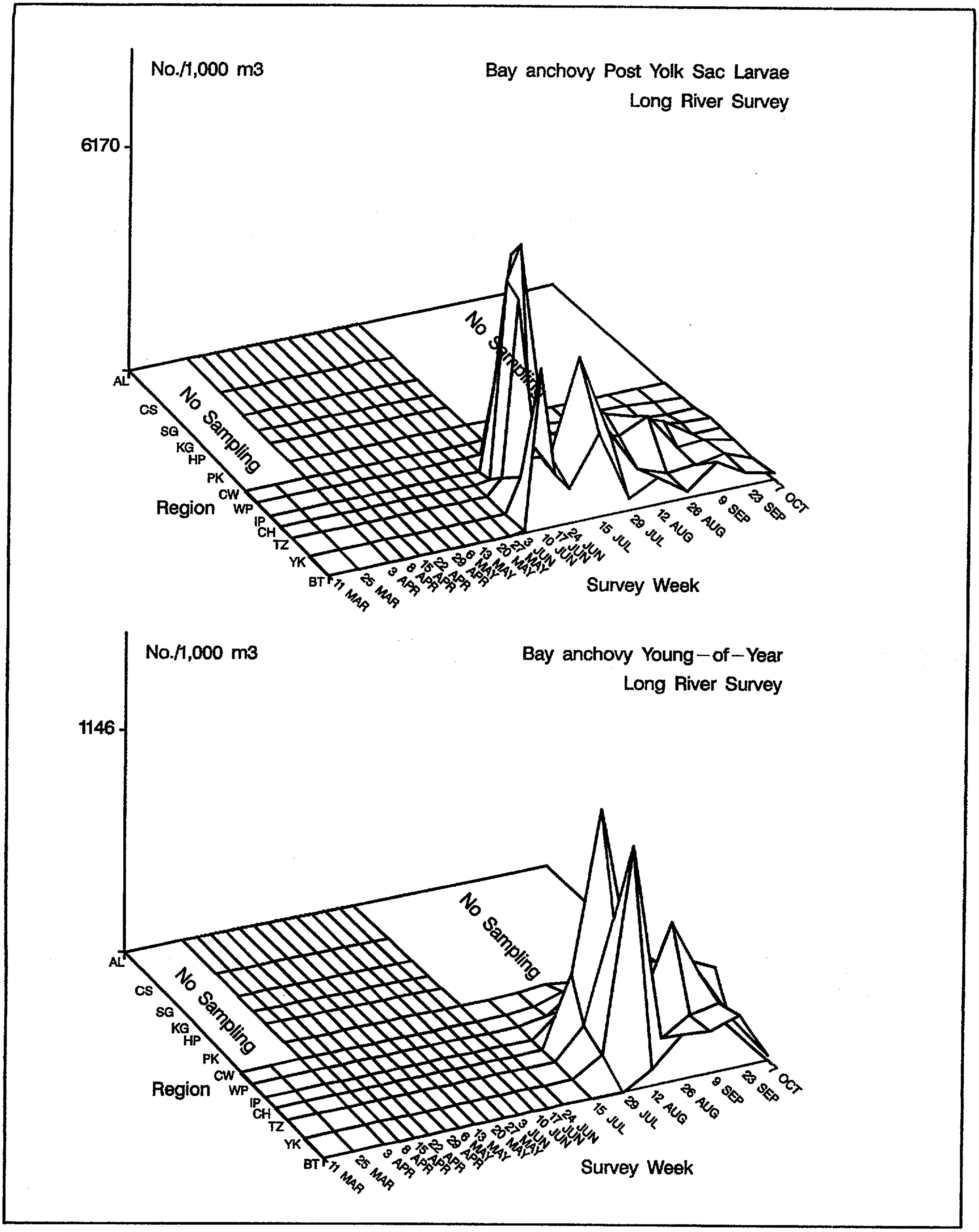


Figure 4–27. Spatiotemporal distribution of post yolk sac larval and young–of–year bay anchovy in the Hudson River estuary based on the 1996 Long River Survey.

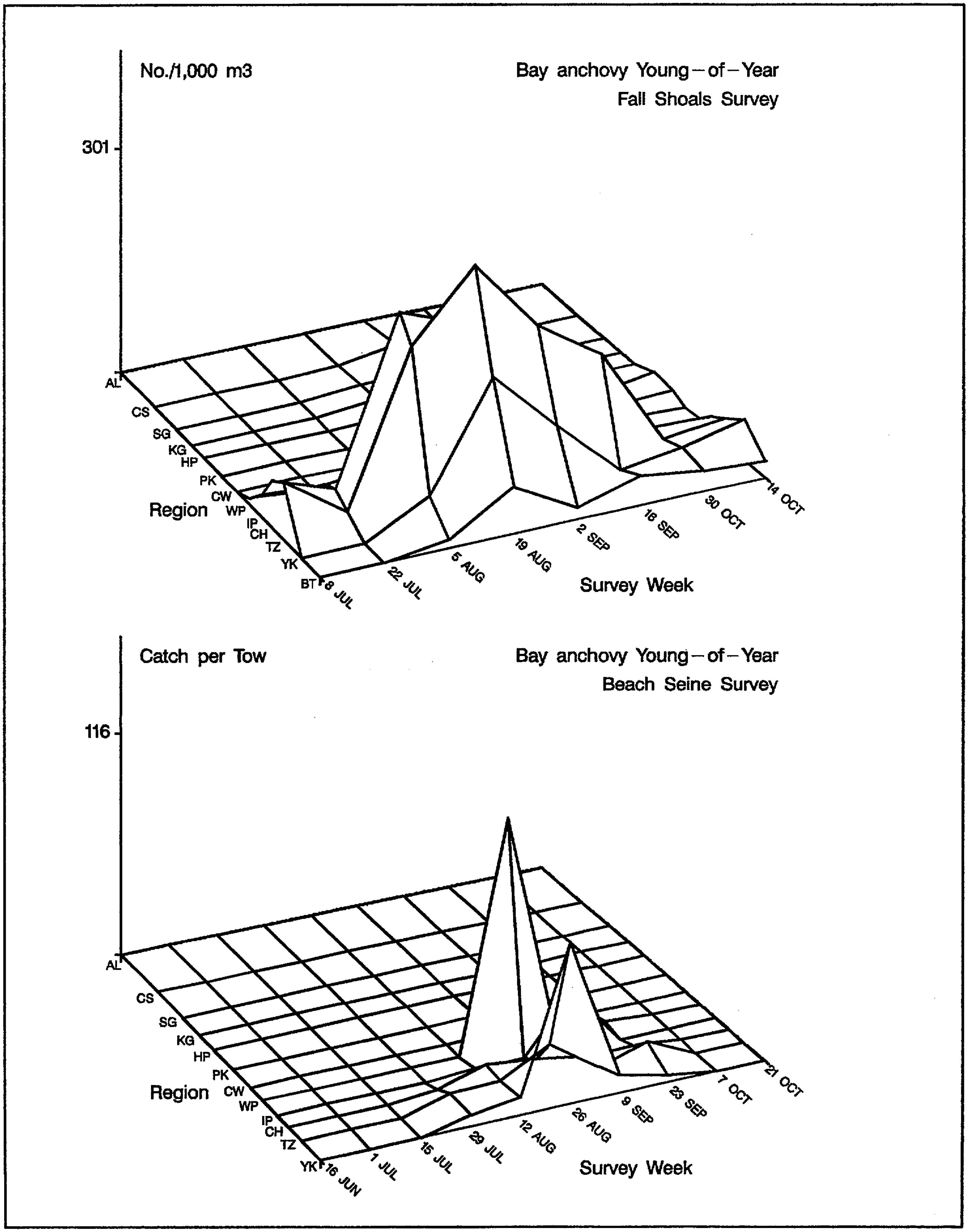


Figure 4-28. Spatiotemporal distribution of young-of-year bay anchovy in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

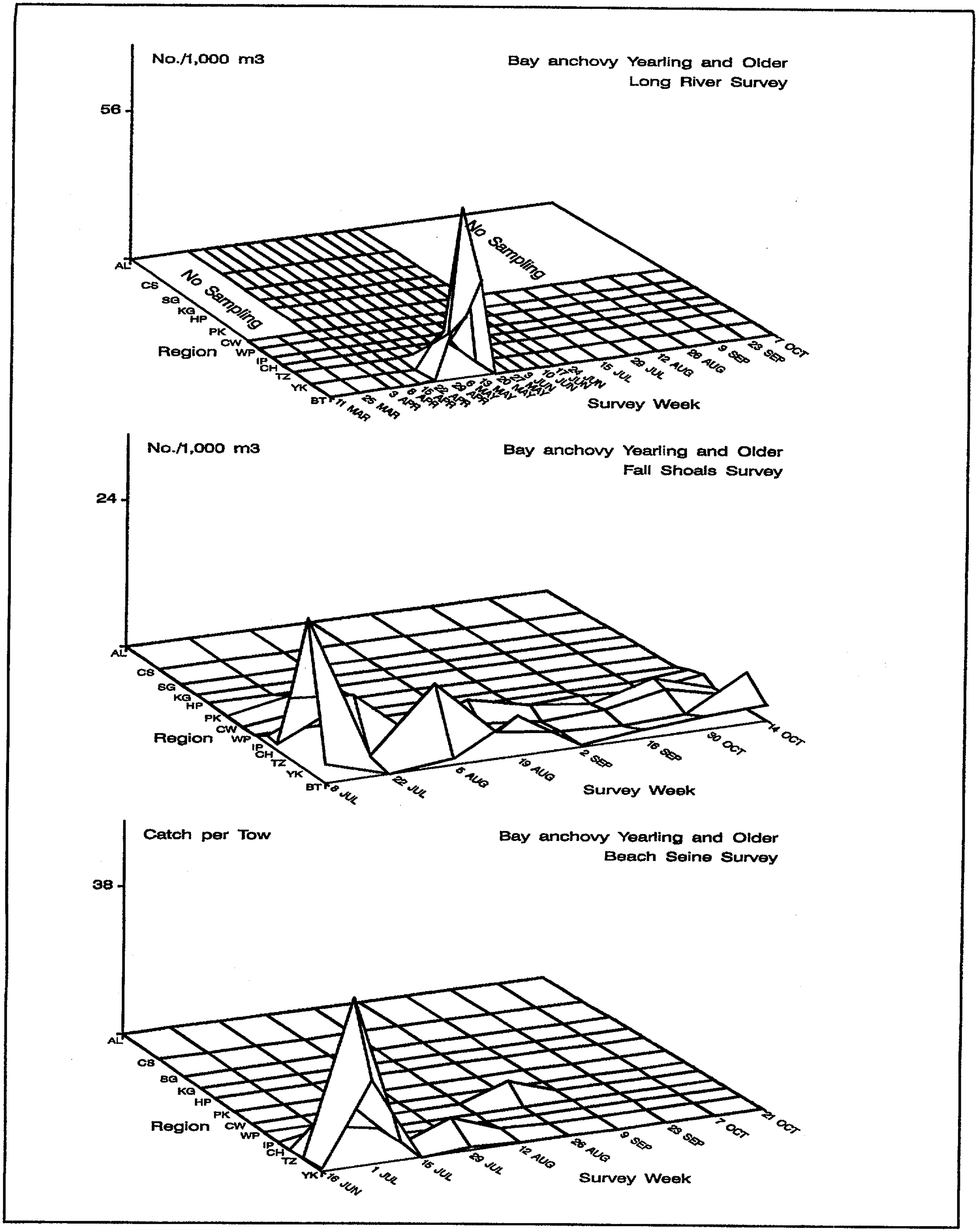


Figure 4-29. Spatiotemporal distribution of yearling and older bay anchovy in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

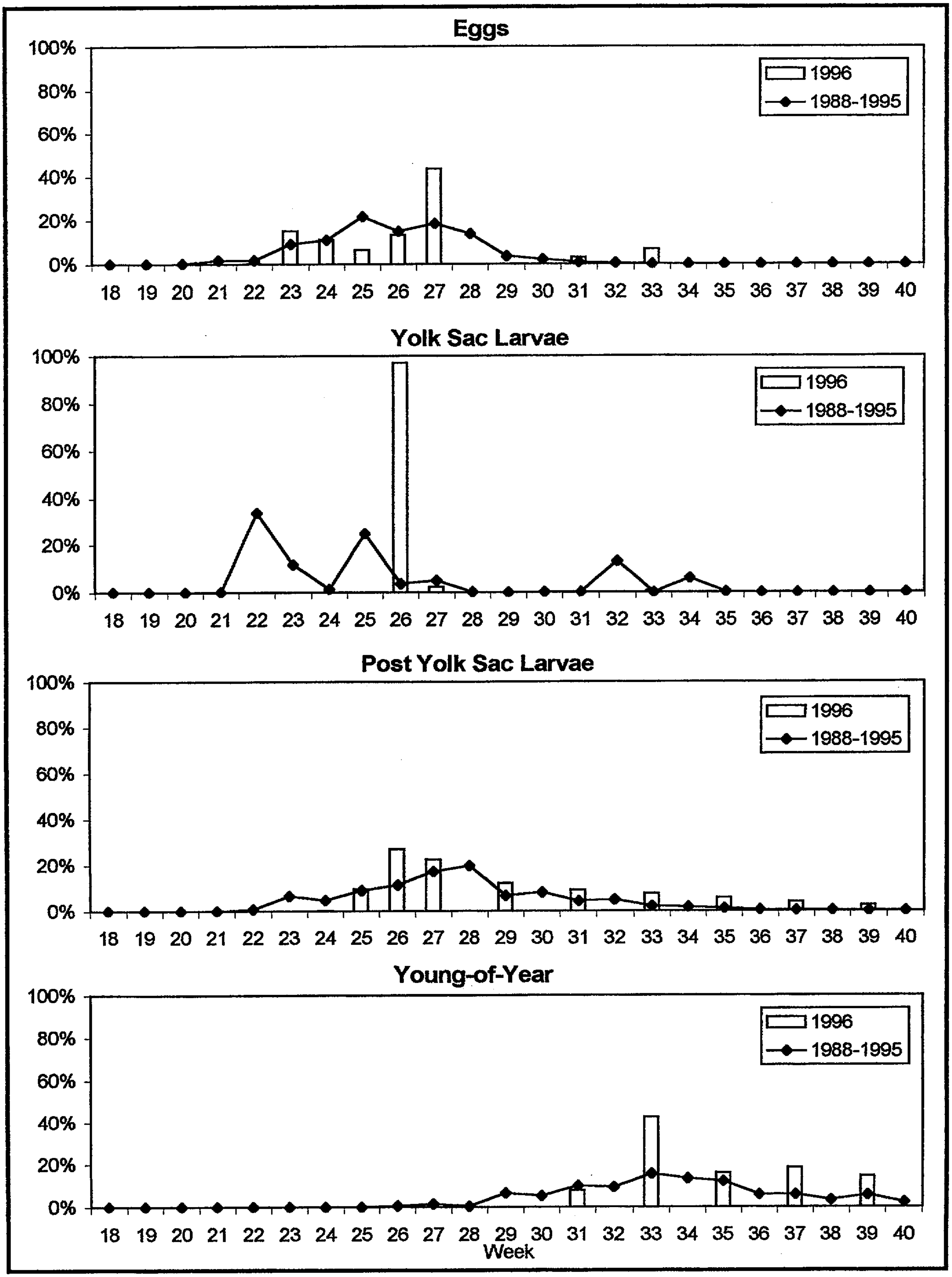


Figure 4-30. Temporal distribution indices for bay anchovy collected during Long River surveys of the Hudson River estuary, 1988-1996.

the range seen over the 7 previous years, spanning the period from late July through September (Figure 4-30).

The geographical distribution of bay anchovy early life stages in 1996 was very consistent with the distribution pattern seen over the 1988-1995 period (Figure 4-31). The 1996 YOY geographical distribution was similar to the previous 8 years with peak abundance in the Tappan Zee region. The 1996 geographical distribution of YOY bay anchovy in the BSS was very consistent with the 1974-1994 long-term trend, with the majority of the catch in Tappan Zee. The 1996 geographical distribution of yearling and older bay anchovy shows a concentration in the West Point region. However, the majority of yearling and older fish caught in 1996 by beach seines were found in the Tappan Zee region earlier than the temporal constraints of this index. The historical trend shows a predominance of yearling and older bay anchovy in the Yonkers region (Figure 4-32).

Weekly length statistics for bay anchovy juvenile life stage collected in 1996 show an overall increase in growth throughout the early summer and a slower growth rate during September and October as the fish near adult size. The zigzag pattern in the growth curve may reflect the different size selectivity of the variety of sampling equipment used. The wide range in size (up to 1.9 in.) during a collection period reflects the protracted spawning period of bay anchovy (Figure 4-33, Appendix Tables E-10 through E-12).

4.6 AMERICAN SHAD

American shad (*Alosa sapidissima*) are the largest of the North American species of anadromous herrings. They range from Newfoundland to northern Florida along the Atlantic Coast and over the continental shelf. They may live to 13 years, attain a length of 30 in., and weigh up to 12 lb. American shad usually become sexually mature after 3-6 years at sea, although some males may mature within 2 years. Most females mature by their fourth or fifth year.

Shad, like many anadromous herrings, have well-developed homing abilities and are capable of returning to their natal rivers and tributaries from far off the Coast. After spawning, the adults soon return to the ocean. They can repeat their annual spawning sequence up to eight times. In more southerly rivers along the Atlantic Coast, increasing percentages of the adult population die after spawning; south of Cape Fear, North Carolina, all spawners die on their first run.

In the spring, American shad migrate north, and by summer they are feeding in the Gulf of Maine, the Bay of Fundy, Georges Bank, and the Gulf of the St. Lawrence (Neves and Depres 1979; Dadswell et al. 1987). In fall they move south again along the perimeter of the Gulf of Maine and Georges Bank at depths greater than 60 m (Neves and Depres 1979); by winter they may congregate along the edge of the continental shelf. Based on tagging experiments conducted in 1950 and 1951, Talbot (1954) reported that American shad of Hudson River origin were recaptured from Maine to North Carolina. Most recaptured fish were from the fishery along the New Jersey Coast in spring. Pre-spawning adults move along the Coast in the spring to their natal rivers (Dadswell et al. 1987), which they enter as river temperatures reach 50-60 °F.

Peak spawning activity for American shad in the Hudson River occurs during May in the upper estuary. Shad have been reported to spawn on dark afternoons or evening hours over shallow, broad flats washed by moderate currents in the main body of coastal rivers (Leggett 1976). At present shad are not known to utilize Hudson River tributaries, the Mohawk River, or the upper Hudson River for spawning (Schmidt et al. 1988), although historically the Mohawk and upper Hudson may have been part of the shad spawning

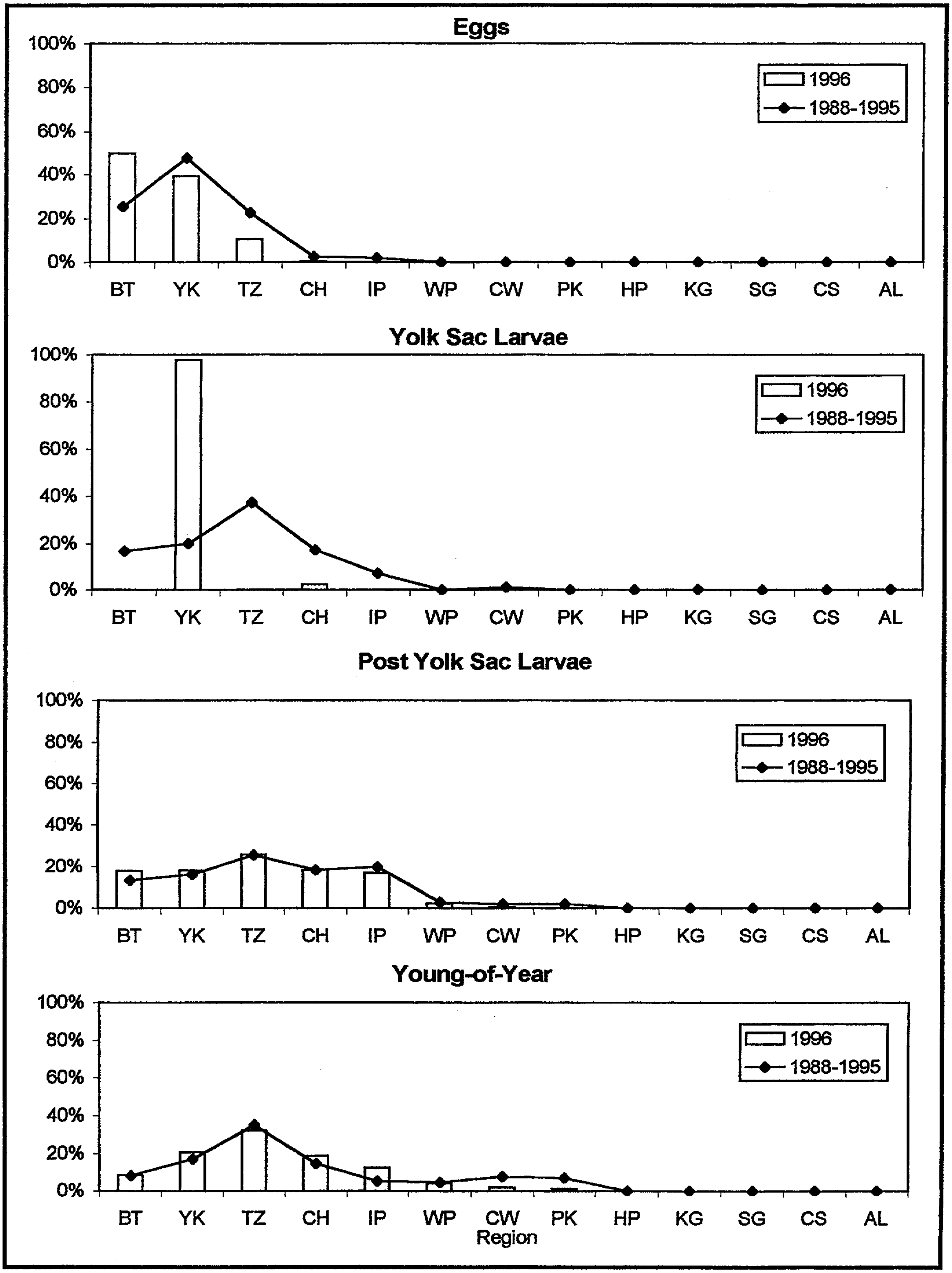


Figure 4-31. Geographic distribution indices for bay anchovy collected during Long River surveys of the Hudson River estuary, 1988-1996.

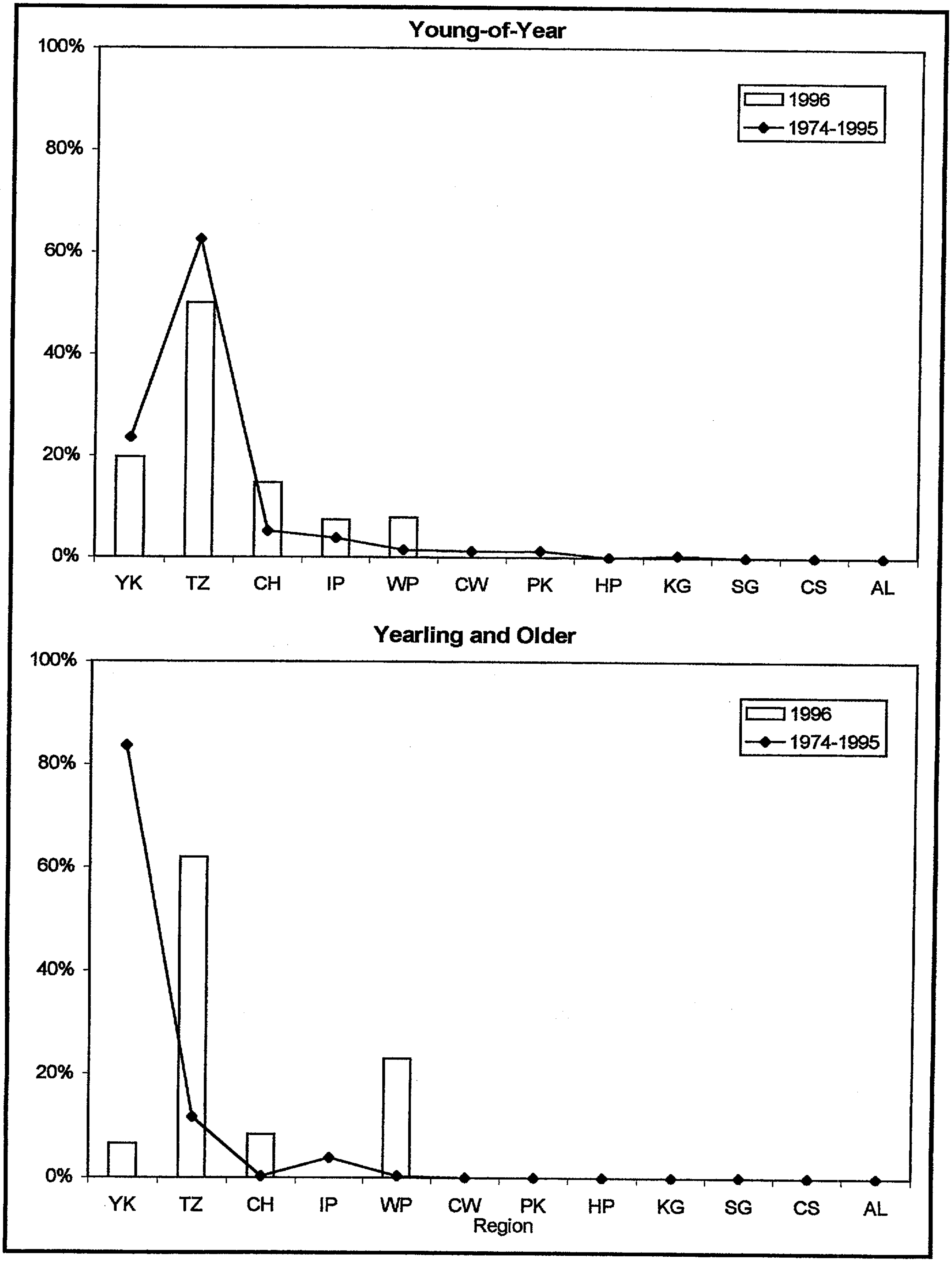


Figure 4-32. Geographic distribution indices for bay anchovy collected during Beach Seine surveys of the Hudson River estuary, 1974-1996.

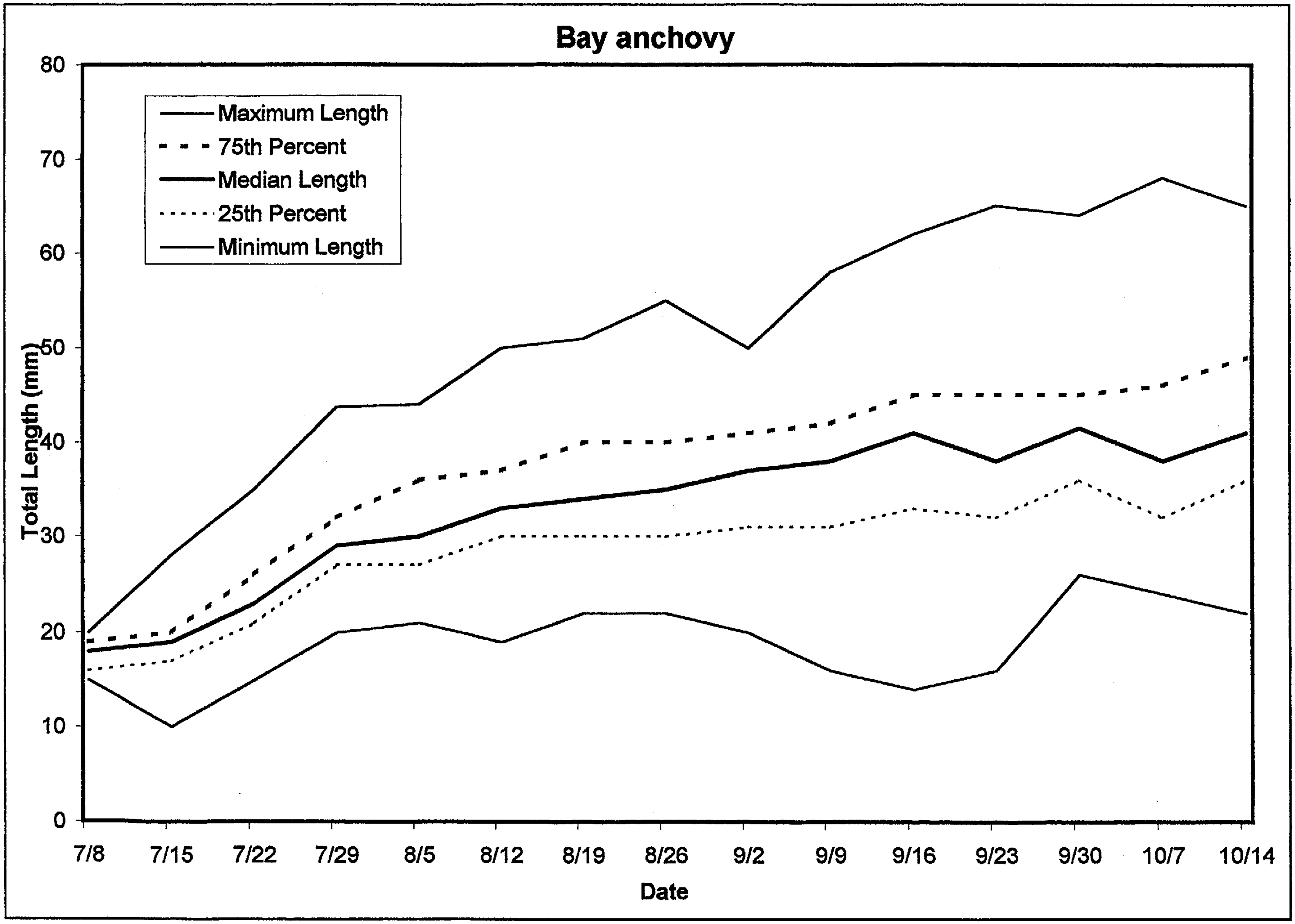


Figure 4-33. Weekly length statistics for young-of-year bay anchovy in the Hudson River estuary, 1996.

and nursery range. During 1995, the bulk of American shad eggs were collected from Saugerties to Albany during May (Figure 4-34).

American shad produce 116,000-468,000 eggs per female. The eggs are 1/16-1/8 in. in diameter, semibuoyant, and non-adhesive. They hatch in 3-12 days, depending upon water temperature. Newly hatched YSL are approximately 1/4 in. long and grow very rapidly. They absorb the yolk-sac within 1 week and are approximately 1/2 in. long at the beginning of the PYSL stage. Larval shad alternately swim toward the surface and passively sink (Chittenden 1969), but behavior has not been completely described. Although some downriver dispersal was apparent during 1996, both YSL and PYSL American shad were found primarily in the upper estuary between Hyde Park and Albany (Figures 4-34 and 4-35). During 1996 juvenile shad appeared to have been fully recruited to the beach seine gear by early July with the highest catch effort evident in the middle estuary, whereas the highest catch effort was still in the upper estuary for the FSS gear (Figure 4-36). Few yearling and older American shad were collected in 1996 (Figure 4-37), since adult spawning fish (3- to 6-year-old fish) effectively avoid the BSS and FSS juvenile gear.

Comparing the temporal distribution of early life stages of American shad in 1996 with previous years (1974-1995), the 1996 distributions of early life stages lagged 2-3 weeks behind the historical peak of the long-term record (Figure 4-38). Peak egg distribution in 1996 occurred in late May, followed by peak YSL distribution one week later, peak PYSL occurrence in late June, and peak YOY abundance in late June and early July. The geographical distribution of American shad early life stages in 1996 was generally consistent with the long-term record with greatest distribution in the upper estuary, except that more eggs and YSL were found downriver in the Catskill instead of Albany region (Figure 4-39).

The long-term geographical distribution of YOY American shad in the BSS shows tri-modal peaks in the lower estuary (Tappan Zee and Croton-Haverstraw), mid-estuary (Cornwall and Poughkeepsie), and upper estuary (Saugerties, Catskill, and Albany) (Figure 4-40). The 1996 geographical distribution data supported the mid- and upper estuary peaks, with fewer YOY found in the lower estuary in 1996.

Weekly length statistics for YOY American shad collected in 1996 show a rapid growth period in June and slower but steady growth through the end of BSS/FSS collections in October (Figure 4-41, Appendix Tables E-13 through E-15). At the time they emigrate from the Hudson River at the end of the summer, juvenile shad range from 3 to 4 in. long. This emigration is triggered by declining water temperatures and may be related to size (Schmidt et al. 1988); larger juveniles may tend to emigrate earlier. The shad emigration is a gradual movement of the population seaward over several months. Shad emigrate from the estuary earlier than either of the other two anadromous herrings commonly found in the Hudson River, alewife and blueback herring; and Schmidt et al. (1988) speculated that the earlier migration might be a behavioral adaptation that reduces competition with juveniles of the other two herring species.

4.7 RIVER HERRINGS (*Alosa* spp.)

Blueback herring (*Alosa aestivalis*) and its congener, alewife (*A. pseudoharengus*), are similar in general form to American shad, but are much smaller and not as deep bodied when adult. Blueback herring and alewife are very much alike in external appearance, especially as larvae, but older alewife have proportionately larger eyes and deeper bodies than blueback herring. In Hudson River sampling, eggs and larvae of alewife and blueback herring are not differentiated because of the similarity in appearance. Any references in this document to eggs and larvae pertain to the combined numbers from both species, referred to as *Alosa* spp. When juveniles of these two species reach sufficient size, they are differentiated by the size of the eyes and the mouth morphology. The differentiated juveniles are discussed separately below.

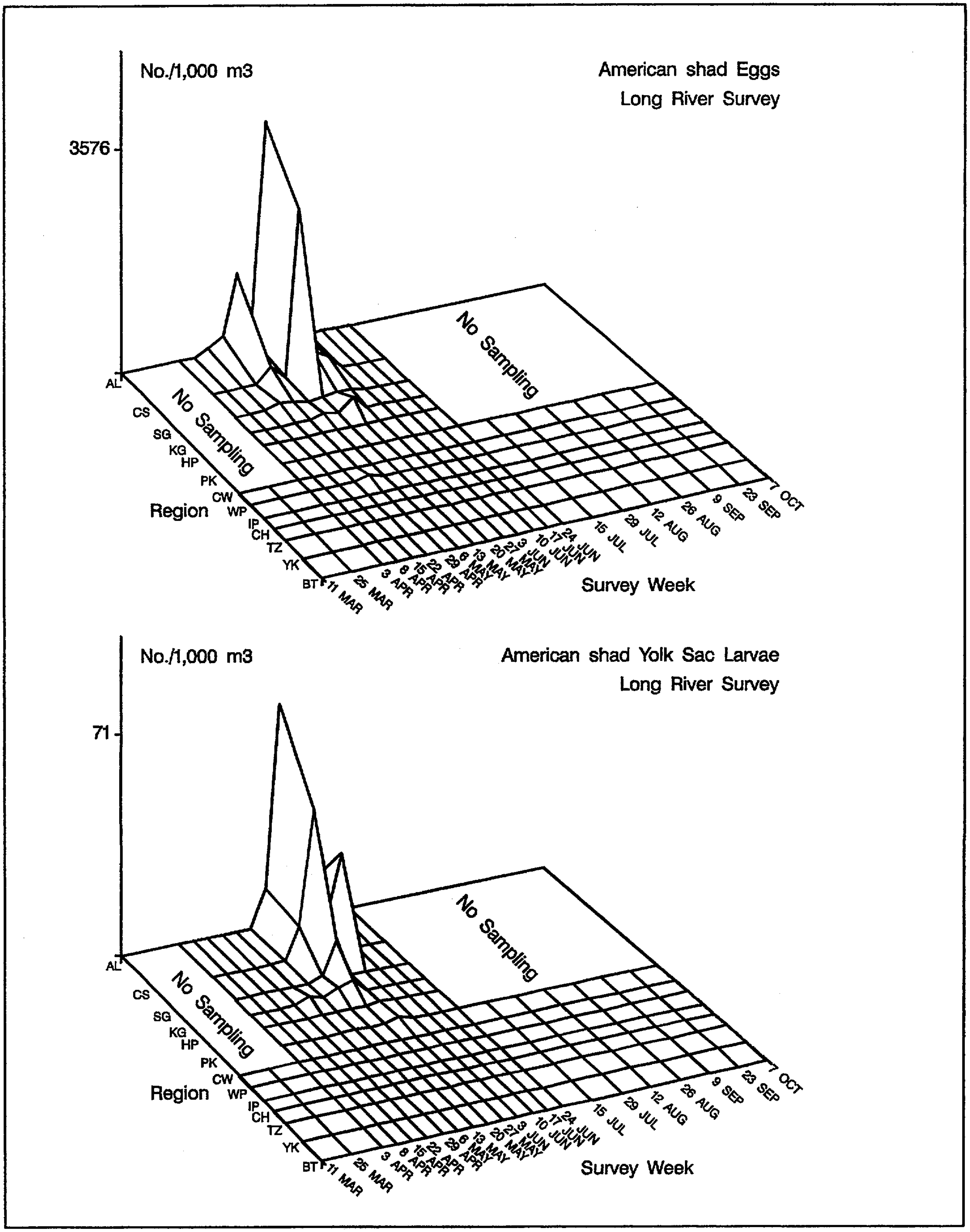


Figure 4-34. Spatiotemporal distribution of eggs and yolk sac larval American shad in the Hudson River estuary based on the 1996 Long River Survey.

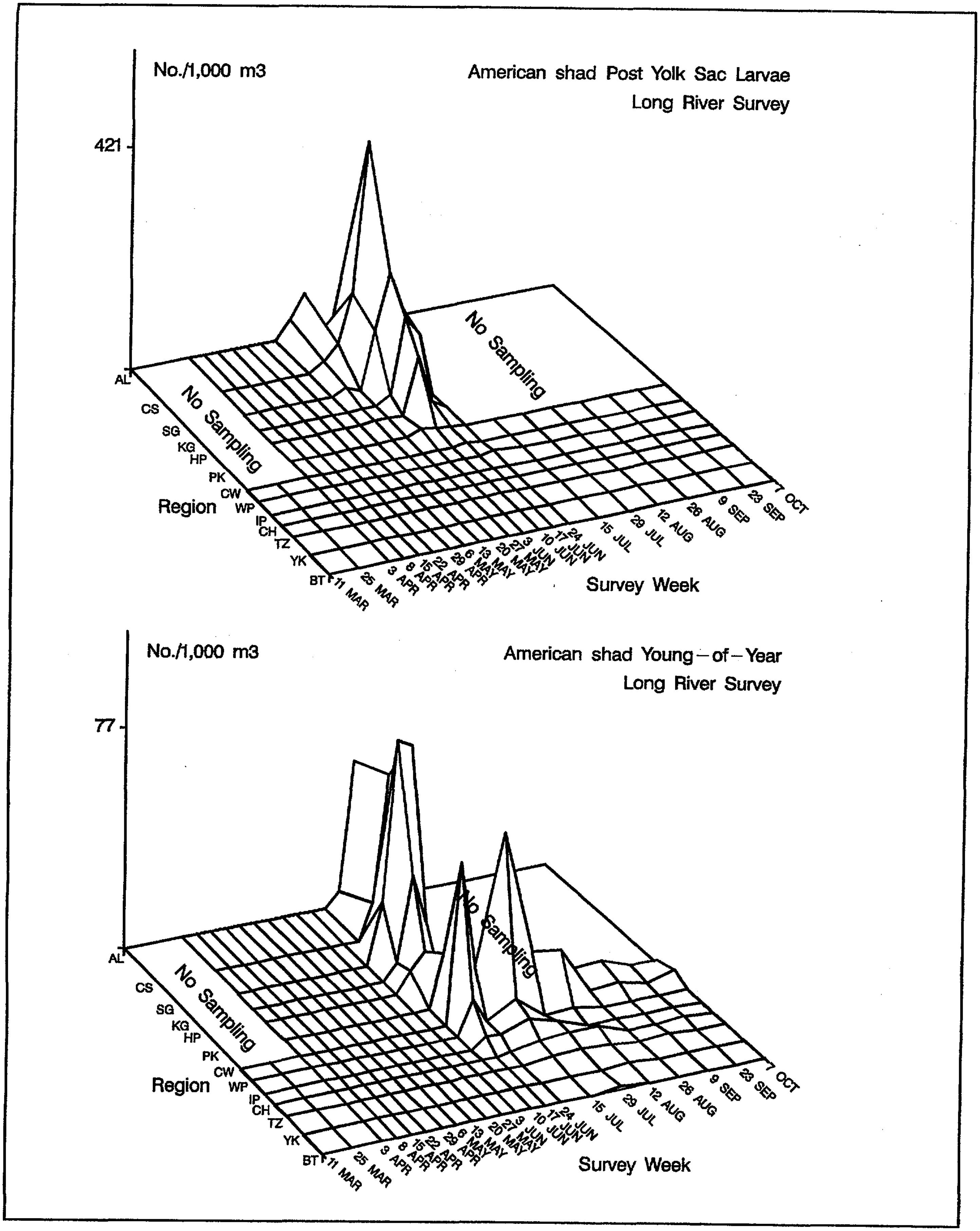
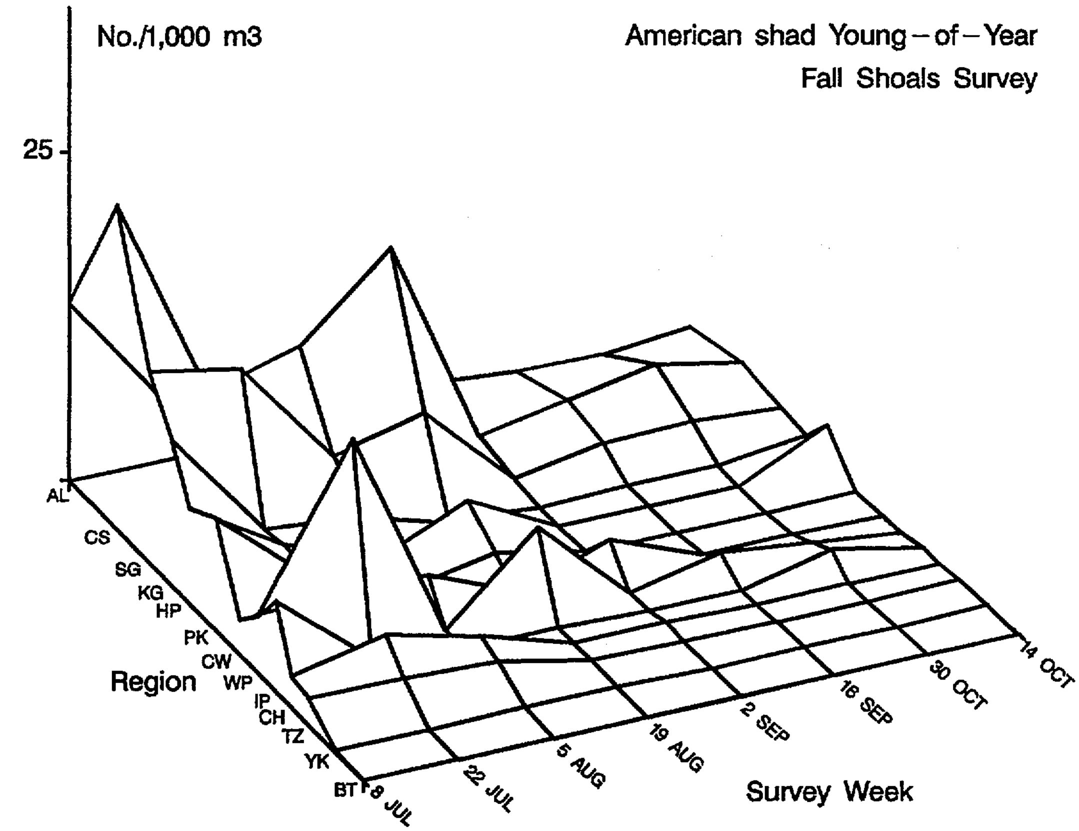


Figure 4-35. Spatiotemporal distribution of post yolk sac larval and young-of-year American shad in the Hudson River estuary based on the 1996 Long River Survey.



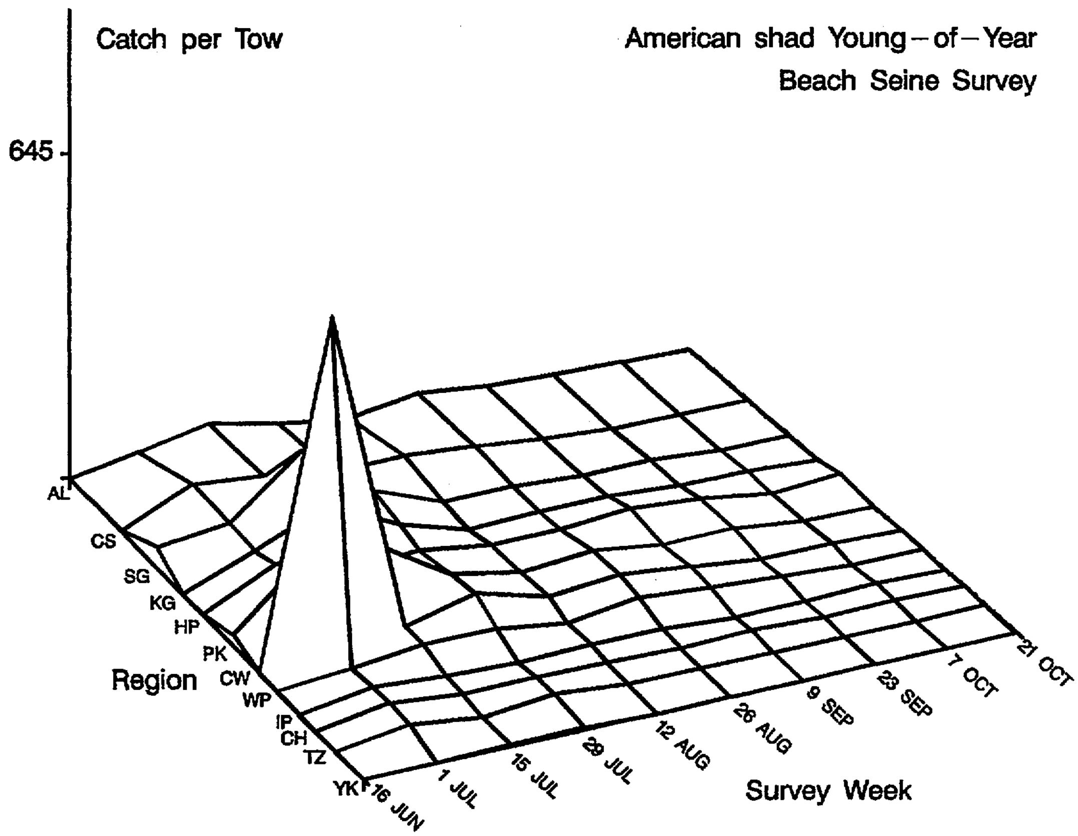


Figure 4-36. Spatiotemporal distribution of young-of-year American shad in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

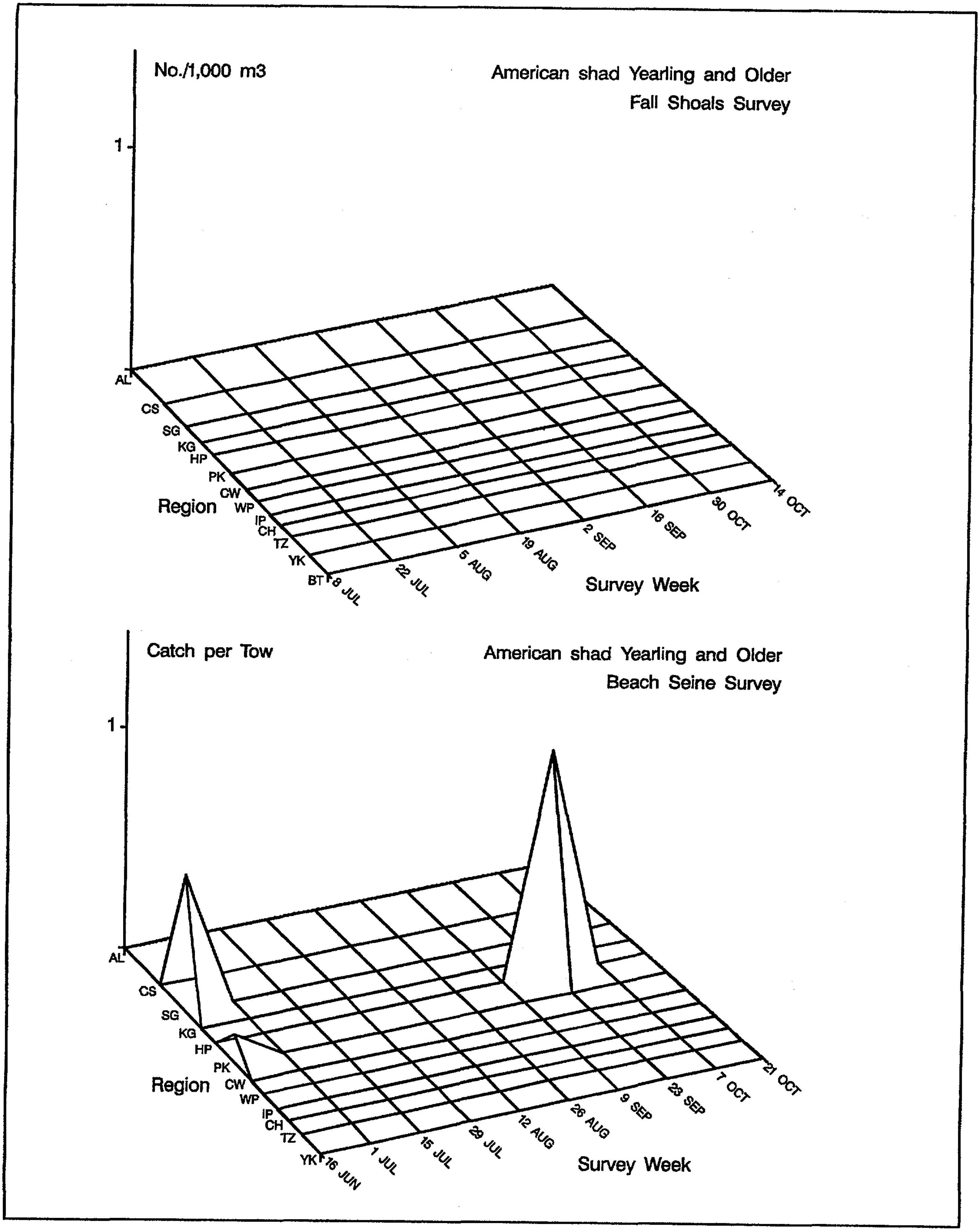


Figure 4-37. Spatiotemporal distribution of yearling and older American shad in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

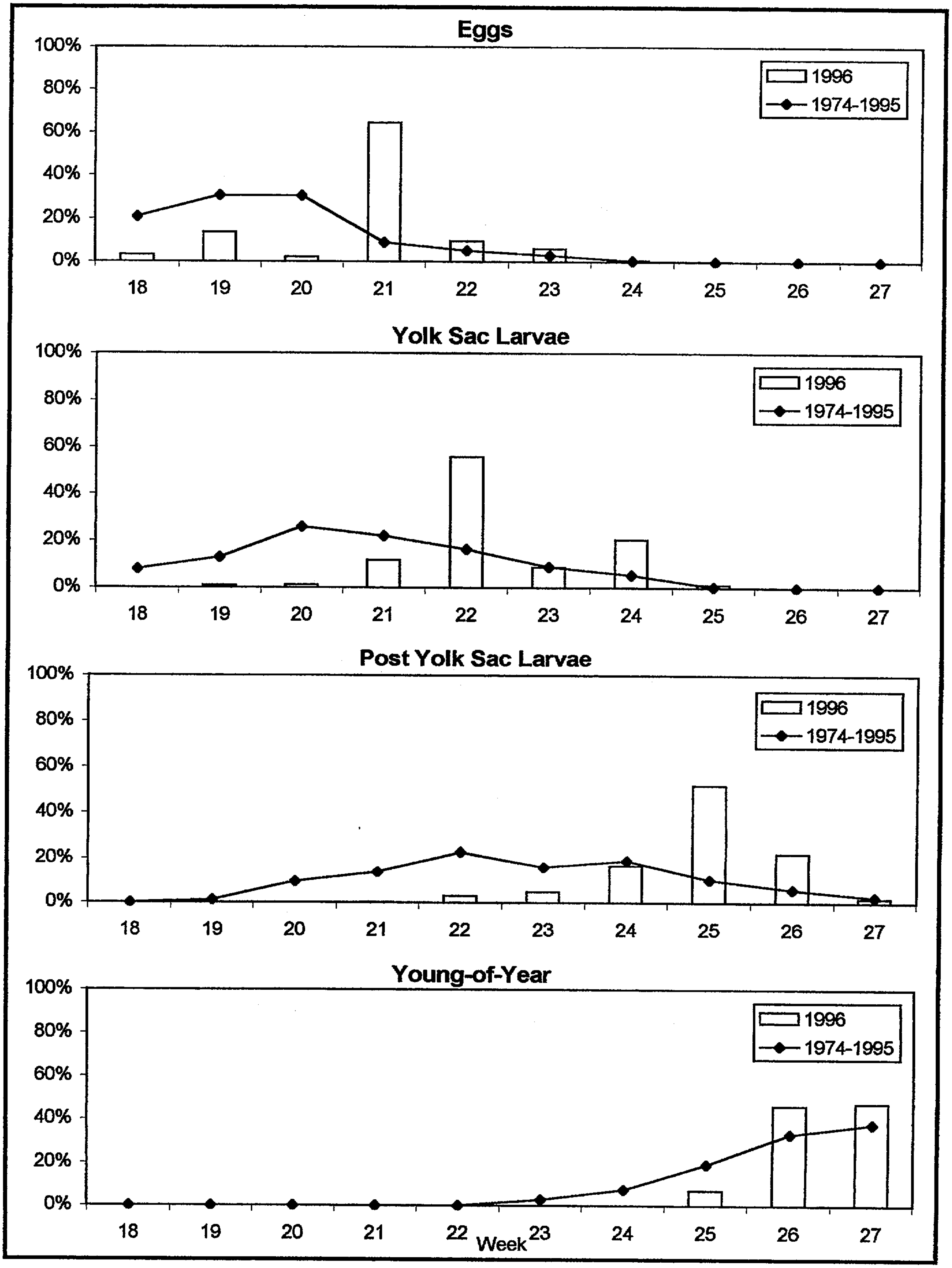


Figure 4-38. Temporal distribution indices for American shad collected during Long River surveys of the Hudson River estuary, 1974-1996.

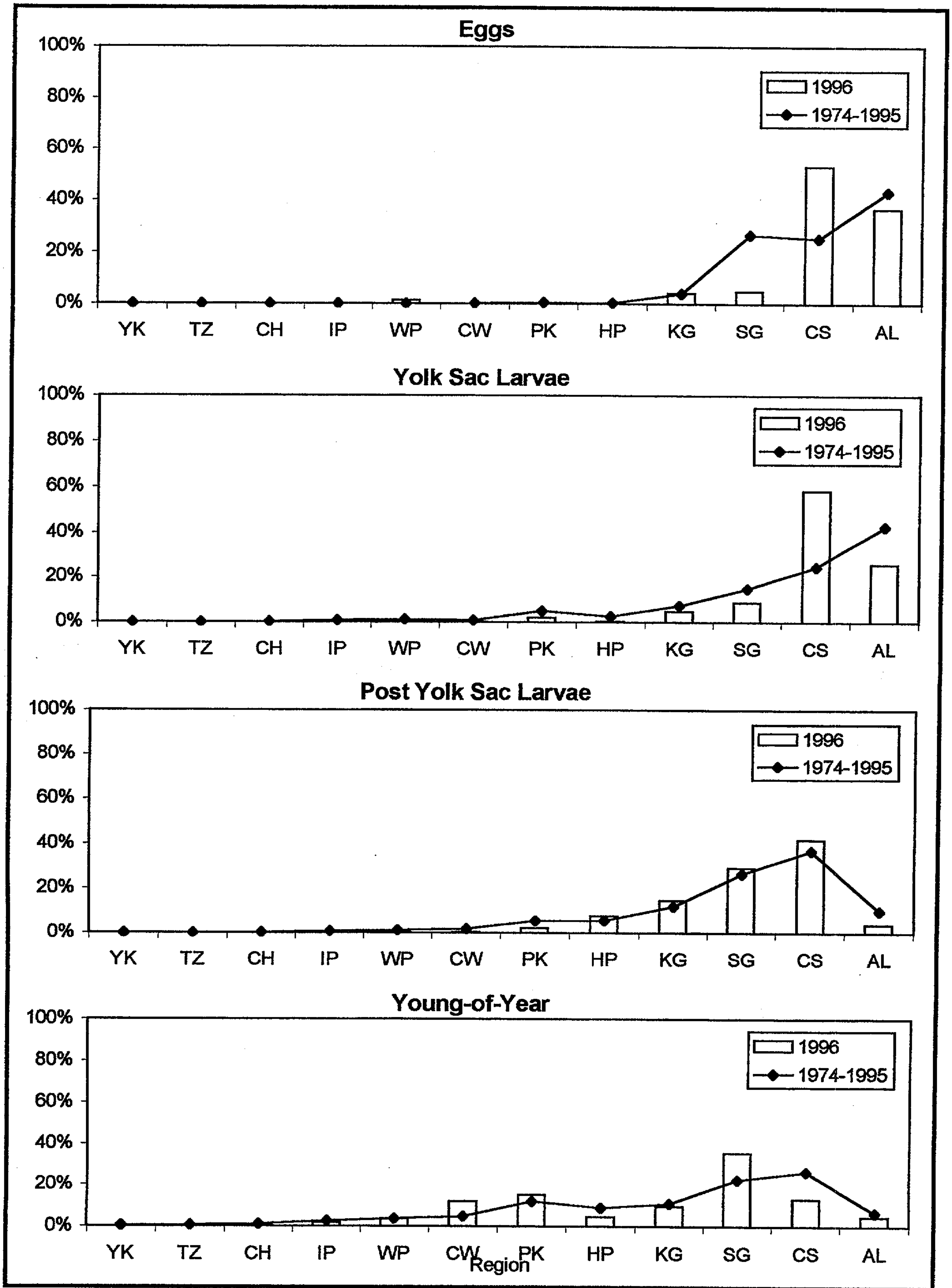


Figure 4-39. Geographic distribution indices for American shad collected during Long River surveys of the Hudson River estuary, 1974-1996.

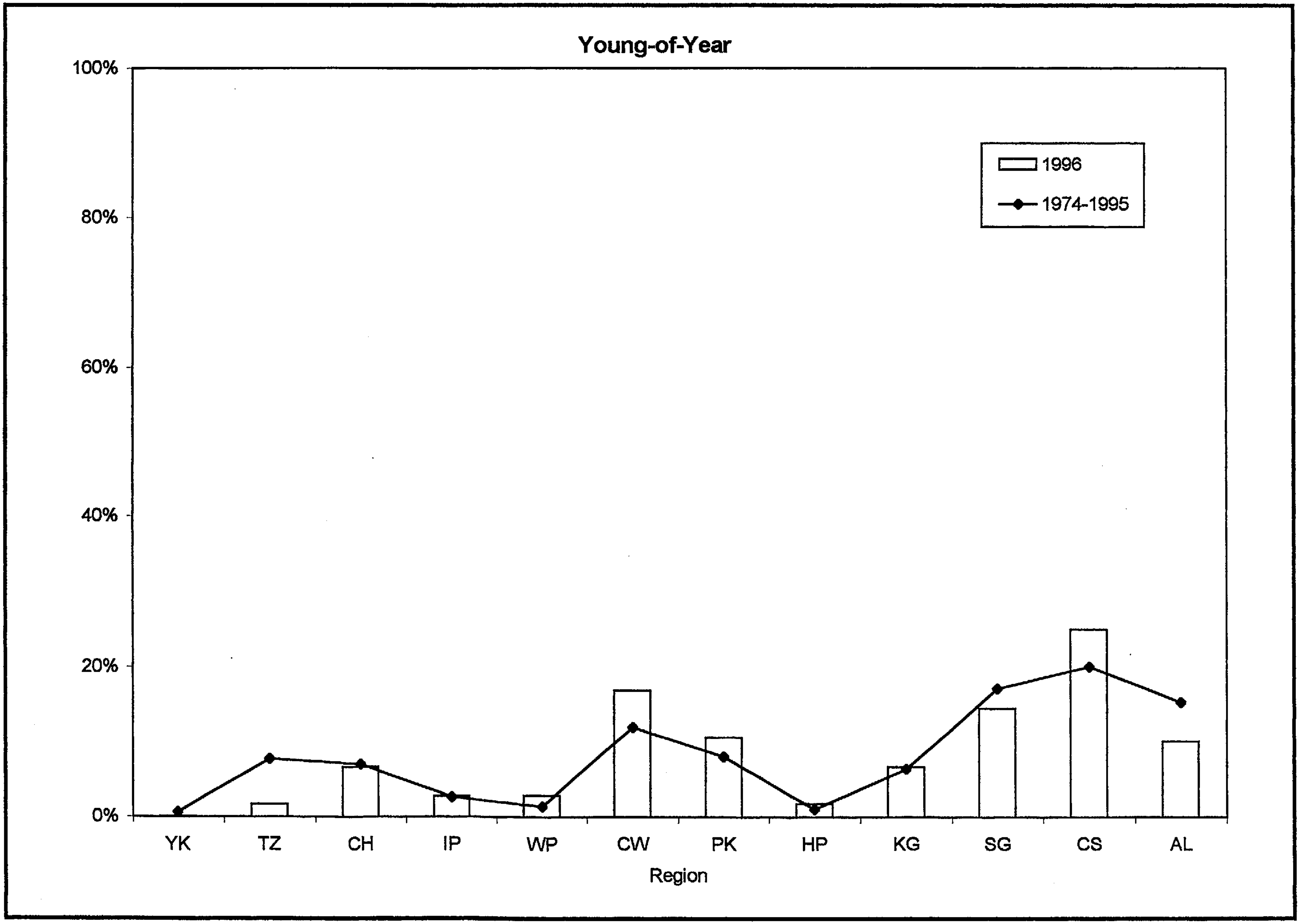


Figure 4-40. Geographic distribution indices for American shad collected during Beach Seine surveys of the Hudson River estuary, 1974-1996.

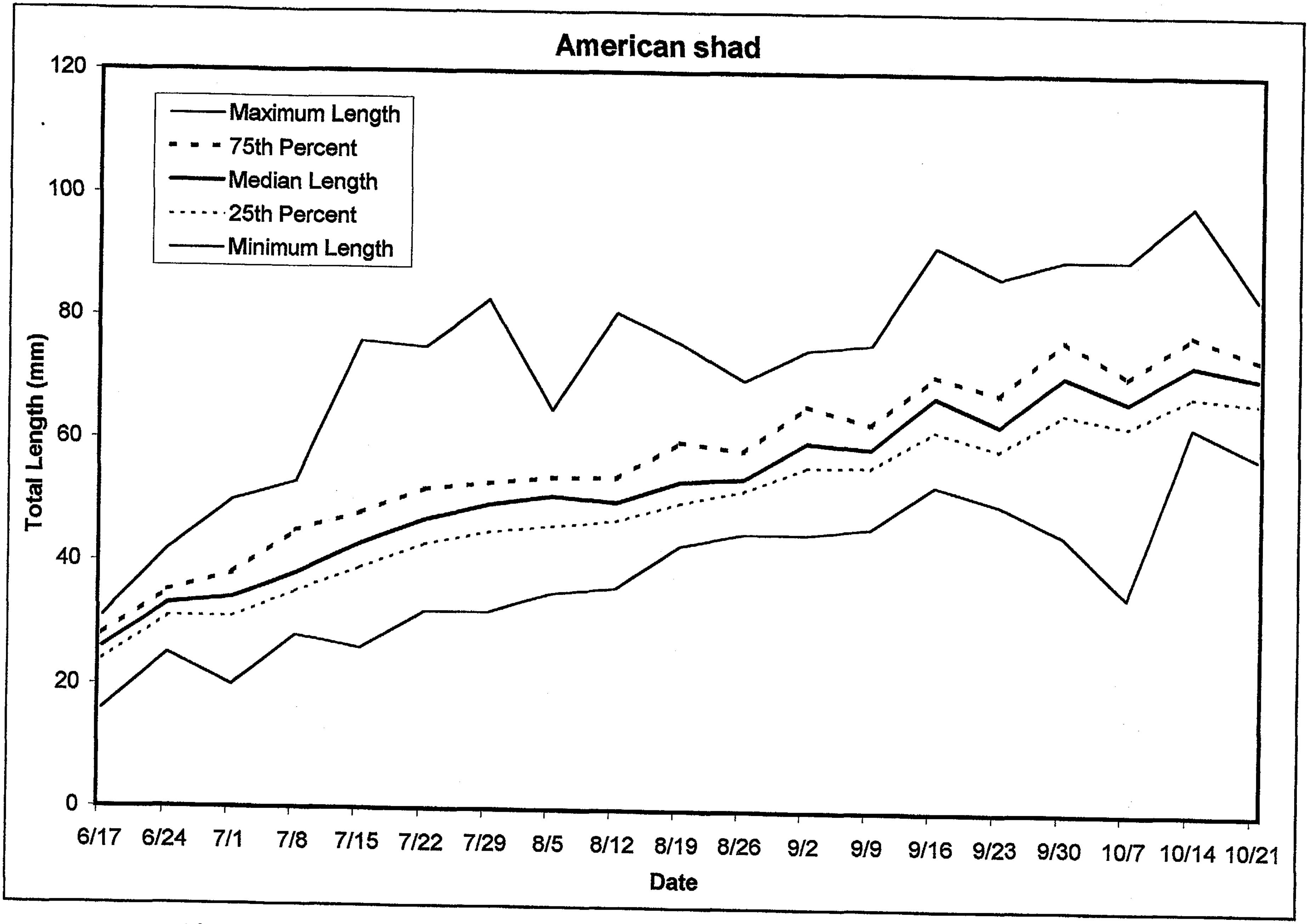


Figure 4-41. Weekly length statistics for young-of-year American shad in the Hudson River estuary, 1996.

Of the three anadromous herring species that spawn in the Hudson River estuary, blueback herring are the last to begin their spring spawning run, preferring warmer water than American shad or alewife. Alewife spawning activity is most intense when water temperatures are 51-71°F, which results in slightly earlier spawning than that of blueback herring. Blueback herring peak spawning activity occurs near the end of May. Spawning activity occurs within the river, but preferred spawning habitat for blueback herring is in fast-flowing tributaries, where eggs are released over hard substrates (Loesch and Lund 1977). In the Hudson River, blueback herring travel through the locks and spawning occurs within the Mohawk River and upper Hudson River. Alewife prefer ponds and slow-moving streams for their spawning habitat.

Alewife eggs are semidemersal, slightly adhesive, but easily torn free and carried by currents. The egg diameter is about 1/16 in. Hatching takes 2-15 days depending upon temperature (Smith 1985). Blueback herring produce 45,000-350,000 eggs per female. The eggs are 1/16 in. in diameter and adhesive upon release, but they may later become dislodged and be pelagic. Development proceeds rapidly and hatching occurs in 2-3 days. Newly hatched blueback herring are 0.125 in. long and the yolk-sac is absorbed in about 4 days. At the beginning of the PYSL stage, the larvae are about 0.1875 in. long.

In the Hudson River during 1996, peak abundance of *Alosa* spp. eggs occurred in the upper estuary, mainly from Catskill to Albany during mid-May (Figure 4-42). YSL and PYSL were also most abundant in the upper estuary but PYSL were found downriver as far as Indian Point by early June (Figure 4-43). Juvenile *Alosa* spp. were found throughout the middle and upper estuary from June to September (Figures 4-43 and 4-44).

Comparing the temporal distribution of early life stages of *Alosa* spp. in 1996 with previous years (1974-1995), the 1996 peak abundance periods lagged 1-2 weeks behind the historical peak in the long-term distribution (Figure 4-45). Most eggs and YSL appeared in late May in 1996, whereas PYSL distribution occurred from late May through early July. YOY temporal distributions in 1996 peaked in early July, consistent with the long-term pattern. The geographical distribution of *Alosa* spp. early life stages showed that most of the *Alosa* spp. eggs are found in the Catskill and Albany regions and the larvae gradually disperse downriver to the middle estuary regions. The 1996 distribution is consistent with this long-term record, except that YOY were more abundant in the middle estuary in 1996 (Figures 4-46 and 4-47).

4.8 ALEWIFE

Alewife are usually anadromous and inhabit coastal waters from Newfoundland to South Carolina but they have also been introduced into the upper Great Lakes and inland lakes in Rhode Island, Maine, New Hampshire, Virginia, Ontario, and New York, where they provide forage for large predatory species. Anadromous alewife spend most of their lives in salt water and return to fresh water to spawn in lakes and quiet stretches of rivers (Scott and Crossman 1973). They are capable of homing to their natal rivers after they mature at ages 3 or 4, even though substantial numbers may not return and considerable mixing of river stocks may occur (reviewed in Fay et al. 1983). Adults are typically about 10- to 12 in. long and have a maximum life span of about 9 years.

Alewife is chiefly a plankton feeder; copepods, amphipods, shrimps, and appendicularians are the chief diet. However, they also take small fish, such as herring, eels, lance, cunners, and their own species, as well as fish eggs. Upon returning to the lower estuary after spawning, alewife feed heavily on shrimp (Bigelow and Schroeder 1953).

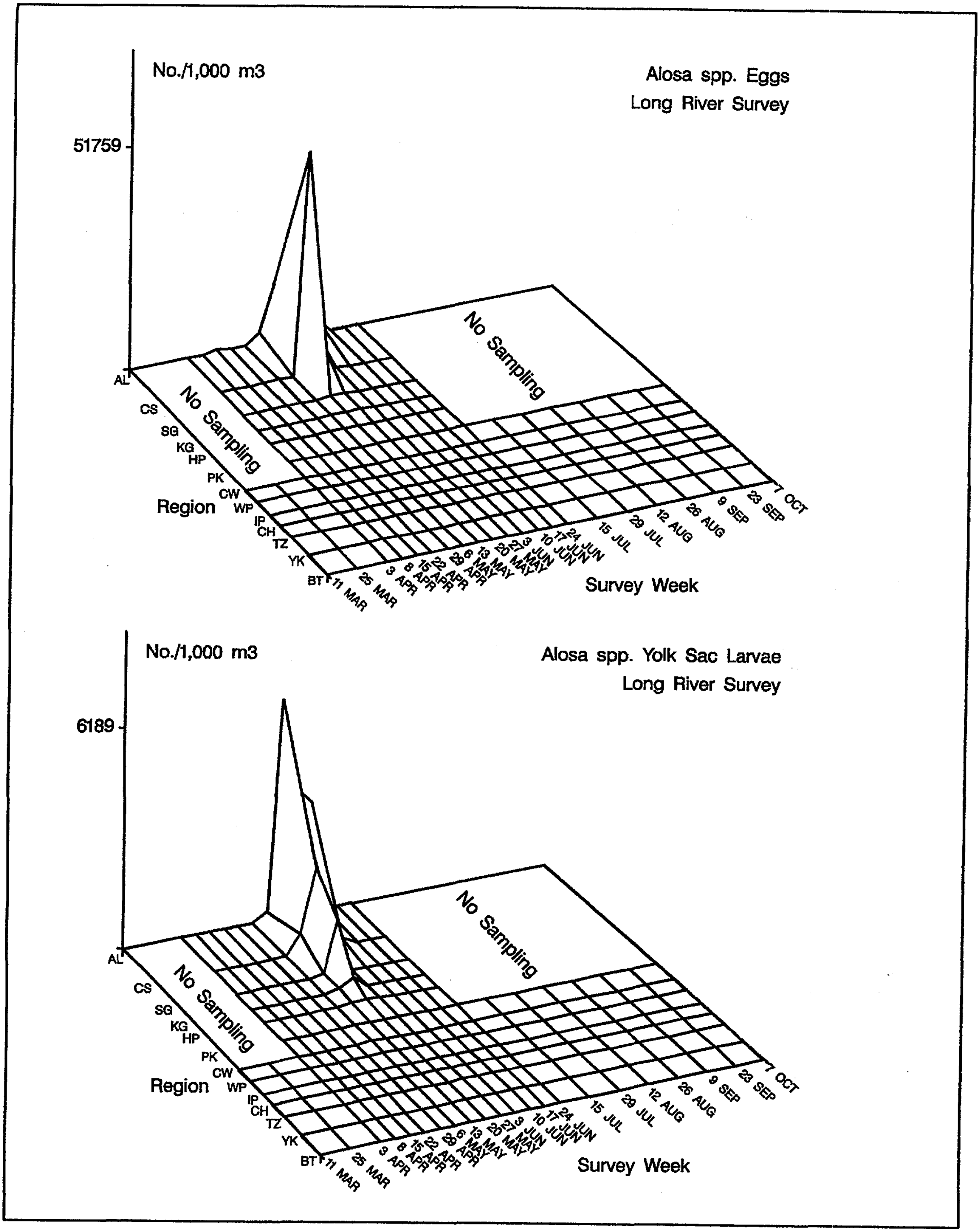


Figure 4-42. Spatiotemporal distribution of eggs and yolk sac larval Alosa spp. in the Hudson River estuary based on the 1996 Long River Survey.

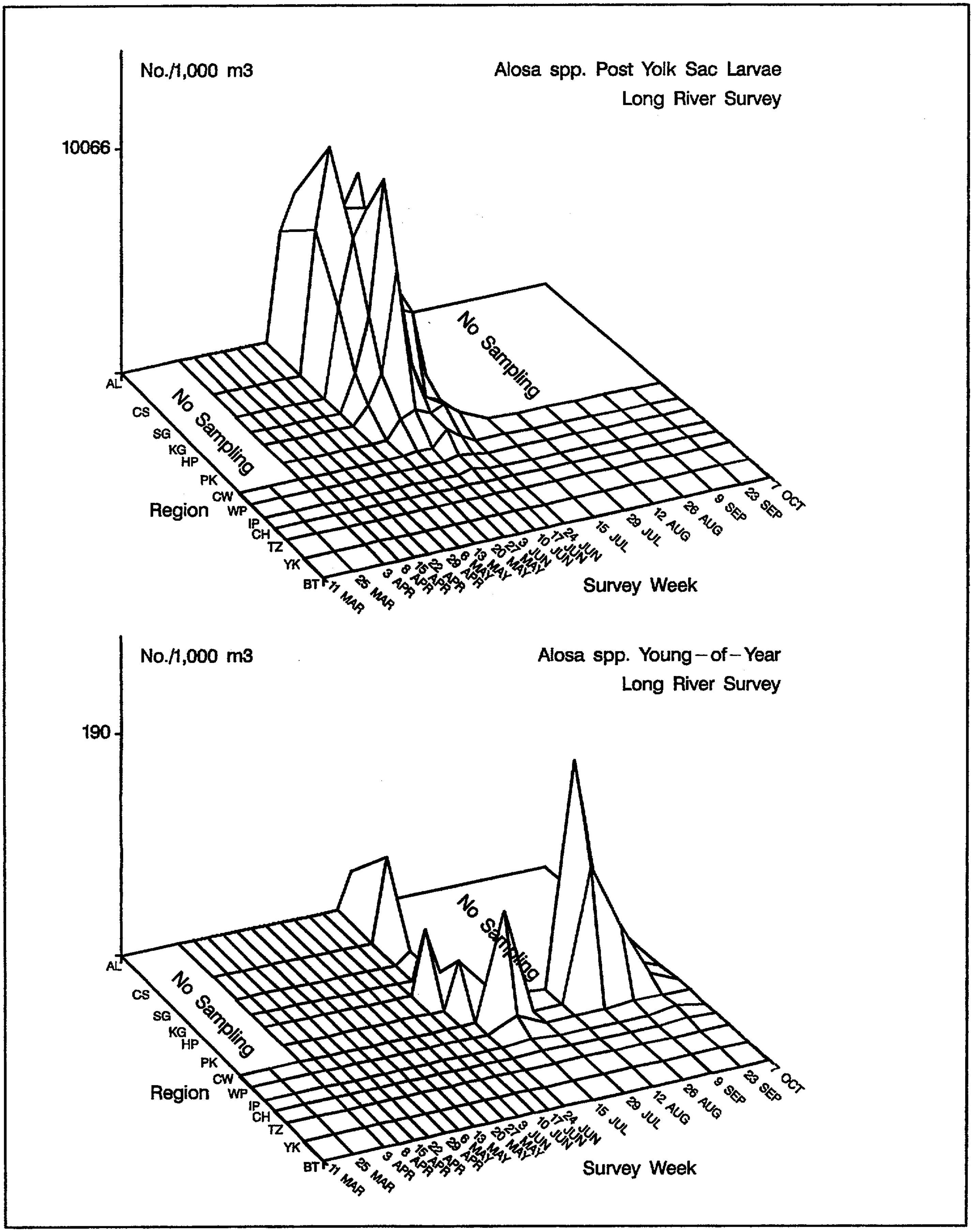


Figure 4-43. Spatiotemporal distribution of post yolk sac larval and young-of-year Alosa spp. in the Hudson River estuary based on the 1996 Long River Survey.

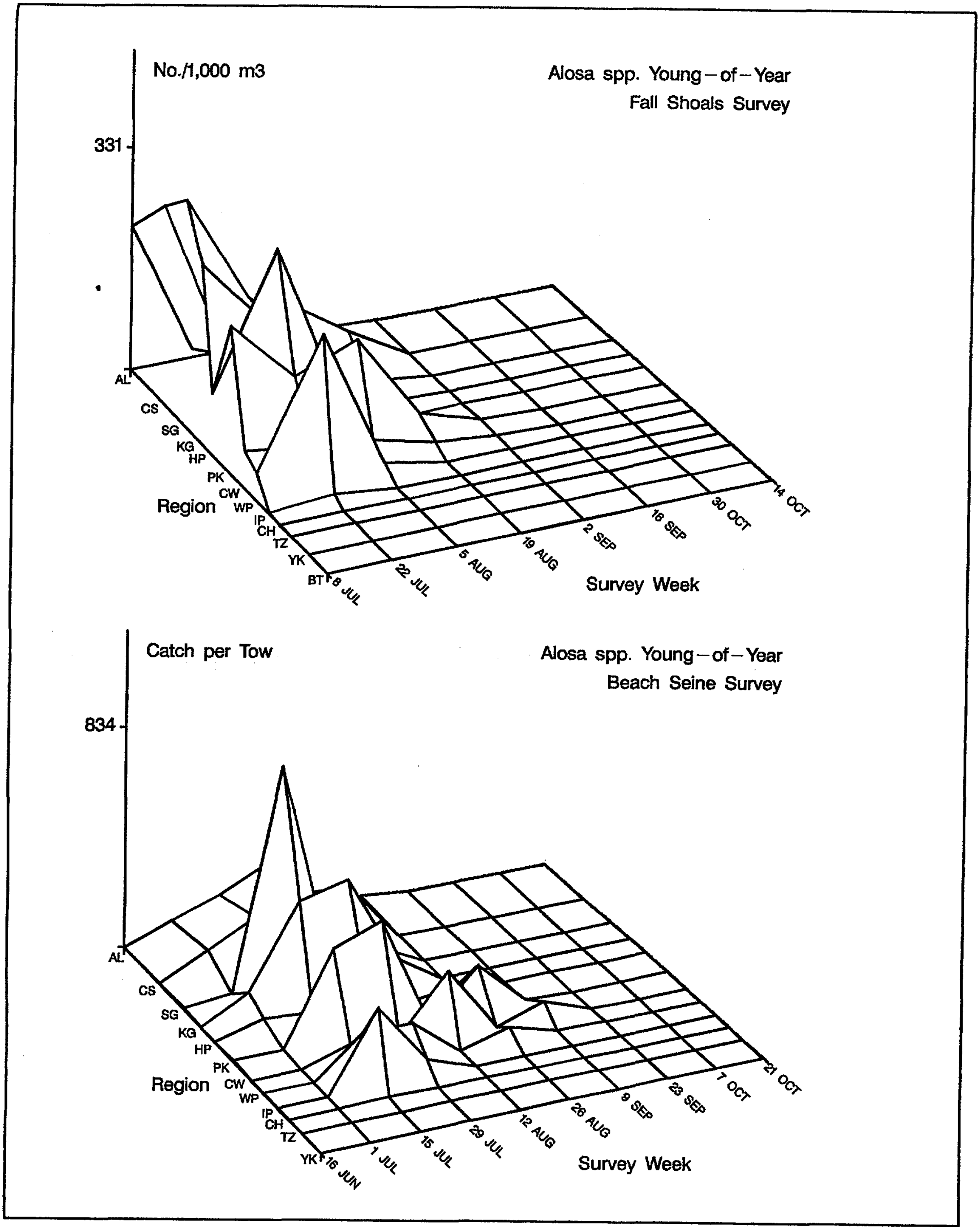


Figure 4-44. Spatiotemporal distribution of young-of-year Alosa spp. in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

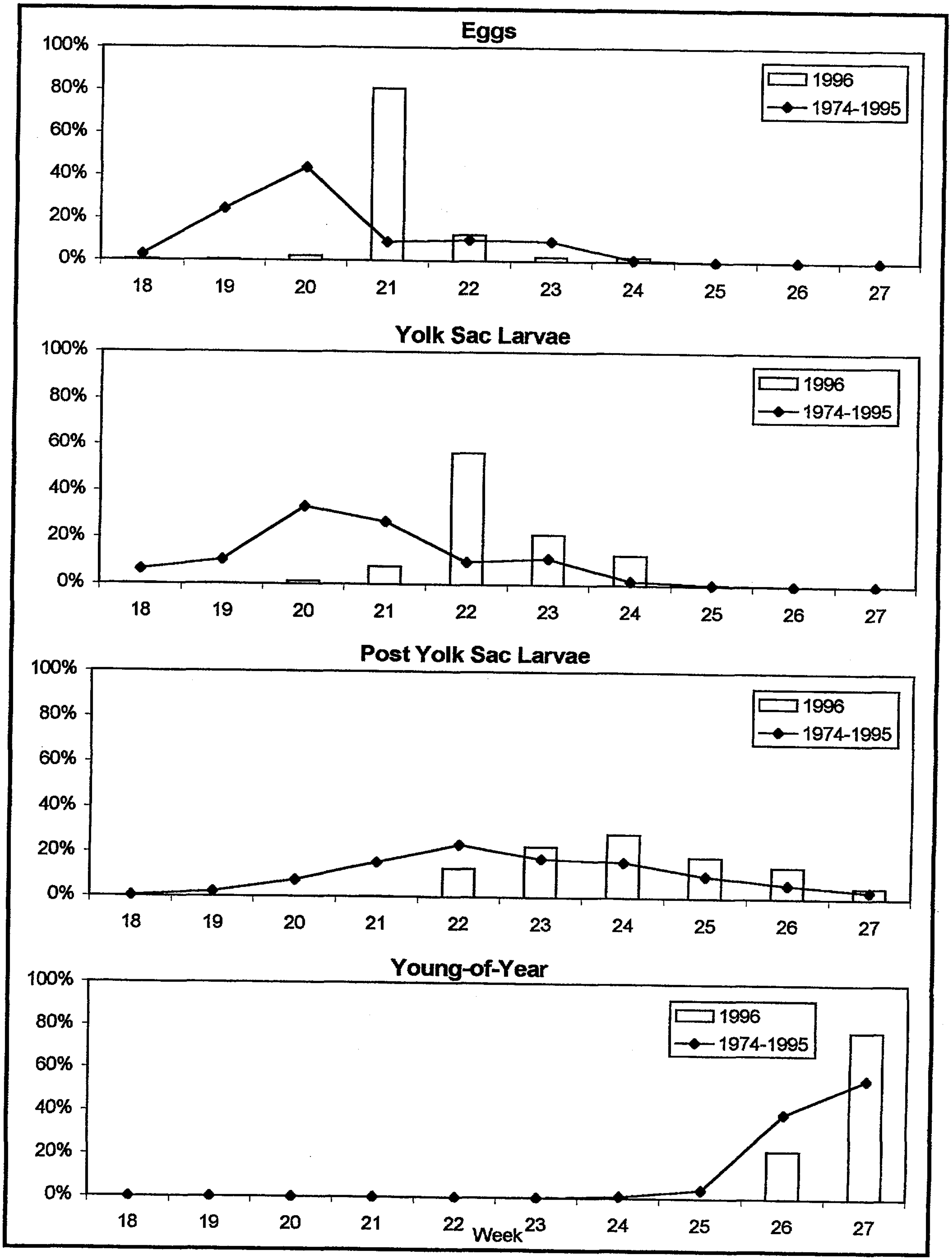


Figure 4-45. Temporal distribution indices for *Alosa* spp. collected during Long River surveys of the Hudson River estuary, 1974-1996.

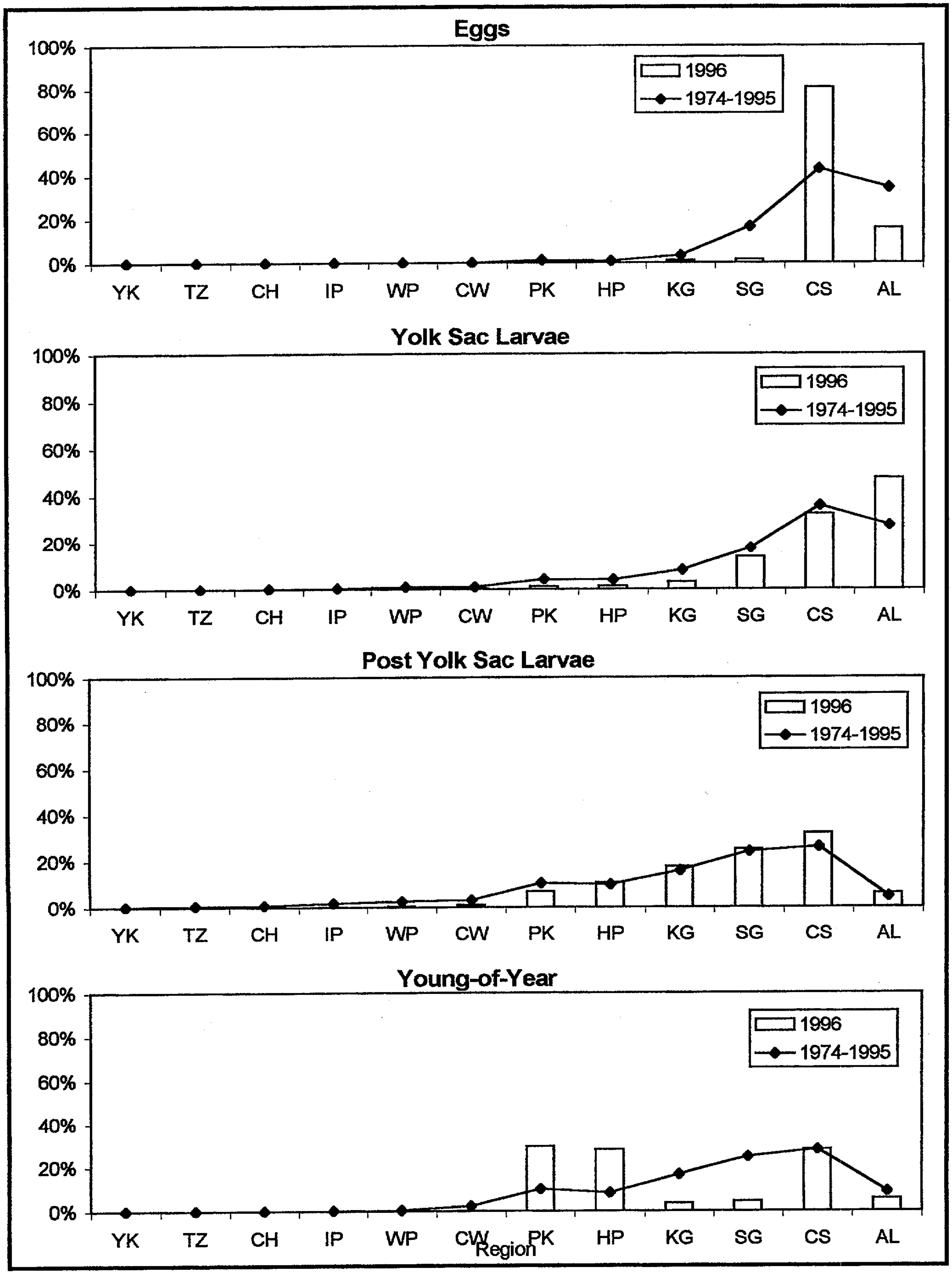


Figure 4-46. Geographic distribution indices for *Alosa* spp. collected during Long River surveys of the Hudson River estuary, 1974-1996.

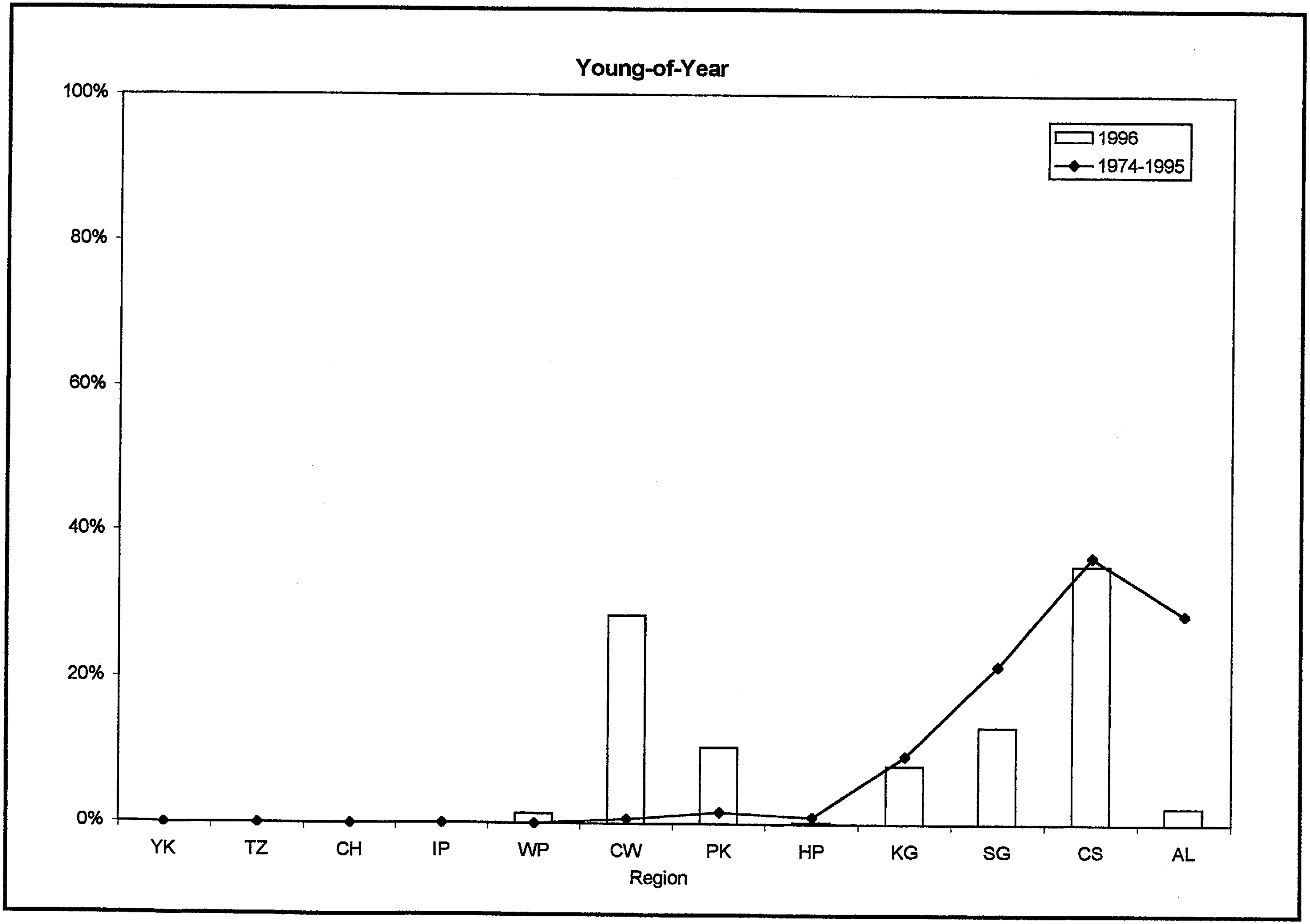


Figure 4-47. Geographic distribution indices for *Alosa* spp. collected during Beach Seine surveys of the Hudson River estuary, 1974-1996.

Alewife assume adult characteristics at about one month of age and about 0.5 in. long. At this stage they tend to move inshore during the day and offshore into deeper waters at night. They remain in estuaries until water temperatures begin declining in the fall, when they move into coastal waters. Their emigration pattern is prolonged, like that of American shad. Timing of migration may also be related to size, and larger juveniles migrate earlier (Schmidt et al. 1988). Little is known about the migration patterns at sea. The presence of alewife and blueback herring in the Bay of Fundy has led to speculation that these species have an oceanic migratory pattern similar to American shad, although that has not been confirmed (Harris and Rulifson 1989).

Juvenile alewife began appearing in the 1996 LRS in late June in the upper estuary with the highest density found in the Albany region (Figure 4-48). Juvenile alewife captured in the 1996 FSS were found throughout the upper and middle estuary while juvenile alewife from the BSS were most abundant in the middle estuary (Figure 4-48). Few yearling and older alewife were collected in the 1996 monitoring program (Figure 4-49).

Comparing the geographical distribution of YOY alewife based on the 1996 BSS with previous years (1974-1995), the 1996 distribution of juveniles does not wholly support the long-term pattern of a tri-modal peak in distribution (Figure 4-50). Approximately 40 percent of the YOY alewife were caught in the Cornwall region in 1996 compared to 15 percent in the long-term pattern. Few alewife were collected in the upper estuary, but a secondary peak in the lower estuary was evident in 1996.

Weekly length statistics for alewife juveniles collected in 1996 showed an overall increase in growth from early July through the end of BSS/FSS collections in October, marked by a zigzag pattern that may be related to sampling gear selectivity on alternating weeks of the FSS and BSS (Figure 4-51, Appendix Tables E-16 and E-17).

4.9 BLUEBACK HERRING

Blueback herring range from southern New Brunswick and Nova Scotia southward to northern Florida. Although they are caught as far as 70-80 miles offshore, little is known about the oceanic migration patterns. The presence of blueback herring and alewife in the Bay of Fundy has led to speculation that these species have an oceanic migratory pattern similar to that of American shad, although that has not been confirmed (Harris and Rulifson 1989). The degree to which river herring of Hudson River origin return to the Hudson River is not known nor is the degree to which spawning stocks from different river systems mix. Blueback herring grow to a maximum length of 15 in. and a weight of about 1 lb and live for up to 8 or 9 years (Scott and Crossman 1973).

Within a month of hatching the young blueback herring assume adult characteristics and are about 0.5 in. long. Juvenile blueback herring remain in upper estuaries throughout the summer. During this period they are about 10 times more abundant than juvenile alewife. Juvenile blueback herring grow more slowly than juvenile alewife and begin their downriver migration later than the other herring species. It has been reported that blueback herring exhibit a tendency to spend their first year or two in the lower reaches of estuaries (Hildebrand 1963).

In the Hudson River during 1996, early juveniles collected in the LRS were abundant in the middle estuary during July (Figure 4-52). Juvenile blueback herring began appearing in the 1996 BSS and FSS in mid-August, with collections gradually increasing in downriver regions by October, reflecting the downriver migration. A few yearling and older blueback herring were collected in the LRS during their spring migration in April and May (Figure 4-53).

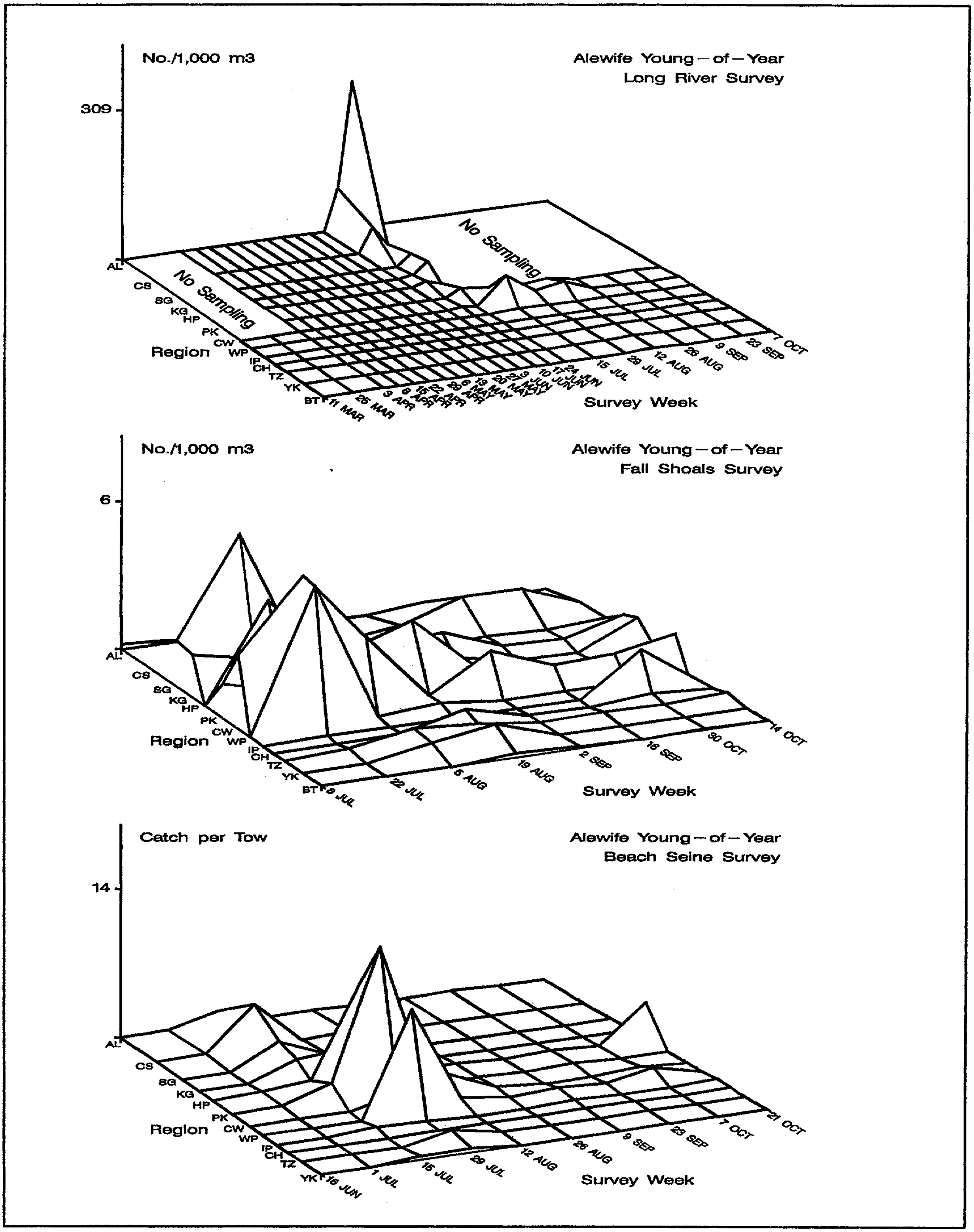


Figure 4-48. Spatiotemporal distribution of young-of-year alewife in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

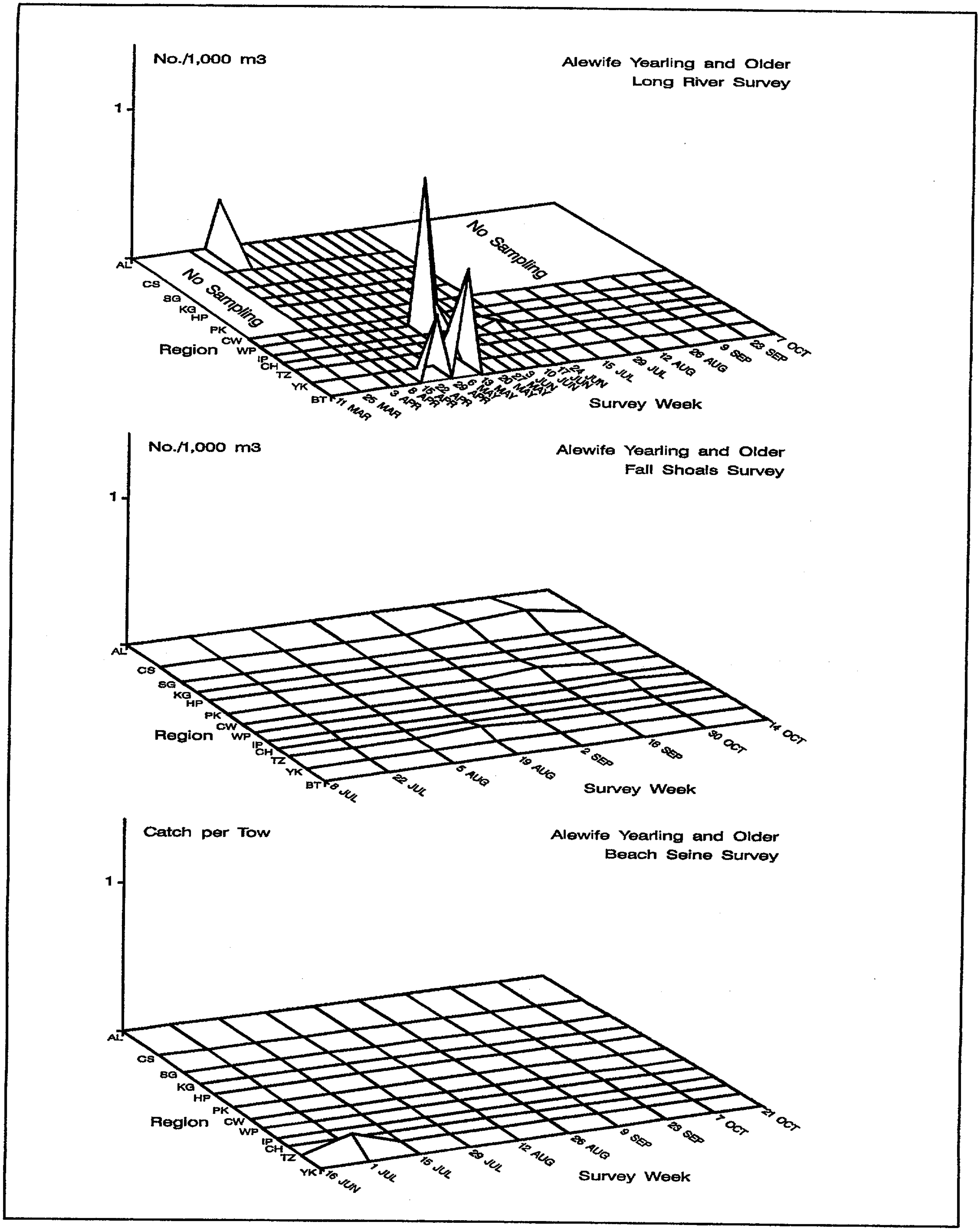


Figure 4-49. Spatiotemporal distribution of yearling and older alewife in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

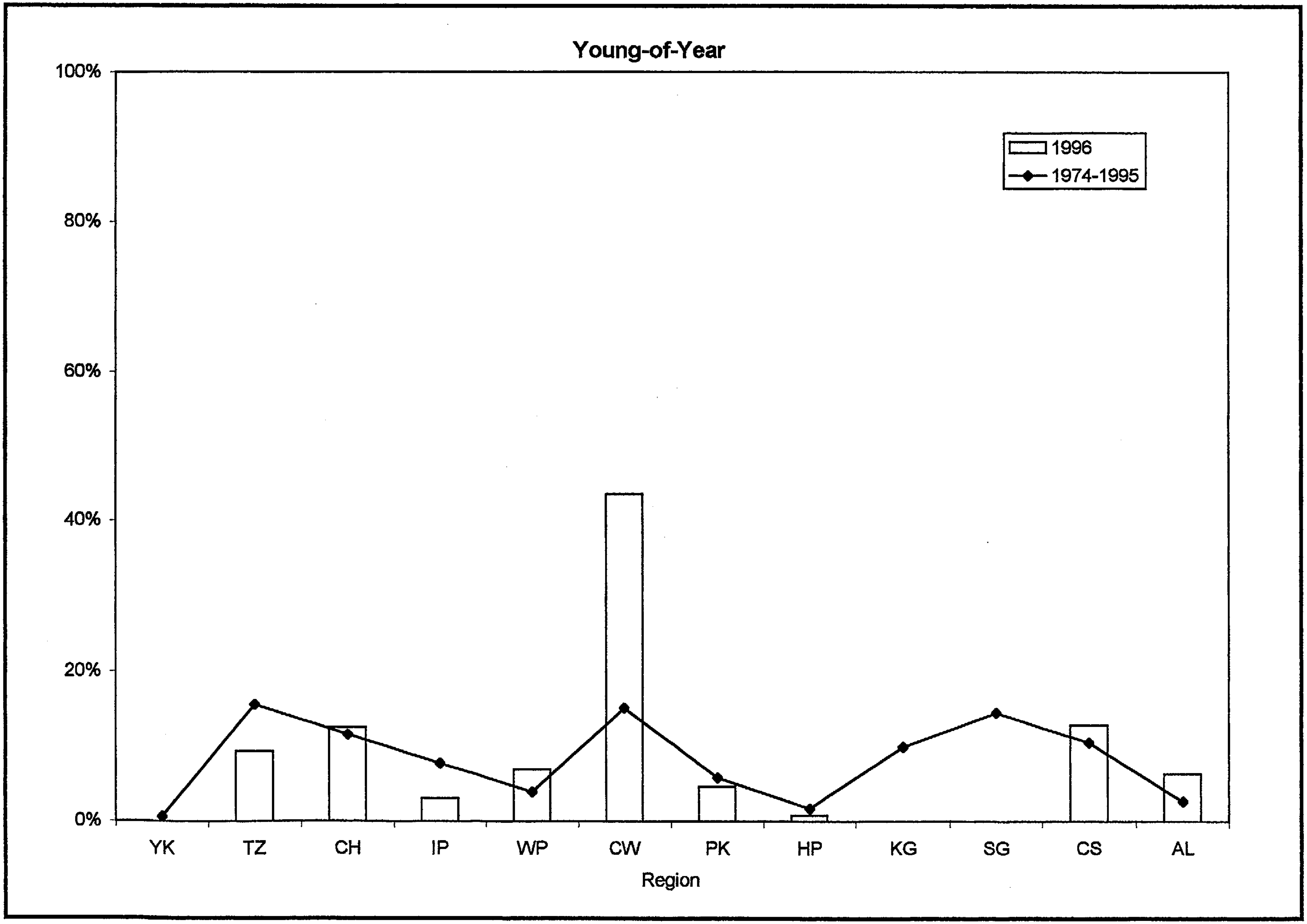


Figure 4-50. Geographic distribution indices for alewife collected during Beach Seine surveys of the Hudson River estuary, 1974-1996.

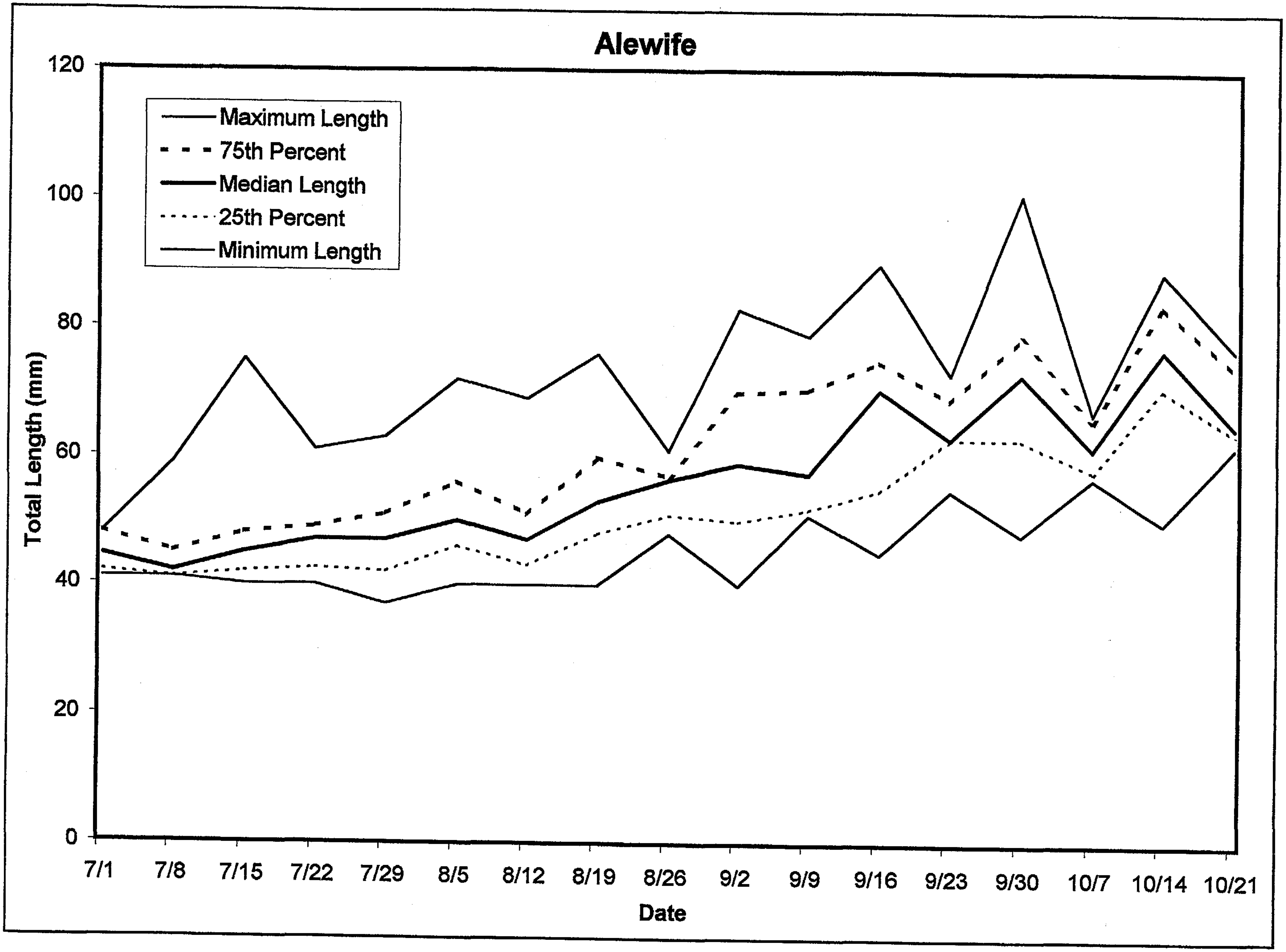


Figure 4-51. Weekly length statistics for young-of-year alewife in the Hudson River estuary, 1996.

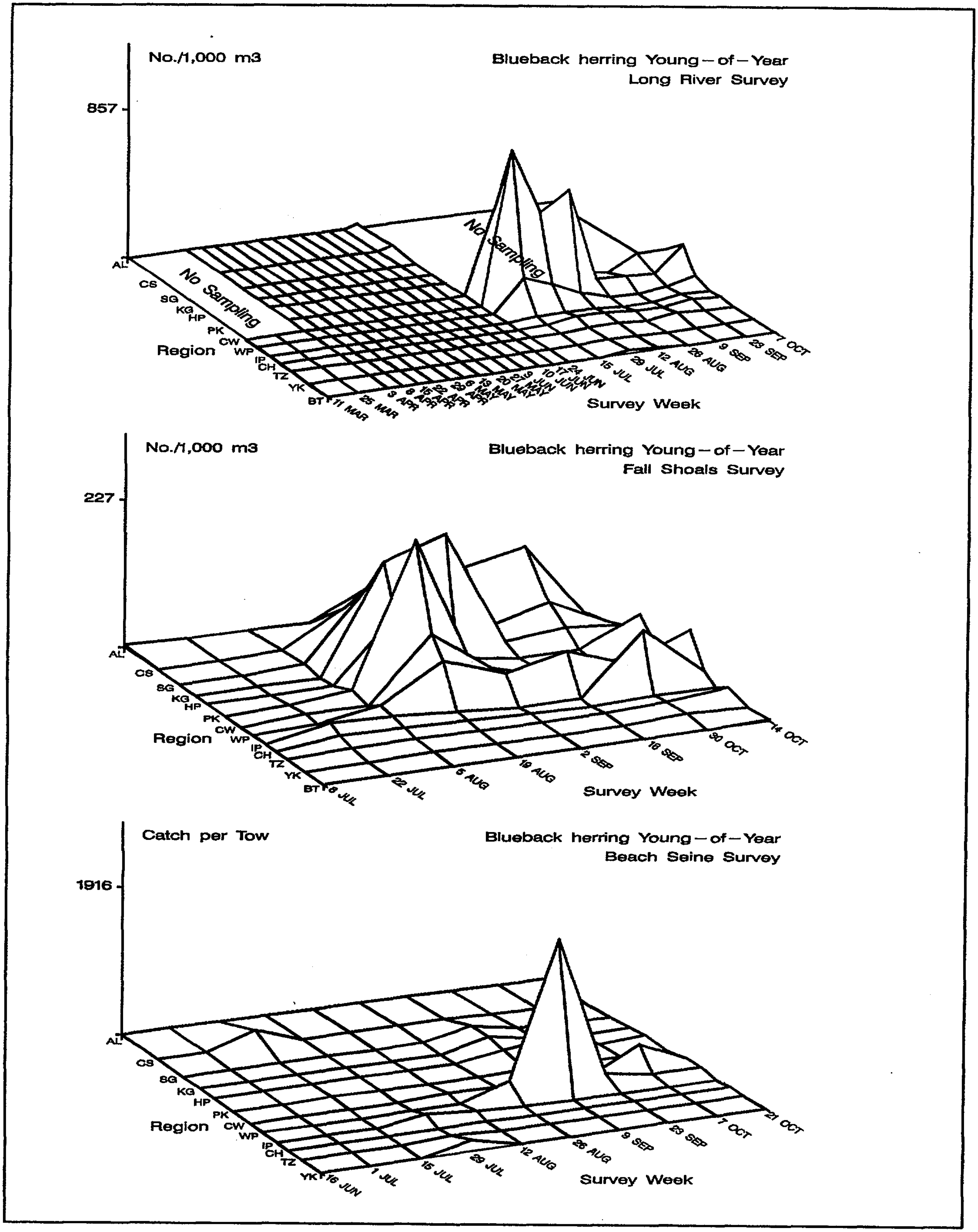


Figure 4-52. Spatiotemporal distribution of young-of-year blueback herring in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

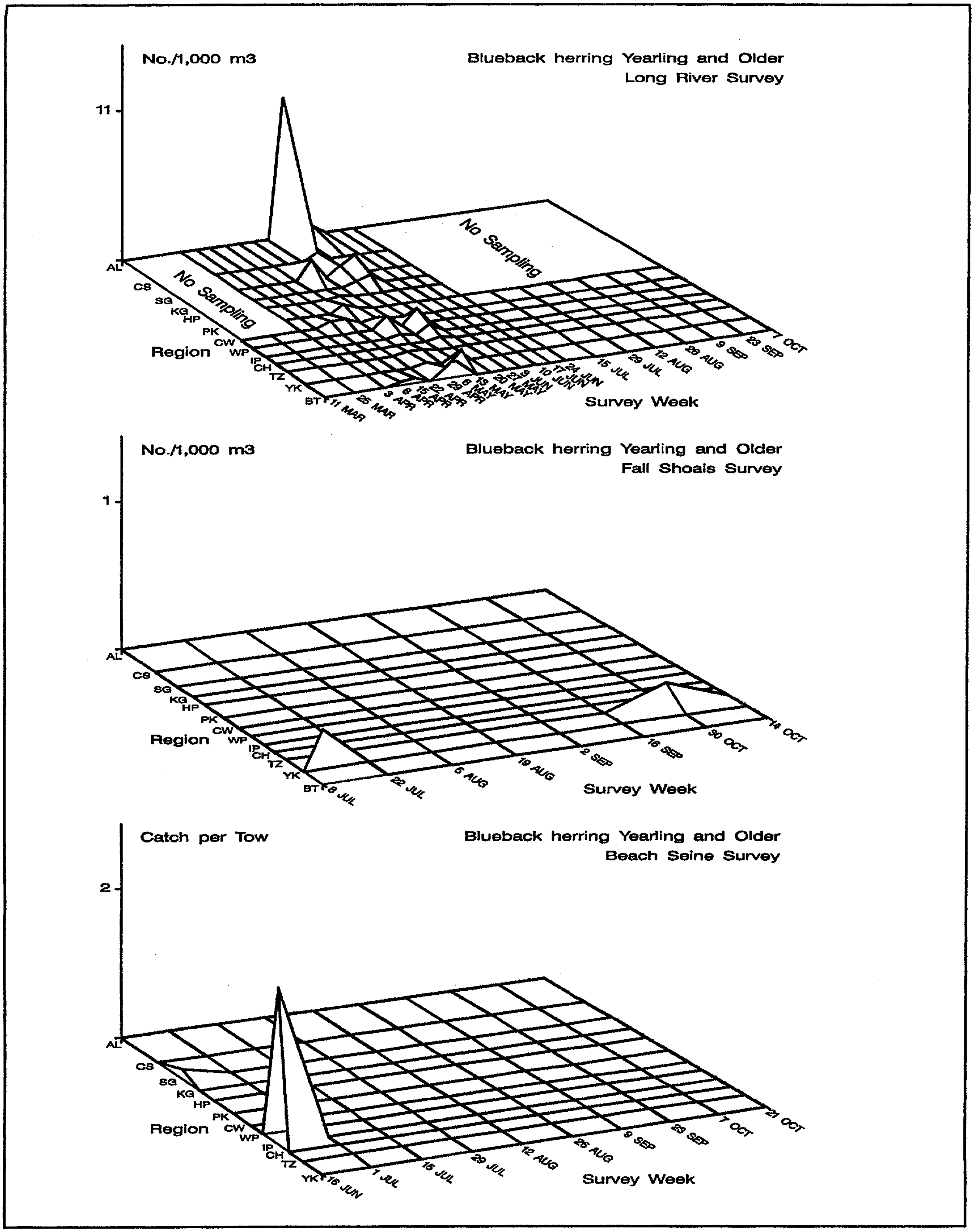


Figure 4–53. Spatiotemporal distribution of yearling and older blueback herring in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

Comparing the geographical distribution of juvenile blueback herring based on the 1996 BSS with previous years (1974-1995), the 1996 distribution of juveniles resembled the long-term record, except that a much higher proportion, almost 40 percent, of the population was caught in the West Point region than in previous years (Figure 4-54). A concentration area in the neighboring Cornwall region was also observed in YOY alewife distribution in 1996.

Weekly length statistics for juvenile blueback herring collected in 1996 showed very little growth until late September when a slight increase was shown (Figure 4-55, Appendix Tables E-18 and E-19).

4.10 GIZZARD SHAD

Gizzard shad (*Dorosoma cepedianum*) is a freshwater herring that sometimes ranges into brackish water and seawater along the Coast. It is an open-water species, usually living at or near the surface, and is found in large rivers, reservoirs, lakes, swamps, bays, borrow pits, bayous, estuaries, temporary floodwater pools along large river courses, sloughs, and similar quiet open waters. The geographic range of the gizzard shad includes the Great Lakes, except Lake Superior; the Hudson River south to the U.S. Gulf Coast and west to the Dakotas, Texas, and New Mexico; and along the Gulf Coast south to Rio Panuco in eastern Mexico. The northern extent of the range along the Atlantic Coast is Sandy Hook, the Hudson River, and Long Island (Smith 1985). Gizzard shad can grow to a length of 19 in., but the usual adult size is 10-14 in. and 1-3 lb in weight (Miller 1960).

Gizzard shad spawn when the water temperature reaches 50-70°F (April-June, depending upon the location). Adults mill near the surface and spawning sometimes takes place in water less than a foot deep. The eggs sink slowly and adhere to the bottom. The eggs are less than 1/16 in. in diameter and the number of eggs produced by adult females ranges from 59,000 to almost 400,000. Hatching occurs from 1-1/2 to 7 days, depending upon the temperature. Gizzard shad larvae are generally pelagic and widely distributed in many types of habitat. They begin to eat by the fifth day after hatching and feed on microzooplankton until they are about 1 in. long. At that point the digestive system begins to change and the young shad become herbivorous and eat phytoplankton, algae, and microscopic bottom plants (Scott and Crossman 1973).

Growth during the first 5 or 6 weeks is typically rapid, but then slows. By the end of the first summer, gizzard shad are generally between 4 and 5 in. long. Young gizzard shad tend to school and prefer clear, slow-moving water. They sometimes move into small streams and can tolerate high turbidity. However, they do not usually move into brackish waters.

Gizzard shad typically mature at age 2 or 3, and the life span is about 7 years in northern populations and less in southern ones. In estuarine populations gizzard shad move into waters of higher salinities as they age; spring spawning runs have been reported in some instances (Miller 1960). Young gizzard shad are eaten by most predatory fish, but adults are generally too large to be eaten easily.

Gizzard shad occur primarily in the Mohawk River drainage. The early life stages of this species have been caught only occasionally in the Utilities' river surveys. A few juvenile gizzard shad were collected in the 1996 BSS from Cornwall to Saugerties and no gizzard shad were collected during the 1996 FSS (Figure 4-56). However, adult gizzard shad appear regularly in winter impingement samples at all of the power plants. These fish may be emigrants from established populations located in the Mohawk River (Smith 1985) or there may be a small resident population in the lower Hudson River. The few yearling and older gizzard shad recorded in river surveys in 1996 were mostly collected in beach seines in the middle estuary (Figure 4-57).

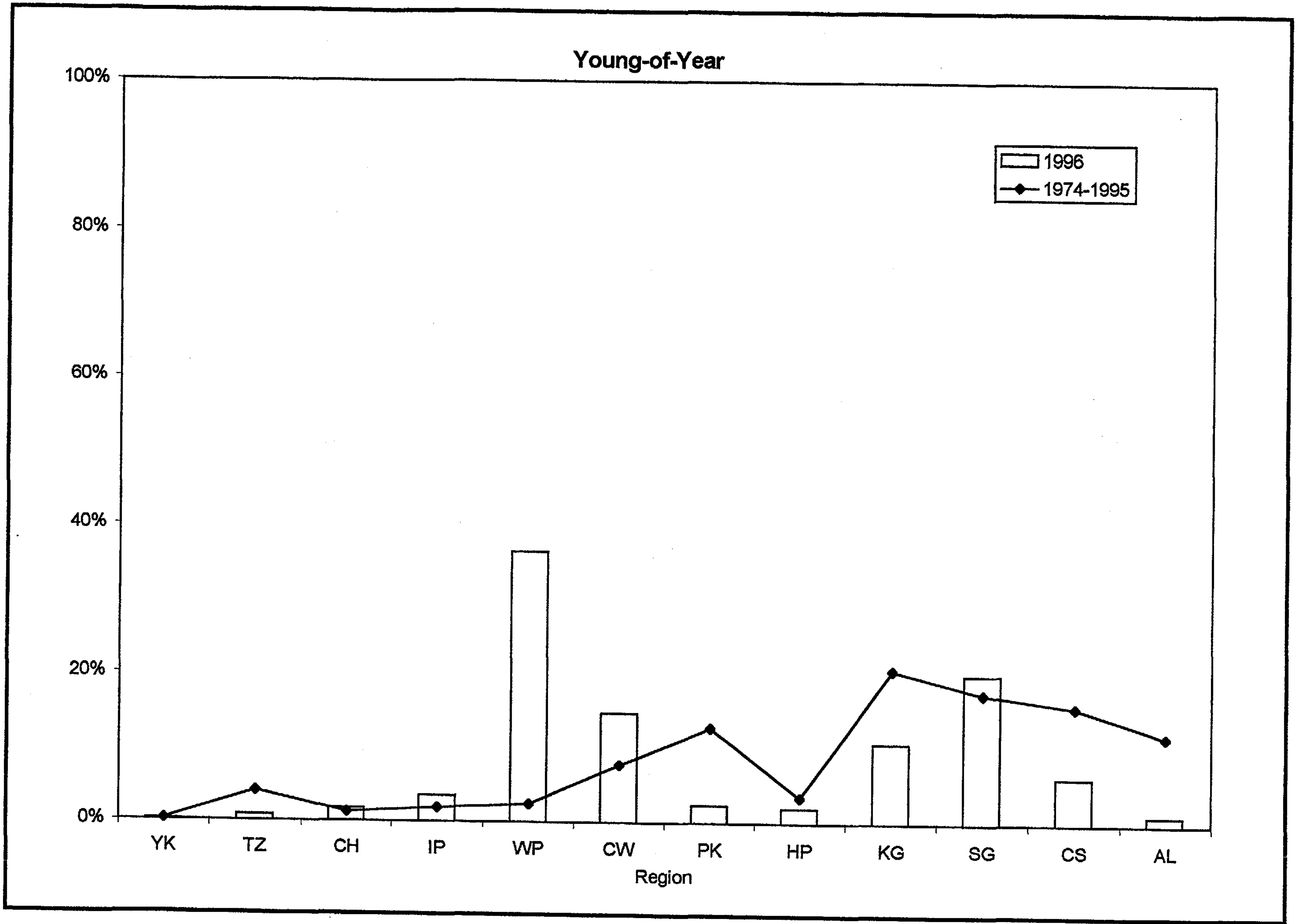


Figure 4-54. Geographic distribution indices for blueback herring collected during Beach Seine surveys of the Hudson River estuary, 1974-1996.

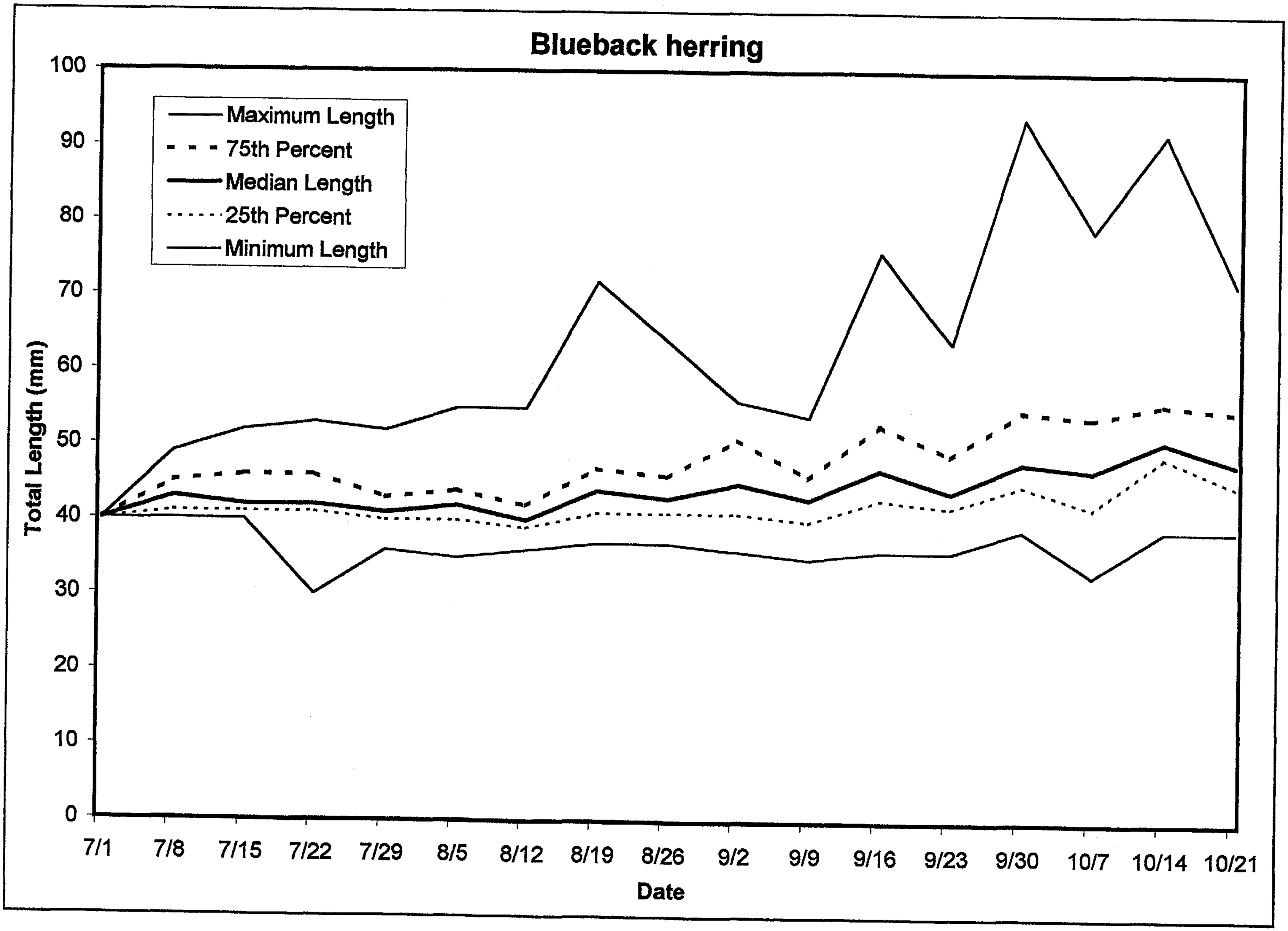


Figure 4-55. Weekly length statistics for young-of-year blueback herring in the Hudson River estuary, 1996.

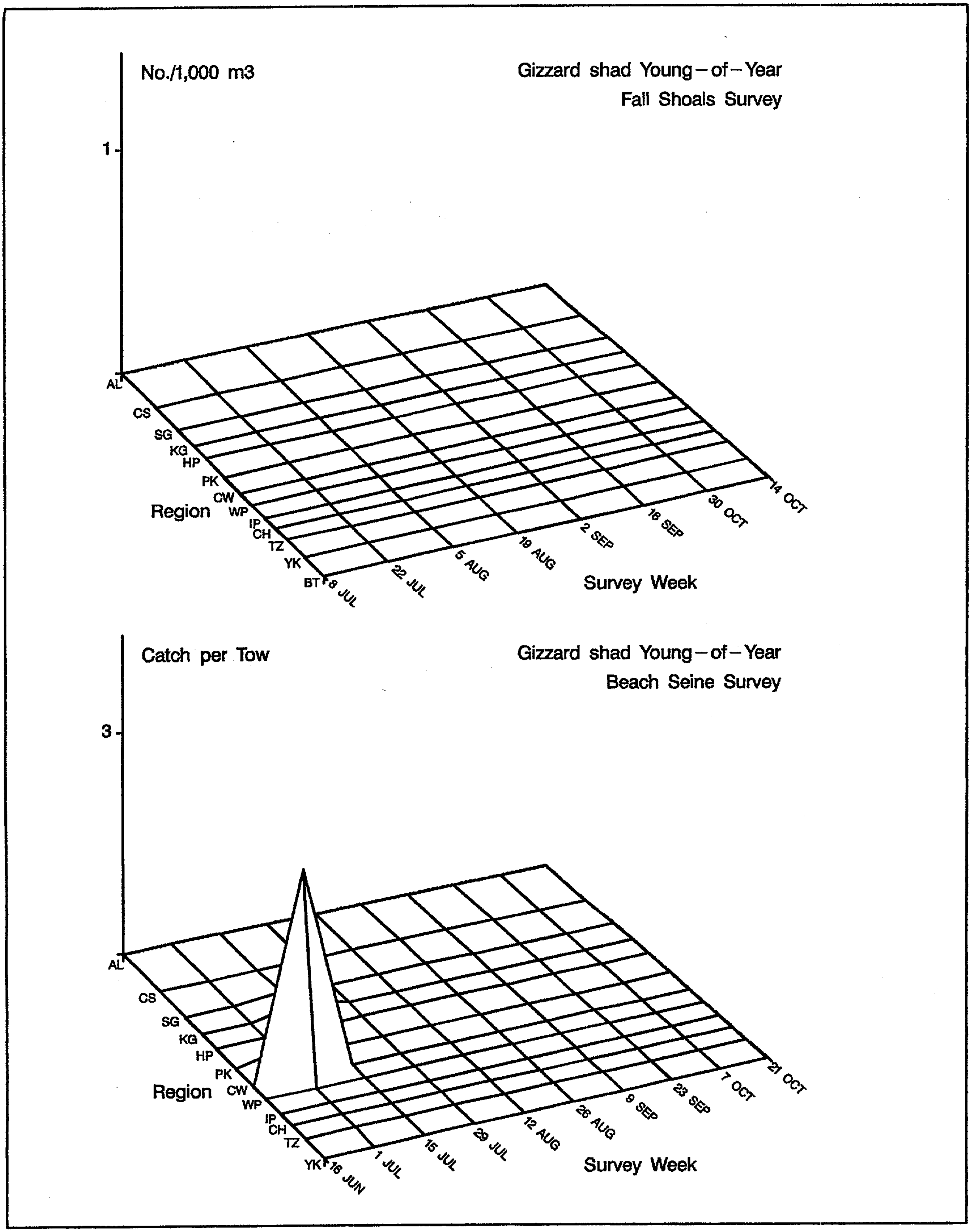


Figure 4-56. Spatiotemporal distribution of young-of-year gizzard shad in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

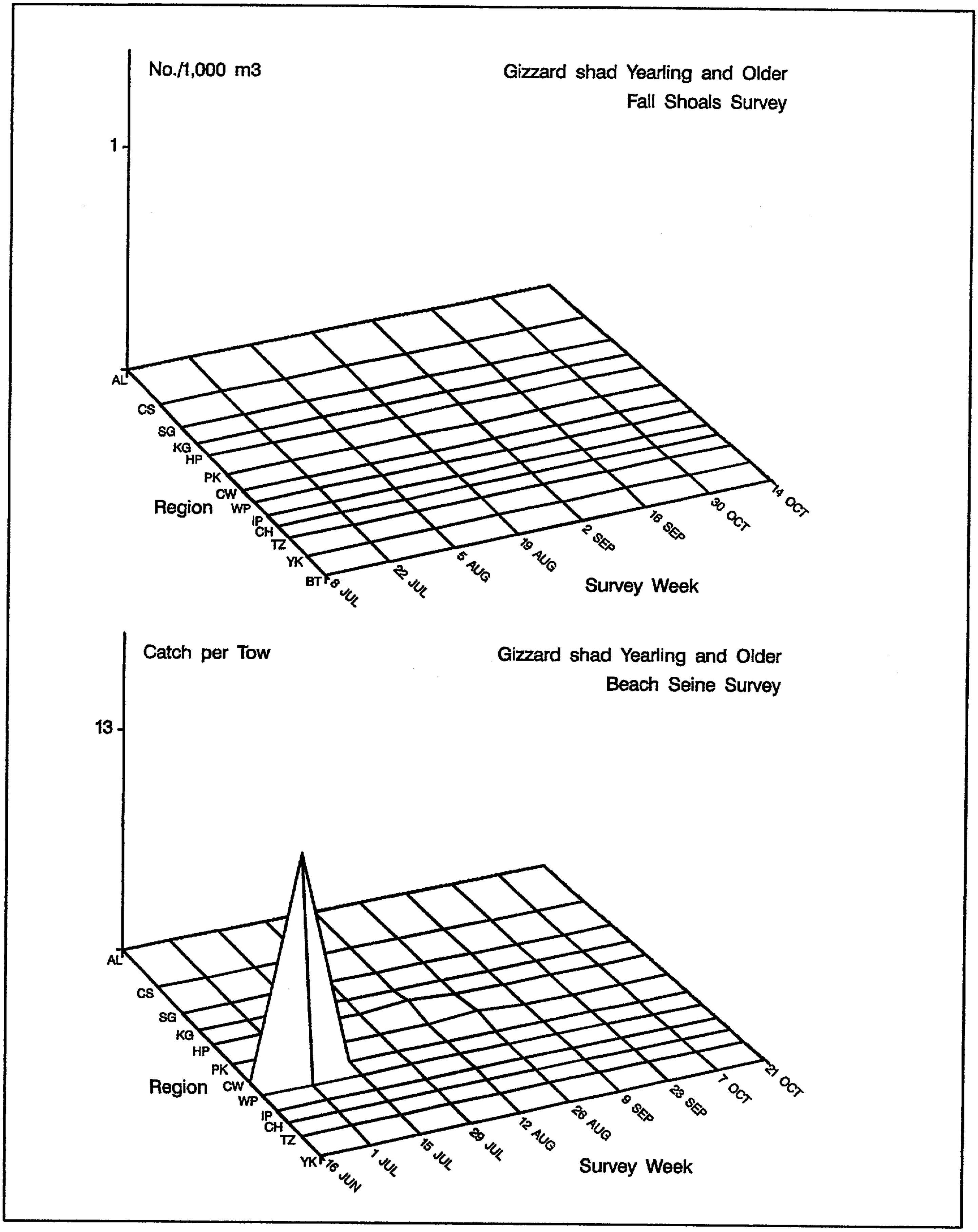


Figure 4–57. Spatiotemporal distribution of yearling and older gizzard shad in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

Comparing the yearling and older distribution of gizzard shad during 1996 with the long-term record (1974-1995), the 1996 distribution showed that most gizzard shad were found in Poughkeepsie whereas the long-term pattern showed two primary areas of distribution: Cornwall and Saugerities (Figure 4-58).

4.11 RAINBOW SMELT

No rainbow smelt were collected in the Utilities' monitoring program in 1996. Because this species has previously been selected for a more detailed analysis, a discussion of it's life history and past collections in the monitoring program is included herein.

Rainbow smelt are greenish, slender, salmon-like fish with deeply forked tails. They occur along the Atlantic Coast from Labrador to the Delaware River, along the Arctic Coast, and along the coasts of Alaska and British Columbia. They are landlocked naturally in many lakes and ponds in Canada, Maine and New Hampshire and have been introduced to other landlocked fresh waters. Within New York State rainbow smelt are found in the Hudson River, Long Island streams, several Adirondack lakes, and the Great Lakes (Smith 1985).

Anadromous rainbow smelt may spend the whole year in or near estuaries. In the fall they move into the bays and estuaries. Rainbow smelt spawn in tributaries in spring when the water temperature reaches 48°F. Even landlocked populations continue to migrate from their lake habitats to tributary streams to spawn. Spawners move into the lower reaches of streams in the evening, spawn at night, and move out in the day. Adult rainbow smelt leave the tributaries immediately after spawning. They spawn where water velocities are high, and larval survival decreases where water velocities are low (Buckley 1989). In the summer adults move to deeper, cooler water just outside bays and estuaries.

Adult smelt usually average 7-8 in. in total length, but occasionally reach lengths of 13-14 in. Female smelt grow faster than males and may reach maturity as early as age 1 along the southern edge of their range. However, maturity occurs more commonly at ages 2 through 5. The number of eggs produced by an adult smelt may range from 7,000 to 70,000.

The eggs are approximately 1/16 in. or less in diameter and sink to the bottom, where they stick in clusters to pebbles or whatever they happen to touch (Bigelow and Schroeder 1953). Rainbow smelt eggs hatch in about a week to almost a month, depending on temperature and, historically, eggs have been present in the Hudson River ichthyoplankton catches for about 2 weeks, which suggests a short spawning period.

Newly hatched larvae are about 1/5 in. long. These larvae are carried downstream and out of the tributaries by current flows. In the Hudson River, YSL have been most abundant in late April throughout the upper half of the Hudson River estuary (Figures 4-59 and 4-60). The yolk-sac is absorbed when the fish are about 1/4 in. in length. PYSL in the Hudson River were commonly found in the upper and middle estuary and were abundant from late April through June. As rainbow smelt larvae grow, they move closer to the bottom during the day and move back toward the surface at night, probably to feed on zooplankton, which exhibit similar vertical migrations in the water column.

Juvenile rainbow smelt were found in the Hudson River from mid-June to August in the middle and lower estuary (Figures 4-60 and 4-61). Juvenile smelt are exceedingly slender and nearly transparent. At about 3/4 in. they begin to school. Juvenile rainbow smelt move into shallow water at night and back to deep channels during the day (Buckley 1989). These movement patterns were reflected in BSS and FSS collections where beach seines conducted during the day collected no rainbow smelt and fall shoals

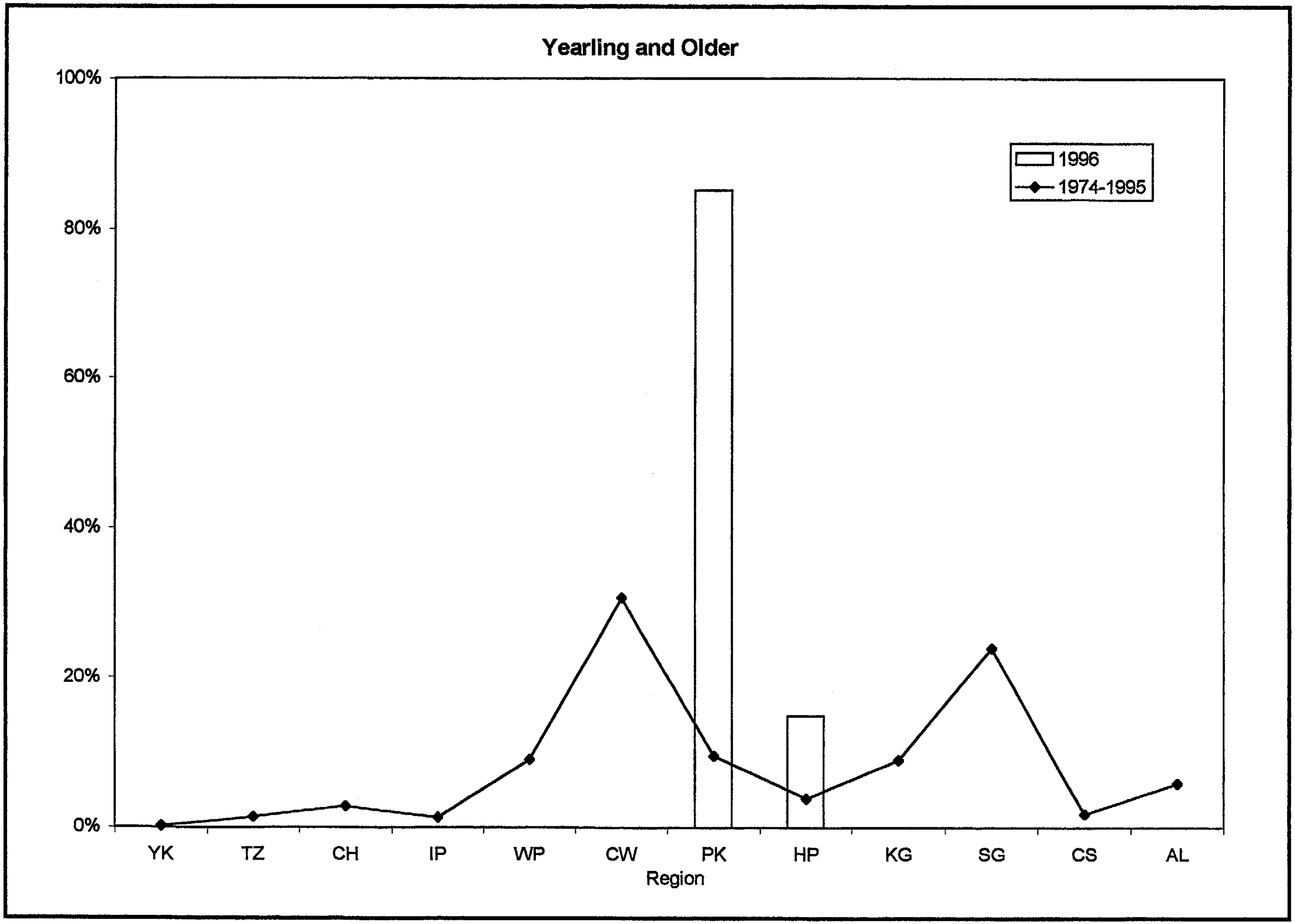


Figure 4-58. Geographic distribution indices for gizzard shad collected during Beach Seine surveys of the Hudson River estuary, 1974-1996.

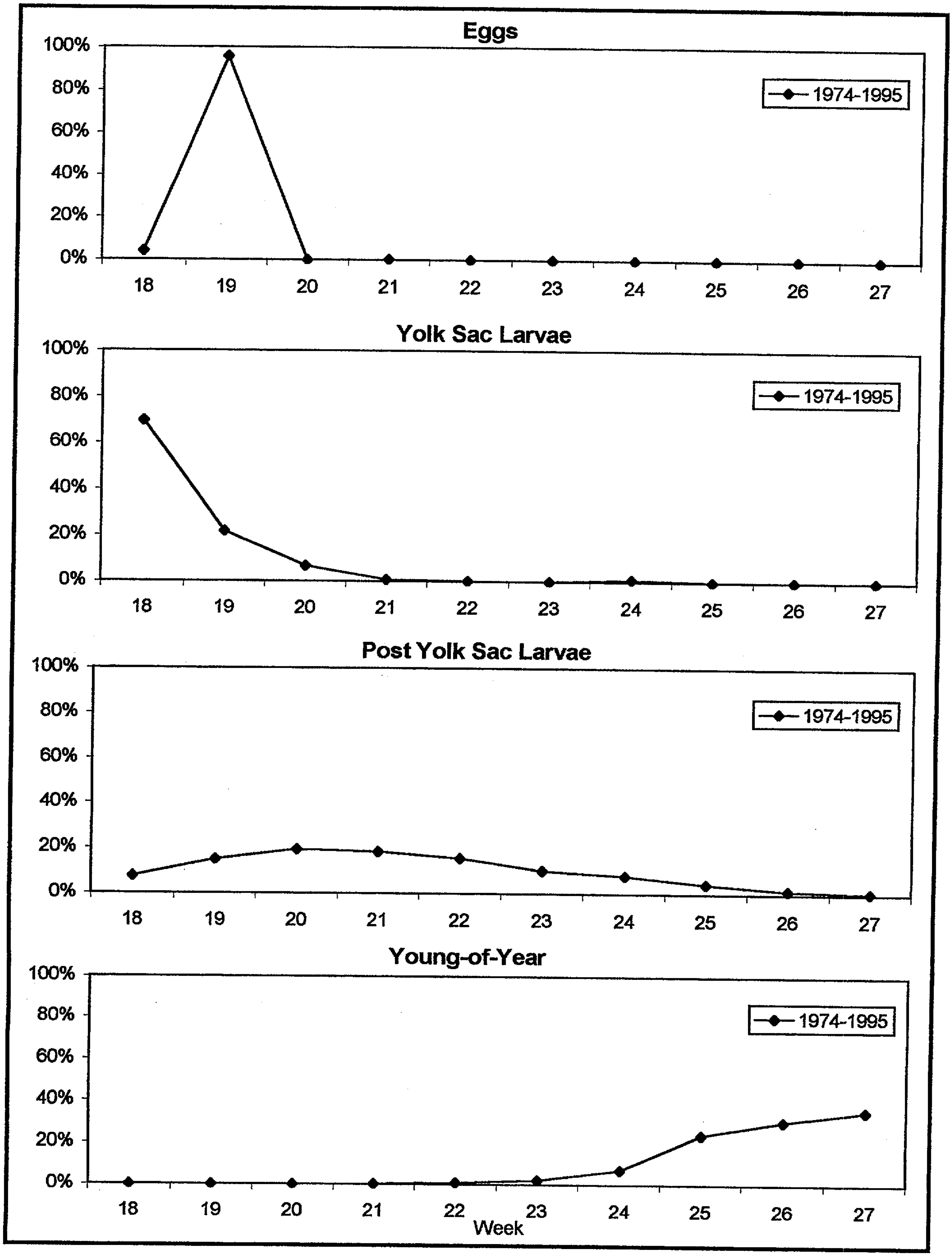


Figure 4-59. Temporal distribution indices for rainbow smelt collected during Long River surveys of the Hudson River estuary, 1974-1995.

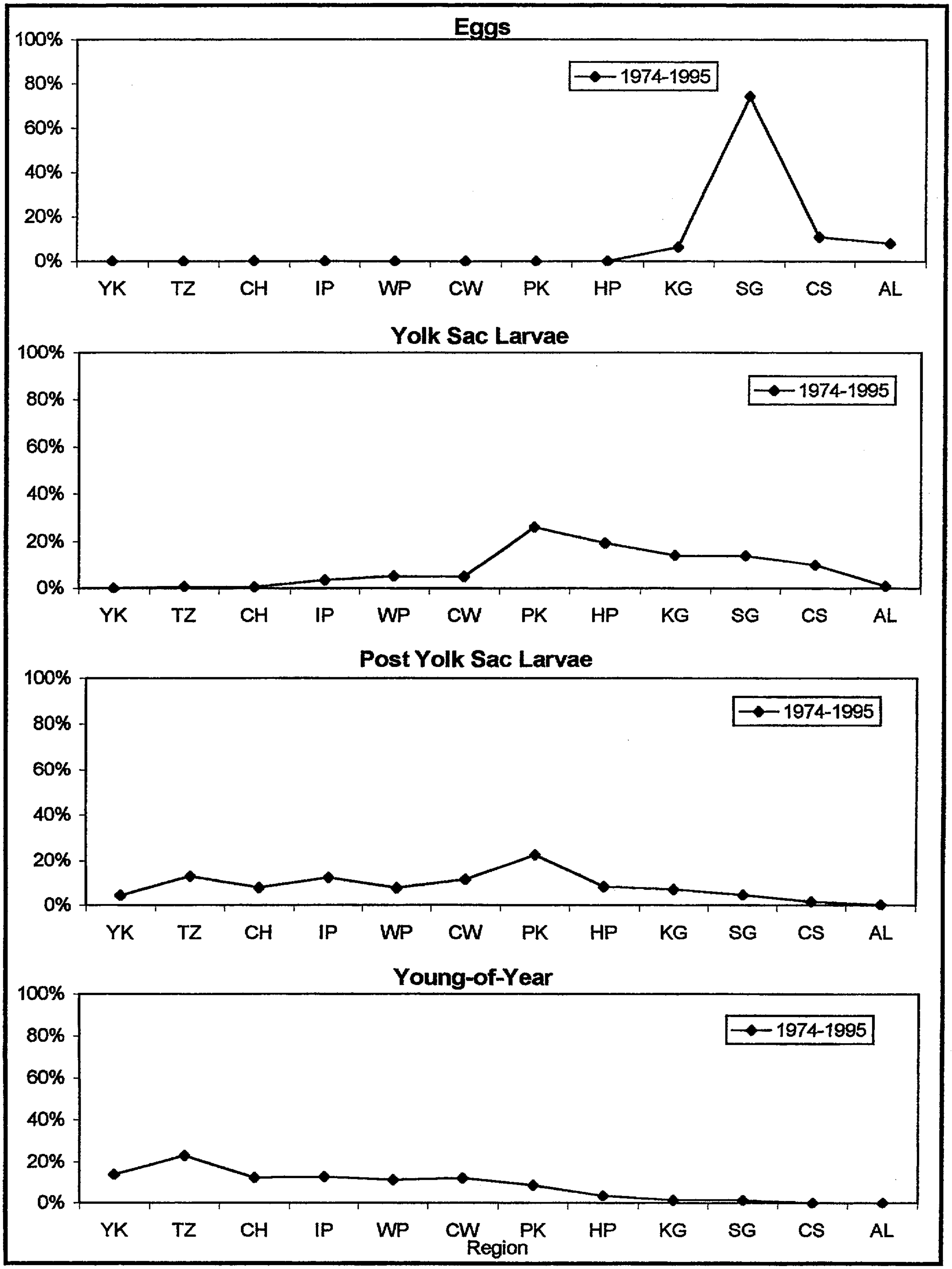


Figure 4-60. Geographic distribution indices for rainbow smelt collected during Long River surveys of the Hudson River estuary, 1974-1995.

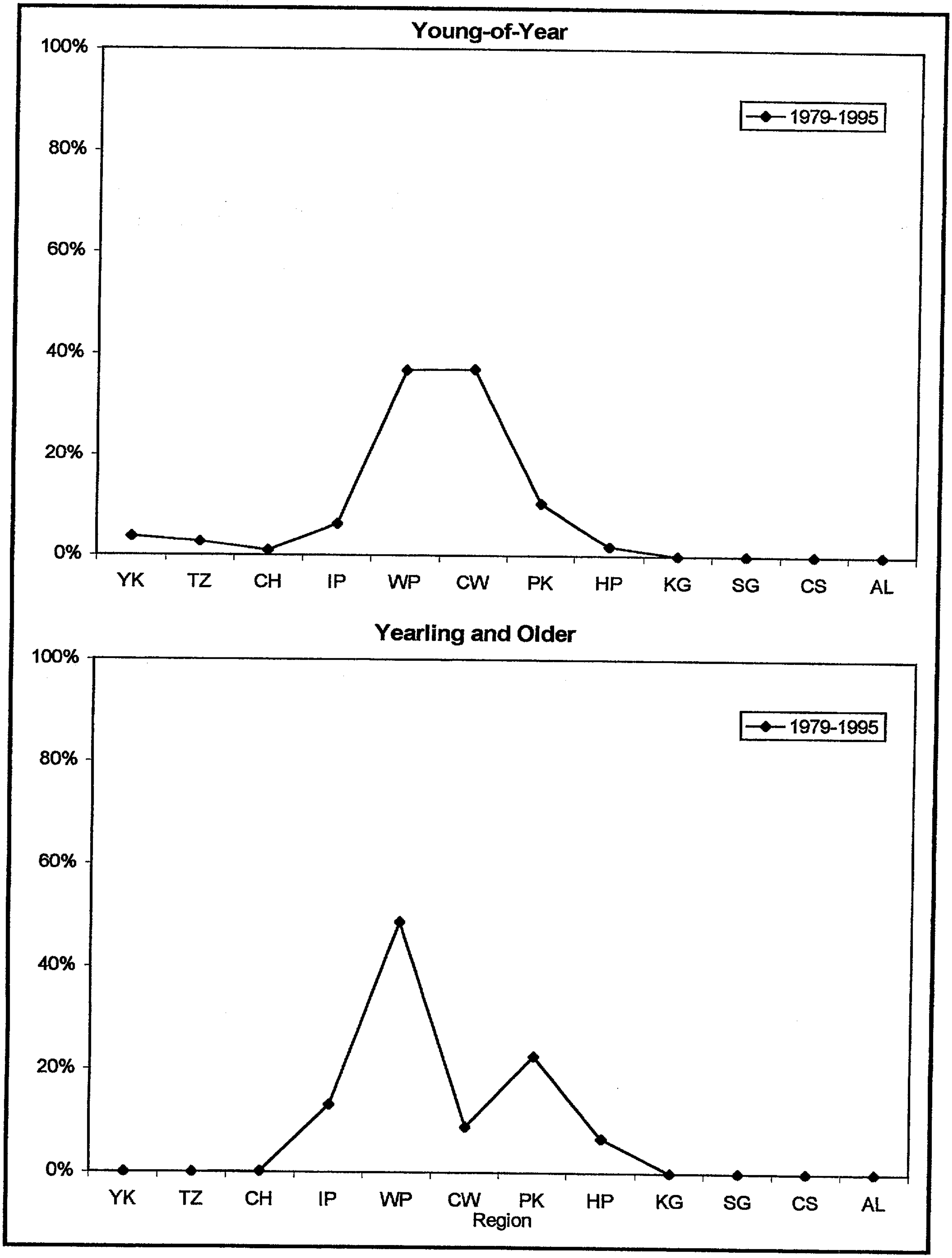


Figure 4-61. Geographic distribution indices for rainbow smelt collected during Fall Shoals surveys of the Hudson River estuary, 1979-1995.

sampling conducted at night collected juveniles primarily in the middle estuary regions in the early summer. By late summer the young smelt leave the estuary. The few yearling and older rainbow smelt collected in the Hudson River were found in the Indian Point through Hyde Park regions (Figure 4-61).

4.12 HOGCHOKER

Hogchoker (*Trinectes maculatus*) inhabit estuaries and nearshore coastal waters and range from Massachusetts Bay to the Atlantic Coast of Panama. They can tolerate a wide range of salinities and are found from marine waters up into fresh water, although older individuals tend to be found in more saline waters. Hogchoker reach a length of 2-3 in. in their first year, mature at about 4.5 in., and obtain a maximum size of about 8 in. (Bigelow and Schroeder 1953). This small flatfish is very abundant in the Hudson River estuary and its adjacent bays and coastal waters.

Adult hogchoker overwinter in low salinity regions of estuaries (Koski 1973) and spawn in the lower regions of estuaries and offshore from estuary mouths during the spring and summer. In some areas (eastern Chesapeake Bay) spawning appears to be restricted to sandy substrates. Dovel et al. (1969) reported that the hogchoker population in the Patuxent River was a resident population confined for the most part to that estuary in the Chesapeake Bay complex and concluded that the hogchoker population in the Chesapeake Bay system was probably composed of subpopulations that were generally confined to the bay and various tributaries. The relationship of Hudson River hogchoker to Atlantic coastal populations is unknown.

Individual hogchoker produce from 11,000 to 54,000 eggs, depending upon the size of the female. In the Hudson River estuary hogchoker spawning occurs from May to October, although eggs are more commonly collected from the last week in May through July in the more saline areas of the lower estuary, such as the Battery and Yonkers regions. During 1996 hogchoker eggs were collected primarily in the Yonkers and Battery regions in late June (Figure 4-62).

After hatching, the YSL move upstream from the spawning areas and may use the net upstream flows in the deeper saline waters of the estuary. During the 1996 LRS, the few larval and juvenile hogchoker collected were found in progressively upriver regions: YSL in Tappan Zee, PYSL in Croton-Haverstraw, and YOY in Indian Point through Cornwall (Figure 4-63). Juvenile hogchoker were collected in the 1996 FSS and BSS primarily in the middle estuary during August through October (Figure 4-64). Yearling and older hogchoker were collected throughout the Hudson River in 1996 but were most abundant in the lower and middle estuary (Figure 4-65).

The 1996 geographical distribution of YOY and yearling and older hogchoker in the FSS is generally consistent with the long-term trend (1979-1995) showing a fairly even distribution throughout most of the Hudson River estuary, although in 1996 more YOY hogchoker were concentrated in the middle estuary regions of Cornwall and Kingston (Figure 4-66).

In the Hudson River, hogchoker generally reached sexual maturity at age 2, although some males were mature at age 1 (about 3 in. long). The oldest males in the Hudson River were age 4 while the oldest females were age 6. Hogchoker feed near the bottom on a variety of benthic invertebrates, including annelid worms and smaller crustaceans.

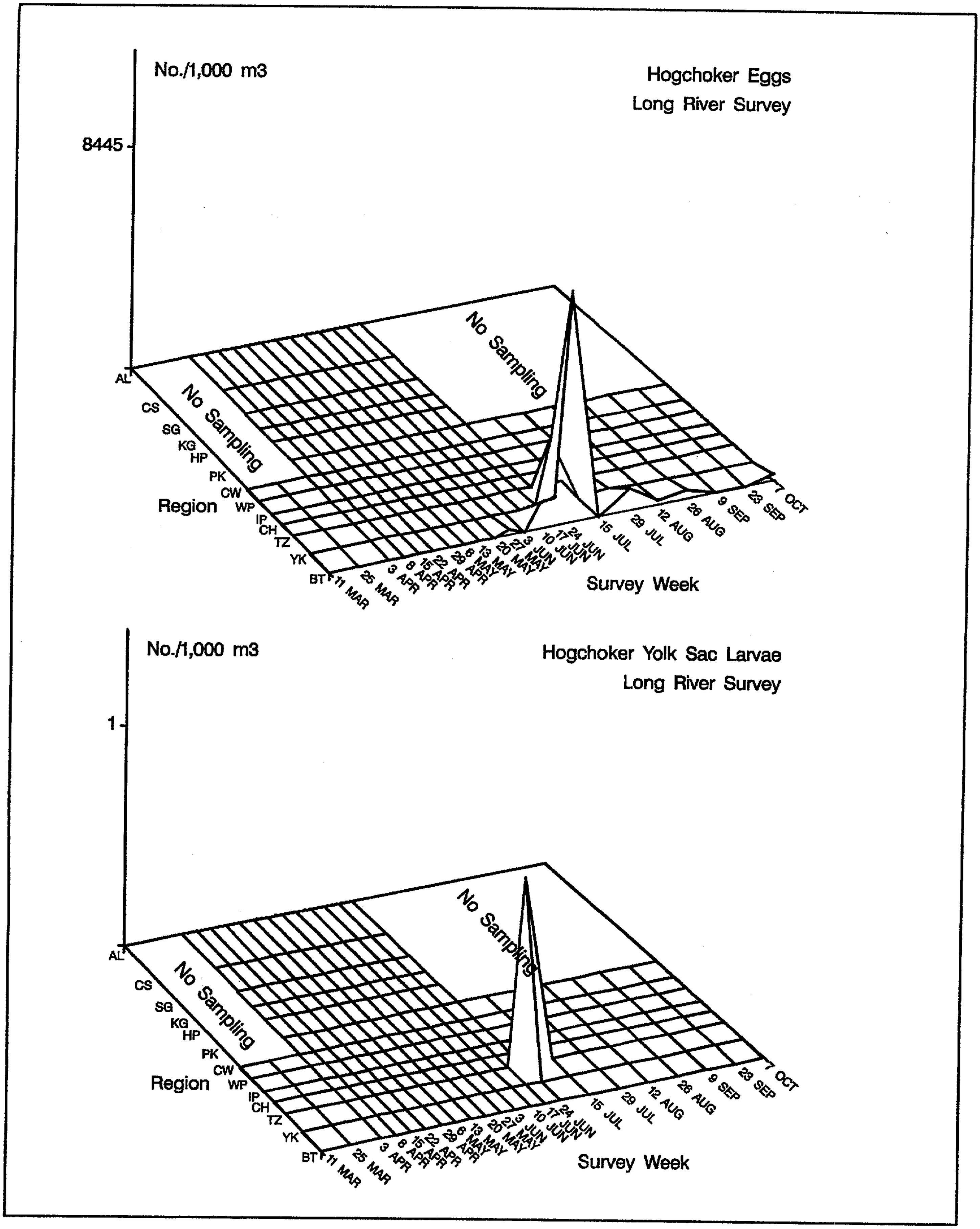


Figure 4–62. Spatiotemporal distribution of eggs and yolk sac larval hogchoker in the Hudson River estuary based on the 1996 Long River Survey.

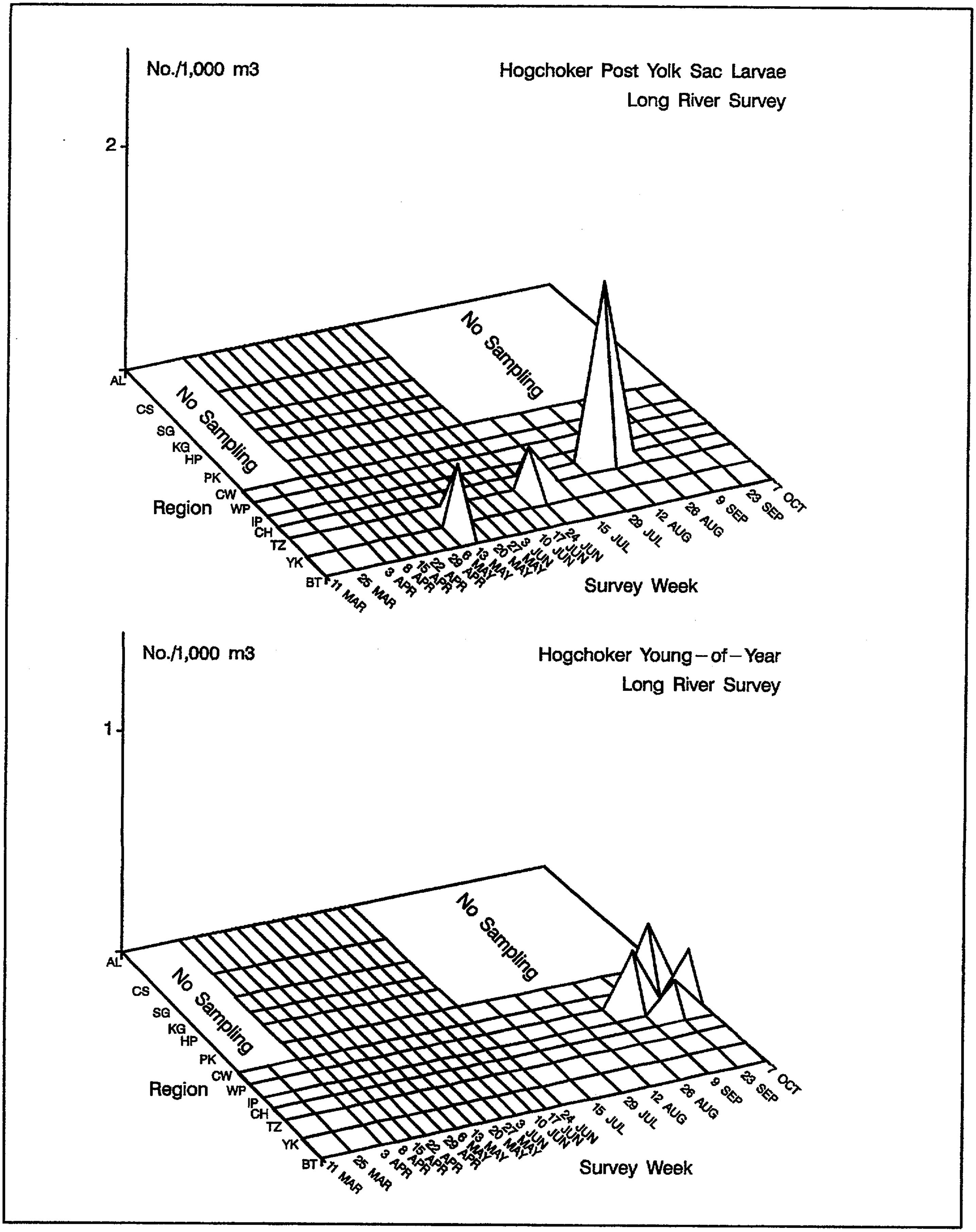


Figure 4–63. Spatiotemporal distribution of post yolk sac larval and young–of–year hogchoker in the Hudson River estuary based on the 1996 Long River Survey.

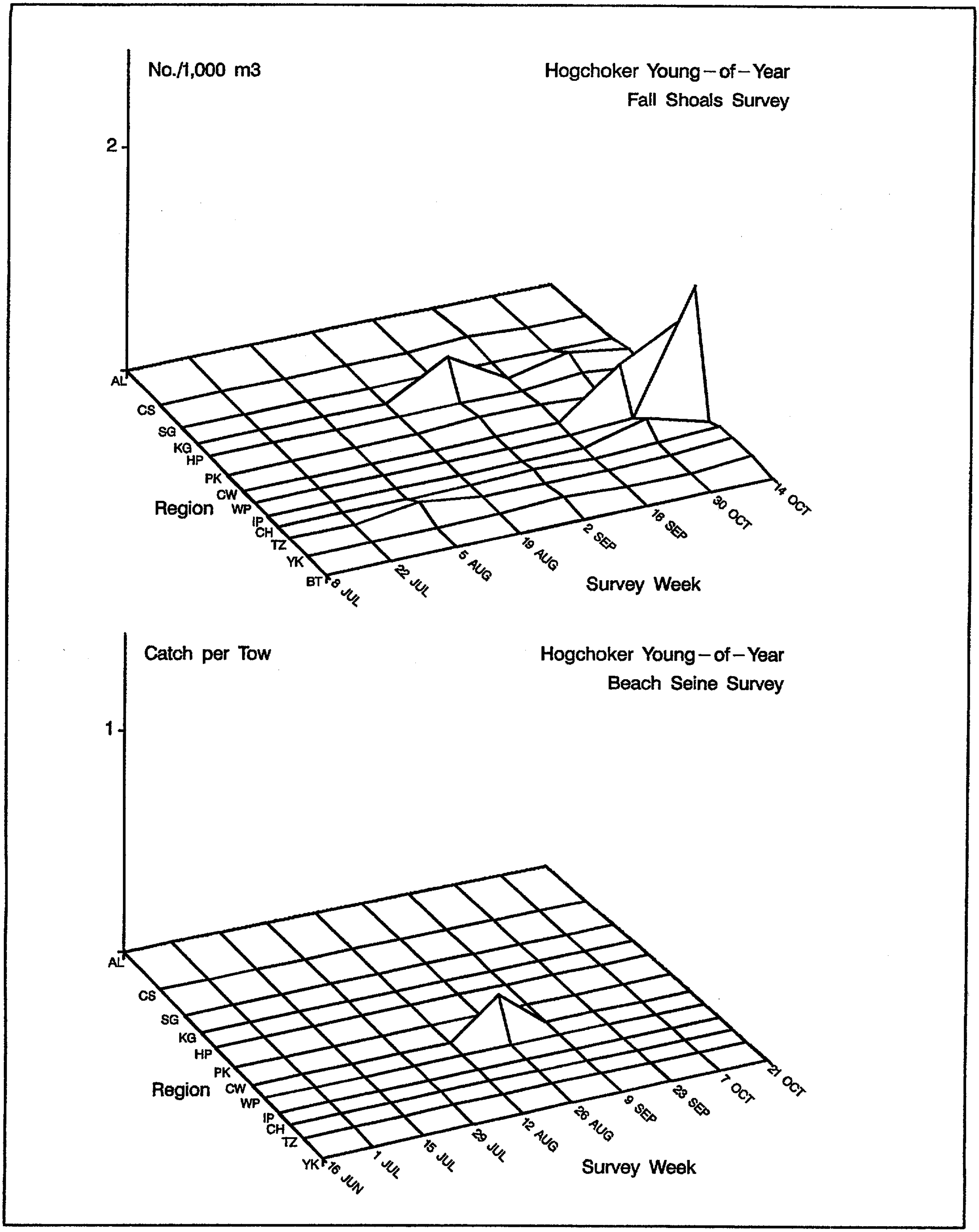


Figure 4-64. Spatiotemporal distribution of young-of-year hogchoker in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

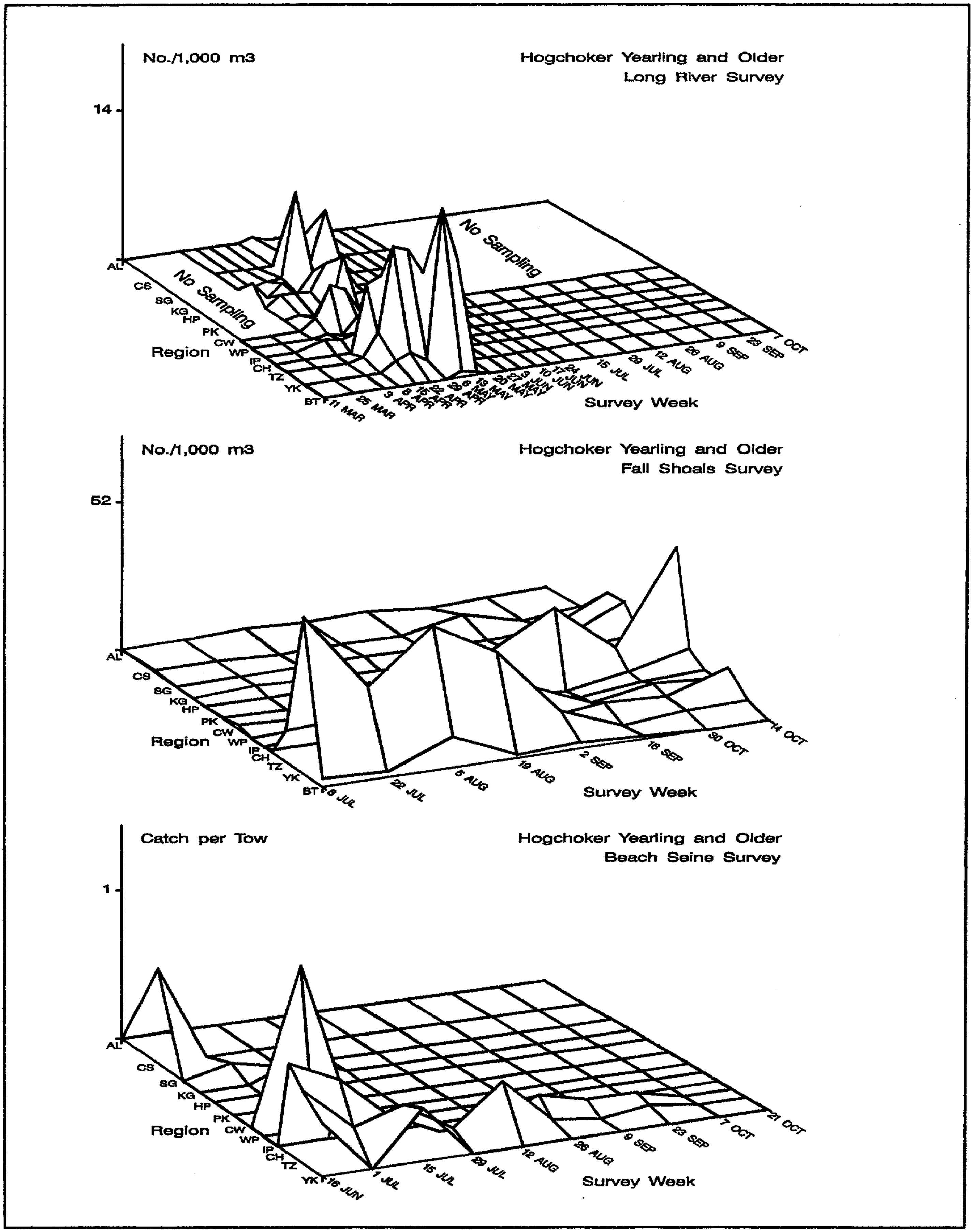


Figure 4-65. Spatiotemporal distribution of yearling and older hogchoker in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

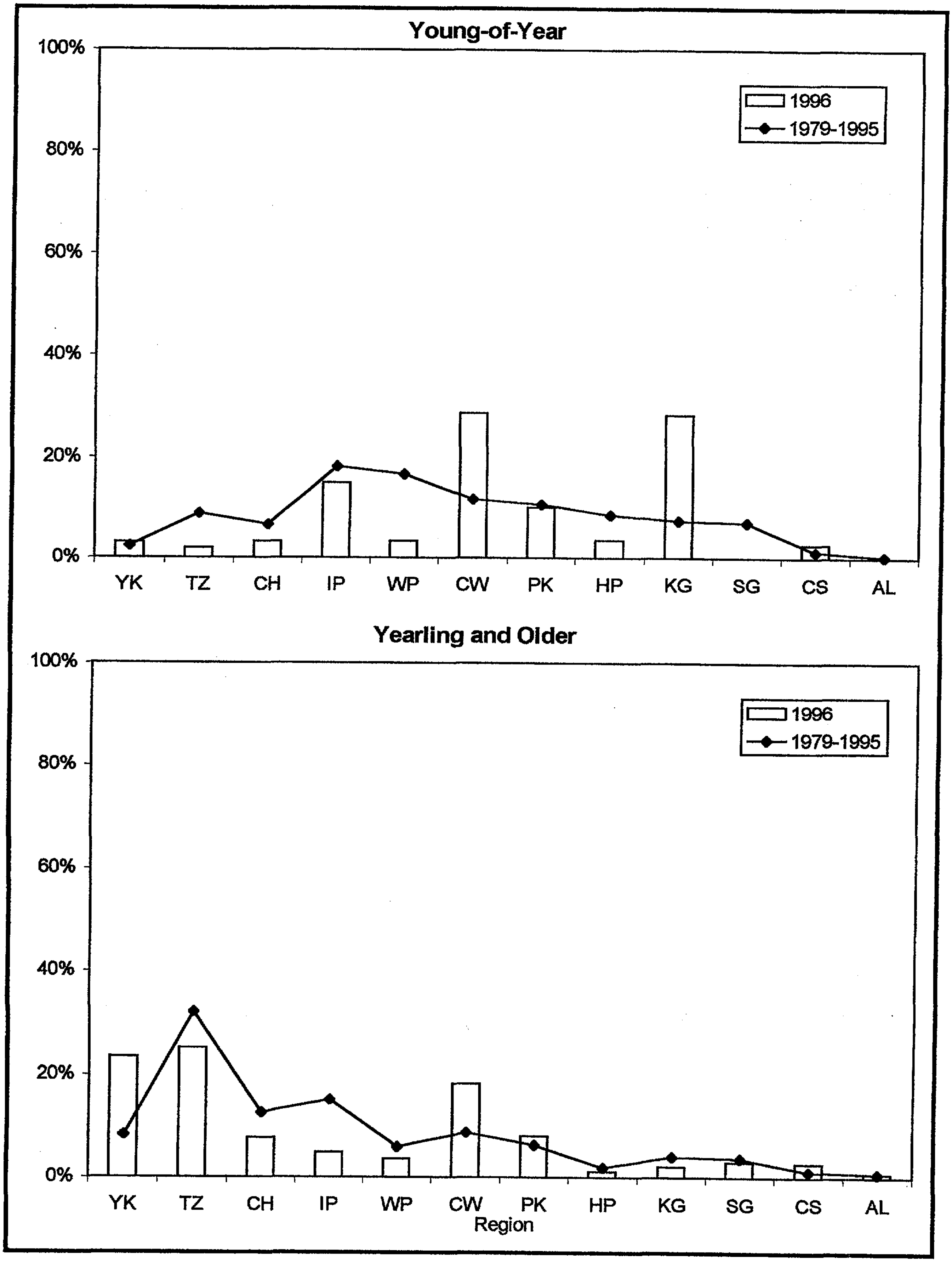


Figure 4-66. Geographic distribution indices for hogchoker collected during Fall Shoals surveys of the Hudson River estuary, 1979-1996.

4.13 SPOTTAIL SHINER

Spottail shiner (*Notropis hudsonius*) is a small, silvery, freshwater minnow that reaches a maximum total length of over 5 in. in the Hudson River. It is usually recognizable by a large oval spot at the base of the tail, but in large individuals the spot is sometimes small and somewhat masked by silvery pigment. It occurs in a variety of freshwater habitats from large lakes and rivers to small streams and is widely distributed in Canada and the United States (Smith 1985). Spottail shiner is a freshwater species and does not enter marine coastal waters. Thus, the Hudson River population is probably isolated from those in other coastal rivers along the East Coast of the United States.

Adult spottail shiner may form large spawning aggregations over sand or gravel substrates in shallow water or at the mouths of tributaries. In the Hudson River adult spottail shiner appear in the ichthyoplankton samples from the upper, freshwater regions of the estuary during May. Spottail shiner produce from 100 to 2,600 eggs, depending upon the age and size of the female. Very few eggs and larvae have been collected during the LRS, which is probably a reflection of the fact that this species spawns in shallow-water habitats that are not sampled efficiently during the ichthyoplankton surveys.

Juvenile spottail shiner first appeared in the BSS during June and were most abundant in the shorezone above the Cornwall region (Figure 4-67), which is also the portion of the estuary with the greatest number of tributaries. Yearling and older spottail shiner were also found throughout the middle and upper Hudson River above Croton-Haverstraw (Figure 4-68).

Comparing the geographical distribution of juvenile and yearling and older spottail shiner based on BSS in 1996 with previous years (1974-1995), the 1996 distribution of these life stages was generally consistent with the long-term record except that the peak distribution for yearling and older occurred in the middle instead of the upper estuary as seen in the long-term record (Figure 4-69).

Weekly length statistics for juvenile spottail shiner collected in 1996 show an overall increase in length from July through August and then fluctuations in growth until the end of BSS/FSS collections that may be related to sampling gear selectivity (Figure 4-70, Appendix Tables E-20 and E-21).

In general, spottail shiner are opportunistic predators that feed on aquatic insect larvae, zooplankton, benthic invertebrates, and the eggs and larvae of fish, including their own species. The smaller fish eat the smaller organisms and zooplankton (Scott and Crossman 1973).

4.14 ATLANTIC STURGEON

Atlantic sturgeon, *Acipenser oxyrhynchus*, has two recognized subspecies, *A. o. oxyrhynchus* and *A. o. desotoi*. The former ranges from Hamilton River, Labrador, and George River, Ungava Bay, to northeastern Florida, while the latter is confined to the northeastern Gulf of Mexico (Gruchy and Parker 1980a). Atlantic sturgeon are anadromous with spawning occurring in freshwater, but most of their life is spent in marine waters, often undertaking long distance migrations along the Atlantic Coast (Bain 1997). Tagging studies reported by Dovel and Berggren (1983) indicate that Atlantic sturgeon disperse over great distances and spend at least part of their lives in other estuary systems. Atlantic sturgeon tagged in the Hudson River have been recaptured as far north as Marblehead, Massachusetts, and as far south as Ocracoke, North Carolina. Many of the tags were returned by Delaware Bay and Chesapeake Bay commercial fisherman. Presumably, Atlantic sturgeon that spawned in other rivers and estuaries find their way into the Hudson River.

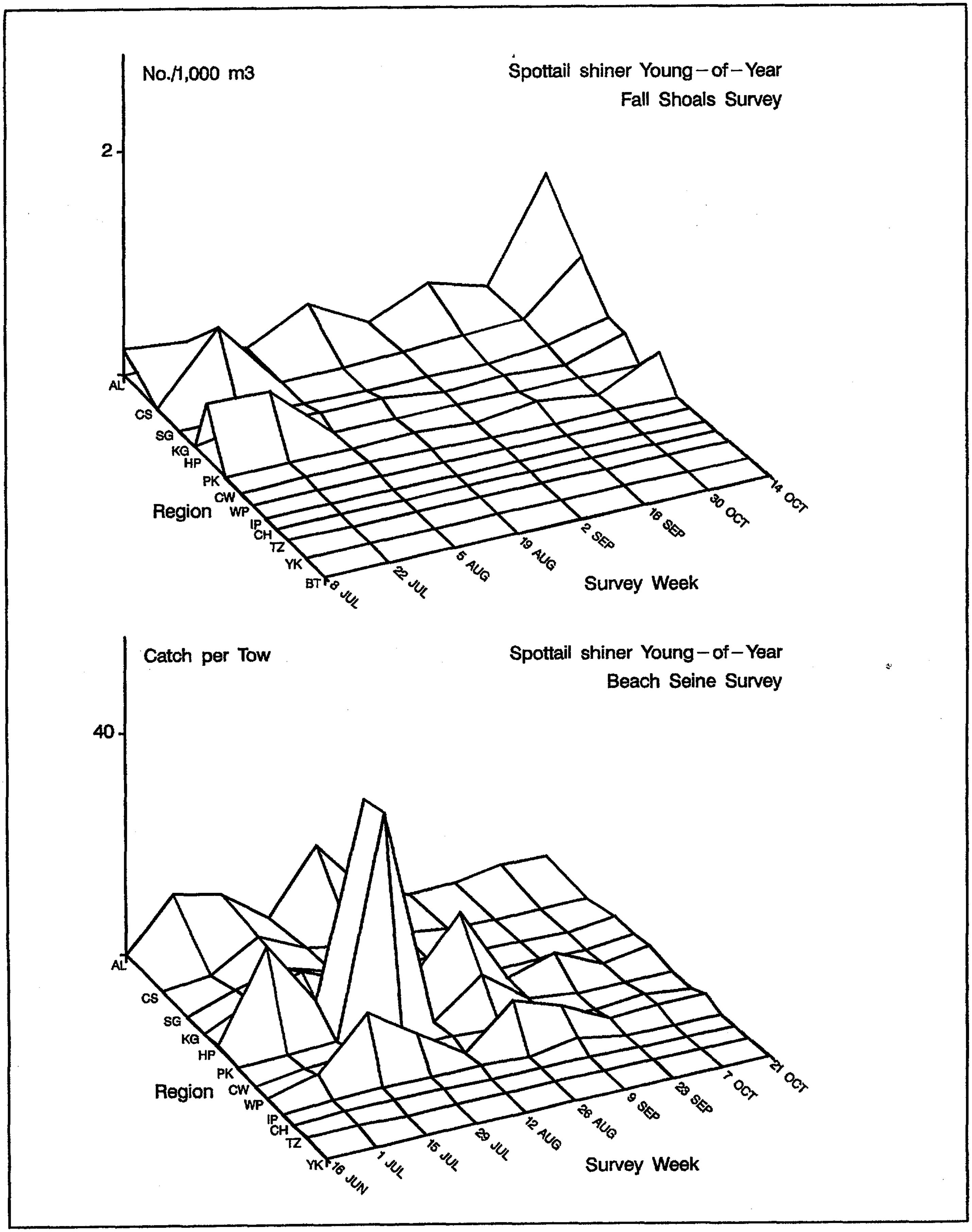


Figure 4-67. Spatiotemporal distribution of young-of-year spottail shiner in the Hudson River estuary based on the 1996 Fall Shoals and Beach Seine surveys.

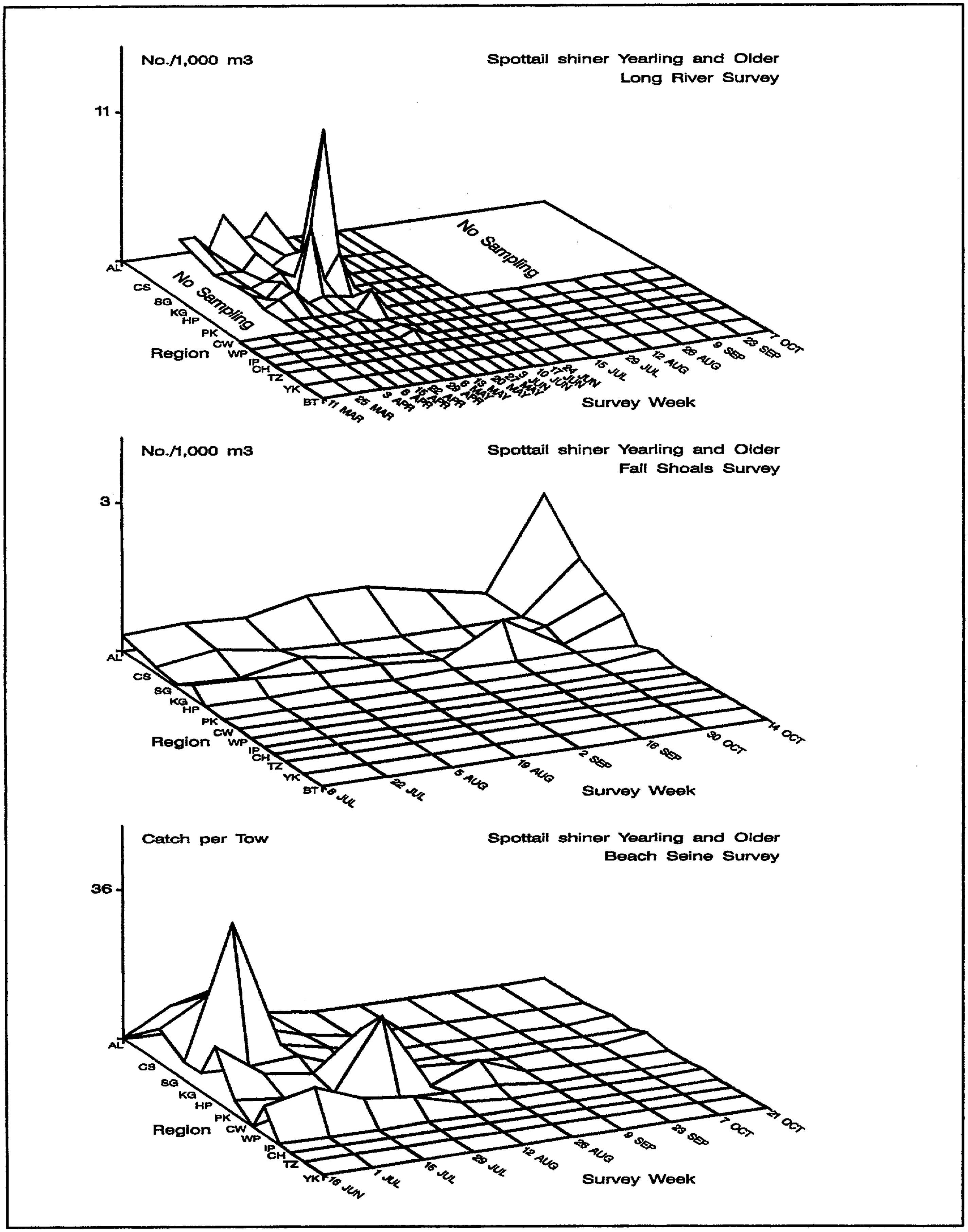


Figure 4–68. Spatiotemporal distribution of yearling and older spottail shiner in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

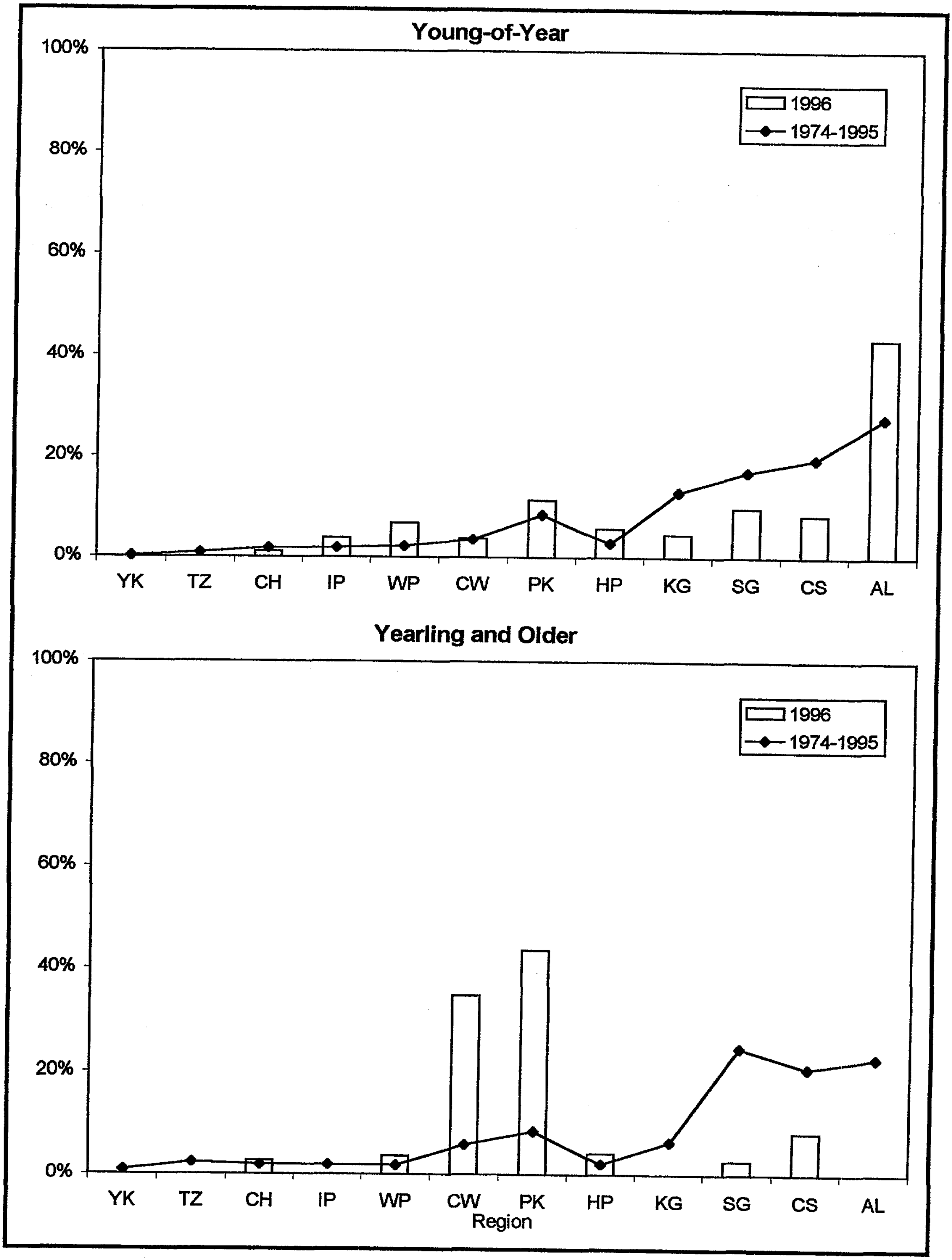


Figure 4-69. Geographic distribution indices for spottail shiner collected during Beach Seine surveys of the Hudson River estuary, 1974-1996.

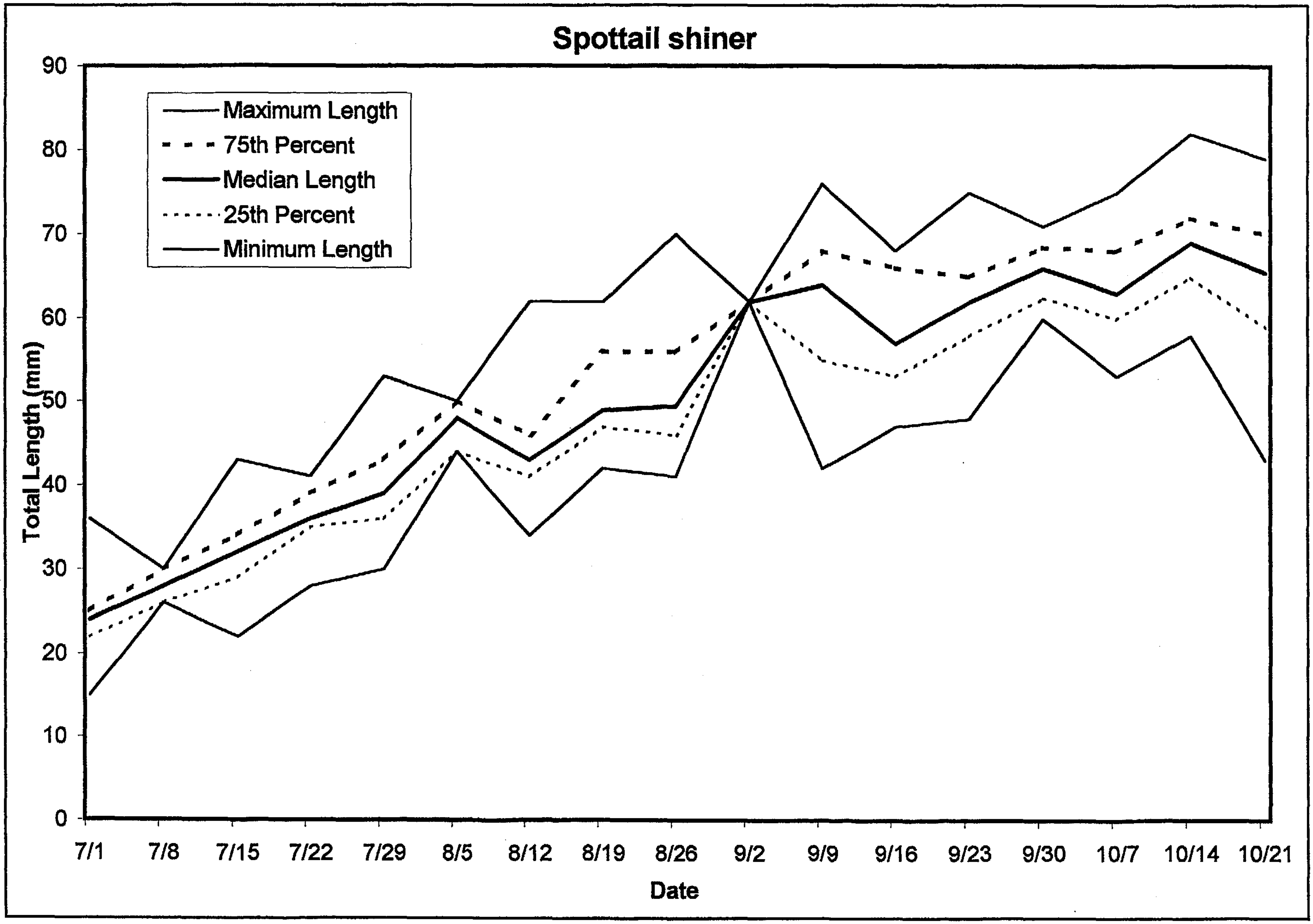


Figure 4-70. Weekly length statistics for young-of-year spottail shiner in the Hudson River estuary, 1996.

Atlantic sturgeon are long-lived, slow-maturing, large fishes. Dovel and Berggren (1983) reported that by age 29, Atlantic sturgeon averaged 7.8 ft. The largest known Atlantic sturgeon was a 14-ft specimen weighing 811 lb from Saint John River, New Brunswick (Van Den Avyle 1984). While in the Hudson River the maximum reported age is 36 (Van Eenennaam et al. 1996), the oldest known Atlantic sturgeon is a 60-year-old individual from the St. Lawrence River (Gilbert 1989). Adults are large fishes with barbels extending across most of the width of the snout, heavy bony plates (called scutes) covering the body, and an extended upper lobe of the tail fin.

Male Atlantic sturgeon reach maturity at about 12 years and females at 18-19 years (Dovel and Berggren 1983), although some females may reach maturity at 15 years (Van Eenennaam et al. 1996). They are believed to spawn at intervals ranging from 1 to 5 years (Bain 1997), however, males may possibly have an annual spermatogenic cycle (Van Eenennaam et al. 1996). Mature male Atlantic sturgeon enter the Hudson estuary by early April, before water temperatures rise above 43°F while mature females do not arrive until several weeks later (Dovel and Berggren 1983). Spawning occurs from May through July. Telemetry studies in 1994 and 1995 suggest that spawning occurs in concentration areas near Hyde Park (RM 80) and Clinton Point (RM 70) (Nack and Bain 1996). Other studies have identified an additional concentration area near Catskill (RM 113) (Van Eenennaam et al. 1996). After spawning, males and females were tracked to a congregation site at Con Hook (RM 48) where the estuary is deep (up to 120 ft). Post-spawning adults were joined at this site by marine-migrant juveniles and this large population of Atlantic sturgeon remained at Con Hook throughout most of the summer. A gradual emigration to marine waters began in August and was completed by October (Nack and Bain 1996).

Atlantic sturgeon produce large numbers of eggs. Fecundity estimates derived from a number of river systems indicate that Atlantic sturgeon produce between 0.8 to 3.75 million eggs per female and that the number of eggs is closely related to the weight of the fish. During spawning, eggs are presumably broadcast into flowing water, becoming widely dispersed after fertilization. There is no evidence of parental care. The eggs are demersal and become strongly adhesive after about 20 minutes and attach to rocks, weeds, and other submerged objects (Gilbert 1989). Hatching time ranges from about 4 days at about 20 C (Dean 1895) to 7 days at 17.8 C (Vladykov and Greeley 1963).

Larvae of Atlantic sturgeon, as all life stages, are oriented on the bottom of deep channel habitats (Bain 1997). Based on capture locations of larval and juvenile sturgeon from early Hudson River studies, the nursery region for sturgeon is believed to be located between RM 43 and RM 118 from May through mid-July (Hoff et al. 1977, in Hoff et al. 1988). More recent data collected during the LRS from 1974 through 1994 show a concentration area (RM 43-100) of larvae and early juveniles between mid-May and mid-July that may correspond to the distribution of Atlantic sturgeon early life stages (Con Edison 1997a).

Juvenile Atlantic sturgeon remain in the Hudson estuary for 2-6 years before migrating to marine waters. During the first 3 years of life, they quickly grow to over 2 ft (Bain 1997). From July through September, juvenile Atlantic sturgeon are distributed over much of the Hudson estuary (Bain 1997), but one section of the estuary (RM 43-48) contained high numbers of juveniles (Haley et al. 1996). As water temperatures drop in the fall, juveniles form an overwintering congregation in deep waters (>25 ft) between the Bear Mountain Bridge and the George Washington Bridge (Dovel and Berggren 1983).

Sturgeon feed by rooting along the bottom and "vacuuming" with their protrusible mouths. This leads to a large amount of non-food matter, mostly mud, in the stomach. Actual food items include mollusks, polychaete worms, gastropods, shrimp, isopods, amphipods, and small benthic fishes.

The Atlantic sturgeon is an important commercial species in the Hudson estuary, prized for its flesh and caviar. Commercial landings peaked at 7 million pounds at the turn of the 19th century, but the fishery crashed within a 10-year period due to over-exploitation of a slow-growing, slow-maturing fish (Field 1996). Since then, coast-wide landings hovered around 200,000 lb. In 1990, the Atlantic States Marine Fisheries Commission adopted a management plan for Atlantic sturgeon establishing a minimum size limit for the commercial fishery. Recent annual landings in New York State have ranged from 17,000 to 36,000 lb (McKown 1996). However, in 1996, the Atlantic States Marine Fisheries Commission recommended a 2-year fishery moratorium based on recent scientific analyses of the Hudson River Atlantic sturgeon which indicated a collapsing population (Field 1996).

Evidence of a decline in the Hudson River estuary stock of Atlantic sturgeon in recent years comes from two population estimates. The population of immature Atlantic sturgeon in the Hudson River estuary was estimated at 14,500 to 36,000 fish for the 1976 year class at age one (Dovel and Berggren 1983). Kahnle and Hattala (1998) estimated that there were 4,600 age zero Atlantic sturgeon in the estuary in 1994, a substantial decline from the abundance of the 1976 year class.

A few Atlantic sturgeon were collected in the Utilities' monitoring program in 1996. A total of 10 yearling and older Atlantic sturgeon were caught in the LRS and FSS between the Croton-Haverstraw and Saugerties regions from July through October (Table 4-3 and Figure 4-71).

4.15 SHORTNOSE STURGEON

Shortnose sturgeon, ***Acipenser brevirostrum***, are less widespread than the Atlantic sturgeon, ranging from the St. John River, New Brunswick, to the St. Johns River, Florida (Gruchy and Parker 1980b). Nineteen distinct stocks of shortnose sturgeon are recognized, ranging in size from less than about 100 adults in the Merrimack River, Massachusetts to greater than about 38,000 adults in the Hudson River, New York (NMFS 1998). Shortnose sturgeon are amphidromous, using mainly fresh and brackish waters, and only occasionally marine waters, during its life cycle (Bain 1997). Shortnose sturgeon presumably from the Hudson River have been caught in Sandy Hook Bay, New Jersey just off the mouth of the Hudson (Dovel et al. 1992), but most seem to remain within the Hudson estuary. Forty-four shortnose sturgeon tagged in the Hudson River between 1979 and 1980 were recaptured in the Hudson River by researchers from 1993 to 1995, from 14 to 17 years after tagging (Bain et al. 1996).

Like Atlantic sturgeon, shortnose sturgeon are long-lived, slow-maturing fishes. In the Hudson River the maximum reported age for shortnose sturgeon is 37 years, however, the oldest known shortnose sturgeon is a 67-year-old female from St. John River, Canada (Gilbert 1989). The largest shortnose sturgeon reported for the Hudson River was almost 4 ft long (Geoghegan et al. 1992), considerably smaller than that reported for Atlantic sturgeon. However, both the Atlantic and the shortnose sturgeons are similar in appearance. As adults, shortnose sturgeon can be distinguished from the Atlantic sturgeon by a shorter and blunter snout, wider mouth, and smaller size of the anal fin.

Male shortnose sturgeon in the Hudson River do not reach sexual maturity until age 3-5 and females at age 6-7 (Dadswell et al. 1984). The first spawning, however, may follow maturation in males by 1-2 years, while in females spawning may be delayed for up to 5 years (Dadswell 1979). Spawning appears to be a non-annual event. Based on the percentage of fish examined from August to March that were developing sexually, Dadswell (1979) suggested that females spawn once every third year and males every other year. Other evidence (annuli of the pectoral ray) suggests a 5- to 11-year interval between spawnings (Dadswell 1979). However, annual spawning has been suggested by tagging studies on the Hudson River that tracked shortnose sturgeon to the spawning grounds in successive years (Dovel et al. 1992).

TABLE 4-3 COLLECTIONS OF ATLANTIC STURGEON DURING THE 1996 HUDSON RIVER SURVEYS

Date		Survey	Region	River Mile	Number Collected	Total Length (mm)
11	July	FSS	Albany	138	1	85
14	July	FSS	Cornwall	58	1	615
25	July	FSS	Cornwall	59	1	582
20	August	FSS	Saugerties	97	1	452
5	September	FSS	West Point	50	1	185
5	September	FSS	Albany	138	1	151
20	September	FSS	West Point	54	1	225
24	September	LRS	West Point	55	1	204
4	October	FSS	Poughkeepsie	68	1	575
8	October	LRS	Poughkeepsie	62	1	650

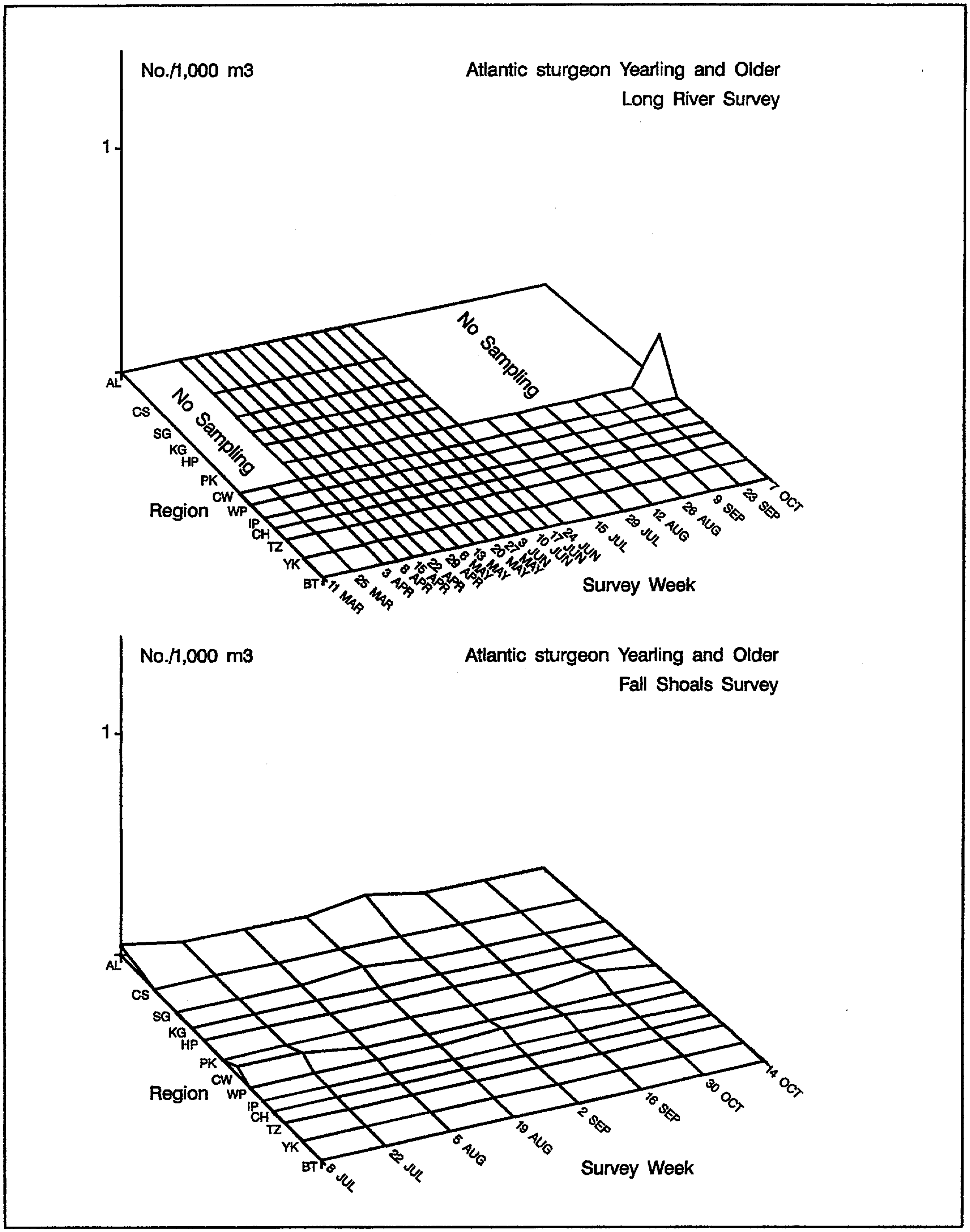


Figure 4 – 71. Spatiotemporal distribution of yearling and older Atlantic sturgeon in the Hudson River estuary based on the 1996 Long River and Fall Shoals surveys.

During their spawning migrations, shortnose sturgeon move upriver as far as accessible habitat permits (Dovel et al. 1992). In the Hudson River, adult shortnose sturgeon reach the spawning grounds between Coeymans and Troy (RM 124-153) as early as the first week of April and spawning occurs from late April to early May (Bain 1997). After spawning, adults move downriver to feed and disperse over the tidal portion of the Hudson estuary, but are primarily south of Kingston (Bain 1997). From October through March, pre-spawning adults concentrate near Esopus Meadows (RM 87) (Dovel et al. 1992). Non-spawning adults may inhabit another winter concentration area located near Croton Point (RM 34) (Geoghegan et al. 1992; Bain 1997).

Shortnose sturgeon are broadcast spawners with external fertilization of eggs (NMFS 1987). Similar to Atlantic sturgeon, the eggs are demersal and adhere to objects on the river bottom within minutes of fertilization. Between 8 and 12 C, eggs hatch 13 days after fertilization. At 17 C, hatching occurs in 8 days (Buckley and Kynard 1981).

Recent research on shortnose sturgeon larval behavior indicates that hatchlings are photonegative and vigorously seek cover under any available structure immediately after hatching (Richmond and Kynard 1995). During the first 1-2 days following hatch, larvae denied or dislodged from cover will exhibit "swim-up and drift" behavior, which in the wild allows them to move short distances to seek available cover. At 9-12 days post hatch, larvae are 15 mm long (TL), the yolk sac is completely absorbed, and the fry are feeding on zooplankton (Buckley and Kynard 1981; Washburn and Gillis Associates 1981). By about 14-17 mm TL, shortnose sturgeon, resembling miniature adults, become photopositive and leave cover to swim in the water column, although remaining bottom oriented. In the wild, larvae of this size probably migrate downstream (Richmond and Kynard 1995).

Little information is available on the actual distribution of the early life stages of Hudson River sturgeon during their first growth season because of the infrequency of their capture and the difficulty in distinguishing between the two species. Data from 21 years of the LRS (1974-1994) document the collection of 186 larvae and early juveniles (Con Edison 1997a). These data show two concentration areas of sturgeon larvae and early juveniles in the Hudson River estuary. Based on spawning ground identification by Dovel et al. (1992), the concentration area from RM 120 to RM 150 during May may correspond to the distribution of shortnose sturgeon larvae and early juveniles in the Hudson River.

Early growth is rapid. For shortnose sturgeon, larvae are approximately 0.7 in. in total length at the end of May and from 4.9 to 5.1 in. by the end of July. By the end of their second summer, they average approximately 11.5 in. (Dovel et al. 1992). After about the third year of life, growth slows considerably. Greeley (1937) reported a maximum size of about 34 in. at 15 years for shortnose sturgeon, while Dadswell et al. (1984) reported a maximum of approximately 35 in. at age 40.

Juvenile shortnose sturgeon use a large portion of the Hudson estuary as nursery ground (Bain 1997). During the summer, more juvenile shortnose sturgeon were found in the relatively shallow, freshwater zone of the estuary around Poughkeepsie (RM 67-86) than in the deeper, more saline zone near West Point (RM 42-56) (Haley et al. 1996). By late fall and early winter, most juveniles occupy the broad region of the Hudson River near Haverstraw (RM 34-39) (Bain 1997). Juvenile shortnose sturgeon typically prey on benthic crustaceans and insect larvae, whereas adults will feed on larger items with mollusks being a major component of their diet (Bain 1997).

Although numerous studies summarized the life history of Atlantic sturgeon since the late 1800s, little attention was paid to shortnose sturgeon, likely because of its limited commercial importance. With the listing of shortnose sturgeon as an endangered species in the United States and its classification as rare in

Canada (Gorham and McAllister 1974), more effort has been directed toward understanding this species. Current research efforts have focused on the ecology of juveniles and on the population status of shortnose sturgeon in the Hudson River. Trends in the relative abundance of shortnose and Atlantic sturgeon have shown an increase in shortnose sturgeon and a decline in Atlantic sturgeon (Bain 1996). Dovel et al. (1992) observed that in 1984 equal numbers of juvenile Atlantic and shortnose sturgeon were collected; while during earlier years (1975-1980), the ratio of Atlantic to shortnose sturgeon was 10:1 in the Hudson River. Other evidence of an increasing population of shortnose sturgeon over its range is that the National Marine Fisheries Service is considering a petition to delist shortnose sturgeon as an endangered species in the Kennebec River system in Maine (Haley 1996).

The Hudson River estuary appears presently to contain the largest stock of shortnose sturgeon that has been reported anywhere. In the late 1970's, Dovel (1979) estimated the shortnose sturgeon population in the Hudson River estuary at 13,000 fish. Bain et al. (1995) estimated the current adult population size to be 38,024, with lower and upper 95% confidence intervals of 26,427 and 55,072, respectively. This latter population estimate suggests a 2- to 4-fold increase in abundance since the late 1970's (NMFS 1998). However, Bain et al. (1995) believe that the current estimate of 38,024 fish may substantially underestimate the actual number of shortnose sturgeon in the Hudson River estuary. Based on the near lack of recaptures of marked sturgeon in the summer and fall sampling, it is likely that the sampled overwintering and spawning concentrations were just a subset of the total adult population. Dovel's study design targeted spawning adults in the overwintering areas near Kingston and on the spawning grounds near Troy, but missed non-spawning adults, which probably overwinter near Haverstraw and do not migrate to Troy (Bain 1997). Additionally, because shortnose sturgeon do not appear to spawn every year, the majority of the population may be non-spawners and, thus, not included in this population estimate.

The Utilities' monitoring program conducted during 1996 resulted in a total of 89 shortnose sturgeon (32 of which were YSL) collected in the LRS and FSS from Yonkers to Albany from April though October (Table 4-4 and Figure 4-72).

4.16 WHITE CATFISH

White catfish occur in freshwater lakes and ponds and have been introduced widely on the West Coast and into the Northeast. The natural distribution was originally from the Chesapeake Bay region in coastal streams southward to Texas. They are found in estuaries all along the Atlantic Coast from the Hudson River to Florida and west along the Gulf of Mexico to Mobile Bay. White catfish prefer fresh and slightly brackish waters and moderate water currents, however, they do not tolerate high salinity, so estuarine populations generally remain in their natal systems.

In southern waters young white catfish are about 3 in. long at the end of the first growing season. White catfish generally do not mature until they are 3-4 years old and 7-8 in. long. They continue to grow slowly, attaining lengths of 17 in. at age 8 and 22 in. at age 11. This species seldom exceeds 3 lb in weight.

White catfish move upstream to spawn. In spring white catfish have been reported in tidal creeks and shallow marsh habitats. Like the other members of the catfish family, the white catfish is a nest builder, and the male guards the young for some time after they hatch. Both parents participate in the construction of a nest up to 3 ft in diameter on sand and gravel bars. White catfish spawn when water temperatures reach about 70°F, i.e., in late June and early July in the Hudson River. An 11- to 12-in. female carries only 3,200-3,500 eggs, but the eggs are large, approximately 1/4 in. in diameter. The male (or less often both parents) protects and fans water over the eggs in the nest.

TABLE 4-4 COLLECTIONS OF SHORTNOSE STURGEON DURING THE 1996 HUDSON RIVER SURVEYS

Date		Survey	Region	River Mile	Number Collected	Total Length (mm)
9	April	LRS	Catskill	121	2	712,780
16	April	LRS	Catskill	124	1	592
16	April	LRS	Albany	131	1	821
10	May	LRS	West Point	53	1	700
15	May	LRS	Albany	132	2	795,YSL
15	May	LRS	Albany	134	2	YSL
15	May	LRS	Albany	137	2	YSL
15	May	LRS	Albany	139	2	YSL
15	May	LRS	Albany	142	7	YSL
16	May	LRS	Kingston	87	1	YSL
16	May	LRS	Saugerties	97	1	YSL
12	June	LRS	Hyde Park	79	16	YSL
12	June	LRS	Hyde Park	85	1	720
1	July	LRS	Indian Point	40	1	788
12	July	FSS	Kingston	91	1	666
14	July	FSS	Croton-Haverstraw	35	1	742
14	July	FSS	Cornwall	61	1	718
23	July	FSS	Saugerties	94	1	670
23	July	FSS	Saugerties	97	1	760
24	July	FSS	Hyde Park	78	1	820
26	July	FSS	Yonkers	22	1	809
2	August	LRS	West Point	54	1	761
6	August	FSS	Saugerties	94	2	716,773
6	August	FSS	Saugerties	97	1	674
6	August	FSS	Catskill	108	1	239
6	August	FSS	Catskill	122	1	278
7	August	FSS	Kingston	89	1	721
9	August	FSS	Tappan Zee	33	1	748
20	August	FSS	Kingston	92	1	159
20	August	FSS	Saugerties	98	1	650
20	August	FSS	Catskill	120	1	178
21	August	FSS	Cornwall	58	1	691
21	August	FSS	Cornwall	60	1	653
21	August	FSS	Poughkeepsie	62	1	143
21	August	FSS	Hyde Park	83	1	749
21	August	FSS	Hyde Park	85	1	670
22	August	FSS	Croton-Haverstraw	38	1	554
24	August	FSS	Yonkers	17	1	645
4	September	FSS	Tappan Zee	28	1	615
4	September	FSS	Tappan Zee	31	1	700
5	September	FSS	Catskill	120	1	181
6	September	FSS	Hyde Park	77	1	640
6	September	FSS	Kingston	88	1	771
6	September	FSS	Kingston	93	1	584
6	September	FSS	Saugerties	94	1	740
6	September	FSS	Catskill	117	1	790
7	September	FSS	Cornwall	57	1	578
18	September	FSS	Catskill	117	1	203
19	September	FSS	Hyde Park	81	1	523
19	September	FSS	Hyde Park	82	1	645

TABLE 4-4 (Continued)

	Date	Survey	Region	River Mile	Number Collected	Total Length (mm)
19	September	FSS	Kingston	93	1	638
20	September	FSS	Tappan Zee	33	1	760
20	September	FSS	West Point	54	1	662
20	September	FSS	West Point	55	1	705
20	September	FSS	Cornwall	59	1	720
3	October	FSS	Kingston	90	1	701
3	October	FSS	Saugerties	106	1	760
4	October	FSS	Croton-Haverstraw	37	1	668
4	October	FSS	Croton-Haverstraw	38	1	590
14	October	FSS	Yonkers	22	1	764
15	October	FSS	Hyde Park	81	1	653
15	October	FSS	Catskill	115	1	235

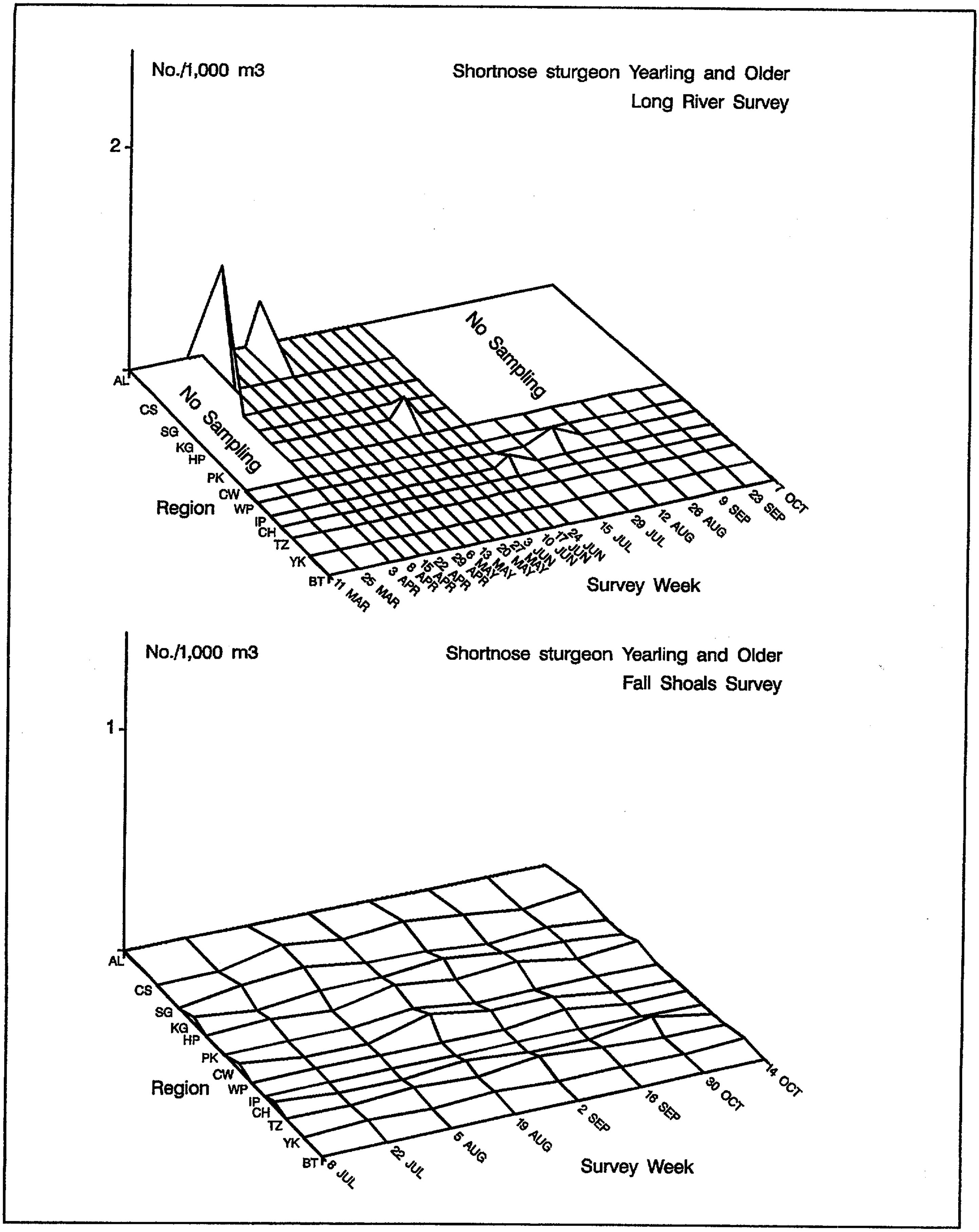


Figure 4−72. Spatiotemporal distribution of yearling and older shortnose sturgeon in the Hudson River estuary based on the 1996 Long River and Fall Shoals surveys.

White catfish eggs and larvae were rarely collected during the Utilities' ichthyoplankton surveys. However, the 1996 LRS and FSS consistently captured low numbers of YOY white catfish primarily in the upper and middle estuary but extending as far south as Indian Point (Figure 4-73). Yearling and older white catfish were captured in the 1996 surveys throughout the estuary (Figure 4-74).

The 1996 geographical distribution of YOY white catfish in the FSS is generally consistent with the 1979-1995 long-term trend, however, the 1996 distribution for yearling and older white catfish differs slightly from the historical pattern (Figure 4-75). Juveniles tend to occur in the mid- to upper Hudson with the bulk of the distribution in the Catskill and Albany regions. Although yearling and older white catfish are found throughout the river, their distribution tends to be bimodal with peaks in the Croton-Haverstraw and Catskill regions, but in 1996 most yearling and older white catfish were found in Tappan Zee (Figure 4-75). After moving into the deeper river strata during September and October, yearling and older white catfish migrate downstream to overwinter in the lower estuary when temperatures in the upper estuary drop below 59°F (NAI 1985a).

Small white catfish feed on midge larvae until they become large enough to eat fish. Larger white catfish have a diverse diet that includes midge larvae, crustaceans, algae, fish eggs, and a variety of fish (Smith 1985).

Weekly length statistics for juvenile white catfish collected in 1996 showed a steady increase in growth from July through mid-September and then no increase in length through the end of FSS collections in October (Figure 4-76, Appendix Tables E-22 and E-23).

4.17 WEAKFISH

Weakfish (*Cynoscion regalis*) is a member of the drum family commonly inhabiting nearshore waters from North Carolina to New York and occasionally straying as far as Nova Scotia or the eastern Gulf of Mexico. Weakfish overwinter in deeper waters of the continental shelf, generally between Chesapeake Bay and Cape Fear, North Carolina. When inshore waters begin to warm each spring, older weakfish begin to move toward shore and then head north along the Coast. These older individuals are followed by successively younger groups of adult weakfish. During warmer months of the year, weakfish are found throughout inshore waters in their geographic range, with larger individuals the most abundant in northern areas. As water temperatures decline in the fall, weakfish begin to migrate southward and return to offshore overwintering areas.

Spawning occurs in nearshore coastal and marine waters in spring and summer, depending upon geographic location. Extensive spawning occurs in the south and in the New York Bight. Weakfish eggs are buoyant and hatch in about 2 days. The newly hatched larvae, which are less than 1/8 in. long, are weak swimmers and move shoreward up into the bays and estuaries. Duration of the larval stage appears to depend partially on prey density. In the nursery areas young weakfish feed on invertebrates and grow rapidly. They reach a length of 3-6 in. by the end of the first summer. Young weakfish can be found throughout the saline and brackish areas of estuaries but tend to be most common in areas where salinities are over 10 ppt. As water temperatures decline in fall, juvenile weakfish begin to leave these nursery areas and move toward southern overwintering areas.

In the New York Bight spawning typically occurs from May to mid-July, and there are two spawning peaks. Weakfish larvae are rarely encountered north of the George Washington Bridge, preferring more saline waters. Weakfish juveniles typically first enter the areas north of the George Washington Bridge

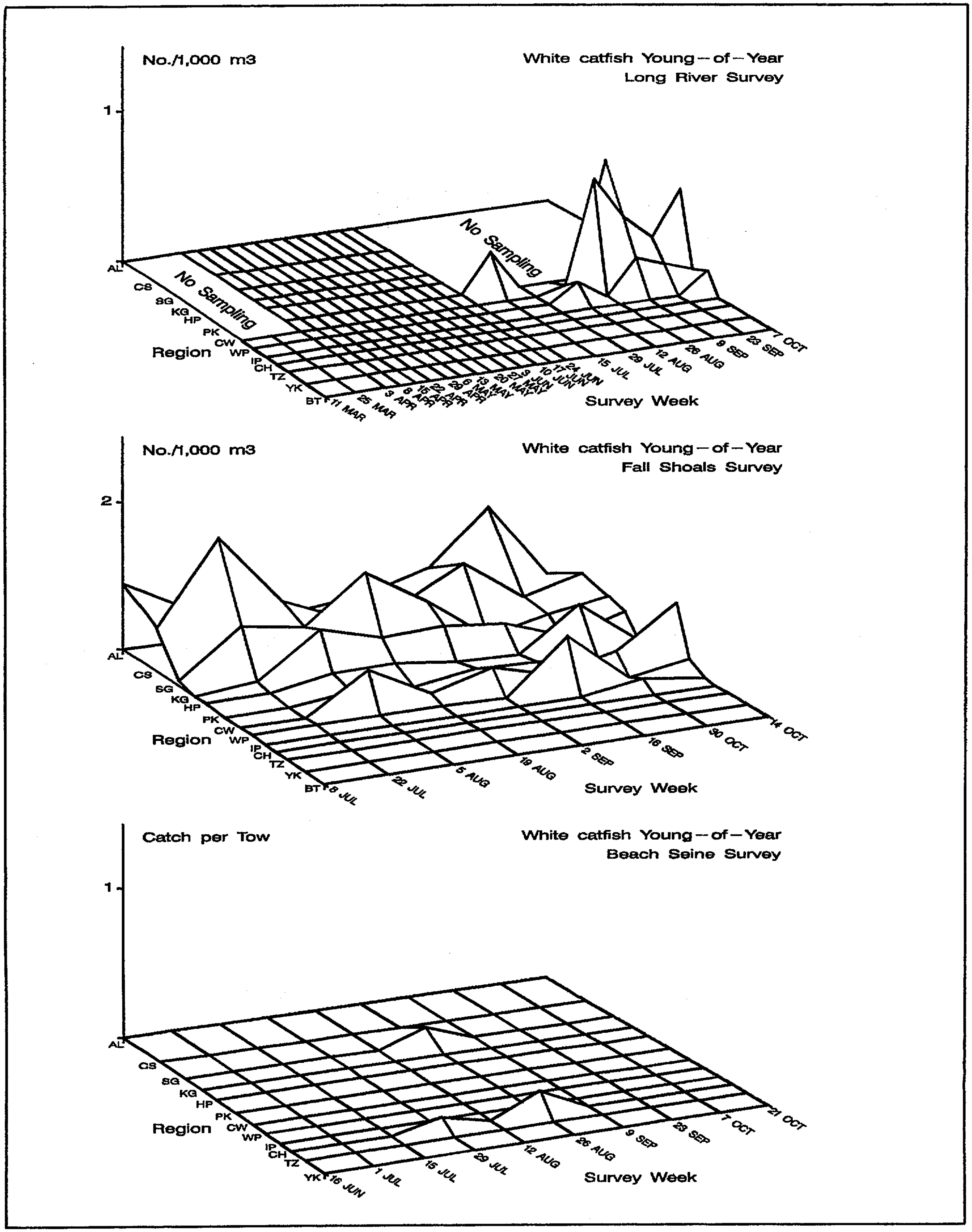


Figure 4-73. Spatiotemporal distribution of young-of-year white catfish in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

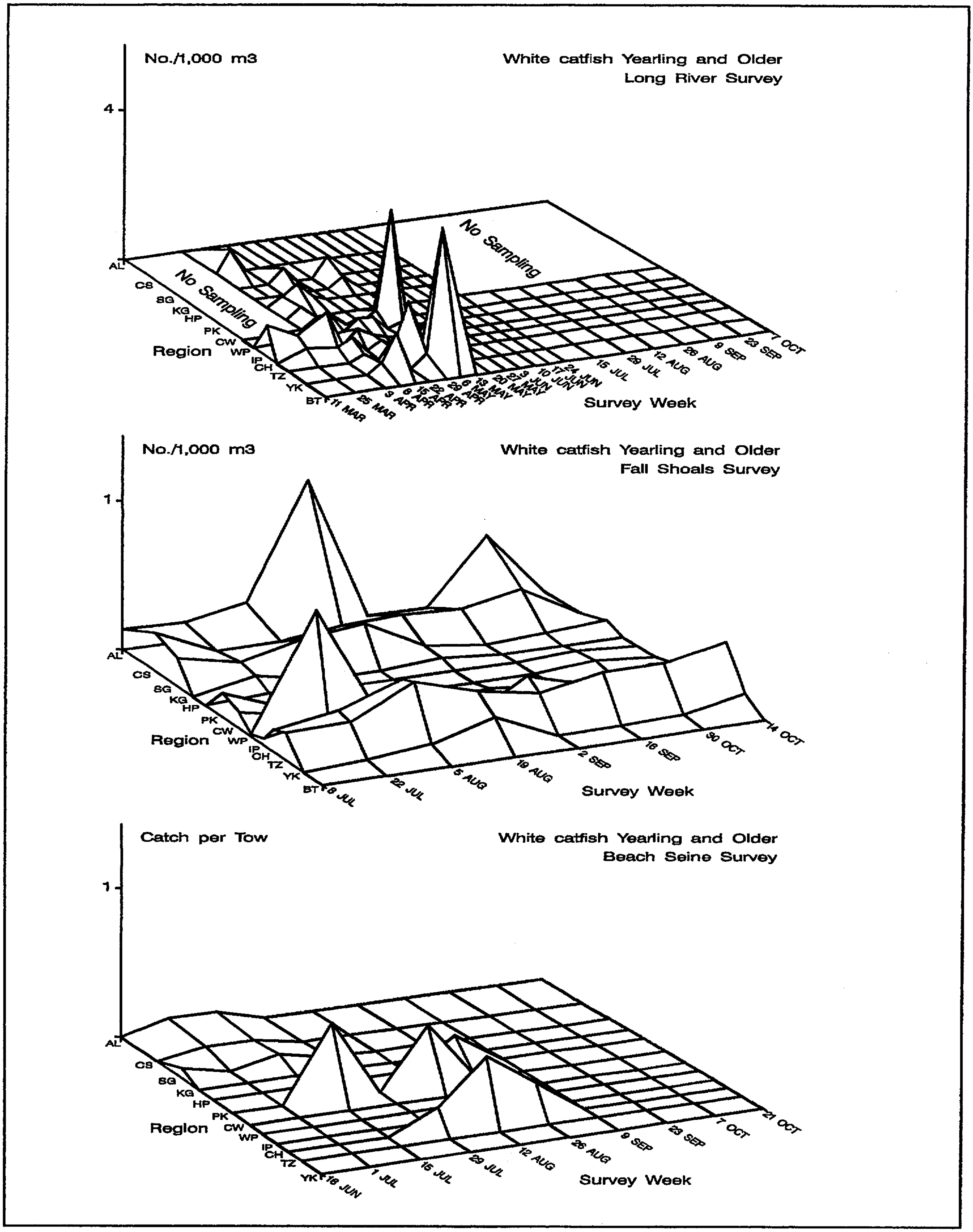


Figure 4–74. Spatiotemporal distribution of yearling and older white catfish in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

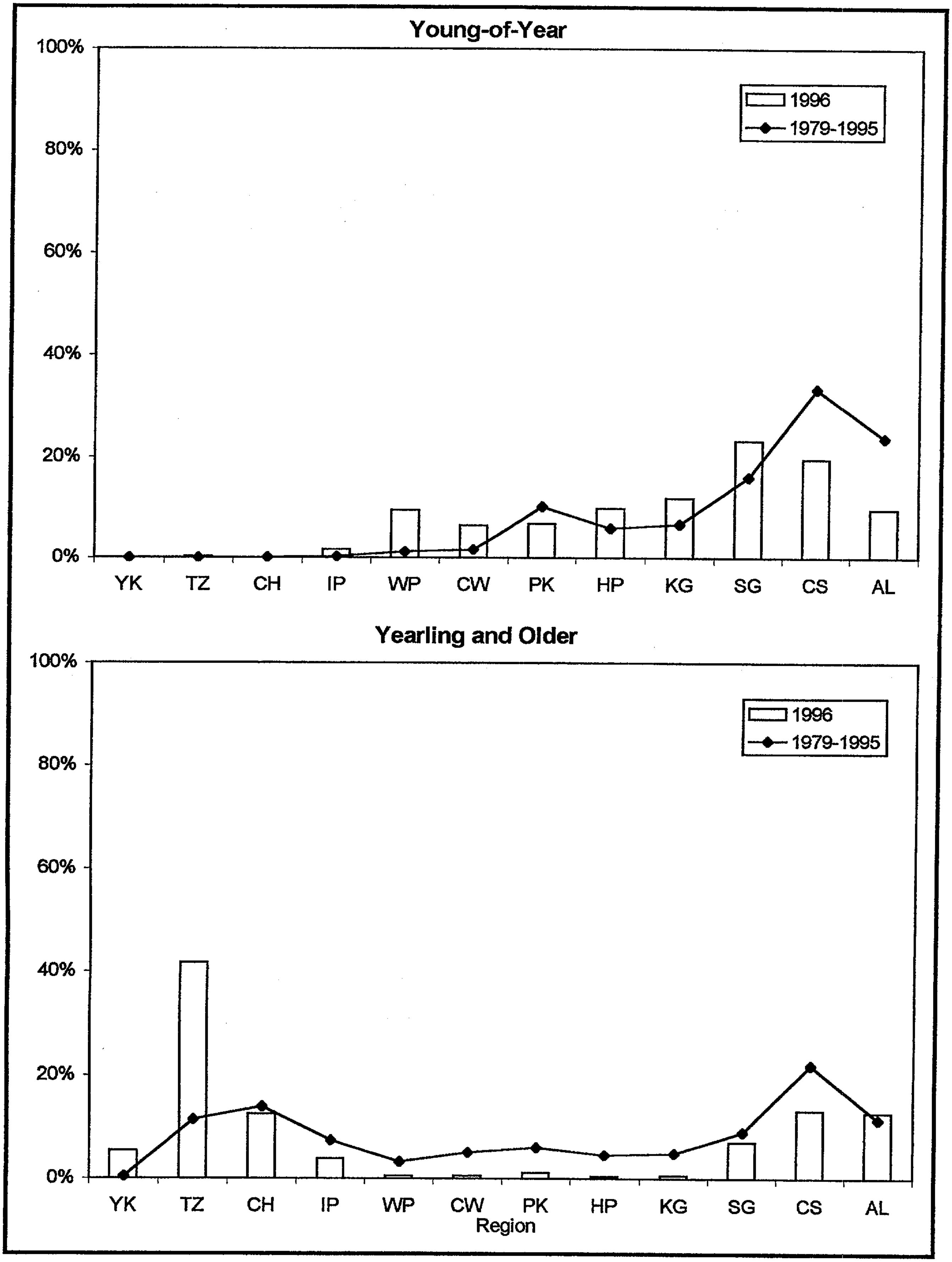


Figure 4-75. Geographic distribution indices for white catfish collected during Fall Shoals surveys of the Hudson River estuary, 1979-1996.

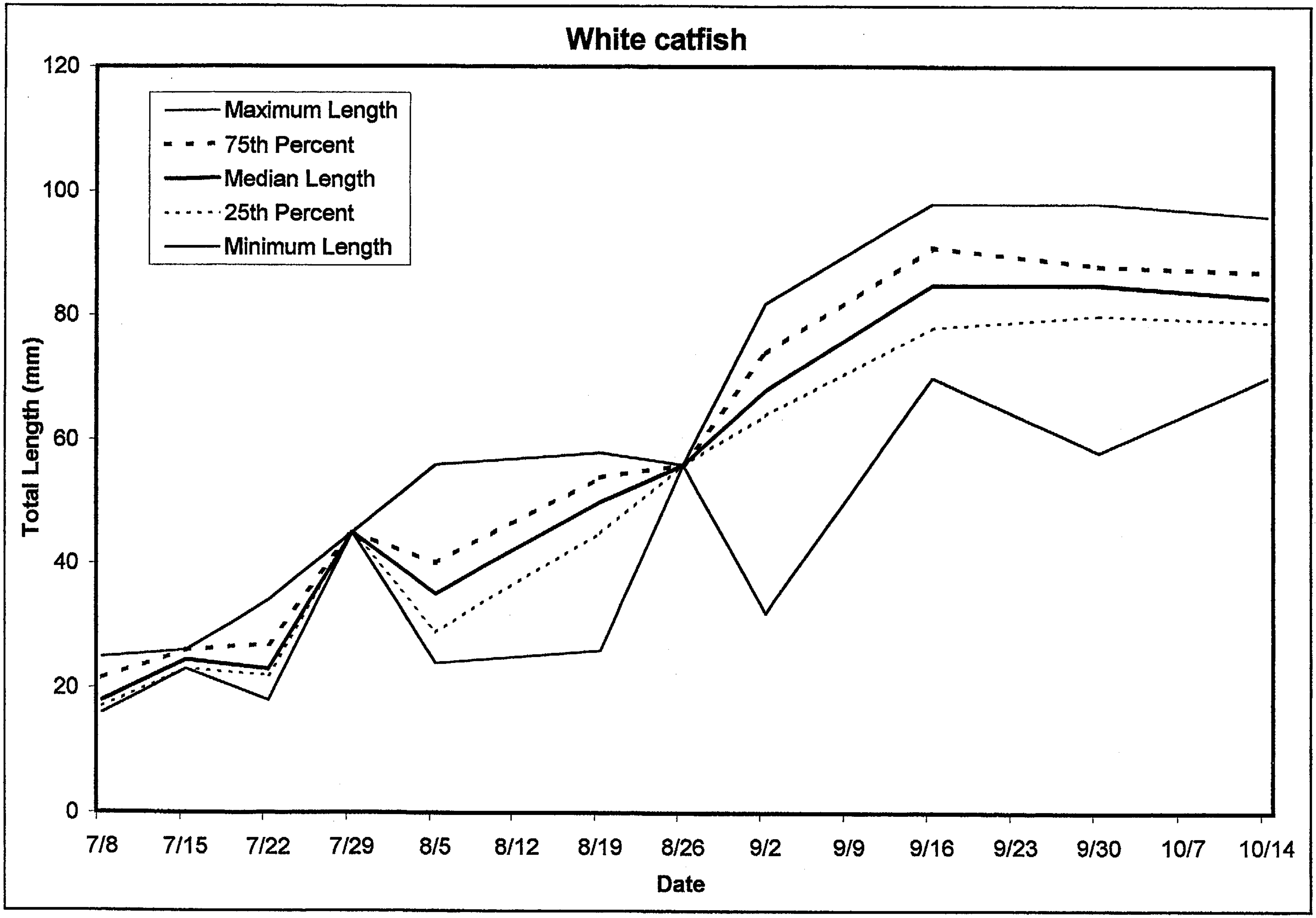


Figure 4-76. Weekly length statistics for young-of-year white catfish in the Hudson River estuary, 1996.

during July and most have emigrated from the estuary by mid-August. During the 1996 LRS, weakfish juveniles were present from July through October from the Battery to Poughkeepsie regions with greatest abundance in mid-July in the Yonkers region (Figure 4-77). In the 1996 FSS juvenile weakfish abundance peaked in late July but were found through October from Yonkers to Indian Point, showing a gradual emigration from the Hudson estuary. Few yearling and older weakfish are collected in the monitoring program, indicating that these life stages rarely enter the Hudson above Yonkers.

The 1996 geographical distribution of YOY weakfish in the FSS is consistent with the 1979-1995 long-term trend in which the majority of juveniles were distributed in the lower estuary from Indian Point through Yonkers (Figure 4-78).

Weekly length statistics for juvenile weakfish collected in 1996 showed a rapid increase in growth until mid-August and then little change in length through October (Figure 4-79; Appendix Tables E-24 and E-25).

4.18 BLUEFISH

Bluefish (*Pomatomus saltatrix*) is a predaceous oceanic fish species; in the western Atlantic Ocean its range is from Argentina to Maine and occasionally to Nova Scotia. In the New York Bight bluefish is a common inshore inhabitant that arrives in May and usually departs by November. North Atlantic bluefish migrate from New England to Cape Hatteras, North Carolina in summer and to the Florida area and the southern Gulf Stream in winter, but migration patterns have not been positively identified. During migrations, smaller fish migrate closer to shore than larger fish.

There are two major spawning aggregations in the mid-Atlantic: a spring spawning stock and a summer spawning stock. The degree to which the stocks are isolated is not known, but consistent morphological differences suggest some isolation of the stocks (Pottern et al. 1989). Most of the bluefish population in the New York Bight probably originates from the spring-spawning stock (Chiarella and Conover 1990). The spring spawners move into the waters where the Gulf Stream and the continental shelf water meet between northern Florida and Cape Hatteras. Bluefish spawn as they migrate northward. North of Cape Hatteras the adults move shoreward. The smaller spent bluefish may spend summers in the Chesapeake and Delaware bays and Albemarle Sound. Larger fish move north longer than the smaller bluefish and migrate farther. Some move into Long Island Sound and more northern areas. In autumn, bluefish migrate back to the wintering areas off south Florida and the south Atlantic (Pottern et al. 1989).

The juvenile bluefish produced in the spring travel north with the Gulf Stream and migrate across the continental shelf to the mid-Atlantic bays and estuaries, which act as productive nursery areas. Spring-spawned juveniles spend most of their first summer in estuaries (Kendall and Walford 1979). In fall they migrate southward along the Coast to winter off south Florida. The following spring, yearlings migrate north along the Coast and return to the mid-Atlantic bays and estuaries and, to a lesser extent, the sounds of North Carolina (Pottern et al. 1989). The spring-spawning bluefish stock that contributes most to Hudson River fish ranges along most of the Atlantic Coast.

Some summer-spawned larvae have also been reported in the more saline parts of estuaries in the mid-Atlantic Bight. Summer-spawned juveniles may spend only about a month in estuaries, but most are found along the shore (Kendall and Walford 1979). The summer-spawning adults start from the southern wintering areas, but they migrate north to the outer half of the continental shelf between Cape Hatteras and Cape Cod and spawn there. Spent spawners then move west, and show up in coastal waters, particularly along Long Island. Most of the juveniles from the summer spawn remain offshore during the summer. In

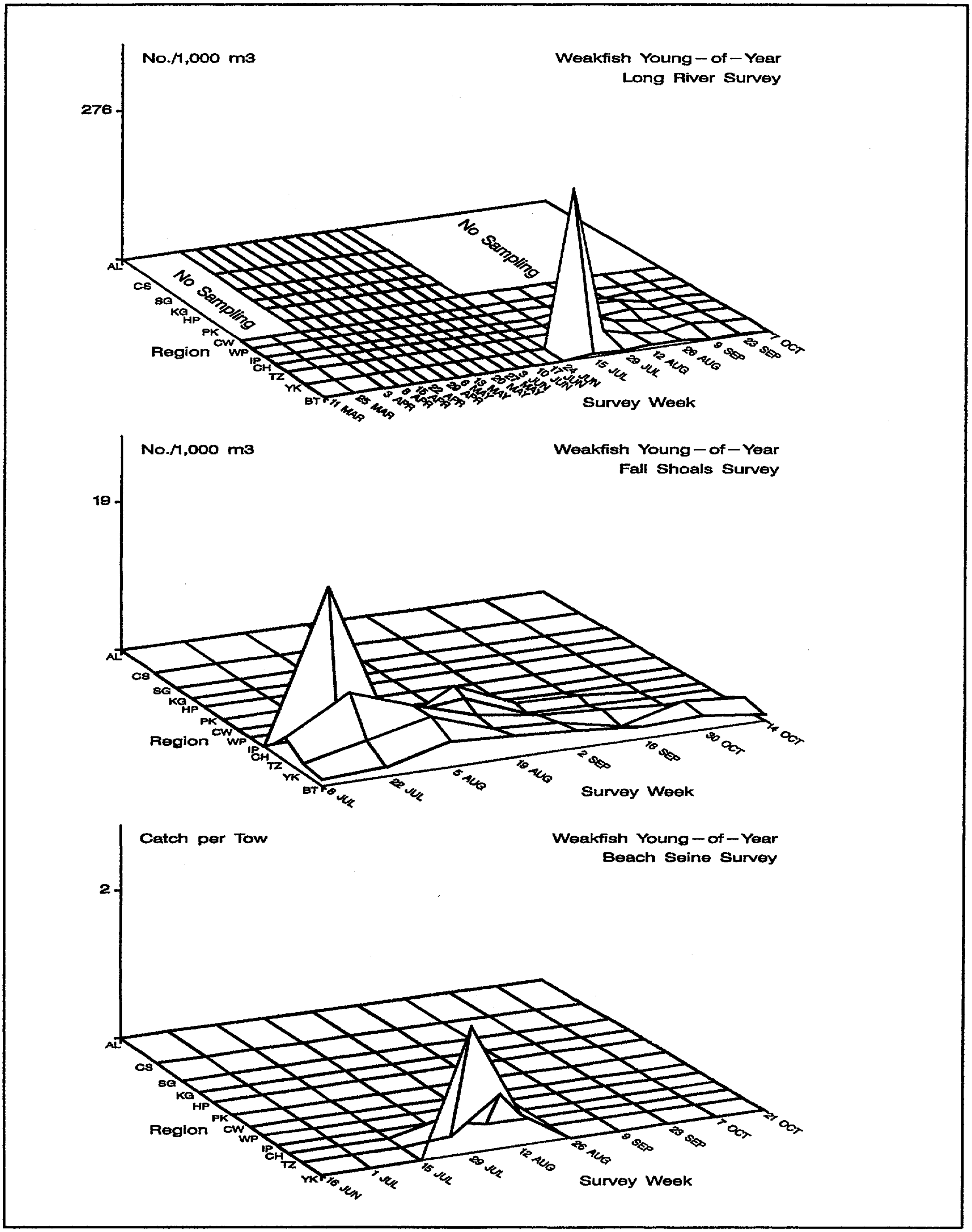


Figure 4-77. Spatiotemporal distribution of young-of-year weakfish in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

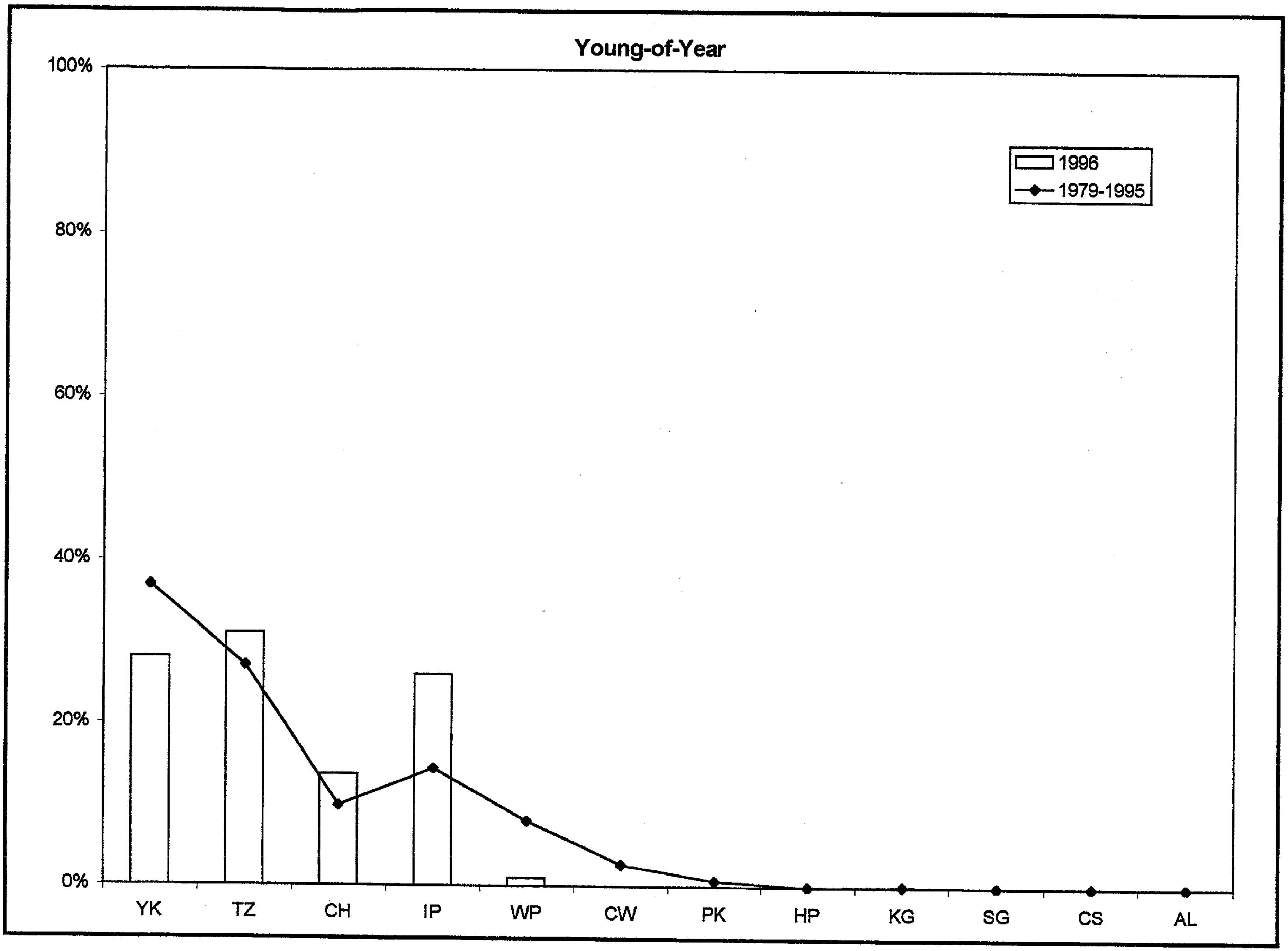


Figure 4-78. Geographic distribution indices for weakfish collected during Fall Shoals surveys of the Hudson River estuary, 1979-1996.

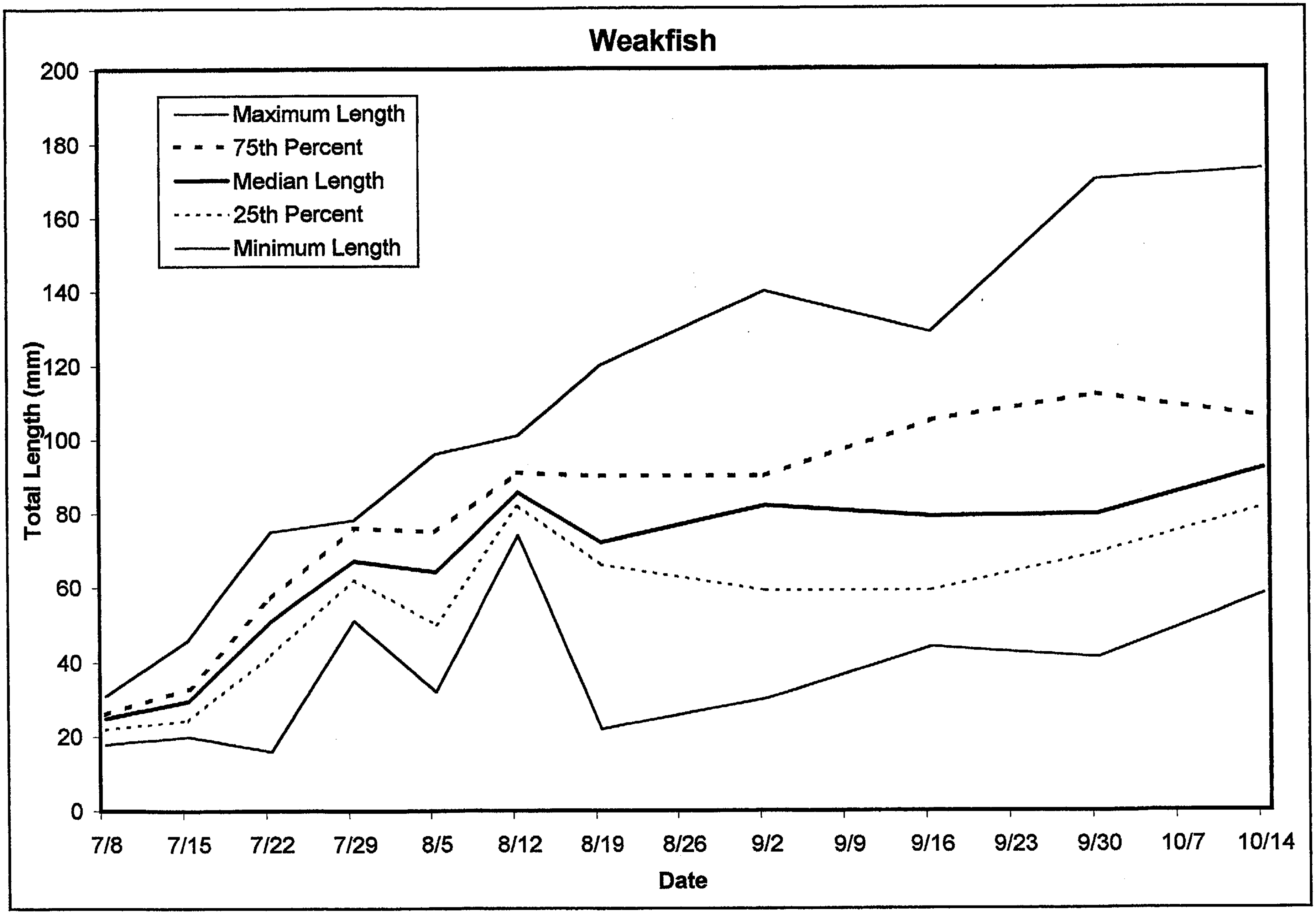


Figure 4-79. Weekly length statistics for young-of-year weakfish in the Hudson River estuary, 1996.

fall the adults and juveniles migrate south. Juveniles from the summer spawn may spend the winter farther out to sea than juveniles from the spring spawning. Juveniles from the summer spawn migrate north the next spring and most of these juveniles may spend the summer in the sounds of North Carolina and may not return to their original nursery areas (Pottern et al. 1989).

Bluefish eggs are buoyant and pelagic and hatch in about 2 days. The newly hatched larvae are also pelagic and remain in offshore waters for 1-2 months before migrating shoreward toward shallow-water nursery areas. In the New York Bight, YOY bluefish enter the shallow-water nursery areas as two groups. The first, from the spring spawning in the south Atlantic, are about 1-2 in. long when they enter the nursery areas in June or early July to feed and grow rapidly. The second, from the summer spawning in the mid-Atlantic Bight, are larger when they arrive in September.

YOY bluefish typically first enter areas north of the George Washington Bridge in early June and remain at least until early October. They are most common in shallow, more saline areas of the estuary, including the Tappan Zee and Haverstraw Bay, but typically range as far upriver as the Cornwall region. During 1996 juvenile bluefish were collected as far north as the Cornwall region and most had emigrated from the Hudson River above the George Washington Bridge by late October (Figure 4-80). Salinity intrusions into the estuary appear to be a major determinant of geographic distribution within the estuary. YOY bluefish are also abundant in areas of the estuary south of the George Washington Bridge and adjacent waterways, which are part of the larger, coastal distribution.

The 1996 geographical distribution of YOY bluefish in the BSS is consistent with the 1974-1995 long-term trend with the majority of fish collected in the Tappan Zee and Croton-Haverstraw regions (Figure 4-81).

In the Hudson River YOY bluefish aggressively feed on a variety of macroinvertebrates and fish and grow rapidly to a size of 3-6 in. by the time they begin to leave the estuary in late summer. Older bluefish, including adults, occasionally enter the lower estuary during summer and feed on available forage fish such as bay anchovy, Atlantic silverside, and young menhaden and river herrings. Bluefish reach sexual maturity during their second year of life. Annual fecundities range from 600,000 to 1,400,000 eggs per female, depending upon size. The maximum size of bluefish has been reported to be 45 in. and 30 lb. All ages of bluefish often travel in schools and are voracious feeders that commonly destroy more than they can eat.

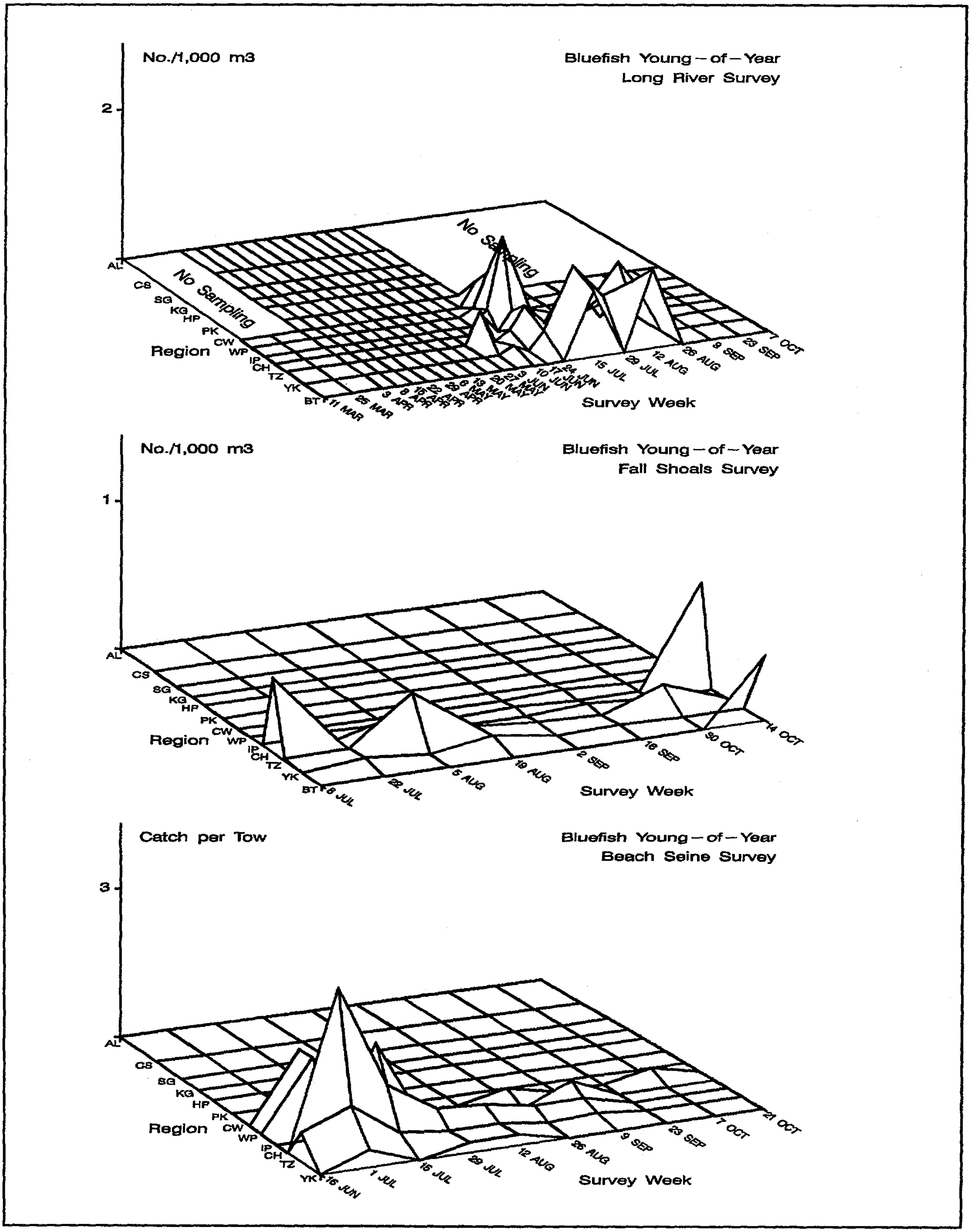


Figure 4-80. Spatiotemporal distribution of young-of-year bluefish in the Hudson River estuary based on the 1996 Long River, Fall Shoals, and Beach Seine surveys.

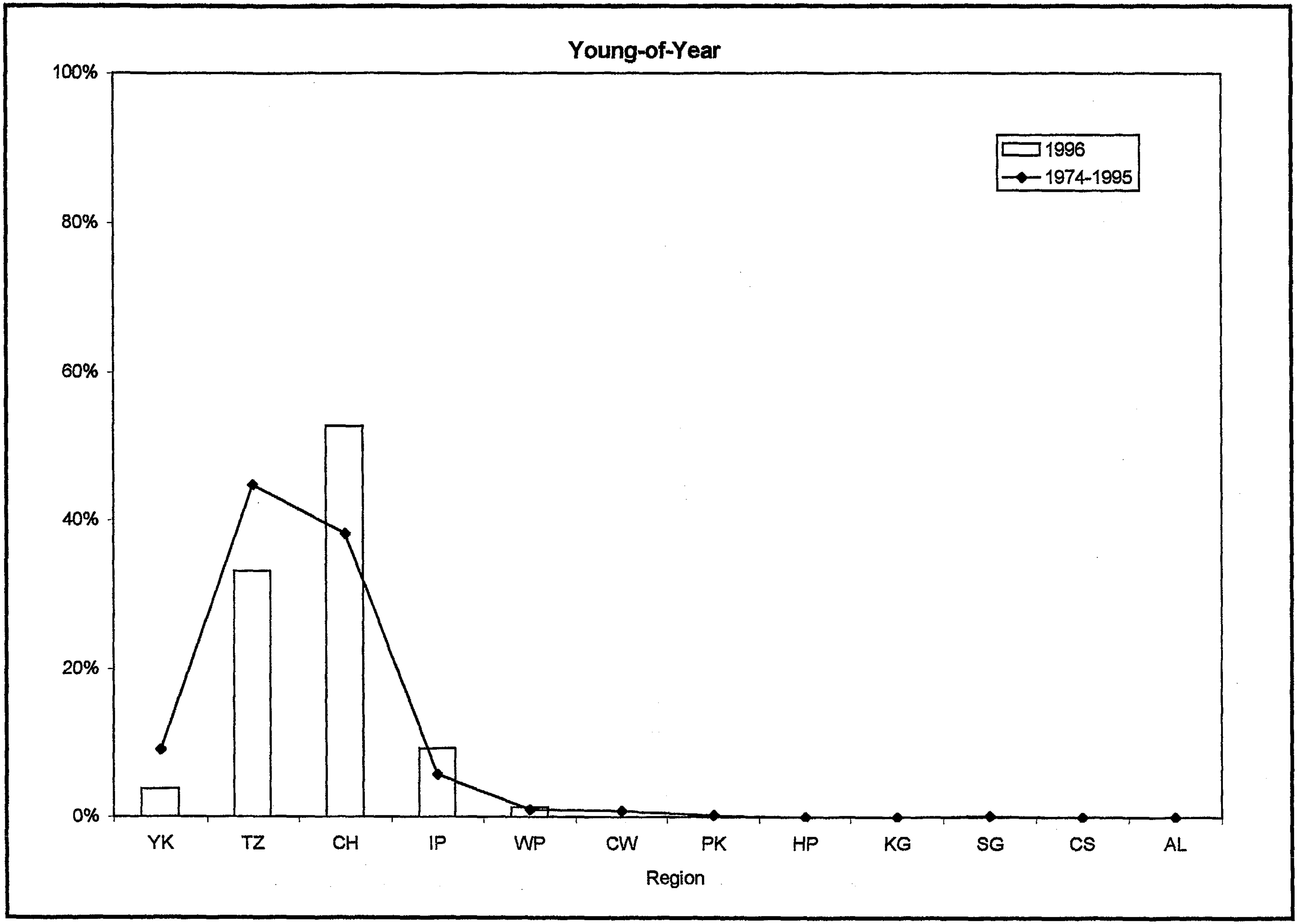


Figure 4-81. Geographic distribution indices for bluefish collected during Beach Seine surveys of the Hudson River estuary, 1974-1996.

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Appendix A

Quality Control Report for the 1996 Hudson River Ichthyoplankton Laboratory Program and 1996 Fall Juvenile Survey

QUALITY CONTROL REPORT FOR THE 1996 HUDSON RIVER ICHTHYOPLANKTON LABORATORY PROGRAM AND 1996 FALL JUVENILE SURVEY

Prepared for

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QUALITY CONTROL REPORT FOR THE 1996 HUDSON RIVER ICHTHYOPLANKTON LABORATORY PROGRAM AND 1996 FALL JUVENILE SURVEY

1.0 INTRODUCTION

This quality control report for the laboratory tasks of the 1996 Hudson River Ichthyoplankton Survey and the 1996 Fall Juvenile Survey was prepared for Con Edison by Normandeau Associates Inc. (NAI).

To comply with Consolidated Edison's requirements for valid and reliable data on the Hudson River Ichthyoplankton Laboratory Program and the Fall Juvenile Survey, NAI implemented a Quality Assurance Plan that provides a 10% Average Outgoing Quality Limit (AOQL) for all measurement parameters collected. The Quality Assurance Plan consists of two systems: a quality control (QC) system and a quality assurance (QA) system. The QC system is managed by the program manager and conducted by operational personnel. The system monitors and documents the reliability and validity (accuracy, precision, completeness) of daily operations. The specific features of the QC system are determined by the Quality Assurance Department to insure that all procedures conform to Consolidated Edison's data requirements. The QA system is managed by NAI's Quality Assurance Director and utilizes project independent personnel familiar with the work or activities under evaluation to conduct performance and systems audits. These audits are designed to provide objective evidence that the quality control program and technical requirements, methods, and procedures as outlined in the program Standard Operating Procedures are being implemented. The outcomes of the QA system activities are

- verification of the effectiveness of the QC system,
- assignment of corrective actions to resolve nonconforming procedures or data deficiencies,
- communication of audit results to project and staff managers for follow-up, and
- objective validation or improvement of project operations.

This report provides a compilation of QC system data verifying the results of the 1996 Hudson River Ichthyoplankton Laboratory Program and 1996 Fall Juvenile Survey activities. Determinations of the fraction inspected, percent nonconforming, and average outgoing quality are presented for both programs. In addition, for the 1996 Hudson River Ichthyoplankton Laboratory Program the results include percent measurement error, a summary of the number of each taxon-life stage found during sorting QA, and cumulative error rates for each taxon-life stage.

2.0 METHODS

2.1 LABORATORY QUALITY CONTROL PROCEDURES

2.1.1 Ichthyoplankton Survey

For sorting and identification of samples from the 1996 Hudson River Ichthyoplankton Laboratory Program, NAI used a continuous sampling plan designed to provide a 10% Average Outgoing Quality Limit (U.S. Department of Defense 1981). A flow diagram of how the sampling plan was applied is presented in Figure 1. A summary of the sampling plan, tolerances and QC sample definitions used for each measurement parameter is presented in Table 1. Quality control inspection was applied on a laboratory-wide basis for the sorting task and to each individual processor for the identification task. Quality control samples were selected in a random manner utilizing random number tables. As determined from the sampling plan outlined in Table 1, a given number of quality control samples were reprocessed by QC inspectors with expertise in the task being inspected. In cases where a sample was subdivided and counted, counts for all subdivisions were combined before calculating percent error for that sample. If the difference between the quality control value and the original value exceeded acceptable tolerances (Table 1), a third measurement could be obtained to verify one of the measurements. If a sample was found to have exceeded acceptable tolerances, all subsequent samples processed by the same technician were subjected to 100% quality control until an appropriate number of consecutive samples (i) were found within tolerance as determined by the continuous sampling plan (Table 1 and Figure 1). The standard operating procedures manual (NAI 1996) documents specific QA/QC methods utilized for this program.

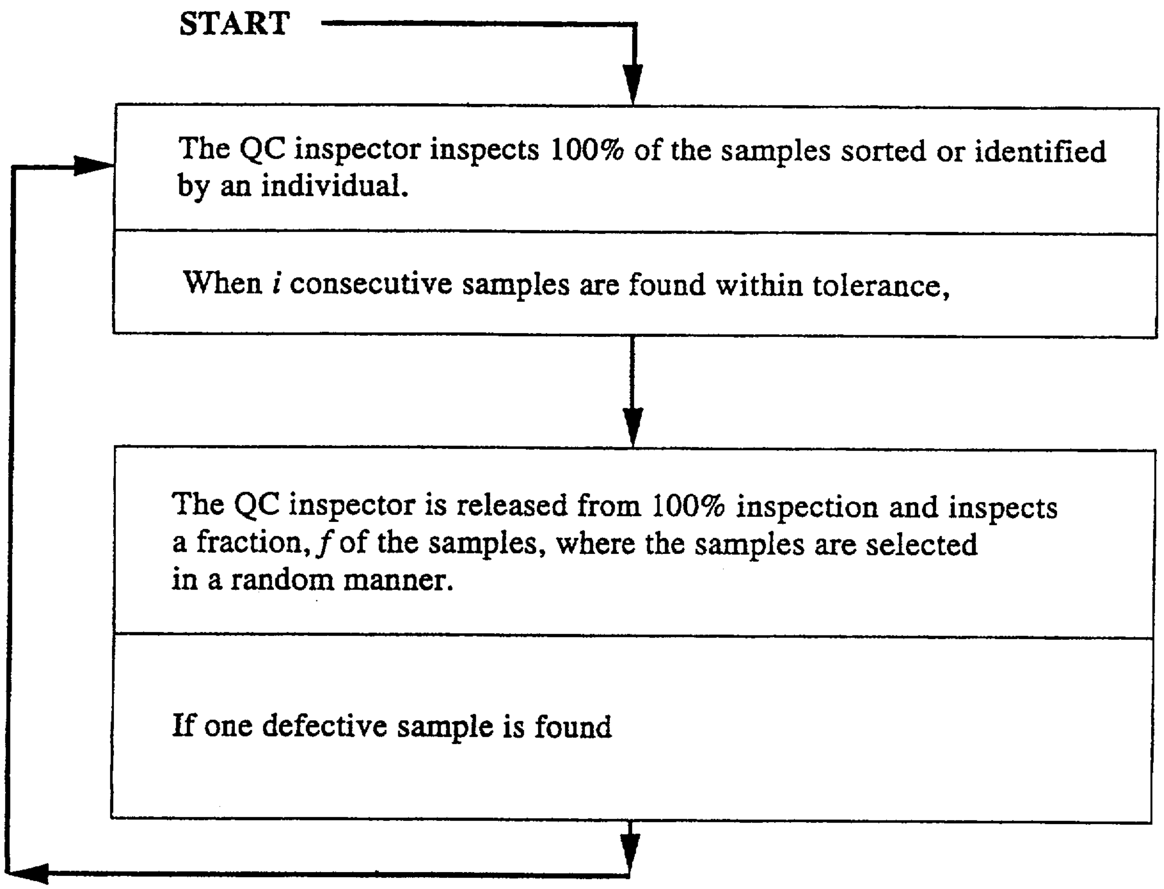

Figure 1. Quality control inspection plan for ichthyoplankton sorting and identification tasks.

TABLE 1. TASK SPECIFIC APPLICATIONS OF CONTINUOUS SAMPLING PLANS FOR THE 1996 HUDSON RIVER ICHTHYOPLANKTON LABORATORY PROGRAM.

LABORATORY TASK	CSP-1 AOQL-10% i	f	SAMPLE TOLERANCE	QC SAMPLE DEFINITION
Sorting	8	1/7	± 2 if ≤20 organisms ± 10% if > 20 organisms	one sample
Identification	8	1/7	± 2 if ≤ 20 ± 10% if > 20 for every taxon in the sample (in identifying, assigning a life stage, or counting any species, errors are cumulative by life stage within each taxon)	one sample

In some cases one of the taxonomists (either the original identifier or the QC inspector) was able to determine the taxon or life stage of damaged specimens when the other taxonomist recorded them as unknown life stage, unidentified taxon, or a higher level taxon (genus or family). If a more general taxon or life stage used by one taxonomist <u>included</u> the more specific category used by the other taxonomist, and that was the only reason for a count discrepancy, then that sample was not considered as failing the QC inspection. For example, damaged specimens recorded as *Morone* sp. by the original identifier and as striped bass by the QC inspector were considered to be in agreement because the category *Morone* sp. includes striped bass. In contrast, an original determination of unidentified gobiid would not be acceptable if the QC determination was striped bass, because striped bass is not included in the family Gobiidae.

2.1.2 Fall Juvenile Survey

The Fall Juvenile Survey consisted of two types of collections, referred to as the Fall Shoals Survey (which used Tucker trawls) and the Beach Seine Survey. For laboratory identification and length measurements of young-of-the-year fishes in the 1996 Fall Juvenile Survey, NAI used a continuous sampling plan designed to provide a 10% Average Outgoing Quality Limit (U.S. Department of Defense, 1981). A flow diagram of how the plan was applied is presented in Figure 2. A summary of the sampling plan, tolerances, and QC sample definitions used for each task is shown in Table 2. QC samples were selected as specified by the appropriate plan in Table 2, using random numbers, and reprocessed by QC inspectors. If the difference between original and QC values exceeded the acceptable tolerance, a third value was obtained as a resolution. The QC methods are documented in the Standard Operating Procedures (NAI 1997). Young-of-the-year fishes were identified in the laboratory for the first two Fall Shoals "river runs" (sampling weeks) and the first three Beach Seine Survey river runs. Young-of-the-year fishes were identified in the field starting with Fall Shoals river run 3 and Beach Seine Survey river run 4. The same quality control procedures applied to both field and laboratory identifications. All length measurements of young-of-the-year fishes occurred in the laboratory.

2.2 REPORTING PROCEDURES

The 1996 Hudson River Ichthyoplankton Laboratory Program Sort and Identification Quality Control Logs were keyed, verified, and error-checked to produce SAS data sets. From these data, fraction inspected, percent nonconforming, and percent measurement error (precision) were determined for each river run and for the entire study. In 1996, in addition to the 23 river runs originally scheduled, a special set of ichthyoplankton samples was collected between the third and fourth scheduled sampling weeks. These samples (referred to as river run 3.5) are shown as a separate river run in this report (the week beginning 1 April 1996). For the 1996 Fall Juvenile Survey, QC data were used to determine fraction inspected and percent nonconforming for the entire study (combining all river runs processed in the laboratory for both the Fall Shoals Survey and the Beach Seine Survey).

2.2.1 Fraction Inspected

Fraction Inspected

$$= \frac{\text{Number of Samples Inspected}}{\text{Total Number of Samples}} \times 100 \qquad \text{(Equation 1)}$$

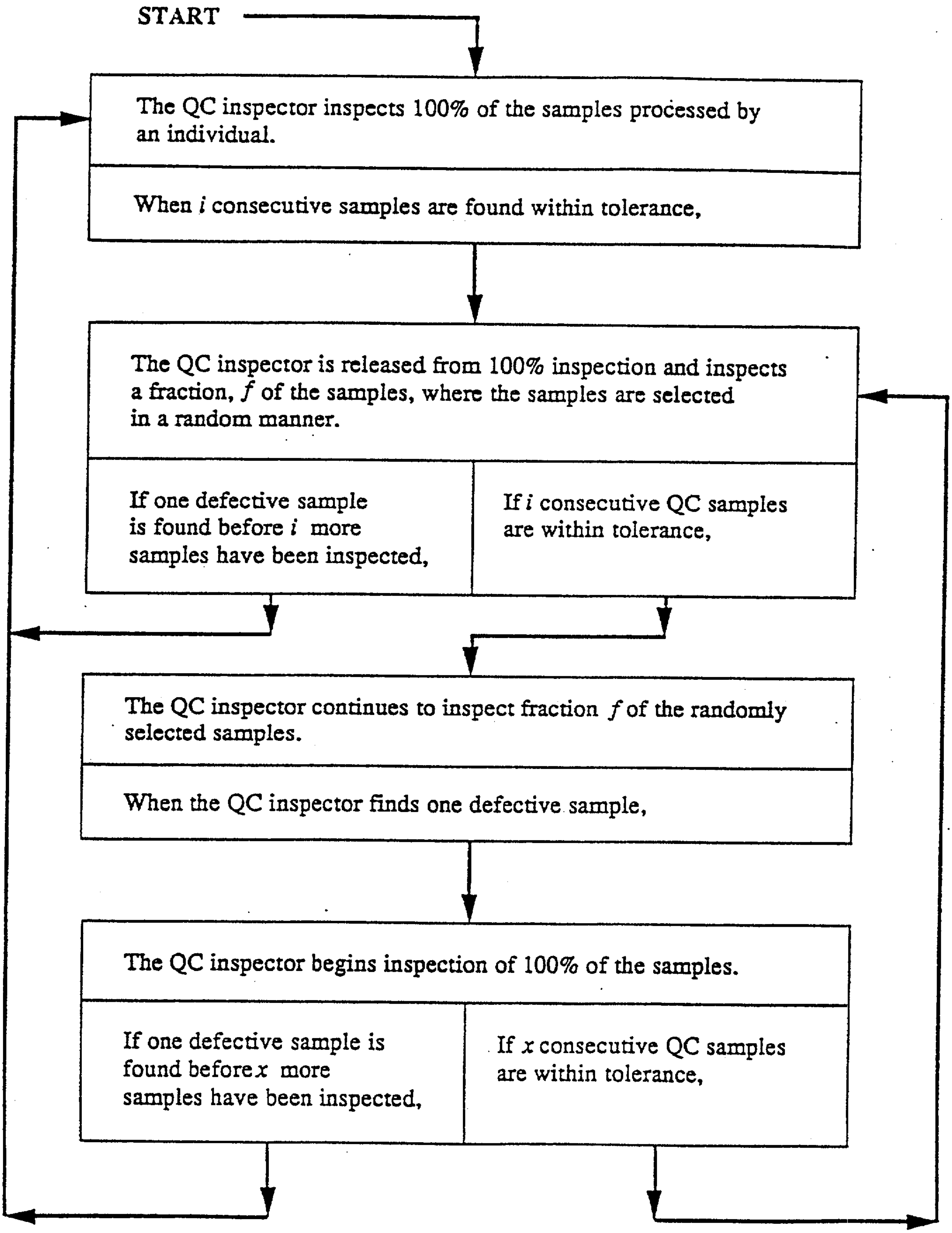

Figure 2. Quality control inspection plan for identification and length measurement of young-of-the-year fishes.

TABLE 2. TASK SPECIFIC APPLICATIONS OF CONTINUOUS SAMPLING PLANS FOR THE 1996 FALL JUVENILE SURVEY.

TASK	QC PLAN	AOQL	i	f	x	TOLERANCE	QC SAMPLE DEFINITION
Identification	CSP-V	7%	21	1/15	7	±10% of total count or ±2 individuals when <25 fish	One taxon
Length	CSP-V	7%	30	1/50	10	±1 mm when <34 mm TL ±3% when >34 mm TL	One fish

River Run: Fraction inspected for a river run (Equation 1) was one hundred times the number of samples inspected divided by the total number of samples analyzed for that river run. For ichthyoplankton tasks, the number of samples inspected excludes "training QC samples," which do not represent the independent performance of the technician. For the ichthyoplankton identification task, the total number of samples identified excludes empty ("no catch") samples, which did not require processing by an identifier.

Entire Study: Fraction inspected for the entire study was one hundred times the number of samples inspected divided by the total number of samples analyzed during the study.

2.2.2 Percent Nonconforming

Percent Nonconforming

$$= \frac{\text{Number Nonconforming Samples Inspected}}{\text{Number of Samples Inspected}} \times 100 \qquad \text{(Equation 2)}$$

River Run: Percent nonconforming for a river run (Equation 2) was one hundred times the number of nonconforming quality control samples found for that river run divided by the total number of quality control samples inspected for that river run.

Entire Study: Percent nonconforming for the entire study was one hundred times the total number of nonconforming quality control samples for the study divided by the total number of quality control samples inspected for the study. The results of this analysis was a determination of the actual incoming quality level of each measurement parameter. (Note that because samples checked by QC found to be defective were rectified during QC, the average outgoing quality of the final data set differed from the percent nonconforming.)

2.2.3 Percent Measurement Error

Sorting Task

Sorting Percent Measurement Error

$$= \frac{\text{Quality Control Value}}{(\text{Original Value} + \text{Quality Control Value})} \times 100 \qquad \text{(Equation 3)}$$

Sample: Percent measurement error for a sorted sample (Equation 3) was one hundred times the quality control value divided by the sum of the original value and the quality control value. If the total count (original value plus quality control value) was less than or equal to 20, and the quality control value (i.e., the number of organisms missed by the sorter and found during sort QC inspection) was one or two, the percent measurement error for the sorted sample was defined as zero.

River Run: Mean percent measurement error for sorted samples for a river run was the sum of the percent measurement errors for each sample inspected during the river run divided by the total number of samples inspected for the river run.

Entire Study: Mean percent measurement error for sorted samples for the entire study was the sum of the percent measurement errors for each sample inspected during the study divided by the total number of samples inspected for the study. (Note that this method of averaging gives equal weight to each sample, regardless of the number of organisms present).

Identification Task

Life Stage Percent Measurement Error

$$= \frac{(\text{Original Value - Quality Control Value})}{\text{Quality Control Value}} \times 100 \qquad \text{(Equation 4)}$$

Life Stage: Percent measurement error for a life stage (Equation 4) was one hundred times the difference between the original value and the quality control value divided by the quality control value. For life stages where the quality control value was 20 or less, if the original and quality control values differed by less than or equal to two organisms the percent measurement error was defined as zero. For life stages where the quality control value was 20 or less and the original and quality control values differed by more than two organisms, the percent measurement error was calculated utilizing Equation 4. In the latter case, if the quality control value was zero, the percent measurement error was calculated by multiplying the difference between the original and quality control values by 100. This results in percent measurement error values which are at times extremely large (e.g. possibly several hundred percent for a life stage of a taxon in a sample) and not truly indicative of the actual proportion of specimens misidentified, mis-staged, or miscounted in a sample. If the original count for a life stage was acceptably close to a resolution value but not to the quality control value, the percent measurement error was calculated as described above except that the resolution value was substituted for the quality control value.

Taxon: Percent measurement error for an identified taxon was the sum of the absolute values of percent measurement error for each life stage within the taxon. Refer to Figure 3 for an example of taxon percent measurement error calculations.

River Run: Mean percent measurement error for the identification task for a river run was the sum of the percent measurement errors for all taxa inspected during the river run divided by the total number of taxa inspected for the river run. This statistic was computed by averaging taxa rather than samples because even though complete samples were inspected and reworked for identification quality control, the pass/fail criterion was whether any taxon in the sample individually exceeded the 10% tolerance.

Entire Study: Mean percent measurement error for identified taxa for the entire study was the sum of the percent measurement errors for all taxa inspected during the study divided by the total number of taxa inspected for the study.

		EGGS	POST YOLK-SAC LARVAE	YOUNG-OF-THE-YEAR	TOTAL
Taxon 1					
	Original Value	103	176	25	
	Quality Control Value	100	194	26	
	% Measurement Error Life Stage	3.0	-9.3	-3.8	16.1
Taxon 2					
	Original Value		2		
	Quality Control Value		1		
	% Measurement Error Life Stage		0		0
Taxon 3					
	Original Value		8		
	Quality Control Value		2		
	% Measurement Error Life Stage		300		300

Figure 3. Example of percent measurement error calculations for individual taxa during the identification task.

2.2.4 Average Outgoing Quality

At the completion of these studies, the Average Outgoing Quality (AOQ) was calculated for each measurement parameter inspected. Continuous sampling plans were used for all tasks. Continuous sampling plans are devised for processes involving a continuous or nearly continuous flow of products or other entities. For these types of processes, it is extremely difficult to organize units into discrete groups commonly referred to as lots. As a result, inspection must be performed on individual units drawn from a continuous flow of products and a decision made concerning the quality of units produced based on the inspection results. Rectification is performed on any nonconforming unit found during inspection, followed by 100% screening of a number of subsequent units depending on the sampling plan. Average Outgoing Quality for each laboratory task was calculated as a function of the percent nonconforming and the fraction of total units inspected (Stephens 1979). This calculation applies to continuous sampling plans when nonconforming units found are rectified:

$$AOQ = \frac{p'(1-f)q^i}{f+(1-f)q^i} \times 100 \qquad \text{(Equation 5)}$$

where

p' = Percent nonconforming as a decimal fraction
f = Fraction of units inspected. This is a parameter of the sampling plan.
$q = 1-p'$ = Percent conforming as a decimal fraction
i = Clearing interval. This is a parameter of the sampling plan.

Example:

$p' = 0.0689$
$f = 1/7 = 0.1429$
$q = 1-0.0689 = 0.9311$
$i = 8$

$$\text{AOQ} = \frac{0.0689\ (1-0.1429)(0.9311)^8}{0.1429 + (1-0.1429)\ (0.9311)^8} \times 100 = 5.32\%$$

The above equation for calculating AOQ was formulated specifically for CSP-1 sampling plans such as those used for the ichthyoplankton sorting and identification (Table 1). The same equation was used to calculate AOQ for young-of-the-year identifications and measurements, which used CSP-V plans (Table 2). When Equation 5 is used for CSP-V plans, the calculated AOQ is conservatively high, because the equation does not take into account the times when the number of consecutive reinspection following a failure is x (which is smaller than i).

2.2.5 Cumulative Error Rates

Due to the non-independence of identification errors across taxa and life stages, and to the cumulation of errors within taxa, a relatively high fraction of samples may fail QC inspection even though only a small fraction of organisms are incorrectly identified or counted. In order to present the error frequencies more realistically for particular taxa-life stages, two additional statistics were calculated for each taxon-life stage for the identification/counting process.

Absolute Error Rate =

$$\sum_{i=1}^{n} |I_i - Q_i| \ / \ \sum_{i=1}^{n} Q_i \qquad \text{Equation 6}$$

Net Error Rate =

$$\sum_{i=1}^{n} (I_i - Q_i) \ / \ \sum_{i=1}^{n} Q_i \qquad \text{Equation 7}$$

where

I_i = initial count for taxon-life stage in sample i
Q_i = QC count for taxon-life stage in sample i (or the resolution count, if I_i was acceptably close to it but not to the QC count)
n = number of samples in the entire study

If the sum of Q_i for the entire study was zero for the taxon-life stage, then the sum of Q_i was set equal to one for the purpose of calculating absolute and net error rate.

The absolute error rate is the approximate fraction of the taxon-life stage that was originally identified or counted incorrectly. This is an estimate of the fraction of erroneous countable items in the uninspected samples.

Net error rate is the approximate relative error in the total counts for the taxon-life stage. For this index, positive (original count too high) and negative (original count too low) errors cancel each other so that the index reflects the relative net bias to the taxon-life stage abundance.

3.0 RESULTS

3.1 ICHTHYOPLANKTON LABORATORY PROGRAM

The Average Outgoing Quality (AOQ) of the 1996 Hudson River Ichthyoplankton Laboratory Program was 3.64% for the sorting task and 0.49% for the identification task. These AOQ levels represent the actual or achieved quality for measurement parameters and were well within the 10% AOQL requirement of Con Edison. The Average Fraction Inspected (AFI) was 13.76% for sorting and 16.37% for identification (Table 3).

TABLE 3. FRACTION INSPECTED, PERCENT NONCONFORMING, MEAN PERCENT MEASUREMENT ERROR, AND AVERAGE OUTGOING QUALITY OF TASKS PERFORMED BY NAI FOR THE 1996 HUDSON RIVER ICHTHYOPLANKTON LABORATORY PROGRAM.

TASK	FRACTION INSPECTED(%)	PERCENT NONCONFORMING(%)	MEAN PERCENT MEASUREMENT ERROR(%)	AOQ(%)
Sorting	13.76	4.52	2.25	3.64
Identification	16.37	0.57	0.74	0.49

The AFI for the sorting task as calculated here is conservatively low, because samples used as "training QCs" were not entered into the formal QC inspection plan. Each training QC sample was reprocessed by the Sorting Supervisor during the training process, so these do not represent the independent performance of the sorter. Only after a new sorter demonstrated proficiency in the training program were subsequent samples processed by that sorter entered into the laboratory-wide QC plan.

Sorting and identification tasks were also evaluated on a sampling week basis representing river runs (sampling weeks) 1 through 23. Sorted samples were inspected at a rate of 8.11% to 39.51% for individual river runs (Table 4). Nonconformance for task among the inspected samples ranged from 0% to 30.00% among the river runs and was 4.52% overall (Table 5). Sorting measurement error was between 0% and 6.52% and averaged 2.25% for the study (Table 6). For the task of sample identification, 10.00% to 39.51% of samples were inspected from individual river runs (Table 7). Percent nonconforming for the identification task ranged from 0% to 3.13% for each of river runs 1-23 and averaged 0.57% (Table 8). Measurement error ranged from 0% to 1.69% and overall measurement error was 0.74% for the identification task of this study (Table 9).

Measurement error results are skewed towards high values as a result of the method of computation at the life stage level. In addition, measurement errors are summed over life stages within each taxon, which then amplifies the already skewed life stage values. These data are not indicative of actual measurement error and should only be compared to other measurement error results that are calculated using exactly the same methods.

Additional organisms found during the sort QC were identified independently to determine the frequency of species and life stages missed during the initial sort. Six taxa accounted for 95% of the additional organisms found during sort QC: bay anchovy, white perch, striped bass, clupeids, *Morone* sp., and windowpane (Table 10). The additional number found in the QC sort was less than 1% of the total found during sample processing.

For the six taxa most commonly encountered during sort QC the total number of each life stage found in the sort QC was low compared to the total number sorted (Table 11). For most taxa-life stages the percentage missed by the original sorter was well under 2%.

TABLE 4. SAMPLE SORTING FRACTION INSPECTED RESULTS, 1996 HUDSON RIVER ICHTHYOPLANKTON LABORATORY PROGRAM.

	FRACTION INSPECTED SORTING QC		
SAMPLING WEEK (BEGINNING MONDAY)	TOTAL # OF SAMPLES INSPECTED	TOTAL # OF SAMPLES SORTED	FRACTION INSPECTED
03/04/96	4	24	16.67
03/11/96	6	74	8.11
03/25/96	6	74	8.11
04/01/96	4	24	16.67
04/08/96	18	126	14.29
04/15/96	16	125	12.80
04/22/96	18	126	14.29
04/29/96	16	135	11.85
05/06/96	16	136	11.76
05/13/96	20	135	14.81
05/20/96	11	126	8.73
05/27/96	15	126	11.90
06/03/96	14	125	11.20
06/10/96	15	123	12.20
06/17/96	15	123	12.20
06/24/96	19	121	15.70
07/01/96	14	123	11.38
07/15/96	25	81	30.86
07/29/96	7	81	8.64
08/12/96	10	81	12.35
08/26/96	10	81	12.35
09/09/96	10	81	12.35
09/23/96	11	80	13.75
10/07/96	32	81	39.51
STUDY	332	2412	13.76

TABLE 5. SAMPLE SORTING PERCENT NONCONFORMANCE RESULTS, 1996 HUDSON RIVER ICHTHYOPLANKTON LABORATORY PROGRAM.

	% NONCONFORMANCE SORTING QC			
SAMPLING WEEK (BEGINNING MONDAY)	# OF NONCON-FORMITIES	TOTAL # OF SAMPLES INSPECTED	% NON-CONFORMANCE (WEEK)	% NON-CONFORMANCE (STUDY)
03/04/96	0	4	0.00	0.00
03/11/96	0	6	0.00	0.00
03/25/96	0	6	0.00	0.00
04/01/96	0	4	0.00	0.00
04/08/96	0	18	0.00	0.00
04/15/96	0	16	0.00	0.00
04/22/96	1	18	5.56	1.39
04/29/96	0	16	0.00	1.14
05/06/96	2	16	12.50	2.88
05/13/96	2	20	10.00	4.03
05/20/96	1	11	9.09	4.44
05/27/96	1	15	6.67	4.67
06/03/96	1	14	7.14	4.88
06/10/96	2	15	13.33	5.59
06/17/96	0	15	0.00	5.15
06/24/96	1	19	5.26	5.16
07/01/96	0	14	0.00	4.85
07/15/96	0	25	0.00	4.37
07/29/96	1	7	14.29	4.63
08/12/96	3	10	30.00	5.58
08/26/96	0	10	0.00	5.38
09/09/96	0	10	0.00	5.19
09/23/96	0	11	0.00	5.00
10/07/96	0	32	0.00	4.52
STUDY	15	332		

TABLE 6. SAMPLE SORTING MEAN PERCENT MEASUREMENT ERROR RESULTS, 1996 HUDSON RIVER ICHTHYOPLANKTON LABORATORY PROGRAM.

	MEAN PERCENT MEASUREMENT ERROR SORTING QC	
SAMPLING WEEK (BEGINNING MONDAY)	TOTAL # OF SAMPLES INSPECTED	MEAN PERCENT MEASUREMENT ERROR
03/04/96	4	0.00
03/11/96	6	0.00
03/25/96	6	0.00
04/01/96	4	0.79
04/08/96	18	0.82
04/15/96	16	0.57
04/22/96	18	1.18
04/29/96	16	0.26
05/06/96	16	6.22
05/13/96	20	6.38
05/20/96	11	4.43
05/27/96	15	4.44
06/03/96	14	3.37
06/10/96	15	3.25
06/17/96	15	3.66
06/24/96	19	2.67
07/01/96	14	2.12
07/15/96	25	0.11
07/29/96	7	5.99
08/12/96	10	6.52
08/26/96	10	0.05
09/09/96	10	0.00
09/23/96	11	0.00
10/07/96	32	0.30
STUDY	332	2.25

TABLE 7. SAMPLE IDENTIFICATION FRACTION INSPECTED RESULTS, 1996 HUDSON RIVER ICHTHYOPLANKTON LABORATORY PROGRAM.

	FRACTION INSPECTED IDENTIFICATION QC		
SAMPLING WEEK (BEGINNING MONDAY)	TOTAL # OF SAMPLES INSPECTED	TOTAL # OF SAMPLES IDENTIFIED	FRACTION INSPECTED
03/04/96	2	20	10.00
03/11/96	9	73	12.33
03/25/96	8	55	14.55
04/01/96	3	24	12.50
04/08/96	13	81	16.05
04/15/96	8	59	13.56
04/22/96	5	47	10.64
04/29/96	14	101	13.86
05/06/96	12	116	10.34
05/13/96	26	130	20.00
05/20/96	17	126	13.49
05/27/96	15	126	11.90
06/03/96	16	125	12.80
06/10/96	18	123	14.63
06/17/96	38	123	30.89
06/24/96	14	121	11.57
07/01/96	18	123	14.63
07/15/96	12	81	14.81
07/29/96	18	81	22.22
08/12/96	17	81	20.99
08/26/96	11	81	13.58
09/09/96	13	81	16.05
09/23/96	11	79	13.92
10/07/96	32	81	39.51
STUDY	350	2138	16.37

TABLE 8. SAMPLE IDENTIFICATION PERCENT NONCONFORMANCE RESULTS, 1996 HUDSON RIVER ICHTHYOPLANKTON LABORATORY PROGRAM.

	% NONCONFORMANCE IDENTIFICATION QC			
SAMPLING WEEK (BEGINNING MONDAY)	# OF NONCON-FORMITIES	TOTAL # OF SAMPLES INSPECTED	% NON-CONFORMANCE (WEEK)	% NON-CONFORMANCE (STUDY)
03/04/96	0	2	0.00	0.00
03/11/96	0	9	0.00	0.00
03/25/96	0	8	0.00	0.00
04/01/96	0	3	0.00	0.00
04/08/96	0	13	0.00	0.00
04/15/96	0	8	0.00	0.00
04/22/96	0	5	0.00	0.00
04/29/96	0	14	0.00	0.00
05/06/96	0	12	0.00	0.00
05/13/96	0	26	0.00	0.00
05/20/96	0	17	0.00	0.00
05/27/96	0	15	0.00	0.00
06/03/96	0	16	0.00	0.00
06/10/96	0	18	0.00	0.00
06/17/96	1	38	2.63	0.49
06/24/96	0	14	0.00	0.46
07/01/96	0	18	0.00	0.42
07/15/96	0	12	0.00	0.40
07/29/96	0	18	0.00	0.38
08/12/96	0	17	0.00	0.35
08/26/96	0	11	0.00	0.34
09/09/96	0	13	0.00	0.33
09/23/96	0	11	0.00	0.31
10/07/96	1	32	3.13	0.57
STUDY	2	350		

TABLE 9. SAMPLE IDENTIFICATION MEAN PERCENT MEASUREMENT ERROR RESULTS, 1996 HUDSON RIVER ICHTHYOPLANKTON LABORATORY PROGRAM.

	MEAN PERCENT MEASUREMENT ERROR IDENTIFICATION QC		
SAMPLING WEEK (BEGINNING MONDAY)	TOTAL # OF SAMPLES INSPECTED	MEAN PERCENT MEASUREMENT ERROR	NUMBER OF TAXA INSPECTED
03/04/96	2	0.00	7
03/11/96	9	0.00	15
03/25/96	8	0.31	13
04/01/96	3	0.09	7
04/08/96	13	0.13	29
04/15/96	8	0.19	14
04/22/96	5	0.73	11
04/29/96	14	0.00	26
05/06/96	12	0.52	32
05/13/96	26	0.19	105
05/20/96	17	1.10	70
05/27/96	15	0.64	71
06/03/96	16	0.87	68
06/10/96	18	0.98	108
06/17/96	38	1.69	217
06/24/96	14	0.91	83
07/01/96	18	0.83	84
07/15/96	12	0.16	65
07/29/96	18	0.63	72
08/12/96	17	0.24	77
08/26/96	11	0.00	19
09/09/96	13	0.30	30
09/23/96	11	0.30	30
10/07/96	32	0.59	108
STUDY	350	0.74	1361

TABLE 10. RANKING OF TAXA MISSED DURING INITIAL SORT AND FOUND DURING SORT QC

TAXON	NUMBER OF ORGANISMS FOUND IN SORT QC	PERCENT
BAY ANCHOVY	1694	41.65
WHITE PERCH	1081	26.58
STRIPED BASS	567	13.94
HERRING FAMILY	264	6.49
MORONE SPECIES	206	5.07
WINDOWPANE	52	1.28
WEAKFISH	47	1.16
WINTER FLOUNDER	30	0.74
CUNNER	28	0.69
AMERICAN SHAD	13	0.32
UNIDENTIFIED	13	0.32
ATLANTIC TOMCOD	10	0.25
GOBY FAMILY	10	0.25
TAUTOG	9	0.22
YELLOW PERCH	8	0.20
GRUBBY	7	0.17
TESSELLATED DARTER	6	0.15
CARP AND MINNOW FAMILY	5	0.12
HOGCHOKER	5	0.12
ATLANTIC MENHADEN	3	0.07
COMMON CARP	3	0.07
INLAND SILVERSIDE	2	0.05
NORTHERN PIPEFISH	2	0.05
FOURBEARD ROCKLING	1	0.02
NORTHERN PUFFER	1	0.02
TOTAL	4067	100.00

TABLE 11. SUMMARY BY LIFE STAGE OF THE SIX HIGHEST RANKED TAXA MISSED DURING ORIGINAL SORT AND FOUND DURING SORT QC COMPARED TO TOTAL COUNT

TAXON	LIFE STAGE	NUMBER MISSED	PERCENT IN EACH STAGE	PERCENT OF TOTAL FOUND	TOTAL ORGANISMS FOUND[a]
BAY ANCHOVY	EGGS	1244	73.44	2.02	61585
	YOLK-SAC LARVAE	2	0.12	7.69	26
	POST YOLK-SAC LARVAE	446	26.33	1.19	37342
	YOUNG-OF-THE-YEAR	0	0.00	0.00	12770
	UNIDENTIFIED	2	0.12	13.33	15
HERRING FAMILY	EGGS	97	36.74	0.61	15912
	YOLK-SAC LARVAE	30	11.36	0.86	3471
	POST YOLK-SAC LARVAE	136	51.52	0.52	26249
	YOUNG-OF-THE-YEAR	0	0.00	0.00	1482
	UNIDENTIFIED	1	0.38	3.13	32
MORONE SPECIES	EGGS	1	0.49	100.00	1
	YOLK-SAC LARVAE	0	0.00	0.00	8
	POST YOLK-SAC LARVAE	130	63.11	1.30	10016
	UNIDENTIFIED	75	36.41	3.23	2323
STRIPED BASS	EGGS	186	32.80	0.55	33563
	YOLK-SAC LARVAE	192	33.86	0.34	56118
	POST YOLK-SAC LARVAE	189	33.33	0.16	114760
	YOUNG-OF-THE-YEAR	0	0.00	0.00	609
	UNIDENTIFIED	0	0.00	0.00	9
WHITE PERCH	EGGS	201	18.59	1.10	18249
	YOLK-SAC LARVAE	227	21.00	1.28	17691
	POST YOLK-SAC LARVAE	653	60.41	0.76	85570
	YOUNG-OF-THE-YEAR	0	0.00	0.00	614
	UNIDENTIFIED	0	0.00	0.00	68
WINDOWPANE	EGGS	46	88.46	0.90	5126
	YOLK-SAC LARVAE	0	0.00	0.00	3
	POST YOLK-SAC LARVAE	6	11.54	5.17	116
	YOUNG-OF-THE-YEAR	0	0.00	0.00	41

[a]Includes both original count and additional organisms found during sort QC.

The life stage most commonly missed by sorters for white perch, clupeids, and *Morone* sp. was post yolk-sac larvae (Table 11). The most commonly missed life stage was yolk-sac larvae for striped bass and eggs for bay anchovy and windowpane. Generally the life stage most frequently missed by sorters was the most abundant one, except that the larger young-of-the-year fish were very rarely overlooked by the sorters.

Absolute error rates of the identification process for individual life stages of commonly encountered taxa ranged from 0 to 1, but most taxa-life stages had rates less than 0.05. Generally, only those taxa-life stages with low total counts had absolute error rates above 0.05 (Table 12).

Net error rates were substantially lower than the absolute error rates in most cases, demonstrating that errors often tended to cancel each other out. This was noticeable for many of the more abundant taxa-life stages, such as post yolk-sac larvae of striped bass, white perch, bay anchovy, and clupeids.

3.2 FALL JUVENILE SURVEY

Results of the laboratory quality control program for the 1996 Fall Juvenile Survey (consisting of the Beach Seine Survey and the Fall Shoals Survey) were summarized by the same methods as the QC results for the 1996 Hudson River Ichthyoplankton Laboratory Program (Section 2.1.2) and are presented in Table 13.

TABLE 12. CUMULATIVE NET AND ABSOLUTE ERROR RATES FOR COMMONLY ENCOUNTERED TAXA IN SAMPLES SELECTED FOR QC INSPECTION OF IDENTIFICATION AND COUNTING PROCESS.

TAXON	LIFE STAGE	TOTAL COUNT	NET ERROR RATE	ABSOLUTE ERROR RATE	N
AMERICAN SHAD	EGGS	447	-0.00447	0.01342	16
	YOLK-SAC LARVAE	16	-0.06250	0.06250	6
	POST YOLK SAC LARVAE	58	0.01724	0.01724	20
	YOUNG OF THE YEAR	172	-0.00581	0.00581	34
ATLANTIC HERRING	POST YOLK SAC LARVAE	400	-0.01500	0.02000	23
	YOUNG OF THE YEAR	17	0.05882	0.05882	6
ATLANTIC TOMCOD	UNIDENTIFIED	17	0.11765	0.11765	7
	YOLK-SAC LARVAE	55	0.01818	0.12727	10
	POST YOLK SAC LARVAE	1005	-0.00199	0.00995	38
	YOUNG OF THE YEAR	904	0.00000	0.00000	78
BAY ANCHOVY	UNIDENTIFIED	5	0.60000	0.60000	5
	EGGS	14120	0.01331	0.01601	69
	POST YOLK SAC LARVAE	6072	0.00593	0.01548	148
	YOUNG OF THE YEAR	1902	-0.00789	0.02050	96
BLUEBACK HERRING	YOUNG OF THE YEAR	1105	-0.00995	0.01538	61
GOBY FAMILY	POST YOLK SAC LARVAE	200	0.00500	0.04500	47
	YOUNG OF THE YEAR	31	0.00000	0.25806	15
HERRING FAMILY	UNIDENTIFIED	7	-0.14286	0.14286	4
	EGGS	1142	-0.00963	0.01839	19
	YOLK-SAC LARVAE	541	-0.00185	0.03512	38
	POST YOLK SAC LARVAE	3143	0.01050	0.02132	98
	YOUNG OF THE YEAR	141	0.04965	0.10638	19
HOGCHOKER	EGGS	477	0.02306	0.03145	13
	YOUNG OF THE YEAR	2	0.50000	0.50000	3
MORONE SPECIES	UNIDENTIFIED	309	0.04854	0.06149	16
	YOLK-SAC LARVAE	3	0.00000	0.00000	2
	POST YOLK SAC LARVAE	732	0.04781	0.07787	57
STRIPED BASS	EGGS	4340	0.01014	0.01106	45
	YOLK-SAC LARVAE	3553	0.01182	0.02815	55
	POST YOLK SAC LARVAE	17911	-0.00357	0.01731	110
	YOUNG OF THE YEAR	56	-0.03571	0.03571	25
WEAKFISH	EGGS	495	0.01212	0.01212	6
	YOLK-SAC LARVAE	1	0.00000	0.00000	1
	POST YOLK SAC LARVAE	153	-0.00654	0.00654	17
	YOUNG OF THE YEAR	53	0.01887	0.01887	11
WHITE PERCH	UNIDENTIFIED	0	1.00000	1.00000	1
	EGGS	1487	-0.00269	0.00672	40
	YOLK-SAC LARVAE	2166	0.00369	0.02770	72
	POST YOLK SAC LARVAE	14794	0.01068	0.03123	113
	YOUNG OF THE YEAR	4	0.00000	0.00000	2
WINDOWPANE	EGGS	348	0.00575	0.00575	7
	POST YOLK SAC LARVAE	14	0.00000	0.00000	5
	YOUNG OF THE YEAR	15	0.00000	0.00000	7

TABLE 13. FRACTION INSPECTED, PERCENT NONCONFORMING, AND AVERAGE OUTGOING QUALITY OF LABORATORY TASKS PERFORMED BY NAI FOR THE 1996 FALL JUVENILE SURVEY.

TASK	AVERAGE FRACTION INSPECTED(%)	PERCENT NONCONFORMING(%)	AVERAGE OUTGOING QUALITY(%)
Identification	4.31	0.00	0.00
Measurement	2.41	0.35	0.34

A total of 2217 and 2009 young-of-the-year fish identification records were made in the laboratory for the Fall Shoals and Beach Seine surveys respectively and 7411 and 4562 young-of-the-year fish length measurement records were made for the Fall Shoals and Beach Seine surveys respectively.

4.0 LITERATURE CITED

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Appendix B

Physical/Chemical Parameters

APPENDIX B

LIST OF TABLES

TABLE B-1 DAILY FRESHWATER FLOW (CU. M/S) ESTIMATED FOR GREEN ISLAND, NEW YORK, 1996

DAY OF MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	232	600	535	419	2012	272	184	283	158	291	308	543
2	215	552	470	447	1879	235	167	271	147	221	275	2205
3	221	543	430	481	1511	252	161	249	153	238	243	2536
4	226	518	368	439	1339	255	300	231	167	190	221	1610
5	224	447	340	388	1327	258	439	226	130	173	184	1392
6	226	427	357	357	1282	238	416	206	150	181	218	1129
7	226	419	379	340	1242	238	269	174	127	184	232	985
8	232	399	340	365	795	351	272	161	130	164	221	880
9	238	402	365	391	730	552	226	269	181	201	1718	829
10	249	436	376	376	716	645	207	199	192	224	2606	617
11	255	447	391	351	1002	640	215	203	175	260	1350	492
12	246	444	382	331	2428	600	181	190	175	260	894	535
13	243	413	365	368	2530	563	328	158	142	238	688	809
14	246	348	382	668	1888	569	1438	190	144	218	560	1293
15	238	348	396	889	1474	515	849	167	153	192	580	1163
16	243	345	526	1234	1214	441	925	150	175	184	515	1013
17	232	331	532	2137	1070	405	756	195	153	187	501	923
18	238	306	481	1616	971	382	524	187	198	204	484	991
19	795	300	504	1214	1073	345	439	170	184	195	495	988
20	3877	294	594	1013	1061	289	470	173	198	357	676	914
21	2437	388	778	1005	934	334	473	184	173	906	611	781
22	1491	733	676	1109	804	314	306	167	164	662	586	674
23	1081	849	558	1559	705	289	320	170	198	492	478	637
24	903	784	475	1970	603	275	258	147	221	413	456	628
25	1313	1016	430	1899	552	266	221	167	212	408	433	1073
26	1030	801	481	1565	512	249	244	164	190	317	555	1070
27	931	631	572	1429	444	232	354	147	198	311	710	897
28	1658	563	532	1242	405	224	325	190	192	294	617	778
29	1288	NA	447	1126	357	190	233	204	362	232	509	733
30	991	NA	419	1455	325	175	211	178	419	249	453	832
31	795	NA	396	NA	325	NA	197	167	NA	275	NA	702

NA = NO DATA AVAILABLE

TABLE B-2 LONG-TERM (1947-1995) AND 1996 MONTHLY MEAN FRESHWATER FLOW (CU. M/S) ESTIMATED FOR GREEN ISLAND, NEW YORK

MONTH	1996 AVERAGE	LONG-TERM AVERAGE	LONG-TERM MINIMUM	LONG-TERM MAXIMUM
JAN	736	371	118	961
FEB	503	391	128	885
MAR	461	609	258	1,077
APR	939	868	257	1,749
MAY	1,081	519	156	1,147
JUN	353	276	101	839
JUL	384	182	87	520
AUG	192	161	48	414
SEP	185	180	58	482
OCT	288	251	71	853
NOV	613	363	93	740
DEC	989	412	173	764
ANNUAL AVERAGE	560	381		

TABLE B-3 MONTHLY MEAN FRESHWATER FLOW (CU. M/S) ESTIMATED FOR GREEN ISLAND, NEW YORK, 1974 TO 1996

	YEAR												
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
JAN	623	540	417	225	744	571	256	148	321	259	133	439	310
FEB	527	548	885	227	400	335	128	851	356	352	552	319	362
MAR	587	670	897	987	619	1,077	633	349	613	580	281	581	1,018
APR	854	724	1,040	1,092	950	1,009	748	384	897	1,062	761	456	689
MAY	650	566	900	421	530	508	274	328	354	1,036	651	232	363
JUN	249	367	431	207	282	216	192	169	431	358	275	157	428
JUL	333	211	432	162	131	131	144	140	182	127	127	133	250
AUG	180	254	414	154	169	149	130	133	124	155	48	104	350
SEP	294	482	271	408	175	221	118	233	122	133	58	171	218
OCT	256	662	658	853	244	313	158	456	124	71	178	206	336
NOV	486	637	507	663	227	465	242	393	196	224	277	423	544
DEC	548	532	398	749	303	430	273	319	233	624	447	338	524
ANNUAL AVERAGE	466	516	604	512	398	452	275	325	329	415	316	296	449

(CONTINUED)

	YEAR									
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
JAN	262	268	196	383	512	304	550	239	490	736
FEB	201	349	256	703	496	236	276	337	263	503
MAR	605	461	332	994	696	408	453	562	514	461
APR	981	476	548	894	655	648	1,749	1,375	257	939
MAY	156	357	620	990	346	501	375	534	158	1,081
JUN	175	123	389	250	144	342	203	233	130	353
JUL	162	131	92	157	112	254	136	248	94	384
AUG	118	139	61	248	123	203	140	265	97	191
SEP	341	164	120	159	136	217	158	190	102	185
OCT	504	211	254	477	216	286	192	177	361	288
NOV	453	565	407	653	301	531	347	251	693	613
DEC	437	330	180	687	364	438	403	396	328	989
ANNUAL AVERAGE	366	298	288	549	342	364	415	401	291	560

TABLE B-4 POUGHKEEPSIE WATER WORKS DATA, MEAN, MINIMUM, AND MAXIMUM TEMPERATURE (C) FOR EACH DAY OF THE YEAR, 1951-1996

MONTH	DAY	LONG-TERM MEAN	TEMPERATURE (1951-1995) MINIMUM	MAXIMUM	1996 ACTUAL TEMPERATURES
1	1	1.5	0.6	4.4	1.1
1	2	1.5	0.0	4.4	1.1
1	3	1.5	0.6	4.4	1.7
1	4	1.5	0.6	3.3	1.7
1	5	1.5	0.0	3.3	1.1
1	6	1.2	0.0	3.3	1.1
1	7	1.2	0.0	3.3	1.7
1	8	1.2	0.0	3.3	
1	9	1.2	0.0	3.3	1.7
1	10	1.1	0.0	2.8	1.1
1	11	1.1	0.0	2.8	1.7
1	12	1.1	0.4	2.8	1.1
1	13	1.1	0.0	2.8	1.1
1	14	1.1	0.0	2.8	1.1
1	15	1.1	0.0	2.8	1.1
1	16	1.1	0.4	2.8	1.1
1	17	1.1	0.5	2.8	1.1
1	18	1.1	0.6	3.3	0.6
1	19	1.0	0.6	2.8	0.6
1	20	1.0	0.5	2.2	0.6
1	21	1.0	0.0	2.4	0.6
1	22	1.0	0.6	2.2	0.6
1	23	1.1	0.6	3.3	0.6
1	24	1.0	0.0	3.3	1.1
1	25	1.0	0.0	3.7	0.6
1	26	1.0	0.0	3.5	1.1
1	27	1.0	0.0	3.1	0.6
1	28	1.0	0.5	3.0	0.6
1	29	1.0	0.6	2.5	0.6
1	30	1.0	0.6	2.5	0.0
1	31	1.0	0.6	2.8	0.6
2	1	1.0	0.6	2.4	0.6
2	2	1.0	0.6	2.7	0.6
2	3	1.0	0.6	2.2	0.6
2	4	1.0	0.6	2.0	0.6
2	5	0.9	0.6	1.8	0.0
2	6	0.9	0.5	2.0	0.6
2	7	0.9	0.2	2.2	0.6
2	8	1.0	0.6	2.2	0.0
2	9	0.9	0.2	2.2	0.6
2	10	1.0	0.2	3.3	0.6
2	11	1.0	0.0	2.2	0.6
2	12	1.0	0.3	2.3	0.6
2	13	1.0	0.0	2.2	0.6
2	14	1.1	0.3	2.8	1.1
2	15	1.1	0.2	2.8	1.1
2	16	1.1	0.0	2.8	1.1
2	17	1.1	0.6	2.8	1.1
2	18	1.1	0.0	2.8	1.1
2	19	1.2	0.6	2.8	1.1
2	20	1.1	0.0	2.8	1.1
2	21	1.1	0.4	2.8	1.7
2	22	1.2	0.0	3.9	2.2
2	23	1.2	0.0	2.8	1.7
2	24	1.2	0.0	3.9	1.7
2	25	1.3	0.5	3.9	1.7
2	26	1.4	0.0	3.9	1.7
2	27	1.4	0.0	4.4	1.1
2	28	1.5	0.0	5.0	1.7
2	29	1.8	0.6	4.4	1.7
3	1	1.4	0.6	4.4	2.2
3	2	1.5	0.5	4.4	2.2
3	3	1.5	0.5	4.4	2.2
3	4	1.5	0.5	4.4	2.8
3	5	1.5	0.5	3.3	2.2
3	6	1.6	0.6	3.7	2.8
3	7	1.7	0.6	4.7	2.2
3	8	1.7	0.0	4.9	1.7
3	9	1.8	0.6	4.5	1.7
3	10	1.9	0.6	4.8	1.7
3	11	2.0	0.6	4.4	1.1
3	12	2.1	0.5	4.4	0.6
3	13	2.1	0.5	4.4	1.1
3	14	2.2	0.6	4.4	1.1
3	15	2.3	0.6	5.0	1.1
3	16	2.5	0.6	5.6	1.1
3	17	2.6	0.6	5.7	1.1
3	18	2.6	0.5	5.9	1.7

TABLE B-4 POUGHKEEPSIE WATER WORKS DATA, MEAN, MINIMUM, AND MAXIMUM TEMPERATURE (C) FOR EACH DAY OF THE YEAR, 1951-1996

MONTH	DAY	LONG-TERM MEAN	TEMPERATURE (1951-1995) MINIMUM	MAXIMUM	1996 ACTUAL TEMPERATURES
3	19	2.7	0.6	7.7	2.2
3	20	2.8	0.6	7.5	2.8
3	21	2.9	0.6	7.3	2.8
3	22	3.1	0.6	7.2	3.3
3	23	3.3	0.6	7.1	3.3
3	24	3.4	0.6	7.1	4.4
3	25	3.5	0.6	6.4	4.4
3	26	3.8	0.6	6.5	4.4
3	27	4.0	1.1	6.9	5.0
3	28	4.3	1.1	6.8	5.0
3	29	4.5	1.1	7.5	5.6
3	30	4.6	1.1	7.8	5.6
3	31	4.9	1.1	8.3	5.6
4	1	5.1	1.7	9.4	5.6
4	2	5.3	2.2	8.3	5.6
4	3	5.5	2.8	8.9	6.7
4	4	5.7	2.8	8.9	6.7
4	5	5.9	2.8	8.9	6.7
4	6	6.0	3.3	8.9	6.7
4	7	6.2	2.8	9.4	6.7
4	8	6.3	2.8	9.4	6.7
4	9	6.4	2.8	9.2	7.2
4	10	6.5	2.8	10.2	6.7
4	11	6.7	2.8	11.2	7.2
4	12	6.9	2.8	11.4	7.2
4	13	7.2	2.8	11.4	7.2
4	14	7.3	2.8	11.4	7.2
4	15	7.5	2.8	11.5	7.2
4	16	7.7	3.3	11.8	7.8
4	17	7.8	3.9	11.7	8.3
4	18	8.1	5.6	11.8	7.2
4	19	8.4	5.6	12.2	7.8
4	20	8.7	6.1	12.2	7.8
4	21	9.0	6.1	12.2	7.8
4	22	9.2	6.7	12.8	8.3
4	23	9.4	6.7	12.8	9.4
4	24	9.5	6.7	13.3	10.0
4	25	9.7	6.7	13.3	10.6
4	26	10.0	6.7	13.3	12.2
4	27	10.1	7.2	13.3	12.2
4	28	10.3	7.8	13.3	12.8
4	29	10.6	8.3	13.9	12.2
4	30	10.9	8.9	13.9	11.7
5	1	11.1	8.9	14.4	11.1
5	2	11.4	8.9	14.4	10.6
5	3	11.7	8.9	14.4	10.6
5	4	11.9	8.9	15.0	11.1
5	5	12.1	8.9	15.0	11.1
5	6	12.3	8.9	15.0	11.1
5	7	12.5	8.9	15.0	11.1
5	8	12.6	8.9	15.1	11.1
5	9	12.8	8.9	15.6	11.7
5	10	13.0	8.9	16.1	11.7
5	11	13.1	9.4	16.1	11.7
5	12	13.2	9.4	16.2	11.7
5	13	13.4	10.0	16.7	12.8
5	14	13.6	10.6	16.7	12.2
5	15	13.8	11.1	16.8	12.2
5	16	14.1	11.1	17.2	12.2
5	17	14.3	11.7	17.6	11.7
5	18	14.6	12.2	17.7	11.7
5	19	14.8	12.2	17.7	11.7
5	20	15.0	12.2	17.8	12.8
5	21	15.3	12.8	18.0	13.9
5	22	15.5	12.8	18.5	12.8
5	23	15.8	12.8	18.9	13.3
5	24	15.9	12.8	19.0	13.9
5	25	16.1	12.8	19.3	15.0
5	26	16.3	12.2	19.4	15.6
5	27	16.5	12.2	20.6	15.6
5	28	16.8	12.2	20.6	15.6
5	29	17.0	12.8	20.7	16.1
5	30	17.2	12.8	21.5	16.1
5	31	17.3	13.3	21.3	16.7
6	1	17.7	13.3	22.0	16.7
6	2	17.9	13.3	22.2	16.7
6	3	18.0	14.4	22.1	17.2
6	4	18.3	13.9	22.5	17.8

TABLE B-4 POUGHKEEPSIE WATER WORKS DATA, MEAN, MINIMUM, AND MAXIMUM TEMPERATURE (C) FOR EACH DAY OF THE YEAR, 1951-1996

MONTH	DAY	LONG-TERM MEAN	TEMPERATURE MINIMUM	(1951-1995) MAXIMUM	1996 ACTUAL TEMPERATURES
6	5	18.5	15.0	22.2	17.8
6	6	18.7	15.6	22.4	18.3
6	7	18.8	15.0	22.4	18.3
6	8	19.1	16.1	22.5	18.3
6	9	19.2	16.1	23.0	18.3
6	10	19.4	16.1	23.2	20.0
6	11	19.6	17.2	23.4	20.6
6	12	19.8	17.2	23.3	21.1
6	13	20.0	17.8	23.4	21.7
6	14	20.1	17.8	23.3	21.7
6	15	20.2	17.8	23.5	22.2
6	16	20.4	17.8	23.8	22.8
6	17	20.5	17.8	23.8	23.3
6	18	20.7	17.8	24.2	23.3
6	19	20.8	17.8	24.1	23.3
6	20	21.0	17.8	24.0	22.8
6	21	21.3	17.8	24.3	22.8
6	22	21.4	17.2	24.3	22.8
6	23	21.5	17.2	24.1	23.3
6	24	21.7	17.8	24.1	23.3
6	25	21.7	17.8	24.2	23.3
6	26	21.9	17.8	24.5	23.3
6	27	22.1	17.8	24.4	23.3
6	28	22.1	17.8	24.4	23.3
6	29	22.3	17.8	25.0	23.3
6	30	22.4	17.8	25.0	23.3
7	1	22.6	18.9	25.4	23.3
7	2	22.7	18.9	25.0	23.3
7	3	22.8	19.4	25.0	23.3
7	4	22.9	19.4	25.0	23.3
7	5	23.1	20.0	25.6	22.8
7	6	23.2	20.0	25.6	22.8
7	7	23.2	20.0	25.6	22.8
7	8	23.4	20.0	25.6	23.3
7	9	23.5	20.0	25.6	23.3
7	10	23.5	20.6	26.0	23.3
7	11	23.6	20.6	25.9	23.9
7	12	23.8	21.1	26.1	23.9
7	13	24.0	21.7	26.7	23.9
7	14	24.0	21.7	26.7	23.3
7	15	24.2	21.7	26.7	22.8
7	16	24.3	22.2	26.7	22.8
7	17	24.4	22.2	26.6	22.2
7	18	24.4	22.2	26.3	22.2
7	19	24.6	22.2	26.5	22.8
7	20	24.7	22.2	26.7	22.8
7	21	24.7	22.8	26.6	22.8
7	22	24.8	22.2	27.0	23.3
7	23	24.9	22.2	27.0	22.8
7	24	24.9	22.8	26.8	23.3
7	25	24.9	22.8	26.7	22.8
7	26	25.0	22.8	26.7	23.3
7	27	25.2	22.8	27.2	23.3
7	28	25.2	22.8	27.2	23.3
7	29	25.2	22.8	27.0	23.3
7	30	25.2	23.3	27.1	23.3
7	31	25.2	23.3	27.1	23.3
8	1	25.3	23.3	26.7	22.8
8	2	25.3	22.8	26.7	22.8
8	3	25.3	23.3	26.9	22.8
8	4	25.3	23.3	26.9	22.8
8	5	25.4	23.3	27.2	23.3
8	6	25.4	23.3	27.2	23.3
8	7	25.3	23.3	27.4	23.3
8	8	25.3	23.3	27.4	23.9
8	9	25.3	23.3	27.8	23.9
8	10	25.3	23.3	27.8	23.9
8	11	25.3	22.8	27.8	23.9
8	12	25.3	22.8	28.1	23.9
8	13	25.2	22.2	28.0	23.9
8	14	25.1	22.2	28.4	23.9
8	15	25.1	22.2	28.4	24.4
8	16	25.0	22.2	28.4	23.9
8	17	24.9	22.2	28.1	24.4
8	18	24.9	22.8	28.0	24.4
8	19	24.9	22.2	27.7	24.4
8	20	24.9	22.8	27.6	25.0
8	21	24.8	22.2	27.5	25.0

TABLE B-4 POUGHKEEPSIE WATER WORKS DATA, MEAN, MINIMUM, AND MAXIMUM TEMPERATURE (C) FOR EACH DAY OF THE YEAR, 1951-1996

		LONG-TERM	TEMPERATURE	(1951-1995)	1996 ACTUAL
MONTH	DAY	MEAN	MINIMUM	MAXIMUM	TEMPERATURES
8	22	24.7	22.2	27.1	25.0
8	23	24.7	22.8	26.9	24.4
8	24	24.6	22.2	26.7	24.4
8	25	24.5	21.7	26.2	24.4
8	26	24.5	21.7	26.1	25.0
8	27	24.5	22.2	26.2	25.6
8	28	24.4	22.2	26.1	25.0
8	29	24.3	22.2	26.7	25.0
8	30	24.3	22.2	26.1	25.0
8	31	24.2	22.2	26.1	25.0
9	1	24.2	22.2	26.1	25.0
9	2	24.1	22.2	26.7	25.0
9	3	24.0	22.2	26.1	25.0
9	4	23.9	22.2	25.6	25.0
9	5	23.8	21.7	25.6	25.0
9	6	23.8	22.2	25.6	25.0
9	7	23.6	21.6	25.6	25.0
9	8	23.5	21.7	25.6	25.0
9	9	23.4	21.7	25.6	25.0
9	10	23.4	21.1	25.6	25.0
9	11	23.2	21.1	25.6	25.0
9	12	23.1	21.1	25.6	25.0
9	13	22.9	20.0	25.6	25.0
9	14	22.7	18.9	25.0	25.0
9	15	22.6	17.8	25.0	25.0
9	16	22.3	17.2	25.0	24.4
9	17	22.2	17.2	25.0	24.4
9	18	22.0	16.7	25.0	22.8
9	19	21.9	16.7	23.9	22.8
9	20	21.8	17.2	23.9	21.7
9	21	21.5	16.7	23.3	21.7
9	22	21.3	16.1	23.3	21.7
9	23	21.0	16.1	22.8	21.1
9	24	20.9	15.6	22.8	20.6
9	25	20.7	15.6	22.8	20.6
9	26	20.5	15.6	22.2	19.4
9	27	20.4	16.1	22.2	19.4
9	28	20.2	15.6	22.2	19.4
9	29	20.0	15.6	22.2	19.4
9	30	19.7	15.6	22.2	18.9
10	1	19.6	16.1	22.2	18.3
10	2	19.4	15.6	22.2	18.9
10	3	19.3	15.6	22.2	18.3
10	4	19.0	15.6	21.7	18.3
10	5	18.7	15.0	21.1	17.8
10	6	18.6	15.0	21.1	17.8
10	7	18.4	15.0	21.1	17.8
10	8	18.2	14.4	21.1	17.2
10	9	18.0	14.4	21.1	17.2
10	10	17.8	14.4	21.1	16.7
10	11	17.7	13.9	21.1	16.7
10	12	17.4	13.3	21.1	16.1
10	13	17.1	13.3	20.0	16.1
10	14	16.9	12.8	21.1	16.1
10	15	16.8	12.2	20.0	16.1
10	16	16.6	12.2	20.0	
10	17	16.3	12.2	20.0	16.1
10	18	16.1	12.2	20.0	
10	19	15.9	11.7	20.0	15.0
10	20	15.6	10.6	19.4	15.0
10	21	15.4	10.6	18.9	14.4
10	22	15.1	10.0	18.9	13.3
10	23	15.0	10.0	18.9	12.8
10	24	14.7	10.0	18.3	13.3
10	25	14.5	10.0	18.3	12.8
10	26	14.3	10.0	17.8	13.3
10	27	14.1	9.4	17.8	13.3
10	28	14.0	8.9	17.8	13.3
10	29	13.7	8.3	17.8	13.3
10	30	13.5	7.8	16.7	12.8
10	31	13.2	7.2	16.7	12.8
11	1	13.0	7.2	16.7	12.8
11	2	12.8	7.2	16.1	12.8
11	3	12.7	7.2	16.1	12.2
11	4	12.4	7.2	16.1	11.7
11	5	12.1	7.2	15.6	12.2
11	6	12.0	6.7	15.6	11.7
11	7	11.7	6.1	15.0	12.2

TABLE B-4 POUGHKEEPSIE WATER WORKS DATA, MEAN, MINIMUM, AND MAXIMUM TEMPERATURE (C) FOR EACH DAY OF THE YEAR, 1951-1996

MONTH	DAY	LONG-TERM MEAN	TEMPERATURE MINIMUM	(1951-1995) MAXIMUM	1996 ACTUAL TEMPERATURES
11	8	11.4	6.1	15.0	12.2
11	9	11.2	5.6	15.0	12.2
11	10	10.9	5.0	15.0	12.2
11	11	10.6	5.0	15.0	12.2
11	12	10.4	5.0	15.0	10.6
11	13	10.2	5.0	13.3	10.0
11	14	9.9	5.0	13.3	10.0
11	15	9.7	5.0	12.8	9.4
11	16	9.5	5.0	12.8	8.9
11	17	9.3	5.0	12.8	8.3
11	18	9.1	5.0	12.8	8.3
11	19	8.8	5.0	12.2	7.8
11	20	8.6	4.9	11.1	7.8
11	21	8.4	3.9	11.1	7.2
11	22	8.2	3.9	11.1	6.7
11	23	8.0	3.9	11.1	6.7
11	24	7.8	3.9	10.6	6.1
11	25	7.6	3.9	10.6	6.1
11	26	7.3	3.3	10.0	6.1
11	27	7.1	3.3	10.0	5.6
11	28	6.9	3.3	10.0	4.4
11	29	6.7	3.3	10.0	3.9
11	30	6.4	2.8	10.0	3.9
12	1	6.2	2.2	9.4	3.9
12	2	6.0	3.0	8.9	3.3
12	3	5.7	2.2	8.9	4.4
12	4	5.6	1.3	8.3	4.4
12	5	5.3	2.8	7.8	5.0
12	6	5.2	2.6	7.8	5.0
12	7	5.0	2.0	7.8	5.0
12	8	4.8	2.0	7.8	5.0
12	9	4.6	1.7	7.2	5.0
12	10	4.3	1.1	7.2	4.4
12	11	4.1	1.1	7.2	4.4
12	12	3.9	0.6	7.2	4.4
12	13	3.8	0.6	6.7	4.4
12	14	3.5	0.6	6.7	3.9
12	15	3.3	0.6	6.7	3.9
12	16	3.2	0.6	6.7	3.9
12	17	3.0	0.6	5.6	3.9
12	18	2.8	0.6	5.6	4.4
12	19	2.7	0.6	5.0	4.4
12	20	2.7	0.6	5.0	4.4
12	21	2.4	0.6	4.4	4.4
12	22	2.2	0.6	4.4	3.9
12	23	2.1	0.6	5.0	3.9
12	24	2.0	0.6	5.6	3.9
12	25	2.0	0.6	5.6	3.3
12	26	1.9	0.0	6.1	3.3
12	27	1.8	0.0	6.1	3.3
12	28	1.8	0.0	6.1	3.3
12	29	1.8	0.0	6.1	2.8
12	30	1.7	0.6	6.1	2.8
12	31	1.7	0.0	5.0	2.8

TABLE B-5 WEIGHTED MEAN TEMPERATURE (C) BY REGION AND WEEK FROM 1996 LONG RIVER/FALL SHOALS SURVEYS

WEEK BEGINNING MONDAY	REGIONS												
	BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
04MAR96	2.9	2.6	1.9	.	.	.	1.1	.	.	.	.	.	.
11MAR96	2.6	2.5	0.9	1.9	1.6	1.5	1.9	.	.	.	.	.	.
25MAR96	4.7	4.7	4.4	3.7	3.9	3.5	3.3	.	.	.	.	.	.
01APR96	5.4	5.2	5.6	5.9	5.9	.	.	.	.	.	.	.	.
08APR96	6.0	5.9	6.0	7.3	6.7	6.3	6.6	6.7	7.0	6.9	7.1	7.1	7.0
15APR96	8.3	8.4	8.1	7.6	7.7	7.6	7.7	7.8	7.9	7.7	7.2	7.3	6.7
22APR96	9.2	9.8	10.3	10.6	10.1	9.7	10.0	10.2	11.3	12.0	12.0	12.0	11.9
29APR96	10.8	12.1	13.1	12.6	12.5	12.8	12.1	11.3	10.7	10.3	10.1	9.8	9.1
06MAY96	12.6	13.3	12.8	12.8	11.7	11.4	11.4	11.7	11.6	11.4	10.7	10.7	10.6
13MAY96	12.2	12.3	12.4	12.6	13.6	13.2	13.0	12.4	11.8	11.6	11.8	11.3	11.0
20MAY96	12.8	15.5	16.7	15.4	15.2	14.5	14.3	13.5	14.2	14.1	14.8	15.0	15.3
27MAY96	13.7	13.7	12.4	12.5	15.9	16.0	16.3	16.1	17.2	17.2	17.5	18.0	18.0
03JUN96	17.3	18.0	18.4	19.3	19.4	17.5	17.7	17.9	18.3	18.3	18.6	18.6	18.2
10JUN96	18.1	19.8	21.1	21.1	21.2	21.0	20.7	21.2	22.4	22.1	21.9	22.0	22.0
17JUN96	20.8	22.1	22.6	22.9	22.8	22.2	23.0	23.1	23.6	23.6	23.9	23.8	24.0
24JUN96	21.4	22.0	22.7	23.4	24.1	23.6	23.4	23.3	23.2	22.9	22.7	22.9	22.7
01JUL96	20.1	21.5	22.0	23.3	23.6	23.7	23.8	23.8	23.7	23.0	22.9	23.0	23.2
08JUL96	21.3	23.8	24.5	19.6	.	.	.	24.8	24.6	24.8	24.3	24.0	24.4
15JUL96	23.6	25.0	25.4	25.1	25.0	24.2	24.1	23.6	.	.	.	.	.
22JUL96	17.8	20.5	22.8	24.4	24.2	23.5	23.8	23.7	23.2	23.0	23.0	23.2	23.0
29JUL96	20.2	22.9	23.6	24.2	24.7	24.0	23.6	23.5	.	.	.	.	.
05AUG96	23.8	24.6	25.8	26.7	25.7	25.0	25.0	27.4	28.0	28.2	26.6	21.7	22.1
12AUG96	22.8	24.5	24.8	25.4	25.6	24.6	24.5	24.7	.	.	.	.	.
19AUG96	23.8	25.3	25.9	26.5	26.1	25.0	25.1	25.2	25.1	25.1	25.1	25.5	25.4
26AUG96	24.2	25.1	26.1	27.0	26.7	25.8	25.9	25.8	.	.	.	.	.
02SEP96	23.9	25.2	25.7	26.9	26.7	25.7	25.9	26.0	25.8	25.9	25.7	25.9	25.9
09SEP96	24.9	25.2	25.9	26.5	26.1	25.8	25.6	25.5	.	.	.	.	.
16SEP96	22.4	22.6	22.2	23.9	23.9	22.6	23.0	23.3	22.6	20.7	20.9	21.4	21.6
23SEP96	20.7	20.8	21.1	23.1	23.2	22.2	22.1	22.0	.	.	.	.	.
30SEP96	19.9	20.2	19.4	19.9	20.5	19.4	19.1	18.6	18.0	17.9	17.7	17.2	17.1
07OCT96	17.9	18.1	18.8	19.9	17.8	18.0	18.0	17.7	.	.	.	.	.
14OCT96	17.2	17.1	17.3	16.8	16.9	16.0	15.6	15.2	12.8	14.0	14.1	14.4	14.0

Note: Dots (.) indicate no sampling or inability to collect data due to inclement weather or malfunctioning meters.

TABLE B-6 MEAN TEMPERATURE (C) BY REGION AND WEEK FROM 1996 BEACH SEINE SURVEY

WEEK BEGINNING MONDAY	REGIONS											
	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
17JUN96	21.4	21.6	21.9	21.6	22.0	21.6	21.4	23.2	23.1	23.9	24.0	23.4
01JUL96	23.9	24.7	25.7	26.0	22.4	24.7	24.4	24.9	24.5	23.4	23.7	23.4
15JUL96	25.1	25.8	25.6	24.7	24.8	25.1	24.1	24.8	24.2	23.8	24.1	21.9
29JUL96	23.6	24.1	24.8	23.9	22.7	21.6	22.7	22.6	23.0	23.3	23.4	23.1
12AUG96	24.4	24.9	26.1	26.3	24.8	24.3	23.9	23.6	24.6	24.9	24.9	23.5
26AUG96	26.4	27.0	28.5	26.1	25.1	24.5	25.3	25.8	26.2	26.3	25.1	25.0
09SEP96	25.9	26.4	27.0	27.2	24.6	25.1	26.7	25.7	26.4	26.4	26.1	23.5
23SEP96	20.9	21.4	21.9	23.5	21.4	20.7	20.3	19.7	18.7	19.3	19.0	18.2
07OCT96	19.0	19.4	20.7	21.1	20.2	18.8	18.7	17.4	17.1	16.8	16.7	15.8
21OCT96	17.3	17.8	17.5	16.5	16.0	14.4	13.8	12.4	14.3	14.2	13.3	11.7

TABLE B-7 WEIGHTED MEAN SALINITY (PPT) BY REGION AND WEEK FROM 1996 LONG RIVER/FALL SHOALS SURVEYS

WEEK BEGINNING MONDAY	REGIONS												
	BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
04MAR96	19.1	9.3	3.7	.	.	.	0.1	.	.	.	.	.	.
11MAR96	15.8	6.4	2.2	0.3	0.2	0.1	0.1	.	.	.	.	.	.
25MAR96	11.0	4.4	2.0	0.1	0.1	0.1	0.1	.	.	.	.	.	.
01APR96	17.4	11.0	6.5	4.4	3.5	.	.	.	.	.	.	.	.
08APR96	12.3	5.4	3.0	1.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
15APR96	9.7	2.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
22APR96	9.9	3.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
29APR96	11.9	3.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
06MAY96	5.3	2.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
13MAY96	8.6	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
20MAY96	13.7	5.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
27MAY96	18.1	12.8	9.5	5.8	2.7	1.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
03JUN96	13.2	8.0	5.2	2.8	1.3	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10JUN96	18.3	8.2	2.5	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
17JUN96	12.9	6.2	3.6	2.4	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
24JUN96	16.4	8.7	6.4	5.3	2.6	1.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1
01JUL96	21.0	15.2	8.0	4.9	2.5	1.4	0.4	0.1	0.1	0.1	0.1	0.1	0.1
08JUL96	19.1	8.5	5.6	2.0	.	.	.	0.1	0.1	0.1	0.1	0.1	0.1
15JUL96	9.5	3.3	0.9	0.9	0.1	0.1	0.1	0.1	.	.	.	.	.
22JUL96	19.5	11.1	4.8	4.3	1.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
29JUL96	17.9	8.0	5.7	3.6	1.8	0.3	0.1	0.1	.	.	.	.	.
05AUG96	17.2	9.0	2.8	1.9	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
12AUG96	19.0	9.8	7.3	4.9	2.7	0.4	0.1	0.1	.	.	.	.	.
19AUG96	21.2	11.0	5.8	3.9	1.9	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
26AUG96	16.2	11.8	7.0	3.1	1.9	0.8	0.2	0.1	.	.	.	.	.
02SEP96	19.8	10.9	7.6	4.0	2.1	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1
09SEP96	16.6	13.3	8.9	5.9	4.1	2.5	0.7	0.1	.	.	.	.	.
16SEP96	18.0	11.6	7.3	4.0	2.9	0.9	0.3	0.1	0.1	0.1	0.1	0.1	0.1
23SEP96	15.7	10.2	7.2	3.5	1.8	0.7	0.4	0.2	.	.	.	.	.
30SEP96	16.1	9.4	3.7	1.6	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
07OCT96	20.0	12.9	8.5	4.7	3.7	1.5	0.3	0.1	.	.	.	.	.
14OCT96	14.6	11.3	6.6	3.9	2.5	0.8	0.3	0.2	0.2	0.2	0.2	0.2	0.1

Note: Dots (.) indicate no sampling or inability to collect data due to inclement weather or malfunctioning meters.

TABLE B-8 MEAN SALINITY (PPT) BY REGION AND WEEK FROM 1996 BEACH SEINE SURVEY

WEEK BEGINNING MONDAY	REGIONS											
	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
17JUN96	3.9	1.0	0.4	0.9	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
01JUL96	10.1	6.6	3.9	1.2	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1
15JUL96	0.7	0.5	0.3	0.5	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
29JUL96	6.4	4.5	2.3	1.0	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.1
12AUG96	5.9	2.9	2.0	1.7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
26AUG96	9.7	5.9	3.5	1.7	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1
09SEP96	7.6	4.8	3.9	3.4	1.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1
23SEP96	9.0	5.6	3.6	2.6	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1
07OCT96	4.4	2.1	1.5	3.9	1.9	0.2	0.1	0.1	0.1	0.1	0.1	0.1
21OCT96	6.2	3.6	2.1	1.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1

TABLE B-9 WEIGHTED MEAN DISSOLVED OXYGEN (MG/L) BY REGION AND WEEK FROM 1996 LONG RIVER/FALL SHOALS SURVEYS

WEEK BEGINNING MONDAY	REGIONS												
	BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
04MAR96	11.1	11.6	12.1	.	.	.	12.5	.	.	.	.	.	.
11MAR96	11.0	11.7	12.9	12.3	12.5	12.5	12.5	.	.	.	.	.	.
25MAR96	11.3	12.4	12.3	12.4	11.9	11.9	12.1	.	.	.	.	.	.
01APR96	10.1	10.9	11.6	11.1	11.1	.	.	.	.	.	.	.	.
08APR96	10.1	10.7	11.0	11.3	11.5	11.4	11.6	11.6	11.5	11.3	11.5	11.9	12.4
15APR96	9.6	10.3	10.9	11.2	11.4	11.4	11.4	11.2	11.1	11.3	11.5	11.5	12.2
22APR96	9.9	10.4	10.9	10.9	11.2	11.2	11.3	11.4	10.9	10.8	10.9	11.2	11.4
29APR96	9.4	10.1	10.1	10.0	10.0	9.7	10.0	10.1	10.5	10.8	11.0	11.3	11.7
06MAY96	9.3	9.5	9.9	10.1	10.6	11.1	11.2	10.6	10.6	10.8	11.0	11.3	12.0
13MAY96	9.2	10.2	10.0	9.8	9.6	9.6	9.7	9.9	10.5	11.0	11.2	11.7	12.0
20MAY96	8.5	8.9	10.5	10.3	8.9	9.1	9.3	9.6	9.4	9.4	9.5	9.7	9.7
27MAY96	8.4	8.7	9.5	9.6	8.7	8.7	8.9	8.7	8.4	8.4	8.5	8.6	9.1
03JUN96	6.7	7.5	8.2	8.3	8.2	8.2	8.5	8.3	8.2	8.5	8.6	8.7	9.2
10JUN96	7.2	8.0	8.9	8.0	8.0	8.0	8.0	7.9	8.2	8.0	7.8	7.6	8.9
17JUN96	6.7	7.5	7.4	7.2	7.7	7.7	7.8	7.1	6.7	7.0	6.9	7.2	7.8
24JUN96	6.6	7.6	8.2	8.4	6.8	7.2	7.4	6.6	6.6	7.3	7.5	7.4	7.9
01JUL96	5.9	6.5	7.6	7.6	6.9	6.6	6.8	6.3	7.0	7.3	7.6	7.4	7.7
08JUL96	5.6	7.5	7.9	8.1	.	.	.	6.7	6.5	7.3	7.6	7.4	7.7
15JUL96	5.4	6.2	7.0	6.8	7.6	7.6	7.7	7.2	.	.	.	.	.
22JUL96	8.5	8.5	8.2	7.3	7.0	7.7	7.7	7.2	7.1	7.3	7.5	7.5	8.3
29JUL96	5.1	5.9	6.4	6.7	6.4	6.5	6.5	6.4	.	.	.	.	.
05AUG96	5.4	6.3	7.2	9.9	6.2	6.3	6.5	6.5	.	.	4.8	6.2	7.5
12AUG96	5.5	6.5	5.3	5.0	4.9	5.9	6.4	6.4	.	.	.	.	.
19AUG96	4.0	4.5	6.4	7.0	6.0	6.4	6.5	6.5	6.8	7.7	7.3	7.1	7.4
26AUG96	6.0	7.0	7.8	8.2	6.0	6.1	6.5	6.8	.	.	.	.	.
02SEP96	5.8	7.2	7.7	6.8	6.4	6.2	6.3	6.3	6.4	6.9	6.9	7.3	7.2
09SEP96	4.6	5.3	5.9	5.3	5.3	5.6	6.3	6.4	.	.	.	.	.
16SEP96	5.3	6.4	7.2	6.6	6.6	7.4	7.6	7.4	7.5	8.3	8.1	7.7	7.6
23SEP96	5.4	6.2	6.9	7.0	6.9	7.1	7.4	7.3	.	.	.	.	.
30SEP96	5.7	6.8	7.4	7.3	7.3	7.3	7.3	7.1	7.4	8.1	8.1	8.2	8.5
07OCT96	5.9	6.4	6.3	6.6	7.5	7.7	8.0	7.9	.	.	.	.	.
14OCT96	6.7	7.1	7.9	9.1	8.8	8.4	8.6	8.7	10.3	9.4	9.8	9.5	10.0

Note: Dots (.) indicate no sampling or inability to collect data due to inclement weather or malfunctioning meters.

TABLE B-10 MEAN DISSOLVED OXYGEN (mg/L) BY REGION AND WEEK FROM 1996 BEACH SEINE SURVEY

WEEK BEGINNING MONDAY	REGIONS											
	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
17JUN96	8.1	8.7	8.4	7.3	8.2	8.4	7.5	7.3	7.0	7.7	7.9	8.4
01JUL96	7.3	9.6	9.0	8.7	8.1	8.0	8.4	8.2	8.5	8.5	8.8	9.0
15JUL96	10.7	11.4	9.5	10.1	10.8	8.9	9.0	8.9	8.7	8.8	8.5	8.4
29JUL96	8.0	8.9	8.9	7.1	7.4	7.9	7.1	6.8	7.0	7.8	8.4	8.1
12AUG96	9.5	9.5	8.7	6.4	6.0	6.2	5.8	5.8	7.4	7.8	7.8	7.2
26AUG96	7.6	8.0	8.0	4.2	4.2	4.7	6.8	6.2	6.1	6.2	5.9	6.3
09SEP96	7.1	7.1	7.6	6.3	6.0	6.2	6.6	6.7	6.9	7.1	7.3	6.8
23SEP96	8.2	7.6	6.0	5.9	5.1	5.4	5.7	5.7	5.8	5.9	6.3	7.8
07OCT96	6.5	6.7	6.7	6.0	6.0	6.5	6.7	7.4	6.9	6.9	7.0	8.6
21OCT96	10.7	10.1	10.0	9.1	9.6	10.2	10.2	10.9	9.8	9.6	10.2	11.7

TABLE B-11 WEIGHTED MEAN PERCENT OXYGEN SATURATION BY REGION AND WEEK FROM 1996 LONG RIVER/FALL SHOALS SURVEYS

WEEK BEGINNING MONDAY	REGIONS BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
04MAR96	94.9	91.8	90.0	.	.	.	88.5	.	.	.	.	.	.
11MAR96	91.1	89.8	91.9	89.3	89.5	89.4	90.0	.	.	.	.	.	.
25MAR96	95.3	100.0	96.5	94.3	90.6	89.8	91.1	.	.	.	.	.	.
01APR96	90.5	92.7	96.8	91.6	91.3	.	.	.	.	.	.	.	.
08APR96	88.4	89.0	90.4	94.5	94.2	92.6	94.7	94.7	94.5	93.0	95.2	98.1	102.0
15APR96	87.2	89.4	92.1	93.7	95.6	94.9	95.3	94.4	93.4	94.8	95.1	95.5	100.0
22APR96	92.6	94.2	97.5	98.2	99.4	98.6	99.8	101.3	99.5	100.2	101.1	103.7	105.9
29APR96	92.6	95.6	96.5	94.0	94.3	91.6	93.2	92.1	94.3	96.2	98.1	100.1	101.8
06MAY96	90.6	92.3	93.9	95.8	97.3	101.6	102.9	98.0	97.6	98.9	99.4	101.4	108.2
13MAY96	91.0	95.3	93.6	92.6	92.7	91.6	92.0	92.6	97.3	101.0	103.2	106.9	108.9
20MAY96	88.7	91.9	107.6	103.1	89.1	89.8	90.8	92.0	92.2	91.9	94.1	96.1	97.0
27MAY96	91.5	92.0	95.4	93.4	90.0	89.1	90.3	88.2	87.0	87.4	89.3	90.7	96.0
03JUN96	76.1	83.9	90.7	91.9	89.3	86.2	89.2	87.5	87.4	90.3	92.2	93.0	97.5
10JUN96	86.2	92.2	102.0	90.0	90.5	89.9	88.8	89.5	94.0	91.8	89.0	87.4	101.6
17JUN96	81.9	89.7	87.0	84.6	89.5	88.9	91.3	83.3	78.5	82.0	81.2	85.2	93.0
24JUN96	83.2	92.3	99.6	102.2	82.5	85.2	86.9	77.0	77.5	85.0	87.0	86.0	91.6
01JUL96	74.9	81.8	90.9	91.3	82.3	78.8	80.5	74.7	82.8	84.7	87.8	86.6	90.1
08JUL96	71.7	93.3	97.8	89.9	.	.	.	80.4	78.3	88.0	90.5	88.1	92.3
15JUL96	67.6	76.5	85.8	83.4	92.2	90.9	91.8	84.9	.	.	.	.	.
22JUL96	102.2	101.9	99.0	89.3	84.3	90.5	91.1	84.8	83.5	84.6	87.0	88.1	97.0
29JUL96	63.8	72.4	77.7	81.1	78.1	77.3	76.5	74.9	.	.	.	.	.
05AUG96	71.3	79.9	90.3	125.2	76.3	76.6	78.2	79.0	.	.	57.8	69.9	86.0
12AUG96	72.4	82.8	66.4	62.9	61.4	71.1	76.7	77.0	.	.	.	.	.
19AUG96	54.8	58.3	81.8	88.6	75.5	77.2	78.2	78.5	82.9	92.9	88.9	86.3	90.1
26AUG96	79.3	91.4	100.9	104.4	75.9	75.5	79.3	83.0	.	.	.	.	.
02SEP96	77.9	94.1	99.2	87.6	80.4	76.3	77.8	77.3	78.0	84.2	83.9	89.7	88.2
09SEP96	61.1	70.5	76.2	68.1	67.4	69.7	77.8	78.6	.	.	.	.	.
16SEP96	68.6	79.9	86.3	79.9	79.1	86.2	88.6	86.5	87.1	92.7	91.1	87.2	86.1
23SEP96	66.8	74.3	81.7	83.4	81.6	82.2	84.8	83.8	.	.	.	.	.
30SEP96	69.5	79.1	82.4	80.9	81.0	79.4	78.4	76.4	78.4	85.1	84.6	85.2	87.9
07OCT96	71.2	74.0	71.7	74.8	81.1	82.3	84.6	83.2	.	.	.	.	.
14OCT96	76.2	79.1	86.0	96.7	92.3	86.0	86.1	86.8	96.8	91.5	95.5	92.7	97.5

Note: Dots (.) indicate no sampling or inability to collect data due to inclement weather or malfunctioning meters.

TABLE B-12 MEAN PERCENT OXYGEN SATURATION BY REGION AND WEEK FROM 1996 BEACH SEINE SURVEY

WEEK BEGINNING MONDAY	REGIONS											
	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
17JUN96	93.9	98.8	96.0	83.0	93.9	95.5	85.5	85.2	81.6	91.3	93.7	98.2
01JUL96	92.2	120.2	113.4	108.3	93.2	96.6	100.4	99.4	102.3	99.6	103.9	106.0
15JUL96	130.2	140.5	116.1	121.7	130.3	108.0	107.3	106.9	103.9	104.3	101.0	96.1
29JUL96	98.6	109.1	108.9	85.0	86.3	89.8	82.6	79.1	82.0	91.0	98.5	94.5
12AUG96	118.1	116.9	108.4	80.2	72.4	73.5	69.1	68.5	89.2	93.6	94.5	84.7
26AUG96	100.5	103.4	105.0	52.1	51.3	56.1	82.2	76.2	76.1	77.0	71.4	76.8
09SEP96	91.3	90.8	97.9	81.4	72.5	75.4	83.0	82.2	86.3	87.5	90.7	79.8
23SEP96	97.1	88.8	69.5	70.3	57.5	60.8	62.6	61.8	62.2	64.4	68.4	82.5
07OCT96	72.6	73.2	75.9	69.3	67.5	69.8	71.4	76.8	72.0	71.1	72.1	86.3
21OCT96	115.7	108.4	105.5	93.5	97.5	99.5	98.5	102.0	95.5	93.6	97.7	108.3

TABLE B-13 WEIGHTED MEAN CONDUCTIVITY (MS/CM @ 25 C) BY REGION AND WEEK FROM 1996 LONG RIVER/FALL SHOALS SURVEYS

WEEK BEGINNING MONDAY	REGIONS BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
04MAR96	31.0	15.8	6.5	.	.	.	0.2	.	.	.	.	.	.
11MAR96	25.9	10.9	3.8	0.5	0.3	0.3	0.2	.	.	.	.	.	.
25MAR96	18.2	7.5	3.4	0.2	0.2	0.2	0.2	.	.	.	.	.	.
01APR96	28.4	18.4	11.2	7.7	6.1	.	.	.	.	.	.	.	.
08APR96	20.4	9.4	5.4	2.0	0.5	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
15APR96	16.2	3.5	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
22APR96	16.4	6.0	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
29APR96	19.8	5.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
06MAY96	9.1	3.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
13MAY96	14.4	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
20MAY96	22.6	8.9	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
27MAY96	29.6	21.3	16.0	9.9	4.7	2.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2
03JUN96	22.0	13.8	9.1	4.9	2.4	0.7	0.2	0.2	0.2	0.2	0.2	0.2	0.2
10JUN96	29.8	13.9	4.4	0.6	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
17JUN96	21.4	10.7	6.2	4.2	0.7	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
24JUN96	26.8	14.7	11.0	9.2	4.6	2.1	0.5	0.2	0.2	0.2	0.2	0.2	0.2
01JUL96	33.8	25.0	13.7	8.5	4.4	2.5	0.7	0.2	0.2	0.2	0.2	0.2	0.2
08JUL96	31.0	14.5	9.6	3.5	.	.	.	0.2	0.2	0.2	0.2	0.2	0.2
15JUL96	16.0	5.8	1.6	1.6	0.3	0.2	0.2	0.2	.	.	.	.	.
22JUL96	31.4	18.6	8.2	7.4	2.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
29JUL96	29.2	13.7	9.9	6.2	3.2	0.5	0.2	0.2	.	.	.	.	.
05AUG96	28.1	15.2	5.0	3.3	0.6	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3
12AUG96	30.8	16.5	12.5	8.5	4.8	0.8	0.2	0.2	.	.	.	.	.
19AUG96	34.0	18.5	10.1	6.9	3.4	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.2
26AUG96	26.6	19.8	12.1	5.5	3.4	1.4	0.4	0.3	.	.	.	.	.
02SEP96	32.0	18.4	13.0	7.0	3.6	1.1	0.3	0.2	0.3	0.3	0.3	0.2	0.2
09SEP96	27.3	22.1	15.2	10.3	7.1	4.4	1.3	0.3	.	.	.	.	.
16SEP96	29.4	19.5	12.6	6.9	5.2	1.6	0.4	0.3	0.3	0.3	0.3	0.2	0.3
23SEP96	25.8	17.4	12.4	6.1	3.2	1.1	0.6	0.3	.	.	.	.	.
30SEP96	26.4	16.0	6.5	2.9	0.7	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3
07OCT96	32.2	21.3	14.4	8.2	6.4	2.7	0.5	0.3	.	.	.	.	.
14OCT96	24.2	19.1	11.4	6.8	4.4	1.5	0.6	0.3	0.3	0.3	0.3	0.3	0.3

Note: Dots (.) indicate no sampling or inability to collect data due to inclement weather or malfunctioning meters.

TABLE B-14 MEAN CONDUCTIVITY (MS/CM AT 25 C) BY REGION AND WEEK FROM 1996 BEACH SEINE SURVEY

WEEK BEGINNING MONDAY	REGIONS											
	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
17JUN96	6.7	1.7	0.8	1.6	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
01JUL96	17.1	11.3	6.8	2.1	1.1	0.4	0.2	0.2	0.2	0.2	0.2	0.2
15JUL96	1.2	0.9	0.4	0.8	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2
29JUL96	11.1	7.9	4.0	1.8	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.2
12AUG96	10.2	5.2	3.6	2.9	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
26AUG96	16.4	10.2	6.1	3.0	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2
09SEP96	13.1	8.3	6.8	6.0	2.2	0.4	0.3	0.3	0.3	0.2	0.2	0.2
23SEP96	15.4	9.7	6.3	4.5	0.8	0.3	0.3	0.3	0.3	0.3	0.3	0.2
07OCT96	7.7	3.8	2.7	6.9	3.4	0.3	0.2	0.2	0.2	0.2	0.3	0.2
21OCT96	10.7	6.4	3.7	1.9	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2

Appendix C

Numbers of Fish Collected in the Long River (1988-1996), Fall Shoals (1985-1996), and Beach Seine (1985-1996) Surveys

APPENDIX C

LIST OF TABLES

TABLE C-1 TOTAL NUMBER OF FISH COLLECTED IN THE LONG RIVER SURVEY, 1988-1996

	1988	1989	1990	1991	1992	1993	1994	1995	1996
Anadromous									
Alewife	8,200	624	60	2,727	555	1,275	1,679	293	1,787
Alosa unidentified	258,802	423,742	714,369	250,755	465,613	191,558	206,819	122,644	460,957
American shad	51,162	62,755	49,242	25,128	30,345	15,867	31,213	12,120	23,378
Atlantic sturgeon	11	2	5	26	4	.	7	1	1
Atlantic tomcod	25,414	37,397	38,431	40,804	10,558	21,343	20,724	64,680	17,375
Blueback herring	4,992	2,568	1,230	28,397	30,496	3,290	9,315	1,412	18,354
Hickory shad	.	.	.	.	.	.	.	1	4
Morone unidentified	2,180	13,473	955	17,620	7,246	12,406	8,350	5,416	29,225
Rainbow smelt	24,693	767	6,838	2,494	23,035	12,002	59,829	2,354	.
Striped bass	61,072	225,498	264,907	359,994	462,382	459,384	674,881	383,781	962,338
Sturgeon unidentified	4	6	18	9	.	.	.	.	.
Catadromous									
American eel	789	917	848	1,372	827	1,505	921	1,388	1,230
Estuarine									
Atlantic silverside	152	11	67	49	27	19	144	323	52
Banded killifish	5	2,274	1	.	5	3	4	24	2
Fourspine stickleback	6	1	1	2	1	7	5	.	7
Hogchoker	301,192	589,469	13,591	908,378	44,337	87,673	159,013	130,281	51,986
Inland silverside	98	101	.	58	42	209	857	149	166
Mummichog	1	.	.	.	.	.	2	6	.
Northern pipefish	1,135	153	102	2,059	137	416	186	277	291
Scup	.	.	.	1	.	.	.	.	.
Sea horse	11	.	1	9	.	.	.	2	.
Shortnose sturgeon	3	.	2	3	3	14	8	7	38
Threespine stickleback	2	.	1	.	.	2	.	2	3
White catfish	77	100	87	76	52	25	214	196	205
White perch	138,753	198,953	157,348	147,232	265,656	221,021	172,995	115,842	287,690
Freshwater									
Black crappie	.	.	.	.	.	.	.	.	1
Bluegill	.	.	.	5	.	.	1	1	.
Brown bullhead	1	12	33	30	4	7	18	25	31
Brown trout	.	.	1	.	1	.	.	.	.
Carp	730	651	.	340	731	136	121	147	1,199
Catostomidae unident.	.	.	.	1	1	.	.	.	.
Centrarchid unident	30	66	46	40	132	40	125	11	152
Chain pickerel	.	.	.	.	.	.	.	.	2
Channel catfish	.	.	.	1	1	.	.	5	5
Common shiner	.	.	12	.	.	.	.	.	.
Fathead minnow	.	.	1	.	.	.	.	.	.
Freshwater drum	.	.	.	.	1	1	.	8	124

TABLE C-1 (CONTINUED)

	1988	1989	1990	1991	1992	1993	1994	1995	1996
Freshwater (cont.)									
Fundulus sp.	.	2	4	3	1	111	4	3	2
Gizzard shad	.	85	5	3	535	123	440	1,065	688
Golden shiner	.	1	7	.	.	1	2	11	1
Largemouth bass	.	1	.	2	.	1	1	.	.
Logperch	48	20	.	.	179	.	.	.	.
Minnow unidentified	470	1,736	6,839	1,764	2,576	2,276	2,044	910	2,709
Northern hogsucker	19	.	.	.	.	.	.	.	.
Percid unidentified	2	15	.	18	.	.	.	.	.
Pumpkinseed	132	1	.	2	.	4	1	.	.
Rock bass	.	.	.	.	1	.	.	.	.
Satinfin shiner	.	.	.	.	.	.	.	.	1
Silvery minnow	.	.	.	.	.	.	.	.	1
Smallmouth bass	.	3	1	.	23	.	1	.	.
Spottail shiner	60	98	55	83	45	33	62	94	156
Tesselated darter	2,898	2,805	2,290	1,566	2,836	1,936	1,714	2,205	1,550
Walleye	.	26	.	1	2	12	32	.	23
White crappie	.	.	.	.	.	.	4	.	.
White sucker	.	10	44	.	1	.	.	1	13
Yellow bullhead	.	.	.	.	.	.	.	2	.
Yellow perch	152	325	610	157	369	225	333	69	764
Marine									
American sandlance	48	8	2	4	4	.	1	42	6
Atherinid unidentified	.	1	.	259	.	16	45	19	26
Atlantic cod	68	.	.	.	.	.	.	.	.
Atlantic croaker	.	.	.	.	157	1	5	409	3
Atlantic herring	522	178	76	1,177	842	1,151	37	3,986	5,485
Atlantic mackerel	4	.	.	1	2	.	.	.	1,968
Atlantic menhaden	6	12	671	1,301	404	268	13,009	2,678	3,036
Atlantic needlefish	.	.	3	.	.	1	.	1	.
Bay anchovy	2,852,331	444,854	900,354	3,831,982	1,341,076	1,849,143	3,051,491	1,271,339	1,337,747
Black sea bass	.	.	.	.	.	.	4	.	.
Blackcheek tonguefish	.	.	.	.	10	.	.	.	.
Bluefish	85	54	165	151	147	78	73	61	43
Bothid unidentified	.	.	.	1	.	.	.	.	.
Butterfish	143	18	18	27	46	38	108	11	12
Conger eel	132	72	54	29	124	195	175	45	117
Crevalle jack	1	4	.	1	.	.	.	.	1
Cunner	11,129	1,429	.	1,955	4,221	996	2,176	3,790	4,932
Four bearded rockling	108	209	2	404	691	4	4,157	6,487	571
Four spot flounder	.	1	.	.	.	.	.	.	.
Gadidae	6	.	.	.	.	10	.	1	.
Gobiidae	9,007	5,593	22,569	78,349	26,599	3,794	3,411	2,683	1,108

TABLE C-1 (CONTINUED)

	1988	1989	1990	1991	1992	1993	1994	1995	1996
Marine (cont.)									
Goosefish	.	.	.	8	12	.	.	.	1
Grubby	605	387	167	521	248	66	99	2,516	317
Hightail goby	.	.	1	.	.	.	.	.	.
Inshore lizardfish	8	8	.	3	14	1	2	1	.
King mackerel	.	.	.	1	.	.	.	.	.
Longhorn sculpin	.	2	.	.	.	2	.	.	.
Menidia sp.	12	7	193	.	2	.	1	1	.
Moonfish	.	.	.	.	.	.	1	.	.
Naked goby	279	44	1,619	8	73	9	1	3	6
Northern kingfish	.	118	.	10	10	1	39	1	.
Northern puffer	1	5	32	279	.	2	.	4	14
Northern searobin	40	2	17	19	1	4	27	5	48
Northern stargazer	129	.	.	.	.	.	53	.	.
Oyster toadfish	.	1	.	.	.	.	.	.	.
Pleuronectid unident.	.	.	.	144	.	.	.	.	.
Red hake	3	1	1	.	1	1	.	.	9
Rock gunnel	9	2	1	5	6	.	.	35	32
Rough silverside	110	19	.	41	44	30	447	218	37
Sea robin	8	.	312	26	.	16	.	.	.
Seabord goby	1	.	.	4	19	1	.	1	.
Silver hake	1	3	.	.	.	.	.	.	2
Silver perch	.	.	.	.	.	.	2	1	.
Smallmouth flounder	38	.	1	91	71	32	175	22	7
Spanish mackerel	.	.	.	20	.	2	1	.	.
Speckled worm eel	1	.	.	.	.	.	.	.	1
Spot	.	.	2	.	.	20	9	.	8
Spotted hake	62	1	1	19	40	13	6	146	186
Striped anchovy	.	.	.	.	.	.	.	5	35
Striped cuskeel	2	1	.	4	3	1	.	1	3
Striped killifish	.	.	.	.	1	.	.	.	.
Striped searobin	43	4	.	234	5	41	671	3	4
Summer flounder	.	24	1	39	18	.	7	23	11
Tautog	1,205	3,432	.	969	488	241	439	3,171	3,396
Tetraodontidae	.	3	.	.	.	.	.	.	.
Weakfish	1,586	2,602	122,082	6,821	1,206	1,621	2,804	623	59,707
Windowpane flounder	8,866	5,162	49	1,500	14,953	166,221	6,917	17,602	7,074
Winter flounder	900	178	64	340	794	188	362	4,754	774
Witch flounder	.	.	.	.	.	.	.	.	1
Yellowtail flounder	.	.	.	.	2	.	1	162	2

TABLE C-1 (CONTINUED)

Unidentified									
Cottid unidentified	128	.	.	.	.	.	.	.	.
Cyprinodontid unident.	.	8	.	.	.	5	.	.	.
Sciaenidae	.	3	.	.	.	2	65	.	.
Unidentified	49,244	7,031	36,103	113,576	18,496	9,938	32,546	1,131	7,378

Sampling Statistics for Long River Survey, 1988-1996

	1988	1989	1990	1991	1992	1993	1994	1995	1996
Start Date	18APR1988	17APR1989	19APR1990	15APR1991	13APR1992	12APR1993	11APR1994	06MAR1995	12MAR1996
End Date	25AUG1988	23AUG1989	16AUG1990	17OCT1991	14OCT1992	05OCT1993	05OCT1994	12OCT1995	09OCT1996
Volume Sampled (m3)	524,777	519,252	419,294	537,825	632,978	596,043	579,959	649,908	675,698
Sample Size	1,663	1,641	1,561	1,991	1,986	1,987	1,986	2,431	2,362

TABLE C-2 TOTAL NUMBER OF FISH COLLECTED IN THE FALL SHOALS SURVEY, 1985-1996

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Anadromous												
Alewife	1,142	554	702	379	327	459	994	790	730	719	519	830
Alosa unidentified	3,341	282	2,591	4,193	4,331	3,543	1,276	10,650	1,905	1,725	2,895	18,007
American shad	1,717	2,166	776	1,483	3,646	1,323	1,291	3,406	961	2,095	831	2,964
Atlantic sturgeon	96	184	149	117	63	6	10	1	7	15	.	2
Atlantic tomcod	5,083	10,046	7,908	8,210	14,060	1,105	4,914	7,299	3,664	1,679	3,649	4,632
Blueback herring	41,919	6,525	18,596	37,957	22,112	15,982	55,299	38,090	22,442	18,790	14,006	20,863
Hickory shad	.	3	.	.	.	.	.	.	.	.	.	.
Morone unidentified	1	.	.	.	3	2	.	.	.	.	.	.
Rainbow smelt	126	389	429	576	34	216	256	2,549	757	363	136	.
Sea lamprey	.	.	.	.	.	1	.	.	.	.	.	.
Striped bass	888	2,348	11,633	18,679	8,472	3,624	4,672	3,773	8,333	8,719	10,327	6,293
Catadromous												
American eel	1,872	2,906	2,254	2,076	1,444	342	984	19	1,406	1,647	207	24
Estuarine												
Atlantic silverside	.	2	.	3	1	2	18	2	29	25	33	42
Banded killifish	78	12	3	3	3	.	2	.	6	21	24	.
Fourspine stickleback	1	9	.	1	1	.	.	.	2	.	1	1
Hogchoker	89,948	108,036	89,042	74,672	73,613	22,760	42,916	62,300	43,064	15,581	23,723	18,200
Inland silverside	.	.	.	1	.	2	.	.	2	.	4	.
Mummichog	.	.	.	.	.	4	.	.	.	.	.	.
Northern pipefish	40	13	22	25	12	4	16	12	65	15	6	1
Scup	1	.	.	.	.	.	3	.	.	.	8	.
Sea horse	.	.	.	.	.	.	.	.	.	.	1	.
Shortnose sturgeon	16	8	11	20	12	2	18	.	82	50	.	1
White catfish	721	677	775	806	740	352	547	72	939	1,363	779	646
White perch	19,721	31,771	27,008	25,760	20,106	5,381	11,019	13,832	8,341	9,007	10,272	8,569
Freshwater												
Black bullhead	1	.	.	.	.	.	.	.	.	.	.	.
Bluegill	.	.	1	.	1	.	1	3	2	.	1	1
Brook trout	.	.	.	.	.	.	1	.	.	.	.	.
Brown bullhead	37	127	109	171	172	17	125	70	92	278	71	78
Carp	4	13	5	4	10	1	6	1	7	3	1	.
Central mudminnow	.	.	1	.	.	.	.	.	.	.	.	.
Centrarchid unident	1	4	1	5	3	.	.	.	.	4	.	.
Channel catfish	.	5	10	9	12	1	4	7	38	187	87	119
Emerald shiner	.	.	.	.	1	.	.	.	.	.	.	.
Freshwater drum	.	.	.	.	3	.	.	1	2	1	3	1
Gizzard shad	4	6	8	2	8	1	.	.	3	1	5	.
Golden shiner	.	1	.	.	.	.	.	29	.	.	.	1
Goldfish	.	.	.	.	1	.	.	1	.	1	.	.
Largemouth bass	.	.	.	.	.	.	.	.	.	.	.	1
Logperch	.	.	.	.	.	.	.	.	4	.	.	.
Margined madtom	.	.	1	.	.	.	1	.	.	1	.	.
Minnow unidentified	48	.	.	.	.	.	.	.	.	.	.	1
Pumpkinseed	57	2	13	5	1	6	12	2	16	12	49	20

TABLE C-2 (CONTINUED)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Freshwater (cont.)												
Redbreast sunfish	1	.	.	1	2	.	.	.	.	1	3	.
Rock bass	.	1	.	.	.	.	.	.	.	1	.	.
Satinfin shiner	.	.	.	.	.	1	.	.	.	.	.	1
Silvery minnow	.	1	.	.	.	.	.	.	.	.	.	56
Smallmouth bass	.	.	.	.	1	1	.	.	.	.	.	.
Spottail shiner	244	685	333	369	102	43	404	259	351	248	204	382
Tesselated darter	89	747	197	370	120	10	187	225	306	684	228	148
White sucker	1	8	4	2	1	.	.	.	.	1	.	1
Yellow bullhead	.	.	.	.	30	.	.	.	.	.	.	.
Yellow perch	.	.	1	1	.	.	.	.	.	1	.	.
Marine												
Atlantic croaker	1	4	7	.	1	4	.	4	18	97	335	5
Atlantic herring	.	.	.	.	.	.	.	.	3	.	.	.
Atlantic menhaden	51	139	67	9	38	129	478	81	13	78	25	251
Atlantic needlefish	.	.	.	1	.	1	1	.	.	.	1	.
Bay anchovy	27,902	20,988	39,348	59,244	41,475	16,465	44,815	37,231	53,437	54,615	93,821	26,168
Black sea bass	1	.	.	1	.	.	.	.	.	2	.	.
Bluefish	60	51	107	116	62	82	58	81	53	37	42	39
Butterfish	61	106	48	110	81	43	35	138	121	109	21	10
Conger eel	.	.	.	14	.	.	.	.	.	.	.	.
Crevalle jack	2	1	1	10	8	7	3	1	10	1	4	1
Cunner	.	.	.	.	.	1	.	1	.	.	.	.
Four spot flounder	2	2	.	1	.	1	.	.	.	25	.	.
Gobiidae	.	.	.	4	.	.	.	38	.	2	.	.
Grubby	.	.	.	2	.	.	.	.	1	.	.	.
Inshore lizardfish	1	.	.	1	4	.	1	4	8	1	.	.
Longhorn sculpin	.	.	.	.	.	.	.	.	3	.	.	.
Lookdown	1	.	1	1	1	.	.	.	.	1	.	.
Moonfish	.	1	2	.	5	.	.	1	.	.	.	.
Naked goby	3	6	47	9	21	1	7	30	3	1	26	.
Northern kingfish	9	6	.	20	3	3	10	2	4	16	6	.
Northern puffer	9	1	5	3	2	.	36	3	1	.	3	.
Northern searobin	.	2	7	21	3	16	7	12	53	305	5	5
Northern stargazer	1	.	.	20	.	4	3	10	2	7	.	.
Oyster toadfish	.	.	.	.	.	.	.	1	.	.	.	4
Red hake	1	.	.	.	.	1	.	.	.	.	.	.
Rough silverside	1	.	3	1	.	.	.	3	2	.	4	.
Seabord goby	.	.	.	12	.	.	2	.	.	.	.	.
Silver hake	.	3	.	.	.	1	1	.	.	.	.	.
Silver perch	.	.	.	13	.	.	1	.	7	11	36	1
Smallmouth flounder	.	.	.	8	.	.	.	1	1	9	3	.
Spanish mackerel	.	.	.	.	.	1	17	.	7	.	.	.
Spot	5	14	1	1,257	.	.	2	.	4	.	.	20
Spotfin butterflyfish	1	.	.	.	.	.	.	.	.	.	1	.
Spotted hake	2	1	.	.	.	.	3	1	7	3	1	21
Striped anchovy	.	.	.	.	.	.	.	1	.	.	2	.
Striped burrfish	.	1	.	.	.	.	.	.	.	.	.	.

TABLE C-2 (CONTINUED)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Marine (cont.)												
Striped cuskeel	3	.	.	1	.	.	1	1	.	.	.	.
Striped searobin	321	148	10	101	25	26	310	52	96	648	14	.
Summer flounder	232	447	58	7	42	35	102	35	39	32	19	15
Tautog	.	.	.	2	.	3	.	1	.	.	.	.
Tetraodontidae	.	.	1	.	.	.	.	.	.	.	.	.
Weakfish	2,214	1,482	749	3,777	2,842	770	5,878	750	2,332	2,416	3,772	2,198
Windowpane flounder	1	1	5	17	.	5	9	32	1	5	19	2
Winter flounder	226	196	92	39	23	13	28	35	51	21	54	30

Sampling Statistics for Fall Shoals Survey, 1985-1996

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Start Date	22JUL1985	21JUL1986	13JUL1987	18JUL1988	17JUL1989	09JUL1990	15JUL1991	13JUL1992	19JUL1993	18JUL1994	10JUL1995	10JUL1996
End Date	14NOV1985	02DEC1986	05NOV1987	28OCT1988	26OCT1989	17OCT1990	25OCT1991	23OCT1992	29OCT1993	27OCT1994	20OCT1995	17OCT1996
Volume Sampled(m3)	1,886,745	2,298,278	2,035,357	1,826,628	1,590,047	1,252,910	1,707,237	1,865,365	2,010,162	2,018,414	1,782,105	1,824,729
Sample Size	1,802	2,098	1,958	1,680	1,679	1,680	1,678	1,680	1,680	1,681	1,680	1,669

TABLE C-3 TOTAL NUMBER OF FISH COLLECTED IN THE BEACH SEINE SURVEY, 1985-1996

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Anadromous												
Alewife	1,272	818	515	675	439	925	2,323	870	638	1,738	1,051	437
Alosa unidentified	8,272	2,529	5,685	21,022	8,346	10,853	38,966	3,490	5,237	14,468	10,653	47,511
American shad	9,171	14,716	7,641	10,780	13,026	12,261	15,771	15,366	5,122	13,007	4,049	21,339
Atlantic sturgeon	1	.	.	.	3	.	.	.	.	.	.	.
Atlantic tomcod	243	148	209	230	81	115	46	328	13	9	22	51
Blueback herring	25,362	12,522	31,373	36,245	19,037	43,555	40,731	29,105	29,722	46,040	21,506	28,591
Hickory shad	.	.	.	.	.	.	.	.	.	.	.	1
Morone unidentified	.	.	1	.	.	.	.	.	.	.	1	.
Rainbow smelt	.	1	.	.	.	2	5	.	5	.	.	.
Striped bass	1,413	1,854	11,987	6,151	5,585	6,906	10,813	6,156	10,765	7,273	6,463	2,847
Catadromous												
American eel	315	163	125	151	107	81	208	8	97	86	36	12
Estuarine												
Atlantic silverside	1,197	4,406	1,459	6,760	686	8,383	17,291	6,668	14,493	21,101	28,061	9,014
Banded killifish	5,959	3,514	4,369	4,917	1,948	1,513	3,232	1,243	2,708	6,402	8,656	1,544
Fat sleeper	.	1	.	.	.	.	.	.	.	.	.	.
Fourspine stickleback	359	525	296	194	12	11	24	15	32	29	20	13
Hogchoker	1,033	276	312	305	261	150	652	328	143	230	392	53
Inland silverside	464	653	146	406	234	190	160	1,129	9	4	12	1
Mummichog	455	38	496	414	68	109	183	128	208	448	613	86
Northern pipefish	844	166	348	297	156	86	689	35	124	16	223	6
Striped mullet	2	6	1	1	.	.	5	.	.	.	2	.
Threespine stickleback	2	17	10	3	4	2	4	1	.	.	.	1
White catfish	52	83	86	101	66	23	25	.	16	7	.	8
White mullet	4	3	.	.	3	1	2	.	1	.	.	.
White perch	9,938	12,082	12,303	14,607	11,407	8,485	10,033	9,497	11,771	8,789	6,368	3,501
Freshwater												
Black crappie	.	47	52	10	10	8	12	14	4	14	16	17
Blacknose dace	2	.	1	1	.	.	.	.	.	.	.	.
Bluegill	64	57	76	355	159	89	69	59	94	89	198	45
Bluntnose minnow	.	.	.	.	.	.	.	.	.	3	.	2
Brook silverside	.	.	.	.	.	.	.	.	.	44	6	2
Brook stickleback	.	.	.	.	1	.	.	.	.	.	.	.
Brown bullhead	6	41	12	53	28	10	42	11	252	117	15	2
Brown trout	.	.	.	.	.	.	.	.	.	1	1	.
Carp	50	102	78	133	86	57	111	2	62	41	21	.
Catostomidae unident.	.	.	.	.	.	.	.	.	.	.	.	3
Centrarchid unident	673	327	388	351	100	106	64	29	42	216	89	79
Chain pickerel	.	.	.	.	4	.	.	1	.	.	1	.
Channel catfish	.	.	.	.	.	3	.	.	.	.	.	.
Comely shiner	.	.	.	.	.	.	.	.	1	.	.	.
Common shiner	.	.	.	1	.	.	.	1	1	.	.	.
Creek chub	1	.	.	.	.	.	4	.	1	.	2	.
Emerald shiner	4	4	5	22	.	11	8	4	2	1	.	76
Fallfish	.	2	.	.	.	.	9	3	2	11	2	3
Fathead minnow	1	10	.	.	1	.	.	.	.	2	.	7
Gizzard shad	3	13	100	10	7	28	22	157	38	49	54	50
Golden shiner	460	1,223	647	676	640	817	672	506	659	760	325	396
Goldfish	14	25	16	97	1	3	33	.	29	3	14	.
Grass pickerel	.	.	.	.	.	1	.	.	.	.	.	.
Green sunfish	.	.	.	1	.	.	.	.	.	.	.	.

TABLE C-3 (CONTINUED)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Freshwater (cont.)												
Largemouth bass	44	71	44	57	51	34	85	42	55	74	146	24
Logperch	.	.	.	.	.	.	.	1	1	.	.	1
Longear sunfish	.	.	.	.	.	10	.	.	.	.	.	.
Mimic shiner	.	.	.	.	.	.	.	.	.	.	.	1
Minnow unidentified	1	6	6	.	.	.	134	.	5	2	18	.
Northern hogsucker	.	.	1	3	.	1	4	2	.	.	.	1
Northern pike	.	2	4	2	4	2	2	.	3	2	.	2
Pugnose shiner	.	.	.	.	.	.	2	.	.	.	.	.
Pumpkinseed	740	496	609	1,070	633	724	1,195	510	774	1,535	1,603	247
Redbreast sunfish	115	158	185	160	111	76	200	163	251	382	368	78
Redfin pickerel	.	.	.	2	.	.	1	.	.	.	.	3
Rock bass	6	8	1	12	3	.	22	1	1	.	10	2
Satinfin shiner	1	2	.	1	.	2	.	.	1	.	6	5
Silvery minnow	3	13	23	119	2	9	387	68	568	1,027	8	2,131
Smallmouth bass	7	25	8	28	25	21	25	9	30	73	59	31
Spotfin shiner	5	8	17	5	.	.	.	.	12	8	8	49
Spottail shiner	5,316	5,177	4,452	5,407	5,129	5,500	12,385	7,727	7,169	12,452	7,529	3,887
Swallowtail shiner	.	.	.	.	.	.	.	3	.	.	.	.
Tesselated darter	1,198	1,372	820	1,697	415	479	2,385	929	1,251	1,669	700	663
Walleye	.	.	.	.	.	.	.	.	.	.	.	2
White crappie	.	4	1	3	.	1	2	1	.	.	.	.
White sucker	7	16	17	32	9	15	12	7	11	12	2	6
Yellow perch	22	67	44	49	34	12	27	9	22	29	6	44
Marine												
Atlantic croaker	.	1	.	.	.	26	.	1	.	.	7	.
Atlantic menhaden	118	834	30	99	159	1,063	678	310	16	1,637	48	1,515
Atlantic needlefish	92	77	54	48	41	96	476	5	11	12	15	26
Bay anchovy	4,081	4,155	3,746	3,989	9,507	4,134	4,669	8,729	8,106	10,447	17,615	3,544
Bluefish	567	400	533	280	224	348	314	375	223	80	252	98
Butterfish	.	.	.	4	.	1	.	1	9	.	.	.
Crevalle jack	71	10	3	22	40	32	58	32	30	2	2	1
Cunner	.	.	.	.	.	.	.	1	.	.	.	.
Goosefish	.	.	.	.	.	.	1	.	.	.	.	.
Gray snapper	7	1	3	.	.	.	2	.	.	.	.	.
Grubby	.	.	.	.	.	.	.	.	.	.	1	.
Inshore lizardfish	.	.	.	1	1	.	14	8	11	5	1	.
Lookdown	18	1	.	.	10	1	.	.	.	.	.	.
Moonfish	.	.	.	.	3	.	.	.	.	.	.	.
Naked goby	20	9	11	4	4	7	14	22	2	.	9	.
Northern kingfish	20	8	.	9	1	4	42	2	17	13	8	1
Northern puffer	2	1	.	1	.	.	10	.	4	.	2	.
Northern searobin	.	2	.	.	.	.	8	.	.	1	.	.
Northern stargazer	1	.	.	.	.	.	1	.	1	1	1	1
Orange spotted filefis	.	1	.	.	.	.	.	.	.	.	.	.
Permit	.	.	.	.	.	.	.	1	2	.	.	.
Rough silverside	35	4	23	258	9	4	.	2	.	1	1	.
Sea robin	.	.	.	.	.	.	5	.	.	.	.	.
Seabord goby	.	.	.	1	.	.	.	.	.	.	.	.
Silver hake	.	.	.	.	.	1	.	.	.	.	.	.
Silver perch	13	1	.	19	.	.	29	8	61	25	5	5
Smallmouth flounder	1	.	.	.	.	.	.	.	.	.	1	.
Spanish mackerel	.	.	.	.	.	.	12	.	4	1	.	.
Spot	35	106	4	32	.	1	8	2	39	24	.	59

TABLE C-3 (CONTINUED)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Marine (cont.)												
Spotfin mojarra	.	.	.	.	.	.	.	.	.	2	.	.
Spotted goatfish	.	.	.	.	.	.	.	.	17	.	.	.
Spotted hake	.	.	.	.	.	1	.	.	.	.	.	.
Striped anchovy	1	.	.	.	.	.	.	.	1	15	25	6
Striped searobin	5	16	.	3	.	.	34	1	11	.	.	.
Summer flounder	48	45	4	1	2	2	46	18	20	18	2	2
Tautog	2	5	2	20	.	6	31	1	.	1	.	.
Weakfish	72	5	.	2	.	27	111	1	4	4	1	25
Windowpane flounder	.	.	3	.	.	.	1	.	.	.	.	1
Winter flounder	282	80	29	41	9	23	154	35	74	45	106	6

Sampling Statistics for Beach Seine Survey, 1985-1996

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Start Date	16JUL85	15JUL86	24JUN87	14JUN88	13JUN89	18JUN90	24JUN91	23JUN92	01JUL93	27JUN94	19JUN95	18JUN96
End Date	21NOV85	21NOV86	13NOV87	03NOV88	02NOV89	24OCT90	01NOV91	28OCT92	04NOV93	02NOV94	26OCT95	23OCT96
Sample Size	1,000	1,000	1,101	1,100	1,100	1,000	1,000	1,000	1,000	1,000	1,000	1,000

Appendix D

Density and Standing Crop Estimates

APPENDIX D

LIST OF TABLES

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LIST OF TABLES (continued)

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LIST OF TABLES (continued)

APPENDIX D

LIST OF TABLES (continued)

APPENDIX D

LIST OF TABLES (continued)

TABLE D-1 REGIONAL DENSITY (NO./1,000m3) OF STRIPED BASS EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.78	0.14
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.03	1.03
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.05
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.39
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.01
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.16
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	1.36	0.16	2.68	36.03	16.52	10.40	3.05	0.00	0.00	5.40
11MAY	SE	0.00	0.00	0.00	0.00	0.71	0.16	0.96	23.30	9.92	8.85	1.06	0.00	0.00	26.87
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.00	0.00	12.34	31.56	20.25	195.65	450.59	40.77	503.23	468.94	6.18	8.74	0.00	133.71
18MAY	SE	0.00	0.00	9.65	13.78	16.62	32.62	277.29	16.33	292.24	313.24	2.63	2.60	0.00	512.17
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.12	0.00	5.62	64.33	418.76	340.61	868.53	2629.86	4780.03	0.68	1.12	13.98	701.82
25MAY	SE	0.00	0.12	0.00	2.95	26.76	153.65	217.21	201.72	800.21	2876.84	0.68	1.12	13.98	3004.82
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	0.00	0.29	1.76	103.68	3110.01	3097.79	12675.19	14161.50	20.68	24.18	0.00	2553.47
01JUN	SE	0.00	0.00	0.00	0.29	0.91	26.44	1395.54	843.08	7196.47	4467.81	11.11	13.28	0.00	8626.11
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.00	0.00	0.93	13.67	57.46	1699.70	393.60	3982.84	4879.41	2620.12	105.75	0.95	1058.03
08JUN	SE	0.00	0.00	0.00	0.39	7.38	35.16	693.47	81.71	1711.20	949.69	1298.88	41.24	0.95	2451.08
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-1 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF STRIPED BASS EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	86.54	0.28	21.29	3.81	44.20	21.12	31.16	9,22	17.82	22.28	173.72	3.71	33.47
14JUN	SE	0.00	86.54	0.28	9.52	2.18	16.76	12.35	28.24	5,01	10.11	11.93	65.24	2.97	115.54
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.76	8.92	0.00	2,18	0.00	0.00	0.56	5.70	1.39
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.76	7.72	0.00	1,63	0.00	0.00	0.56	4.54	9.15
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0,00	0.00	1.34	0.00	0.00	0.10
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0,00	0.00	1.34	0.00	0.00	1.34
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	2.37	9.18	0.00	0.00	0.47	0.00	0.98	0.00	0.00	0.00	0.89	0.00	1.07
03JUL	SE	0.00	2.37	9.18	0.00	0.00	0.47	0.00	0.57	0,00	0.00	0.00	0.89	0.00	9.55
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-2 REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	127	127
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	73	73
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	46	46
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	28	28
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST.CROP	0	0	0	0	0	0	0	48	0	0	0	0	0	48
04MAY	SE	0	0	0	0	0	0	0	48	0	0	0	0	0	48
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST.CROP	0	0	0	0	283	34	374	10741	2733	1472	537	0	0	16175
11MAY	SE	0	0	0	0	148	34	134	6947	1641	1253	187	0	0	7252
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST.CROP	0	0	3971	4662	4219	40588	62988	12156	83277	66340	1089	1406	0	280697
18MAY	SE	0	0	3106	2036	3463	6767	38762	4868	48362	44314	463	417	0	76817
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST.CROP	0	28	0	830	13403	86873	47614	258938	435202	676230	120	180	995	1520413
25MAY	SE	0	28	0	435	5575	31875	30364	60138	132423	406986	120	180	995	434465
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST.CROP	0	0	0	42	367	21509	434751	923556	2097549	2003425	3646	3886	0	5488732
01JUN	SE	0	0	0	42	190	5484	195084	251352	1190905	632061	1959	2134	0	1385290
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST.CROP	0	0	0	138	2849	11921	237602	117347	659100	690290	461916	16998	68	2198228
08JUN	SE	0	0	0	58	1537	7293	96941	24361	283177	134353	228987	6628	68	400956
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-2 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST.CROP	0	19854	91	3146	794	9170	2953	9288	1525	2521	3928	27923	264	81456
14JUN	SE	0	19854	91	1407	455	3477	1726	8420	829	1431	2104	10486	212	24484
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST.CROP	0	0	0	0	0	158	1247	0	360	0	0	91	405	2262
22JUN	SE	0	0	0	0	0	158	1079	0	270	0	0	91	323	1173
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	0	237	0	0	237
29JUN	SE	0	0	0	0	0	0	0	0	0	0	237	0	0	237
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST.CROP	0	543	2954	0	0	98	0	292	0	0	0	143	0	4032
03JUL	SE	0	543	2954	0	0	98	0	169	0	0	0	143	0	3014
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-3 REGIONAL DENSITY (NO./1,000m3) OF STRIPED BASS YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-14MAR	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-27MAR	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-12APR	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-19APR	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-26APR	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-04MAY	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-11MAY	DENSITY	0.00	0.19	0.34	0.00	0.11	0.47	0.16	0.34	1.32	0.89	0.00	1.17	1.23	0.48
	SE	0.00	0.11	0.34	0.00	0.11	0.47	0.16	0.34	1.32	0.44	0.00	0.59	0.97	1.93
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-18MAY	DENSITY	0.00	0.00	0.35	1.89	4.42	1.75	1.04	0.66	0.56	0.42	0.43	0.00	0.00	0.89
	SE	0.00	0.00	0.25	0.97	2.04	1.75	0.74	0.53	0.44	0.42	0.43	0.00	0.00	3.10
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-25MAY	DENSITY	1.09	44.01	332.48	151.70	918.26	116.26	159.01	29.39	2.67	0.71	0.27	0.00	0.00	135.07
	SE	0.63	21.32	200.63	56.73	283.75	51.35	50.26	10.80	1.95	0.71	0.27	0.00	0.00	360.17
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-01JUN	DENSITY	0.00	0.00	0.81	8.36	104.99	1545.24	4360.63	2857.02	2363.79	61.63	2.76	0.56	0.46	869.71
	SE	0.00	0.00	0.47	3.72	26.12	228.01	1103.38	704.44	1367.21	23.11	2.04	0.56	0.46	1906.88
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-08JUN	DENSITY	0.00	0.00	0.34	180.36	1947.87	3701.01	23378.63	32730.11	26626.04	14149.30	483.05	141.08	1.71	7949.19
	SE	0.00	0.00	0.34	36.11	700.14	651.80	8284.38	12209.48	8025.78	2214.61	259.40	65.11	1.71	16970.80
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-3 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF STRIPED BASS YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-14JUN	DENSITY	0.76	0.00	1.09	183.08	2096.79	3140.72	6783.63	5235.41	806.97	241.58	146.50	145.47	1.05	1444.85
	SE	0.76	0.00	0.77	101.24	634.72	1394.56	4381.96	1524.45	269.07	32.33	46.32	67.95	0.53	4895.27
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-22JUN	DENSITY	0.00	0.00	0.00	3.75	111.66	134.02	113.43	61.77	11.90	6.01	19.50	42.97	3.42	39.11
	SE	0.00	0.00	0.00	1.63	70.28	97.73	47.50	31.74	3.78	2.65	13.55	21.32	3.42	135.74
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-29JUN	DENSITY	0.00	0.00	0.00	0.00	0.17	3.00	7.00	0.79	0.00	0.00	0.00	0.00	0.00	0.84
	SE	0.00	0.00	0.00	0.00	0.17	1.09	3.53	0.79	0.00	0.00	0.00	0.00	0.00	3.78
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-03JUL	DENSITY	0.00	0.55	0.00	0.52	0.03	0.00	5.09	6.97	0.12	0.00	0.31	0.00	1.68	1.17
	SE	0.00	0.55	0.00	0.52	0.03	0.00	3.12	2.98	0.12	0.00	0.31	0.00	1.13	4.54
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-19JUL	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-02AUG	DENSITY	2.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.34
	SE	2.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00						2.73
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-17AUG	DENSITY	0.00	0.00	0.39	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.05
	SE	0.00	0.00	0.39	0.00	0.00	0.00	0.00	0.00						0.39
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-29AUG	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-11SEP	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-25SEP	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-09OCT	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-4 REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	43	110	0	22	98	22	102	219	125	0	189	88	1017
1MAY	SE	0	25	110	0	22	98	22	102	219	63	0	95	69	315
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	114	279	921	364	145	198	93	60	75	0	0	2249
8MAY	SE	0	0	81	144	425	364	104	157	73	60	75	0	0	624
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	228	10097	106996	22412	191307	24118	22228	8763	442	101	48	0	0	386739
5MAY	SE	132	4890	64566	8381	59115	10653	7026	3218	323	101	48	0	0	89056
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	0	0	261	1234	21872	320569	609578	851773	391171	8719	487	91	33	2205789
1JUN	SE	0	0	151	550	5442	47301	154243	210018	226253	3270	360	91	33	348378
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	110	26646	405813	767796	3268123	9757940	4406201	2001699	85159	22676	122	20742285
8JUN	SE	0	0	110	5335	145865	135220	1158083	3640053	1328144	313301	45732	10465	122	4061411
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-4 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	159	0	352	27048	436838	651561	948291	1560851	133542	34176	25827	23382	74	3842101
14JUN	SE	159	0	249	14957	132235	289309	612559	454489	44527	4574	8167	10921	38	827882
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	553	23264	27804	15856	18416	1970	851	3438	6906	243	99301
22JUN	SE	0	0	0	241	14641	20275	6640	9461	625	374	2388	3427	243	27877
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	35	622	979	237	0	0	0	0	0	1873
29JUN	SE	0	0	0	0	35	227	493	237	0	0	0	0	0	593
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	127	0	77	7	0	712	2078	20	0	54	0	119	3194
03JUL	SE	0	127	0	77	7	0	436	888	20	0	54	0	80	1006
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	571	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	571
02AUG	SE	571	0	0	0	0	0	0	0						571
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	127	0	0	0	0	0	NS	NS	NS	NS	NS	127
17AUG	SE	0	0	127	0	0	0	0	0						127
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-5 REGIONAL DENSITY (NO./1,000m3) OF STRIPED BASS POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
7MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	9.01	2.23	1.03	0.00	0.00	6.70	0.00	0.00	0.00	0.00	0.00	0.00	1.46
5MAY	SE	0.00	4.35	0.96	0.81	0.00	0.00	6.70	0.00	0.00	0.00	0.00	0.00	0.00	8.08
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.14	1.47	19.20	267.60	1829.51	185.70	3.71	0.00	1.21	0.00	0.55	0.00	177.62
1JUN	SE	0.00	0.14	0.56	8.27	175.66	405.02	60.83	2.27	0.00	1.21	0.00	0.55	0.00	445.73
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	2.78	5.34	113.96	3019.17	2448.43	3032.12	7814.10	1362.58	457.74	129.49	13.38	1.91	0.68	1415.51
8JUN	SE	2.12	2.58	49.04	559.40	355.72	962.40	3598.57	565.00	133.57	44.10	3.59	0.92	0.68	3828.43
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-5 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF STRIPED BASS POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	3.47	428.52	8540.09	6699.11	24714.84	20765.54	35721.73	20834.15	1203.96	1266.66	1104.08	20.51	5.11	9331.37
14JUN	SE	1.65	218.06	5318.10	3325.45	1353.28	7343.01	14258.67	3079.91	211.15	829.97	716.80	15.01	2.56	17583.59
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	389.24	525.35	901.10	3643.15	3594.43	2039.65	1970.59	639.80	367.26	546.88	286.36	25.62	0.00	1148.42
22JUN	SE	117.16	107.63	278.78	969.15	638.62	462.88	334.34	92.98	56.99	199.60	195.31	10.20	0.00	1366.07
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	44.67	225.66	60.20	23.13	1208.04	1741.72	1235.20	376.97	198.59	536.15	38.75	197.61	40.42	455.93
29JUN	SE	36.41	38.12	19.89	8.24	263.46	236.49	225.72	168.28	41.61	191.99	13.94	100.43	21.68	507.14
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.34	18.09	106.37	327.69	353.37	275.18	510.83	61.86	32.52	65.92	43.07	15.80	0.96	139.38
03JUL	SE	0.34	9.26	27.58	99.37	57.87	108.16	103.89	22.62	9.20	27.90	7.88	5.43	0.69	195.01
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	1.21	18.48	10.50	14.08	7.71	12.62	6.93	7.00	NS	NS	NS	NS	NS	9.81
19JUL	SE	0.71	4.81	2.56	2.52	2.29	5.23	2.38	2.44						8.99
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	2.10	0.00	0.14	0.32	2.85	2.82	9.14	0.51	NS	NS	NS	NS	NS	2.24
02AUG	SE	2.10	0.00	0.14	0.32	1.34	1.52	5.44	0.26						6.19
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	1.31	0.00	0.26	NS	NS	NS	NS	NS	0.20
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.53	0.00	0.26						0.59
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	NS	NS	NS	NS	NS	0.10
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.71	0.00						0.71
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-6 REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	2068	719	152	0	0	936	0	0	0	0	0	0	3875
5MAY	SE	0	998	309	120	0	0	936	0	0	0	0	0	0	1408
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
3MAY-	ST. CROP	0	32	472	2837	55751	379543	25959	1106	0	172	0	89	0	465960
1JUN	SE	0	32	180	1221	36597	84023	8504	678	0	172	0	89	0	92052
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	580	1225	36673	446042	510096	629031	1092340	406232	75749	18319	2359	307	48	3219001
3JUN	SE	443	593	15782	82644	74109	199655	503048	168445	22104	6238	634	148	48	578267
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-6 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	726	98311	2748300	989704	5148998	4307930	4993577	6211357	199237	179195	194644	3297	364	25075640
14JUN	SE	345	50028	1711425	491291	281936	1523350	1993234	918223	34943	117416	126368	2413	182	3228007
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	81355	120525	289985	538227	748850	423137	275471	190745	60776	77367	50483	4117	0	2861039
22JUN	SE	24487	24691	89714	143180	133048	96027	46737	27719	9431	28238	34432	1640	0	248412
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	9336	51771	19373	3417	251678	361329	172670	112388	32864	75850	6832	31763	2876	1132147
29JUN	SE	7609	8745	6400	1218	54888	49062	31554	50171	6886	27160	2458	16142	1543	100814
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	71	4151	34231	48411	73620	57088	71410	18443	5382	9325	7592	2540	68	332332
03JUL	SE	71	2124	8877	14680	12057	22439	14522	6743	1522	3947	1389	872	49	34995
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	252	4240	3378	2079	1607	2617	968	2086	NS	NS	NS	NS	NS	17228
19JUL	SE	148	1104	823	372	478	1085	333	728						2025
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	440	0	46	48	593	586	1278	153	NS	NS	NS	NS	NS	3144
02AUG	SE	440	0	46	48	280	316	761	77						980
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	273	0	76	NS	NS	NS	NS	NS	349
17AUG	SE	0	0	0	0	0	110	0	76						134
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	111	0	NS	NS	NS	NS	NS	111
29AUG	SE	0	0	0	0	0	0	100	0						100
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-7 REGIONAL DENSITY (NO./1,000m3) OF STRIPED BASS YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
7MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-7 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF STRIPED BASS YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	1.01	1.29	2.98	0.66	3.30	0.79	0.59	1.64	0.00	0.00	0.94
29JUN	SE	0.00	0.00	0.00	1.01	1.09	1.75	0.38	2.49	0.62	0.59	0.63	0.00	0.00	3.57
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.32	0.37	3.09	1.46	3.06	3.28	0.00	0.00	0.00	0.00	0.00	0.00	0.89
03JUL	SE	0.00	0.25	0.37	1.16	0.96	2.13	3.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	1.35	5.87	0.28	0.84	1.95	5.99	23.35	4.17	NS	NS	NS	NS	NS	5.48
19JUL	SE	0.52	2.24	0.16	0.62	0.87	1.62	13.57	2.51						14.12
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.24	3.63	2.07	0.00	4.15	0.00	NS	NS	NS	NS	NS	1.26
02AUG	SE	0.00	0.00	0.24	1.47	1.40	0.00	1.94	0.00						2.82
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.22	0.00	1.72	4.52	0.94	2.00	0.00	NS	NS	NS	NS	NS	1.18
17AUG	SE	0.00	0.22	0.00	0.66	2.68	0.51	0.79	0.00						2.93
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.56	0.11	2.08	0.00	NS	NS	NS	NS	NS	0.34
29AUG	SE	0.00	0.00	0.00	0.00	0.56	0.11	1.02	0.00						1.17
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	1.96	0.78	0.35	0.11	2.84	0.00	NS	NS	NS	NS	NS	0.76
11SEP	SE	0.00	0.00	0.99	0.78	0.35	0.11	2.14	0.00						2.51
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	2.55	1.33	0.40	0.16	0.73	0.00	NS	NS	NS	NS	NS	0.65
25SEP	SE	0.00	0.00	1.68	1.11	0.29	0.16	0.73	0.00						2.17
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.81	0.00	0.22	0.09	0.48	0.00	NS	NS	NS	NS	NS	0.20
09OCT	SE	0.00	0.00	0.61	0.00	0.16	0.09	0.48	0.00						0.80
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-8 REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-8 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	149	269	618	92	985	130	84	289	0	0	2615
29JUN	SE	0	0	0	149	227	364	53	744	103	84	111	0	0	890
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	72	119	457	305	636	459	0	0	0	0	0	0	2047
03JUL	SE	0	57	119	171	199	441	420	0	0	0	0	0	0	676
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	282	1347	90	125	405	1243	3264	1244	NS	NS	NS	NS	NS	8000
19JUL	SE	109	514	52	92	180	336	1897	747						2142
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	78	536	432	0	581	0	NS	NS	NS	NS	NS	1627
02AUG	SE	0	0	78	217	292	0	271	0						460
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	51	0	255	942	194	280	0	NS	NS	NS	NS	NS	1722
17AUG	SE	0	51	0	97	559	105	111	0						590
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	116	23	291	0	NS	NS	NS	NS	NS	430
29AUG	SE	0	0	0	0	116	23	143	0						186
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	631	116	74	24	397	0	NS	NS	NS	NS	NS	1241
11SEP	SE	0	0	317	116	74	24	299	0						458
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	820	197	83	34	103	0	NS	NS	NS	NS	NS	1236
25SEP	SE	0	0	541	165	61	34	103	0						579
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	262	0	46	19	68	0	NS	NS	NS	NS	NS	395
09OCT	SE	0	0	198	0	34	19	68	0						213
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-9 REGIONAL DENSITY (NO./1,000m3) OF STRIPED BASS YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.00	0.41	3.14	7.79	4.75	3.19	8.53	3.39	0.33	4.47	10.70	6.59	0.05	4.10
15JUL	SE	0.00	0.30	0.79	2.01	1.12	0.67	2.14	1.04	0.11	2.09	3.50	2.98	0.05	6.13
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.06	3.63	5.69	2.44	8.81	4.95	2.24	0.58	2.31	1.53	1.05	0.21	2.58
27JUL	SE	0.00	0.03	1.11	1.95	0.18	4.46	1.78	1.85	0.49	0.79	0.51	0.40	0.09	5.73
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.00	0.99	3.87	8.00	0.65	0.88	6.19	0.68	0.88	0.24	2.82	0.12	0.29	1.97
10AUG	SE	0.00	0.57	0.53	1.69	0.24	0.74	2.06	0.62	0.73	0.12	1.36	0.05	0.21	3.34
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	0.00	0.82	5.29	1.52	0.65	1.87	1.07	0.00	0.12	2.85	3.46	0.20	0.05	1.38
24AUG	SE	0.00	0.55	1.84	0.76	0.41	0.91	0.57	0.00	0.09	0.98	1.02	0.06	0.05	2.75
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.00	0.01	1.49	4.26	0.32	0.79	0.38	0.00	0.58	0.14	0.28	1.26	0.14	0.74
07SEP	SE	0.00	0.01	0.34	1.43	0.17	0.79	0.15	0.00	0.51	0.06	0.07	0.38	0.10	1.80
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.08	0.05	2.30	1.63	0.21	0.76	0.67	0.03	0.05	0.16	0.30	0.98	0.05	0.56
21SEP	SE	0.05	0.04	0.35	0.44	0.11	0.74	0.55	0.03	0.03	0.08	0.13	0.71	0.05	1.31
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.23	0.09	2.57	2.41	0.06	0.02	0.44	0.03	0.55	0.00	0.12	0.27	0.05	0.53
05OCT	SE	0.10	0.06	0.72	0.56	0.03	0.02	0.32	0.03	0.55	0.00	0.04	0.24	0.05	1.14
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	0.75	0.18	2.01	0.31	0.11	0.00	0.06	0.18	0.00	0.42	0.59	0.07	0.06	0.37
17OCT	SE	0.68	0.09	0.56	0.07	0.07	0.00	0.03	0.18	0.00	0.32	0.37	0.04	0.06	1.03
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-10 REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	95	1011	1151	991	662	1192	1010	55	632	1887	1060	3	9748
15JUL	SE	0	70	253	297	234	139	300	309	19	295	616	478	3	1055
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	13	1168	841	509	1827	692	667	96	327	270	169	15	6593
27JUL	SE	0	7	357	288	37	925	249	551	81	112	90	64	6	1210
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	227	1245	1181	136	182	866	203	145	34	498	19	21	4758
10AUG	SE	0	131	172	250	50	154	288	184	121	17	240	8	15	570
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	188	1701	225	135	389	149	0	20	403	610	33	4	3856
24AUG	SE	0	125	593	113	85	188	79	0	14	138	179	10	4	693
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	3	479	629	67	164	54	0	97	20	50	202	10	1775
07SEP	SE	0	3	110	211	35	164	22	0	85	8	13	62	7	311
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	16	11	741	241	43	158	93	10	8	23	53	157	3	1556
21SEP	SE	10	8	114	65	24	154	77	10	5	12	23	114	3	248
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	47	22	829	356	12	3	62	9	91	0	21	44	4	1499
05OCT	SE	20	13	230	83	7	3	45	9	91	0	7	39	4	269
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	156	42	648	46	23	0	8	53	0	60	104	11	4	1157
17OCT	SE	141	20	180	11	15	0	4	53	0	45	65	7	4	250
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-11 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF STRIPED BASS YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.07	0.16	0.00	0.07
20JUN	SE	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.07	0.09	0.00	0.48
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	2.67	26.27	32.86	41.00	19.33	8.67	2.63	1.38	8.00	7.20	2.37	1.75	12.84
03JUL	SE	1.45	13.32	18.32	36.53	4.63	4.26	0.96	0.98	4.49	2.02	0.68	1.36	43.79
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	9.67	3.36	7.14	1.00	4.67	3.00	9.25	3.25	11.88	5.47	5.63	3.75	5.67
18JUL	SE	1.45	0.86	2.94	0.58	2.33	2.52	5.89	2.04	6.03	1.38	1.49	3.31	10.67
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	11.80	5.92	6.86	1.40	39.40	1.17	5.00	8.20	0.80	1.44	2.60	1.57	7.18
01AUG	SE	2.75	1.87	3.81	0.60	23.36	0.60	3.38	2.97	0.80	0.63	1.33	1.11	24.41
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.20	1.25	3.29	1.60	0.40	1.67	0.80	0.20	1.20	0.44	2.70	0.00	1.15
14AUG	SE	0.20	0.37	0.87	0.51	0.40	0.76	0.37	0.20	1.20	0.24	1.63	0.00	2.50
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	2.60	1.46	8.29	0.80	1.00	0.33	2.00	1.00	2.00	1.56	6.10	0.14	2.27
28AUG	SE	1.40	0.48	1.88	0.80	0.63	0.33	1.52	0.77	1.76	1.08	2.63	0.14	4.58
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	1.60	0.13	0.43	7.40	1.20	1.33	1.20	0.00	0.00	0.00	0.00	0.14	1.12
11SEP	SE	1.03	0.07	0.20	2.16	0.49	0.76	0.97	0.00	0.00	0.00	0.00	0.14	2.75
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	3.00	0.38	0.57	0.40	0.20	0.00	0.20	0.20	0.00	0.22	0.10	0.14	0.45
25SEP	SE	2.07	0.19	0.34	0.24	0.20	0.00	0.20	0.20	0.00	0.22	0.10	0.14	2.17
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.08	0.64	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.07
09OCT	SE	0.00	0.06	0.20	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.27
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.13	0.07	0.00	0.60	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.08
23OCT	SE	0.00	0.07	0.07	0.00	0.60	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.64
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-12 REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	25	0	0	0	0	0	0	1	1	3	0	30
20JUN	SE	0	21	0	0	0	0	0	0	1	1	2	0	21
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	20	1194	884	378	51	92	19	2	69	126	47	24	2904
03JUL	SE	11	605	493	337	12	45	7	1	39	35	13	18	853
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	73	153	192	9	12	32	66	4	102	96	111	51	901
18JUL	SE	11	39	79	5	6	27	42	3	52	24	29	45	129
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	89	269	184	13	104	12	35	10	7	25	51	21	822
01AUG	SE	21	85	102	6	62	6	24	4	7	11	26	15	154
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	2	57	88	15	1	18	6	<0.5	10	8	53	0	257
14AUG	SE	2	17	23	5	1	8	3	<0.5	10	4	32	0	46
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	20	66	223	7	3	4	14	1	17	27	120	2	504
28AUG	SE	11	22	51	7	2	4	11	1	15	19	52	2	81
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	12	6	12	68	3	14	9	0	0	0	0	2	125
11SEP	SE	8	3	5	20	1	8	7	0	0	0	0	2	25
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	23	17	15	4	1	0	1	<0.5	0	4	2	2	69
25SEP	SE	16	9	9	2	1	0	1	<0.5	0	4	2	2	21
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	4	17	0	0	2	0	0	0	0	0	0	23
09OCT	SE	0	3	5	0	0	2	0	0	0	0	0	0	6
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	6	2	0	2	0	0	<0.5	0	0	0	0	9
23OCT	SE	0	3	2	0	2	0	0	<0.5	0	0	0	0	4
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-13 REGIONAL DENSITY (NO./1,000m3) OF STRIPED BASS YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.00	0.04	0.13	0.54	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
15JUL	SE	0.00	0.04	0.05	0.16	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01
27JUL	SE	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.05
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.00	0.02	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
10AUG	SE	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	0.00	0.00	0.03	0.00	0.01	0.00	0.64	0.00	0.88	0.00	0.00	0.00	0.00	0.12
24AUG	SE	0.00	0.00	0.03	0.00	0.01	0.00	0.61	0.00	0.88	0.00	0.00	0.00	0.00	1.07
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.00	0.00	0.02	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
07SEP	SE	0.00	0.00	0.02	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.00	0.11	0.08	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02
21SEP	SE	0.00	0.00	0.04	0.05	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.07
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.03	0.00	0.09	0.11	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02
05OCT	SE	0.03	0.00	0.04	0.07	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.09
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	0.00	0.00	0.07	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
17OCT	SE	0.00	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-14 REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	9	42	79	3	0	0	0	0	0	0	0	0	134
15JUL	SE	0	9	18	23	2	0	0	0	0	0	0	0	0	31
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	13	0	0	0	0	0	0	0	0	0	3	16
27JUL	SE	0	0	8	0	0	0	0	0	0	0	0	0	3	8
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	4	27	0	0	0	0	0	0	0	0	0	0	30
10AUG	SE	0	4	10	0	0	0	0	0	0	0	0	0	0	11
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	9	0	2	0	90	0	145	0	0	0	0	246
24AUG	SE	0	0	9	0	2	0	85	0	145	0	0	0	0	169
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	6	0	11	0	0	0	0	0	0	0	0	17
07SEP	SE	0	0	6	0	8	0	0	0	0	0	0	0	0	10
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	35	11	0	0	1	0	0	0	0	0	0	48
21SEP	SE	0	0	14	8	0	0	1	0	0	0	0	0	0	16
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	7	0	27	16	0	0	1	0	0	0	0	0	0	51
05OCT	SE	7	0	12	10	0	0	1	0	0	0	0	0	0	17
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	23	3	0	0	0	0	0	0	0	0	0	26
17OCT	SE	0	0	15	3	0	0	0	0	0	0	0	0	0	15
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-15 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF STRIPED BASS YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.33	0.09	2.00	0.33	0.33	0.00	0.13	0.00	0.00	0.07	0.53	0.33	0.35
20JUN	SE	0.33	0.09	0.72	0.33	0.33	0.00	0.13	0.00	0.00	0.07	0.26	0.19	0.99
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.29	0.33	0.00	0.33	0.13	0.00	0.00	0.00	0.32	0.33	0.14
03JUL	SE	0.00	0.00	0.18	0.33	0.00	0.33	0.13	0.00	0.00	0.00	0.27	0.33	0.67
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.33	0.00	0.00	0.00	0.00	0.33	0.13	0.00	0.13	0.07	0.00	0.42	0.12
18JUL	SE	0.33	0.00	0.00	0.00	0.00	0.33	0.13	0.00	0.13	0.07	0.00	0.23	0.56
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.40	0.08	0.00	0.00	0.40	0.17	0.00	0.00	0.00	0.00	0.00	0.57	0.14
01AUG	SE	0.40	0.06	0.00	0.00	0.40	0.17	0.00	0.00	0.00	0.00	0.00	0.57	0.82
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.00	0.00	0.20	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.03
14AUG	SE	0.00	0.00	0.00	0.00	0.20	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.28
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.40	0.00	0.07	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.06
28AUG	SE	0.40	0.00	0.07	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.45
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.01
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.17
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-16 REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	3	4	54	3	1	0	1	0	0	1	10	5	81
20JUN	SE	3	4	19	3	1	0	1	0	0	1	5	3	21
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	8	3	0	4	1	0	0	0	6	5	26
03JUL	SE	0	0	5	3	0	4	1	0	0	0	5	5	10
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	3	0	0	0	0	4	1	0	1	1	0	6	15
18JUL	SE	3	0	0	0	0	4	1	0	1	1	0	3	6
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	3	4	0	0	1	2	0	0	0	0	0	8	17
01AUG	SE	3	3	0	0	1	2	0	0	0	0	0	8	9
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	0	0	1	0	1	0	0	0	0	0	2
14AUG	SE	0	0	0	0	1	0	1	0	0	0	0	0	2
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	3	0	2	0	0	0	1	0	0	0	0	0	6
28AUG	SE	3	0	2	0	0	0	1	0	0	0	0	0	4
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	2	0	0	0	0	0	0	2
11SEP	SE	0	0	0	0	0	2	0	0	0	0	0	0	2
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-17 REGIONAL DENSITY (NO./1,000m3) OF STRIPED BASS OLDER-THAN-YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005
15JUL	SE	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	<0.005
10AUG	SE	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005
24AUG	SE	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
07SEP	SE	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.02	0.03	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.02	0.00	0.00	0.01
21SEP	SE	0.00	0.02	0.02	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.02	0.00	0.00	0.09
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.00	<0.005
05OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.00	0.03
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	0.00	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.00	0.03	0.00	0.01
17OCT	SE	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.00	0.03	0.00	0.06
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-18 REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS OLDER-THAN-YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	8	0	0	0	0	0	0	0	0	0	0	8
15JUL	SE	0	0	5	0	0	0	0	0	0	0	0	0	0	5
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	0	2	0	1	0	0	0	0	0	0	3
10AUG	SE	0	0	0	0	2	0	1	0	0	0	0	0	0	2
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	4	0	5	0	0	0	0	0	0	0	0	10
24AUG	SE	0	0	4	0	3	0	0	0	0	0	0	0	0	6
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	40	0	0	0	0	0	0	0	0	0	0	40
07SEP	SE	0	0	40	0	0	0	0	0	0	0	0	0	0	40
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	5	9	0	0	0	11	0	0	0	4	0	0	29
21SEP	SE	0	5	6	0	0	0	11	0	0	0	4	0	0	14
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	0	0	0	0	1	0	0	0	0	5	0	6
05OCT	SE	0	0	0	0	0	0	1	0	0	0	0	5	0	5
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	9	0	0	0	2	0	0	6	0	5	0	21
17OCT	SE	0	0	6	0	0	0	2	0	0	6	0	5	0	10
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-19 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF STRIPED BASS OLDER-THAN-YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.01
18JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.07
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.08	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
14AUG	SE	0.00	0.08	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-20 REGIONAL STANDING CROP (IN THOUSANDS) OF STRIPED BASS OLDER-THAN-YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
20JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	1	0	0	1
18JUL	SE	0	0	0	0	0	0	0	0	0	1	0	0	1
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
01AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	4	0	0	1	0	0	0	0	0	0	0	5
14AUG	SE	0	4	0	0	1	0	0	0	0	0	0	0	4
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
28AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-21 REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
7MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.71	0.13
6APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.11	1.11
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	2.80	7.05	1.49	7.55	85.91	89.90	44.24	18.38
4MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	1.32	2.48	1.14	6.43	21.74	88.88	23.14	94.65
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	0.00	0.00	0.21	0.11	0.00	1.54	15.74	495.86	85.85	21.17	786.75	307.42	131.90
1MAY	SE	0.00	0.00	0.00	0.21	0.11	0.00	1.34	7.20	212.60	42.73	13.91	30.15	59.58	227.44
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	3.97	0.73	5.44	652.25	5.30	12.78	138.55	110.06	76.38	255.03	96.96
8MAY	SE	0.00	0.00	0.00	2.97	0.57	0.96	424.37	2.55	6.11	47.84	67.65	41.88	38.53	436.17
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	1.25	0.46	1.11	41.56	115.87	3751.58	471.65	3861.25	2267.15	808.61
5MAY	SE	0.00	0.00	0.00	0.00	1.25	0.18	0.74	20.05	21.00	2337.51	173.78	981.30	555.31	2601.22
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.10	3.90	4.54	130.01	20.68	259.81	204.16	515.38	185.90	101.88
JUN	SE	0.00	0.00	0.00	0.00	0.10	1.76	1.83	89.73	10.84	129.62	174.72	354.02	166.03	456.51
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
JUN-	DENSITY	0.00	0.00	0.00	0.00	0.14	0.50	0.44	25.72	35.88	144.82	266.99	1926.20	298.55	207.63
JUN	SE	0.00	0.00	0.00	0.00	0.14	0.36	0.29	11.52	27.83	37.31	145.32	1241.17	131.15	1257.42
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-21 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	28.85	0.00	0.00	0.04	2.13	30.97	193.18	14.16	397.41	19.82	155.75	6074.54	532.07
14JUN	SE	0.00	28.85	0.00	0.00	0.04	2.13	15.31	140.77	11.02	186.75	18.54	83.27	3235.53	3245.27
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.10	78.77	17.84	3.93	152.12	0.00	6.36	19.73	166.47	34.26
22JUN	SE	0.00	0.00	0.00	0.00	0.10	78.43	17.43	2.00	151.39	0.00	5.12	10.54	54.80	180.33
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	1.99	0.00	0.95	0.30
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	1.28	0.00	0.95	1.77
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-22 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	122	122
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	79	79
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST.CROP	0	0	0	0	0	0	391	2101	247	1069	15145	14450	3148	36550
04MAY	SE	0	0	0	0	0	0	184	741	188	910	3833	14286	1647	14931
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST.CROP	0	0	0	31	22	0	216	4691	82058	12145	3733	126455	21873	251223
11MAY	SE	0	0	0	31	22	0	187	2145	35182	6046	2453	4846	4239	36420
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST.CROP	0	0	0	587	152	1128	91178	1579	2116	19600	19404	12277	18145	166167
18MAY	SE	0	0	0	438	118	199	59323	762	1012	6768	11927	6731	2741	61334
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST.CROP	0	0	0	0	260	95	156	12390	19175	530736	83149	620626	161306	1427891
25MAY	SE	0	0	0	0	260	38	103	5977	3475	330688	30637	157727	39510	369837
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST.CROP	0	0	0	0	21	809	635	38760	3422	36755	35992	82838	13226	212459
01JUN	SE	0	0	0	0	21	364	255	26751	1793	18337	30803	56902	11813	73358
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST.CROP	0	0	0	0	30	103	62	7668	5938	20488	47069	309602	21242	412202
08JUN	SE	0	0	0	0	30	75	40	3435	4606	5278	25619	199495	9331	201501
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-22 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST.CROP	0	6618	0	0	9	442	4330	57592	2343	56222	3494	25035	432198	588282
14JUN	SE	0	6618	0	0	9	442	2140	41967	1823	26420	3268	13384	230205	235998
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST.CROP	0	0	0	0	22	16341	2494	1172	25174	0	1121	3171	11844	61339
22JUN	SE	0	0	0	0	22	16271	2436	596	25052	0	903	1695	3899	30291
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	142	351	0	67	560
29JUN	SE	0	0	0	0	0	0	0	0	0	109	226	0	67	260
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-23 REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	1.03	0.57	0.00	0.00	0.00	0.15
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.65	0.57	0.00	0.00	0.00	0.88
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.18	0.00	0.63	1.57	2.43	3.80	4.30	4.98	0.44	1.41
11MAY	SE	0.00	0.00	0.00	0.00	0.18	0.00	0.48	1.57	1.11	3.80	2.96	2.48	0.44	5.79
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.00	0.10	1.94	7.36	15.23	38.70	482.19	262.81	85.21	120.64	86.43	56.19	7.73	89.58
18MAY	SE	0.00	0.10	0.85	2.36	9.96	23.68	142.56	96.77	18.17	30.79	18.86	11.79	5.37	179.32
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.63	1.87	24.23	51.53	81.72	89.44	199.56	344.33	402.53	227.12	297.83	81.07	138.60
25MAY	SE	0.00	0.33	0.60	9.52	16.17	34.21	12.70	36.46	57.00	137.61	81.33	85.37	25.16	199.34
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	1.50	0.45	0.71	25.75	113.48	94.44	344.36	1895.93	837.09	641.00	71.89	309.74
01JUN	SE	0.00	0.00	1.50	0.32	0.49	8.36	28.40	25.53	66.63	829.42	124.55	146.56	29.09	855.42
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.00	0.00	0.57	5.51	7.75	18.54	42.60	280.50	235.74	92.05	439.16	189.61	100.93
08JUN	SE	0.00	0.00	0.00	0.43	2.89	6.93	10.60	28.05	83.82	37.73	27.88	57.58	127.26	172.32
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-23 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.55	0.00	0.85	2.30	1.37	56.80	18.69	78.10	106.55	97.02	130.37	337.14	771.54	123.18
14JUN	SE	0.55	0.00	0.57	1.50	1.08	22.89	9.41	20.95	16.91	37.95	17.12	189.90	230.19	303.52
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	1.72	1.44	4.08	2.82	4.72	22.68	69.34	295.05	30.91
22JUN	SE	0.00	0.00	0.00	0.00	0.00	1.20	0.86	2.31	1.61	2.01	14.18	23.89	67.34	72.94
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.79	0.00	0.00	1.33	0.52	1.65	0.36
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.79	0.00	0.00	1.06	0.52	0.84	1.69
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.15	0.17
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.46	1.46
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-24 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	100	171	80	0	0	0	351
04MAY	SE	0	0	0	0	0	0	0	61	107	80	0	0	0	147
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	38	0	87	469	403	538	758	801	31	3124
11MAY	SE	0	0	0	0	38	0	66	469	184	538	522	399	31	990
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	0	22	623	1088	3173	8029	67406	78352	14101	17067	15237	9032	550	214679
18MAY	SE	0	22	274	349	2075	4912	19928	28851	3006	4356	3324	1895	382	36069
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	145	602	3579	10735	16954	12502	59495	56981	56946	40040	47871	5768	311619
25MAY	SE	0	76	194	1407	3369	7097	1776	10870	9433	19467	14339	13722	1790	32405
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	484	66	147	5343	15863	28157	56986	268217	147576	103029	5115	630983
01JUN	SE	0	0	484	47	102	1733	3970	7612	11027	117338	21958	23557	2070	122507
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	85	1149	1608	2591	12702	46419	33350	16228	70587	13491	198208
08JUN	SE	0	0	0	63	601	1438	1482	8362	13871	5337	4915	9256	9055	22074
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-24 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	116	0	274	340	285	11784	2613	23284	17633	13726	22983	54189	54894	202119
14JUN	SE	116	0	183	222	224	4748	1316	6245	2798	5369	3018	30523	16378	36181
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	356	202	1218	467	668	3998	11146	20993	39047
22JUN	SE	0	0	0	0	0	248	121	689	267	284	2499	3840	4791	6682
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	50	237	0	0	235	83	118	722
29JUN	SE	0	0	0	0	0	0	50	237	0	0	187	83	60	322
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	153	153
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	104	104
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-25 REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.55	0.00	0.06
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.55	0.00	0.58
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.64	0.00	0.71	0.86	2.83	0.88	3.84	2.26	0.20	1.09	0.42	2.42	0.00	1.24
8MAY	SE	0.64	0.00	0.37	0.50	1.70	0.88	1.40	0.99	0.20	0.78	0.42	1.31	0.00	3.15
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	15.92	134.23	155.80	476.81	149.24	96.87	13.82	0.50	2.31	0.00	0.00	0.00	80.42
25MAY	SE	0.00	9.78	15.21	22.37	184.67	45.29	28.01	4.52	0.50	1.53	0.00	0.00	0.00	194.40
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	6.05	31.48	83.04	534.75	669.29	662.86	2086.35	1567.99	2045.84	557.93	0.46	634.31
01JUN	SE	0.00	0.00	2.05	6.07	16.44	221.64	200.82	146.09	476.87	317.79	705.66	215.31	0.46	991.88
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.11	2.47	51.32	167.08	336.61	1008.23	2329.08	2307.52	3485.84	1091.25	1416.13	4.81	938.50
08JUN	SE	0.00	0.11	1.92	5.43	18.39	51.60	234.91	676.35	383.27	1291.82	134.38	353.19	2.80	1572.95
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-25 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	15.15	39.93	400.74	402.31	819.01	1714.16	5253.42	5237.49	6968.65	5489.11	2002.49	2.27	2180.36
14JUN	SE	0.00	14.74	9.65	40.35	164.59	313.62	559.54	651.24	693.94	2014.81	1966.95	586.97	1.18	3101.46
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	12.66	47.49	50.31	447.79	713.34	758.88	2231.79	1229.31	1517.10	2085.52	2625.86	3671.68	6.92	1184.51
22JUN	SE	5.60	16.68	14.23	111.36	327.25	94.04	534.47	282.64	248.58	342.69	108.12	874.10	5.00	1203.90
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	4.86	19.20	3.85	0.43	161.54	326.49	464.40	1021.38	261.48	3032.54	681.38	3792.75	67.39	756.75
29JUN	SE	3.48	6.03	2.88	0.30	52.75	52.48	123.56	665.16	48.79	1183.23	247.27	1650.62	33.91	2156.97
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.12	7.24	80.14	68.64	275.56	132.64	117.93	141.07	112.09	217.15	3.65	88.94
03JUL	SE	0.00	0.00	0.12	3.43	9.38	22.81	52.47	33.58	25.43	48.45	35.52	30.69	1.91	98.50
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.56	1.36	1.60	1.23	6.95	7.58	2.45	NS	NS	NS	NS	NS	2.72
19JUL	SE	0.00	0.48	0.65	0.64	0.58	2.10	3.12	1.75						4.31
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.04	0.61	3.26	1.81	NS	NS	NS	NS	NS	0.72
02AUG	SE	0.00	0.00	0.00	0.00	0.04	0.61	1.59	1.28						2.14
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-26 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	54	0	0	0	89	0	142
11MAY	SE	0	0	0	0	0	0	0	54	0	0	0	89	0	104
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	134	0	228	127	589	182	537	675	33	154	74	390	0	3122
18MAY	SE	134	0	119	74	355	182	196	296	33	110	74	210	0	620
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	3652	43197	23017	99336	30961	13541	4121	83	326	0	0	0	218235
25MAY	SE	0	2244	4894	3305	38474	9396	3916	1348	83	217	0	0	0	40319
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	1946	4650	17300	110936	93561	197622	345258	221824	360672	89677	33	1443479
01JUN	SE	0	0	661	897	3425	45981	28074	43555	78915	44958	124404	34607	33	172439
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	26	795	7582	34808	69832	140941	694376	381860	493141	192383	227617	342	2243704
08JUN	SE	0	26	619	802	3831	10705	32839	201641	63425	182754	23691	56769	199	288225
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-26 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	3477	12851	59204	83815	169908	239624	1566221	866725	985853	967707	321863	162	5277410
14JUN	SE	0	3381	3105	5961	34291	65062	78218	194156	114837	285035	346765	94345	84	522360
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	2646	10895	16190	66155	148614	157435	311984	366499	251056	295039	462929	590155	492	2680089
22JUN	SE	1171	3827	4579	16453	68178	19509	74713	84264	41136	48480	19061	140496	356	205339
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	1016	4404	1240	63	33655	67732	64919	304508	43272	429013	120125	609615	4794	1684355
29JUN	SE	728	1384	927	45	10990	10888	17272	198306	8074	167392	43593	265306	2413	374493
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	39	1070	16696	14239	38521	39543	19516	19957	19760	34902	259	204503
03JUL	SE	0	0	39	507	1955	4732	7335	10010	4209	6855	6263	4932	136	17571
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	127	438	236	255	1442	1060	730	NS	NS	NS	NS	NS	4288
19JUL	SE	0	110	208	94	121	435	436	522						855
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	8	127	456	539	NS	NS	NS	NS	NS	1130
02AUG	SE	0	0	0	0	8	127	223	382						461
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-27 REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
04JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-27 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.02
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.32
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.73	4.82	2.08	NS	NS	NS	NS	NS	0.95
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.64	4.05	1.19						4.26
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.07	0.00	1.07	0.00	NS	NS	NS	NS	NS	0.14
02AUG	SE	0.00	0.00	0.00	0.00	0.07	0.00	1.02	0.00						1.03
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	NS	NS	NS	NS	NS	0.11
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.00						0.61
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	1.75	0.25	NS	NS	NS	NS	NS	0.25
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	1.75	0.25						1.77
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.49	NS	NS	NS	NS	NS	0.17
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.49						1.03
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.38	NS	NS	NS	NS	NS	0.08
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.38						0.47
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.96	1.35	NS	NS	NS	NS	NS	0.29
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.96	0.34						1.02
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-28 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-28 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	45	0	0	0	0	0	0	45
29JUN	SE	0	0	0	0	0	0	45	0	0	0	0	0	0	45
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	152	673	620	NS	NS	NS	NS	NS	1445
19JUL	SE	0	0	0	0	0	132	565	355						681
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	14	0	149	0	NS	NS	NS	NS	NS	163
02AUG	SE	0	0	0	0	14	0	143	0						144
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	121	0	NS	NS	NS	NS	NS	121
17AUG	SE	0	0	0	0	0	0	86	0						86
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	245	75	NS	NS	NS	NS	NS	320
29AUG	SE	0	0	0	0	0	0	245	75						256
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	126	145	NS	NS	NS	NS	NS	272
11SEP	SE	0	0	0	0	0	0	126	145						192
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	39	114	NS	NS	NS	NS	NS	153
25SEP	SE	0	0	0	0	0	0	39	114						120
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	135	403	NS	NS	NS	NS	NS	538
09OCT	SE	0	0	0	0	0	0	135	101						168
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-29 REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.02	0.46	0.30	0.00	0.00	0.05	0.22	0.00	0.08
15JUL	SE	0.00	0.00	0.00	0.00	0.00	0.02	0.34	0.14	0.00	0.00	0.05	0.22	0.00	0.43
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.06	0.94	0.03	0.52	0.03	0.00	0.09	0.00	0.13
27JUL	SE	0.00	0.00	0.00	0.00	0.00	0.03	0.23	0.03	0.49	0.03	0.00	0.07	0.00	0.55
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.00	0.00	0.00	0.00	0.01	0.00	0.20	0.16	0.00	0.00	0.37	0.00	0.00	0.06
10AUG	SE	0.00	0.00	0.00	0.00	0.01	0.00	0.13	0.08	0.00	0.00	0.30	0.00	0.00	0.34
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	0.00	0.00	0.00	0.00	0.02	0.00	1.45	0.22	0.25	0.00	0.00	0.00	0.00	0.15
24AUG	SE	0.00	0.00	0.00	0.00	0.02	0.00	0.74	0.18	0.25	0.00	0.00	0.00	0.00	0.80
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.00	0.00	0.00	0.00	0.09	0.00	1.74	0.22	2.33	0.06	0.02	0.00	0.00	0.34
07SEP	SE	0.00	0.00	0.00	0.00	0.09	0.00	1.22	0.08	0.87	0.06	0.02	0.00	0.00	1.50
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.00	0.00	0.00	0.01	0.00	0.36	0.42	1.63	0.10	0.00	0.00	0.00	0.19
21SEP	SE	0.00	0.00	0.00	0.00	0.01	0.00	0.16	0.14	0.83	0.07	0.00	0.00	0.00	0.87
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.00	0.00	0.10	0.12	0.03	0.02	0.76	0.13	0.40	0.10	0.00	0.00	0.00	0.13
05OCT	SE	0.00	0.00	0.07	0.05	0.02	0.02	0.20	0.08	0.17	0.10	0.00	0.00	0.00	0.31
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	0.00	0.00	0.00	0.02	0.01	0.79	0.73	0.12	0.42	0.64	0.54	0.00	0.00	0.25
17OCT	SE	0.00	0.00	0.00	0.02	0.01	0.77	0.32	0.09	0.31	0.40	0.23	0.00	0.00	1.00
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-30 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	0	3	65	90	0	0	9	35	0	203
15JUL	SE	0	0	0	0	0	3	48	43	0	0	9	35	0	74
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	12	131	8	85	4	0	15	0	256
27JUL	SE	0	0	0	0	0	6	33	8	82	4	0	11	0	89
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	0	2	0	28	49	0	0	65	0	0	144
10AUG	SE	0	0	0	0	2	0	19	22	0	0	53	0	0	61
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	0	0	4	0	202	65	41	0	0	0	0	313
24AUG	SE	0	0	0	0	4	0	104	54	41	0	0	0	0	124
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	0	0	19	0	243	65	385	9	4	0	0	726
07SEP	SE	0	0	0	0	19	0	170	23	145	9	4	0	0	225
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	2	0	50	126	270	14	0	0	0	462
21SEP	SE	0	0	0	0	2	0	23	43	138	10	0	0	0	147
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	31	18	6	4	106	39	66	14	0	0	0	284
05OCT	SE	0	0	23	7	5	4	28	24	28	14	0	0	0	54
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	0	3	2	163	102	37	69	91	95	0	0	562
17OCT	SE	0	0	0	3	2	159	45	26	52	56	41	0	0	188
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-31 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF WHITE PERCH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	1.14	15.67	0.00	0.33	0.13	0.00	0.25	0.53	0.47	0.25	1.56
03JUL	SE	0.00	0.00	1.14	15.67	0.00	0.33	0.13	0.00	0.16	0.24	0.47	0.18	15.72
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.33	0.00	0.14	0.00	0.33	0.67	0.13	0.75	2.00	1.27	0.89	0.58	0.59
18JUL	SE	0.33	0.00	0.14	0.00	0.33	0.67	0.13	0.53	1.00	0.47	0.31	0.42	1.57
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.08	1.29	0.00	4.80	0.00	1.00	1.60	0.00	0.00	0.00	0.00	0.73
01AUG	SE	0.00	0.06	0.95	0.00	1.98	0.00	0.63	0.93	0.00	0.00	0.00	0.00	2.47
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.21	0.79	0.40	0.20	0.33	0.00	0.00	0.20	0.00	0.50	0.00	0.22
14AUG	SE	0.00	0.10	0.42	0.40	0.20	0.33	0.00	0.00	0.20	0.00	0.31	0.00	0.80
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.04	2.64	0.20	1.40	0.00	1.60	0.80	0.20	0.00	0.80	0.71	0.70
28AUG	SE	0.00	0.04	1.78	0.20	0.98	0.00	1.17	0.37	0.20	0.00	0.80	0.42	2.56
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.04	0.21	2.00	0.60	0.00	0.20	0.20	0.00	0.00	0.00	0.00	0.27
11SEP	SE	0.00	0.04	0.21	1.26	0.60	0.00	0.20	0.20	0.00	0.00	0.00	0.00	1.44
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
25SEP	SE	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	1.80	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.16
09OCT	SE	0.00	0.00	0.00	0.00	1.80	0.17	0.00	0.00	0.00	0.00	0.00	0.00	1.81
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
23OCT	SE	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-32 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
20JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	31	144	0	4	1	0	2	9	9	3	204
03JUL	SE	0	0	31	144	0	4	1	0	1	4	9	2	148
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	3	0	4	0	1	7	1	1	17	22	18	8	81
18JUL	SE	3	0	4	0	1	7	1	1	9	8	6	6	17
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	4	35	0	13	0	7	2	0	0	0	0	60
01AUG	SE	0	3	25	0	5	0	4	1	0	0	0	0	27
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	9	21	4	1	4	0	0	2	0	10	0	50
14AUG	SE	0	5	11	4	1	4	0	0	2	0	6	0	15
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	2	71	2	4	0	11	1	2	0	16	10	118
28AUG	SE	0	2	48	2	3	0	8	<0.5	2	0	16	6	52
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	2	6	18	2	0	1	<0.5	0	0	0	0	29
11SEP	SE	0	2	6	12	2	0	1	<0.5	0	0	0	0	13
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	6	0	0	0	0	0	0	0	0	0	0	6
25SEP	SE	0	4	0	0	0	0	0	0	0	0	0	0	4
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	5	2	0	0	0	0	0	0	7
09OCT	SE	0	0	0	0	5	2	0	0	0	0	0	0	5
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	1	0	0	0	0	0	0	0	1
23OCT	SE	0	0	0	0	1	0	0	0	0	0	0	0	1
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-33 REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	1.72	5.40	3.02	42.65	23.75	0.00	0.00	NS	NS	NS	NS	NS	NS	10.94
14MAR	SE	0.76	2.64	2.78	21.31	7.42	0.00	0.00							22.91
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	1.49	0.10	14.35	15.61	18.41	0.10	0.00	NS	NS	NS	NS	NS	NS	7.15
27MAR	SE	0.70	0.10	3.03	5.02	14.82	0.10	0.00							15.95
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.22	0.52	7.84	28.09	8.18	2.63	3.93	1.69	0.00	1.12	0.00	0.00	4.17
12APR	SE	0.00	0.22	0.17	3.62	12.41	4.95	1.88	1.70	0.74	0.00	0.76	0.00	0.00	14.11
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	1.37	5.85	4.61	17.34	8.34	6.97	7.30	4.66	0.59	3.45	2.59	0.61	4.90
19APR	SE	0.00	0.73	2.28	1.14	11.78	4.37	4.29	1.96	0.57	0.59	1.40	0.59	0.61	13.80
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	3.98	5.84	1.36	2.87	0.52	1.41	1.16	0.74	0.88	0.33	0.45	0.00	1.50
26APR	SE	0.00	1.80	1.17	0.79	0.68	0.52	0.69	0.26	0.42	0.88	0.33	0.45	0.00	2.79
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	1.57	2.08	0.00	3.45	2.48	1.78	1.42	1.82	2.98	0.92	0.00	0.00	1.42
04MAY	SE	0.00	0.95	1.21	0.00	2.17	1.40	0.71	0.99	0.64	1.50	0.92	0.00	0.00	3.75
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	2.03	5.03	2.39	6.49	0.58	0.63	0.79	2.31	1.18	13.42	1.27	0.00	0.00	2.78
11MAY	SE	1.18	2.24	0.96	1.46	0.37	0.41	0.67	1.05	0.65	12.09	0.67	0.00	0.00	12.59
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.64	4.01	4.55	0.76	1.38	0.00	0.68	0.53	1.25	0.80	0.00	0.00	0.00	1.12
18MAY	SE	0.64	2.31	1.24	0.47	1.38	0.00	0.43	0.53	0.63	0.80	0.00	0.00	0.00	3.31
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.00	0.21	0.19	0.13	0.45	2.42	0.70	0.00	0.30	2.37	0.00	0.00	0.52
25MAY	SE	0.00	0.00	0.21	0.19	0.13	0.31	1.28	0.54	0.00	0.30	1.48	0.00	0.00	2.10
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	1.26	0.71	1.33	2.46	3.01	0.29	0.39	0.00	0.81	0.00	0.00	0.79
01JUN	SE	0.00	0.00	0.73	0.71	0.87	1.98	1.30	0.29	0.22	0.00	0.81	0.00	0.00	2.86
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.00	0.00	0.53	0.44	0.11	0.61	1.43	1.04	0.61	1.26	0.66	0.00	0.51
08JUN	SE	0.00	0.00	0.00	0.34	0.40	0.11	0.47	1.29	1.04	0.61	0.78	0.66	0.00	2.16
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-33 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.31	0.00	0.12	0.00	0.37	0.00	0.50	0.00	7.52	0.00	0.00	0.68
14JUN	SE	0.00	0.00	0.31	0.00	0.12	0.00	0.22	0.00	0.50	0.00	7.20	0.00	0.00	7.23
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.24	0.00	0.00	0.58	0.00	0.00	0.69	1.67	3.42	0.00	0.51
22JUN	SE	0.00	0.00	0.00	0.24	0.00	0.00	0.42	0.00	0.00	0.69	1.09	1.72	0.00	2.20
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.45	1.16	0.00	1.06	3.85	0.52
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.30	0.82	0.00	0.53	1.20	1.58
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.12	0.60	0.00	0.45	0.00	0.12
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.12	0.60	0.00	0.45	0.00	0.88
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	NS	NS	NS	NS	NS	0.02
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00						0.05
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	1.33	0.28	NS	NS	NS	NS	NS	0.20
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.86	0.28						0.90
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	NS	NS	NS	NS	NS	0.04
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00						0.22
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.61	0.00	0.00	0.16	0.00	NS	NS	NS	NS	NS	0.10
29AUG	SE	0.00	0.00	0.00	0.61	0.00	0.00	0.11	0.00						0.62
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	NS	NS	NS	NS	NS	0.09
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76						0.76
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.04	0.00	0.05	0.00	NS	NS	NS	NS	NS	0.01
25SEP	SE	0.00	0.00	0.00	0.00	0.04	0.00	0.05	0.00						0.06
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.69	0.00	1.87	0.97	0.00	0.53	0.00	NS	NS	NS	NS	NS	0.51
09OCT	SE	0.00	0.69	0.00	1.41	0.46	0.00	0.25	0.00						1.66
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-34 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	360	1239	973	6301	4947	0	0	NS	NS	NS	NS	NS	NS	13821
14MAR	SE	158	606	894	3149	1546	0	0							3674
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	312	24	4619	2306	3835	21	0	NS	NS	NS	NS	NS	NS	11117
27MAR	SE	146	24	976	742	3087	21	0							3325
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	51	167	1158	5852	1696	367	1173	279	0	197	0	0	10942
12APR	SE	0	51	56	534	2585	1026	263	508	123	0	134	0	0	2896
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	315	1882	681	3613	1729	974	2175	771	83	608	416	44	13291
19APR	SE	0	167	734	168	2454	906	600	584	95	83	246	94	44	2868
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	914	1879	201	598	107	198	346	122	125	59	72	0	4620
26APR	SE	0	413	378	117	141	107	96	77	69	125	59	72	0	634
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	360	668	0	719	515	249	424	302	421	162	0	0	3822
04MAY	SE	0	218	389	0	452	291	100	296	106	212	162	0	0	817
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	425	1155	770	958	121	132	111	689	195	1899	224	0	0	6678
11MAY	SE	247	514	308	216	77	86	94	312	107	1711	118	0	0	1881
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	134	920	1464	112	288	0	95	159	207	114	0	0	0	3492
18MAY	SE	134	530	399	69	288	0	61	159	104	114	0	0	0	774
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	0	67	28	27	94	338	207	0	43	417	0	0	1221
25MAY	SE	0	0	67	28	27	65	178	162	0	43	261	0	0	372
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	407	104	277	511	421	85	64	0	143	0	0	2013
01JUN	SE	0	0	236	104	180	411	181	85	37	0	143	0	0	575
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	79	92	24	85	425	171	87	223	105	0	1291
08JUN	SE	0	0	0	51	82	24	66	384	171	87	137	105	0	478
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-34 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	101	0	24	0	52	0	83	0	1325	0	0	1585
14JUN	SE	0	0	101	0	24	0	30	0	83	0	1269	0	0	1276
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	35	0	0	81	0	0	97	295	550	0	1058
22JUN	SE	0	0	0	35	0	0	58	0	0	97	192	276	0	357
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	27	0	75	163	0	170	274	710
29JUN	SE	0	0	0	0	0	0	22	0	49	116	0	85	85	176
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	93	0	0	20	85	0	72	0	269
03JUL	SE	0	0	0	0	0	93	0	0	20	85	0	72	0	146
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	19	0	NS	NS	NS	NS	NS	19
19JUL	SE	0	0	0	0	0	0	6	0						6
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	186	83	NS	NS	NS	NS	NS	269
02AUG	SE	0	0	0	0	0	0	120	83						145
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	46	0	NS	NS	NS	NS	NS	46
17AUG	SE	0	0	0	0	0	0	31	0						31
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	90	0	0	22	0	NS	NS	NS	NS	NS	112
29AUG	SE	0	0	0	90	0	0	15	0						91
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	226	NS	NS	NS	NS	NS	226
11SEP	SE	0	0	0	0	0	0	0	226						226
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	8	0	7	0	NS	NS	NS	NS	NS	15
25SEP	SE	0	0	0	0	8	0	7	0						11
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	158	0	277	202	0	73	0	NS	NS	NS	NS	NS	710
09OCT	SE	0	158	0	209	95	0	34	0						281
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-35 REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
0JUL-	DENSITY	0.00	0.00	0.00	0.74	0.01	0.00	0.15	0.03	0.09	1.08	1.88	1.06	0.18	0.40
5JUL	SE	0.00	0.00	0.00	0.29	0.01	0.00	0.07	0.03	0.04	0.59	0.70	0.66	0.09	1.17
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
2JUL-	DENSITY	0.00	0.00	0.03	0.00	0.00	0.00	0.29	0.00	0.02	0.03	2.33	0.03	1.62	0.33
7JUL	SE	0.00	0.00	0.02	0.00	0.00	0.00	0.08	0.00	0.02	0.03	1.17	0.03	0.91	1.48
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
5AUG-	DENSITY	0.00	0.00	0.00	0.06	0.00	0.00	0.08	0.00	0.00	0.15	1.22	0.40	2.65	0.35
0AUG	SE	0.00	0.00	0.00	0.04	0.00	0.00	0.05	0.00	0.00	0.12	0.88	0.22	1.04	1.38
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG-	DENSITY	0.00	0.00	0.00	0.00	0.01	0.00	0.12	0.00	0.02	0.00	0.08	0.03	1.25	0.12
4AUG	SE	0.00	0.00	0.00	0.00	0.01	0.00	0.12	0.00	0.02	0.00	0.04	0.03	0.79	0.80
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
3SEP-	DENSITY	0.00	0.00	0.00	0.08	0.20	0.79	0.35	0.00	0.18	0.68	1.14	1.79	0.20	0.42
7SEP	SE	0.00	0.00	0.00	0.04	0.18	0.79	0.11	0.00	0.03	0.41	0.48	0.40	0.13	1.12
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
7SEP-	DENSITY	0.00	0.00	0.13	0.18	0.19	0.00	0.27	0.06	0.17	2.11	0.16	0.79	0.86	0.38
1SEP	SE	0.00	0.00	0.13	0.07	0.14	0.00	0.16	0.06	0.12	0.93	0.06	0.50	0.22	1.12
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
1OCT-	DENSITY	0.00	0.00	1.42	2.36	0.11	0.00	0.47	0.06	0.28	0.11	0.39	0.09	4.60	0.76
5OCT	SE	0.00	0.00	0.45	0.51	0.06	0.00	0.15	0.06	0.16	0.06	0.08	0.05	2.83	2.92
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-	DENSITY	0.00	0.05	0.47	0.23	0.68	0.02	1.31	0.00	0.26	0.57	3.32	0.18	0.48	0.58
7OCT	SE	0.00	0.03	0.17	0.10	0.67	0.02	0.69	0.00	0.22	0.26	1.68	0.08	0.15	1.98
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-36 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	110	3	0	20	10	15	153	332	171	13	827
15JUL	SE	0	0	0	43	2	0	10	10	7	84	123	106	7	189
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	9	0	0	0	40	0	3	4	410	4	115	586
27JUL	SE	0	0	6	0	0	0	11	0	3	4	206	4	65	216
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	9	0	0	11	0	0	21	215	65	189	509
10AUG	SE	0	0	0	5	0	0	7	0	0	17	155	35	74	176
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	0	0	2	0	16	0	4	0	14	5	89	130
24AUG	SE	0	0	0	0	2	0	16	0	4	0	7	5	56	60
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	0	12	42	164	48	0	30	96	201	288	14	896
07SEP	SE	0	0	0	7	37	164	16	0	5	58	85	64	9	208
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	42	27	39	0	38	18	28	298	29	128	61	707
21SEP	SE	0	0	42	11	30	0	22	18	20	131	11	80	16	167
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	457	348	24	0	65	18	46	15	69	15	327	1384
05OCT	SE	0	0	146	76	13	0	21	18	26	9	14	8	201	264
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	12	150	34	142	4	184	0	42	80	585	29	34	1298
17OCT	SE	0	6	54	15	139	4	96	0	36	37	297	13	11	350
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-37 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF WHITE PERCH YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	1.33	3.18	3.86	3.00	7.00	3.67	1.50	12.25	8.25	3.73	7.42	3.00	4.85
20JUN	SE	1.33	0.72	1.60	1.73	3.00	2.33	0.80	6.42	3.35	0.98	1.51	1.60	9.01
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.36	1.14	2.67	11.33	5.67	1.75	3.00	2.63	13.47	1.05	1.33	3.70
03JUL	SE	0.00	0.36	0.51	1.76	9.40	2.33	0.49	1.48	1.07	3.27	0.34	0.61	10.59
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	1.33	0.09	1.29	1.00	1.00	2.00	0.13	1.50	8.50	1.80	1.58	2.33	1.88
18JUL	SE	1.33	0.09	0.52	0.58	0.58	2.00	0.13	1.36	1.80	1.06	0.46	0.80	3.72
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.42	1.00	0.00	3.40	0.33	3.40	7.20	1.80	0.33	2.50	1.71	1.84
01AUG	SE	0.00	0.22	1.00	0.00	1.63	0.33	2.23	3.80	0.97	0.17	1.61	1.55	5.40
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	2.79	0.00	0.20	0.50	0.00	1.20	0.00	0.00	0.10	0.00	0.40
14AUG	SE	0.00	0.00	1.63	0.00	0.20	0.50	0.00	0.80	0.00	0.00	0.10	0.00	1.90
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.21	1.21	0.20	0.60	0.00	0.40	0.00	0.00	0.22	2.20	0.00	0.42
28AUG	SE	0.00	0.17	0.95	0.20	0.40	0.00	0.40	0.00	0.00	0.15	1.89	0.00	2.21
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.07	2.60	0.80	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.31
11SEP	SE	0.00	0.00	0.07	1.78	0.80	0.00	0.20	0.00	0.00	0.00	0.00	0.00	1.96
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.01
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.11
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
09OCT	SE	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-38 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	10	145	104	28	18	39	11	15	71	66	146	41	693
20JUN	SE	10	33	43	16	8	25	6	8	29	17	30	22	81
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	17	31	25	30	60	12	4	23	236	21	18	476
03JUL	SE	0	17	14	16	25	25	3	2	9	57	7	8	74
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	10	4	35	9	3	21	1	2	73	32	31	32	252
18JUL	SE	10	4	14	5	2	21	1	2	16	19	9	11	40
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	19	27	0	9	4	24	9	15	6	49	23	185
01AUG	SE	0	10	27	0	4	4	16	5	8	3	32	21	52
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	75	0	1	5	0	1	0	0	2	0	84
14AUG	SE	0	0	44	0	1	5	0	1	0	0	2	0	44
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	9	33	2	2	0	3	0	0	4	43	0	96
28AUG	SE	0	8	26	2	1	0	3	0	0	3	37	0	46
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	2	24	2	0	1	0	0	0	0	0	29
11SEP	SE	0	0	2	16	2	0	1	0	0	0	0	0	17
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	2	0	0	2
25SEP	SE	0	0	0	0	0	0	0	0	0	2	0	0	2
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	2	0	0	0	0	0	0	0	0	0	2
09OCT	SE	0	0	2	0	0	0	0	0	0	0	0	0	2
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-39 REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH OLDER-THAN-YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.76	36.61	5.22	84.43	21.84	0.11	0.25	NS	NS	NS	NS	NS	NS	21.32
14MAR	SE	0.76	19.66	3.44	46.44	3.81	0.11	0.25							50.69
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	1.00	3.42	16.59	21.08	9.03	0.10	2.23	NS	NS	NS	NS	NS	NS	7.64
27MAR	SE	0.45	1.51	1.51	3.56	3.99	0.10	0.88							5.84
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	3.15	5.77	4.12	10.03	15.20	4.46	0.73	4.05	4.19	7.55	8.44	12.52	5.14	6.57
12APR	SE	1.62	1.29	0.94	4.83	7.64	2.70	0.66	2.17	2.06	3.09	2.07	9.64	2.78	14.76
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.31	2.34	2.77	2.00	4.22	0.10	1.27	2.62	8.43	2.14	7.04	15.49	2.17	3.91
19APR	SE	0.31	1.09	1.39	0.66	2.09	0.10	1.23	0.04	2.92	1.04	2.00	5.00	1.50	7.10
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	9.21	1.21	1.11	1.22	0.09	2.78	1.87	2.53	0.00	1.02	0.43	0.58	1.70
26APR	SE	0.00	4.04	0.28	0.48	0.94	0.09	1.34	1.10	1.14	0.00	0.64	0.43	0.58	4.77
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.12	0.74	0.75	2.33	0.19	2.83	0.00	0.90	3.71	2.55	9.91	8.60	2.51
04MAY	SE	0.00	0.12	0.46	0.46	1.58	0.19	0.96	0.00	0.57	2.63	1.28	6.35	3.48	8.08
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	1.35	6.98	0.17	1.52	0.00	0.35	1.54	8.59	38.12	9.70	17.40	0.00	0.00	6.59
11MAY	SE	0.68	2.23	0.17	0.82	0.00	0.18	0.45	3.26	23.59	7.22	11.92	0.00	0.00	27.71
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.00	2.88	1.23	0.35	1.29	0.00	1.99	1.53	2.39	1.69	2.61	6.00	0.00	1.69
18MAY	SE	0.00	1.22	0.72	0.35	0.93	0.00	0.72	0.74	1.26	1.30	1.13	1.14	0.00	3.15
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	2.46	1.48	0.19	0.46	0.45	13.91	1.23	2.04	26.67	13.08	0.63	0.78	4.88
25MAY	SE	0.00	1.27	0.75	0.19	0.36	0.32	7.71	0.46	1.57	19.94	6.36	0.63	0.78	22.44
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	1.92	0.62	0.05	0.97	1.70	1.54	1.12	1.92	1.24	0.60	3.17	1.14
01JUN	SE	0.00	0.00	1.17	0.42	0.05	0.97	0.61	0.61	0.89	0.85	0.79	0.60	1.68	2.92
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.00	0.40	0.45	0.60	0.00	2.77	0.30	2.34	2.22	3.83	0.58	4.71	1.40
08JUN	SE	0.00	0.00	0.40	0.33	0.42	0.00	1.64	0.30	0.81	1.32	0.75	0.58	1.81	3.13
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-39 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH OLDER-THAN-YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.60	0.27	1.17	0.00	0.54	4.08	1.01	1.56	1.35	1.86	7.28	1.52
14JUN	SE	0.00	0.00	0.43	0.27	0.97	0.00	0.29	2.55	0.61	0.81	1.08	1.86	4.48	5.79
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.09	0.78	0.99	0.04	0.70	1.79	1.01	1.19	1.03	1.30	1.34	14.19	1.88
22JUN	SE	0.00	0.09	0.48	0.50	0.04	0.60	0.90	0.84	0.65	0.78	0.02	0.96	13.17	13.34
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.34	1.94	0.28	0.24	0.00	1.79	2.92	0.27	1.82	0.32	0.62	9.02	1.50
29JUN	SE	0.00	0.27	1.04	0.28	0.17	0.00	0.67	1.70	0.27	0.81	0.32	0.62	6.37	6.81
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.24	0.00	0.00	0.08	0.17	0.12	0.25	4.52	1.87	0.57	0.60
03JUL	SE	0.00	0.00	0.00	0.24	0.00	0.00	0.05	0.17	0.12	0.25	0.91	0.94	0.57	1.48
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.80	0.27	0.00	0.18	0.12	0.00	0.37	0.00	NS	NS	NS	NS	NS	0.22
19JUL	SE	0.46	0.27	0.00	0.18	0.12	0.00	0.17	0.00						0.60
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.89	0.32	0.16	0.53	0.00	3.00	0.00	NS	NS	NS	NS	NS	0.61
02AUG	SE	0.00	0.67	0.19	0.16	0.42	0.00	2.03	0.00						2.19
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.67	0.58	1.12	0.71	0.00	0.70	0.81	NS	NS	NS	NS	NS	0.57
17AUG	SE	0.00	0.43	0.58	0.37	0.60	0.00	0.42	0.81						1.35
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.54	0.27	0.00	0.76	0.95	NS	NS	NS	NS	NS	0.32
29AUG	SE	0.00	0.00	0.00	0.35	0.16	0.00	0.72	0.74						1.11
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.65	0.12	0.04	0.24	NS	NS	NS	NS	NS	0.13
11SEP	SE	0.00	0.00	0.00	0.00	0.65	0.12	0.04	0.24						0.70
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.38	0.72	0.69	0.00	0.05	0.78	NS	NS	NS	NS	NS	0.33
25SEP	SE	0.00	0.00	0.38	0.72	0.54	0.00	0.05	0.78						1.25
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.10	0.35	2.08	0.26	0.00	0.00	0.22	NS	NS	NS	NS	NS	0.38
09OCT	SE	0.00	0.10	0.20	1.40	0.22	0.00	0.00	0.22						1.45
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-40 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH OLDER-THAN-YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	158	8400	1680	12473	4551	22	35	NS	NS	NS	NS	NS	NS	27320
14MAR	SE	158	4510	1107	6861	794	22	35							8324
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	210	784	5339	3115	1882	21	311	NS	NS	NS	NS	NS	NS	11662
27MAR	SE	95	346	486	526	831	21	122							1161
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	659	1325	1325	1482	3166	926	103	1208	693	1069	1487	2012	365	15820
12APR	SE	338	296	303	714	1591	561	92	646	342	438	365	1549	198	2637
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	65	536	890	296	880	20	178	781	1395	303	1242	2490	154	9228
19APR	SE	65	249	446	97	435	20	172	13	484	147	352	804	107	1238
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	2114	390	164	255	19	389	557	418	0	180	69	41	4597
26APR	SE	0	926	90	71	195	19	188	327	189	0	114	69	41	1052
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	28	239	111	486	39	396	0	150	524	450	1593	612	4627
04MAY	SE	0	28	148	68	329	39	135	0	95	372	226	1020	248	1207
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	282	1601	55	225	0	72	215	2562	6308	1373	3068	0	0	15762
11MAY	SE	141	512	55	121	0	37	63	971	3904	1021	2102	0	0	4685
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	0	662	395	52	269	0	278	455	395	240	459	964	0	4168
18MAY	SE	0	279	233	52	195	0	100	220	209	184	199	182	0	618
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	565	476	28	96	93	1944	368	338	3773	2305	101	56	10143
25MAY	SE	0	291	240	28	74	66	1078	138	260	2821	1121	101	56	3260
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	618	92	10	202	238	458	185	272	218	97	225	2615
01JUN	SE	0	0	378	62	10	202	85	182	147	120	138	97	119	554
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	130	67	124	0	388	88	387	314	675	93	335	2602
08JUN	SE	0	0	130	49	87	0	230	88	134	187	132	93	129	428
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-40 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH OLDER-THAN-YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	194	40	243	0	75	1218	166	221	239	299	518	3214
14JUN	SE	0	0	137	40	203	0	41	760	101	114	190	299	319	944
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	22	251	146	8	146	250	301	198	145	229	215	1009	2920
22JUN	SE	0	22	155	74	8	124	125	249	108	111	4	154	937	1024
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	78	623	41	49	0	251	871	45	258	57	99	642	3014
29JUN	SE	0	63	334	41	36	0	94	508	45	115	57	99	453	786
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	35	0	0	12	51	20	35	796	301	41	1291
03JUL	SE	0	0	0	35	0	0	7	51	20	35	160	151	41	236
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	167	62	0	27	24	0	51	0	NS	NS	NS	NS	NS	333
19JUL	SE	97	62	0	27	24	0	24	0						123
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	205	103	24	110	0	419	0	NS	NS	NS	NS	NS	861
02AUG	SE	0	154	61	24	87	0	283	0						340
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	153	186	166	148	0	98	240	NS	NS	NS	NS	NS	991
17AUG	SE	0	98	186	55	125	0	58	240						352
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	80	56	0	106	283	NS	NS	NS	NS	NS	526
29AUG	SE	0	0	0	52	32	0	101	221						251
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	135	25	6	73	NS	NS	NS	NS	NS	239
11SEP	SE	0	0	0	0	135	25	6	73						156
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	121	106	144	0	6	232	NS	NS	NS	NS	NS	610
25SEP	SE	0	0	121	106	112	0	6	232						304
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	22	114	307	54	0	0	65	NS	NS	NS	NS	NS	562
09OCT	SE	0	22	66	207	46	0	0	65						232
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-41 REGIONAL DENSITY (NO./1,000m3) OF WHITE PERCH OLDER-THAN-YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.51	1.35	2.82	3.20	0.12	0.02	0.26	0.65	0.26	0.85	2.37	2.47	1.18	1.23
15JUL	SE	0.45	0.69	0.40	0.46	0.05	0.02	0.06	0.33	0.16	0.33	0.76	0.94	0.35	1.70
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.80	1.80	1.42	0.31	0.03	1.91	0.40	0.68	4.01	3.09	2.10	5.67	1.71
27JUL	SE	0.00	0.50	0.49	0.38	0.14	0.03	1.08	0.14	0.46	1.23	0.87	0.63	2.25	3.13
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.16	1.50	2.96	3.31	0.13	0.00	0.90	1.55	0.37	1.73	1.61	0.98	6.13	1.64
10AUG	SE	0.08	0.35	0.43	0.67	0.08	0.00	0.28	1.23	0.15	0.80	0.52	0.48	1.33	2.30
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	0.08	1.65	3.93	1.30	0.34	0.12	0.23	0.16	0.56	1.07	4.19	1.68	9.68	1.92
24AUG	SE	0.05	0.50	0.75	0.36	0.09	0.05	0.12	0.10	0.15	0.36	1.61	0.40	4.21	4.65
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.00	1.01	2.71	1.71	1.07	0.02	0.72	0.00	0.25	2.04	3.19	10.24	3.38	2.02
07SEP	SE	0.00	0.65	0.63	0.41	0.76	0.02	0.21	0.00	0.18	0.65	0.93	3.50	0.86	3.99
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.09	3.19	1.53	0.44	0.00	0.33	0.03	0.17	1.37	0.74	2.71	1.70	0.95
21SEP	SE	0.00	0.09	0.57	0.50	0.20	0.00	0.08	0.03	0.12	0.76	0.17	0.54	0.54	1.35
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.00	0.80	7.03	5.40	0.19	0.75	0.23	0.03	0.14	0.49	3.09	3.44	6.62	2.17
05OCT	SE	0.00	0.24	1.19	1.09	0.12	0.74	0.07	0.03	0.06	0.22	0.85	1.25	1.84	2.99
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	0.23	2.26	4.47	0.58	0.08	0.02	1.07	0.04	0.85	1.32	2.76	1.21	3.84	1.44
17OCT	SE	0.12	0.72	0.81	0.24	0.05	0.02	0.57	0.04	0.55	0.39	0.66	0.51	0.98	1.91
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-42 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH OLDER-THAN-YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	106	309	908	473	25	3	36	194	42	120	419	397	84	3115
15JUL	SE	93	159	128	68	10	3	8	99	27	46	135	150	25	331
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	183	578	209	64	6	267	119	113	567	544	338	404	3394
27JUL	SE	0	115	156	57	28	6	150	41	77	174	154	102	160	402
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	33	343	951	489	27	0	126	463	62	245	285	157	436	3616
10AUG	SE	17	80	137	98	16	0	39	368	25	113	91	77	95	457
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	17	379	1265	192	71	24	32	47	93	152	739	270	689	3968
24AUG	SE	11	115	242	53	18	10	17	30	24	51	285	64	300	504
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	231	874	252	222	3	100	0	41	288	562	1646	240	4460
07SEP	SE	0	150	203	61	157	3	29	0	29	92	163	562	61	670
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	21	1027	226	93	0	46	10	28	193	130	435	121	2330
21SEP	SE	0	21	183	74	42	0	11	10	19	108	31	86	38	251
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	184	2261	798	39	156	33	9	23	69	545	553	471	5142
05OCT	SE	0	56	384	161	25	153	10	9	10	31	151	201	131	531
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	48	518	1440	86	18	4	150	11	141	187	487	195	273	3556
17OCT	SE	26	164	260	35	10	4	79	11	90	55	116	82	69	373
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-43 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF WHITE PERCH OLDER-THAN-YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	7.67	6.27	1.57	6.67	2.00	0.33	2.38	5.25	7.13	3.07	8.74	1.42	4.37
20JUN	SE	4.18	1.45	0.53	3.28	1.15	0.33	0.91	1.42	3.14	0.96	1.91	0.67	7.05
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	1.00	0.91	1.29	1.00	3.33	2.00	2.00	4.13	6.50	15.80	2.11	2.50	3.55
03JUL	SE	0.58	0.31	0.84	1.00	0.33	1.00	0.63	1.51	1.73	3.50	0.92	1.22	4.85
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	3.00	2.36	1.43	3.00	1.33	1.33	0.00	1.00	9.88	1.60	3.32	9.75	3.17
18JUL	SE	1.53	1.18	0.43	1.15	0.88	1.33	0.00	0.73	2.63	0.54	1.31	3.76	5.60
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	7.20	2.92	2.86	0.00	2.40	0.67	2.40	3.60	1.60	0.11	1.30	2.57	2.30
01AUG	SE	2.99	0.76	2.02	0.00	1.03	0.67	1.50	1.47	1.12	0.11	0.91	1.93	5.03
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.40	1.54	6.71	0.40	0.40	1.17	0.00	1.20	0.40	0.11	0.10	0.00	1.04
14AUG	SE	0.40	0.61	3.82	0.24	0.40	1.17	0.00	0.80	0.24	0.11	0.10	0.00	4.18
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	3.00	0.33	3.21	0.00	1.40	0.17	1.40	0.00	0.00	0.00	2.00	0.29	0.98
28AUG	SE	0.77	0.18	2.55	0.00	1.40	0.17	0.93	0.00	0.00	0.00	1.26	0.18	3.41
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.20	0.21	0.07	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.06
11SEP	SE	0.20	0.21	0.07	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.37
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	4.00	0.42	0.07	0.00	0.00	0.00	0.00	0.20	0.40	0.11	0.00	0.00	0.43
25SEP	SE	2.92	0.17	0.07	0.00	0.00	0.00	0.00	0.20	0.40	0.11	0.00	0.00	2.96
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
09OCT	SE	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.40	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
23OCT	SE	0.24	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-44 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE PERCH OLDER-THAN-YEARLING IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	58	285	42	61	5	4	17	7	61	54	172	19	785
20JUN	SE	31	66	14	30	3	4	6	2	27	17	38	9	95
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	8	41	35	9	9	21	14	5	56	277	41	34	551
03JUL	SE	4	14	23	9	1	11	4	2	15	61	18	17	75
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	23	107	38	28	4	14	0	1	85	28	65	132	526
18JUL	SE	12	54	12	11	2	14	0	1	23	10	26	51	86
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	54	133	77	0	6	7	17	4	14	2	26	35	375
01AUG	SE	23	35	54	0	3	7	11	2	10	2	18	26	77
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	3	70	181	4	1	12	0	1	3	2	2	0	280
14AUG	SE	3	28	103	2	1	12	0	1	2	2	2	0	107
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	23	15	86	0	4	2	10	0	0	0	39	4	183
28AUG	SE	6	8	69	0	4	2	7	0	0	0	25	3	74
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	2	9	2	2	0	0	0	0	0	0	2	0	17
11SEP	SE	2	9	2	2	0	0	0	0	0	0	2	0	10
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	30	19	2	0	0	0	0	<0.5	3	2	0	0	57
25SEP	SE	22	8	2	0	0	0	0	<0.5	3	2	0	0	24
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	2	0	0	0	0	0	0	0	0	0	2
09OCT	SE	0	0	2	0	0	0	0	0	0	0	0	0	2
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	3	0	0	0	1	0	0	0	0	0	0	0	4
23OCT	SE	2	0	0	0	1	0	0	0	0	0	0	0	2
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-45 REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC TOMCOD EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0,00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0,00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0,00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0,00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11MAY	SE	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18MAY	SE	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25MAY	SE	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUN	SE	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-45 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC TOMCOD EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-46 REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC TOMCOD EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
3MAY-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-46 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC TOMCOD EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-47 REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC TOMCOD YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	111.16	32.14	22.39	1.09	9.88	0.86	NS	NS	NS	NS	NS	NS	25.36
4MAR	SE	0.00	89.75	20.43	9.72	0.84	7.85	0.77							92.90
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.87	10.86	32.03	1.28	0.19	0.49	0.00	NS	NS	NS	NS	NS	NS	6.53
7MAR	SE	0.49	6.10	11.60	1.04	0.19	0.22	0.00							13.16
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-47 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC TOMCOD YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-48 REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC TOMCOD YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	25503	10344	3308	228	2050	120	NS	NS	NS	NS	NS	NS	41553
14MAR	SE	0	20591	6575	1437	174	1628	107							21725
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	183	2492	10307	189	40	101	0	NS	NS	NS	NS	NS	NS	13313
27MAR	SE	103	1399	3733	153	40	47	0							3991
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-48 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC TOMCOD YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-49 REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC TOMCOD POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	3.03	103.91	45.62	21.51	39.94	31.19	8.30	NS	NS	NS	NS	NS	NS	36.22
14MAR	SE	1.02	34.19	10.59	3.79	5.99	8.32	1.86							37.48
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	30.49	228.55	190.74	11.70	10.13	1.02	0.24	NS	NS	NS	NS	NS	NS	67.55
27MAR	SE	11.44	113.61	62.93	3.34	5.06	0.63	0.24							130.52
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	64.38	281.47	133.19	85.32	54.80	4.78	0.86	0.76	0.00	0.00	0.00	0.43	0.50	48.19
12APR	SE	9.25	62.92	16.88	14.67	22.40	2.70	0.82	0.76	0.00	0.00	0.00	0.43	0.50	71.10
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	40.91	115.21	3.59	4.82	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	12.71
9APR	SE	19.06	71.49	0.97	1.89	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	74.02
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	268.88	340.40	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.88
6APR	SE	118.39	159.28	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	198.46
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	1.27	52.28	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.15
4MAY	SE	1.27	19.75	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.80
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	104.61	10.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.88
1MAY	SE	52.39	5.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.64
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	3.56	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32
8MAY	SE	1.79	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.91
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
3MAY-	DENSITY	0.00	0.00	0.00	0.00	5.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40
1JUN	SE	0.00	0.00	0.00	0.00	5.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.23
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-49 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC TOMCOD POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-50 REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC TOMCOD POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	633	23839	14682	3178	8322	6471	1161	NS	NS	NS	NS	NS	NS	58285
14MAR	SE	214	7844	3409	561	1248	1725	260							8838
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	6372	52433	61384	1728	2111	213	33	NS	NS	NS	NS	NS	NS	124274
27MAR	SE	2391	26066	20251	493	1054	130	33							33115
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	13456	64576	42863	12605	11416	991	120	226	0	0	0	69	35	146357
12APR	SE	1934	14435	5432	2167	4667	559	115	226	0	0	0	69	35	16385
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	8550	26431	1156	712	0	0	104	0	0	0	0	0	0	36953
19APR	SE	3983	16401	313	279	0	0	104	0	0	0	0	0	0	16883
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	56199	78094	60	0	0	0	0	0	0	0	0	0	0	134353
26APR	SE	24745	36542	60	0	0	0	0	0	0	0	0	0	0	44132
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	265	11995	143	0	0	0	0	0	0	0	0	0	0	12403
04MAY	SE	265	4532	143	0	0	0	0	0	0	0	0	0	0	4542
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	21865	2479	0	0	0	0	0	0	0	0	0	0	0	24344
11MAY	SE	10949	1185	0	0	0	0	0	0	0	0	0	0	0	11013
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	743	151	0	0	0	0	0	0	0	0	0	0	0	895
18MAY	SE	375	151	0	0	0	0	0	0	0	0	0	0	0	404
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	0	0	1090	0	0	0	0	0	0	0	0	1090
01JUN	SE	0	0	0	0	1090	0	0	0	0	0	0	0	0	1090
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-50 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC TOMCOD POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-51 REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC TOMCOD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	6.22	350.01	54.04	0.38	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.63
04MAY	SE	4.51	126.94	52.25	0.38	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	137.35
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	754.44	442.05	9.93	0.94	0.45	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.98
11MAY	SE	350.45	72.55	4.93	0.31	0.21	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	357.92
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	178.00	220.21	5.57	3.47	2.76	1.06	0.94	0.00	0.00	0.00	0.00	0.00	0.00	31.69
18MAY	SE	62.26	107.46	1.67	1.40	1.45	1.06	0.90	0.00	0.00	0.00	0.00	0.00	0.00	124.23
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	25.40	190.77	52.82	4.22	5.10	0.37	0.47	0.14	0.00	0.00	0.00	0.00	0.00	21.48
25MAY	SE	19.34	79.25	30.42	1.36	1.48	0.24	0.28	0.14	0.00	0.00	0.00	0.00	0.00	87.08
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	41.14	115.56	32.63	9.55	33.36	28.44	7.29	1.70	0.19	0.00	0.00	0.00	0.00	20.76
01JUN	SE	23.22	39.56	5.67	2.50	19.85	8.65	1.81	0.95	0.19	0.00	0.00	0.00	0.00	51.15
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	92.10	45.04	21.95	17.37	19.28	19.67	11.89	6.89	0.35	0.00	0.00	0.00	0.00	18.04
08JUN	SE	25.36	12.69	6.99	2.97	6.63	9.36	3.56	2.28	0.35	0.00	0.00	0.00	0.00	31.81
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-51 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC TOMCOD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	44.25	34.85	13.77	11.15	8.18	4.68	4.71	5.69	0.00	0.00	0.00	0.00	0.00	9.79
14JUN	SE	17.95	13.31	2.65	1.48	2.80	2.18	0.95	1.85	0.00	0.00	0.00	0.00	0.00	22.92
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	10.43	4.98	12.08	6.98	1.60	6.44	3.81	2.67	0.59	0.00	0.00	0.00	0.00	3.81
22JUN	SE	5.30	2.53	4.92	3.38	0.62	4.43	1.34	2.03	0.28	0.00	0.00	0.00	0.00	9.81
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	8.30	13.38	15.95	2.63	22.53	2.70	4.56	5.29	0.14	0.00	0.00	0.00	0.00	5.81
29JUN	SE	5.45	5.92	6.67	1.57	16.36	1.53	1.14	1.27	0.14	0.00	0.00	0.00	0.00	19.61
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	7.62	1.97	2.96	4.45	5.89	6.77	1.39	0.86	0.13	0.00	0.00	0.00	0.00	2.46
03JUL	SE	5.06	0.88	1.77	2.23	1.34	5.18	0.67	0.44	0.13	0.00	0.00	0.00	0.00	7.99
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.80	0.27	1.25	0.32	2.23	1.91	4.87	0.26	NS	NS	NS	NS	NS	1.49
19JUL	SE	0.80	0.27	0.72	0.18	0.90	0.77	1.96	0.26						2.56
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	2.19	0.09	0.51	0.74	0.51	7.84	3.57	0.51	NS	NS	NS	NS	NS	2.00
02AUG	SE	1.67	0.09	0.35	0.55	0.30	4.14	0.58	0.26						4.57
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	9.75	0.86	1.19	0.38	4.99	5.97	2.78	0.53	NS	NS	NS	NS	NS	3.31
17AUG	SE	4.14	0.86	0.69	0.22	2.24	3.16	0.90	0.53						5.87
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	1.52	0.24	3.62	3.24	0.00	NS	NS	NS	NS	NS	1.08
29AUG	SE	0.00	0.00	0.00	0.88	0.24	1.35	1.66	0.00						2.33
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	4.08	0.00	0.00	1.91	9.95	16.83	0.00	NS	NS	NS	NS	NS	4.10
11SEP	SE	0.00	2.55	0.00	0.00	1.24	5.12	3.28	0.00						6.70
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	5.76	1.43	0.17	0.85	8.38	6.51	2.53	2.64	NS	NS	NS	NS	NS	3.53
25SEP	SE	4.12	1.43	0.17	0.85	2.00	3.18	1.66	1.44						6.22
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	1.72	0.17	4.60	0.42	0.47	0.49	0.70	NS	NS	NS	NS	NS	1.07
09OCT	SE	0.00	1.72	0.17	3.52	0.23	0.23	0.49	0.38						3.99
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-52 REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC TOMCOD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	1301	80299	17391	56	114	0	0	0	0	0	0	0	0	99161
04MAY	SE	942	29123	16816	56	114	0	0	0	0	0	0	0	0	33643
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	157687	101415	3195	139	95	190	0	0	0	0	0	0	0	262720
1MAY	SE	73249	16644	1588	45	43	190	0	0	0	0	0	0	0	75134
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	37204	50520	1791	513	574	220	132	0	0	0	0	0	0	90954
8MAY	SE	13014	24654	536	206	302	220	126	0	0	0	0	0	0	27887
	NO. TOWS	6	13	15	15	12	8	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	5309	43766	16999	623	1062	76	66	42	0	0	0	0	0	67943
25MAY	SE	4042	18181	9789	201	309	49	38	42	0	0	0	0	0	21044
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	8599	26512	10500	1411	6950	5901	1019	507	31	0	0	0	0	61430
01JUN	SE	4853	9077	1823	369	4136	1794	253	283	31	0	0	0	0	11396
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	19250	10332	7063	2566	4017	4080	1662	2055	58	0	0	0	0	51084
08JUN	SE	5301	2912	2249	439	1381	1943	498	681	58	0	0	0	0	6945
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-52 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC TOMCOD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	9250	7996	4430	1647	1703	971	658	1697	0	0	0	0	0	28354
14JUN	SE	3751	3054	852	219	584	453	132	552	0	0	0	0	0	5004
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	2180	1143	3887	1031	334	1336	533	797	98	0	0	0	0	11337
22JUN	SE	1108	581	1582	500	129	919	188	605	46	0	0	0	0	2363
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	1735	3070	5131	388	4695	560	638	1577	22	0	0	0	0	17815
29JUN	SE	1138	1357	2147	232	3408	317	159	379	22	0	0	0	0	4436
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	1593	452	952	657	1227	1404	194	257	21	0	0	0	0	6757
03JUL	SE	1058	203	569	329	280	1074	94	130	21	0	0	0	0	1689
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	167	62	401	47	465	396	680	78	NS	NS	NS	NS	NS	2296
19JUL	SE	167	62	233	27	187	159	274	78						477
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	458	22	163	110	106	1626	498	153	NS	NS	NS	NS	NS	3136
02AUG	SE	349	22	112	82	63	860	81	77						947
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	2037	198	384	56	1040	1238	388	157	NS	NS	NS	NS	NS	5498
17AUG	SE	865	198	222	32	467	656	125	157						1235
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	224	50	750	452	0	NS	NS	NS	NS	NS	1476
29AUG	SE	0	0	0	130	50	281	233	0						390
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	936	0	0	397	2065	2352	0	NS	NS	NS	NS	NS	5751
11SEP	SE	0	585	0	0	258	1062	458	0						1321
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	1204	328	54	126	1746	1350	353	787	NS	NS	NS	NS	NS	5949
25SEP	SE	861	328	54	126	416	660	233	429						1309
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	396	54	680	88	97	68	209	NS	NS	NS	NS	NS	1591
09OCT	SE	0	396	54	521	48	48	68	114						673
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-53 REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC TOMCOD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
0JUL-	DENSITY	7.32	4.88	2.02	2.51	3.94	4.16	0.58	1.51	0.18	0.09	0.02	0.15	0.00	2.10
5JUL	SE	2.22	1.14	0.39	0.56	1.43	3.15	0.13	0.71	0.05	0.04	0.02	0.08	0.00	4.38
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.81	1.32	0.64	0.14	3.68	2.23	1.78	1.03	0.90	0.49	0.13	0.11	0.00	1.02
27JUL	SE	0.59	0.51	0.17	0.05	2.25	0.85	0.56	0.38	0.54	0.14	0.09	0.05	0.00	2.68
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	5.11	2.28	0.94	2.12	15.00	3.82	4.53	0.94	1.22	1.49	0.66	0.19	0.21	2.96
0AUG	SE	1.26	0.78	0.23	0.52	3.92	1.48	1.15	0.28	0.35	0.42	0.28	0.11	0.21	4.68
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG-	DENSITY	1.36	0.73	0.73	1.55	7.55	17.33	3.94	1.02	0.50	0.29	0.18	0.11	0.00	2.71
24AUG	SE	0.38	0.23	0.15	0.55	5.62	7.78	1.40	0.43	0.19	0.13	0.06	0.06	0.00	9.74
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	1.04	0.65	0.16	0.24	1.25	2.71	1.70	1.55	0.23	0.34	0.18	0.03	0.00	0.78
07SEP	SE	0.47	0.19	0.06	0.07	0.66	1.39	0.30	0.75	0.12	0.11	0.13	0.03	0.00	1.82
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.46	0.11	0.28	0.24	0.48	0.68	1.62	1.02	0.35	0.09	0.07	0.00	0.00	0.42
21SEP	SE	0.14	0.07	0.07	0.11	0.16	0.40	0.51	0.43	0.12	0.05	0.04	0.00	0.00	0.83
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.64	1.38	0.96	1.73	2.27	0.76	0.59	0.94	1.22	0.74	0.17	0.09	0.19	0.90
05OCT	SE	0.34	0.41	0.33	0.24	0.94	0.14	0.12	0.20	0.30	0.37	0.08	0.05	0.10	1.29
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	1.42	2.26	1.03	0.51	0.33	2.39	0.80	0.17	0.95	1.71	2.46	1.49	0.61	1.24
17OCT	SE	0.34	0.60	0.24	0.13	0.14	0.72	0.16	0.08	0.32	0.45	0.55	0.32	0.28	1.38
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-54 REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC TOMCOD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	1529	1120	650	371	822	862	81	449	29	12	4	25	0	5955
15JUL	SE	463	262	127	83	299	653	19	211	9	6	4	13	0	931
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	170	302	207	21	767	464	249	308	149	69	23	18	0	2747
27JUL	SE	123	116	55	7	468	176	78	114	89	20	15	8	0	556
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	1069	523	304	313	3124	793	633	281	202	210	116	31	15	7614
10AUG	SE	263	179	73	77	818	308	161	83	59	59	49	18	15	958
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	284	168	235	230	1572	3596	550	303	82	41	31	17	0	7109
24AUG	SE	80	52	50	81	1171	1614	195	129	31	19	10	9	0	2012
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	218	149	50	36	261	561	237	464	39	49	32	5	0	2100
07SEP	SE	99	44	19	11	137	287	42	224	20	16	22	5	0	408
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	97	26	91	36	100	142	227	303	57	13	12	0	0	1103
21SEP	SE	29	16	24	16	34	84	72	128	21	6	6	0	0	179
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	134	316	310	256	472	157	82	280	202	104	30	15	14	2372
05OCT	SE	70	95	106	36	196	28	16	58	50	52	14	8	7	274
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	296	518	333	75	68	496	111	50	157	243	433	240	43	3062
17OCT	SE	70	139	79	19	28	149	23	25	53	64	96	51	20	272
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-55 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF ATLANTIC TOMCOD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	2.67	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
20JUN	SE	1.20	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	1.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
03JUL	SE	1.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
18JUL	SE	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.13	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
01AUG	SE	0.00	0.09	1.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.29
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005
14AUG	SE	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.02
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.20
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-56 REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC TOMCOD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	20	21	0	0	0	0	0	0	0	0	0	0	41
20JUN	SE	9	21	0	0	0	0	0	0	0	0	0	0	23
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	8	12	0	0	0	0	0	0	0	0	0	0	20
03JUL	SE	8	6	0	0	0	0	0	0	0	0	0	0	10
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	12	0	0	0	0	0	0	0	0	0	0	12
18JUL	SE	0	9	0	0	0	0	0	0	0	0	0	0	9
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	6	46	0	0	0	0	0	0	0	0	0	52
01AUG	SE	0	4	35	0	0	0	0	0	0	0	0	0	35
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	2	0	0	0	0	0	0	0	0	0	0	2
14AUG	SE	0	2	0	0	0	0	0	0	0	0	0	0	2
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
28AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	1	0	0	0	0	0	1
25SEP	SE	0	0	0	0	0	0	1	0	0	0	0	0	1
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-57 REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC TOMCOD YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.17	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
10AUG	SE	0.11	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
07SEP	SE	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005
05OCT	SE	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	0.03	0.12	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
17OCT	SE	0.03	0.08	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-58 REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC TOMCOD YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	36	17	0	0	0	0	0	0	0	0	0	0	0	52
10AUG	SE	24	17	0	0	0	0	0	0	0	0	0	0	0	29
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	25	0	0	0	0	0	0	0	0	0	0	0	0	25
07SEP	SE	12	0	0	0	0	0	0	0	0	0	0	0	0	12
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	0	0	9	0	0	0	0	0	0	0	0	9
05OCT	SE	0	0	0	0	9	0	0	0	0	0	0	0	0	9
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	7	29	5	4	0	0	0	0	0	0	0	0	0	43
17OCT	SE	7	19	5	4	0	0	0	0	0	0	0	0	0	21
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-59 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF ATLANTIC TOMCOD YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-60 REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC TOMCOD YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
20JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
18JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
01AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
14AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
28AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-61 REGIONAL DENSITY (NO./1,000m3) OF BAY ANCHOVY EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	540.93	59.80	396.31	259.79	54.76	4.93	0.00	0.00	0.37	0.00	0.00	0.00	0.00	101.30
1JUN	SE	374.49	29.88	102.62	70.21	26.06	4.93	0.00	0.00	0.37	0.00	0.00	0.00	0.00	396.61
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	49751.42	15800.46	3400.83	1.40	3.99	0.24	4.06	0.72	20.93	0.00	0.00	0.00	0.00	5306.47
8JUN	SE	8086.85	2829.86	1288.65	0.69	2.47	0.14	3.33	0.47	16.67	0.00	0.00	0.00	0.00	8664.07
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-61 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF BAY ANCHOVY EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	24701.95	25416.33	89.16	0.51	0.00	0.72	0.52	0.00	0.00	0.00	0.00	0.00	0.00	3862.25
14JUN	SE	7588.38	12216.82	56.36	0.51	0.00	0.72	0.52	0.00	0.00	0.00	0.00	0.00	0.00	14381.84
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	19464.49	6101.35	2321.98	5.39	0.00	0.13	1.54	0.00	0.00	0.00	0.00	5.66	0.00	2146.20
22JUN	SE	6117.01	1913.74	680.51	2.77	0.00	0.13	1.49	0.00	0.00	0.00	0.00	5.66	0.00	6445.41
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	43651.27	9110.90	5786.32	1267.52	9.19	0.00	0.00	0.42	0.00	1.45	1.32	0.54	0.00	4602.22
29JUN	SE	17604.28	3001.52	642.28	185.52	4.43	0.00	0.00	0.42	0.00	1.45	1.04	0.54	0.00	17870.83
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	62646.81	103396.4	19110.06	1694.18	0.18	0.00	0.00	1.91	7.09	1.73	0.31	0.89	3.82	14374.11
03JUL	SE	13922.59	15917.45	9367.23	540.78	0.18	0.00	0.00	1.91	6.11	1.34	0.31	0.89	2.20	23135.28
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	107.68	2.08	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	13.72
19JUL	SE	107.68	2.08	0.00	0.00	0.00	0.00	0.00	0.00						107.70
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	3156.41	8629.37	1104.87	15.20	0.57	0.00	0.85	0.00	NS	NS	NS	NS	NS	1613.41
02AUG	SE	590.48	2066.67	428.24	9.05	0.57	0.00	0.49	0.00						2191.63
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	31104.57	523.47	287.94	237.75	1.21	0.64	1.47	0.26	NS	NS	NS	NS	NS	4019.66
17AUG	SE	5342.12	161.95	163.26	232.41	0.70	0.64	1.47	0.26						5352.11
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	186.72	187.64	23.38	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	49.72
29AUG	SE	47.95	46.90	8.04	0.00	0.00	0.00	0.00	0.00						67.55
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	52.72	28.78	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	10.19
11SEP	SE	23.95	28.78	0.00	0.00	0.00	0.00	0.00	0.00						37.45
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	3.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.44
25SEP	SE	3.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00						3.54
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-62 REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST.CROP	113060	13720	127538	38381	11408	1022	0	0	62	0	0	0	0	305191
1JUN	SE	78274	6855	33026	10372	5429	1022	0	0	62	0	0	0	0	86039
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST.CROP	10398677	3624946	1094425	207	832	50	568	213	3464	0	0	0	0	15123382
3JUN	SE	1690254	649228	414703	103	514	29	466	139	2758	0	0	0	0	1857536
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-62 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST.CROP	5163024	5831021	28693	75	0	149	73	0	0	0	0	0	0	11023035
14JUN	SE	1586068	2802786	18138	75	0	149	73	0	0	0	0	0	0	3220489
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST.CROP	4068324	1399773	747240	796	0	26	215	0	0	0	0	910	0	6217285
22JUN	SE	1278531	439051	218996	409	0	26	208	0	0	0	0	910	0	1369441
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST.CROP	9123678	2090225	1862104	187259	1914	0	0	126	0	204	232	87	0	13265829
29JUN	SE	3679521	688609	206692	27408	923	0	0	126	0	204	183	87	0	3749204
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST.CROP	13093988	23721230	6149836	250293	38	0	0	568	1173	245	54	143	272	43217841
03JUL	SE	2910000	3651785	3014483	79894	38	0	0	568	1010	189	54	143	157	5558518
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST.CROP	22507	477	0	0	0	0	0	0	NS	NS	NS	NS	NS	22984
19JUL	SE	22507	477	0	0	0	0	0	0						22512
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST.CROP	659730	1979753	355561	2246	119	0	119	0	NS	NS	NS	NS	NS	2997528
02AUG	SE	123418	474136	137812	1337	119	0	68	0						508951
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST.CROP	6501254	120095	92661	35125	252	133	205	77	NS	NS	NS	NS	NS	6749803
17AUG	SE	1116572	37155	52540	34335	145	133	205	77						1118951
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST.CROP	39027	43048	7524	0	0	0	0	0	NS	NS	NS	NS	NS	89599
29AUG	SE	10022	10759	2586	0	0	0	0	0						14929
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST.CROP	11019	6604	0	0	0	0	0	0	NS	NS	NS	NS	NS	17622
11SEP	SE	5007	6604	0	0	0	0	0	0						8287
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST.CROP	740	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	740
25SEP	SE	740	0	0	0	0	0	0	0						740
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-63 REGIONAL DENSITY (NO./1,000m3) OF BAY ANCHOVY YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-63 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF BAY ANCHOVY YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	91.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.04
29JUN	SE	0.00	91.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.56
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	3.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
03JUL	SE	0.00	0.00	0.00	3.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.35
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.65	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.08
17AUG	SE	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00						0.40
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-64 REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
4MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-64 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	21005	0	0	0	0	0	0	0	0	0	0	0	21005
29JUN	SE	0	21005	0	0	0	0	0	0	0	0	0	0	0	21005
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	495	0	0	0	0	0	0	0	0	0	495
03JUL	SE	0	0	0	495	0	0	0	0	0	0	0	0	0	495
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	148	0	0	0	0	0	0	NS	NS	NS	NS	NS	148
17AUG	SE	0	92	0	0	0	0	0	0						92
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-65 REGIONAL DENSITY (NO./1,000m3) OF BAY ANCHOVY POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.99	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
01JUN	SE	0.99	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.03
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	7.64	0.69	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66
08JUN	SE	6.28	0.69	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.32
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-65 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF BAY ANCHOVY POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	63.98	3.03	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	5.18
14JUN	SE	15.06	2.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	15.19
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	4262.21	916.45	419.42	47.00	1.75	0.00	0.00	0.00	0.00	0.00	0.00	48.60	0.00	438.11
22JUN	SE	1589.99	373.46	117.87	19.90	1.75	0.00	0.00	0.00	0.00	0.00	0.00	48.60	0.00	1638.35
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	1389.58	1572.55	5082.59	5295.04	2407.59	29.96	0.00	0.00	0.00	0.00	0.00	0.00	2.58	1213.84
29JUN	SE	259.70	503.12	855.83	1013.44	898.28	16.88	0.00	0.00	0.00	0.00	0.00	0.00	2.58	1699.20
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	933.35	1297.37	782.73	6169.93	5668.59	678.79	11.02	0.00	0.38	0.00	0.00	0.00	5.61	1195.98
03JUL	SE	880.11	231.83	189.87	800.73	2296.05	299.27	5.05	0.00	0.38	0.00	0.00	0.00	5.61	2620.50
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	2219.47	3752.85	655.65	81.79	123.58	19.09	39.71	4.01	NS	NS	NS	NS	NS	862.02
19JUL	SE	224.38	1116.85	56.93	31.36	63.80	11.87	10.68	4.01						1142.91
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	339.00	1625.65	1047.75	1873.06	428.51	173.65	115.85	16.46	NS	NS	NS	NS	NS	702.49
02AUG	SE	94.68	1056.19	329.57	419.34	65.96	87.28	29.54	7.06						1192.42
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	717.61	446.86	876.40	1170.22	1089.85	296.29	31.46	14.01	NS	NS	NS	NS	NS	580.34
17AUG	SE	89.93	110.06	176.34	229.00	492.53	93.28	3.31	7.30						595.89
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	182.15	184.44	1253.54	927.89	421.25	79.06	145.67	7.07	NS	NS	NS	NS	NS	400.13
29AUG	SE	31.62	23.85	300.11	160.98	106.15	19.38	50.67	2.95						362.99
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	816.70	245.39	254.47	644.58	285.24	99.37	140.91	25.48	NS	NS	NS	NS	NS	314.02
11SEP	SE	340.70	137.65	72.27	131.47	38.06	15.02	75.38	12.05						406.25
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	362.49	370.21	284.66	124.75	181.70	50.17	75.20	40.35	NS	NS	NS	NS	NS	186.19
25SEP	SE	58.64	168.64	69.85	27.81	57.40	10.26	20.37	8.24						203.50
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	170.40	78.48	103.79	157.66	150.16	74.46	40.25	14.69	NS	NS	NS	NS	NS	98.74
09OCT	SE	31.36	14.02	20.32	42.82	37.33	26.26	7.56	6.01						74.85
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-66 REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
4MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
7MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	206	0	0	0	64	0	0	0	0	0	0	0	0	271
01JUN	SE	206	0	0	0	64	0	0	0	0	0	0	0	0	216
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	1596	158	65	0	0	0	0	0	0	0	0	0	0	1818
08JUN	SE	1313	158	65	0	0	0	0	0	0	0	0	0	0	1324
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-66 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	13372	696	0	0	0	0	46	0	0	0	0	0	0	14114
14JUN	SE	3147	458	0	0	0	0	46	0	0	0	0	0	0	3180
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	890856	210253	134975	6944	365	0	0	0	0	0	0	7811	0	1251204
22JUN	SE	332327	85679	37933	2939	365	0	0	0	0	0	0	7811	0	345385
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	290439	360776	1635634	782273	501589	6216	0	0	0	0	0	0	184	3577110
29JUN	SE	54281	115425	275415	149722	187145	3501	0	0	0	0	0	0	184	386749
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	195081	297643	251892	911525	1180972	140820	1541	0	62	0	0	0	399	2979936
03JUL	SE	183953	53186	61102	118297	478351	62086	706	0	62	0	0	0	399	535789
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	463898	860980	210997	12084	25746	3961	5552	1195	NS	NS	NS	NS	NS	1584413
19JUL	SE	46898	256227	18320	4633	13292	2463	1492	1195						261525
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	70855	372958	337179	276720	89274	36024	16194	4908	NS	NS	NS	NS	NS	1204113
02AUG	SE	19790	242311	106060	61952	13741	18107	4130	2104						273370
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	149990	102520	282034	172885	227055	61467	4398	4177	NS	NS	NS	NS	NS	1004525
17AUG	SE	18797	25251	56749	33832	102611	19351	462	2177						127533
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	38072	42314	403405	137083	87762	16402	20363	2109	NS	NS	NS	NS	NS	747509
29AUG	SE	6609	5472	96578	23782	22114	4020	7083	881						102580
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	170701	56298	81893	95228	59425	20615	19698	7597	NS	NS	NS	NS	NS	511456
11SEP	SE	71211	31580	23259	19424	7930	3117	10537	3592						84753
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	75765	84933	91607	18430	37854	10407	10512	12031	NS	NS	NS	NS	NS	341540
25SEP	SE	12256	38690	22477	4109	11959	2129	2848	2458						48280
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	35616	18004	33401	23292	31284	15448	5627	4379	NS	NS	NS	NS	NS	167051
09OCT	SE	6555	3217	6538	6326	7777	5447	1057	1791						15184
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-67 REGIONAL DENSITY (NO./1,000m3) OF BAY ANCHOVY YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
8JUN	SE	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-67 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF BAY ANCHOVY YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	1.57	0.16	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.22
19JUL	SE	0.00	0.00	0.91	0.16	0.00	0.00	0.00	0.00						0.92
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	88.13	149.56	345.80	110.49	19.68	13.18	6.68	NS	NS	NS	NS	NS	91.69
02AUG	SE	0.00	28.17	54.02	101.68	22.63	8.97	5.70	3.41						121.19
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	79.54	1096.14	652.05	1145.72	552.36	115.23	62.63	18.68	NS	NS	NS	NS	NS	465.29
17AUG	SE	34.31	220.18	276.03	175.24	227.36	75.37	24.61	8.13						463.25
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	218.12	110.53	203.98	346.35	349.75	138.56	77.86	2.79	NS	NS	NS	NS	NS	180.99
29AUG	SE	40.89	72.42	25.54	73.89	85.75	15.57	39.23	2.79						148.90
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	206.20	192.18	575.15	257.53	76.97	61.17	19.21	17.14	NS	NS	NS	NS	NS	175.69
11SEP	SE	61.42	24.39	149.07	74.75	22.35	22.78	7.35	7.44						182.49
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	251.94	224.09	293.04	306.28	35.98	27.65	76.77	26.33	NS	NS	NS	NS	NS	155.26
25SEP	SE	44.06	53.59	35.79	79.18	10.31	7.03	24.83	13.06						115.35
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	25.88	35.64	65.37	237.87	116.75	28.67	31.40	23.28	NS	NS	NS	NS	NS	70.61
09OCT	SE	4.61	8.68	12.96	54.64	27.07	5.13	4.74	15.76						65.43
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-68 REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	0	0	83	0	0	0	0	0	0	0	0	83
8JUN	SE	0	0	0	0	83	0	0	0	0	0	0	0	0	83
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-68 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	506	24	0	0	0	0	NS	NS	NS	NS	NS	529
19JUL	SE	0	0	292	24	0	0	0	0						293
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	20219	48130	51087	23018	4082	1843	1991	NS	NS	NS	NS	NS	150371
02AUG	SE	0	6463	17385	15021	4715	1862	796	1018						24434
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	16624	251477	209839	169265	115076	23904	8755	5568	NS	NS	NS	NS	NS	800508
17AUG	SE	7172	50514	88831	25889	47366	15636	3440	2423						116919
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	45589	25358	65642	51168	72867	28744	10884	831	NS	NS	NS	NS	NS	301082
29AUG	SE	8547	16615	8220	10916	17865	3230	5484	831						29937
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	43098	44090	185091	38046	16035	12691	2685	5109	NS	NS	NS	NS	NS	346846
11SEP	SE	12838	5596	47972	11043	4656	4725	1027	2217						51666
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	52659	51411	94304	45248	7496	5736	10732	7850	NS	NS	NS	NS	NS	275437
25SEP	SE	9209	12294	11517	11698	2148	1458	3470	3894						23224
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	5408	8176	21035	35142	24323	5948	4389	6940	NS	NS	NS	NS	NS	111362
09OCT	SE	963	1991	4171	8073	5640	1064	663	4699						11955
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-69 REGIONAL DENSITY (NO./1,000m3) OF BAY ANCHOVY YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.00	0.17	73.87	61.51	29.61	6.82	1.35	0.84	0.00	0.00	0.00	0.00	0.00	13.40
15JUL	SE	0.00	0.06	21.20	19.91	18.56	4.94	1.30	0.42	0.00	0.00	0.00	0.00	0.00	34.88
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.45	17.79	32.69	25.94	0.78	3.55	1.37	0.47	0.00	0.00	0.03	0.00	6.39
27JUL	SE	0.00	0.29	4.92	9.13	14.05	0.75	0.93	1.37	0.47	0.00	0.00	0.03	0.00	17.57
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	10.93	42.00	213.76	243.07	30.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.54
10AUG	SE	4.25	10.09	15.96	13.95	3.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.08
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	60.43	178.58	300.90	211.28	102.88	137.41	23.71	0.06	3.29	6.92	6.62	2.12	0.00	79.55
24AUG	SE	34.00	54.78	27.52	56.04	51.85	71.79	18.45	0.06	3.29	3.31	4.25	1.45	0.00	127.59
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	15.03	98.14	206.22	140.09	15.05	37.27	44.38	14.28	2.07	3.02	4.00	13.24	0.00	45.60
07SEP	SE	8.60	40.21	47.29	41.90	4.83	8.47	31.41	12.07	1.20	1.22	1.47	6.32	0.00	83.39
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	39.49	23.10	152.52	58.10	18.06	17.70	30.73	22.09	5.95	7.55	1.11	3.14	0.00	29.20
21SEP	SE	11.83	10.92	32.83	25.25	4.83	2.52	9.08	7.30	2.91	3.77	0.56	1.63	0.00	46.54
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	28.01	34.06	22.84	22.10	0.25	7.06	5.58	0.03	0.07	0.00	0.00	0.00	0.00	9.23
05OCT	SE	6.22	20.63	5.13	7.25	0.08	4.55	3.38	0.03	0.07	0.00	0.00	0.00	0.00	23.99
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	22.96	53.12	32.95	20.28	2.81	1.70	10.33	13.65	0.55	0.54	0.00	0.00	0.00	12.22
17OCT	SE	4.18	13.80	10.13	12.45	0.61	1.62	5.87	8.46	0.51	0.54	0.00	0.00	0.00	23.98
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-70 REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	38	23772	9087	6168	1415	189	251	0	0	0	0	0	40921
15JUL	SE	0	14	6822	2941	3867	1026	182	125	0	0	0	0	0	8441
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	102	5726	4829	5405	162	496	410	78	0	0	5	0	17213
27JUL	SE	0	66	1582	1349	2927	155	130	410	78	0	0	5	0	3621
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	2285	9636	68792	35910	6294	0	0	0	0	0	0	0	0	122916
10AUG	SE	889	2315	5138	2061	668	0	0	0	0	0	0	0	0	6102
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	12630	40970	96834	31214	21434	28507	3314	19	545	979	1167	340	0	237953
24AUG	SE	7106	12567	8857	8279	10801	14893	2579	19	545	469	749	233	0	26489
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	3142	22514	66363	20696	3136	7731	6204	4259	343	427	704	2127	0	137646
07SEP	SE	1798	9224	15217	6190	1006	1757	4391	3599	198	172	260	1015	0	19892
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	8254	5301	49083	8583	3763	3673	4296	6585	985	1068	196	504	0	92291
21SEP	SE	2472	2505	10566	3731	1006	523	1269	2178	481	533	98	262	0	12090
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	5854	7814	7351	3265	52	1465	780	10	11	0	0	0	0	26603
05OCT	SE	1300	4734	1651	1071	17	944	472	10	11	0	0	0	0	5393
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	4799	12187	10603	2996	585	353	1443	4069	90	76	0	0	0	37202
17OCT	SE	873	3167	3260	1839	128	336	820	2522	85	76	0	0	0	5655
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-71 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF BAY ANCHOVY YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	5.60	6.71	1.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.19
01AUG	SE	4.85	3.66	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.17
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	9.00	7.58	9.29	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.27
14AUG	SE	4.76	2.52	4.60	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.15
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	80.40	20.25	6.86	1.40	115.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.73
28AUG	SE	75.93	9.06	3.04	1.17	115.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.81
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	9.20	4.04	2.43	29.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.74
11SEP	SE	3.22	1.80	1.85	29.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.29
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	3.80	11.21	2.93	0.00	2.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.68
25SEP	SE	2.33	6.72	0.91	0.00	2.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.50
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.21	0.00	0.20	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.07
09OCT	SE	0.00	0.00	0.21	0.00	0.20	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.50
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-72 REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
20JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
18JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	42	305	52	0	0	0	0	0	0	0	0	0	399
01AUG	SE	37	166	29	0	0	0	0	0	0	0	0	0	173
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	68	345	250	13	0	0	0	0	0	0	0	0	675
14AUG	SE	36	114	124	9	0	0	0	0	0	0	0	0	173
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	606	920	184	13	305	0	0	0	0	0	0	0	2028
28AUG	SE	572	412	82	11	305	0	0	0	0	0	0	0	772
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	69	184	65	267	1	0	0	0	0	0	0	0	586
11SEP	SE	24	82	50	267	1	0	0	0	0	0	0	0	285
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	29	509	79	0	6	0	0	0	0	0	0	0	622
25SEP	SE	18	305	24	0	6	0	0	0	0	0	0	0	307
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	6	0	1	0	0	0	3	0	0	0	10
09OCT	SE	0	0	6	0	1	0	0	0	3	0	0	0	7
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

ABLE D-73 REGIONAL DENSITY (NO./1,000m3) OF BAY ANCHOVY YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
7MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
4MAY	SE	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	17.14	8.22	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98
1MAY	SE	7.37	2.34	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.73
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	21.91	6.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.20
8MAY	SE	5.13	2.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.91
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	33.99	55.34	7.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.44
5MAY	SE	12.52	14.81	6.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.37
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-73 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF BAY ANCHOVY YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-74 REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	127	0	0	0	0	0	0	0	0	0	0	0	0	127
04MAY	SE	127	0	0	0	0	0	0	0	0	0	0	0	0	127
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	3582	1885	109	0	0	0	0	0	0	0	0	0	0	5576
11MAY	SE	1540	536	77	0	0	0	0	0	0	0	0	0	0	1632
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	4579	1546	0	0	0	0	0	0	0	0	0	0	0	6125
18MAY	SE	1072	672	0	0	0	0	0	0	0	0	0	0	0	1265
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	7105	12696	2386	0	0	0	0	0	0	0	0	0	0	22187
25MAY	SE	2617	3397	2007	0	0	0	0	0	0	0	0	0	0	4735
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-74 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-75 REGIONAL DENSITY (NO./1,000m3) OF BAY ANCHOVY YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	2.97	23.33	9.29	1.06	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.92
15JUL	SE	0.97	12.63	3.31	0.37	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.12
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.06	0.85	8.41	5.73	5.47	0.00	1.14	1.91	0.00	0.00	0.00	0.00	0.00	1.81
27JUL	SE	0.04	0.52	2.23	4.35	5.30	0.00	1.14	1.06	0.00	0.00	0.00	0.00	0.00	7.40
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.98	10.54	0.42	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96
10AUG	SE	0.56	0.90	0.20	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	6.24	1.84	1.34	3.72	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02
24AUG	SE	5.37	0.67	0.58	2.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.20
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.32	0.50	0.14	1.60	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
07SEP	SE	0.29	0.38	0.05	1.48	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.56
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	1.40	0.07	0.62	0.37	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
21SEP	SE	0.65	0.04	0.30	0.37	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	2.08	0.41	2.55	3.06	0.04	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.63
05OCT	SE	1.86	0.33	0.83	1.69	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	2.66
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	2.37	5.60	0.44	0.23	1.39	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83
17OCT	SE	1.62	2.06	0.20	0.05	0.67	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.83
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-76 REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	621	5352	2989	157	262	0	0	0	0	0	0	0	0	9382
15JUL	SE	204	2899	1065	55	131	0	0	0	0	0	0	0	0	3098
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	12	196	2706	847	1139	0	159	570	0	0	0	0	0	5628
27JUL	SE	8	119	719	643	1105	0	159	317	0	0	0	0	0	1514
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	205	2419	136	79	0	0	0	0	0	0	0	0	0	2839
10AUG	SE	117	207	63	23	0	0	0	0	0	0	0	0	0	247
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	1304	422	431	550	15	0	0	0	0	0	0	0	0	2721
24AUG	SE	1122	154	187	438	6	0	0	0	0	0	0	0	0	1229
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	67	115	45	237	43	0	0	0	0	0	0	0	0	507
07SEP	SE	60	87	15	219	14	0	0	0	0	0	0	0	0	244
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	293	16	201	55	129	0	0	0	0	0	0	0	0	694
21SEP	SE	137	8	95	55	124	0	0	0	0	0	0	0	0	215
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	434	93	821	452	9	0	5	0	0	0	0	0	0	1814
05OCT	SE	388	75	267	249	5	0	5	0	0	0	0	0	0	538
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	496	1285	143	35	289	167	0	0	0	0	0	0	0	2415
17OCT	SE	339	473	64	8	139	167	0	0	0	0	0	0	0	625
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-77 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF BAY ANCHOVY YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.67	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
20JUN	SE	0.67	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	20.33	37.09	11.43	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.90
03JUL	SE	12.67	20.11	8.03	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.17
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.45	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
18JUL	SE	0.00	0.37	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.80	4.79	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.48
01AUG	SE	0.80	2.01	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	2.17
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.20	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
14AUG	SE	0.20	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.20	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
28AUG	SE	0.20	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
25SEP	SE	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-78 REGIONAL STANDING CROP (IN THOUSANDS) OF BAY ANCHOVY YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	5	12	0	0	0	0	0	0	0	0	0	0	17
20JUN	SE	5	6	0	0	0	0	0	0	0	0	0	0	8
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	153	1685	307	18	0	0	0	0	0	0	0	0	2164
03JUL	SE	95	914	216	18	0	0	0	0	0	0	0	0	944
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	21	4	0	0	0	0	0	0	0	0	0	24
18JUL	SE	0	17	4	0	0	0	0	0	0	0	0	0	17
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	6	218	0	0	0	0	0	<0.5	0	0	0	0	224
01AUG	SE	6	91	0	0	0	0	0	<0.5	0	0	0	0	92
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	2	28	0	0	0	0	0	0	0	0	0	0	30
14AUG	SE	2	17	0	0	0	0	0	0	0	0	0	0	17
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	2	0	0	0	11	0	0	0	0	0	0	0	12
28AUG	SE	2	0	0	0	11	0	0	0	0	0	0	0	11
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	4	0	0	0	0	0	0	0	0	0	4
25SEP	SE	0	0	4	0	0	0	0	0	0	0	0	0	4
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-79 REGIONAL DENSITY (NO./1,000m3) OF AMERICAN SHAD EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59	10.52	2.41	109.37	9.45
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59	5.83	1.71	29.59	30.22
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	1.88	83.75	5.22	255.20	26.77
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.38	0.00	1.88	54.78	2.66	111.53	124.31
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	66.66	0.00	0.00	0.70	2.15	41.98	245.32	1215.63	120.96
11MAY	SE	0.00	0.00	0.00	0.00	0.00	51.45	0.00	0.00	0.70	2.15	23.86	61.15	321.51	332.16
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.00	0.00	0.00	0.00	0.53	0.00	0.23	0.00	0.00	58.54	1.32	32.13	129.72	17.11
18MAY	SE	0.00	0.00	0.00	0.00	0.53	0.00	0.23	0.00	0.00	33.19	0.74	21.57	36.90	54.12
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	5.73	31.16	2658.34	3575.41	482.37
25MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	5.73	12.93	982.30	2206.89	2415.67
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	224.08	60.98	340.64	98.60	55.72
01JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.14	28.65	321.95	70.11	344.71
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.85	0.00	5.73	56.62	236.00	218.09	39.87
08JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40	0.00	5.34	36.21	78.68	138.26	163.24
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-79 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF AMERICAN SHAD EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59	12.74	8.41	17.18	8.81	3.67
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59	4.99	5.72	10.79	8.00	15.44
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	1.32	2.77	8.88	1.02
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.95	1.49	8.88	9.06
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-80 REGIONAL STANDING CROP (IN THOUSANDS) OF AMERICAN SHAD EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST.CROP	0	0	0	0	0	0	0	0	0	83	1854	388	7782	10107
6APR	SE	0	0	0	0	0	0	0	0	0	83	1027	275	2106	2360
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST.CROP	0	0	0	0	0	0	0	595	0	267	14765	839	18157	34623
4MAY	SE	0	0	0	0	0	0	0	411	0	267	9658	427	7935	12517
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST.CROP	0	0	0	0	0	13829	0	0	115	304	7400	39431	86491	147571
1MAY	SE	0	0	0	0	0	10674	0	0	115	304	4207	9829	22875	27416
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST.CROP	0	0	0	0	111	0	32	0	0	8282	233	5165	9230	23051
8MAY	SE	0	0	0	0	111	0	32	0	0	4695	131	3467	2625	6402
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST.CROP	0	0	0	0	0	0	0	0	29	810	5493	427280	254387	687998
5MAY	SE	0	0	0	0	0	0	0	0	29	810	2279	157887	157018	222685
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
3MAY-	ST.CROP	0	0	0	0	0	0	0	0	0	31701	10750	54752	7015	104218
1JUN	SE	0	0	0	0	0	0	0	0	0	13742	5051	51748	4988	54010
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST.CROP	0	0	0	0	0	0	0	551	0	810	9982	37932	15517	64792
3JUN	SE	0	0	0	0	0	0	0	417	0	755	6384	12646	9837	17268
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-80 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF AMERICAN SHAD EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST.CROP	0	0	0	0	0	0	0	0	98	1802	1483	2761	627	6771
14JUN	SE	0	0	0	0	0	0	0	0	98	706	1008	1735	569	2204
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	45	232	445	632	1355
22JUN	SE	0	0	0	0	0	0	0	0	0	45	167	239	632	698
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-81 REGIONAL DENSITY (NO./1,000m3) OF AMERICAN SHAD YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
7MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.83	0.00	0.00	0.00	0.14
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.83	0.00	0.00	0.00	1.83
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.35	0.20	0.61	0.00	0.34	0.00	0.14
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.35	0.20	0.61	0.00	0.34	0.00	0.86
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.18	0.00	0.00	0.23	0.00	0.00	2.75	1.65	10.13	12.17	2.08
5MAY	SE	0.00	0.00	0.00	0.18	0.00	0.00	0.23	0.00	0.00	1.38	0.74	5.64	3.59	6.87
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	4.04	11.84	46.97	70.99	10.32
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	3.04	10.88	34.09	50.68	62.12
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.24	0.49	0.00	0.00	11.96	0.00	1.05
8JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.24	0.49	0.00	0.00	11.15	0.00	11.23
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-81 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF AMERICAN SHAD YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.69	10.12	3.14
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.43	10.12	28.30
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.47	0.42
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.73	2.73
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-82 REGIONAL STANDING CROP (IN THOUSANDS) OF AMERICAN SHAD YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	259	0	0	0	259
1MAY	SE	0	0	0	0	0	0	0	0	0	259	0	0	0	259
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	42	105	33	87	0	55	0	322
8MAY	SE	0	0	0	0	0	0	42	105	33	87	0	55	0	156
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	26	0	0	32	0	0	389	290	1628	866	3231
5MAY	SE	0	0	0	26	0	0	32	0	0	195	131	907	255	972
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	0	0	0	0	0	0	0	81	0	572	2086	7549	5051	15339
1JUN	SE	0	0	0	0	0	0	0	81	0	430	1919	5479	3606	6848
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	0	0	0	0	0	369	80	0	0	1922	0	2371
8JUN	SE	0	0	0	0	0	0	0	369	80	0	0	1793	0	1832
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-82 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF AMERICAN SHAD YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	4932	720	5652
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	4248	720	4308
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	389	389
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	195	195
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-83 REGIONAL DENSITY (NO./1,000m3) OF AMERICAN SHAD POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	<0.005
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.04
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	1.62	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.16
5MAY	SE	0.00	0.00	0.00	0.00	1.08	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00	1.16
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.14	3.90	1.28	11.09	18.07	35.74	5.44
1JUN	SE	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.14	3.90	1.28	10.84	18.07	28.32	35.54
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.42	0.00	0.00	0.00	3.53	0.00	0.00	44.73	79.97	9.90
3JUN	SE	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	3.09	0.00	0.00	35.81	56.76	67.18
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-83 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF AMERICAN SHAD POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.04	0.00	1.48	10.14	0.00	16.96	107.75	137.53	0.00	21.07
14JUN	SE	0.00	0.00	0.00	0.00	0.04	0.00	0.87	10.14	0.00	15.18	45.61	68.81	0.00	84.55
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.04	1.12	0.74	6.63	105.37	155.03	212.19	420.24	15.09	70.50
22JUN	SE	0.00	0.00	0.00	0.00	0.04	1.12	0.74	3.89	39.75	43.91	138.59	90.83	10.69	176.35
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.13	3.99	5.03	18.38	119.01	135.22	101.77	15.19	30.67
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.13	3.13	2.97	7.73	44.17	48.62	19.81	11.48	70.12
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	4.29	0.07	0.00	0.53	0.00	3.94	18.09	8.90	2.76
03JUL	SE	0.00	0.00	0.00	0.00	0.00	4.29	0.07	0.00	0.53	0.00	2.97	14.41	8.41	17.49
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-84 REGIONAL STANDING CROP (IN THOUSANDS) OF AMERICAN SHAD POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	6	0	0	0	0	0	0	6
8MAY	SE	0	0	0	0	0	0	6	0	0	0	0	0	0	6
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	0	338	0	59	0	0	0	0	0	0	397
5MAY	SE	0	0	0	0	224	0	59	0	0	0	0	0	0	232
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	0	0	0	0	94	0	0	40	646	182	1955	2905	2543	8364
1JUN	SE	0	0	0	0	94	0	0	40	646	182	1911	2905	2015	4075
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	0	0	87	0	0	0	585	0	0	7189	5690	13551
8JUN	SE	0	0	0	0	79	0	0	0	511	0	0	5756	4038	7050
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-84 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF AMERICAN SHAD POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	9	0	206	3023	0	2399	18995	22105	0	46738
14JUN	SE	0	0	0	0	9	0	122	3023	0	2147	8041	11060	0	14168
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	8	232	104	1977	17436	21931	37409	67546	1074	147718
22JUN	SE	0	0	0	0	8	232	104	1160	6578	6212	24433	14600	761	29900
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	27	557	1500	3042	16837	23838	16357	1081	63239
29JUN	SE	0	0	0	0	0	27	437	884	1279	6248	8572	3185	817	11222
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	891	10	0	88	0	694	2908	633	5224
03JUL	SE	0	0	0	0	0	891	10	0	88	0	524	2316	598	2607
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-85 REGIONAL DENSITY (NO./1,000m3) OF AMERICAN SHAD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
7MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-85 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF AMERICAN SHAD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	7.31	5.77	21.19	0.00	0.00	2.65
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	4.55	5.77	21.19	0.00	0.00	22.43
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	3.79	11.59	54.42	18.55	12.74	34.63	76.76	12.74	5.05	17.71
29JUN	SE	0.00	0.00	0.00	0.00	2.05	4.21	16.75	6.17	5.29	10.72	38.27	11.57	5.05	45.91
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.84	3.21	3.50	18.27	24.29	3.73	17.64	74.22	56.49	50.28	19.42
03JUL	SE	0.00	0.00	0.00	0.61	2.56	1.68	9.34	8.16	1.67	6.89	19.63	23.12	33.48	47.48
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	1.23	2.51	6.52	8.68	61.89	3.25	NS	NS	NS	NS	NS	10.51
19JUL	SE	0.00	0.00	0.61	0.72	2.50	3.49	12.57	1.47						13.40
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	1.36	0.19	1.75	3.35	3.88	1.36	19.17	0.63	NS	NS	NS	NS	NS	3.96
02AUG	SE	0.69	0.19	0.85	0.85	1.25	0.73	8.83	0.63						9.07
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.70	1.17	3.44	0.39	2.08	17.73	3.83	NS	NS	NS	NS	NS	3.67
17AUG	SE	0.00	0.70	0.70	0.93	0.26	0.89	9.49	2.43						9.93
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.50	0.33	2.08	3.85	NS	NS	NS	NS	NS	0.85
29AUG	SE	0.00	0.00	0.00	0.00	0.30	0.11	1.04	1.72						2.04
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.82	0.00	0.24	0.12	2.75	4.67	NS	NS	NS	NS	NS	1.08
11SEP	SE	0.00	0.00	0.82	0.00	0.12	0.12	0.78	1.53						1.91
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.15	0.77	0.20	0.00	0.33	1.32	NS	NS	NS	NS	NS	0.35
25SEP	SE	0.00	0.00	0.15	0.45	0.20	0.00	0.28	1.32						1.44
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.31	0.00	0.00	0.00	0.00	0.19	2.94	0.92	NS	NS	NS	NS	NS	0.54
09OCT	SE	0.31	0.00	0.00	0.00	0.00	0.11	2.17	0.20						2.21
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-86 REGIONAL STANDING CROP (IN THOUSANDS) OF AMERICAN SHAD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
4MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
7MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-86 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF AMERICAN SHAD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	59	1209	816	3735	0	0	5820
22JUN	SE	0	0	0	0	0	0	0	59	753	816	3735	0	0	3897
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	790	2404	7607	5530	2109	4899	13533	2048	359	39279
29JUN	SE	0	0	0	0	428	873	2341	1840	875	1517	6747	1860	359	7873
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	124	668	726	2554	7242	617	2496	13085	9079	3577	40170
03JUL	SE	0	0	0	90	534	348	1306	2433	276	975	3461	3716	2382	6366
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	397	370	1359	1801	8651	969	NS	NS	NS	NS	NS	13548
19JUL	SE	0	0	196	107	520	725	1757	438						2031
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	284	43	563	496	808	282	2680	188	NS	NS	NS	NS	NS	5344
02AUG	SE	144	43	274	126	261	151	1234	188						1327
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	161	378	508	81	432	2478	1141	NS	NS	NS	NS	NS	5180
17AUG	SE	0	161	226	137	53	184	1326	725						1554
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	105	69	291	1148	NS	NS	NS	NS	NS	1613
29AUG	SE	0	0	0	0	63	23	146	514						538
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	263	0	51	25	385	1393	NS	NS	NS	NS	NS	2116
11SEP	SE	0	0	263	0	26	25	109	456						539
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	47	114	41	0	46	394	NS	NS	NS	NS	NS	642
25SEP	SE	0	0	47	66	41	0	40	394						406
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	64	0	0	0	0	40	411	273	NS	NS	NS	NS	NS	789
09OCT	SE	64	0	0	0	0	23	304	61						317
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-87 REGIONAL DENSITY (NO./1,000m3) OF AMERICAN SHAD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
0JUL-	DENSITY	0.00	0.24	1.93	2.29	6.69	4.13	2.72	8.39	7.20	10.88	14.25	24.45	13.35	7.42
5JUL	SE	0.00	0.09	0.64	0.74	3.86	1.98	0.97	4.59	1.28	1.64	7.96	5.80	5.24	13.06
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
2JUL-	DENSITY	0.00	0.15	1.87	3.82	0.94	15.79	3.10	2.46	3.01	2.74	13.05	8.90	4.91	4.67
7JUL	SE	0.00	0.07	0.34	2.12	0.67	12.76	1.42	2.38	1.67	1.12	5.88	3.17	1.45	15.05
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
5AUG-	DENSITY	0.00	0.20	1.63	2.22	0.22	0.15	2.91	0.14	0.24	2.17	5.17	10.98	3.06	2.24
0AUG	SE	0.00	0.12	0.59	0.40	0.11	0.11	1.75	0.10	0.11	0.45	1.58	6.64	2.21	7.44
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG-	DENSITY	0.00	0.10	0.19	0.23	0.23	6.28	0.32	1.48	3.43	0.43	7.01	17.04	2.97	3.06
4AUG	SE	0.00	0.05	0.07	0.14	0.04	4.49	0.12	1.39	1.40	0.35	4.10	12.05	2.77	13.92
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
3SEP-	DENSITY	0.00	0.00	0.09	0.28	0.06	0.00	2.61	0.10	0.05	0.03	0.60	1.27	1.56	0.51
7SEP	SE	0.00	0.00	0.05	0.11	0.02	0.00	2.41	0.07	0.03	0.03	0.29	0.67	1.22	2.80
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
7SEP-	DENSITY	0.04	0.00	0.07	0.06	0.04	1.45	0.13	0.03	0.05	0.32	1.82	2.66	1.19	0.60
1SEP	SE	0.04	0.00	0.03	0.04	0.02	0.73	0.05	0.03	0.03	0.26	0.44	0.97	0.40	1.37
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
1OCT-	DENSITY	0.03	0.00	0.04	0.13	1.66	0.74	0.19	0.09	0.13	0.39	2.06	3.96	1.11	0.81
5OCT	SE	0.03	0.00	0.02	0.05	1.61	0.74	0.07	0.06	0.06	0.31	0.99	1.06	0.45	2.36
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-	DENSITY	0.03	0.17	0.23	0.16	0.26	0.00	0.10	0.16	3.34	1.28	1.61	2.64	1.81	0.91
7OCT	SE	0.03	0.07	0.07	0.05	0.13	0.00	0.05	0.04	2.53	0.41	0.44	0.38	0.42	2.67
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-88 REGIONAL STANDING CROP (IN THOUSANDS) OF AMERICAN SHAD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	55	621	339	1393	857	381	2501	1191	1539	2513	3930	950	16269
15JUL	SE	0	20	207	109	804	410	136	1369	212	233	1403	931	373	2416
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	34	602	565	197	3276	434	735	498	388	2300	1431	350	10807
27JUL	SE	0	16	111	313	140	2647	198	710	277	159	1037	509	103	3021
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	47	523	329	46	32	407	41	40	307	912	1764	218	4665
10AUG	SE	0	27	189	59	22	22	245	31	19	64	278	1067	157	1160
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	23	60	34	47	1304	45	441	568	61	1235	2740	211	6770
24AUG	SE	0	12	23	21	8	931	17	414	232	49	722	1937	197	2326
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	28	41	12	0	365	31	8	4	105	204	111	909
07SEP	SE	0	0	15	17	4	0	336	21	5	4	51	108	87	369
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	8	0	22	9	8	302	17	9	8	45	322	428	85	1263
21SEP	SE	8	0	11	5	4	151	7	9	5	37	77	155	29	235
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	7	0	14	19	346	153	27	27	22	54	363	636	79	1745
05OCT	SE	7	0	8	8	336	153	10	18	10	44	174	171	32	446
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	6	38	73	23	54	0	13	48	553	181	283	424	129	1825
17OCT	SE	6	16	22	7	26	0	7	12	419	58	77	62	30	438
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-89 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF AMERICAN SHAD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	21.38	4.75	2.00	42.47	3.21	0.25	6.17
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	17.94	4.19	1.13	15.72	1.18	0.18	24.28
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	1.00	17.73	21.86	19.67	13.67	644.33	138.75	68.88	53.13	59.13	65.16	22.92	93.85
03JUL	SE	1.00	9.55	7.26	5.24	7.45	579.56	62.05	19.19	11.95	20.00	20.77	8.82	584.28
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	4.33	1.27	8.14	11.67	28.67	27.67	128.13	35.88	109.13	174.80	52.68	51.00	52.78
18JUL	SE	2.03	0.38	3.43	5.17	1.45	7.84	39.63	8.53	26.33	60.45	9.67	26.77	83.11
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	6.40	12.29	7.79	4.60	28.60	58.67	48.20	36.20	47.20	64.22	29.10	22.00	30.44
01AUG	SE	5.41	3.18	3.48	2.20	7.22	23.63	22.18	4.31	15.05	20.16	5.78	9.51	43.98
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.96	4.36	8.40	9.80	24.67	22.20	17.00	6.80	13.44	34.10	2.00	11.98
14AUG	SE	0.00	0.51	1.58	3.44	2.92	7.77	7.66	7.15	2.56	2.78	11.91	1.84	18.79
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.80	0.50	1.14	7.80	27.20	35.50	31.80	16.80	14.00	15.89	26.40	23.71	16.80
28AUG	SE	0.49	0.25	0.56	4.40	9.37	12.25	8.61	7.87	6.26	5.94	11.28	15.56	28.94
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.13	6.43	1.20	16.00	23.33	15.00	29.40	15.60	8.11	10.50	11.43	11.43
11SEP	SE	0.00	0.09	4.60	1.20	10.61	6.92	3.56	8.23	5.66	3.30	3.90	6.34	19.02
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.20	0.58	2.21	0.00	8.80	6.67	16.60	19.00	8.20	9.78	1.40	5.29	6.56
25SEP	SE	0.20	0.27	1.42	0.00	2.69	5.55	6.71	12.19	2.48	4.98	0.40	3.72	16.70
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.80	0.42	3.00	5.80	1.40	6.67	2.60	3.40	7.20	2.44	1.20	2.14	3.09
09OCT	SE	0.80	0.19	1.35	5.08	0.51	3.12	1.94	1.99	5.29	1.47	0.53	0.74	8.77
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	1.40	2.08	2.71	0.80	2.60	3.83	2.40	11.60	2.20	1.89	0.20	0.43	2.68
23OCT	SE	0.98	0.58	1.54	0.20	1.08	3.45	1.75	9.39	0.86	0.59	0.20	0.43	10.45
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-90 REGIONAL STANDING CROP (IN THOUSANDS) OF AMERICAN SHAD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	152	6	17	746	63	3	987
20JUN	SE	0	0	0	0	0	0	127	5	10	276	23	2	305
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	8	805	588	181	36	6863	985	85	457	1038	1282	311	12640
03JUL	SE	8	434	195	48	20	6173	440	24	103	351	409	120	6232
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	33	58	219	108	76	295	909	44	939	3069	1037	693	7478
18JUL	SE	15	17	92	48	4	83	281	11	227	1061	190	364	1201
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	48	558	209	42	75	625	342	45	406	1127	573	299	4351
01AUG	SE	41	144	94	20	19	252	157	5	130	354	114	129	540
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	44	117	77	26	263	158	21	59	236	671	27	1698
14AUG	SE	0	23	43	32	8	83	54	9	22	49	234	25	268
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	6	23	31	72	72	378	226	21	121	279	519	322	2069
28AUG	SE	4	11	15	41	25	130	61	10	54	104	222	211	362
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	6	173	11	42	249	106	36	134	142	207	155	1262
11SEP	SE	0	4	124	11	28	74	25	10	49	58	77	86	204
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	2	27	60	0	23	71	118	24	71	172	28	72	665
25SEP	SE	2	12	38	0	7	59	48	15	21	87	8	51	136
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	6	19	81	53	4	71	18	4	62	43	24	29	414
09OCT	SE	6	9	36	47	1	33	14	2	46	26	10	10	89
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	11	95	73	7	7	41	17	14	19	33	4	6	327
23OCT	SE	7	27	41	2	3	37	12	12	7	10	4	6	66
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

'ABLE D-91 REGIONAL DENSITY (NO./1,000m3) OF AMERICAN SHAD YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
0JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
2JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
5AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
3SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
7SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
1OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-92 REGIONAL STANDING CROP (IN THOUSANDS) OF AMERICAN SHAD YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-93 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF AMERICAN SHAD YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.60	0.00	0.00	0.06
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.53	0.00	0.00	0.55
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.08
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-94 REGIONAL STANDING CROP (IN THOUSANDS) OF AMERICAN SHAD YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	1	0	0	11	0	0	11
20JUN	SE	0	0	0	0	0	0	1	0	0	9	0	0	9
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
18JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
01AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
14AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
28AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	1	0	0	0	0	1
25SEP	SE	0	0	0	0	0	0	0	1	0	0	0	0	1
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-95 REGIONAL DENSITY (NO./1,000m3) OF ALOSA SPP. EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
7MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.78	0.29
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.37	2.37
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	650.59	50.07
6APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	258.89	258.89
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.42	0.00	0.00	0.00	0.00	0.00	0.00	1.23	0.00	109.61	124.00	2.24	212.91	34.65
4MAY	SE	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.00	100.66	90.78	1.59	106.59	172.45
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.47	17.73	0.86	2.16	202.84	241.25	35.81
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.47	12.34	0.86	2.16	94.09	67.59	116.53
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.17	0.00	0.00	0.17	1.78	1.67	6.23	199.33	36.51	94.11	2791.23	240.86
3MAY	SE	0.00	0.00	0.17	0.00	0.00	0.17	0.71	1.47	3.71	74.61	25.22	71.83	647.43	656.16
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.01	37.77	199.27	458.26	51758.37	14290.71	5141.80
MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.80	20.75	81.62	125.43	28774.90	3430.84	28979.20
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.14	3.87	385.76	343.70	6571.00	3844.39	858.07
JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.45	2.87	142.21	223.78	5992.02	3626.15	7008.82
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
JUN-	DENSITY	0.00	0.00	0.00	0.00	1.69	0.11	0.00	2.32	0.38	5.69	11.38	468.27	1866.16	181.23
JUN	SE	0.00	0.00	0.00	0.00	1.55	0.11	0.00	1.53	0.38	3.35	8.44	186.19	354.62	400.63
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-95 REGIONAL DENSITY (NO./1,000m3) OF ALOSA SPP. EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.17	8.67	6.00	2.34	3219.84	249.03
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.17	4.11	5.08	2.34	2623.75	2623.75
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.88	0.82
22JUN	SE	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.86	6.91
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.02
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.32
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.01
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.12
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-96 REGIONAL STANDING CROP (IN THOUSANDS) OF ALOSA SPP. EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	269	269
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	169	169
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST.CROP	0	0	0	0	0	0	0	0	0	53	0	0	46289	46342
26APR	SE	0	0	0	0	0	0	0	0	0	53	0	0	18420	18420
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST.CROP	88	0	0	0	0	0	0	368	0	15506	21861	359	15149	53332
04MAY	SE	88	0	0	0	0	0	0	197	0	14241	16004	255	7584	22728
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST.CROP	0	0	0	0	0	0	31	139	2935	122	381	32603	17165	53376
1MAY	SE	0	0	0	0	0	0	31	139	2043	122	381	15122	4809	16005
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST.CROP	0	0	55	0	0	36	248	498	1031	28199	6436	15127	198594	250225
8MAY	SE	0	0	55	0	0	36	99	440	614	10554	4447	11545	46064	48856
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST.CROP	0	0	0	0	0	0	0	29517	6250	28190	80788	8319213	1016772	9480730
5MAY	SE	0	0	0	0	0	0	0	21705	3434	11547	22113	4625040	244101	4631597
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST.CROP	0	0	0	0	0	0	0	1830	640	54574	60592	1056168	273525	1447329
1JUN	SE	0	0	0	0	0	0	0	1030	476	20118	39451	963107	257998	998048
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST.CROP	0	0	0	0	351	23	0	693	63	805	2006	75265	132776	211984
8JUN	SE	0	0	0	0	323	23	0	457	63	474	1489	29927	25231	39179
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-96 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF ALOSA SPP. EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST.CROP	0	0	0	0	0	0	47	0	28	1226	1059	376	229089	231823
14JUN	SE	0	0	0	0	0	0	47	0	28	581	896	376	186677	186681
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST.CROP	0	0	0	123	0	0	0	0	0	0	0	0	703	826
22JUN	SE	0	0	0	123	0	0	0	0	0	0	0	0	488	504
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	0	57	0	0	57
29JUN	SE	0	0	0	0	0	0	0	0	0	0	57	0	0	57
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST.CROP	0	0	0	0	0	0	0	0	19	0	0	0	0	19
03JUL	SE	0	0	0	0	0	0	0	0	19	0	0	0	0	19
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-97 REGIONAL DENSITY (NO./1,000m3) OF ALOSA SPP. YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
7MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.00	0.00	0.40	2.87	0.61	0.57	6.32	4.20	1.35	0.00	0.00	0.00	0.00	1.25
4MAY	SE	0.00	0.00	0.40	2.12	0.58	0.57	5.44	1.89	0.72	0.00	0.00	0.00	0.00	6.25
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	0.00	0.16	0.98	0.29	1.89	6.95	4.32	4.57	5.20	2.97	4.49	1.44	2.56
1MAY	SE	0.00	0.00	0.16	0.40	0.29	1.65	2.16	1.88	1.56	4.43	1.10	1.88	1.09	6.26
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	1.76	2.39	0.44	9.84	41.48	31.49	5.65	6.80	3.45	4.60	0.87	8.37
8MAY	SE	0.00	0.00	0.89	1.16	0.20	8.80	15.35	8.61	1.98	1.83	2.21	2.29	0.35	20.18
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.87	1.26	9.90	6.79	29.00	40.85	90.24	80.76	541.45	244.23	80.41
5MAY	SE	0.00	0.00	0.00	0.43	1.08	3.28	1.61	5.76	8.74	48.41	28.83	247.00	61.04	260.83
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.15	0.38	0.00	0.42	0.97	2.64	2.65	65.83	312.52	1458.99	2333.49	6188.13	797.40
1JUN	SE	0.00	0.15	0.38	0.00	0.21	0.97	1.39	1.35	40.57	134.87	721.51	446.87	2080.26	2251.13
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.20	1.03	0.79	0.45	0.69	35.51	22.12	13.40	984.11	3644.98	361.79
8JUN	SE	0.00	0.00	0.00	0.20	1.03	0.79	0.41	0.56	21.26	21.83	12.43	305.01	1416.03	1448.88
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-97 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF ALOSA SPP. YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.38	0.00	1.03	175.13	3140.01	255.96
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.13	0.00	1.03	168.00	492.07	520.06
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	139.85	10.76
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.69	57.69
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.05
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.69
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.32	1.87
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.22	12.22
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-98 REGIONAL STANDING CROP (IN THOUSANDS) OF ALOSA SPP. YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
4MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
7MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST. CROP	0	0	127	423	128	118	883	1253	223	0	0	0	0	3155
4MAY	SE	0	0	127	314	120	118	761	565	119	0	0	0	0	1027
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST. CROP	0	0	51	145	60	393	972	1287	756	736	523	722	102	5746
1MAY	SE	0	0	51	59	60	343	302	560	258	626	194	302	77	1061
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	566	353	92	2042	5799	9387	935	961	608	739	62	21544
8MAY	SE	0	0	285	172	42	1827	2146	2567	328	258	390	367	25	3887
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	128	262	2053	950	8647	6761	12767	14238	87029	17376	150210
5MAY	SE	0	0	0	63	225	681	225	1716	1447	6848	5083	39701	4343	40906
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
3MAY-	ST. CROP	0	34	121	0	87	202	369	790	10894	44212	257213	375066	440280	1129268
JUN	SE	0	34	121	0	44	202	194	403	6714	19080	127199	71827	148009	208937
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
JUN-	ST. CROP	0	0	0	29	215	165	63	206	5876	3130	2363	158178	259337	429561
JUN	SE	0	0	0	29	215	165	57	168	3518	3088	2192	49024	100749	112163
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-98 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF ALOSA SPP. YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	1883	0	181	28149	223409	253621
14JUN	SE	0	0	0	0	0	0	0	0	1676	0	181	27003	35010	44246
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	9950	9950
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	4105	4105
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	49	49
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	49	49
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	1730	1730
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	869	869
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-99 REGIONAL DENSITY (NO./1,000m3) OF ALOSA SPP. POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
7MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.04
6APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.56
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.00	0.00	0.00	1.46	0.00	0.00	1.77	0.34	0.00	0.00	0.00	0.00	0.00	0.27
4MAY	SE	0.00	0.00	0.00	1.06	0.00	0.00	1.43	0.21	0.00	0.00	0.00	0.00	0.00	1.79
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	1.02	0.51	1.43	3.60	0.47	2.78	0.52	0.45	0.00	0.00	0.00	0.00	0.83
1MAY	SE	0.00	0.77	0.51	0.69	2.76	0.47	0.88	0.52	0.45	0.00	0.00	0.00	0.00	3.23
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	8.85	1.04	4.87	2.17	4.55	9.67	27.35	7.73	1.08	0.61	0.00	1.64	0.28	5.37
3MAY	SE	5.58	0.63	2.69	1.16	2.36	8.81	5.68	3.68	0.77	0.61	0.00	0.93	0.28	13.08
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	2.35	2.30	33.38	33.43	16.74	8.00	9.80	2.18	2.61	1.44	2.88	0.00	8.85
5MAY	SE	0.00	1.49	0.60	12.45	12.33	7.45	2.55	4.57	0.81	1.22	1.44	2.88	0.00	20.12
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
3MAY-	DENSITY	0.27	1.69	5.13	5.73	5.09	21.76	28.48	36.35	811.07	1700.44	3865.00	6413.15	4913.01	1369.78
1JUN	SE	0.27	1.69	1.15	2.33	2.08	11.06	11.05	8.79	186.79	287.46	552.12	1168.57	660.27	1491.37
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.18	1.08	5.54	15.92	101.87	814.91	2061.73	4024.12	6889.70	10041.26	6551.75	2346.77
3JUN	SE	0.00	0.00	0.18	0.51	1.63	3.37	67.90	626.89	812.68	1356.44	1751.38	2520.63	758.23	3590.79
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-99 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF ALOSA SPP. POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	4.07	2.12	2.77	15.19	23.76	38.22	108.98	1112.86	6531.13	10065.47	8126.90	7163.80	2185.71	2721.61
14JUN	SE	4.07	1.49	0.96	5.20	2.37	10.02	23.45	591.81	2288.49	1946.28	1633.05	2189.86	957.29	4213.65
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.38	1.81	29.48	142.14	194.08	799.26	841.24	2269.38	4126.80	4165.76	8580.77	858.85	1693.07
22JUN	SE	0.00	0.38	1.14	3.60	52.46	64.62	242.64	207.25	380.85	1378.42	449.34	2044.80	439.59	2594.26
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	4.20	0.00	0.00	12.08	65.75	385.89	1103.85	631.68	3825.49	4343.29	5059.30	915.97	1257.50
29JUN	SE	0.00	2.95	0.00	0.00	9.73	8.93	93.72	399.21	192.19	658.97	1237.63	1528.60	478.84	2176.50
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	4.90	3.99	0.23	6.71	0.00	1.77	49.95	623.22	366.50	868.37	733.69	2055.32	1380.58	468.86
03JUL	SE	3.46	3.75	0.23	6.71	0.00	1.16	24.74	248.64	105.97	229.70	86.28	932.17	395.03	1076.54
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.50	1.88	18.78	58.05	30.84	NS	NS	NS	NS	NS	13.76
19JUL	SE	0.00	0.00	0.00	0.26	1.06	9.03	18.76	7.30						22.09
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.04	0.00	1.28	0.00	NS	NS	NS	NS	NS	0.16
02AUG	SE	0.00	0.00	0.00	0.00	0.04	0.00	0.76	0.00						0.76
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-100 REGIONAL STANDING CROP (IN THOUSANDS) OF ALOSA SPP. POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
4MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
7MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	40	40
6APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	40	40
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST. CROP	0	0	0	216	0	0	247	101	0	0	0	0	0	564
4MAY	SE	0	0	0	156	0	0	199	62	0	0	0	0	0	261
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST. CROP	0	233	165	212	749	98	389	156	75	0	0	0	0	2077
1MAY	SE	0	176	165	101	575	98	122	156	75	0	0	0	0	674
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	1850	238	1568	320	949	2006	3823	2306	178	87	0	263	20	13608
8MAY	SE	1167	144	865	171	492	1828	795	1097	127	87	0	149	20	2761
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	539	741	4932	6964	3474	1118	2922	360	370	253	462	0	22135
5MAY	SE	0	342	194	1840	2568	1545	357	1364	134	172	253	462	0	3851
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	57	388	1650	846	1060	4515	3981	10838	134219	240560	681383	1030796	349556	2459850
1JUN	SE	57	388	371	345	433	2294	1544	2620	30911	40667	97336	187826	46977	222675
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	59	159	1153	3303	14240	242952	341185	569292	1214624	1613949	466151	4467068
3JUN	SE	0	0	59	76	340	699	9491	186897	134486	191895	308761	405145	53947	593563
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-100 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF ALOSA SPP. POST YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	850	487	890	2245	4950	7929	15234	331780	1080802	1423960	1432737	1151451	155512	5608827
14JUN	SE	850	342	309	768	494	2079	3278	176438	378710	275340	287899	351980	68110	679555
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	87	584	4356	29613	40262	111730	250801	375547	583818	734406	1379203	61106	3571513
22JUN	SE	0	87	366	532	10929	13405	33918	61788	63024	195004	79217	328664	31277	403163
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	963	0	0	2518	13639	53944	329094	104534	541191	765703	813191	65171	2689947
29JUN	SE	0	678	0	0	2027	1852	13101	119017	31805	93224	218189	245694	34069	364938
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	1024	915	75	991	0	368	6982	185803	60651	122848	129347	330355	98227	937585
03JUL	SE	723	861	75	991	0	240	3459	74126	17537	32495	15210	149830	28106	174192
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	73	391	3896	8115	9195	NS	NS	NS	NS	NS	21671
19JUL	SE	0	0	0	38	221	1873	2623	2176						3895
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	8	0	179	0	NS	NS	NS	NS	NS	186
02AUG	SE	0	0	0	0	8	0	106	0						106
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
1SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
3SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
5SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
7OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
9OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-101 REGIONAL DENSITY (NO./1,000m3) OF ALOSA SPP. YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
7MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-101 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF ALOSA SPP. YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.73	0.00	0.00	0.00	0.65	4.18
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.58	0.00	0.00	0.00	0.65	53.58
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.82	40.23	14.97	10.36	9.87	70.70	31.64	13.74
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.82	34.51	8.65	4.12	5.80	48.53	31.64	68.36
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.53	2.01	10.61	89.00	11.78	NS	NS	NS	NS	NS	14.24
19JUL	SE	0.00	0.00	0.00	0.40	1.32	2.55	22.54	6.63						23.67
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.03	0.00	0.00	2.12	NS	NS	NS	NS	NS	0.27
02AUG	SE	0.00	0.00	0.00	0.00	0.03	0.00	0.00	1.50						1.50
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	NS	NS	NS	NS	NS	0.01
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00						0.05
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.27	0.44	111.79	189.29	NS	NS	NS	NS	NS	37.72
29AUG	SE	0.00	0.00	0.00	0.00	0.27	0.26	49.21	51.13						70.97
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.04	2.90	57.21	49.46	NS	NS	NS	NS	NS	13.70
11SEP	SE	0.00	0.00	0.00	0.00	0.04	1.40	30.29	16.67						34.60
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	1.51	3.77	2.51	11.28	9.54	NS	NS	NS	NS	NS	3.58
25SEP	SE	0.00	0.00	0.00	1.24	1.36	1.38	5.68	6.17						8.70
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.21	0.30	0.00	2.03	1.33	0.22	NS	NS	NS	NS	NS	0.51
09OCT	SE	0.00	0.00	0.21	0.30	0.00	1.21	0.74	0.22						1.48
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-102 REGIONAL STANDING CROP (IN THOUSANDS) OF ALOSA SPP. YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
4MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
7MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-102 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF ALOSA SPP. YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	8892	0	0	0	46	8938
29JUN	SE	0	0	0	0	0	0	0	0	8866	0	0	0	46	8867
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	115	11993	2477	1465	1739	11364	2251	31404
03JUL	SE	0	0	0	0	0	0	115	10290	1431	583	1023	7800	2251	13238
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	78	420	2202	12441	3513	NS	NS	NS	NS	NS	18653
19JUL	SE	0	0	0	59	275	530	3151	1975						3767
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	7	0	0	633	NS	NS	NS	NS	NS	640
02AUG	SE	0	0	0	0	7	0	0	448						448
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	7	0	NS	NS	NS	NS	NS	7
17AUG	SE	0	0	0	0	0	0	7	0						7
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	56	92	15627	56434	NS	NS	NS	NS	NS	72209
29AUG	SE	0	0	0	0	56	53	6879	15244						16725
	NO. TOWS	6	11	13	14	13	8	10	6						81
9SEP-	ST. CROP	0	0	0	0	8	602	7997	14747	NS	NS	NS	NS	NS	23354
1SEP	SE	0	0	0	0	8	290	4235	4969						6535
	NO. TOWS	6	11	13	14	13	8	9	6						80
3SEP-	ST. CROP	0	0	0	224	786	521	1577	2843	NS	NS	NS	NS	NS	5951
5SEP	SE	0	0	0	183	283	285	795	1841						2053
	NO. TOWS	6	11	13	13	13	7	10	6						79
7OCT-	ST. CROP	0	0	68	44	0	421	186	65	NS	NS	NS	NS	NS	783
9OCT	SE	0	0	68	44	0	251	103	65						291
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-103 REGIONAL DENSITY (NO./1,000m3) OF ALOSA SPP. YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
0JUL-	DENSITY	0.00	0.00	0.00	0.00	2.12	41.57	56.34	213.09	89.55	259.30	330.52	291.28	212.99	115.14
5JUL	SE	0.00	0.00	0.00	0.00	1.90	22.09	25.60	97.97	37.53	117.42	143.96	93.58	138.90	273.35
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
2JUL-	DENSITY	0.00	0.00	0.17	0.63	9.75	220.87	44.70	120.97	282.21	158.28	172.54	52.36	12.78	82.71
7JUL	SE	0.00	0.00	0.14	0.22	8.20	47.36	34.07	114.70	190.57	74.29	31.23	25.65	2.98	245.16
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
5AUG-	DENSITY	0.00	0.00	0.00	0.00	0.23	18.70	33.94	157.51	38.60	25.48	87.05	110.20	48.57	40.02
0AUG	SE	0.00	0.00	0.00	0.00	0.14	3.28	25.52	91.50	7.38	8.41	29.05	35.08	40.71	113.54
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	12.51	31.74	0.00	2.35	11.35	51.07	5.68	8.82
4AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	9.90	20.67	0.00	2.35	7.08	35.28	3.91	42.91
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
3SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	2.43	3.10	0.02	0.00	0.00	0.00	0.00	0.43
7SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	1.21	2.86	0.02	0.00	0.00	0.00	0.00	3.11
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
7SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
1OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-104 REGIONAL STANDING CROP (IN THOUSANDS) OF ALOSA SPP. YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	441	8625	7875	63529	14820	36683	58269	46818	15154	252214
15JUL	SE	0	0	0	0	396	4583	3579	29208	6210	16611	25379	15042	9883	46580
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	54	93	2032	45820	6248	36064	46701	22392	30418	8416	909	199148
27JUL	SE	0	0	45	33	1707	9824	4763	34197	31536	10510	5505	4123	212	49435
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	0	48	3880	4745	46960	6388	3604	15347	17713	3455	102140
10AUG	SE	0	0	0	0	29	680	3568	27278	1222	1190	5122	5638	2896	28751
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	0	0	0	0	1749	9461	0	332	2000	8209	404	22155
24AUG	SE	0	0	0	0	0	0	1385	6162	0	332	1249	5671	278	8591
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	0	0	0	0	339	926	4	0	0	0	0	1269
07SEP	SE	0	0	0	0	0	0	170	853	4	0	0	0	0	870
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
30CT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70CT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-105 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF ALOSA SPP. YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.09	0.00	0.00	0.00	0.00	10.13	1.00	0.75	8.47	2.32	0.17	1.91
20JUN	SE	0.00	0.09	0.00	0.00	0.00	0.00	10.13	1.00	0.62	4.24	1.17	0.11	11.10
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.29	0.33	0.00	1.33	9.50	49.00	91.63	25.60	90.53	67.67	27.99
03JUL	SE	0.00	0.00	0.29	0.33	0.00	0.67	7.55	45.17	43.59	12.29	58.02	30.45	91.88
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	5.57	286.67	146.00	58.00	338.75	35.00	394.25	833.13	181.16	129.08	200.63
18JUL	SE	0.00	0.00	5.25	282.17	20.65	50.12	207.99	26.64	249.48	286.26	53.40	67.16	527.35
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	1.64	64.40	142.80	46.17	405.80	208.20	439.00	64.78	239.10	216.29	152.35
01AUG	SE	0.00	0.00	0.66	60.43	75.30	23.52	282.49	117.15	178.53	26.74	192.26	210.96	466.32
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.00	0.00	5.40	247.17	0.00	1.40	111.60	90.11	211.30	1.29	55.69
14AUG	SE	0.00	0.00	0.00	0.00	2.96	162.46	0.00	0.87	81.43	56.37	92.17	0.99	211.44
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.07	1.00	52.80	5.83	169.60	19.60	0.00	0.11	3.40	19.29	22.64
28AUG	SE	0.00	0.00	0.07	0.77	19.29	3.55	135.76	14.40	0.00	0.11	1.59	11.94	138.45
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.04	0.00	0.00	4.20	65.33	7.80	0.80	0.00	0.00	0.00	0.00	6.51
11SEP	SE	0.00	0.04	0.00	0.00	4.20	64.74	4.78	0.80	0.00	0.00	0.00	0.00	65.05
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-106 REGIONAL STANDING CROP (IN THOUSANDS) OF ALOSA SPP. YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	4	0	0	0	0	72	1	6	149	46	2	280
20JUN	SE	0	4	0	0	0	0	72	1	5	74	23	2	106
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	8	3	0	14	67	61	789	449	1781	919	4092
03JUL	SE	0	0	8	3	0	7	54	56	375	216	1142	414	1292
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	150	2642	385	618	2404	43	3394	14626	3564	1754	29580
18JUL	SE	0	0	141	2600	54	534	1476	33	2148	5025	1051	912	6407
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	44	593	376	492	2879	258	3779	1137	4704	2939	17203
01AUG	SE	0	0	18	557	198	250	2004	145	1537	469	3783	2866	5437
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	0	0	14	2633	0	2	961	1582	4157	17	9366
14AUG	SE	0	0	0	0	8	1730	0	1	701	990	1813	13	2785
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	2	9	139	62	1203	24	0	2	67	262	1771
28AUG	SE	0	0	2	7	51	38	963	18	0	2	31	162	980
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	2	0	0	11	696	55	1	0	0	0	0	765
11SEP	SE	0	2	0	0	11	690	34	1	0	0	0	0	690
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-107 REGIONAL DENSITY (NO./1,000m3) OF ALEWIFE YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-4MAR	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-7MAR	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-2APR	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-9APR	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-6APR	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-4MAY	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-1MAY	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-3MAY	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
MAY-MAY	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
MAY-JUN	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
JUN-JUN	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-107 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF ALEWIFE YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	3.80	0.00	8.83	5.58	0.00	51.67	86.52	12.03
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	2.67	0.00	8.36	5.58	0.00	29.90	85.88	91.53
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.04	16.14	1.54	28.20	23.81	10.93	308.83	29.96
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.04	7.92	1.17	13.80	7.98	7.21	153.47	154.67
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.18	1.25	2.45	54.04	9.42	NS	NS	NS	NS	NS	8.42
19JUL	SE	0.00	0.00	0.00	0.18	0.65	2.35	22.90	4.20						23.41
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.22	3.46	0.04	2.60	15.84	5.75	NS	NS	NS	NS	NS	3.49
02AUG	SE	0.00	0.00	0.22	1.64	0.04	1.44	5.16	1.37						5.77
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	2.16	1.53	2.61	0.77	0.39	0.43	25.13	10.87	NS	NS	NS	NS	NS	5.49
17AUG	SE	1.09	0.70	1.01	0.42	0.24	0.29	12.35	4.67						13.32
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.27	0.66	3.83	1.50	NS	NS	NS	NS	NS	0.78
29AUG	SE	0.00	0.00	0.00	0.00	0.27	0.66	3.51	0.86						3.68
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.75	0.00	0.00	0.00	2.55	0.99	NS	NS	NS	NS	NS	0.54
11SEP	SE	0.00	0.00	0.75	0.00	0.00	0.00	1.26	0.64						1.61
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	1.64	0.00	0.90	0.93	0.00	0.00	0.00	2.73	NS	NS	NS	NS	NS	0.77
25SEP	SE	1.64	0.00	0.72	0.64	0.00	0.00	0.00	1.28						2.29
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.09	0.40	0.72	0.00	0.24	2.42	0.22	NS	NS	NS	NS	NS	0.51
09OCT	SE	0.00	0.09	0.30	0.25	0.00	0.14	1.70	0.22						1.77
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-108 REGIONAL STANDING CROP (IN THOUSANDS) OF ALEWIFE YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
4MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
7MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-108 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF ALEWIFE YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	532	0	1462	789	0	8305	6156	17243
29JUN	SE	0	0	0	0	0	0	373	0	1383	789	0	4806	6110	7944
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	6	4811	255	3990	4198	1757	21973	36990
03JUL	SE	0	0	0	0	0	0	6	2363	193	1953	1406	1159	10919	11488
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	27	261	508	7554	2809	NS	NS	NS	NS	NS	11159
19JUL	SE	0	0	0	27	136	487	3201	1251						3474
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	72	512	8	539	2215	1715	NS	NS	NS	NS	NS	5059
02AUG	SE	0	0	72	242	8	298	721	409						916
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	452	351	840	114	81	89	3512	3242	NS	NS	NS	NS	NS	8682
17AUG	SE	227	160	325	62	51	61	1726	1393						2261
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	57	137	535	448	NS	NS	NS	NS	NS	1177
29AUG	SE	0	0	0	0	57	137	490	257						573
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	242	0	0	0	357	294	NS	NS	NS	NS	NS	893
11SEP	SE	0	0	242	0	0	0	177	192						356
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	343	0	288	138	0	0	0	814	NS	NS	NS	NS	NS	1583
25SEP	SE	343	0	230	95	0	0	0	381						570
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	21	130	107	0	49	339	65	NS	NS	NS	NS	NS	710
09OCT	SE	0	21	95	37	0	29	238	65						269
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-109 REGIONAL DENSITY (NO./1,000m3) OF ALEWIFE YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
IOJUL-	DENSITY	0.00	0.00	0.02	0.00	0.00	0.02	2.91	1.34	0.00	1.71	1.86	1.21	0.20	0.71
I5JUL	SE	0.00	0.00	0.02	0.00	0.00	0.02	2.62	1.29	0.00	0.66	0.94	0.89	0.20	3.26
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.00	0.14	0.00	0.07	5.53	5.66	0.76	3.83	1.19	5.77	0.74	0.00	1.82
27JUL	SE	0.00	0.00	0.13	0.00	0.04	3.38	2.37	0.62	3.18	0.52	2.85	0.30	0.00	6.01
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
)5AUG-	DENSITY	0.00	0.44	0.53	0.06	0.03	0.09	2.90	1.96	0.75	0.33	0.48	1.46	0.08	0.70
IOAUG	SE	0.00	0.35	0.20	0.03	0.02	0.05	1.72	1.06	0.73	0.27	0.28	0.50	0.08	2.28
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
I9AUG-	DENSITY	0.18	0.80	0.38	0.63	0.02	0.27	0.27	2.80	0.03	1.04	0.76	0.20	0.00	0.57
24AUG	SE	0.18	0.70	0.20	0.53	0.01	0.20	0.05	0.71	0.03	0.66	0.42	0.08	0.00	1.42
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.08	0.05	0.06	0.06	0.03	0.02	1.68	0.71	0.51	1.22	0.10	0.51	0.00	0.39
07SEP	SE	0.05	0.05	0.03	0.04	0.02	0.02	0.62	0.68	0.49	0.90	0.06	0.26	0.00	1.41
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.00	0.13	0.00	0.00	0.02	0.80	0.16	0.09	0.33	0.32	1.30	0.24	0.26
21SEP	SE	0.00	0.00	0.06	0.00	0.00	0.02	0.57	0.05	0.06	0.27	0.07	0.34	0.16	0.74
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
)1OCT-	DENSITY	0.07	0.00	0.06	0.19	1.67	0.02	0.88	0.16	0.02	0.26	0.23	1.31	0.00	0.37
)5OCT	SE	0.07	0.00	0.03	0.06	1.61	0.02	0.60	0.07	0.02	0.26	0.11	0.49	0.00	1.82
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-	DENSITY	0.00	0.00	0.18	0.04	0.02	0.00	1.34	0.12	1.13	0.92	0.39	0.44	0.11	0.36
7OCT	SE	0.00	0.00	0.14	0.03	0.02	0.00	0.61	0.07	1.06	0.63	0.27	0.16	0.07	1.42
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-110 REGIONAL STANDING CROP (IN THOUSANDS) OF ALEWIFE YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	6	0	0	3	407	399	0	242	327	195	14	1593
15JUL	SE	0	0	6	0	0	3	366	384	0	93	165	143	14	581
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	45	0	14	1148	791	225	633	168	1017	119	0	4160
27JUL	SE	0	0	41	0	7	702	332	186	526	74	502	48	0	1085
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	100	170	10	5	19	405	584	124	47	84	234	6	1789
10AUG	SE	0	80	63	5	4	11	240	317	120	39	49	80	6	440
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	38	184	123	94	3	56	38	835	4	148	133	33	0	1688
24AUG	SE	38	161	63	78	2	41	7	212	4	93	75	12	0	314
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	16	12	21	8	6	3	235	212	85	172	17	82	0	870
07SEP	SE	10	12	10	5	4	3	87	203	82	127	10	42	0	272
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	41	0	0	3	112	47	15	46	56	209	17	547
21SEP	SE	0	0	20	0	0	3	79	14	10	38	13	55	11	109
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	14	0	19	28	348	3	122	48	3	37	41	211	0	874
05OCT	SE	14	0	11	9	336	3	84	22	3	37	19	79	0	359
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	59	6	5	0	188	35	187	130	69	70	8	756
17OCT	SE	0	0	45	4	5	0	85	22	176	89	48	26	5	227
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-111 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF ALEWIFE YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.13	0.00	0.00	0.16	0.08	0.04
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.13	0.00	0.00	0.16	0.08	0.25
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.33	0.00	0.00	0.33	0.00	0.00	1.50	0.50	1.63	2.20	4.16	1.25	0.99
18JUL	SE	0.33	0.00	0.00	0.33	0.00	0.00	1.50	0.27	0.91	0.58	3.23	0.91	3.86
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.40	0.88	0.07	0.20	9.40	1.00	13.40	8.80	2.00	0.44	0.20	0.00	3.07
01AUG	SE	0.24	0.55	0.07	0.20	7.73	0.63	11.07	1.77	0.95	0.24	0.13	0.00	13.68
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.08	0.07	0.00	0.80	2.17	0.00	0.00	0.00	0.00	0.40	0.14	0.31
14AUG	SE	0.00	0.08	0.07	0.00	0.58	2.17	0.00	0.00	0.00	0.00	0.27	0.14	2.27
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.07	0.00	0.20	0.33	0.20	0.20	0.00	0.00	0.00	0.00	0.08
28AUG	SE	0.00	0.00	0.07	0.00	0.20	0.33	0.20	0.20	0.00	0.00	0.00	0.00	0.49
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.07	0.20	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
11SEP	SE	0.00	0.00	0.07	0.20	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.04	0.07	0.00	0.20	0.00	0.20	0.20	0.00	0.00	0.00	0.14	0.07
25SEP	SE	0.00	0.04	0.07	0.00	0.20	0.00	0.20	0.20	0.00	0.00	0.00	0.14	0.38
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	1.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.11
09OCT	SE	0.00	0.00	0.00	0.00	1.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	1.05
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.07	0.20	0.00	0.00	0.00	3.40	0.00	0.00	0.00	0.00	0.31
23OCT	SE	0.00	0.00	0.07	0.20	0.00	0.00	0.00	3.40	0.00	0.00	0.00	0.00	3.41
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-112 REGIONAL STANDING CROP (IN THOUSANDS) OF ALEWIFE YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
20JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	0	1	<0.5	0	0	3	1	5
03JUL	SE	0	0	0	0	0	0	1	<0.5	0	0	3	1	3
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	3	0	0	3	0	0	11	1	14	39	82	17	168
18JUL	SE	3	0	0	3	0	0	11	<0.5	8	10	63	12	67
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	3	40	2	2	25	11	95	11	17	8	4	0	217
01AUG	SE	2	25	2	2	20	7	79	2	8	4	3	0	86
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	4	2	0	2	23	0	0	0	0	8	2	41
14AUG	SE	0	4	2	0	2	23	0	0	0	0	5	2	24
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	2	0	1	4	1	<0.5	0	0	0	0	8
28AUG	SE	0	0	2	0	1	4	1	<0.5	0	0	0	0	4
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	2	2	1	0	0	0	0	0	0	0	5
11SEP	SE	0	0	2	2	1	0	0	0	0	0	0	0	3
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	2	2	0	1	0	1	<0.5	0	0	0	2	8
25SEP	SE	0	2	2	0	1	0	1	<0.5	0	0	0	2	4
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	3	4	0	0	0	0	0	0	6
09OCT	SE	0	0	0	0	3	4	0	0	0	0	0	0	4
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	2	2	0	0	0	4	0	0	0	0	8
23OCT	SE	0	0	2	2	0	0	0	4	0	0	0	0	5
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

ABLE D-113 REGIONAL DENSITY (NO./1,000m3) OF ALEWIFE YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
7MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
3APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.02
6APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.32
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
4MAY	SE	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.69	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
8MAY	SE	0.69	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
8JUN	SE	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-113 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF ALEWIFE YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005
29JUN	SE	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
5AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
7AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
6AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
9AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
9SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
1SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
3SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
5SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
7OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
9OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-114 REGIONAL STANDING CROP (IN THOUSANDS) OF ALEWIFE YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
4MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
7MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	23	23
6APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	23	23
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST. CROP	88	0	0	0	0	0	0	0	0	0	0	0	0	88
4MAY	SE	88	0	0	0	0	0	0	0	0	0	0	0	0	88
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	144	50	0	0	0	0	0	0	0	0	0	0	0	194
8MAY	SE	144	50	0	0	0	0	0	0	0	0	0	0	0	152
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	0	0	0	198	0	0	0	0	0	0	0	198
01JUN	SE	0	0	0	0	0	198	0	0	0	0	0	0	0	198
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	0	0	24	0	0	0	0	0	0	0	24
08JUN	SE	0	0	0	0	0	24	0	0	0	0	0	0	0	24
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-114 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF ALEWIFE YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	7	0	0	0	0	0	0	0	0	7
29JUN	SE	0	0	0	0	7	0	0	0	0	0	0	0	0	7
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
1SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
3SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
5SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
7OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
9OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-115 REGIONAL DENSITY (NO./1,000m3) OF ALEWIFE YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
0JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
2JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
5AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG-	DENSITY	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005
4AUG	SE	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
3SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
7SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.04	0.00	0.01
1SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.04	0.00	0.05
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
1OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.01
5OCT	SE	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.05
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-116 REGIONAL STANDING CROP (IN THOUSANDS) OF ALEWIFE YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	7	0	0	0	0	0	0	0	0	0	0	7
24AUG	SE	0	0	7	0	0	0	0	0	0	0	0	0	0	7
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	0	0	0	9	0	0	0	6	0	15
21SEP	SE	0	0	0	0	0	0	0	9	0	0	0	6	0	11
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	0	0	0	3	0	0	0	0	0	10	0	14
05OCT	SE	0	0	0	0	0	3	0	0	0	0	0	7	0	8
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-117 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF ALEWIFE YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
03JUL	SE	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-118 REGIONAL STANDING CROP (IN THOUSANDS) OF ALEWIFE YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
20JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	4	0	0	0	0	0	0	0	0	0	0	4
03JUL	SE	0	4	0	0	0	0	0	0	0	0	0	0	4
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
18JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
01AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
14AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
28AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-119 REGIONAL DENSITY (NO./1,000m3) OF BLUEBACK HERRING YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-119 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF BLUEBACK HERRING YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.93	0.00	0.00	0.00	0.00	0.30
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.93	0.00	0.00	0.00	0.00	3.93
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.14	1.60	0.38	0.00	4.49	19.58	23.01	3.78
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.76	0.38	0.00	4.49	16.22	23.01	28.52
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	1.62	13.34	177.24	856.24	475.78	NS	NS	NS	NS	NS	190.53
19JUL	SE	0.00	0.00	0.00	0.68	7.85	55.30	220.36	203.09						304.83
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	22.20	8.04	8.22	30.96	15.18	123.17	485.08	298.96	NS	NS	NS	NS	NS	123.98
02AUG	SE	7.05	5.05	2.93	13.13	4.38	39.19	161.24	60.09						177.26
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	9.62	5.13	14.75	22.72	13.88	50.64	590.52	381.24	NS	NS	NS	NS	NS	136.06
17AUG	SE	3.39	1.90	4.52	11.00	6.25	19.88	297.56	90.18						311.87
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	14.54	1.47	4.46	62.26	43.80	NS	NS	NS	NS	NS	15.82
29AUG	SE	0.00	0.00	0.00	5.36	0.61	1.80	10.05	12.26						16.84
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	1.46	21.70	7.92	0.96	2.38	56.64	16.58	NS	NS	NS	NS	NS	13.45
11SEP	SE	0.00	1.46	8.62	4.57	0.59	0.56	13.92	7.60						18.69
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	3.32	0.00	13.08	36.56	24.70	15.63	49.09	104.47	NS	NS	NS	NS	NS	30.86
25SEP	SE	3.32	0.00	7.32	23.63	7.98	3.42	28.39	32.07						50.33
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	3.08	8.23	7.49	25.08	21.28	54.74	190.05	102.13	NS	NS	NS	NS	NS	51.51
09OCT	SE	2.24	4.51	1.68	8.73	9.60	15.24	27.91	32.75						47.75
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-120 REGIONAL STANDING CROP (IN THOUSANDS) OF BLUEBACK HERRING YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
·MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
'MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
3APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-120 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF BLUEBACK HERRING YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	651	0	0	0	0	651
29JUN	SE	0	0	0	0	0	0	0	0	651	0	0	0	0	651
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	20	477	62	0	791	3147	1637	6134
03JUL	SE	0	0	0	0	0	0	20	226	62	0	791	2607	1637	3187
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
7JUL-	ST. CROP	0	0	0	239	2779	36769	119694	141847	NS	NS	NS	NS	NS	301328
9JUL	SE	0	0	0	100	1636	11473	30804	60548						68914
	NO. TOWS	6	11	13	14	13	8	10	6						81
1JUL-	ST. CROP	4641	1844	2647	4574	3163	25553	67809	89131	NS	NS	NS	NS	NS	199362
2AUG	SE	1473	1158	944	1939	912	8129	22540	17916						30068
	NO. TOWS	6	11	13	14	13	8	10	6						81
5AUG-	ST. CROP	2010	1177	4745	3356	2891	10506	82549	113659	NS	NS	NS	NS	NS	220895
7AUG	SE	709	435	1456	1626	1301	4123	41596	26885						49771
	NO. TOWS	6	11	13	14	13	8	10	6						81
6AUG-	ST. CROP	0	0	0	2148	305	925	8704	13058	NS	NS	NS	NS	NS	25140
9AUG	SE	0	0	0	791	126	373	1405	3656						4015
	NO. TOWS	6	11	13	14	13	8	10	6						81
9SEP-	ST. CROP	0	335	6983	1170	201	493	7917	4942	NS	NS	NS	NS	NS	22041
1SEP	SE	0	335	2773	676	124	117	1945	2265						4148
	NO. TOWS	6	11	13	14	13	8	9	6						80
3SEP-	ST. CROP	694	0	4208	5401	5147	3243	6862	31145	NS	NS	NS	NS	NS	56699
5SEP	SE	694	0	2357	3492	1662	709	3969	9561						11342
	NO. TOWS	6	11	13	13	13	7	10	6						79
7OCT-	ST. CROP	643	1888	2409	3705	4433	11356	26568	30448	NS	NS	NS	NS	NS	81451
0OCT	SE	469	1034	539	1290	2000	3162	3901	9764						11305
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-121 REGIONAL DENSITY (NO./1,000m3) OF BLUEBACK HERRING YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
0JUL-	DENSITY	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.70	0.00	0.46	0.76	0.87	3.16	0.46
5JUL	SE	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.70	0.00	0.32	0.39	0.46	1.37	1.68
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
2JUL-	DENSITY	0.03	0.31	3.70	9.44	18.09	2.96	6.59	4.16	0.47	0.84	1.26	0.85	1.47	3.86
7JUL	SE	0.03	0.12	0.62	2.87	8.79	1.99	5.58	4.16	0.47	0.84	0.70	0.69	0.77	11.87
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
5AUG-	DENSITY	0.04	2.29	3.51	8.07	14.67	18.13	6.23	14.22	1.52	0.46	6.59	4.36	1.53	6.28
0AUG	SE	0.04	2.16	0.86	1.29	8.55	1.85	3.05	8.55	1.49	0.29	2.30	2.20	1.45	13.44
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG-	DENSITY	0.08	0.24	2.53	6.15	8.69	71.37	100.49	226.12	97.49	165.18	109.73	55.94	0.65	64.97
4AUG	SE	0.05	0.13	0.94	4.14	7.37	33.21	50.46	108.78	74.60	93.25	57.09	22.52	0.34	183.25
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
3SEP-	DENSITY	0.00	0.05	1.40	3.69	2.67	40.97	36.85	13.66	18.15	195.41	22.43	92.41	45.84	36.43
7SEP	SE	0.00	0.02	0.43	1.28	1.21	25.10	30.22	2.78	5.11	124.18	5.04	25.58	25.65	135.42
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
7SEP-	DENSITY	0.08	0.02	2.36	0.94	2.77	61.67	14.30	6.11	6.42	19.20	27.21	96.69	22.13	19.99
1SEP	SE	0.05	0.02	0.70	0.42	0.55	25.29	6.02	2.29	1.72	5.44	4.87	31.88	11.32	43.40
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
1OCT-	DENSITY	0.19	5.40	5.71	4.03	92.33	30.30	15.88	4.37	7.15	27.60	52.28	115.83	20.66	29.36
5OCT	SE	0.11	4.25	1.95	1.11	17.91	30.17	7.79	2.22	2.54	21.49	14.30	65.95	7.60	80.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-	DENSITY	2.77	2.21	14.51	3.62	19.04	67.96	6.10	9.06	47.96	19.27	8.93	3.25	1.38	15.85
7OCT	SE	1.85	1.13	4.85	1.32	18.01	23.11	2.37	6.00	40.18	13.32	2.24	1.20	0.52	52.23
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-122 REGIONAL STANDING CROP (IN THOUSANDS) OF BLUEBACK HERRING YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	1	3	6	209	0	64	134	140	225	784
15JUL	SE	0	0	0	0	1	3	6	209	0	45	68	74	97	256
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	7	72	1190	1395	3769	614	922	1242	78	118	222	136	105	9869
27JUL	SE	7	28	201	424	1832	413	780	1242	78	118	123	112	55	2439
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	8	526	1130	1192	3055	3760	871	4241	252	65	1162	700	109	17071
10AUG	SE	8	496	277	190	1782	383	426	2549	247	41	406	354	103	3274
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	16	54	814	909	1810	14807	14048	67414	16133	23368	19345	8992	46	167756
24AUG	SE	10	31	302	612	1534	6891	7055	32431	12345	13191	10065	3620	24	39908
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	11	451	545	556	8499	5151	4072	3003	27645	3954	14854	3261	72003
07SEP	SE	0	5	137	190	253	5207	4224	830	846	17568	888	4112	1825	19395
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	16	6	761	139	578	12794	1999	1821	1063	2716	4797	15542	1575	43804
21SEP	SE	10	6	227	62	114	5247	842	682	284	769	858	5125	806	7556
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	41	1240	1837	595	19235	6287	2220	1304	1183	3905	9216	18617	1470	67150
05OCT	SE	22	976	626	164	3731	6259	1089	662	420	3040	2520	10601	541	13584
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	578	507	4669	535	3968	14098	853	2700	7936	2726	1574	523	98	40765
17OCT	SE	386	258	1560	195	3751	4794	331	1789	6649	1885	395	192	37	9540
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-123 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF BLUEBACK HERRING YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	8888.88
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.29	1.00	0.00	0.67	13.88	7.75	1.88	2.20	205.79	2.67	19.68
18JUL	SE	0.00	0.00	0.29	1.00	0.00	0.33	7.31	3.46	0.77	0.78	164.70	1.36	164.91
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	136.00	31.38	2.29	96.20	12.20	2.17	8.00	3.80	0.60	0.89	2.00	1.29	24.73
01AUG	SE	69.74	9.41	0.80	87.81	5.53	1.42	5.75	1.53	0.40	0.31	0.84	1.29	112.85
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	2.00	2.58	4.64	39.00	13.00	38.50	0.40	1.20	0.00	0.11	11.10	0.00	9.38
14AUG	SE	2.00	1.15	4.13	39.00	4.77	18.57	0.24	0.73	0.00	0.11	6.58	0.00	44.21
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.13	0.00	14.60	208.00	24.83	9.80	6.20	3.00	13.33	13.30	2.71	24.66
28AUG	SE	0.00	0.13	0.00	11.90	105.71	10.98	5.88	3.81	1.64	10.27	8.73	1.96	108.05
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	5.07	7.80	1915.20	156.00	24.80	97.20	151.00	138.11	24.20	10.57	210.83
11SEP	SE	0.00	0.00	4.92	4.90	1550.63	151.82	7.88	56.50	98.21	83.67	12.09	8.85	1564.51
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.04	0.79	1.20	131.40	8.50	19.60	223.20	51.40	35.78	3.40	1.29	39.72
25SEP	SE	0.00	0.04	0.47	1.20	121.03	8.30	18.61	104.22	28.87	10.37	3.40	0.84	163.95
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	2.00	1.00	43.80	313.83	3.40	4.60	2.20	33.22	0.10	3.29	33.95
09OCT	SE	0.00	0.00	1.65	0.63	22.54	191.59	3.16	4.12	2.20	33.22	0.10	1.06	195.84
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	1.00	8.13	12.07	6.00	43.60	53.83	2.00	43.00	20.20	1.22	0.00	2.71	16.15
23OCT	SE	1.00	7.16	11.16	4.85	19.26	53.83	1.76	34.06	15.11	0.49	0.00	2.55	69.77
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-124 REGIONAL STANDING CROP (IN THOUSANDS) OF BLUEBACK HERRING YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
20JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	1	0	1
03JUL	SE	0	0	0	0	0	0	0	0	0	0	1	0	1
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	8	9	0	7	98	10	16	39	4049	36	4272
18JUL	SE	0	0	8	9	0	4	52	4	7	14	3241	18	3241
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	1024	1426	61	887	32	23	57	5	5	16	39	17	3592
01AUG	SE	525	427	22	809	15	15	41	2	3	5	17	17	1057
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	15	117	125	359	34	410	3	1	0	2	218	0	1286
14AUG	SE	15	52	111	359	13	198	2	1	0	2	129	0	448
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	6	0	135	548	265	70	8	26	234	262	37	1589
28AUG	SE	0	6	0	110	279	117	42	5	14	180	172	27	410
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	136	72	5048	1662	176	121	1300	2425	476	144	11558
11SEP	SE	0	0	132	45	4087	1617	56	70	845	1469	238	120	4721
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	2	21	11	346	91	139	277	442	628	67	17	2042
25SEP	SE	0	2	13	11	319	88	132	129	249	182	67	11	493
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	54	9	115	3343	24	6	19	583	2	45	4200
09OCT	SE	0	0	44	6	59	2041	22	5	19	583	2	14	2124
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	8	369	325	55	115	573	14	53	174	21	0	37	1745
23OCT	SE	8	325	300	45	51	573	12	42	130	9	0	35	741
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-125 REGIONAL DENSITY (NO./1,000m3) OF BLUEBACK HERRING YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
9APR	SE	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	0.37	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.06
6APR	SE	0.37	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.53
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.03
4MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.43
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.80	0.24	0.17	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.13
1MAY	SE	0.80	0.24	0.17	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	1.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	1.87	0.00	0.17	0.00	0.19	0.87	0.23	0.15	0.15	0.00	1.43	0.00	0.00	0.39
8MAY	SE	1.87	0.00	0.17	0.00	0.19	0.87	0.23	0.15	0.15	0.00	1.06	0.00	0.00	2.35
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
3MAY-	DENSITY	0.00	0.00	0.00	0.21	0.57	1.10	0.00	0.00	0.00	0.30	0.68	0.55	10.49	1.07
1JUN	SE	0.00	0.00	0.00	0.21	0.28	0.98	0.00	0.00	0.00	0.30	0.68	0.55	10.49	10.58
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65	1.36	0.00	0.00	0.15
3JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.68	0.00	0.00	0.94
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-125 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF BLUEBACK HERRING YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.05
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.67
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-126 REGIONAL STANDING CROP (IN THOUSANDS) OF BLUEBACK HERRING YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	56	0	0	0	0	0	0	0	0	0	0	0	0	56
9APR	SE	56	0	0	0	0	0	0	0	0	0	0	0	0	56
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST. CROP	77	0	0	0	0	0	53	0	0	0	0	0	0	130
6APR	SE	77	0	0	0	0	0	53	0	0	0	0	0	0	93
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST. CROP	0	0	0	0	0	0	60	0	0	0	0	0	0	60
4MAY	SE	0	0	0	0	0	0	60	0	0	0	0	0	0	60
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST. CROP	168	56	55	0	0	0	0	151	0	0	0	0	0	430
1MAY	SE	168	56	55	0	0	0	0	151	0	0	0	0	0	239
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	391	0	55	0	40	181	32	45	25	0	252	0	0	1022
8MAY	SE	391	0	55	0	40	181	32	45	25	0	186	0	0	478
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	0	0	0	31	120	228	0	0	0	43	119	89	746	1376
1JUN	SE	0	0	0	31	58	203	0	0	0	43	119	89	746	791
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	92	240	0	0	332
3JUN	SE	0	0	0	0	0	0	0	0	0	92	120	0	0	151
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-126 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF BLUEBACK HERRING YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	48	48
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	48	48
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-127 REGIONAL DENSITY (NO./1,000m3) OF BLUEBACK HERRING YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
15JUL	SE	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
05OCT	SE	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-128 REGIONAL STANDING CROP (IN THOUSANDS) OF BLUEBACK HERRING YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	73	0	0	0	0	0	0	0	0	0	0	0	0	73
15JUL	SE	73	0	0	0	0	0	0	0	0	0	0	0	0	73
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	45	0	0	0	0	0	0	0	0	0	0	45
05OCT	SE	0	0	45	0	0	0	0	0	0	0	0	0	0	45
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-129 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF BLUEBACK HERRING YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.18
20JUN	SE	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	2.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-130 REGIONAL STANDING CROP (IN THOUSANDS) OF BLUEBACK HERRING YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	18	0	0	0	0	0	2	0	0	21
20JUN	SE	0	0	0	18	0	0	0	0	0	2	0	0	19
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
18JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
01AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
14AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
28AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

ABLE D-131 REGIONAL DENSITY (NO./1,000m3) OF GIZZARD SHAD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
0JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
!2JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
!7JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
)5AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IOAUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
I9AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
!4AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
)3SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
)7SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-132 REGIONAL STANDING CROP (IN THOUSANDS) OF GIZZARD SHAD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-133 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF GIZZARD SHAD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	2.67	0.13	0.00	0.00	0.00	0.00	0.00	0.23
03JUL	SE	0.00	0.00	0.00	0.00	0.00	1.45	0.13	0.00	0.00	0.00	0.00	0.00	1.46
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.07	0.00	0.00	0.02
18JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.07	0.00	0.00	0.14
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-134 REGIONAL STANDING CROP (IN THOUSANDS) OF GIZZARD SHAD YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
20JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	28	1	0	0	0	0	0	29
03JUL	SE	0	0	0	0	0	15	1	0	0	0	0	0	16
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	0	0	0	0	1	1	0	0	2
18JUL	SE	0	0	0	0	0	0	0	0	1	1	0	0	2
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
01AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
14AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
28AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-135 REGIONAL DENSITY (NO./1,000m3) OF GIZZARD SHAD YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-136 REGIONAL STANDING CROP (IN THOUSANDS) OF GIZZARD SHAD YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-137 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF GIZZARD SHAD YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	12.33	0.00	0.00	0.00	0.00	0.00	0.00	1.03
03JUL	SE	0.00	0.00	0.00	0.00	0.00	7.88	0.00	0.00	0.00	0.00	0.00	0.00	7.88
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.02
14AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.20
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.02
28AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.20
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-138 REGIONAL STANDING CROP (IN THOUSANDS) OF GIZZARD SHAD YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
20JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	131	0	0	0	0	0	0	131
03JUL	SE	0	0	0	0	0	84	0	0	0	0	0	0	84
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
18JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
01AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	0	0	0	0	0	<0.5	0	0	0	0	<0.5
14AUG	SE	0	0	0	0	0	0	0	<0.5	0	0	0	0	<0.5
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	0	0	0	0	1	0	0	0	0	0	1
28AUG	SE	0	0	0	0	0	0	1	0	0	0	0	0	1
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-139 REGIONAL DENSITY (NO./1,000m3) OF HOGCHOKER EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	230.08	7.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.24
8JUN	SE	85.44	7.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	85.73
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-139 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF HOGCHOKER EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	992.53	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	76.35
22JUN	SE	983.35	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	983.35
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	1064.24	107.18	42.41	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	93.50
29JUN	SE	1054.65	48.39	37.64	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1056.43
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	8444.21	2422.99	0.00	2.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	836.10
03JUL	SE	4240.33	1131.05	0.00	1.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4388.58
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	3.19	0.09	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.41
19JUL	SE	3.19	0.09	0.00	0.00	0.00	0.00	0.00	0.00						3.19
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	819.45	131.08	2.20	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	119.09
02AUG	SE	239.58	62.38	2.20	0.00	0.00	0.00	0.00	0.00						247.58
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	185.57	46.95	3.26	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	29.47
17AUG	SE	150.42	10.41	1.35	0.00	0.00	0.00	0.00	0.00						150.79
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	314.54	52.35	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	45.86
29AUG	SE	122.35	52.35	0.00	0.00	0.00	0.00	0.00	0.00						133.08
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	3.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.46
11SEP	SE	3.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00						3.64
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	250.83	1.58	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	31.55
09OCT	SE	114.52	1.39	0.00	0.00	0.00	0.00	0.00	0.00						114.53
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-140 REGIONAL STANDING CROP (IN THOUSANDS) OF HOGCHOKER EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST.CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST.CROP	48090	1611	0	0	0	0	0	0	0	0	0	0	0	49701
08JUN	SE	17857	1611	0	0	0	0	0	0	0	0	0	0	0	17930
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-140 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF HOGCHOKER EGGS IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST.CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST.CROP	207452	0	0	0	17	0	0	0	0	0	0	0	0	207469
22JUN	SE	205533	0	0	0	17	0	0	0	0	0	0	0	0	205533
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST.CROP	222440	24589	13647	238	0	0	0	0	0	0	0	0	0	260913
29JUN	SE	220434	11102	12112	238	0	0	0	0	0	0	0	0	0	221046
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST.CROP	1764947	555883	0	317	0	0	0	0	0	0	0	0	0	2321147
03JUL	SE	886282	259486	0	289	0	0	0	0	0	0	0	0	0	923488
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST.CROP	667	21	0	0	0	0	0	0	NS	NS	NS	NS	NS	688
19JUL	SE	667	21	0	0	0	0	0	0						667
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST.CROP	171275	30072	709	0	0	0	0	0	NS	NS	NS	NS	NS	202056
02AUG	SE	50076	14312	709	0	0	0	0	0						52086
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST.CROP	38786	10772	1050	0	0	0	0	0	NS	NS	NS	NS	NS	50608
17AUG	SE	31440	2389	434	0	0	0	0	0						31534
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST.CROP	65743	12009	0	0	0	0	0	0	NS	NS	NS	NS	NS	77752
29AUG	SE	25574	12009	0	0	0	0	0	0						28253
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST.CROP	761	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	761
11SEP	SE	761	0	0	0	0	0	0	0						761
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST.CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST.CROP	52427	361	0	0	0	0	0	0	NS	NS	NS	NS	NS	52789
09OCT	SE	23936	320	0	0	0	0	0	0						23938
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-141 REGIONAL DENSITY (NO./1,000m3) OF HOGCHOKER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-141 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF HOGCHOKER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	NS	NS	NS	NS	NS	0.03
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00						0.13
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.14	0.00	0.28	0.00	NS	NS	NS	NS	NS	0.05
25SEP	SE	0.00	0.00	0.00	0.00	0.14	0.00	0.28	0.00						0.31
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	NS	NS	NS	NS	NS	0.02
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00						0.11
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-142 REGIONAL STANDING CROP (IN THOUSANDS) OF HOGCHOKER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-142 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF HOGCHOKER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	48	0	0	NS	NS	NS	NS	NS	48
11SEP	SE	0	0	0	0	0	28	0	0						28
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	28	0	39	0	NS	NS	NS	NS	NS	67
25SEP	SE	0	0	0	0	28	0	39	0						48
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	40	0	0	NS	NS	NS	NS	NS	40
09OCT	SE	0	0	0	0	0	23	0	0						23
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-143 REGIONAL DENSITY (NO./1,000m3) OF HOGCHOKER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
0JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
2JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
5AUG-	DENSITY	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0AUG	SE	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.04	0.00	0.30	0.00	0.00	0.00	0.03
07SEP	SE	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.04	0.00	0.30	0.00	0.00	0.00	0.31
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.03	0.00	0.01
21SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.03	0.00	0.05
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.00	0.00	0.01	0.02	0.15	0.03	0.42	0.00	0.04	0.11	0.00	0.00	0.00	0.06
05OCT	SE	0.00	0.00	0.01	0.02	0.14	0.02	0.26	0.00	0.03	0.09	0.00	0.00	0.00	0.31
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	0.00	0.04	0.05	0.05	0.01	1.10	0.70	0.00	0.00	0.04	0.00	0.00	0.00	0.15
17OCT	SE	0.00	0.04	0.03	0.03	0.01	0.82	0.23	0.00	0.00	0.04	0.00	0.00	0.00	0.85
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-144 REGIONAL STANDING CROP (IN THOUSANDS) OF HOGCHOKER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	25	0	0	0	0	0	0	0	0	0	0	25
10AUG	SE	0	0	25	0	0	0	0	0	0	0	0	0	0	25
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	7	0	4	0	0	0	11	0	43	0	0	0	64
07SEP	SE	0	7	0	4	0	0	0	11	0	43	0	0	0	45
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	0	0	1	10	0	0	0	6	0	17
21SEP	SE	0	0	0	0	0	0	1	10	0	0	0	6	0	12
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	4	3	31	7	58	0	7	16	0	0	0	127
05OCT	SE	0	0	4	3	30	4	36	0	5	13	0	0	0	49
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	10	16	7	2	229	98	0	0	5	0	0	0	366
17OCT	SE	0	10	9	5	2	170	33	0	0	5	0	0	0	173
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-145 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF HOGCHOKER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.01
28AUG	SE	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.17
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-146 REGIONAL STANDING CROP (IN THOUSANDS) OF HOGCHOKER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
20JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
18JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
01AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
14AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	0	0	0	2	0	0	0	0	0	0	2
28AUG	SE	0	0	0	0	0	2	0	0	0	0	0	0	2
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-147 REGIONAL DENSITY (NO./1,000m3) OF HOGCHOKER YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.76	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.17
12APR	SE	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.84	0.00	0.00	0.00	1.03
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.35	0.00	0.58	0.31	0.99	0.28	1.01	0.00	0.00	0.00	0.00	0.27
19APR	SE	0.00	0.00	0.20	0.00	0.37	0.21	0.59	0.28	1.01	0.00	0.00	0.00	0.00	1.29
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.88	2.37	5.91	0.99	0.00	3.77	0.00	1.02	1.12	0.33	0.00	0.00	1.26
26APR	SE	0.00	0.57	0.90	2.00	0.87	0.00	2.00	0.00	0.67	1.12	0.33	0.00	0.00	3.42
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	1.42	9.85	6.52	3.34	1.49	3.25	0.00	0.95	0.00	0.40	0.00	0.00	2.09
04MAY	SE	0.00	0.52	3.66	3.74	1.24	0.49	0.48	0.00	0.64	0.00	0.40	0.00	0.00	5.49
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.56	9.36	5.05	1.65	1.11	0.80	5.02	3.35	1.78	8.26	0.00	0.00	2.84
11MAY	SE	0.00	0.29	4.73	1.44	0.52	0.68	0.45	2.18	1.08	0.48	3.12	0.00	0.00	6.43
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.53	13.87	7.16	3.90	1.42	3.49	1.80	0.16	0.15	0.00	1.30	0.75	0.42	2.69
18MAY	SE	0.53	9.75	1.72	1.47	0.82	2.30	0.68	0.16	0.15	0.00	1.30	0.75	0.42	10.45
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.31	9.24	2.81	4.42	2.71	1.50	2.05	1.74	0.17	2.36	6.20	2.28	0.00	2.75
25MAY	SE	0.31	5.63	1.18	1.88	0.54	0.47	1.28	0.92	0.17	0.83	1.81	2.28	0.00	6.99
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-147 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF HOGCHOKER YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-148 REGIONAL STANDING CROP (IN THOUSANDS) OF HOGCHOKER YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	158	0	0	0	0	207	0	0	0	365
12APR	SE	0	0	0	0	122	0	0	0	0	119	0	0	0	171
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	113	0	121	64	138	85	167	0	0	0	0	688
19APR	SE	0	0	65	0	77	43	82	85	167	0	0	0	0	232
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	202	762	873	207	0	528	0	168	158	59	0	0	2956
26APR	SE	0	131	289	295	182	0	279	0	111	158	59	0	0	582
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	326	3170	963	695	310	455	0	157	0	70	0	0	6147
04MAY	SE	0	120	1177	552	258	101	67	0	106	0	70	0	0	1342
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	129	3013	746	344	231	112	1498	555	251	1456	0	0	8334
11MAY	SE	0	66	1521	212	109	142	62	651	178	68	550	0	0	1778
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	111	3182	2304	576	297	725	251	49	25	0	228	120	30	7898
18MAY	SE	111	2236	553	217	170	477	95	49	25	0	228	120	30	2388
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	65	2120	904	653	564	312	287	520	29	334	1093	367	0	7248
25MAY	SE	65	1291	379	278	113	98	179	276	29	117	318	367	0	1508
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-148 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF HOGCHOKER YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-149 REGIONAL DENSITY (NO./1,000m3) OF HOGCHOKER YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
0JUL-	DENSITY	2.87	51.57	10.32	1.17	0.06	0.05	1.71	0.49	0.00	0.19	0.32	0.76	0.23	5.36
5JUL	SE	1.82	15.86	5.40	0.27	0.04	0.03	0.52	0.42	0.00	0.09	0.12	0.21	0.10	16.87
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	1.91	25.62	11.74	1.36	1.99	0.81	1.00	0.16	0.13	1.39	0.83	0.81	0.56	3.72
27JUL	SE	1.76	13.62	4.05	0.26	0.47	0.27	0.38	0.16	0.09	0.35	0.19	0.32	0.16	14.35
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	10.17	42.67	7.13	3.31	1.38	0.85	2.54	0.69	0.34	0.72	1.18	0.23	1.55	5.60
0AUG	SE	2.97	7.36	2.47	0.78	0.36	0.26	1.56	0.53	0.18	0.30	0.45	0.16	0.68	8.57
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG-	DENSITY	1.16	31.13	22.86	4.03	0.70	1.33	2.86	0.53	0.22	0.26	1.63	0.78	1.02	5.27
24AUG	SE	0.31	11.00	8.56	2.27	0.29	0.45	1.21	0.27	0.16	0.12	0.58	0.29	0.30	14.21
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	2.10	8.63	1.95	10.49	3.99	1.27	15.03	4.57	0.48	1.02	1.29	0.61	1.74	4.09
07SEP	SE	0.33	2.46	0.50	1.87	1.90	0.28	5.06	2.11	0.18	0.33	0.30	0.18	0.58	6.65
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
7SEP-	DENSITY	0.99	0.29	4.25	1.67	1.32	0.46	26.55	2.11	0.49	2.20	1.46	5.28	0.15	3.63
21SEP	SE	0.46	0.17	0.83	0.73	0.57	0.33	5.59	0.78	0.23	0.76	0.78	2.96	0.10	6.62
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.03	2.30	3.44	5.15	3.54	4.04	9.78	3.83	1.75	2.62	2.56	0.29	1.22	3.12
05OCT	SE	0.03	0.71	0.99	1.33	1.02	1.93	5.90	0.56	0.75	0.83	0.75	0.22	0.37	6.72
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-	DENSITY	0.28	2.85	10.06	3.91	4.51	8.91	41.78	7.09	4.32	12.70	12.39	2.62	1.86	8.71
7OCT	SE	0.28	0.94	1.93	1.04	2.54	2.87	13.99	2.85	1.43	7.10	4.87	1.53	0.77	17.42
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-150 REGIONAL STANDING CROP (IN THOUSANDS) OF HOGCHOKER YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	601	11832	3321	172	12	10	238	146	0	26	57	122	16	16553
15JUL	SE	381	3640	1738	39	9	7	73	124	0	12	21	33	7	4054
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	399	5877	3778	200	414	167	140	49	22	197	145	131	40	11560
27JUL	SE	369	3125	1304	38	97	56	52	49	14	49	33	51	11	3410
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	2125	9788	2295	489	288	177	355	206	57	101	208	36	110	16237
10AUG	SE	622	1690	796	115	75	54	218	158	30	42	80	26	48	1995
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	243	7143	7357	596	145	277	400	158	36	37	288	125	73	16876
24AUG	SE	65	2524	2756	336	61	93	169	80	27	17	102	46	22	3761
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	439	1980	628	1550	832	264	2101	1364	79	144	228	98	124	9831
07SEP	SE	68	564	160	276	396	58	707	629	30	46	53	29	42	1221
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	206	67	1367	247	276	95	3712	628	82	311	257	849	10	8107
21SEP	SE	96	40	269	108	118	69	782	234	37	107	137	476	7	1018
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	7	528	1108	760	736	837	1367	1141	289	371	451	46	87	7728
05OCT	SE	7	163	320	197	212	400	825	168	125	118	133	35	26	1063
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	58	654	3236	577	939	1849	5840	2113	715	1797	2184	421	132	20516
17OCT	SE	58	215	622	153	529	596	1956	850	236	1004	858	245	55	2740
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-151 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF HOGCHOKER YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.33	0.45	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.00	0.17
20JUN	SE	0.33	0.45	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.72
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.18	0.43	0.00	0.00	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.14
03JUL	SE	0.00	0.18	0.43	0.00	0.00	0.58	0.00	0.00	0.00	0.07	0.00	0.00	0.74
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.33	0.27	0.14	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.07
18JUL	SE	0.33	0.19	0.14	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.43
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
01AUG	SE	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
14AUG	SE	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.04	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
28AUG	SE	0.00	0.04	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
11SEP	SE	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.04	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
25SEP	SE	0.00	0.04	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-152 REGIONAL STANDING CROP (IN THOUSANDS) OF HOGCHOKER YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	3	21	15	0	0	0	0	0	0	0	12	0	51
20JUN	SE	3	21	10	0	0	0	0	0	0	0	5	0	24
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	8	12	0	0	11	0	0	0	1	0	0	32
03JUL	SE	0	8	12	0	0	6	0	0	0	1	0	0	15
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	3	12	4	0	0	0	0	0	1	0	0	0	20
18JUL	SE	3	9	4	0	0	0	0	0	1	0	0	0	10
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	4	0	0	0	0	0	0	0	0	0	0	4
01AUG	SE	0	3	0	0	0	0	0	0	0	0	0	0	3
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	15	0	0	0	0	0	0	0	0	0	0	15
14AUG	SE	0	9	0	0	0	0	0	0	0	0	0	0	9
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	2	4	0	0	0	0	0	0	0	0	0	6
28AUG	SE	0	2	3	0	0	0	0	0	0	0	0	0	3
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	2	0	0	0	0	0	0	0	0	0	2
11SEP	SE	0	0	2	0	0	0	0	0	0	0	0	0	2
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	2	2	0	0	0	0	0	0	0	0	0	4
25SEP	SE	0	2	2	0	0	0	0	0	0	0	0	0	3
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-153 REGIONAL DENSITY (NO./1,000m3) OF SPOTTAIL SHINER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-153 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF SPOTTAIL SHINER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-154 REGIONAL STANDING CROP (IN THOUSANDS) OF SPOTTAIL SHINER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-154 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF SPOTTAIL SHINER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-155 REGIONAL DENSITY (NO./1,000m3) OF SPOTTAIL SHINER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-15JUL	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.23	0.06
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.23	0.54
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-27JUL	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.47	0.08	0.00	0.61	0.18	0.10
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.47	0.06	0.00	0.16	0.09	0.51
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-10AUG	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.06	0.00	0.00	0.00	0.01
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.04
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG-24AUG	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.00	0.07	0.00	0.00	0.29	0.03
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.00	0.04	0.00	0.00	0.14	0.15
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
3SEP-7SEP	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	<0.005
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
7SEP-1SEP	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.03	0.00	0.07	0.24	0.03
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.03	0.00	0.07	0.15	0.17
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
1OCT-5OCT	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.05	0.09	0.10	0.02
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.06	0.06	0.10
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-7OCT	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.18	0.19	0.55	1.03	0.17
	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.09	0.11	0.16	0.61	0.69
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-156 REGIONAL STANDING CROP (IN THOUSANDS) OF SPOTTAIL SHINER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	0	0	0	0	81	0	0	0	17	98
15JUL	SE	0	0	0	0	0	0	0	0	81	0	0	0	17	83
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	0	2	0	78	12	0	97	13	202
27JUL	SE	0	0	0	0	0	0	2	0	78	8	0	26	7	83
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	0	0	0	4	0	0	9	0	0	0	13
10AUG	SE	0	0	0	0	0	0	2	0	0	6	0	0	0	6
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	0	0	0	0	3	10	0	9	0	0	20	42
24AUG	SE	0	0	0	0	0	0	3	10	0	6	0	0	10	15
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	4	0	4
07SEP	SE	0	0	0	0	0	0	0	0	0	0	0	4	0	4
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	0	0	0	19	0	5	0	11	17	52
21SEP	SE	0	0	0	0	0	0	0	12	0	5	0	11	10	20
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	0	0	0	0	1	0	0	0	9	15	7	31
05OCT	SE	0	0	0	0	0	0	1	0	0	0	6	10	5	13
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	0	0	0	0	0	81	0	25	33	89	73	301
17OCT	SE	0	0	0	0	0	0	0	65	0	13	19	26	44	86
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-157 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF SPOTTAIL SHINER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.05
20JUN	SE	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.42
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.27	0.57	0.33	2.33	1.00	0.25	16.00	3.75	2.80	1.00	9.17	3.12
03JUL	SE	0.00	0.27	0.43	0.33	1.86	1.00	0.16	13.12	1.45	1.07	0.43	4.97	14.32
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.43	0.67	11.00	1.67	0.75	4.50	7.13	4.80	6.11	7.42	3.70
18JUL	SE	0.00	0.00	0.30	0.67	10.02	1.67	0.37	1.58	4.47	1.27	1.85	1.69	11.58
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	0.36	0.40	5.60	0.83	39.20	38.20	4.00	2.33	2.10	1.14	7.85
01AUG	SE	0.00	0.00	0.20	0.40	2.98	0.54	25.08	17.39	1.14	1.08	1.28	0.86	30.75
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.00	0.60	0.20	1.00	0.40	5.00	2.60	1.22	0.80	12.57	2.03
14AUG	SE	0.00	0.00	0.00	0.40	0.20	1.00	0.40	3.58	2.36	0.64	0.59	9.86	10.85
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.14	0.00	7.60	0.33	7.00	14.60	0.00	1.00	1.20	3.14	2.92
28AUG	SE	0.00	0.00	0.14	0.00	6.42	0.33	4.14	9.06	0.00	0.67	0.66	1.68	12.01
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.07	1.60	4.80	0.50	0.80	1.00	0.00	0.33	0.20	0.00	0.78
11SEP	SE	0.00	0.00	0.07	0.98	3.60	0.34	0.80	1.00	0.00	0.33	0.20	0.00	3.98
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.80	0.00	0.00	3.60	0.20	0.33	0.00	0.43	0.45
25SEP	SE	0.00	0.00	0.00	0.00	0.37	0.00	0.00	2.29	0.20	0.33	0.00	0.43	2.39
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	1.20	1.00	0.00	0.00	0.00	0.11	0.10	1.86	0.36
09OCT	SE	0.00	0.00	0.00	0.00	0.80	0.82	0.00	0.00	0.00	0.11	0.10	0.59	1.30
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	1.40	0.00	0.00	1.20	1.00	1.33	0.20	1.71	0.57
23OCT	SE	0.00	0.00	0.00	0.00	1.40	0.00	0.00	0.73	0.77	1.11	0.20	1.19	2.40
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-158 REGIONAL STANDING CROP (IN THOUSANDS) OF SPOTTAIL SHINER YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	12	0	0	0	0	0	<0.5	0	0	0	0	13
20JUN	SE	0	9	0	0	0	0	0	<0.5	0	0	0	0	9
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	12	15	3	6	11	2	20	32	49	20	125	295
03JUL	SE	0	12	12	3	5	11	1	16	12	19	8	68	76
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	12	6	29	18	5	6	61	84	120	101	442
18JUL	SE	0	0	8	6	26	18	3	2	38	22	36	23	70
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	10	4	15	9	278	47	34	41	41	16	495
01AUG	SE	0	0	5	4	8	6	178	22	10	19	25	12	183
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	0	6	1	11	3	6	22	21	16	171	256
14AUG	SE	0	0	0	4	1	11	3	4	20	11	12	134	137
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	4	0	20	4	50	18	0	18	24	43	179
28AUG	SE	0	0	4	0	17	4	29	11	0	12	13	23	46
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	2	15	13	5	6	1	0	6	4	0	51
11SEP	SE	0	0	2	9	9	4	6	1	0	6	4	0	16
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	2	0	0	4	2	6	0	6	20
25SEP	SE	0	0	0	0	1	0	0	3	2	6	0	6	9
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	3	11	0	0	0	2	2	25	43
09OCT	SE	0	0	0	0	2	9	0	0	0	2	2	8	12
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	4	0	0	1	9	23	4	23	64
23OCT	SE	0	0	0	0	4	0	0	1	7	19	4	16	27
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-159 REGIONAL DENSITY (NO./1,000m3) OF SPOTTAIL SHINER YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	DENSITY	0.00	0.00	0.00	0.00	0.05	0.00	0.04	NS	NS	NS	NS	NS	NS	0.01
7MAR	SE	0.00	0.00	0.00	0.00	0.05	0.00	0.04							0.07
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.31	0.00	1.04	0.13
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.31	0.00	0.60	0.76
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	1.09	0.12
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.78	0.82
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	1.02	1.04	0.33	0.00	0.00	0.19
6APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.67	0.80	0.33	0.00	0.00	1.10
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85	1.22	2.35	0.34
4MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.61	1.40	1.58
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.29	4.76	0.43	0.00	0.43	0.48
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.29	4.76	0.43	0.00	0.43	4.81
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.17	0.80	2.33	0.75	0.54	0.36
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.17	0.80	1.25	0.75	0.54	1.76
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.45	0.22	0.03	1.40	0.00	2.63	10.84	0.57	2.08	1.40
5MAY	SE	0.00	0.00	0.00	0.00	0.45	0.22	0.03	0.65	0.00	1.16	6.17	0.57	1.14	6.46
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-159 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF SPOTTAIL SHINER YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

... STANDING CROP (IN THOUSANDS) OF SPOTTAIL SHINER YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
4MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	ST. CROP	0	0	0	0	11	0	6	NS	NS	NS	NS	NS	NS	17
7MAR	SE	0	0	0	0	11	0	6							12
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	ST. CROP	0	0	0	0	0	0	0	0	0	51	55	0	74	179
2APR	SE	0	0	0	0	0	0	0	0	0	51	55	0	43	86
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	83	0	0	0	77	160
9APR	SE	0	0	0	0	0	0	0	0	41	0	0	0	55	69
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST. CROP	0	0	0	0	0	0	7	0	168	147	59	0	0	381
6APR	SE	0	0	0	0	0	0	7	0	111	113	59	0	0	169
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	150	197	167	514
4MAY	SE	0	0	0	0	0	0	0	0	0	0	75	98	99	159
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST. CROP	0	0	0	0	0	0	38	0	47	673	76	0	31	865
1MAY	SE	0	0	0	0	0	0	38	0	47	673	76	0	31	680
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	6	0	28	114	411	120	38	717
MAY	SE	0	0	0	0	0	0	6	0	28	114	220	120	38	280
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
MAY-	ST. CROP	0	0	0	0	94	46	5	416	0	372	1911	92	148	3085
MAY	SE	0	0	0	0	94	46	5	193	0	165	1088	92	81	1128
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
AY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
IN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

LE D-160 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF SPOTTAIL SHINER YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

TE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
7JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
4JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	[illegible]	[illegible]	11	13	14	13	8	10	6						81

TABLE D-161 REGIONAL DENSITY (NO./1,000m3) OF SPOTTAIL SHINER YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.27	0.07	0.12	0.32	0.06
15JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.17	0.05	0.05	0.14	0.24
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.22	0.02	0.29	0.40	0.07
27JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.10	0.02	0.18	0.22	0.30
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.16	0.26	0.12	0.33	0.07
10AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.08	0.26	0.07	0.22	0.35
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.15	0.07	0.07	0.60	0.07
24AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.07	0.06	0.05	0.25	0.27
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.07	0.00	0.06	0.61	0.06
07SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.00	0.04	0.30	0.31
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.71	0.00	0.07	0.38	0.09
21SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.32	0.00	0.05	0.18	0.38
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.03	0.21	0.09	0.15	0.04
05OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.03	0.08	0.05	0.10	0.14
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.47	0.71	1.15	2.04	0.35
7OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.15	0.15	0.31	0.62	0.73
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-162 REGIONAL STANDING CROP (IN THOUSANDS) OF SPOTTAIL SHINER YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	0	0	3	0	4	38	13	20	23	99
15JUL	SE	0	0	0	0	0	0	2	0	4	25	9	8	10	30
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	0	2	0	0	31	4	47	28	113
27JUL	SE	0	0	0	0	0	0	1	0	0	15	4	28	15	35
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	0	0	0	0	0	5	23	46	19	24	116
10AUG	SE	0	0	0	0	0	0	0	0	5	12	46	10	15	51
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	0	0	0	0	1	0	0	22	13	11	42	89
24AUG	SE	0	0	0	0	0	0	1	0	0	9	10	7	18	24
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	0	0	0	0	0	0	7	9	0	9	43	69
07SEP	SE	0	0	0	0	0	0	0	0	4	6	0	6	21	23
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	0	0	0	0	4	101	0	11	27	143
21SEP	SE	0	0	0	0	0	0	0	0	4	46	0	7	13	48
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	0	0	0	0	2	0	4	4	37	15	10	72
05OCT	SE	0	0	0	0	0	0	2	0	4	4	15	8	7	19
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	0	0	0	0	0	38	0	67	124	184	145	560
17OCT	SE	0	0	0	0	0	0	0	27	0	21	26	50	44	79
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-163 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF SPOTTAIL SHINER YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.33	6.67	0.00	3.25	12.75	4.38	4.27	8.21	0.33	3.35
20JUN	SE	0.00	0.00	0.00	0.33	4.06	0.00	2.00	6.52	1.88	1.23	2.20	0.33	8.55
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	9.33	2.67	2.00	4.63	4.13	35.67	14.58	6.50	6.62
03JUL	SE	0.00	0.00	0.00	0.00	4.67	1.20	0.71	1.87	1.47	13.76	5.09	4.99	16.42
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	5.00	3.33	1.75	3.00	5.00	5.13	5.05	9.33	3.13
18JUL	SE	0.00	0.00	0.00	0.00	2.31	3.33	1.33	1.92	1.10	1.59	1.42	2.54	5.84
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	0.00	0.20	3.80	1.17	18.20	12.00	1.00	2.67	1.90	1.43	3.53
01AUG	SE	0.00	0.00	0.00	0.20	3.07	0.75	11.20	4.20	0.63	1.51	0.90	0.95	12.55
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.07	0.00	0.80	1.17	0.00	1.20	0.00	0.00	0.10	0.00	0.28
14AUG	SE	0.00	0.00	0.07	0.00	0.37	1.17	0.00	0.80	0.00	0.00	0.10	0.00	1.47
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	1.17	4.40	0.60	0.00	0.00	0.20	0.00	0.53
28AUG	SE	0.00	0.00	0.00	0.00	0.00	1.17	1.91	0.60	0.00	0.00	0.20	0.00	2.33
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.03
11SEP	SE	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.28
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.11	0.00	0.00	0.04
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.11	0.00	0.00	0.27
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.40	0.00	0.00	1.40	0.00	0.78	0.00	0.14	0.23
23OCT	SE	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.87	0.00	0.40	0.00	0.14	1.05
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-164 REGIONAL STANDING CROP (IN THOUSANDS) OF SPOTTAIL SHINER YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	3	18	0	23	16	38	75	162	5	338
20JUN	SE	0	0	0	3	11	0	14	8	16	22	43	5	55
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	25	28	14	6	36	626	287	88	1110
03JUL	SE	0	0	0	0	12	13	5	2	13	242	100	68	271
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	13	36	12	4	43	90	99	127	424
18JUL	SE	0	0	0	0	6	36	9	2	9	28	28	34	65
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	0	2	10	12	129	15	9	47	37	19	281
01AUG	SE	0	0	0	2	8	8	79	5	5	26	18	13	88
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	2	0	2	12	0	1	0	0	2	0	20
14AUG	SE	0	0	2	0	1	12	0	1	0	0	2	0	13
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	0	0	0	12	31	1	0	0	4	0	48
28AUG	SE	0	0	0	0	0	12	14	1	0	0	4	0	19
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	1	0	0	<0.5	0	0	0	0	1
11SEP	SE	0	0	0	0	1	0	0	<0.5	0	0	0	0	1
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	<0.5	0	2	0	0	2
25SEP	SE	0	0	0	0	0	0	0	<0.5	0	2	0	0	2
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	1	0	0	2	0	14	0	2	18
23OCT	SE	0	0	0	0	1	0	0	1	0	7	0	2	7
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-165 REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC STURGEON YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-165 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC STURGEON YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	NS	NS	NS	NS	NS	0.03
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22						0.22
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-166 REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC STURGEON YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-166 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC STURGEON YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	65	NS	NS	NS	NS	NS	65
09OCT	SE	0	0	0	0	0	0	0	65						65
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-167 REGIONAL DENSITY (NO./1,000m3) OF ATLANTIC STURGEON YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.04	0.01
15JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.04	0.06
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	<0.005
27JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.04
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	<0.005
24AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.05	<0.005
07SEP	SE	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005
21SEP	SE	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	<0.005
05OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.03
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-168 REGIONAL STANDING CROP (IN THOUSANDS) OF ATLANTIC STURGEON YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	0	0	6	0	0	0	0	0	3	9
15JUL	SE	0	0	0	0	0	0	6	0	0	0	0	0	3	6
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	0	5	0	0	0	0	0	0	5
27JUL	SE	0	0	0	0	0	0	5	0	0	0	0	0	0	5
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	4	0	0	4
24AUG	SE	0	0	0	0	0	0	0	0	0	0	4	0	0	4
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	0	0	0	3	0	0	0	0	0	0	3	7
07SEP	SE	0	0	0	0	0	3	0	0	0	0	0	0	3	5
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	0	3	0	0	0	0	0	0	0	3
21SEP	SE	0	0	0	0	0	3	0	0	0	0	0	0	0	3
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	0	0	0	0	0	9	0	0	0	0	0	9
05OCT	SE	0	0	0	0	0	0	0	9	0	0	0	0	0	9
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-169 REGIONAL DENSITY (NO./1,000m3) OF SHORTNOSE STURGEON YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.43	0.00	6.73	0.59
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.43	0.00	2.90	2.97
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-169 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF SHORTNOSE STURGEON YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.34	0.00	0.00	0.00	0.00	0.64
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.34	0.00	0.00	0.00	0.00	8.34
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-170 REGIONAL STANDING CROP (IN THOUSANDS) OF SHORTNOSE STURGEON YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
4MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
7MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	67	75	0	479	621
18MAY	SE	0	0	0	0	0	0	0	0	0	67	75	0	206	230
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-170 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF SHORTNOSE STURGEON YOLK-SAC LARVAE IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	1380	0	0	0	0	1380
14JUN	SE	0	0	0	0	0	0	0	0	1380	0	0	0	0	1380
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-171 REGIONAL DENSITY (NO./1,000m3) OF SHORTNOSE STURGEON YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12	0.00	0.09
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12	0.00	1.12
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
13MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.03
18MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.39
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-171 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF SHORTNOSE STURGEON YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.01
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.17
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
03JUL	SE	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	NS	NS	NS	NS	NS	0.01
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00						0.11
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-172 REGIONAL STANDING CROP (IN THOUSANDS) OF SHORTNOSE STURGEON YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	181	0	181
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	181	0	181
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	28	28
8MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	28	28
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-172 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF SHORTNOSE STURGEON YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	28	0	0	0	0	28
14JUN	SE	0	0	0	0	0	0	0	0	28	0	0	0	0	28
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	19	0	0	0	0	0	0	0	0	19
03JUL	SE	0	0	0	0	19	0	0	0	0	0	0	0	0	19
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	23	0	0	NS	NS	NS	NS	NS	23
02AUG	SE	0	0	0	0	0	23	0	0						23
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-173 REGIONAL DENSITY (NO./1,000m3) OF SHORTNOSE STURGEON YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.01
15JUL	SE	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.05
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.04	0.00	0.00	0.01
27JUL	SE	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.03	0.00	0.00	0.04
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.07	0.06	0.00	0.01
10AUG	SE	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.04	0.00	0.07
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	0.00	0.01	0.00	0.02	0.00	0.00	0.08	0.03	0.05	0.03	0.03	0.03	0.00	0.02
24AUG	SE	0.00	0.01	0.00	0.02	0.00	0.00	0.05	0.03	0.03	0.03	0.03	0.03	0.00	0.09
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.00	0.00	0.03	0.00	0.00	0.00	0.03	0.00	0.02	0.06	0.02	0.06	0.00	0.02
07SEP	SE	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.02	0.04	0.02	0.04	0.00	0.08
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.00	0.02	0.00	0.00	0.03	0.04	0.00	0.05	0.03	0.00	0.03	0.00	0.01
21SEP	SE	0.00	0.00	0.02	0.00	0.00	0.02	0.04	0.00	0.03	0.03	0.00	0.03	0.00	0.07
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.01
05OCT	SE	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.04
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-	DENSITY	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.03	0.00	0.01
7OCT	SE	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.03	0.00	0.04
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-174 REGIONAL STANDING CROP (IN THOUSANDS) OF SHORTNOSE STURGEON YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	3	0	0	5	0	0	4	0	0	0	12
15JUL	SE	0	0	0	3	0	0	5	0	0	4	0	0	0	7
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	2	0	0	0	0	0	0	3	0	7	0	0	13
27JUL	SE	0	2	0	0	0	0	0	0	3	0	5	0	0	6
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	5	0	0	0	0	0	0	4	12	10	0	31
10AUG	SE	0	0	5	0	0	0	0	0	0	4	8	7	0	13
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	3	0	3	0	0	11	9	9	4	5	5	0	50
24AUG	SE	0	3	0	3	0	0	7	9	6	4	5	5	0	16
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	11	0	0	0	5	0	4	8	4	9	0	42
07SEP	SE	0	0	7	0	0	0	5	0	4	6	4	6	0	13
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	5	0	0	7	5	0	7	4	0	5	0	34
21SEP	SE	0	0	5	0	0	4	5	0	5	4	0	5	0	12
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	0	7	0	0	0	0	0	3	4	0	0	14
05OCT	SE	0	0	0	4	0	0	0	0	0	3	4	0	0	7
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	3	0	0	0	0	0	0	4	0	0	5	0	13
17OCT	SE	0	3	0	0	0	0	0	0	4	0	0	5	0	8
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-175 REGIONAL DENSITY (NO./1,000m3) OF WHITE CATFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
14MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-175 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF WHITE CATFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	NS	NS	NS	NS	NS	0.03
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26						0.26
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.12	0.05	0.00	NS	NS	NS	NS	NS	0.02
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.12	0.05	0.00						0.13
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.72	0.00	NS	NS	NS	NS	NS	0.09
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.72	0.00						0.72
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.23	0.45	0.76	NS	NS	NS	NS	NS	0.18
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.13	0.45	0.76						0.89
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.16	0.29	0.00	NS	NS	NS	NS	NS	0.06
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.16	0.29	0.00						0.34
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.14	0.10	0.58	0.00	NS	NS	NS	NS	NS	0.10
09OCT	SE	0.00	0.00	0.00	0.00	0.14	0.10	0.58	0.00						0.60
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-176 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE CATFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-176 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE CATFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	78	NS	NS	NS	NS	NS	78
19JUL	SE	0	0	0	0	0	0	0	78						78
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	24	7	0	NS	NS	NS	NS	NS	31
17AUG	SE	0	0	0	0	0	24	7	0						25
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	101	0	NS	NS	NS	NS	NS	101
29AUG	SE	0	0	0	0	0	0	101	0						101
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	48	63	226	NS	NS	NS	NS	NS	337
11SEP	SE	0	0	0	0	0	28	63	226						236
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	34	41	0	NS	NS	NS	NS	NS	75
25SEP	SE	0	0	0	0	0	34	41	0						53
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	30	21	81	0	NS	NS	NS	NS	NS	131
09OCT	SE	0	0	0	0	30	21	81	0						89
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-177 REGIONAL DENSITY (NO./1,000m3) OF WHITE CATFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.02	0.00	0.07	0.59	0.89	0.12
15JUL	SE	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.02	0.00	0.04	0.34	0.49	0.60
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.08	0.69	1.68	0.44	0.23
27JUL	SE	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.06	0.35	0.60	0.15	0.71
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.02	0.52	0.09	0.17	0.66	0.56	0.71	0.38	0.24
10AUG	SE	0.00	0.00	0.00	0.00	0.00	0.02	0.50	0.06	0.06	0.33	0.32	0.19	0.23	0.74
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	DENSITY	0.00	0.00	0.01	0.00	0.00	0.02	0.08	0.03	0.19	0.44	1.17	0.37	0.19	0.19
24AUG	SE	0.00	0.00	0.01	0.00	0.00	0.02	0.08	0.03	0.13	0.18	0.59	0.12	0.07	0.65
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.16	0.09	0.47	0.67	0.46	0.29	0.19
07SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.12	0.07	0.28	0.30	0.10	0.12	0.48
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.71	0.09	0.13	0.07	0.38	0.09	0.88	0.53	0.22
21SEP	SE	0.00	0.00	0.00	0.00	0.00	0.70	0.05	0.06	0.05	0.15	0.09	0.32	0.38	0.88
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	DENSITY	0.00	0.00	0.00	0.00	0.13	0.03	0.30	0.06	0.63	0.10	0.26	0.31	1.27	0.24
05OCT	SE	0.00	0.00	0.00	0.00	0.05	0.03	0.16	0.04	0.54	0.06	0.11	0.10	0.66	0.89
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
30CT-	DENSITY	0.00	0.00	0.00	0.00	0.02	0.17	0.83	0.00	0.03	0.31	0.39	0.52	0.22	0.19
70CT	SE	0.00	0.00	0.00	0.00	0.02	0.08	0.61	0.00	0.03	0.16	0.21	0.28	0.12	0.74
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-178 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE CATFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	0	0	0	3	1	0	4	0	13	94	63	179
15JUL	SE	0	0	0	0	0	3	1	0	4	0	7	55	35	66
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	0	0	0	0	4	0	0	4	11	121	270	31	441
27JUL	SE	0	0	0	0	0	4	0	0	4	8	62	96	10	115
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	0	0	0	0	4	72	27	29	93	98	115	27	465
10AUG	SE	0	0	0	0	0	4	69	18	10	46	56	31	16	108
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	0	4	0	0	4	12	10	32	62	205	59	14	402
24AUG	SE	0	0	4	0	0	4	12	10	21	25	104	19	5	112
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	0	0	0	0	43	48	16	67	117	73	21	386
07SEP	SE	0	0	0	0	0	0	19	37	12	39	52	17	9	81
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	0	0	0	148	13	38	12	54	16	141	37	460
21SEP	SE	0	0	0	0	0	145	6	17	8	21	16	51	27	159
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	0	0	28	7	42	19	105	15	45	50	90	400
05OCT	SE	0	0	0	0	11	7	22	12	90	8	20	15	47	108
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	0	0	0	4	34	115	0	4	45	69	83	16	371
17OCT	SE	0	0	0	0	4	18	85	0	4	22	38	45	8	108
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-179 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF WHITE CATFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
01AUG	SE	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.02
28AUG	SE	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.18
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-180 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE CATFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
20JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
18JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	2	0	0	0	0	0	0	0	0	0	2
01AUG	SE	0	0	2	0	0	0	0	0	0	0	0	0	2
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
14AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	4	0	0	0	0	0	0	2	0	0	6
28AUG	SE	0	0	4	0	0	0	0	0	0	2	0	0	4
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-181 REGIONAL DENSITY (NO./1,000m3) OF WHITE CATFISH YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	DENSITY	0.00	0.00	0.00	0.00	0.80	0.00	0.00	NS	NS	NS	NS	NS	NS	0.11
14MAR	SE	0.00	0.00	0.00	0.00	0.80	0.00	0.00							0.80
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.27	0.42	0.00	0.00	NS	NS	NS	NS	NS	NS	0.10
27MAR	SE	0.00	0.00	0.00	0.27	0.42	0.00	0.00							0.50
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.20	0.92	0.10	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.10
12APR	SE	0.00	0.00	0.00	0.20	0.54	0.10	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.58
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
15APR-	DENSITY	0.00	0.25	0.17	0.39	0.00	0.00	0.31	0.29	0.24	0.00	0.00	0.59	0.00	0.17
19APR	SE	0.00	0.25	0.17	0.28	0.00	0.00	0.31	0.29	0.24	0.00	0.00	0.59	0.00	0.87
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.95	0.00	0.00	0.38	0.09	0.28	0.00	0.52	0.00	0.00	0.00	0.00	0.17
26APR	SE	0.00	0.55	0.00	0.00	0.32	0.09	0.28	0.00	0.52	0.00	0.00	0.00	0.00	0.87
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.22	0.21	0.19	0.38	0.00	0.00	0.16	0.00	0.40	0.00	0.00	0.12
04MAY	SE	0.00	0.00	0.22	0.21	0.19	0.38	0.00	0.00	0.16	0.00	0.40	0.00	0.00	0.68
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.32	1.35	0.00	0.06	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
1MAY	SE	0.00	0.24	0.62	0.00	0.06	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	3.47	0.35	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.31
8MAY	SE	0.00	1.27	0.35	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	1.34
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	1.73	0.63	0.56	0.00	0.12	2.82	0.00	0.00	0.27	0.54	0.00	0.00	0.51
5MAY	SE	0.00	1.20	0.43	0.56	0.00	0.12	1.62	0.00	0.00	0.27	0.54	0.00	0.00	2.23
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-181 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF WHITE CATFISH YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
19JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
02AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
17AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
29AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-182 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE CATFISH YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	167	0	0	NS	NS	NS	NS	NS	NS	167
4MAR	SE	0	0	0	0	167	0	0							167
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	40	89	0	0	NS	NS	NS	NS	NS	NS	129
27MAR	SE	0	0	0	40	89	0	0							97
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	30	191	20	6	0	0	0	0	0	0	247
2APR	SE	0	0	0	30	112	20	6	0	0	0	0	0	0	117
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	57	55	58	0	0	43	86	39	0	0	95	0	433
9APR	SE	0	57	55	41	0	0	43	86	39	0	0	95	0	167
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	ST. CROP	0	217	0	0	79	18	39	0	86	0	0	0	0	439
26APR	SE	0	126	0	0	68	18	39	0	86	0	0	0	0	172
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	ST. CROP	0	0	72	31	40	79	0	0	27	0	70	0	0	318
04MAY	SE	0	0	72	31	40	79	0	0	27	0	70	0	0	140
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	ST. CROP	0	73	435	0	12	74	0	0	0	0	0	0	0	594
1MAY	SE	0	56	199	0	12	37	0	0	0	0	0	0	0	211
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	797	114	0	0	0	37	0	0	0	0	0	0	947
8MAY	SE	0	291	114	0	0	0	32	0	0	0	0	0	0	314
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	ST. CROP	0	397	202	83	0	26	395	0	0	39	95	0	0	1236
25MAY	SE	0	276	139	83	0	26	226	0	0	39	95	0	0	406
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-182 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE CATFISH YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
19JUL	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
02AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
17AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
29AUG	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-183 REGIONAL DENSITY (NO./1,000m3) OF WHITE CATFISH YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	DENSITY	0.00	0.00	0.18	0.15	0.04	0.02	0.11	0.16	0.00	0.00	0.19	0.26	0.14	0.10
15JUL	SE	0.00	0.00	0.06	0.06	0.03	0.02	0.05	0.08	0.00	0.00	0.09	0.15	0.07	0.23
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	DENSITY	0.00	0.02	0.19	0.21	0.14	0.76	0.04	0.00	0.02	0.08	0.11	0.08	0.13	0.14
27JUL	SE	0.00	0.01	0.11	0.08	0.09	0.75	0.04	0.00	0.02	0.06	0.05	0.06	0.09	0.78
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	DENSITY	0.00	0.06	0.39	0.36	0.07	0.02	0.01	0.00	0.00	0.00	0.21	0.09	0.20	0.11
0AUG	SE	0.00	0.05	0.09	0.09	0.07	0.02	0.01	0.00	0.00	0.00	0.11	0.06	0.12	0.23
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG-	DENSITY	0.00	0.18	0.27	0.04	0.01	0.02	0.00	0.00	0.00	0.00	0.25	0.14	0.98	0.14
4AUG	SE	0.00	0.11	0.08	0.04	0.01	0.02	0.00	0.00	0.00	0.00	0.09	0.08	0.31	0.36
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
3SEP-	DENSITY	0.00	0.00	0.20	0.26	0.04	0.00	0.03	0.00	0.00	0.03	0.05	0.16	0.00	0.06
7SEP	SE	0.00	0.00	0.07	0.09	0.03	0.00	0.02	0.00	0.00	0.03	0.03	0.09	0.00	0.16
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
7SEP-	DENSITY	0.00	0.00	0.28	0.15	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.05
1SEP	SE	0.00	0.00	0.08	0.07	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.13
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
1OCT-	DENSITY	0.00	0.02	0.28	0.23	0.06	0.00	0.00	0.03	0.02	0.00	0.02	0.22	0.45	0.10
5OCT	SE	0.00	0.02	0.07	0.09	0.04	0.00	0.00	0.03	0.02	0.00	0.02	0.19	0.23	0.32
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-	DENSITY	0.00	0.09	0.36	0.18	0.03	0.00	0.04	0.00	0.00	0.00	0.05	0.00	0.00	0.06
7OCT	SE	0.00	0.04	0.09	0.08	0.03	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.00	0.13
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-184 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE CATFISH YEARLING & OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	0	0	57	22	9	3	15	49	0	0	33	42	10	240
15JUL	SE	0	0	19	9	6	3	7	23	0	0	16	24	5	44
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	0	5	60	31	28	158	5	0	4	11	19	13	9	343
27JUL	SE	0	3	37	12	18	155	5	0	4	8	8	9	6	162
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	0	14	125	53	14	4	2	0	0	0	37	14	14	277
10AUG	SE	0	11	31	13	14	4	2	0	0	0	20	10	9	45
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	40	87	6	1	4	0	0	0	0	45	22	70	275
24AUG	SE	0	24	26	6	1	4	0	0	0	0	15	12	22	47
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	64	39	9	0	4	0	0	5	8	25	0	154
07SEP	SE	0	0	21	14	6	0	3	0	0	5	6	15	0	31
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	0	90	21	7	0	0	0	0	0	0	22	0	141
21SEP	SE	0	0	25	10	4	0	0	0	0	0	0	13	0	30
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	4	90	34	13	0	0	9	3	0	4	35	32	224
05OCT	SE	0	4	23	13	8	0	0	9	3	0	4	30	16	45
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	0	22	117	27	5	0	5	0	0	0	9	0	0	185
17OCT	SE	0	8	28	11	5	0	3	0	0	0	6	0	0	32
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF WHITE CATFISH YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.01
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.07
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.08	0.01
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.08	0.10
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.07	0.05	0.08	0.06
18JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.07	0.05	0.08	0.51
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
01AUG	SE	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.00	0.00	0.43	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.07
14AUG	SE	0.00	0.00	0.43	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.49
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.03
28AUG	SE	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.29
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-186 REGIONAL STANDING CROP (IN THOUSANDS) OF WHITE CATFISH YEARLING AND OLDER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	1	0	0	1
20JUN	SE	0	0	0	0	0	0	0	0	0	1	0	0	1
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	1	1	2
03JUL	SE	0	0	0	0	0	0	0	0	0	0	1	1	2
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	0	0	4	0	0	1	1	1	7
18JUL	SE	0	0	0	0	0	0	4	0	0	1	1	1	4
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	0	0	4	0	0	0	0	0	0	0	0	0	4
01AUG	SE	0	0	4	0	0	0	0	0	0	0	0	0	4
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	0	0	12	0	0	0	3	0	0	0	0	0	14
14AUG	SE	0	0	12	0	0	0	2	0	0	0	0	0	12
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	6	0	0	0	0	<0.5	0	0	0	0	6
28AUG	SE	0	0	6	0	0	0	0	<0.5	0	0	0	0	6
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-187 REGIONAL DENSITY (NO./1,000m3) OF WEAKFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-187 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF WEAKFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	6.29	275.42	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	35.21
19JUL	SE	1.97	82.96	0.00	0.00	0.00	0.00	0.00	0.00						82.99
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	4.09	17.22	24.40	10.80	5.15	0.00	0.00	0.00	NS	NS	NS	NS	NS	7.71
02AUG	SE	2.06	10.99	19.74	5.00	2.59	0.00	0.00	0.00						23.38
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	6.51	4.39	8.22	2.02	10.90	0.00	0.00	0.00	NS	NS	NS	NS	NS	4.01
17AUG	SE	3.99	2.46	3.29	0.89	6.68	0.00	0.00	0.00						8.84
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	7.02	0.00	0.00	7.40	9.87	0.00	0.00	0.00	NS	NS	NS	NS	NS	3.04
29AUG	SE	4.57	0.00	0.00	2.67	7.12	0.00	0.00	0.00						8.87
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	2.04	7.86	0.82	0.00	0.00	1.06	0.00	0.00	NS	NS	NS	NS	NS	1.47
11SEP	SE	2.04	4.01	0.82	0.00	0.00	0.53	0.00	0.00						4.60
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	3.32	3.58	2.54	1.92	2.21	0.00	0.00	0.00	NS	NS	NS	NS	NS	1.70
25SEP	SE	3.32	1.67	2.22	1.92	1.14	0.00	0.00	0.00						4.87
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.31	1.98	0.35	0.77	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.43
09OCT	SE	0.31	0.97	0.35	0.62	0.00	0.00	0.00	0.00						1.24
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-188 REGIONAL STANDING CROP (IN THOUSANDS) OF WEAKFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
4MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
5MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
7MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
8APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-188 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF WEAKFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	1315	63186	0	0	0	0	0	0	NS	NS	NS	NS	NS	64500
19JUL	SE	411	19033	0	0	0	0	0	0						19038
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	856	3950	7852	1596	1073	0	0	0	NS	NS	NS	NS	NS	15327
02AUG	SE	430	2522	6353	738	540	0	0	0						6910
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	1361	1007	2645	299	2270	0	0	0	NS	NS	NS	NS	NS	7583
17AUG	SE	833	564	1059	131	1391	0	0	0						2022
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	1468	0	0	1094	2056	0	0	0	NS	NS	NS	NS	NS	4618
29AUG	SE	955	0	0	394	1484	0	0	0						1808
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	426	1803	263	0	0	219	0	0	NS	NS	NS	NS	NS	2711
11SEP	SE	426	919	263	0	0	110	0	0						1052
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	694	822	817	284	461	0	0	0	NS	NS	NS	NS	NS	3076
25SEP	SE	694	383	715	284	238	0	0	0						1130
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	65	455	113	114	0	0	0	0	NS	NS	NS	NS	NS	746
09OCT	SE	65	223	113	91	0	0	0	0						274
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-189 REGIONAL DENSITY (NO./1,000m3) OF WEAKFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
0JUL- 5JUL	DENSITY	0.77	1.17	2.91	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46
	SE	0.46	0.64	0.66	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.08
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
2JUL- 7JUL	DENSITY	1.17	2.79	7.31	1.10	18.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.37
	SE	0.62	0.92	3.72	0.40	13.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.16
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
5AUG- 0AUG	DENSITY	3.10	4.62	4.62	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
	SE	1.92	1.51	0.84	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.70
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG- 4AUG	DENSITY	2.68	1.97	2.32	3.42	4.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12
	SE	1.06	0.69	0.57	1.09	3.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.23
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
3SEP- 7SEP	DENSITY	2.15	1.62	1.18	0.46	0.88	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
	SE	0.56	0.45	0.25	0.09	0.41	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
7SEP- 1SEP	DENSITY	1.50	0.07	0.78	0.28	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
	SE	0.73	0.07	0.21	0.15	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.97
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
1OCT- 5OCT	DENSITY	1.75	2.05	0.21	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32
	SE	0.89	0.55	0.06	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT- 7OCT	DENSITY	0.83	1.39	0.02	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
	SE	0.15	0.74	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-190 REGIONAL STANDING CROP (IN THOUSANDS) OF WEAKFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUL-	ST. CROP	160	270	936	161	0	0	0	0	0	0	0	0	0	1526
15JUL	SE	96	147	212	52	0	0	0	0	0	0	0	0	0	279
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
22JUL-	ST. CROP	244	640	2354	163	3840	0	0	0	0	0	0	0	0	7240
27JUL	SE	130	212	1198	59	2835	0	0	0	0	0	0	0	0	3088
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
05AUG-	ST. CROP	648	1060	1488	386	0	0	0	0	0	0	0	0	0	3582
10AUG	SE	402	347	269	114	0	0	0	0	0	0	0	0	0	606
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	560	452	745	506	871	0	0	0	0	0	0	0	0	3134
24AUG	SE	222	158	184	160	802	0	0	0	0	0	0	0	0	881
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	449	372	381	68	182	46	0	0	0	0	0	0	0	1499
07SEP	SE	118	104	82	13	85	38	0	0	0	0	0	0	0	200
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	314	15	252	41	160	0	0	0	0	0	0	0	0	783
21SEP	SE	153	15	68	22	119	0	0	0	0	0	0	0	0	207
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	366	470	68	23	0	0	0	0	0	0	0	0	0	927
05OCT	SE	186	125	19	17	0	0	0	0	0	0	0	0	0	226
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	173	320	7	7	5	0	0	0	0	0	0	0	0	512
17OCT	SE	31	171	7	5	5	0	0	0	0	0	0	0	0	174
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-191 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF WEAKFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18JUL	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	1.60	0.04	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
01AUG	SE	1.03	0.04	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.40	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
14AUG	SE	0.40	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28AUG	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-192 REGIONAL STANDING CROP (IN THOUSANDS) OF WEAKFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
20JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
18JUL	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	12	2	4	0	0	0	0	0	0	0	0	0	18
01AUG	SE	8	2	4	0	0	0	0	0	0	0	0	0	9
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	3	23	0	0	0	0	0	0	0	0	0	0	26
14AUG	SE	3	11	0	0	0	0	0	0	0	0	0	0	11
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
28AUG	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
11SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
09OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-193 REGIONAL DENSITY (NO./1,000m3) OF BLUEFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
2MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
4MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	NS	0.00
27MAR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
22APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26APR	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
29APR-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
06MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
21MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25MAY	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
28MAY-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
03JUN-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08JUN	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-193 (CONT.) REGIONAL DENSITY (NO./1,000m3) OF BLUEFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	DENSITY	0.00	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
14JUN	SE	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	DENSITY	0.00	0.10	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
22JUN	SE	0.00	0.10	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	DENSITY	0.00	0.00	0.12	0.00	0.20	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
29JUN	SE	0.00	0.00	0.12	0.00	0.17	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	DENSITY	0.00	0.23	0.41	0.24	1.11	0.54	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.22
03JUL	SE	0.00	0.23	0.31	0.24	0.86	0.54	0.18	0.00	0.00	0.00	0.00	0.00	0.00	1.13
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	DENSITY	0.84	1.01	0.00	0.00	0.12	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.25
19JUL	SE	0.49	0.58	0.00	0.00	0.12	0.00	0.00	0.00						0.77
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	DENSITY	0.00	0.57	0.22	0.54	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.17
02AUG	SE	0.00	0.57	0.22	0.40	0.00	0.00	0.00	0.00						0.73
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	DENSITY	1.02	0.70	0.33	0.00	0.08	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.27
17AUG	SE	1.02	0.70	0.33	0.00	0.08	0.00	0.00	0.00						1.28
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	DENSITY	0.00	0.00	0.00	0.22	0.58	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.10
29AUG	SE	0.00	0.00	0.00	0.22	0.58	0.00	0.00	0.00						0.62
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
11SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	DENSITY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NS	NS	NS	NS	NS	0.00
09OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00
	NO. TOWS	6	11	13	14	13	8	10	6						81

TABLE D-194 REGIONAL STANDING CROP (IN THOUSANDS) OF BLUEFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
12MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
14MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
25MAR-	ST. CROP	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0
27MAR	SE	0	0	0	0	0	0	0							0
	NO. TOWS	10	10	11	11	10	10	12							74
08APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
5APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	14	12	10	11	6	7	7	7	7	9	125
2APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6APR	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	7	13	15	15	12	10	11	6	7	7	7	7	9	126
9APR-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
6MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	16	15	12	6	14	10	11	7	8	8	10	136
3MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	6	13	15	15	12	6	14	10	11	7	8	8	10	135
1MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5MAY	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	15	12	7	14	10	9	7	8	6	6	126
8MAY-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	6	126
3JUN-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3JUN	SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	8	10	14	14	13	7	14	10	9	7	8	6	5	125

TABLE D-194 (CONT.) REGIONAL STANDING CROP (IN THOUSANDS) OF BLUEFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM LONGITUDINAL RIVER ICHTHYOPLANKTON SURVEY, 1996

DATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
10JUN-	ST. CROP	0	0	136	0	0	0	0	0	0	0	0	0	0	136
14JUN	SE	0	0	101	0	0	0	0	0	0	0	0	0	0	101
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUN-	ST. CROP	0	22	0	32	0	0	0	0	0	0	0	0	0	54
22JUN	SE	0	22	0	32	0	0	0	0	0	0	0	0	0	39
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
24JUN-	ST. CROP	0	0	38	0	41	20	0	0	0	0	0	0	0	100
29JUN	SE	0	0	38	0	35	20	0	0	0	0	0	0	0	56
	NO. TOWS	7	11	14	11	11	9	16	7	10	7	6	6	6	121
30JUN-	ST. CROP	0	52	131	35	230	111	45	0	0	0	0	0	0	606
03JUL	SE	0	52	100	35	179	111	26	0	0	0	0	0	0	243
	NO. TOWS	7	11	14	11	13	9	16	7	10	7	6	6	6	123
17JUL-	ST. CROP	175	233	0	0	25	0	0	0	NS	NS	NS	NS	NS	432
19JUL	SE	103	132	0	0	25	0	0	0						169
	NO. TOWS	6	11	13	14	13	8	10	6						81
31JUL-	ST. CROP	0	132	72	80	0	0	0	0	NS	NS	NS	NS	NS	284
02AUG	SE	0	132	72	59	0	0	0	0						161
	NO. TOWS	6	11	13	14	13	8	10	6						81
15AUG-	ST. CROP	213	161	106	0	16	0	0	0	NS	NS	NS	NS	NS	495
17AUG	SE	213	161	106	0	16	0	0	0						287
	NO. TOWS	6	11	13	14	13	8	10	6						81
26AUG-	ST. CROP	0	0	0	33	121	0	0	0	NS	NS	NS	NS	NS	153
29AUG	SE	0	0	0	33	121	0	0	0						125
	NO. TOWS	6	11	13	14	13	8	10	6						81
09SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
11SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	9	6						80
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
25SEP	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	13	13	7	10	6						79
07OCT-	ST. CROP	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0
09OCT	SE	0	0	0	0	0	0	0	0						0
	NO. TOWS	6	11	13	14	13	8	10	6						81

ABLE D-195 REGIONAL DENSITY (NO./1,000m3) OF BLUEFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

ATE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
0JUL-	DENSITY	0.00	0.00	0.01	0.48	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
5JUL	SE	0.00	0.00	0.01	0.35	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
2JUL-	DENSITY	0.00	0.04	0.02	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
7JUL	SE	0.00	0.04	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
5AUG-	DENSITY	0.00	0.00	0.32	0.13	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
0AUG	SE	0.00	0.00	0.32	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
9AUG-	DENSITY	0.00	0.06	0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
4AUG	SE	0.00	0.05	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
3SEP-	DENSITY	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005
7SEP	SE	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
7SEP-	DENSITY	0.00	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.005
1SEP	SE	0.00	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
1OCT-	DENSITY	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
5OCT	SE	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
3OCT-	DENSITY	0.42	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
7OCT	SE	0.42	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

BLE D-196 REGIONAL STANDING CROP (IN THOUSANDS) OF BLUEFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

TE		BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
)JUL-	ST. CROP	0	0	4	71	1	0	0	0	0	0	0	0	0	76
5JUL	SE	0	0	4	52	1	0	0	0	0	0	0	0	0	52
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
2JUL-	ST. CROP	0	8	6	4	7	0	0	0	0	0	0	0	0	26
7JUL	SE	0	8	6	4	5	0	0	0	0	0	0	0	0	12
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
)5AUG-	ST. CROP	0	0	102	19	4	0	0	0	0	0	0	0	0	125
10AUG	SE	0	0	102	7	4	0	0	0	0	0	0	0	0	102
	NO. TOWS	13	17	40	25	13	8	13	8	9	14	17	17	13	207
19AUG-	ST. CROP	0	13	15	0	1	0	0	0	0	0	0	0	0	30
24AUG	SE	0	11	9	0	1	0	0	0	0	0	0	0	0	14
	NO. TOWS	13	17	40	25	14	8	13	8	10	13	17	17	13	208
03SEP-	ST. CROP	0	0	4	0	4	0	0	0	0	0	0	0	0	8
07SEP	SE	0	0	4	0	4	0	0	0	0	0	0	0	0	6
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
17SEP-	ST. CROP	0	2	0	4	0	4	0	0	0	0	0	0	0	10
21SEP	SE	0	2	0	4	0	4	0	0	0	0	0	0	0	6
	NO. TOWS	13	16	40	25	14	8	13	8	10	14	17	17	13	208
01OCT-	ST. CROP	0	0	45	0	0	0	0	0	0	0	0	0	0	45
05OCT	SE	0	0	45	0	0	0	0	0	0	0	0	0	0	45
	NO. TOWS	13	17	40	25	14	8	13	8	10	14	17	17	13	209
13OCT-	ST. CROP	88	0	0	0	139	0	0	0	0	0	0	0	0	227
17OCT	SE	88	0	0	0	139	0	0	0	0	0	0	0	0	165
	NO. TOWS	14	17	40	25	14	8	13	8	10	14	17	17	13	210

TABLE D-197 REGIONAL CATCH-PER-UNIT-EFFORT (CPUE) OF BLUEFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	CPUE	0.00	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
20JUN	SE	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	CPUE	0.33	0.91	3.00	0.00	1.33	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.58
03JUL	SE	0.33	0.37	1.11	0.00	1.33	0.67	0.00	0.00	0.00	0.00	0.00	0.00	1.93
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	CPUE	0.00	0.27	1.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
18JUL	SE	0.00	0.14	0.44	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	CPUE	0.20	0.17	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
01AUG	SE	0.20	0.10	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	CPUE	0.20	0.17	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
14AUG	SE	0.20	0.08	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	CPUE	0.00	0.04	0.21	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
28AUG	SE	0.00	0.04	0.15	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	CPUE	0.00	0.08	0.21	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
11SEP	SE	0.00	0.06	0.15	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25SEP	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	CPUE	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
09OCT	SE	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	CPUE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23OCT	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

TABLE D-198 REGIONAL STANDING CROP (IN THOUSANDS) OF BLUEFISH YOUNG-OF-YEAR IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATE		YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL	ALL REGIONS COMBINED
18JUN-	ST. CROP	0	25	0	0	0	0	0	0	0	0	0	0	25
20JUN	SE	0	21	0	0	0	0	0	0	0	0	0	0	21
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
01JUL-	ST. CROP	3	41	81	0	4	14	0	0	0	0	0	0	142
03JUL	SE	3	17	30	0	4	7	0	0	0	0	0	0	35
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
15JUL-	ST. CROP	0	12	27	15	0	0	0	0	0	0	0	0	55
18JUL	SE	0	6	12	8	0	0	0	0	0	0	0	0	16
	NO. TOWS	3	11	7	3	3	3	8	8	8	15	19	12	100
29JUL-	ST. CROP	2	8	12	0	0	0	0	0	0	0	0	0	21
01AUG	SE	2	4	6	0	0	0	0	0	0	0	0	0	8
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
12AUG-	ST. CROP	2	8	10	0	0	0	0	0	0	0	0	0	19
14AUG	SE	2	4	5	0	0	0	0	0	0	0	0	0	7
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
26AUG-	ST. CROP	0	2	6	0	1	0	0	0	0	0	0	0	8
28AUG	SE	0	2	4	0	1	0	0	0	0	0	0	0	5
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
09SEP-	ST. CROP	0	4	6	4	0	0	0	0	0	0	0	0	13
11SEP	SE	0	3	4	2	0	0	0	0	0	0	0	0	5
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
23SEP-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
25SEP	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
07OCT-	ST. CROP	0	0	0	0	1	0	0	0	0	0	0	0	1
09OCT	SE	0	0	0	0	1	0	0	0	0	0	0	0	1
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100
21OCT-	ST. CROP	0	0	0	0	0	0	0	0	0	0	0	0	0
23OCT	SE	0	0	0	0	0	0	0	0	0	0	0	0	0
	NO. TOWS	5	24	14	5	5	6	5	5	5	9	10	7	100

Appendix E

Length Frequency Distribution

APPENDIX E

LIST OF TABLES

APPENDIX E

LIST OF TABLES (continued)

TABLE E-1 LENGTH FREQUENCY DISTRIBUTION OF LARVAL AND YOUNG-OF-YEAR STRIPED BASS IN HUDSON RIVER ESTUARY DETERMINED FROM LONG RIVER SURVEY, 1996

DATES	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	20.0-21.9	22.0-23.9	24.0-25.9	26.0-27.9	28.0-29.9	30.0-31.9
	0	0	30	0	0	0	0	0	0	0	1	0	0	0	0	0
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29APR-04MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06MAY-11MAY	0	18	4	3	0	0	0	0	0	0	0	0	0	0	0	0
13MAY-18MAY	0	5	23	5	0	0	0	0	0	0	0	0	0	0	0	0
21MAY-25MAY	0	58	988	267	1	0	0	0	0	0	0	0	0	0	0	0
28MAY-01JUN	0	17	924	686	3	0	0	0	0	0	0	0	0	0	0	0
03JUN-08JUN	0	221	1182	1168	199	1	0	0	0	0	0	0	0	0	0	0
10JUN-14JUN	0	75	923	1774	304	69	0	1	0	0	0	0	0	0	0	0
17JUN-22JUN	0	26	815	1342	844	211	61	15	13	4	0	0	0	0	0	0
24JUN-29JUN	1	0	38	469	1082	618	180	54	23	22	21	18	12	0	2	0
30JUN-03JUL	0	1	38	171	660	742	399	85	17	8	23	9	9	5	4	1

DATES	32.0-33.9	34.0-35.9	36.0-37.9	38.0-39.9	40.0-41.9	42.0-43.9	44.0-45.9	46.0-47.9	48.0-49.9	50.0-51.9	52.0-53.9	54.0-55.9	56.0-57.9	58.0-59.9	60.0-61.9	62.0-63.9
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29APR-04MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06MAY-11MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13MAY-18MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21MAY-25MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28MAY-01JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUN-08JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10JUN-14JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUN-22JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUN-29JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30JUN-03JUL	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DATES	64.0-65.9	66.0-67.9	68.0-69.9	70.0-71.9	72.0-73.9	74.0-75.9	76.0-77.9	78.0-79.9	80.0-81.9	82.0-83.9	84.0-85.9	86.0-87.9	88.0-89.9	90.0-91.9	92.0-93.9	94.0-95.9
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29APR-04MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06MAY-11MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13MAY-18MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21MAY-25MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28MAY-01JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUN-08JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10JUN-14JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUN-22JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUN-29JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30JUN-03JUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DATES	96.0-97.9	98.0-99.9	100.0-101.9	102.0-103.9	104.0-105.9	106.0-107.9	108.0-109.9	110.0-111.9+	N	MEAN	MIN	MED	MAX	SD
	0	0	0	0	0	0	0	0	31	5.1	4.0	4.6	20.0	2.8
12MAR-14MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
25MAR-27MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
08APR-12APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
15APR-19APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
22APR-26APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
29APR-04MAY	0	0	0	0	0	0	0	0	0	.	.	.	.	.
06MAY-11MAY	0	0	0	0	0	0	0	0	25	4.0	2.4	3.5	6.9	1.5
13MAY-18MAY	0	0	0	0	0	0	0	0	33	4.9	3.2	4.7	7.1	0.9
21MAY-25MAY	0	0	0	0	0	0	0	0	1314	5.2	2.9	5.1	8.1	0.8
28MAY-01JUN	0	0	0	0	0	0	0	0	1630	5.8	2.9	5.8	8.2	0.7
03JUN-08JUN	0	0	0	0	0	0	0	0	2771	5.8	2.6	5.9	10.0	1.4
10JUN-14JUN	0	0	0	0	0	0	0	0	3146	6.5	2.5	6.3	15.0	1.4
17JUN-22JUN	0	0	0	0	0	0	0	0	3331	7.4	2.7	7.2	18.8	2.0
24JUN-29JUN	0	0	0	0	0	0	0	0	2540	9.8	1.5	9.3	28.0	2.8
30JUN-03JUL	0	0	0	0	0	0	0	0	2177	10.8	3.0	10.5	35.0	3.1

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation

TABLE E-1 (CONT.)

DATES	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	20.0-21.9	22.0-23.9	24.0-25.9	26.0-27.9	28.0-29.9	30.0-31.9
17JUL-19JUL	0	0	21	50	63	61	40	50	52	49	21	5	4	2	5	7
31JUL-02AUG	0	0	4	28	6	0	4	3	3	4	12	9	4	5	3	7
15AUG-17AUG	0	0	1	2	2	1	4	2	0	0	0	0	2	4	3	1
26AUG-29AUG	0	0	0	0	0	1	1	1	2	0	0	0	0	0	0	1
09SEP-11SEP	0	0	0	0	0	0	0	3	5	3	2	0	2	2	0	0
23SEP-25SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
07OCT-09OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	1	421	4991	5965	3164	1704	689	214	115	90	80	41	33	18	18	18

DATES	32.0-33.9	34.0-35.9	36.0-37.9	38.0-39.9	40.0-41.9	42.0-43.9	44.0-45.9	46.0-47.9	48.0-49.9	50.0-51.9	52.0-53.9	54.0-55.9	56.0-57.9	58.0-59.9	60.0-61.9	62.0-63.9
17JUL-19JUL	9	6	7	4	3	2	2	3	5	1	2	0	1	0	0	1
31JUL-02AUG	6	1	5	5	3	5	6	3	6	2	3	3	1	1	1	1
15AUG-17AUG	2	1	4	1	0	1	0	5	2	3	4	0	3	1	9	4
26AUG-29AUG	1	1	0	0	0	0	1	0	1	0	0	1	0	0	0	0
09SEP-11SEP	1	1	0	0	0	3	0	0	0	1	0	0	1	0	0	0
23SEP-25SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07OCT-09OCT	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0
	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	22	12	16	10	6	11	9	11	14	8	9	4	7	3	10	7

DATES	64.0-65.9	66.0-67.9	68.0-69.9	70.0-71.9	72.0-73.9	74.0-75.9	76.0-77.9	78.0-79.9	80.0-81.9	82.0-83.9	84.0-85.9	86.0-87.9	88.0-89.9	90.0-91.9	92.0-93.9	94.0-95.9
17JUL-19JUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL-02AUG	2	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0
15AUG-17AUG	2	3	1	1	1	1	1	0	0	0	1	0	0	1	0	0
26AUG-29AUG	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
09SEP-11SEP	0	1	2	0	0	0	1	0	1	0	0	0	0	0	0	0
23SEP-25SEP	3	0	3	3	2	4	0	1	0	1	3	0	1	1	1	0
07OCT-09OCT	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0
	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	8	5	7	5	5	5	4	3	1	1	4	0	1	3	1	0

DATES	96.0-97.9	98.0-99.9	100.0-101.9	102.0-103.9	104.0-105.9	106.0-107.9	108.0-109.9	110.0-111.9+	N	MEAN	MIN	MED	MAX	SD
17JUL-19JUL	0	0	0	0	0	0	0	0	476	16.0	4.9	14.1	62.0	9.7
31JUL-02AUG	0	0	0	0	0	0	0	0	149	27.6	4.2	24.0	77.0	17.6
15AUG-17AUG	0	0	0	0	0	0	0	0	74	44.7	5.4	48.5	90.0	20.9
26AUG-29AUG	0	0	0	0	0	0	0	0	14	37.7	10.2	33.0	78.0	22.8
09SEP-11SEP	0	0	0	0	0	0	0	0	29	33.9	15.0	24.0	80.0	21.0
23SEP-25SEP	0	0	0	0	0	0	0	0	26	71.7	28.0	73.0	92.0	15.1
07OCT-09OCT	1	0	1	0	0	0	0	0	10	74.4	50.0	74.5	101.0	17.5
	======	======	======	======	======	======	======	======	======					
	1	0	1	0	0	0	0	0	17776					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation

TABLE E-2 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR STRIPED BASS IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9
10JUL-15JUL	10	35	25	27	23	23	10	8	5	2	0	0
22JUL-27JUL	2	11	27	15	19	18	24	18	21	6	1	1
05AUG-10AUG	0	1	2	5	15	15	12	9	22	24	13	18
19AUG-24AUG	0	0	0	0	4	10	14	21	22	21	14	22
03SEP-07SEP	0	0	2	4	1	2	3	6	6	9	11	13
17SEP-21SEP	0	0	0	1	0	1	1	1	4	7	7	11
01OCT-05OCT	0	0	0	0	0	2	2	0	5	6	1	11
13OCT-17OCT	0	0	0	0	0	1	0	2	1	3	5	7
	======	======	======	======	======	======	======	======	======	======	======	======
	12	47	56	52	62	72	66	65	86	78	52	83

DATES	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9	110.0-114.9	115.0-119.9	120.0-124.9	125.0-129.9
10JUL-15JUL	0	0	0	0	0	0	0	0	0	0	0	0
22JUL-27JUL	0	0	0	0	0	0	0	0	0	0	0	0
05AUG-10AUG	3	4	3	2	0	1	0	0	0	0	0	0
19AUG-24AUG	14	4	2	2	0	1	0	0	0	0	0	0
03SEP-07SEP	17	10	13	3	1	1	0	0	0	0	0	0
17SEP-21SEP	16	7	9	7	10	10	4	1	1	0	0	0
01OCT-05OCT	12	8	11	12	4	1	3	0	2	0	0	0
13OCT-17OCT	18	9	6	8	8	2	4	3	3	1	1	0
	======	======	======	======	======	======	======	======	======	======	======	======
	80	42	44	34	23	16	11	4	6	1	1	0

DATES	130.0-134.9	135.0-139.9	140.0-144.9	145.0-149.9+	N	MEAN	MIN	MED	MAX	SD
10JUL-15JUL	0	0	0	0	168	28.2	11.0	27.0	55.0	10.9
22JUL-27JUL	0	0	0	0	164	36.3	14.0	38.0	66.0	12.6
05AUG-10AUG	0	0	0	0	151	51.8	17.0	54.0	97.0	14.9
19AUG-24AUG	0	0	0	0	154	56.3	30.0	56.5	96.0	12.5
03SEP-07SEP	0	0	0	0	103	64.2	24.0	67.0	96.0	16.0
17SEP-21SEP	0	0	0	0	101	75.9	25.0	74.0	112.0	16.6
01OCT-05OCT	0	0	0	0	81	74.1	35.0	75.0	111.0	15.4
13OCT-17OCT	0	0	1	0	85	79.9	35.0	76.0	143.0	18.4
	======	======	======	======	======					
	0	0	1	0	1007					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-3 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR STRIPED BASS IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9
18JUN-20JUN	3	8	0	0	0	0	0	0	0	0
01JUL-03JUL	0	10	42	46	36	20	0	0	0	0
15JUL-18JUL	0	6	10	17	20	27	28	30	31	19
29JUL-01AUG	0	0	5	11	28	25	14	14	17	6
12AUG-14AUG	0	0	0	0	4	5	10	17	12	9
26AUG-28AUG	0	0	0	0	4	2	3	4	8	17
09SEP-11SEP	0	0	0	0	0	0	0	7	7	13
23SEP-25SEP	0	0	0	0	0	0	0	2	2	2
07OCT-09OCT	0	0	0	0	0	0	0	0	1	1
21OCT-23OCT	0	0	0	0	0	0	0	0	1	0
	======	======	======	======	======	======	======	======	======	======
	3	24	57	74	92	79	55	74	79	67

DATES	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9
18JUN-20JUN	0	0	0	0	0	0	0	0	0	0
01JUL-03JUL	0	0	0	0	0	0	0	0	0	0
15JUL-18JUL	1	1	0	0	0	0	0	0	0	0
29JUL-01AUG	7	8	2	0	0	0	0	0	0	0
12AUG-14AUG	2	8	6	4	6	1	2	0	0	0
26AUG-28AUG	14	13	12	8	3	2	4	0	0	0
09SEP-11SEP	12	8	7	1	3	2	3	1	0	1
23SEP-25SEP	2	4	5	4	1	6	0	6	3	1
07OCT-09OCT	2	0	0	2	2	1	1	1	0	0
21OCT-23OCT	0	0	1	0	4	0	0	1	0	0
	======	======	======	======	======	======	======	======	======	======
	40	42	33	19	19	12	10	9	3	2

DATES	110.0-114.9	115.0-119.9+	N	MEAN	MIN	MED	MAX	SD
18JUN-20JUN	0	0	11	15.9	13.0	16.0	18.0	1.7
01JUL-03JUL	0	0	154	27.2	16.0	27.0	38.0	5.5
15JUL-18JUL	0	0	191	41.2	16.0	42.0	65.0	11.0
29JUL-01AUG	0	0	140	42.7	20.0	40.0	71.0	12.5
12AUG-14AUG	0	0	88	56.3	31.0	52.0	92.0	14.9
26AUG-28AUG	0	0	95	62.7	32.0	63.0	92.0	13.4
09SEP-11SEP	0	0	67	64.4	46.0	62.0	108.0	13.2
23SEP-25SEP	1	0	40	78.7	45.0	79.0	110.0	17.6
07OCT-09OCT	1	0	12	78.0	53.0	79.5	110.0	17.2
21OCT-23OCT	1	0	8	82.0	54.0	80.0	113.0	17.4
	======	======	======					
	3	0	806					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-4 LENGTH FREQUENCY DISTRIBUTION OF LARVAL AND YOUNG-OF-YEAR WHITE PERCH IN HUDSON RIVER ESTUARY DETERMINED FROM LONG RIVER SURVEY, 1996

DATES	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	20.0-21.9	22.0-23.9	24.0-25.9	26.0-27.9
	0	1	29	0	0	0	0	0	0	0	0	0	0	0
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29APR-04MAY	0	8	0	0	0	0	0	0	0	0	0	0	0	0
06MAY-11MAY	1	42	5	0	0	0	0	0	0	0	0	0	0	0
13MAY-18MAY	1	1238	182	0	0	0	0	0	0	0	0	0	0	0
21MAY-25MAY	0	1079	1778	0	0	0	0	0	0	0	0	0	0	0
28MAY-01JUN	0	551	1656	37	1	0	0	0	0	0	0	0	0	0
03JUN-08JUN	0	381	1503	201	10	0	0	0	0	0	0	0	0	0
10JUN-14JUN	0	527	681	968	166	5	1	0	0	0	0	0	0	0
17JUN-22JUN	0	419	864	838	744	123	14	0	0	0	0	0	0	0
24JUN-29JUN	0	91	344	588	736	337	85	12	3	0	0	0	0	0
30JUN-03JUL	0	15	109	571	782	277	61	10	0	1	0	0	0	0
17JUL-19JUL	0	0	1	7	7	20	50	16	11	1	2	1	0	0
31JUL-02AUG	0	0	0	2	0	0	0	2	9	3	2	1	1	3
15AUG-17AUG	0	0	0	0	0	0	0	0	0	0	0	0	2	0
26AUG-29AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09SEP-11SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23SEP-25SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	2	4352	7152	3212	2446	762	211	40	23	5	4	2	3	3

DATES	28.0-29.9	30.0-31.9	32.0-33.9	34.0-35.9	36.0-37.9	38.0-39.9	40.0-41.9	42.0-43.9	44.0-45.9	46.0-47.9	48.0-49.9	50.0-51.9	52.0-53.9	54.0-55.9
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29APR-04MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06MAY-11MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13MAY-18MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21MAY-25MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28MAY-01JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUN-08JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10JUN-14JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUN-22JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUN-29JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30JUN-03JUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUL-19JUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL-02AUG	0	0	1	0	0	0	0	1	0	0	0	0	0	0
15AUG-17AUG	0	0	0	0	1	0	1	0	0	1	0	0	1	1
26AUG-29AUG	0	2	1	0	0	0	1	0	0	0	0	0	0	0
09SEP-11SEP	0	0	0	0	0	0	1	1	0	0	1	0	1	0
23SEP-25SEP	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	0	2	2	0	1	0	3	4	0	2	1	1	3	4

DATES	56.0-57.9	58.0-59.9	60.0-61.9	62.0-63.9	64.0-65.9	66.0-67.9	68.0-69.9	70.0-71.9+	N	MEAN	MIN	MED	MAX	SD
	0	0	0	0	0	0	0	0	30	4.3	3.9	4.3	4.7	0.2
12MAR-14MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
25MAR-27MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
08APR-12APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
15APR-19APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
22APR-26APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
29APR-04MAY	0	0	0	0	0	0	0	0	8	3.5	3.2	3.5	3.9	0.2
06MAY-11MAY	0	0	0	0	0	0	0	0	48	3.1	1.7	3.0	5.2	0.7
13MAY-18MAY	0	0	0	0	0	0	0	0	1421	3.6	1.9	3.6	4.6	0.4
21MAY-25MAY	0	0	0	0	0	0	0	0	2857	4.0	2.4	4.1	5.8	0.5
28MAY-01JUN	0	0	0	0	0	0	0	0	2245	4.3	2.9	4.2	8.0	0.6
03JUN-08JUN	0	0	0	0	0	0	0	0	2095	4.7	2.4	4.6	8.5	0.9
10JUN-14JUN	0	0	0	0	0	0	0	0	2348	5.6	2.2	5.9	12.7	1.7
17JUN-22JUN	0	0	0	0	0	0	0	0	3002	6.5	2.3	6.5	13.7	2.1
24JUN-29JUN	0	0	0	0	0	0	0	0	2196	8.0	2.9	8.1	17.3	2.3
30JUN-03JUL	0	0	0	0	0	0	0	0	1826	8.5	2.7	8.5	19.4	1.8
17JUL-19JUL	0	0	0	0	0	0	0	0	116	12.7	5.7	12.6	22.0	2.8
31JUL-02AUG	0	1	0	0	0	0	0	0	27	22.4	6.3	18.5	58.0	11.9
15AUG-17AUG	1	1	0	0	0	0	0	0	8	42.9	25.0	43.5	58.0	13.3
26AUG-29AUG	0	0	0	0	0	0	0	0	4	33.8	31.0	32.0	40.0	4.3
09SEP-11SEP	0	0	0	0	0	0	0	0	4	45.5	40.0	45.0	52.0	5.5
23SEP-25SEP	0	0	0	0	0	1	0	0	2	54.0	42.0	54.0	66.0	17.0
	======	======	======	======	======	======	======	======	======					
	3	2	0	0	0	1	1	0	18247					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation

TABLE E-5 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR WHITE PERCH IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9
10JUL-15JUL	9	17	2	1	0	0	0	0	0	0	0	0
22JUL-27JUL	0	2	5	5	4	7	4	4	0	0	0	0
05AUG-10AUG	0	2	4	3	1	0	1	2	3	1	0	0
19AUG-24AUG	0	0	0	5	9	6	1	5	6	6	0	0
03SEP-07SEP	0	0	0	0	7	9	12	8	1	3	5	5
17SEP-21SEP	0	0	0	0	0	2	10	16	10	3	0	5
01OCT-05OCT	0	0	0	1	0	1	5	5	18	5	4	4
13OCT-17OCT	0	0	0	0	0	0	0	0	6	4	3	10
	======	======	======	======	======	======	======	======	======	======	======	======
	9	21	11	15	21	25	33	40	44	22	12	24

DATES	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9+	N	MEAN	MIN	MED	MAX	SD
10JUL-15JUL	0	0	0	0	0	29	16.1	12.0	15.0	27.0	3.1
22JUL-27JUL	0	0	0	0	0	31	32.7	15.0	33.0	47.0	9.0
05AUG-10AUG	0	0	0	0	0	17	33.7	18.0	28.0	56.0	13.2
19AUG-24AUG	0	0	0	0	0	39	42.3	28.0	39.0	60.0	11.1
03SEP-07SEP	1	0	0	0	0	53	47.2	30.0	44.0	70.0	11.7
17SEP-21SEP	1	1	0	0	0	48	49.8	37.0	47.0	76.0	9.3
01OCT-05OCT	4	8	3	5	0	63	60.7	29.0	55.0	88.0	14.7
13OCT-17OCT	12	4	7	5	0	51	69.8	51.0	70.0	86.0	10.3
	======	======	======	======	======	======					
	18	13	10	10	0	331					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-6 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR WHITE PERCH IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9
18JUN-20JUN	0	0	0	0	0	0	0	0	0	0	0
01JUL-03JUL	1	5	9	9	5	1	0	0	0	0	0
15JUL-18JUL	0	2	19	18	17	13	1	1	0	0	0
29JUL-01AUG	0	0	2	2	8	14	14	8	1	0	0
12AUG-14AUG	0	0	0	1	2	1	2	4	9	8	0
26AUG-28AUG	0	0	0	0	1	4	4	4	7	6	7
09SEP-11SEP	0	0	0	0	0	0	1	0	0	2	6
23SEP-25SEP	0	0	0	0	0	0	0	0	0	0	0
07OCT-09OCT	0	0	0	0	0	0	0	0	0	2	1
21OCT-23OCT	0	0	0	0	0	0	0	0	0	0	0
	======	======	======	======	======	======	======	======	======	======	======
	1	7	30	30	33	33	22	17	17	18	14

DATES	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9+	N	MEAN	MIN	MED	MAX	SD
18JUN-20JUN	0	0	0	0	0	0	.	.	.	.	.
01JUL-03JUL	0	0	0	0	0	30	24.5	14.0	24.5	35.0	4.9
15JUL-18JUL	0	0	0	0	0	71	28.8	19.0	28.0	46.0	6.2
29JUL-01AUG	0	0	0	0	0	49	38.2	20.0	39.0	50.0	6.6
12AUG-14AUG	0	0	0	0	0	27	48.8	26.0	51.0	59.0	9.0
26AUG-28AUG	8	1	0	0	0	44	54.6	34.0	56.0	70.0	10.1
09SEP-11SEP	3	6	0	0	0	19	65.2	44.0	64.0	74.0	7.4
23SEP-25SEP	1	1	1	0	0	3	71.3	65.0	73.0	76.0	5.7
07OCT-09OCT	0	1	0	1	0	5	66.2	55.0	64.0	82.0	10.7
21OCT-23OCT	0	1	0	0	0	1	70.0	70.0	70.0	70.0	.
	======	======	======	======	======	======					
	12	10	1	1	0	249					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-7 LENGTH FREQUENCY DISTRIBUTION OF LARVAL AND YOUNG-OF-YEAR ATLANTIC TOMCOD IN HUDSON RIVER ESTUARY DETERMINED FROM LONG RIVER SURVEY, 1996

DATES	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	20.0-21.9	22.0-23.9	24.0-25.9	26.0-27.9	28.0-29.9	30.0-31.9
	0	0	0	170	122	210	8	0	0	0	0	0	0	0	0	0
12MAR-14MAR	0	0	19	587	68	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	1	210	299	43	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	23	126	564	545	24	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	2	3	34	124	69	12	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	6	21	58	118	82	37	3	0	0	0	0
29APR-04MAY	0	0	0	0	0	1	1	4	8	3	3	16	77	80	49	11
06MAY-11MAY	0	0	0	0	0	0	1	0	5	5	6	7	23	52	57	135
13MAY-18MAY	0	0	0	0	0	0	0	0	0	0	0	1	2	2	6	10
21MAY-25MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28MAY-01JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUN-08JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DATES	32.0-33.9	34.0-35.9	36.0-37.9	38.0-39.9	40.0-41.9	42.0-43.9	44.0-45.9	46.0-47.9	48.0-49.9	50.0-51.9	52.0-53.9	54.0-55.9	56.0-57.9	58.0-59.9	60.0-61.9	62.0-63.9
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29APR-04MAY	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06MAY-11MAY	69	86	49	5	1	0	0	0	0	0	0	0	0	0	0	0
13MAY-18MAY	9	21	33	45	62	36	34	24	11	1	1	0	0	0	0	0
21MAY-25MAY	1	1	1	2	8	13	31	34	44	56	51	54	35	24	13	6
28MAY-01JUN	1	0	1	2	4	9	12	13	29	55	54	80	64	79	92	66
03JUN-08JUN	0	0	0	0	0	2	2	7	6	12	26	30	36	61	71	60

DATES	64.0-65.9	66.0-67.9	68.0-69.9	70.0-71.9	72.0-73.9	74.0-75.9	76.0-77.9	78.0-79.9	80.0-81.9	82.0-83.9	84.0-85.9	86.0-87.9	88.0-89.9	90.0-91.9	92.0-93.9	94.0-95.9
	0	0	0	0	0	2	3	0	0	3	4	6	4	2	0	3
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29APR-04MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06MAY-11MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13MAY-18MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21MAY-25MAY	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28MAY-01JUN	46	20	22	11	3	4	0	0	0	0	0	0	0	0	0	0
03JUN-08JUN	76	65	74	44	56	37	20	9	2	1	0	0	0	0	0	0

DATES	96.0-97.9	98.0-99.9	100.0-101.9	102.0-103.9	104.0-105.9	106.0-107.9	108.0-109.9	110.0-111.9	112.0-113.9	114.0-115.9	116.0-117.9	118.0-119.9	120.0-121.9	122.0-123.9	124.0-125.9	126.0-127.9
	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29APR-04MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06MAY-11MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13MAY-18MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21MAY-25MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28MAY-01JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUN-08JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DATES	128.0-129.9	130.0-131.9	132.0-133.9	134.0-135.9	136.0-137.9	138.0-139.9	140.0-141.9+	N	MEAN	MIN	MED	MAX	SD
	0	0	0	0	0	0	0	540	13.5	6.2	9.7	118.0	18.1
12MAR-14MAR	0	0	0	0	0	0	0	674	7.2	4.9	7.2	8.9	0.6
25MAR-27MAR	0	0	0	0	0	0	0	553	8.5	5.8	8.6	11.9	1.1
08APR-12APR	0	0	0	0	0	0	0	1282	11.6	6.2	11.8	14.7	1.4
15APR-19APR	0	0	0	0	0	0	0	244	13.4	6.5	13.2	17.9	1.6
22APR-26APR	0	0	0	0	0	0	0	325	17.2	10.5	17.2	23.1	2.2
29APR-04MAY	0	0	0	0	0	0	0	258	25.6	11.0	26.0	33.0	3.3
06MAY-11MAY	0	0	0	0	0	0	0	501	30.7	13.8	31.0	40.0	4.1
13MAY-18MAY	0	0	0	0	0	0	0	298	39.8	23.0	40.0	53.0	5.0
21MAY-25MAY	0	0	0	0	0	0	0	376	51.2	32.0	51.0	65.0	5.3
28MAY-01JUN	0	0	0	0	0	0	0	667	57.3	32.0	58.0	75.0	6.5
03JUN-08JUN	0	0	0	0	0	0	0	697	64.2	42.0	64.0	83.0	7.2

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation

TABLE E-7 (CONT.)

DATES	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	20.0-21.9	22.0-23.9	24.0-25.9	26.0-27.9	28.0-29.9	30.0-31.9
10JUN-14JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUN-22JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUN-29JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30JUN-03JUL	0	0	0	0	2	12	4	1	0	0	0	0	0	0	0	0
17JUL-19JUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL-02AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15AUG-17AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26AUG-29AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09SEP-11SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23SEP-25SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07OCT-09OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	0	0	20	992	620	870	704	156	143	90	46	27	102	134	112	156

DATES	32.0-33.9	34.0-35.9	36.0-37.9	38.0-39.9	40.0-41.9	42.0-43.9	44.0-45.9	46.0-47.9	48.0-49.9	50.0-51.9	52.0-53.9	54.0-55.9	56.0-57.9	58.0-59.9	60.0-61.9	62.0-63.9
10JUN-14JUN	0	0	0	0	0	0	0	1	1	2	4	12	21	34	30	42
17JUN-22JUN	0	0	0	0	0	0	0	0	2	1	2	3	5	7	6	13
24JUN-29JUN	0	0	0	0	0	0	0	0	0	0	0	1	1	4	6	10
30JUN-03JUL	0	0	0	0	0	0	0	0	0	0	0	2	1	3	1	5
17JUL-19JUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL-02AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15AUG-17AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26AUG-29AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09SEP-11SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23SEP-25SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07OCT-09OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	85	108	84	54	75	60	79	79	93	127	138	182	163	212	219	202

DATES	64.0-65.9	66.0-67.9	68.0-69.9	70.0-71.9	72.0-73.9	74.0-75.9	76.0-77.9	78.0-79.9	80.0-81.9	82.0-83.9	84.0-85.9	86.0-87.9	88.0-89.9	90.0-91.9	92.0-93.9	94.0-95.9
10JUN-14JUN	46	38	42	39	32	30	15	24	12	12	3	1	1	1	0	0
17JUN-22JUN	17	16	9	26	25	22	21	25	21	14	8	4	0	1	2	0
24JUN-29JUN	15	15	22	19	28	23	22	24	31	21	16	20	8	9	4	4
30JUN-03JUL	4	6	9	10	15	10	11	11	24	11	9	10	6	12	7	4
17JUL-19JUL	1	2	0	0	2	5	0	6	10	3	6	4	4	3	2	1
31JUL-02AUG	0	1	0	5	3	6	3	5	10	3	8	4	5	2	5	5
15AUG-17AUG	0	0	0	0	2	3	4	4	7	10	6	4	7	11	4	6
26AUG-29AUG	0	1	0	1	1	3	1	4	2	4	3	1	4	3	2	1
09SEP-11SEP	0	0	2	5	9	5	9	13	11	11	9	9	5	4	5	3
23SEP-25SEP	0	0	2	3	5	5	5	8	11	9	7	14	8	5	6	6
07OCT-09OCT	0	0	0	0	0	0	0	1	2	1	1	1	6	3	4	1
	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	207	164	182	163	181	155	114	134	143	103	80	78	58	56	41	34

DATES	96.0-97.9	98.0-99.9	100.0-101.9	102.0-103.9	104.0-105.9	106.0-107.9	108.0-109.9	110.0-111.9	112.0-113.9	114.0-115.9	116.0-117.9	118.0-119.9	120.0-121.9	122.0-123.9	124.0-125.9	126.0-127.9
10JUN-14JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUN-22JUN	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUN-29JUN	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30JUN-03JUL	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUL-19JUL	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
31JUL-02AUG	4	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0
15AUG-17AUG	6	3	4	1	2	3	0	3	2	0	0	1	2	1	0	0
26AUG-29AUG	3	1	1	1	0	0	1	0	0	0	0	0	0	0	1	0
09SEP-11SEP	2	2	4	2	3	2	0	0	0	1	0	0	0	0	0	0
23SEP-25SEP	4	4	5	5	1	1	2	1	1	0	0	1	0	0	0	0
07OCT-09OCT	5	0	2	5	1	1	0	0	1	1	0	0	1	0	1	0
	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	28	16	16	15	8	9	4	5	4	2	0	3	3	1	2	0

DATES	128.0-129.9	130.0-131.9	132.0-133.9	134.0-135.9	136.0-137.9	138.0-139.9	140.0-141.9+	N	MEAN	MIN	MED	MAX	SD
10JUN-14JUN	0	0	0	0	0	0	0	443	67.4	46.0	67.0	90.0	7.7
17JUN-22JUN	0	0	0	0	0	0	0	251	72.4	49.0	73.0	96.0	8.4
24JUN-29JUN	0	0	0	0	0	0	0	305	76.1	55.0	77.0	99.0	8.6
30JUN-03JUL	0	0	0	0	0	0	0	194	71.9	9.3	78.0	98.0	21.9
17JUL-19JUL	0	0	0	0	0	0	0	51	82.5	65.0	81.0	107.0	7.8
31JUL-02AUG	0	0	0	0	0	0	0	74	84.5	66.0	84.0	110.0	9.7
15AUG-17AUG	1	0	0	0	0	0	0	97	91.3	73.0	90.0	128.0	11.9
26AUG-29AUG	0	0	0	0	0	0	0	39	86.8	67.0	85.0	125.0	11.3
09SEP-11SEP	1	1	0	0	0	0	0	118	84.8	68.0	83.0	131.0	11.2
23SEP-25SEP	0	0	0	0	0	0	0	119	87.2	69.0	86.0	118.0	10.2
07OCT-09OCT	0	0	0	0	0	0	1	39	97.0	78.0	94.0	140.0	12.6
	======	======	======	======	======	======	======	======					
	2	1	0	0	0	0	1	8145					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation

TABLE E-8 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR ATLANTIC TOMCOD IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATES	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9	110.0-114.9	115.0-119.9	120.0-124.9
10JUL-15JUL	1	8	24	33	27	38	27	12	5	2	0	0	0
22JUL-27JUL	0	5	8	33	27	34	30	22	12	4	0	0	0
05AUG-10AUG	0	5	11	25	46	57	51	45	35	11	10	1	1
19AUG-24AUG	0	0	4	13	22	35	40	22	20	10	7	6	6
03SEP-07SEP	1	1	5	15	20	35	21	23	6	9	8	3	4
17SEP-21SEP	0	0	6	8	24	29	22	15	14	4	6	4	3
01OCT-05OCT	0	0	0	4	19	29	35	34	23	10	6	7	4
13OCT-17OCT	0	0	1	0	3	16	18	14	30	23	15	15	10
	======	======	======	======	======	======	======	======	======	======	======	======	======
	2	19	59	131	188	273	244	187	145	73	52	36	28

DATES	125.0-129.9	130.0-134.9	135.0-139.9	140.0-144.9	145.0-149.9	150.0-154.9+	N	MEAN	MIN	MED	MAX	SD
10JUL-15JUL	0	0	0	0	0	0	177	83.1	61.0	84.0	105.0	8.8
22JUL-27JUL	0	0	0	0	0	0	175	86.4	67.0	86.0	109.0	9.1
05AUG-10AUG	0	0	0	0	0	0	298	90.2	68.0	90.0	122.0	10.0
19AUG-24AUG	5	5	0	0	0	0	195	95.2	71.0	92.0	134.0	13.8
03SEP-07SEP	4	1	2	0	0	0	158	92.9	62.0	90.0	139.0	14.3
17SEP-21SEP	1	3	2	1	0	0	142	93.7	71.0	90.0	144.0	14.4
01OCT-05OCT	7	3	2	1	3	1	188	98.6	75.0	95.0	150.0	15.0
13OCT-17OCT	4	4	6	7	2	2	170	107.6	74.0	105.0	150.0	16.2
	======	======	======	======	======	======	======					
	21	16	12	9	5	3	1503					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-9 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR ATLANTIC TOMCOD IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATES	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9
18JUN-20JUN	2	3	3	1	3	1	0
01JUL-03JUL	0	0	1	1	1	1	2
15JUL-18JUL	0	0	1	0	1	0	1
29JUL-01AUG	0	1	0	3	5	4	1
12AUG-14AUG	0	0	0	1	0	0	0
26AUG-28AUG	0	0	0	0	0	0	0
09SEP-11SEP	0	0	0	0	0	0	0
23SEP-25SEP	0	0	0	0	0	0	0
07OCT-09OCT	0	0	0	0	0	0	0
21OCT-23OCT	0	0	0	0	0	0	0
	======	======	======	======	======	======	======
	2	4	5	6	10	6	4

DATES	100.0-104.9+	N	MEAN	MIN	MED	MAX	SD
18JUN-20JUN	0	13	78.5	68.0	75.0	91.0	8.2
01JUL-03JUL	0	6	89.3	79.0	91.0	99.0	7.9
15JUL-18JUL	0	3	85.7	77.0	85.0	95.0	9.0
29JUL-01AUG	0	14	86.4	74.0	86.0	95.0	5.3
12AUG-14AUG	0	1	83.0	83.0	83.0	83.0	.
26AUG-28AUG	0	0	.	.	.	.	.
09SEP-11SEP	0	0	.	.	.	.	.
23SEP-25SEP	0	0	.	.	.	.	.
07OCT-09OCT	0	0	.	.	.	.	.
21OCT-23OCT	0	0	.	.	.	.	.
	======	======					
	0	37					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-10 LENGTH FREQUENCY DISTRIBUTION OF LARVAL AND YOUNG-OF-YEAR BAY ANCHOVY IN HUDSON RIVER ESTUARY DETERMINED FROM LONG RIVER SURVEY, 1996

DATES	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	20.0-21.9	22.0-23.9	24.0-25.9	26.0-27.9
	0	0	0	0	0	0	1	5	2	6	3	2	2	2
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29APR-04MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06MAY-11MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13MAY-18MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21MAY-25MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28MAY-01JUN	0	0	2	0	0	0	0	0	0	0	0	0	0	0
03JUN-08JUN	0	1	14	0	1	0	0	0	0	0	0	0	0	0
10JUN-14JUN	0	46	70	1	0	0	0	1	0	0	0	0	0	0
17JUN-22JUN	0	166	483	214	35	3	0	0	0	0	0	0	0	0
24JUN-29JUN	1	89	549	552	266	108	18	1	0	0	0	0	0	0
30JUN-03JUL	0	66	253	389	484	376	173	70	14	3	0	0	0	0
17JUL-19JUL	0	1	5	23	97	109	97	165	248	338	228	91	28	6
31JUL-02AUG	0	0	9	47	43	74	101	126	218	282	313	268	160	68
15AUG-17AUG	0	5	38	132	149	113	137	103	76	77	71	111	102	90
26AUG-29AUG	0	0	7	22	134	306	195	157	119	122	124	69	64	70
09SEP-11SEP	0	0	0	2	23	189	189	178	177	164	114	95	52	73
23SEP-25SEP	0	0	0	1	6	9	39	150	260	216	175	151	99	67
	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	1	374	1430	1384	1266	1402	1038	1067	1277	1437	1245	914	602	440

DATES	28.0-29.9	30.0-31.9	32.0-33.9	34.0-35.9	36.0-37.9	38.0-39.9	40.0-41.9	42.0-43.9	44.0-45.9	46.0-47.9	48.0-49.9	50.0-51.9	52.0-53.9	54.0-55.9
	0	1	2	2	0	0	0	0	0	1	0	1	0	0
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29APR-04MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06MAY-11MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13MAY-18MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21MAY-25MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28MAY-01JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUN-08JUN	0	0	1	0	0	0	0	0	0	0	0	0	0	0
10JUN-14JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUN-22JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUN-29JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30JUN-03JUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUL-19JUL	1	0	0	0	0	0	0	0	0	0	0	0	0	0
31JUL-02AUG	87	73	46	23	7	4	1	2	0	0	0	0	0	0
15AUG-17AUG	92	137	151	139	100	92	54	33	19	7	6	2	0	0
26AUG-29AUG	72	84	84	59	72	60	59	75	31	13	9	5	2	1
09SEP-11SEP	45	48	46	35	70	73	96	96	52	35	21	12	4	1
23SEP-25SEP	67	52	70	49	83	69	57	85	62	75	55	39	24	9
	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	429	458	486	360	399	363	327	347	206	178	136	94	52	17

DATES	56.0-57.9	58.0-59.9	60.0-61.9	62.0-63.9	64.0-65.9	66.0-67.9	68.0-69.9	70.0-71.9+	N	MEAN	MIN	MED	MAX	SD
	0	0	0	0	0	0	0	0	30	23.5	13.6	20.7	51.0	9.3
12MAR-14MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
25MAR-27MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
08APR-12APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
15APR-19APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
22APR-26APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
29APR-04MAY	0	0	0	0	0	0	0	0	0	.	.	.	.	.
06MAY-11MAY	0	0	0	0	0	0	0	0	0	.	.	.	.	.
13MAY-18MAY	0	0	0	0	0	0	0	0	0	.	.	.	.	.
21MAY-25MAY	0	0	0	0	0	0	0	0	0	.	.	.	.	.
28MAY-01JUN	0	0	0	0	0	0	0	0	2	4.5	4.2	4.5	4.7	0.4
03JUN-08JUN	0	0	0	0	0	0	0	0	17	6.5	3.7	4.8	32.0	6.6
10JUN-14JUN	0	0	0	0	0	0	0	0	118	4.2	2.0	4.2	14.8	1.3
17JUN-22JUN	0	0	0	0	0	0	0	0	901	5.2	2.0	5.0	11.6	1.4
24JUN-29JUN	0	0	0	0	0	0	0	0	1584	6.8	1.8	6.5	14.7	2.0
30JUN-03JUL	0	0	0	0	0	0	0	0	1828	8.9	2.1	8.9	18.5	2.9
17JUL-19JUL	0	0	0	0	0	0	0	0	1437	16.9	3.8	17.8	28.0	4.2
31JUL-02AUG	0	0	0	0	0	0	0	0	1952	20.4	4.5	20.4	43.7	6.1
15AUG-17AUG	1	0	0	0	0	0	0	0	2037	23.4	2.9	24.0	56.1	11.1
26AUG-29AUG	0	0	0	0	0	0	0	0	2015	22.0	4.5	19.1	55.0	11.0
09SEP-11SEP	2	1	0	0	0	0	0	0	1893	24.3	7.5	20.5	58.0	11.6
23SEP-25SEP	4	4	6	3	3	0	0	0	1989	28.0	7.9	23.8	65.0	11.7
	======	======	======	======	======	======	======	======	======					
	17	11	17	11	12	6	4	0	17807					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation

TABLE E-11 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR BAY ANCHOVY IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9
	0	0	2	3	0	0	0	0	0
10JUL-15JUL	6	60	28	1	0	0	0	0	0
22JUL-27JUL	0	11	53	36	11	1	0	0	0
05AUG-10AUG	0	0	10	41	32	27	12	0	0
19AUG-24AUG	0	0	6	36	46	39	29	12	5
03SEP-07SEP	0	0	9	27	44	46	50	17	3
17SEP-21SEP	1	1	8	23	22	25	59	35	13
01OCT-05OCT	0	0	0	6	21	31	36	29	11
13OCT-17OCT	0	0	2	8	23	20	32	21	19
	======	======	======	======	======	======	======	======	======
	7	72	118	181	199	189	218	114	51

DATES	55.0-59.9	60.0-64.9	65.0-69.9+	N	MEAN	MIN	MED	MAX	SD
	0	0	0	5	25.0	24.0	25.0	26.0	1.0
10JUL-15JUL	0	0	0	95	18.3	10.0	19.0	27.0	2.5
22JUL-27JUL	0	0	0	112	24.0	15.0	23.0	35.0	3.8
05AUG-10AUG	0	0	0	122	31.4	21.0	30.0	44.0	5.4
19AUG-24AUG	0	0	0	173	35.0	22.0	34.0	51.0	6.9
03SEP-07SEP	0	0	0	196	36.1	20.0	37.0	50.0	6.8
17SEP-21SEP	5	1	0	193	39.3	14.0	41.0	62.0	8.7
01OCT-05OCT	3	3	0	142	41.4	26.0	41.5	64.0	7.8
13OCT-17OCT	9	1	1	137	41.7	22.0	41.0	65.0	8.9
	======	======	======	======					
	17	5	1	1175					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-12 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR BAY ANCHOVY IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATES	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9
18JUN-20JUN	0	0	0	0	0	0	0	0
01JUL-03JUL	0	0	0	0	0	0	0	0
15JUL-18JUL	0	0	0	0	0	0	0	0
29JUL-01AUG	0	22	17	11	3	0	0	0
12AUG-14AUG	1	19	30	20	7	6	0	0
26AUG-28AUG	0	3	15	18	26	18	3	0
09SEP-11SEP	12	15	1	0	15	22	4	1
23SEP-25SEP	0	29	15	5	3	12	6	6
07OCT-09OCT	0	0	3	0	0	0	1	0
21OCT-23OCT	0	0	0	0	0	0	0	0
	======	======	======	======	======	======	======	======
	13	88	81	54	54	58	14	7

DATES	55.0-59.9+	N	MEAN	MIN	MED	MAX	SD
18JUN-20JUN	0	0	.	.	.	.	.
01JUL-03JUL	0	0	.	.	.	.	.
15JUL-18JUL	0	0	.	.	.	.	.
29JUL-01AUG	0	53	26.3	20.0	25.0	36.0	4.5
12AUG-14AUG	0	83	29.0	19.0	28.0	43.0	5.5
26AUG-28AUG	0	83	35.0	22.0	35.0	45.0	5.7
09SEP-11SEP	1	71	32.8	16.0	38.0	55.0	11.2
23SEP-25SEP	0	76	31.8	20.0	26.0	53.0	10.4
07OCT-09OCT	0	4	32.5	25.0	28.5	48.0	10.5
21OCT-23OCT	0	0	.	.	.	.	.
	======	======					
	1	370					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-13 LENGTH FREQUENCY DISTRIBUTION OF LARVAL AND YOUNG-OF-YEAR AMERICAN SHAD IN HUDSON RIVER ESTUARY DETERMINED FROM LONG RIVER SURVEY, 1996

DATES	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	20.0-21.9	22.0-23.9	24.0-25.9	26.0-27.9	28.0-29.9	30.0-31.9	32.0-33.9	34.0-35.9
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29APR-04MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06MAY-11MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13MAY-18MAY	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0
21MAY-25MAY	0	0	0	1	25	16	2	0	0	0	0	0	0	0	0	0	0	0
28MAY-01JUN	0	0	0	1	6	12	4	0	0	0	0	0	0	0	0	0	0	0
03JUN-08JUN	0	0	0	0	1	9	2	7	1	0	0	0	0	0	0	0	0	0
10JUN-14JUN	0	0	0	1	3	2	1	5	7	8	5	4	0	0	1	0	0	0
17JUN-22JUN	0	0	0	0	6	1	1	5	11	19	43	40	23	22	5	4	0	0
24JUN-29JUN	0	0	0	0	0	1	3	2	6	8	10	20	26	32	42	71	72	62
30JUN-03JUL	0	0	0	0	0	0	0	0	1	3	3	9	3	17	35	43	47	43
17JUL-19JUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
31JUL-02AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
15AUG-17AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26AUG-29AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09SEP-11SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23SEP-25SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07OCT-09OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	0	0	0	3	42	45	13	19	26	38	61	73	52	71	83	118	120	110

DATES	36.0-37.9	38.0-39.9	40.0-41.9	42.0-43.9	44.0-45.9	46.0-47.9	48.0-49.9	50.0-51.9	52.0-53.9	54.0-55.9	56.0-57.9	58.0-59.9	60.0-61.9	62.0-63.9	64.0-65.9	66.0-67.9	68.0-69.9	70.0-71.9
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29APR-04MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06MAY-11MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13MAY-18MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21MAY-25MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28MAY-01JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03JUN-08JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10JUN-14JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17JUN-22JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUN-29JUN	49	23	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30JUN-03JUL	38	35	18	17	8	4	0	1	0	0	0	0	0	0	0	0	0	0
17JUL-19JUL	7	12	19	17	20	18	20	13	7	3	1	0	2	1	1	0	0	0
31JUL-02AUG	0	0	1	4	6	5	8	14	16	7	4	5	4	3	2	0	1	0
15AUG-17AUG	0	2	0	0	3	5	5	2	10	6	12	4	4	2	0	1	1	0
26AUG-29AUG	0	0	0	0	1	1	0	5	2	3	5	2	2	1	1	0	0	1
09SEP-11SEP	0	0	0	0	0	1	0	2	8	2	9	6	2	1	0	0	1	0
23SEP-25SEP	0	0	0	0	0	0	0	0	0	0	1	2	2	3	2	0	1	0
07OCT-09OCT	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	1	2	4
	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======	======
	94	72	44	40	38	34	33	37	43	21	32	19	17	13	8	2	6	5

DATES	72.0-73.9	74.0-75.9	76.0-77.9	78.0-79.9	80.0-81.9	82.0-83.9	84.0-85.9	86.0-87.9	88.0-89.9	90.0-91.9+	N	MEAN	MIN	MED	MAX	SD
12MAR-14MAR	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.
25MAR-27MAR	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.
08APR-12APR	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.
15APR-19APR	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.
22APR-26APR	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.
29APR-04MAY	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.
06MAY-11MAY	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.
13MAY-18MAY	0	0	0	0	0	0	0	0	0	0	5	10.5	8.6	11.0	11.6	1.2
21MAY-25MAY	0	0	0	0	0	0	0	0	0	0	44	9.9	7.7	9.6	13.8	1.3
28MAY-01JUN	0	0	0	0	0	0	0	0	0	0	23	10.6	7.0	10.9	12.6	1.6
03JUN-08JUN	0	0	0	0	0	0	0	0	0	0	20	12.8	9.4	12.0	16.1	2.1
10JUN-14JUN	0	0	0	0	0	0	0	0	0	0	37	17.2	7.4	17.6	29.9	4.6
17JUN-22JUN	0	0	0	0	0	0	0	0	0	0	180	22.0	8.5	22.2	30.0	4.2
24JUN-29JUN	0	0	0	0	0	0	0	0	0	0	435	30.7	10.7	31.0	42.0	5.4
30JUN-03JUL	0	0	0	0	0	0	0	0	0	0	325	33.7	17.0	34.0	50.0	5.6
17JUL-19JUL	0	0	1	0	0	0	0	0	0	0	146	45.3	34.0	45.0	76.0	6.1
31JUL-02AUG	1	0	0	2	0	1	0	0	0	0	85	53.2	32.0	52.0	83.0	8.2
15AUG-17AUG	1	0	0	0	1	0	0	0	0	0	59	54.4	38.0	54.0	81.0	7.3
26AUG-29AUG	0	0	0	0	0	0	0	0	0	0	24	55.6	45.0	55.5	70.0	5.7
09SEP-11SEP	2	0	0	0	0	0	0	0	0	0	34	56.7	46.0	56.0	72.0	5.6
23SEP-25SEP	0	0	0	0	2	1	0	1	0	0	15	67.3	56.0	63.0	87.0	9.9
07OCT-09OCT	2	0	0	1	2	0	0	1	0	1	20	69.8	35.0	70.0	90.0	11.4
	======	======	======	======	======	======	======	======	======	======	======					
	6	0	1	3	5	2	0	2	0	1	1452					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation

TABLE E-14 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR AMERICAN SHAD IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATES	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9
10JUL-15JUL	2	15	35	36	34	22	5	1	0	0	0
22JUL-27JUL	0	3	11	34	41	45	11	3	2	0	1
05AUG-10AUG	0	0	4	11	36	39	22	3	3	0	0
19AUG-24AUG	0	0	0	2	18	45	19	16	5	2	1
03SEP-07SEP	0	0	0	0	2	9	15	11	10	7	1
17SEP-21SEP	0	0	0	0	0	1	4	10	11	11	2
01OCT-05OCT	0	0	0	0	2	0	2	5	13	9	10
13OCT-17OCT	0	0	0	0	0	0	0	5	17	18	17
	======	======	======	======	======	======	======	======	======	======	======
	2	18	50	83	133	161	78	54	61	47	32

DATES	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9+	N	MEAN	MIN	MED	MAX	SD
10JUL-15JUL	0	0	0	0	0	150	42.7	28.0	42.5	61.0	6.8
22JUL-27JUL	0	0	0	0	0	152	47.9	32.0	47.0	75.0	6.8
05AUG-10AUG	0	0	0	0	0	119	50.6	35.0	51.0	65.0	5.9
19AUG-24AUG	0	0	0	0	0	116	55.1	43.0	53.5	76.0	6.6
03SEP-07SEP	0	0	0	0	0	61	60.8	45.0	60.0	75.0	6.7
17SEP-21SEP	1	1	1	0	0	42	67.7	53.0	67.5	92.0	7.6
01OCT-05OCT	5	3	1	0	0	51	71.2	45.0	71.0	90.0	9.5
13OCT-17OCT	9	6	1	2	0	75	74.3	63.0	73.0	99.0	7.8
	======	======	======	======	======	======					
	15	10	3	2	0	766					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-15 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR AMERICAN SHAD IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATES	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9
18JUN-20JUN	1	33	68	6	0	0	0	0	0	0	0
01JUL-03JUL	0	8	26	69	42	25	2	0	0	0	0
15JUL-18JUL	0	0	6	20	46	65	33	26	7	0	0
29JUL-01AUG	0	0	0	0	7	31	61	49	10	2	2
12AUG-14AUG	0	0	0	0	5	22	54	47	14	4	0
26AUG-28AUG	0	0	0	0	0	0	11	64	37	8	6
09SEP-11SEP	0	0	0	0	0	0	3	14	30	32	24
23SEP-25SEP	0	0	0	0	0	0	0	5	28	26	24
07OCT-09OCT	0	0	0	0	0	0	0	0	5	30	37
21OCT-23OCT	0	0	0	0	0	0	0	0	1	8	34
	======	======	======	======	======	======	======	======	======	======	======
	1	41	100	95	100	143	164	205	132	110	127

DATES	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9+	N	MEAN	MIN	MED	MAX	SD
18JUN-20JUN	0	0	0	0	108	25.6	16.0	26.0	31.0	2.9
01JUL-03JUL	0	0	0	0	172	33.5	20.0	33.0	45.0	5.3
15JUL-18JUL	1	0	0	0	204	42.0	26.0	42.0	72.0	6.9
29JUL-01AUG	0	0	0	0	163	48.0	36.0	48.0	65.0	5.2
12AUG-14AUG	0	0	0	0	147	48.9	36.0	49.0	63.0	5.3
26AUG-28AUG	1	0	0	0	136	55.1	46.0	54.0	70.0	4.9
09SEP-11SEP	3	1	0	0	113	60.4	49.0	61.0	76.0	5.4
23SEP-25SEP	12	3	0	0	110	63.0	50.0	62.5	79.0	5.6
07OCT-09OCT	28	6	1	0	110	67.1	55.0	67.0	80.0	5.0
21OCT-23OCT	39	16	8	0	106	71.0	58.0	71.0	84.0	5.1
	======	======	======	======	======					
	84	26	9	0	1369					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-16 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR ALEWIFE IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATES	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9
	0	0	0	1	0	0	0	0	0	0
10JUL-15JUL	26	14	2	2	0	0	0	0	0	0
22JUL-27JUL	23	27	10	3	1	0	0	0	0	0
05AUG-10AUG	14	24	17	12	4	2	1	0	0	0
19AUG-24AUG	7	24	18	15	9	7	3	1	0	0
03SEP-07SEP	2	9	16	1	5	8	6	6	2	0
17SEP-21SEP	0	4	7	4	6	3	13	9	2	1
01OCT-05OCT	0	1	7	6	2	5	14	12	8	1
13OCT-17OCT	0	0	5	2	1	0	7	10	5	10
	======	======	======	======	======	======	======	======	======	======
	72	103	82	46	28	25	44	38	17	12

DATES	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9+	N	MEAN	MIN	MED	MAX	SD
	0	0	0	0	1	59.0	59.0	59.0	59.0	.
10JUL-15JUL	0	0	0	0	44	44.4	41.0	43.0	59.0	4.3
22JUL-27JUL	0	0	0	0	64	46.6	40.0	47.0	61.0	4.4
05AUG-10AUG	0	0	0	0	77	50.8	40.0	50.0	72.0	7.1
19AUG-24AUG	0	0	0	0	86	53.9	40.0	52.5	76.0	8.2
03SEP-07SEP	0	0	0	0	55	60.2	40.0	59.0	83.0	11.5
17SEP-21SEP	1	0	0	0	50	65.9	45.0	70.5	90.0	11.6
01OCT-05OCT	4	0	1	0	62	70.9	48.0	73.0	101.0	12.2
13OCT-17OCT	0	0	0	0	41	74.4	50.0	77.0	89.0	12.0
	======	======	======	======	======					
	5	0	1	0	480					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-17 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR ALEWIFE IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATES	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9
18JUN-20JUN	0	0	0	0	0	0	0	0
01JUL-03JUL	0	3	3	0	0	0	0	0
15JUL-18JUL	0	34	20	7	6	1	0	2
29JUL-01AUG	7	22	24	17	7	1	0	0
12AUG-14AUG	0	7	8	5	2	0	1	0
26AUG-28AUG	0	0	1	1	3	1	0	0
09SEP-11SEP	0	0	0	2	0	1	0	0
23SEP-25SEP	0	0	0	0	1	2	1	1
07OCT-09OCT	0	0	0	0	2	1	2	0
21OCT-23OCT	0	0	0	0	0	3	2	1
	======	======	======	======	======	======	======	======
	7	66	56	32	21	10	6	4

DATES	75.0-79.9	80.0-84.9+	N	MEAN	MIN	MED	MAX	SD
18JUN-20JUN	0	0	0	.	.	.	.	.
01JUL-03JUL	0	0	6	44.7	41.0	44.5	48.0	3.1
15JUL-18JUL	1	0	71	47.3	40.0	45.0	75.0	7.3
29JUL-01AUG	0	0	78	46.8	37.0	47.0	63.0	5.6
12AUG-14AUG	0	0	23	48.2	40.0	47.0	69.0	6.3
26AUG-28AUG	0	0	6	55.0	48.0	56.5	61.0	4.7
09SEP-11SEP	1	0	4	61.3	51.0	57.5	79.0	12.8
23SEP-25SEP	0	0	5	64.6	55.0	63.0	73.0	6.8
07OCT-09OCT	0	0	6	61.8	57.0	61.5	67.0	4.2
21OCT-23OCT	1	0	7	67.7	62.0	65.0	77.0	5.7
	======	======	======					
	3	0	206					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-18 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR BLUEBACK HERRING IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATES	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9
10JUL-15JUL	0	0	18	7	1	0	0	0	0	0
22JUL-27JUL	2	2	78	29	9	0	0	0	0	0
05AUG-10AUG	0	24	98	34	3	1	0	0	0	0
19AUG-24AUG	0	21	70	59	20	0	0	2	1	0
03SEP-07SEP	0	13	64	27	42	10	0	0	0	0
17SEP-21SEP	0	2	59	35	29	21	5	0	0	1
01OCT-05OCT	0	2	37	58	32	22	7	4	4	4
13OCT-17OCT	0	1	16	42	67	31	9	5	6	1
	======	======	======	======	======	======	======	======	======	======
	2	65	440	291	203	85	21	11	11	6

DATES	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9+	N	MEAN	MIN	MED	MAX	SD
10JUL-15JUL	0	0	0	0	26	43.8	40.0	43.0	52.0	2.9
22JUL-27JUL	0	0	0	0	120	43.5	30.0	42.0	53.0	3.8
05AUG-10AUG	0	0	0	0	160	42.3	35.0	42.0	55.0	3.1
19AUG-24AUG	0	0	0	0	173	44.7	37.0	44.0	72.0	5.0
03SEP-07SEP	0	0	0	0	156	45.8	36.0	45.0	56.0	5.4
17SEP-21SEP	0	0	0	0	154	48.3	36.0	47.0	76.0	6.7
01OCT-05OCT	0	0	2	0	177	50.9	39.0	48.0	94.0	9.3
13OCT-17OCT	1	0	1	0	182	52.8	39.0	51.0	92.0	7.8
	======	======	======	======	======					
	1	0	3	0	1148					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-19 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR BLUEBACK HERRING IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATES	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9
18JUN-20JUN	0	0	0	0	0	0	0	0	0
01JUL-03JUL	0	0	1	0	0	0	0	0	0
15JUL-18JUL	0	0	83	38	6	0	0	0	0
29JUL-01AUG	0	31	106	22	4	0	0	0	0
12AUG-14AUG	0	46	70	16	0	1	0	0	0
26AUG-28AUG	0	6	70	33	5	0	2	0	0
09SEP-11SEP	0	29	48	34	6	0	0	0	0
23SEP-25SEP	0	9	36	22	12	4	3	0	0
07OCT-09OCT	1	7	28	17	20	8	3	1	2
21OCT-23OCT	0	1	23	43	18	16	4	5	3
	======	======	======	======	======	======	======	======	======
	1	129	465	225	71	29	12	6	5

DATES	75.0-79.9	80.0-84.9+	N	MEAN	MIN	MED	MAX	SD
18JUN-20JUN	0	0	0	.	.	.	.	.
01JUL-03JUL	0	0	1	40.0	40.0	40.0	40.0	.
15JUL-18JUL	0	0	127	43.6	40.0	42.0	52.0	3.1
29JUL-01AUG	0	0	163	41.9	36.0	41.0	52.0	3.0
12AUG-14AUG	0	0	133	40.9	36.0	40.0	55.0	2.8
26AUG-28AUG	0	0	116	43.8	37.0	43.0	64.0	4.1
09SEP-11SEP	0	0	117	42.8	35.0	43.0	54.0	4.2
23SEP-25SEP	0	0	87	45.8	36.0	44.0	64.0	6.2
07OCT-09OCT	3	0	90	48.8	33.0	47.0	79.0	9.2
21OCT-23OCT	0	0	114	50.3	39.0	48.0	72.0	7.5
	======	======	======					
	3	0	948					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-20 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR SPOTTAIL SHINER IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATES	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9
10JUL-15JUL	1	1	0	0	0	0	0	0	0	0
22JUL-27JUL	1	4	14	4	0	0	0	0	0	0
05AUG-10AUG	0	0	0	2	1	2	0	0	0	0
19AUG-24AUG	0	0	0	1	5	0	4	1	0	0
03SEP-07SEP	0	0	0	0	0	0	0	1	0	0
17SEP-21SEP	0	0	0	0	1	3	2	1	3	0
01OCT-05OCT	0	0	0	0	0	0	0	0	4	2
13OCT-17OCT	0	0	0	0	0	0	2	3	9	10
	======	======	======	======	======	======	======	======	======	======
	2	5	14	7	7	5	8	6	16	12

DATES	75.0-79.9	80.0-84.9	85.0-89.9+	N	MEAN	MIN	MED	MAX	SD
10JUL-15JUL	0	0	0	2	28.0	26.0	28.0	30.0	2.8
22JUL-27JUL	0	0	0	23	36.2	28.0	36.0	41.0	3.4
05AUG-10AUG	0	0	0	5	47.2	44.0	48.0	50.0	3.0
19AUG-24AUG	0	0	0	11	51.5	42.0	49.0	62.0	5.8
03SEP-07SEP	0	0	0	1	62.0	62.0	62.0	62.0	.
17SEP-21SEP	0	0	0	10	58.0	47.0	57.0	68.0	7.4
01OCT-05OCT	0	0	0	8	65.6	60.0	66.0	71.0	4.0
13OCT-17OCT	2	1	0	28	68.3	58.0	69.0	82.0	5.5
	======	======	======	======					
	2	1	0	88					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-21 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR SPOTTAIL SHINER IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9
18JUN-20JUN	3	1	2	0	0	0	0	0	0	0	0
01JUL-03JUL	0	8	70	49	5	1	0	0	0	0	0
15JUL-18JUL	0	0	6	26	70	19	6	0	0	0	0
29JUL-01AUG	0	0	0	0	11	24	22	9	3	0	0
12AUG-14AUG	0	0	0	0	2	6	14	14	3	1	1
26AUG-28AUG	0	0	0	0	0	0	5	24	12	12	2
09SEP-11SEP	0	0	0	0	0	0	2	2	6	4	4
23SEP-25SEP	0	0	0	0	0	0	0	2	2	2	7
07OCT-09OCT	0	0	0	0	0	0	0	0	1	5	5
21OCT-23OCT	0	0	0	0	0	0	1	0	3	4	4
	======	======	======	======	======	======	======	======	======	======	======
	3	9	78	75	88	50	50	51	30	28	23

DATES	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9+	N	MEAN	MIN	MED	MAX	SD
18JUN-20JUN	0	0	0	0	6	16.5	11.0	16.5	21.0	4.4
01JUL-03JUL	0	0	0	0	133	23.9	15.0	24.0	36.0	3.2
15JUL-18JUL	0	0	0	0	127	31.7	22.0	32.0	43.0	4.0
29JUL-01AUG	0	0	0	0	69	39.8	30.0	39.0	53.0	5.2
12AUG-14AUG	0	0	0	0	41	43.6	34.0	43.0	62.0	6.0
26AUG-28AUG	0	1	0	0	58	50.9	41.0	49.5	70.0	6.0
09SEP-11SEP	12	6	2	0	41	61.9	42.0	64.0	76.0	8.9
23SEP-25SEP	4	0	1	0	19	60.8	48.0	62.0	75.0	7.1
07OCT-09OCT	8	3	1	0	26	63.5	53.0	63.0	75.0	5.6
21OCT-23OCT	8	7	2	0	30	64.3	43.0	65.5	79.0	8.0
	======	======	======	======	======					
	32	17	6	0	550					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-22 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR WHITE CATFISH IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATES	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9
10JUL-15JUL	13	7	2	0	0	0	0	0	0	0	0	0
22JUL-27JUL	3	8	7	3	0	0	0	0	0	0	0	0
05AUG-10AUG	0	1	5	5	5	4	2	0	1	0	0	0
19AUG-24AUG	0	0	1	1	1	3	8	8	6	0	0	0
03SEP-07SEP	0	0	0	2	0	1	0	1	1	7	11	9
17SEP-21SEP	0	0	0	0	0	0	0	0	0	0	0	4
01OCT-05OCT	0	0	0	0	0	0	0	0	1	0	1	5
13OCT-17OCT	0	0	0	0	0	0	0	0	0	0	0	5
	======	======	======	======	======	======	======	======	======	======	======	======
	16	16	15	11	6	8	10	9	9	7	12	23

DATES	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9+	N	MEAN	MIN	MED	MAX	SD
10JUL-15JUL	0	0	0	0	0	0	22	19.7	16.0	18.5	26.0	3.1
22JUL-27JUL	0	0	0	0	0	0	21	24.3	18.0	23.0	34.0	4.2
05AUG-10AUG	0	0	0	0	0	0	23	35.4	24.0	35.0	56.0	7.9
19AUG-24AUG	0	0	0	0	0	0	28	48.4	26.0	50.0	58.0	7.8
03SEP-07SEP	5	3	0	0	0	0	41	66.7	32.0	68.0	82.0	10.8
17SEP-21SEP	5	5	8	5	4	0	31	84.3	70.0	85.0	98.0	7.8
01OCT-05OCT	3	9	20	5	2	0	46	83.6	58.0	85.0	98.0	8.1
13OCT-17OCT	5	13	10	4	2	0	39	82.8	70.0	83.0	96.0	6.6
	======	======	======	======	======	======	======					
	18	30	38	14	8	0	251					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-23 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR WHITE CATFISH IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATES	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9+	N	MEAN	MIN	MED	MAX	SD
18JUN-20JUN	0	0	0	0	0	.	.	.	.	.
01JUL-03JUL	0	0	0	0	0	.	.	.	.	.
15JUL-18JUL	0	0	0	0	0	.	.	.	.	.
29JUL-01AUG	1	0	0	0	1	45.0	45.0	45.0	45.0	.
12AUG-14AUG	0	0	0	0	0	.	.	.	.	.
26AUG-28AUG	0	0	1	0	1	56.0	56.0	56.0	56.0	.
09SEP-11SEP	0	0	0	0	0	.	.	.	.	.
23SEP-25SEP	0	0	0	0	0	.	.	.	.	.
07OCT-09OCT	0	0	0	0	0	.	.	.	.	.
21OCT-23OCT	0	0	0	0	0	.	.	.	.	.
	======	======	======	======	======					
	1	0	1	0	2					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-24 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR WEAKFISH IN HUDSON RIVER ESTUARY DETERMINED FROM FALL SHOALS SURVEY, 1996

DATES	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9
10JUL-15JUL	1	20	20	13	3	1	1	0	0	0	0	0	0
22JUL-27JUL	3	1	2	6	10	14	17	17	21	4	9	2	1
05AUG-10AUG	0	0	0	5	6	9	2	3	11	11	12	8	6
19AUG-24AUG	0	1	0	3	3	0	0	2	4	9	22	17	8
03SEP-07SEP	0	0	0	6	4	7	1	4	8	2	3	5	10
17SEP-21SEP	0	0	0	0	0	1	1	4	10	7	4	1	2
01OCT-05OCT	0	0	0	0	0	1	0	0	1	2	12	10	4
13OCT-17OCT	0	0	0	0	0	0	0	0	1	0	2	2	4
	======	======	======	======	======	======	======	======	======	======	======	======	======
	4	22	22	33	26	33	22	30	56	35	64	45	35

DATES	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9	110.0-114.9	115.0-119.9	120.0-124.9	125.0-129.9	130.0-134.9	135.0-139.9	140.0-144.9
10JUL-15JUL	0	0	0	0	0	0	0	0	0	0	0	0	0
22JUL-27JUL	0	0	0	0	0	0	0	0	0	0	0	0	0
05AUG-10AUG	6	7	4	1	0	0	0	0	0	0	0	0	0
19AUG-24AUG	3	6	8	4	4	3	8	1	1	0	0	0	0
03SEP-07SEP	14	21	10	3	6	1	2	5	3	0	1	0	1
17SEP-21SEP	4	3	1	4	3	9	5	0	1	1	0	0	0
01OCT-05OCT	4	5	2	1	1	1	2	2	2	3	0	2	0
13OCT-17OCT	4	3	7	5	4	2	0	2	1	1	0	1	0
	======	======	======	======	======	======	======	======	======	======	======	======	======
	35	45	32	18	18	16	17	10	8	5	1	3	1

DATES	145.0-149.9	150.0-154.9	155.0-159.9	160.0-164.9	165.0-169.9	170.0-174.9	175.0-179.9+	N	MEAN	MIN	MED	MAX	SD
10JUL-15JUL	0	0	0	0	0	0	0	59	27.0	18.0	26.0	46.0	5.5
22JUL-27JUL	0	0	0	0	0	0	0	113	49.3	16.0	51.0	75.0	11.9
05AUG-10AUG	0	0	0	0	0	0	0	91	62.7	32.0	64.0	96.0	16.9
19AUG-24AUG	0	0	0	0	0	0	0	107	76.5	22.0	72.0	120.0	20.3
03SEP-07SEP	0	0	0	0	0	0	0	119	77.7	30.0	82.0	140.0	24.1
17SEP-21SEP	0	0	0	0	0	0	0	62	80.8	44.0	79.0	129.0	23.4
01OCT-05OCT	2	1	0	0	0	2	0	60	90.9	41.0	79.5	170.0	29.6
13OCT-17OCT	0	1	1	1	0	1	0	44	98.0	58.0	92.0	173.0	26.5
	======	======	======	======	======	======	======	======					
	2	2	1	1	0	3	0	655					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

TABLE E-25 LENGTH FREQUENCY DISTRIBUTION OF YOUNG-OF-YEAR WEAKFISH IN HUDSON RIVER ESTUARY DETERMINED FROM BEACH SEINE SURVEY, 1996

DATES	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9
18JUN-20JUN	0	0	0	0	0	0	0	0	0
01JUL-03JUL	0	0	0	0	0	0	0	0	0
15JUL-18JUL	0	0	0	0	0	0	0	0	0
29JUL-01AUG	1	0	3	2	2	3	0	0	0
12AUG-14AUG	0	0	0	0	1	1	4	3	3
26AUG-28AUG	0	0	0	0	0	0	0	0	0
09SEP-11SEP	0	0	0	0	0	0	0	0	0
23SEP-25SEP	0	0	0	0	0	0	0	0	0
07OCT-09OCT	0	0	0	0	0	0	0	0	0
21OCT-23OCT	0	0	0	0	0	0	0	0	0
	======	======	======	======	======	======	======	======	======
	1	0	3	2	3	4	4	3	3

DATES	95.0-99.9	100.0-104.9	105.0-109.9+	N	MEAN	MIN	MED	MAX	SD
18JUN-20JUN	0	0	0	0	.	.	.	.	.
01JUL-03JUL	0	0	0	0	.	.	.	.	.
15JUL-18JUL	0	0	0	0	.	.	.	.	.
29JUL-01AUG	0	0	0	11	67.4	51.0	67.0	78.0	8.1
12AUG-14AUG	1	1	0	14	86.4	74.0	85.5	101.0	7.8
26AUG-28AUG	0	0	0	0	.	.	.	.	.
09SEP-11SEP	0	0	0	0	.	.	.	.	.
23SEP-25SEP	0	0	0	0	.	.	.	.	.
07OCT-09OCT	0	0	0	0	.	.	.	.	.
21OCT-23OCT	0	0	0	0	.	.	.	.	.
	======	======	======	======					
	1	1	0	25					

NOTE: N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum l
SD = Standard deviation

Appendix F

Summary of Atlantic Tomcod Food Habits Study

APPENDIX F

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F.1 STUDY OBJECTIVE

The objective of the Atlantic tomcod food habits study is to examine the stomach contents of juvenile and adult Atlantic tomcod in order to detect differences in food habits throughout the Hudson River estuary and the possibility of cannibalism among Atlantic tomcod.

F.2 METHODS

A maximum of 100 juvenile and 25 adult Atlantic tomcod per river run were collected during the Fall Shoals Survey. Up to 20 juvenile and 5 adult fish per river region (as defined below for the Atlantic tomcod food habits study) were preserved in 10 percent formalin and returned to the laboratory for analysis.

Atlantic Tomcod Food Habits River Regions

Region	River Miles
21	0-23
22	24-38
23	39-46
24	47-76
25	77-152

In the laboratory, the entire stomach was removed from the fish and the contents carefully placed into a dissecting pan or petri dish. The contents were identified to family level for fish and to order for invertebrates, except for Gammarids which were identified to family if possible. For each type of food item, a count and weight to the nearest hundredth gram were recorded on the laboratory data sheet. Other recorded information included sample number, region, and river run as well as fish length and life stage.

F.3 RESULTS

A total of 773 Atlantic tomcod stomachs, 765 from juvenile fish and 8 from adult fish, were analyzed in 1996 (Table F-1). Fish were captured from all 13 designated regions of the Hudson River estuary during July through October 1996. The majority of Atlantic tomcod came from the Indian Point region and other regions of the lower estuary; the fewest fish were collected in the Albany region. Adult Atlantic tomcod were only collected in the Battery and Yonkers regions and all except one measured over 150 mm. Most of the fish selected for analysis measured between 81 and 100 mm and were found throughout the estuary (Table F-2). Fish over 120 mm in length were generally found south of West Point.

The most abundant food item found in juvenile Atlantic tomcod was Amphipoda (including Gammarids), comprising over 80 percent of the total count and over 40 percent of the total weight of all food items found in this age group (Table F-3). The other major food items that accounted for at least one percent of the total count were, in numerical order, Mysidacea (Neomysis), Cumacea, Decapoda, Isopoda, and Diptera. Only mysids and decapods contributed significantly to the total weight, with 9 and 44 percent, respectively. For many of the food items, individual weights were below the minimum weight measurable by the instrumentation used. The only fish species found in the analyzed Atlantic tomcod were blueback herring (*Alosa aestivalis*) and bay anchovy (*Anchoa mitchilli*), with no evidence of cannibalism.

For adult Atlantic tomcod, the most abundant food item was decapods, comprising over 70 of the total count and almost 95 percent of the total weight of all food items found in this age group (Table F-3). The only other food items found in the 8 adult fish examined were mysids (Neomysis), amphipods, and a plant remnant.

TABLE F-1. NUMBER OF STOMACHS ANALYZED FOR ATLANTIC TOMCOD FOOD HABIT STUDY, 1996

	July	August	September	October	Total
Juvenile					
Battery	11	15	22	23	71
Yonkers	29	25	13	12	79
Tappan Zee	27	15	22	21	85
Croton-Haverstraw	13	25	17	21	76
Indian Point	35	34	33	35	137
West Point	12	20	10	21	63
Cornwall	5	10	14	6	35
Poughkeepsie	18	11	15	13	57
Hyde Park	21	10	15	--	46
Kingston	7	13	14	9	43
Saugerties	5	12	11	6	34
Catskill	8	5	1	12	26
Albany	--	--	--	13	13
Total	191	195	187	192	765
Adult					
Battery	--	2	--	--	2
Yonkers	--	3	--	3	6
Total	--	5	--	3	8

-- = None analyzed

TABLE F-2. LENGTH FREQUENCY DISTRIBUTION OF ATLANTIC TOMCOD ANALYZED FOR FOOD HABIT STUDY, 1996

	Length Category (mm)									
	<=70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	>150
Battery	--	1	6	18	11	13	12	9	1	2
Yonkers	--	9	16	19	18	8	2	5	3	5
Tappan Zee	4	11	22	18	10	10	6	2	2	--
Croton-Haverstraw	2	12	32	14	8	5	1	1	1	--
Indian Point	6	22	64	26	11	2	5	--	1	--
West Point	1	11	17	22	9	2	--	1	--	--
Cornwall	--	7	18	5	4	1	--	--	--	--
Poughkeepsie	--	4	25	22	6	--	--	--	--	--
Hyde Park	1	12	15	17	1	--	--	--	--	--
Kingston	--	6	22	12	3	--	--	--	--	--
Saugerties	1	1	11	15	4	1	--	1	--	--
Catskill	--	1	6	10	3	5	1	--	--	--
Albany	--	--	1	2	7	2	1	--	--	--
Total	15	97	255	200	95	49	28	19	8	7

-- = None collected

TABLE F-3. TOTAL COUNTS AND WEIGHTS AND PERCENT COMPOSITION OF FOOD ITEMS FROM ATLANTIC TOMCOD FOOD HABIT STUDY, 1996

Class	Order	Genus	Species	Count	Percent of Total Count	Weight (g)[a]	Percent of Total Weight
Juvenile Atlantic tomcod							
Crustacea	Amphipoda			10,753	80.68	18.63	41.46
Crustacea	Mysidacea	Neomysis		1,232	9.24	4.06	9.03
Crustacea	Cumacea			422	3.17	< min	--
Crustacea	Decapoda			293	2.20	19.58	43.57
Crustacea	Isopoda			231	1.73	0.45	1.00
Insecta	Diptera			168	1.26	< min	--
Crustacea	Amphipoda	Gammarus		86	0.65	0.23	0.51
Crustacea	Copepoda			39	0.29	< min	--
Polychaeta				28	0.21	0.38	0.85
Empty stomach				18	0.14	< min	--
Invert remnant				17	0.13	0.24	0.53
Gastropoda				10	0.08	< min	--
Osteichthyes	Clupeaform	Alosa	aestivalis	7	0.05	1.37	3.05
Pelecypoda				7	0.05	< min	--
Insecta	Trichoptera			3	0.02	< min	--
Fish remnant				3	0.02	< min	--
Osteichthyes	Unknown			2	0.02	< min	--
Crustacea	Ostracoda			2	0.02	< min	--
Crustacea	Cladocera			2	0.02	< min	--
Osteichthyes	Clupeaform	Anchoa	mitchilli	1	0.01	< min	--
Insecta	Ephemeroptera			1	0.01	< min	--
Insecta	Diptera	(Ceratopogonidae larv.)		1	0.01	< min	--
Insecta	Hemiptera			1	0.01	< min	--
Oligochaeta				1	0.01	< min	--
Total				13,328	100	44.94	100
Adult Atlantic tomcod							
Crustacea	Decapoda			20	71.43	2.41	94.88
Crustacea	Mysidacea	Neomysis		5	17.86	< min	--
Crustacea	Amphipoda			2	7.14	< min	--
Plant remnant				1	3.57	0.13	5.12
Total				28	100	2.54	100

[a] For some food items, weights were less than the minimum weight measurable by instrumentation and are represented here as "< min."

Although amphipods were the major food item for almost all length categories of Atlantic tomcod, preferences for other food items changed with length (Figure F-1). Diptera was most common in fish under 70 mm, but decreased in abundance with increases in fish length until it ceased to be a food source for fish over 120 mm. Conversely, decapods increased in abundance as Atlantic tomcod increased in length until it was the major food source for fish over 150 mm, the length category comprised of all adult fish.

Selection of food items may be influenced not only by fish size but also by location and month. Amphipods were again the primary food item in most regions of the Hudson River estuary for all months sampled (Figure F-2, Table F-4). However in the Battery region, mysids dominated as a food source in July and August, but then shared that dominance with Cumacea and amphipods in September and October. Co-dominance of decapods, Cumacea, mysids, and amphipods also existed in the Yonkers region and further up the estuary into the Croton-Haverstraw region in August.

To ascertain whether fish size or location was more important in determining patterns in diet, a comparison of food items from the four lower regions of the estuary, where the diet was most varied, investigated changes with season and length (Figures 3a and 3b). Selection of decapods as a food source seems dependent solely on fish size as abundance increased with length regardless of season or region. On the other hand, consumption of mysids varied little with length for the juvenile fish under 150 mm but changed with location becoming less prevalent as a food item further up the estuary into the less saline regions. Amphipods were clearly chosen as the major food source for juvenile fish north of the Yonkers region regardless of fish size or season; but in the Battery and Yonkers regions, there were no apparent trends in consumption of amphipods except for the near absence from juvenile fish collected during the summer in the Battery region.

In summary, selection of food items by Atlantic tomcod may be dependent on location for juvenile fish, but as fish increase in size, preferences for specific food items may influence dietary habits. Amphipods were the preferred food item for most of the juvenile Atlantic tomcod collected throughout the Hudson River estuary whereas decapods were preferred by the adult Atlantic tomcod found only in the Battery and Yonkers regions.

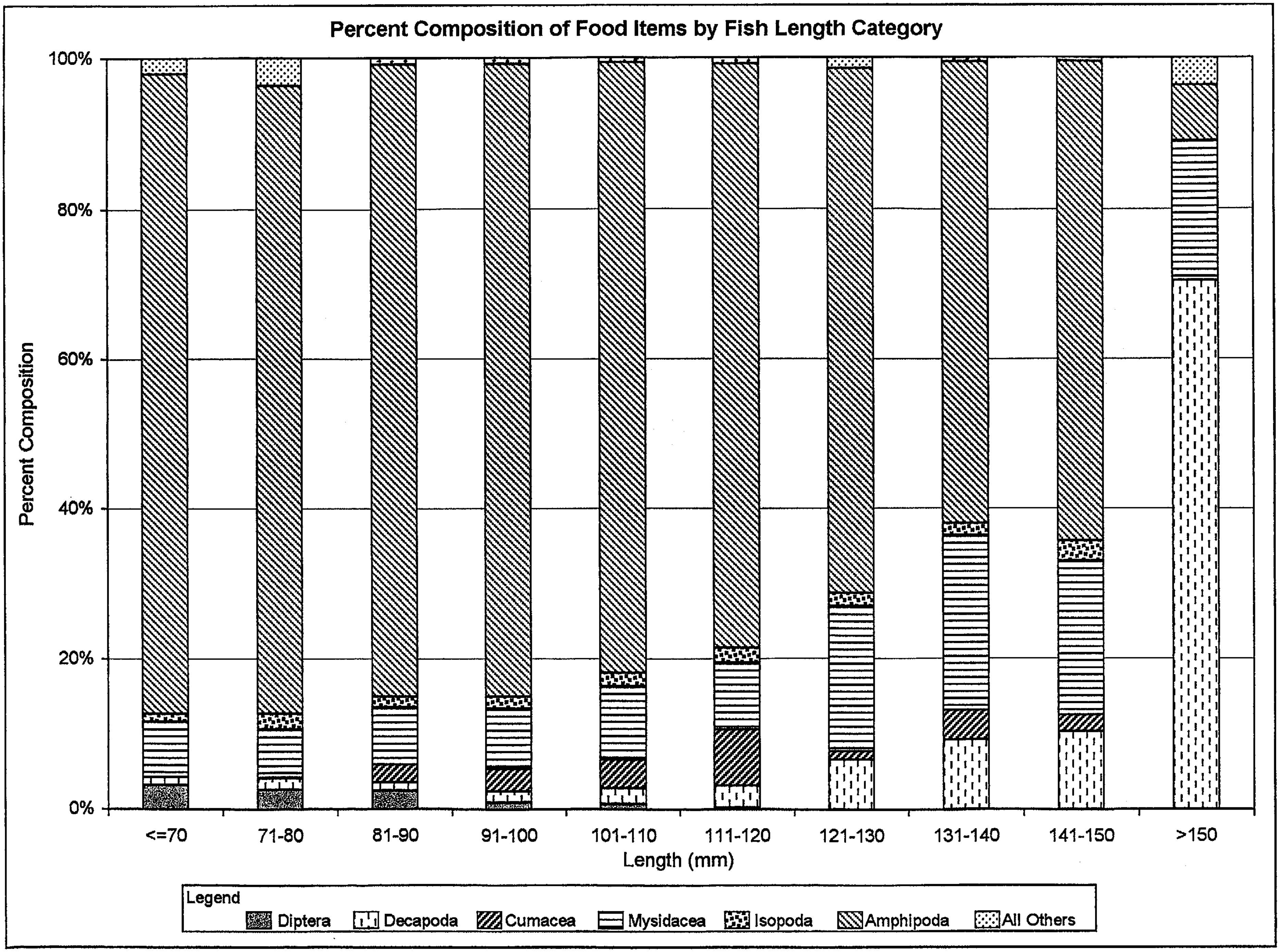

Figure F-1. Percent composition of food items by length category of Atlantic tomcod from food habit study, 1996.

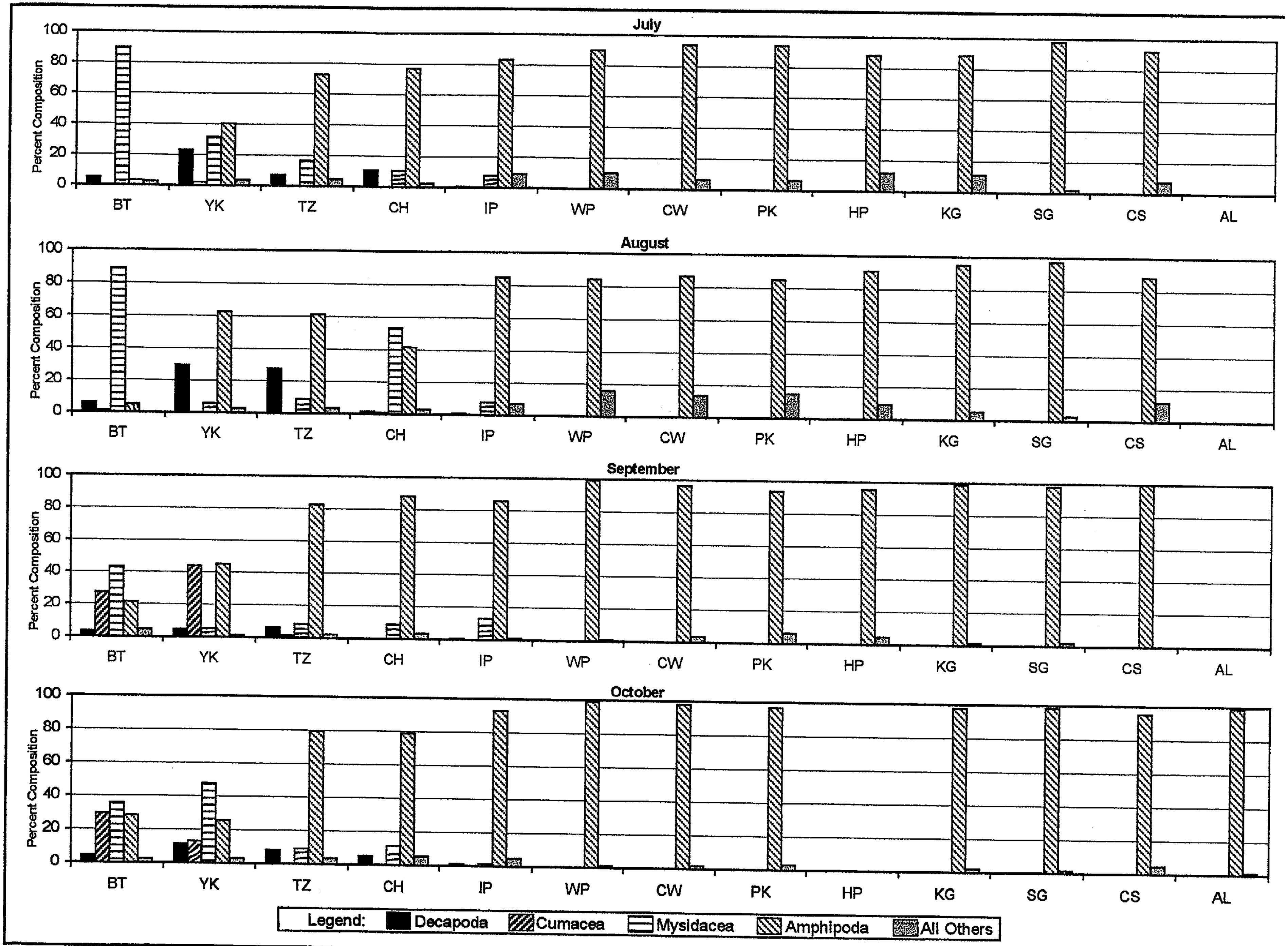

Figure F-2. Percent composition of major food items by month and region from Atlantic tomcod food habit study, 1996.

TABLE F-4 SUMMARY OF FOOD ITEMS FROM ATLANTIC TOMCOD FOOD HABIT STUDY BY MONTH AND REGION, 1996

	Battery		Yonkers		Tappan Zee		Croton-Haverstraw		Indian Point		West Point		Cornwall		Poughkeepsie		Hyde Park		Kingston		Saugerties		Catskill		Albany	
	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight
July																										
Empty stomach									1	< min	1	< min					1	< min								
Anchoa mitchilli	1	< min																								
Alosa aestivalis															1	0.29					1	0.13	2	0.22		
Unknown fish															1	< min	1	< min								
Pelecypoda													1	< min			2	< min								
Gastropoda									1	< min	1	< min														
Trichoptera													1	< min					1	< min						
Diptera							2	< min	8	< min	1	< min	11	< min	2	< min	24	< min	11	< min	1	< min	2	< min		
Decapoda	8	0.19	36	1.31	9	0.3	9	0.1	1	< min																
Cumacea			3	< min																						
Mysidacea/Neomysis	146	0.94	49	0.36	22	< min	9	< min	21	< min																
Isopoda	2	< min	2	< min	2	< min			10	< min	11	0.04	5	< min	4	< min	6	< min			1	< min	3	< min		
Amphipoda	5	< min	63	< min	97	0.05	67	< min	230	0.45	123	0.53	294	0.12	136	0.4	261	0.72	94	< min	148	0.39	83	0.13		
Copepoda					1	< min			1	< min			2	< min												
Polychaeta	1	< min	2	0.1					2	0.05																
Invert remnant			2	< min	3	< min			2	< min					1	< min	1	< min								
August																										
Empty stomach					2	< min	1	< min	2	< min	1	< min					1	< min	1	< min			1	< min		
Alosa aestivalis											1	0.32											1	0.07		
Pelecypoda			1	< min							1	< min														
Diptera									13	< min	9	< min	11	< min	8	< min	3	< min	6	< min	3	< min	1	< min		
Decapoda	12	0.97	32	3.61	26	0.8	2	0.06	2	0.24																
Cumacea	2	< min					1	< min																		
Mysidacea/Neomysis	188	1.07	6	< min	8	< min	73	0.12	24	< min																
Isopoda			1	< min			3	< min	3	< min	11	< min			3	< min	2	< min	6	< min	1	< min	1	< min		
Amphipoda	10	< min	68	< min	58	< min	57	< min	260	0.04	156	0.05	220	0.25	68	< min	60	0.05	243	0.37	181	0.33	38	0.05		
Copepoda									3	< min	3	< min	21	< min	1	< min										
Ostracoda													1	< min							1	< min				
Cladocera											2	< min														
Oligochaeta																							1	< min		
Polychaeta			1	< min	1	< min																				
Fish remnant											1	< min	1	< min												

NOTE: All weights are in grams. For some food items, weights were less than the minimum weight measurable by instrumentation and are represented here as "< min."

TABLE F-4 (CONTINUED)

	Battery		Yonkers		Tappan Zee		Croton-Haverstraw		Indian Point		West Point		Cornwall		Poughkeepsie		Hyde Park		Kingston		Saugerties		Catskill		Albany	
	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight
September																										
Empty stomach							2	< min			1	< min							2	< min						
Hemiptera																					1	< min				
Diptera													3	< min	6	< min	6	< min			2	< min				
Decapoda	11	0.95	13	1.31	18	1.63			2	0.17																
Cumacea	91	< min	120	< min	3	< min																				
Mysidacea/Neomysis	143	0.53	14	< min	24	0.06	18	< min	54	< min																
Isopoda	12	0.15	1	< min	4	< min	3	< min	3	< min	1	< min	2	< min	6	< min	7	< min	1	< min	3	< min				
Amphipoda	71	0.05	123	< min	238	< min	183	0.18	354	0.05	214	0.96	161	0.12	184	0.17	296	0.38	213	0.10	315	0.74	31	0.12		
Copepoda							1	< min					1	< min			1	< min								
Polychaeta	2	< min	3	< min	2	< min	1	< min	1	0.05																
Fish remnant	1	< min																								
October																										
Empty stomach									1																	
Alosa aestivalis									1	0.34																
Pelecypoda																							1	< min	1	< min
Gastropoda							4	< min	4	< min																
Ephemeroptera																									1	< min
Diptera/ Ceratopogonidae					1	< min																				
Trichoptera															1	< min										
Diptera					1	< min	1	< min	26	< min	1	< min			2	< min			1	< min			1	< min	2	< min
Decapoda	26	1.82	28	2.48	45	3.5	19	1.12	14	1.43																
Amphipoda/ Gammarus							36	0.18	50	0.05																
Cumacea	169	< min	33	< min																						
Mysidacea/Neomysis	204	0.4	120	0.58	52	< min	45	< min	17	< min																
Isopoda	9	0.1	2	< min	3	< min	14	0.06	22	< min	5	< min	3	< min	5	< min			4	< min	4	< min	30	0.1	10	< min
Amphipoda	161	0.1	64	< min	448	0.1	274	0.18	1066	2.25	600	2.06	154	0.54	238	0.46			224	0.19	250	0.62	644	2.77	1229	2.56
Copepoda	3	< min							1	< min																
Polychaeta	1	< min	4	0.1	6	0.08	1	< min																		
Plant remnant			1	0.13																						
Invert remnant					8	0.24																				

NOTE: All weights are in grams. For some food items, weights were less than the minimum weight measurable by instrumentation and are represented here as "< min."

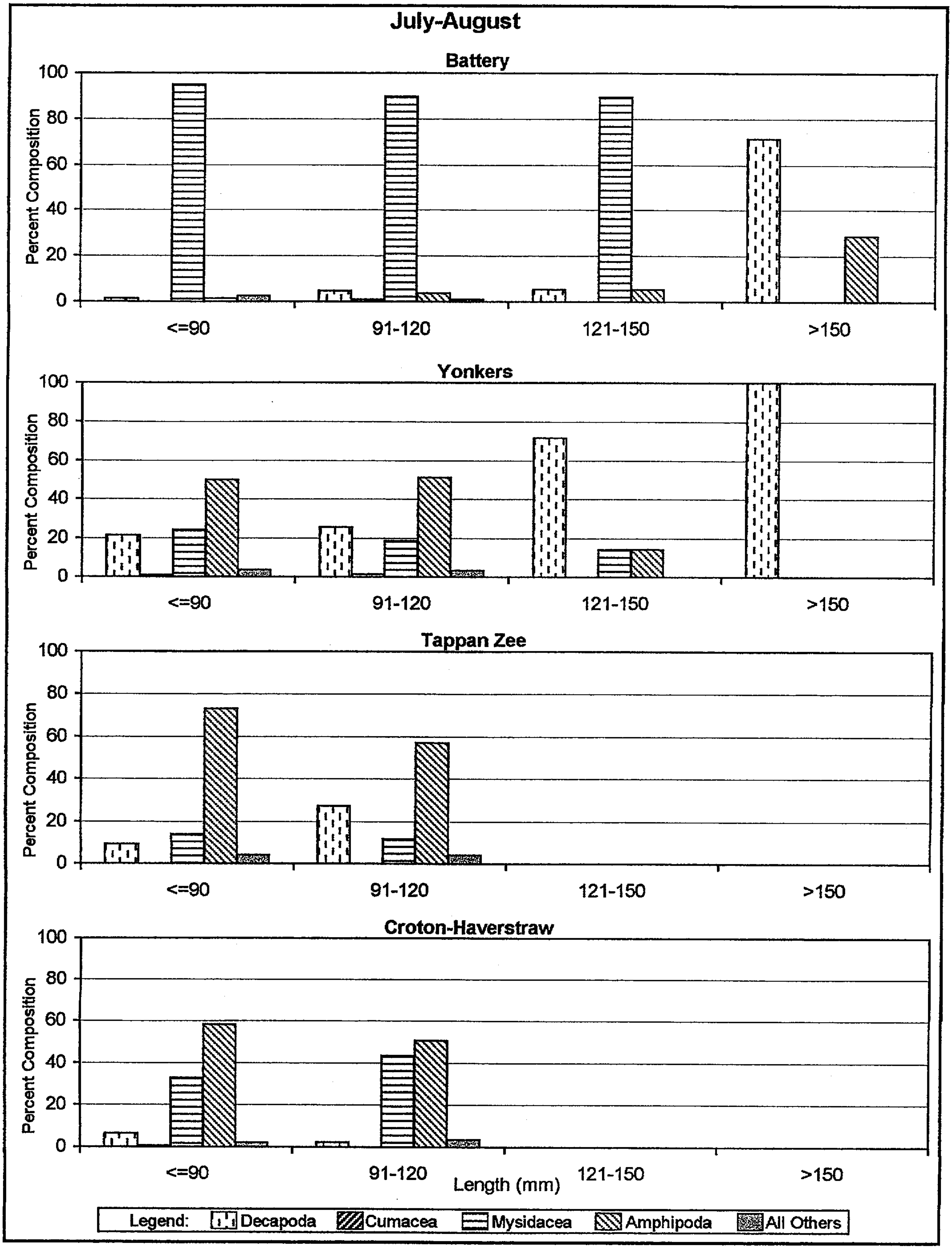

Figure F-3a. Seasonal percent composition of major food items by length category and region from Atlantic tomcod food habit study, 1996.

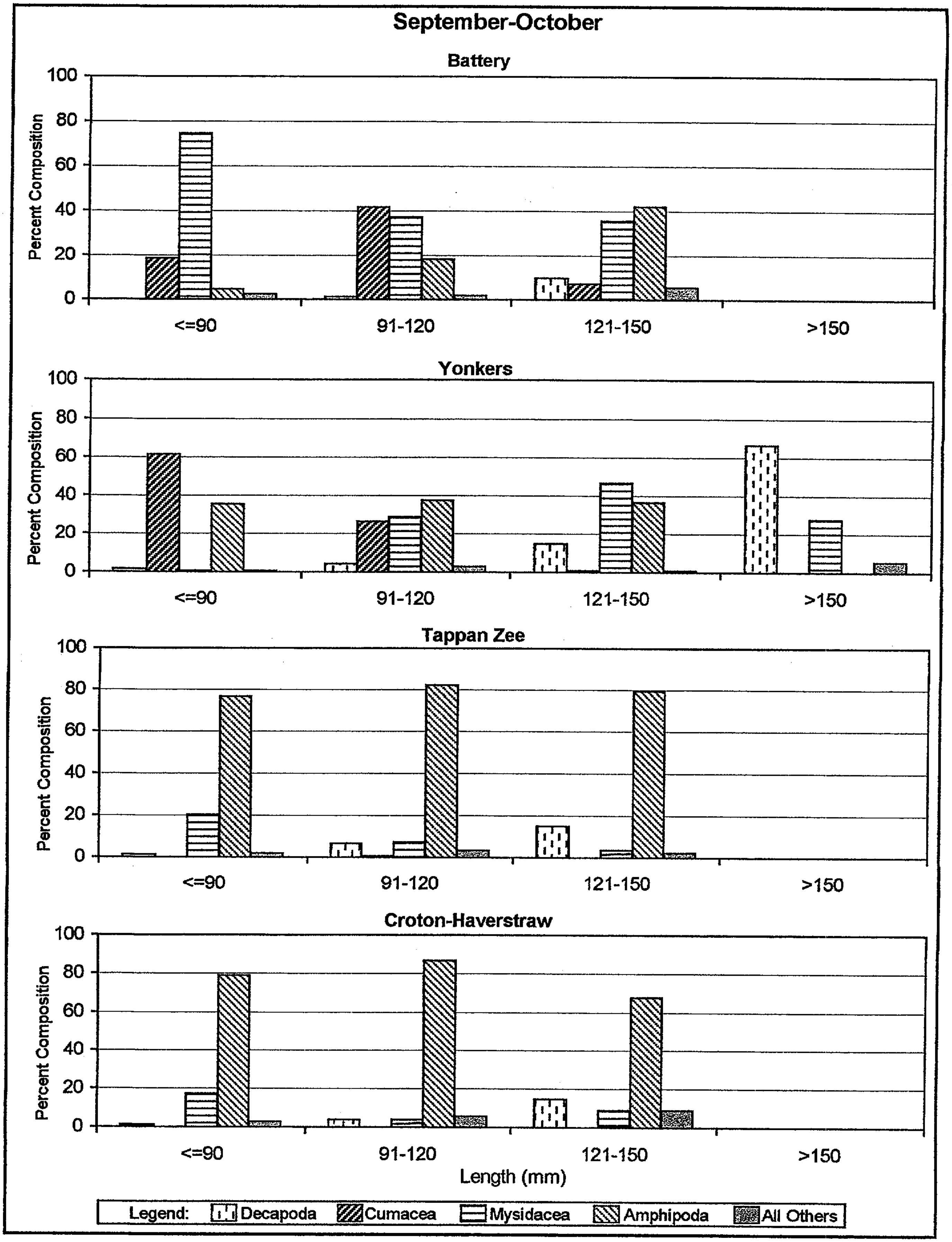

Figure F-3b. Seasonal percent composition of major food items by length category and region from Atlantic tomcod food habit study, 1996.