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Distribution and Abundance of Fish Larvae
in the St. Clair and Detroit Rivers

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Abstract

More than 58,000 fish larvae of 23 taxa were identified in over 4000 tow-net samples taken from the St. Clair and Detroit Rivers in 1977 and 1978. Rainbow smelt, alewife, gizzard shad, emerald shiner, yellow perch, carp, and white bass were the most abundant species and collectively made up more than 90% of the catch. We identified segments of the St. Clair-Detroit River System (SCDRS) as spawning and nursery areas for each of the more abundant species using analysis of variance (ANOVA) of the densities of yolk sac and non-yolk sac larvae. ANOVA revealed that lower Lake Huron was a spawning area for alewife and logperch; that the upper St. Clair River or tributaries entering the upper river were spawning areas for rainbow smelt, yellow perch, and emerald shiner; that the upper St. Clair River was a nursery area for alewife; that the lower St. Clair River was a spawning area for carp and a nursery area for alewife; that lower Lake St. Clair or the upper Detroit River was a spawning area for carp, a spawning and nursery area for alewife, gizzard shad, yellow perch, emerald shiner, and white bass, and a nursery area for rainbow smelt, and logperch; that the lower Detroit River was a spawning area for carp, a spawning and nursery area for rainbow smelt, gizzard shad, logperch, emerald shiner, and white bass, and a nursery area for alewife and yellow perch.

We compared the estimates of the year-class abundance of larvae obtained in the St. Clair River with estimates of yearling abundance obtained in lower Lake Huron for both alewife and rainbow smelt. We also compared year class abundance estimates of larvae obtained in the Detroit River with estimates of fall young-of-the-year abundance obtained in the western basin of Lake Erie for five species. Those comparisons revealed that populations of rainbow smelt and alewife larvae in the St. Clair River were continuous with those in Lake Huron and that populations of four of the five species of larvae in the Detroit River were continuous with populations in the western basin of Lake Erie. Evidence is presented that year-class strength of several species was already established before the larvae became vulnerable to collection in our tow-nets.

Introduction

Studies conducted at a number of widely separated sites in the Great Lakes showed that the nearshore waters are spawning and nursery grounds for many fishes (Boreman 1976). The Great Lakes interconnecting waterways, as part of the nearshore waters, have the potential of providing extensive spawning and nursery areas for system-wide fish production (Goodyear et al. 1982). Information on fish production in these interconnecting waterways is meager, even though fish habitat in the interconnecting waterways is being threatened as a result of increased industrial water use. Our research focused on the St. Clair-Detroit River System (SCDRS), one of the Great Lakes interconnecting waterways. The SCDRS was selected for study because it supports a valuable fishery that is near and vulnerable to the impacts associated with water use in a large urban area (Detroit metropolitan area). Certain evidence also suggested that SCDRS is an important spawning and nursery ground for fish stocks in Lakes Huron and Erie (Nepzy 1977; Johnston 1977). We determined the distribution and abundance of larval fish in each of the major segments of SCDRS to identify spawning and nursery areas for the most abundant taxa. We also sought to establish a correlation between year-class strength as revealed by larval fish abundance in SCDRS and year-class strength as indicated by the abundance of older life stages of fish in adjacent water bodies by comparing catch statistics for larvae in SCDRS with those for older life stages in Lakes Huron and Erie.

The Study Area

The SCDRS carries the outflow of the upper Great Lakes (Huron, Michigan, and Superior) to Lake Erie (Fig. 1). The SCDRS can be divided into five major segments: the upper St. Clair River, the lower St. Clair River delta, Lake St. Clair, and the upper and lower Detroit River.

The upper St. Clair River is 45 km long and receives water from Lake Huron and three major tributaries (the Black, Pine, and Belle Rivers). The lower St. Clair River, which begins at the branching of the north and south channels near Algonac, Michigan, is 18 km long and divides to form a large delta area consisting of three main channels (north, middle, and south) and a number of secondary channels that empty into Lake St. Clair. Width of the river ranges from 1200 m in the upper river to 240 m in the main channels of the delta. Mid-channel depths range from 8.5 to 21.5 m. Much of the shoreline is bulkheaded; consequently, underwater river banks are steep. The water in the river is homothermous and saturated with oxygen throughout. From April to August in 1977 and 1978, the mean annual discharge rate of the St. Clair River into Lake St. Clair was 5395 m^3/sec (Frank Quinn, pers. comm.) and the mean channel current ranged from 3 to 4 knots.

Lake St. Clair has a surface area of about 1114 km^2 and a mean depth of 3 m. A navigation channel 29 km long has a statutory depth of 8.2 m and bisects the lake from the mouth of the South Channel of the St. Clair River to the head of the Detroit River. Thermal stratification does not occur in this shallow lake and dissolved oxygen concentrations are near saturation throughout the year. Major tributaries are the Clinton River on the U.S. side

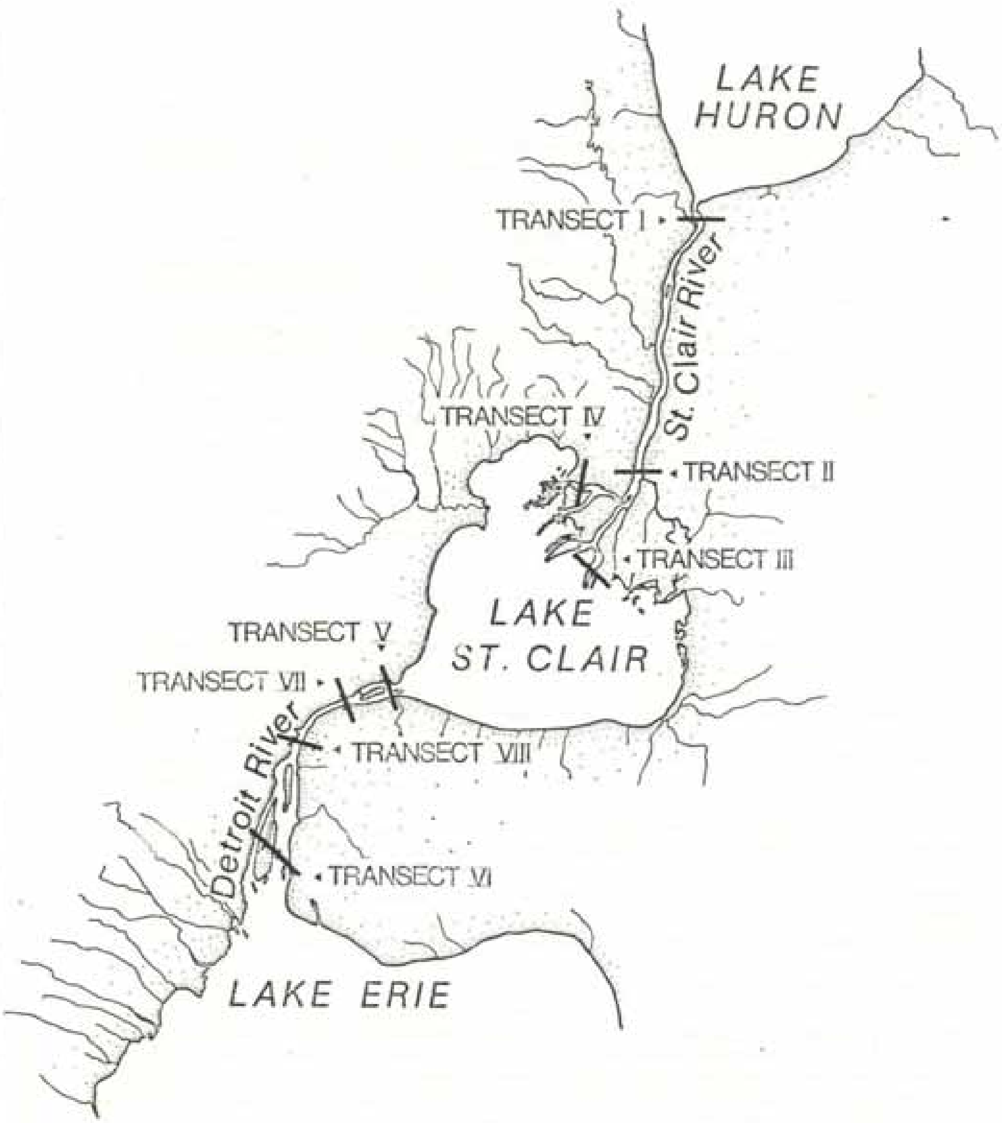

Fig. 1. The St. Clair-Detroit River System bounded by lower Lake Huron and western Lake Erie. Transects I-VI were sampled in 1977; transects II, IV, and V-VIII were sampled in 1978.

and the Sydenham, Thames, Belle, and Ruscom Rivers on the Canadian side. The mean discharge of the lake into the Detroit River from April to August in 1977 and 1978 was only slightly higher than the discharge of the St. Clair River into Lake St. Clair (Frank Quinn, pers. comm.). Flushing time for the lake is 5 to 7 days.

The upper Detroit River is 21 km long and receives water from Lake St. Clair. On opposite shores of the upper river are the metropolitan areas of downtown Detroit, Michigan, and Windsor, Ontario. The lower Detroit River, 30.5 km long, begins at the head of Fighting Island and separates downstream from Fighting Island into three main channels (Trenton, Livingstone, and Amherstburg). Major tributaries are the Rouge and Ecorse Rivers on the U.S. side. Dissolved oxygen is always at or near saturation in the upper river, but in summer is almost nil in the Trenton channel, the western lower river channel closest to the heavily industrialized area south of Detroit. As in the St. Clair River, waters in the Detroit River are homothermous and most of the shoreline is bulkheaded. From April to August in 1977 and 1978, the mean discharge rate of the Detroit River into Lake Erie was about 5536 m^3/sec (Frank Quinn, pers. comm.) and the mean channel current ranged from 1.6 knots in the upper segment to 1.2 knots in the lower segment.

Methods and Materials

Fish larvae were sampled in the St. Clair River and the Detroit River along eight cross-river transects (Fig. 1; Appendix A). In 1977, sampling was conducted along transects I and II in the upper St. Clair River, III and IV in the lower St. Clair River delta, and V and VI in the Detroit River. In 1978, sampling was conducted on transects II, IV, V, and VI and two additional transects--VII and VIII--in the upper Detroit River. Increased sampling in the Detroit River in 1978 was designed to provide a better measure of the industrial impacts on fish larvae being transported through that portion of SCDRS. At each transect, we established three stations, one at mid-river and one adjacent to each shore. The nearshore stations were within 20 to 200 m of the shore, depending on the width of the river. The one exception to this pattern of station location was at transect VI, where shoreline stations were omitted and one mid-river station was established in each of the three main shipping lanes--the Trenton, Livingstone, and Amherstburg channels.

At each station, we sampled fish larvae weekly from April to August in 1977 and from May to August in 1978 using the U. S. Fish and Wildlife Service vessels Daphnia and Sauger. Fish larvae were collected with a 50-cm cylinder-on-cone plankton tow net constructed of 355-µm Nitex.[1/] The net was lashed to a 50-cm net ring fastened to a square frame (Appendix B). The towing bridle was attached to the square frame at four corners so that the bridle wires were not directly in front of the net opening when the net was in tow.

1/ Mention of brand names in this report does not imply endorsement by the U.S. Government.

The net was towed from an outboard derrick with 6.4-mm cable against the current at a speed of about 3 knots (constant cable angle of 67°). A General Oceanic Model 2030 digital flowmeter was mounted inside the net to measure the volume of water passing through the net as it was towed, and a second flowmeter was positioned outside the net to permit monitoring of net filtering efficiency. When net filtering efficiency dropped below 85%, the net was assumed to be clogged (UNESCO 1968), the sample was discarded, and another sample was taken with a freshly washed net.

At each station, we recorded the surface water temperature and, where water depth permitted, made a standard series of replicate net tows (three in 1977 and two in 1978) at each of three depths: 1 m, 1 to 4 m, and 5 to 8 m. Nets were fished at 1 m for 1 min in 1977 and for 3 min in 1978. At 1 to 4 m, nets were fished continuously for 3 min in a stepwise manner (1 min each at 1, 2-1/2, and 4 m); and at 5 to 8 m, nets were fished continuously for 3 min in a stepwise manner (1 min each at 5, 6-1/2, and 8 m). There was no closing device on our nets, but there was little contamination from other than intentionally sampled depths because deployment and retrieval time for the net was relatively short; furthermore, the net was not straining water as it was payed out during deployment and the configuration and weight of the frame and depressor plate effectively collapsed the net during retrieval (Appendix B). Water depth was insufficient to make tows at 5 to 8 m at transect III, stations 1 and 3; transect IV, station 1; and transect V, station 1. No attempt was made to sample at depths greater than 8.2 m, the statutory depth of the shipping channels, even though water at some stations exceeded that depth (Appendix A). During each sampling period, transects were visited from the upper end of the system (transect I in 1977, transect II in 1978) to the lower end (transect VI).

We reduced the number of serial replicates in 1978 from three to two because of the close agreement in larval fish density estimates among the three serial replicates taken at each sampling location in 1977. We believed that physical mixing in the restricted and swiftly flowing channels of the river caused less aggregation of larvae than would be found in less-confined, still-water areas. Consequently we could place more confidence in each sample estimate as being representative of the average condition of larval fish distribution and abundance in the river at the times of our sampling.

Each tow net sample was labeled with the date, location, depth, and replicate number, and preserved in 10% formalin. In the laboratory, fish larvae were picked from the samples and stored in 30% ethanol and later identified and measured (total length to the nearest 0.1 mm). We also recorded the presence or absence of "yolk" (yolk, oil, or both) in the yolk sac of each larva. Keys and descriptions that we found most useful for identification of larvae included Fish (1932), Nelson and Cole (1975), Hogue et al. (1976), Lippson and Moran (1974), Lam and Roff (1977), Khan and Faber (1974), Cooper (1978a,b), and Boreman (1976, 1978).

We identified spawning areas in the SCDRS by analyzing the distribution and abundance of the youngest (mostly recently hatched) larvae in our samples, and nursery areas by analyzing the distribution and abundance of the older larvae (ranging from the earliest exogenous feeding stage to the finfold absorption stage).

For each of the eight most abundant species, which together made up over 90% of the larvae captured, we used the 1977 length frequency data and the presence of yolk in each larva to separate the youngest from the oldest larvae in both 1977 and 1978. We plotted the length frequency distribution of rainbow smelt, alewife, gizzard shad, yellow perch, logperch, emerald shiner, carp, and white bass (Appendix C) and identified for each the 0.3-mm length interval in the descending limb of the catch curve in which the numbers of larvae with yolk and larvae with no yolk were most nearly equal. All larvae with yolk that were shorter than or equal to this "transition length interval" were considered "yolk sac larvae" (herein after denoted as YS larvae), our most workable representation of newly hatched larvae. The larvae without yolk shorter than the transition length were not considered YS larvae and were not categorized as being among the youngest, most recently hatched larvae; therefore, they were not used to identify spawning areas. All larvae--both those with and those without yolk--that were longer than the transition length interval were considered "non-yolk sac larvae" (herein after denoted as NYS larvae), our representation of older larvae.

For example, the length frequency distribution of alewives captured in 1977 showed that the 4.4- to 4.6-mm length interval contained 110 yolk bearing larvae and 145 non-yolk bearing larvae (Fig. C-2 in Appendix C). No other interval in the descending limb of the catch curve had more nearly equal numbers of larvae in the two groups. We therefore designated 4.4 to 4.6 mm as the transition length interval for alewives. Thereafter, all alewife larvae with yolk that were 4.6 mm long or less were considered YS larvae and all larvae 4.7 mm long or longer were considered NYS larvae.

Larvae longer than the lengths at which fin rays develop in rainbow smelt, alewife, gizzard shad, yellow perch, logperch, emerald shiner, carp, and white bass (Table 1) were poorly represented in our catch. We assumed that these larvae were more mobile than shorter larvae and were able to avoid our nets. We therefore decided to delete from our analysis the few larvae we caught that were longer than the lengths at which major fin rays were developed, as reported by Jones et al. (1978), Hardy (1978), and Cooper (1978) and summarized in Table 1. We defined the upper length limit of NYS larvae as the length of the longest larva in our sample that did not exceed the literature values. For alewife larvae, the upper length limit of the NYS category was thus at 11.5 mm.

For each of the eight most abundant taxa, we used analysis of variance (ANOVA) to test for significant ($P = 0.05$) differences among the densities of larvae caught during each of the 17 weekly periods, and at each of the eight transects, the three stations, and the three depths. We transformed larval fish density estimates to natural logarithms ($\ln$ (density + 1)/1000 m^3) to more nearly meet the ANOVA assumptions of normality and homogeneity of variance. We used Duncan's K-ratio t-test to distinguish among the levels of density found during each period and at each transect, station, or depth. When we noted densities of YS larvae significantly greater ($P < 0.05$) than zero/1000 m^3 at specific time periods and transects, we concluded that the larvae had hatched upstream from the transect along which they were caught. By comparing densities of YS larvae among transects, we identified the segments of SCDRS where spawning had most likely occurred. Similarly, when we noted densities of NYS larvae significantly greater than zero/1000 m^3 in samples from specific time periods and transects, we concluded that the larvae were residing in the segment of SCDRS upstream from the transect.

Another objective of our work was to determine (for each species for which we had sufficient data) whether the relative numerical strengths of the 1977 and 1978 year classes were the same in Lake Huron, the SCDRS, and the western basin of Lake Erie. For lower Lake Huron, we calculated the ratio between yearling abundance estimates obtained from the Lake Huron Fisheries Assessment Unit of the Great Lakes Fishery Laboratory in spring 1978 and spring 1979 for both smelt and alewives. For the western basin of Lake Erie, we calculated the ratio between the estimates of young-of-the-year (YOY) abundance obtained from either the Ontario Ministry of Natural Resources or the Ohio Department of Natural Resources in fall 1977 and fall 1978 for smelt, alewives, gizzard shad, freshwater drum, white bass, and yellow perch. For SCDRS, we calculated the ratio between the 1977 and 1978 average density of larvae at transects II and IV in the St. Clair River for smelt and alewives. We also calculated the ratio between the 1977 and 1978 average density of larvae at Transects V and VI in the Detroit River for smelt, alewives, gizzard shad, freshwater drum, white bass, and yellow perch.

Results and Discussion

Species Composition and Abundance

St. Clair River

A total of 15,894 fish larvae, representing 21 taxa, were identified in samples taken from the St. Clair River from May to August in 1977 and 1978 (Table 2). Alewives and rainbow smelt together composed 69% of the larvae caught in 1977 and 95% in 1978. Average density of larvae of all species combined was about 3.5 times greater in 1978 than in 1977, mainly due to a 10-fold increase in the 1978 catch of rainbow smelt. In addition, the densities of alewives, emerald shiners, unidentified darters, sunfishes, lake whitefish, and freshwater drum increased from 1977 to 1978, while those of yellow perch, unidentified minnows, white suckers, carp, burbot, gizzard shad, and trout-perch declined. Densities of logperch, deepwater sculpin, and johnny darter larvae changed little from 1977 to 1978. The same taxa were caught in each year with the exceptions that one lake sturgeon was caught in 1977 (none in 1978), and a few spottail shiners and one brook stickleback were caught in 1978 (none in 1977).

Detroit River

A total of 42,285 fish larvae, representing 21 taxa, were identified in samples taken from the Detroit River from May to August in 1977 and 1978 (Table 3). Rainbow smelt, alewives, and gizzard shad collectively accounted for 62% of the larvae caught in 1977 and 78% in 1978. Average density of all larvae in 1978 was almost double that in 1977, primarily due to a 6-fold increase in the 1978 catch of alewives. Densities of rainbow smelt, gizzard shad, logperch, emerald shiner, trout-perch, spottail shiners, and white suckers increased from 1977 to 1978, while densities of yellow perch, unidentified minnows, white bass, carp, unidentified darters, unidentified sunfishes, and walleyes declined. Densities of johnny darters, burbot, deepwater sculpins, freshwater drum, and lake whitefish were low in both years. The same taxa were caught in each year with the exception that a few brook silversides were caught in 1978 (none in 1977).

Spawning and Nursery Areas for the More Abundant Species

One-way ANOVAs (Appendix D) indicated that in 64% of the cases the density of rainbow smelt, alewives, gizzard shad, yellow perch, logperch, emerald shiners, carp, and white bass did not vary significantly with station (Table 4). Densities were significantly lower at station 1 for YS smelt in 1977 and for NYS yellow perch in 1978. Densities were significantly higher at station 2 (mid-river) for YS logperch in 1977 and for NYS alewives and logperch in 1978. Densities were significantly lower at station 2 for NYS gizzard shad and YS white bass in 1977 and for YS common carp in 1978. Densities were significantly higher at station 3 for YS gizzard shad in 1977 and for YS alewives in 1978. The density of larvae varied significantly by depth (Table 4), primarily because of low densities in 1-m samples. There were no significant differences between densities in the 1- to 4-m and 5- to 8-m samples with these exceptions: 1) densities of YS logperch in both years and YS carp and YS emerald shiners in 1978 were significantly higher in the 5- to 8-m samples; and (2) densities of NYS emerald shiners in both years and NYS gizzard shad and alewives in 1978 were significantly lower in the 5- to 8-m samples.

Essentially, overall densities did not vary significantly by station and, with the exception of lower densities in 1-m samples, did not vary significantly overall by depth. Isolated significant differences in densities with respect to station and depth were indeterminate because the differences nearly always involved a particular life stage in 1977 or 1978, but not in both years. As probable exceptions, YS logperch were more concentrated at mid-river (station 2) toward the bottom (5 to 8 m) in both years. In the transition to the NYS stage, logperch became more evenly distributed vertically but remained at mid-river. It is also probable that emerald shiner and gizzard shad larvae, in the transition from YS to NYS, migrated from the 5- to 8-m depth to the 1- to 4-m depth (Appendix E).

Densities varied significantly by period and transect for all species and life stages (Table 4). We constructed a one-way ANOVA for the period-by-transect interaction for each of the more abundant species, and used Duncan's K-ratio t-test to compare the densities of larvae found at transects during each sampling period in 1977 and 1978 (Appendix F).

Rainbow Smelt

We identified spawning areas for rainbow smelt in two segments of SCDRS: (1) in and upstream from the upper St. Clair River, and (2) in the lower Detroit River just above transect VI. YS larvae were present in significant densities (numbers significantly greater than zero/1000 m^3) throughout the St. Clair River from May 9 to June 8, 1977, and from May 24 to June 13, 1978 (Table 5). On May 9, 1977, the density of YS larvae was lower at stations 1 and 2, transect I, than at station 3 (Appendix E) and the average length of the larvae at station 3 (Appendix G) was near to the hatching length (Table 1). Therefore, we believe that a spawning site was just upstream from transect I, station 3, in the shallow embayment of the St. Clair River adjacent to Sarnia, Ontario (Appendix A).

In both years there were high concentrations of YS larvae throughout the St. Clair River, downstream from transect I (Table 5). The highest concentrations were recorded at transects II, III, and IV, on May 16-18, 1977, and at transects II and IV on May 30-31 and May 24-25, respectively, in 1978. We believe that most of these larvae were hatched from eggs laid in Lake Huron and the upper tributaries of the St. Clair River.

In the Detroit River, YS larvae first appeared in significant densities in both years at transect VI--May 2-4, 1977, and May 15-16, 1978 (Table 5). The 5.0-mm average length of larvae captured at those times at transect VI (Appendix G) indicated that most were newly hatched from eggs that were most likely deposited in shallow areas around the islands immediately upstream from the Livingstone and Amherstberg channels. Densities of larvae were lower in the Trenton Channel (Appendix E).

We identified Lake St. Clair and the Detroit River as nursery areas (Table 6). The influx of NYS larvae from Lake St. Clair into the Detroit River at transect V in 1978 was considerably larger than the influx in 1977, an expected result of increased density of YS larvae upstream in the St. Clair River in 1978. Larvae hatched in Lake Huron, the upper St. Clair River, and its tributaries were transported to Lake St. Clair. By the end of May, these larvae were in transition from the YS to the NYS life stage and a portion of these larvae were transported down the Detroit River, intermixing with smelt larvae spawned in the lower Detroit River.

Alewife

We identified two major alewife spawning areas: lower Lake Huron and Lake St. Clair and its tributaries. YS larvae reached peak abundance in the St. Clair River on July 25-27, 1977, and July 17-18, 1978. On both dates, larvae were evenly distributed among transects and stations and their small average length (Appendix G) indicated they were recently hatched. We concluded that most of the larvae probably hatched in the shallows of lower Lake Huron.

Few YS larvae appeared in Detroit River samples in 1977, but in 1978 there was an influx of larvae to the Detroit River at transect V from June 19 to July 6 (Table 7). On June 19-20, most of the YS larvae were being transported down the Canadian side (station 3) of the Detroit River (Appendix E). The average length of these larvae--about 4.5 mm--indicated they were recently hatched. We concluded that these larvae probably hatched in the shallows around Peach Island at the head of the Detroit River or in the shallows near the Little River in southwestern Lake St. Clair.

Small secondary populations of larvae that hatched early appeared in the lower Detroit River at transect VI (Table 7); larvae from these populations appeared in significant numbers on June 20-22, 1977, and May 30-31, 1978.

We identified the entire SCDRS as a nursery area (Table 8). One population of NYS larvae entered the Detroit River from Lake St. Clair from mid-June through early July in 1978; an equivalent movement was not evident in 1977. This population of NYS larvae was most abundant on July 5-6 on the Canadian side of the Detroit River (Appendix E), where YS larvae had been abundant 2 weeks earlier. In both years, another population of NYS larvae was transported from Lake Huron down through SCDRS to Lake Erie in middle to late July.

There were, therefore, two distinct populations of larvae in SCDRS: one originating from spawning in Lake Huron and one from spawning in Lake St. Clair. During the latter part of our collecting season, NYS larvae from these sources were widely distributed in the SCDRS. At any one transect in the Detroit River, there was a mix of the two populations, as exemplified by the differences in average length of larvae among stations at transect V during the period of peak abundance on July 5-6, 1978 (Appendix G).

Gizzard Shad

We identified multiple spawning locations for gizzard shad in the lower SCDRS. YS larvae in significant densities were found exclusively in the Detroit River in both years from late May to early July (Table 9). In 1977, most of the larvae were on the Canadian side (station 3) of the river (Appendix E). Two populations of YS larvae entered the Detroit River from Lake St. Clair at transect V, station 3: one with peak abundance on June 6-8 (Appendix E) composed of larvae averaging about 6 mm in length (Appendix G); and the other with peak abundance on June 20-22 (Appendix E) composed of larvae averaging about 4.5 mm in length (Appendix G). The larvae collected on June 6-8 most likely hatched farther from transect V, station 3, than did the smaller larvae collected on June 20-22. This interpretation is based on the assumption that the closer the average length was to the hatching length, the nearer was the hatching location to the point of capture.

The origin of another population of larvae was most likely the lower Detroit River just upstream from transect VI, station 3 (Appendix E). Average length of larvae in that population was about 3.5 mm on June 13-15 (Appendix G), indicating that the larvae were recently hatched nearby.

The pattern of the appearance of multiple populations of YS gizzard shad in the Detroit River in 1978 was similar to that in 1977 (Table 9). In 1978, however, larvae were not as restricted to station 3 but were distributed more evenly among all stations (Appendix E). Density of YS larvae was highest at transect VIII on June 19-20, due primarily to increased density on the U.S side (station 1) of the river (Appendix E), directly downstream from the mouth of the Rouge River. This increase in density was most likely the result of an influx of larvae from spawning areas in the Rouge River. There was also an increase of larvae on the Canadian side of the lower Detroit River on June 27-28, 1978.

We identified lower Lake St. Clair and the Detroit River as nursery areas for gizzard shad larvae. The distribution of NYS larvae in both years was the same as that of YS larvae and was restricted to the Detroit River (Table 10). However, NYS larvae in 1977 were not restricted to the Canadian side of the river as were the YS larvae (Appendix E).

Yellow Perch

We identified two segments of SCDRS in which spawning of yellow perch took place: the upper St. Clair River and Lake St. Clair. In 1977, YS larvae were found in significant densities during a 3-week period in both rivers (Table 11). YS larvae were present in the St. Clair River from May 31 to June 15 and peaked in abundance on June 6-8; they were evenly distributed among stations (Appendix E). This pattern suggests dispersed origins of these larvae, some in the upper tributaries of the St. Clair River, and some possibly in Lake Huron. In the Detroit River, YS larvae were present from May 2 to May 18, peaked in abundance on May 9-11, and were most abundant at the head of the river primarily on the Canadian side (Appendix E)--indicating that a population of larvae most likely originated from the south shore of Lake St. Clair, perhaps as far away as the Belle River, Ontario.

In 1978, YS larvae of yellow perch were found in significant densities only in the Detroit River, and only from May 15 to May 25 (Table 11). Larvae were not confined to one side of the river, as they were in 1977. The greatest average densities continued to be at the head of the river, suggesting that there were multiple populations coming primarily from Lake St. Clair (Appendix E).

We identified Lake St. Clair and the Detroit River as the primary nursery areas for yellow perch. NYS larvae showed about the same distribution patterns as those of YS larvae in both years (Table 12) except that in 1977 NYS larvae were present longer along Detroit River transects than were the YS larvae.

Logperch

We identified lower Lake Huron and the lower Detroit River as spawning areas for logperch. Two separate sources of YS logperch were evident in both 1977 and 1978 (Table 13): one population appeared in the St. Clair River on May 31-June 2, 1977, and June 12-13, 1978, and the other population appeared in the lower Detroit River on May 9-11, 1977, and May 24-25, 1978.

Distribution of NYS larvae in 1977 and 1978 (Table 14) indicated that the population in the Detroit River was largest from May 31 to July 27 in 1977 and from June 12 to June 28 in 1978. These larvae were most likely from the same population that appeared as YS larvae in the St. Clair River earlier. We therefore concluded that a population of larvae from lower Lake Huron was transported to Lake St. Clair, where the fish made the transition from YS to NYS larvae. From Lake St. Clair, a portion of the population was transported down the Detroit River to Lake Erie. This population, which originated in lower Lake Huron, contributed most of the NYS logperch larvae we caught in SCDRS in both years. Smaller groups of NYS larvae were also present in the St. Clair River on May 31-June 8, 1977, and June 12-13, 1978, and earlier in the lower Detroit River on May 16-17, 1977, and May 24-25, 1978.

Emerald Shiner

We identified the tributaries of the upper St. Clair River (or the shallow areas of the upper river itself), Lake St. Clair, and the Detroit River as spawning areas of the emerald shiner. In 1977, scattered YS larvae appeared throughout the Detroit River at transects V and VI on June 6-8 and in the St. Clair River at transect II on July 25-27. In 1977, the density of YS larvae was highest in the upper Detroit River on June 13-15, and somewhat lower in the lower Detroit River on July 18-27 (Table 15). In 1978, YS larvae appeared in the same three areas but at slightly different times: at transect II on July 31-August 1, throughout the Detroit River at transects V-VIII on July 5-6, and in the lower Detroit River on July 31-August 1.

In 1977, only a few NYS larvae were caught, suggesting that few emerald shiners remained in the areas where we sampled (Table 16). NYS larvae in 1978 were found throughout the Detroit River primarily during the July 5-6 and July 24-25 sampling periods. Presence of NYS larvae in the river in 1978 indicated that nursery areas for the species were in lower Lake St. Clair and the Detroit River.

Carp

We identified the St. Clair River delta, lower Lake St. Clair, and the lower Detroit River as spawning areas for carp on the basis of the distribution of YS larvae in 1977 and 1978, combined. In 1977, YS larvae were in the St. Clair River delta at transects III and IV but were most abundant and persistent in the lower Detroit River at transect VI (Table 17). In 1978, YS larvae were confined to the Detroit River and were most abundant on July 10-11 on the Canadian side of the river (Appendix E). NYS larvae were not present in the catch in significant densities in either year. They were either present in the area and able to avoid the gear or had migrated from the areas where we sampled.

White Bass

White bass YS larvae were caught exclusively on the lower Detroit River (Table 18), primarily in the Trenton and Amherstberg channels (Appendix E), suggesting the presence of two populations that originated just upstream from transect VI, stations 1 and 2. Distribution of NYS larvae in 1977 (Table 19) also indicated the presence of another population on the Canadian side of the Detroit River (Appendix E) on June 6-8. These larvae probably originated in Lake St. Clair; thus Lake St. Clair and the Detroit River are probably nursery areas.

Distribution of Other Species

No ANOVAs were performed on the densities of the remaining species and no distinction was made between YS and NYS larvae because of their relatively low densities or because taxa identified were undoubtedly a mix of species with varied distributions. Larvae of trout-perch and johnny darters were consistently collected in low densities (3-36/1000 m^3) in the upper Detroit River (Appendix E). Because both species produce only small numbers of eggs (30-350 eggs) at a single spawning (Scott and Crossman 1973), and each larva produced represents a substantial parental investment, we believe these catches indicate that lower Lake St. Clair or the shallow areas around the islands in the upper Detroit River are important spawning areas.

A few walleye larvae (4-30/1000 m^3) were taken throughout the Detroit River in both years (Appendix E). We were surprised that we did not capture more walleye larvae because there are major spawning areas for walleye in Lake St. Clair and its tributaries (Johnston 1977). Perhaps most walleye larvae did not disperse from Lake St. Clair and its tributaries into our sampling areas until they had grown to a size that rendered them invulnerable to capture by our gear.

White sucker larvae occurred in higher densities (4-89/1000 m^3) in the St. Clair River than in the Detroit River (4-11/1000 m^3) in both years (Appendix E). In a given period, densities were similar at all transects in the St. Clair River, and we concluded that these larvae probably came from lower Lake Huron or the head of the St. Clair River upstream of transect I. The relative scarcity of larvae in the Detroit River suggested that there were no major spawning areas for white suckers in lower Lake St. Clair or the Detroit River.

Spottail shiner larvae were caught only in the Detroit River in 1977 (Appendix E). Peak density was at transect VI in the Trenton and Livingstone channels on July 18-20, suggesting that shallow areas around Grosse Isle provided spawning substrate for these fish. Sampling in 1978 confirmed this conclusion (transect VI, May 30-31). There were only a few larvae in St. Clair River samples in 1978, late in the season, which indicated little spawning activity in the northern part of SCDRS. The presence of larvae in the upper Detroit River from June 12 to August 8, 1978, indicated that spottail shiners probably also spawned in areas above transect V in the Detroit River and lower Lake St. Clair.

Freshwater drum larvae occurred sporadically and in low densities in 1977, but in 1978 were found throughout the Canadian side of the Detroit River on July 5-6 (Appendix E). This distribution suggests the presence of a spawning population in lower Lake St. Clair.

Burbot larvae were present throughout the system early in the season in both collection years. We suspect that these larvae originated from spawning populations in lower Lake Huron.

In 1977, the first larvae caught in our samples were deepwater sculpins, which appeared throughout SCDRS. They were most abundant in early May of both years (Appendix E). We believe that these larvae were a small remnant from populations that spawned in Lake Huron.

There were high densities of minnow larvae (Appendix E) which we could not separate taxonomically below the family level. In 1977, most of these larvae originated from Lake Huron on June 6-8 and the upper tributaries of the St. Clair River on July 18-20 and August 8-10. In 1978, most originated to the north of station 1, transect VII, probably from the shallow areas around Belle Isle or from Connor's Creek.

One lake sturgeon, 12 mm long, was caught on June 6, 1978, at station 1, transect I, in the 5- to 8-m tow. To our knowledge, this is the only such recent record of capture of lake sturgeon larvae in the Great Lakes (see Harkness and Dymond 1961, page 25).

Larvae of brook silversides, lake whitefish, unidentified sunfishes and darters occurred sporadically and in low densities in each year (Appendix E). We believe that their low abundance in our catches indicates that they stayed in the shallow, weedy spawning areas near shore, where they were invulnerable to capture by our gear. An exception is the lake whitefish. We believe that its low densities represented the true relative abundance of the larvae throughout the study area, and indicated that there were no nearby spawning locations.

Year-Class Strength of Fish in 1977 and 1978 in SCDRS and Surrounding Waters

We compared fish larvae densities in SCDRS with catch per unit of effort (CPE) for yearlings of two species from lower Lake Huron and CPE for YOY of six species from the western basin of Lake Erie (Table 20). The ratio between the density of smelt larvae in 1977 and 1978 in the St. Clair River was remarkably similar to that between the 1978 and 1979 CPE for yearling smelt in lower Lake Huron. A similar relation also existed between alewife larvae in the St. Clair River and alewife yearlings in lower Lake Huron. The correspondence between these ratios suggest that St. Clair River populations of smelt and alewife were continuous with those in lower Lake Huron.

Likewise, the ratio between the density of smelt larvae with yolk (defined for this analysis as all larvae with yolk, oil, or both) in 1977 and 1978 in the Detroit River was similar to the ratio between 1977 and 1978 CPE for YOY smelt in the western basin of Lake Erie. A similar relation also existed between density of larvae of alewives, gizzard shad, and freshwater drum in the Detroit River and density of YOY alewives, gizzard shad, and freshwater drum in western Lake Erie. The correspondence between these ratios suggested that Detroit River populations of these species were continuous with those in the western basin of Lake Erie.

The factors that determined year-class strength of these fish in 1977 and 1978, presumably, operated before the time at which larvae became vulnerable to our nets. Otherwise one would not have expected such close correspondence between the year-class strength of St. Clair River larvae and lower Lake Huron yearlings, or between the year-class strength of larvae in the Detroit River and that of YOY in western Lake Erie.

The density ratio between yellow perch larvae with yolk in the Detroit River in 1977 and 1978 did not correspond closely with the CPE ratio for YOY of this species in the fall in the western basin of Lake Erie; white bass larvae with yolk demonstrated a similar non-correspondence. There was agreement, however, between the ratio for white bass larvae without yolk in the Detroit River and the ratio for fall YOY white bass in the western basin. Thus, for white bass, it appears that factors affecting year-class strength may have operated in the transition from endogenous to exogenous feeding.

The non-correspondence of the ratio of yellow perch larvae in the Detroit River with the CPE ratio of juvenile yellow perch in the western basin of Lake Erie could be explained as follows: possibly our samples of yellow perch larvae in 1977 and 1978 were not representative of the true population because of the short residence time of larvae in the Detroit River. If these samples were representative of larvae however, either (1) factors affecting year-class abundance in yellow perch were different in the SCDRS and western Lake Erie or (2) factors affecting year-class abundance in yellow perch continued operating beyond the larval stage.

Annual fluctuation of populations of rainbow smelt and alewives in the St. Clair and Detroit Rivers did not correlate, probably as a consequence of the environmental discontinuity imposed between the two rivers by shallow Lake St. Clair. For example, average surface water temperature was higher in the Detroit River than in the St. Clair River (Fig. 2). The earlier rise in temperature in the Detroit River might explain why larvae of smelt and alewives appeared earlier there than in the St. Clair River; critical spawning and hatching temperatures were very probably reached earlier in the Detroit River and were independent of water temperatures in Lake Huron and the St. Clair River.

This study demonstrated the potential for using estimates of fish larvae abundance to determine year-class strength. Specifically, our estimates of fish larvae abundance in the St. Clair and Detroit rivers provided as accurate an assessment of year-class strength for some species in lower Lake Huron and the western basin of Lake Erie as did estimates of abundance of later life stages. In addition, assessment of year-class strength can be made sooner by using estimates of fish larvae abundance than by using estimates of abundance of later life stages. We believe that the traditional means of sampling fish populations for the determination of year-class strength ought to be augmented with a regular schedule of larval fish sampling to further examine the relation between larval, YOY, and yearling abundance. Inclusion of the assessment of larval fish abundance in the sampling required for Lakes Huron and Erie might insure a more accurate and timely estimation of the year-class strength of forage stocks.

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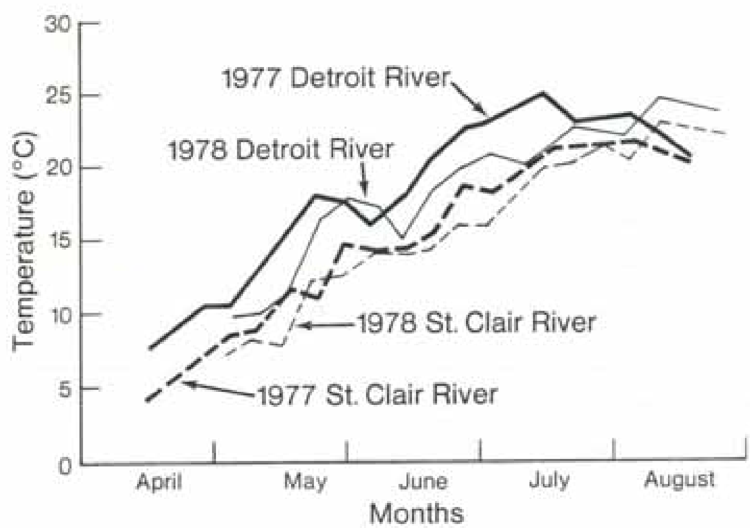

Fig. 2. Average surface water temperature (°C) measured in the Detroit River at transects V and VI in 1977 and at transects V-VIII in 1978, and measured in the St. Clair River at transects I-IV in 1977 and at transects II and IV in 1978.

Table 1. Lengths of the YS and NYS categories of larvae in the present study, and values from other sources for lengths at hatching, at yolk-sac absorption, and at development of major fin rays[a].

Species	Present study		Length (mm) from other sources[b]		
	YS larvae[a] length (mm)	NYS larvae[a] length (mm)	At hatching	At yolk sac absorption	At time of major fin ray development
Rainbow smelt	2.8-7.0	7.1-14.5	5.5 (avg.)	6.4 (avg.)	14.0-17.0
Alewife	1.6-4.6	4.7-11.5	2.5-5.0	5.1 (avg.)	11.9
Gizzard shad	1.6-4.6	4.7-13.6	3.25 (avg.)	6.5 (avg.)	10.8-17.5
Yellow perch	3.7-6.7	6.8-12.1	4.7-6.6	6.7 (avg.)	12.0-16.0
Logperch	2.5-6.1	6.2-13.3	4.5 (avg.)	5.9-6.4	14.2
Emerald shiner	2.5-5.2	5.3-12.1	ND	ND	ND
Carp	4.6-7.3	7.4-13.0	3.0-6.7	7.0-9.5	14[c]
White bass	1.3-5.2	5.3-10.5	ND	ND	ND

[a] See Appendix C for detailed information.
[b] Jones et al. 1978; Hardy 1978; Cooper 1978; ND = no data.
[c] Estimated from data of Jones et al. 1978.

Table 2. Species composition, average density (estimated number/1000 m³) and relative abundance (percent of total density for all species) of fish larvae collected with tow nets (see Table 3) in the St. Clair River, May-August 1977 and 1978. (Tabular values are based on a total catch of 15,894 larvae in 1977 and 1978.)

Species		1977		1978	
Common name	Scientific name	Average density	Relative abundance	Average density	Relative abundance
Alewife	*Alosa pseudoharengus*	41.74	35.2	101.61	18.9
Rainbow smelt	*Osmerus mordax*	40.20	34.1	406.11	75.6
Logperch	*Percina caprodes*	18.76	15.8	17.42	3.2
Yellow perch	*Perca flavescens*	5.46	4.6	0.72	0.1
Unidentified minnows	Cyprinidae	3.92	3.3	0.49	<0.1
White sucker	*Catostomus commersoni*	3.02	2.5	1.40	0.3
Carp	*Cyprinus carpio*	1.37	1.2	0.29	<0.1
Emerald shiner	*Notropis atherinoides*	1.09	0.9	5.18	1.0
Burbot	*Lota lota*	0.70	0.6	0.35	<0.1
Gizzard shad	*Dorosoma cepedianum*	0.67	0.6	0.44	<0.1
Deepwater sculpin	*Myoxocephalus thompsoni*	0.66	0.6	0.53	<0.1
Trout-perch	*Percopsis omiscomaycus*	0.51	0.4	0.14	<0.1
Unidentified darters	Percidae	0.26	0.2	1.78	0.3
Johnny darter	*Etheostoma nigrum*	0.19	0.2	0.20	<0.1
Unidentified sunfishes	Centrarchidae	0.05	<0.1	0.13	<0.1
White bass	*Morone chrysops*	0.05	<0.1	0.07	<0.1
Lake sturgeon	*Acipenser fulvescens*	0.03	<0.1	--	--
Lake whitefish	*Coregonus clupeaformis*	0.02	<0.1	0.06	<0.1
Freshwater drum	*Aplodinotus grunniens*	0.02	<0.1	0.07	<0.1
Spottail shiner	*Notropis hudsonius*	--	--	0.21	<0.1
Brook stickleback	*Culaea inconstans*	--	--	0.07	<0.1
Total average density		118.7		537.4	

Table 3. Species composition, average density (estimated number/1000 m^3) and relative abundance (percent of total density for all species) of fish larvae collected with tow nets in the Detroit River, May-August 1977 and 1978. (Tabular values are bas 3 on a total catch of 42,285 larvae in 1977-78.)

Species		1977		1978	
Common name	Scientific name	Average density	Relative abundance	Average density	Relative abundance
Rainbow smelt	Osmerus mordax	132.01	33.6	204.07	29.9
Gizzard shad	Dorosoma cepedianum	71.74	18.2	90.40	13.3
Yellow perch	Perca flavescens	51.72	13.2	26.24	3.9
Alewife	Alosa pseudoharengus	40.13	10.2	240.11	35.2
Unidentified minnows	Cyprinidae	29.11	7.4	11.36	1.7
Logperch	Percina caprodes	26.35	6.7	35.09	5.1
Emerald shiner	Notropis atherinoides	18.16	4.6	57.87	8.5
White bass	Morone chrysops	9.24	2.4	3.49	0.5
Carp	Cyrinus carpio	7.70	2.0	4.15	0.6
Unidentified darters	Percidae	1.57	0.4	1.01	0.1
Unidentified sunfishes	Centrarchidae	0.93	0.2	0.20	<0.1
Johnny darter	Etheostoma nigrum	0.82	0.2	0.81	<0.1
Trout-perch	Percopsis omiscomaycus	0.81	0.2	1.01	<0.1
Walleye	Stizostedion vitreum	0.77	0.2	0.20	<0.1
Spottail shiner	Notropis hudsonius	0.71	0.2	3.15	0.4
Burbot	Lota lota	0.48	0.1	0.31	<0.1
Deepwater sculpin	Myoxocephalus thompsoni	0.46	0.1	0.63	<0.1
White sucker	Catostomus commersoni	0.39	<0.1	0.68	<0.1
Freshwater drum	Aplodinotus grunniens	0.21	<0.1	0.32	<0.1
Lake whitefish	Coregonus clupeaformis	0.02	<0.1	0.07	<0.1
Brook silverside	Labidesthes sicculus	--	--	0.27	<0.1
Total average density		393.3		681.4	

Table 4. Summary of the ANOVA results (reported in Appendix D) for period, transect, station, and depth, for the eight most abundant species of larvae collected in 1977 and 1978.a/

Species and stage	Period		Transect		Station		Depth	
	1977	1978	1977	1978	1977	1978	1977	1978
Rainbow smelt								
YS	S	S	S	S	S	NS	S	S
NYS	S	S	S	S	NS	NS	S	S
Alewife								
YS	S	S	S	S	NS	S	S	NS
NYS	S	S	S	S	NS	S	S	S
Gizzard shad								
YS	S	S	S	S	S	NS	S	NS
NYS	S	S	S	S	S	NS	NS	S
Yellow perch								
YS	S	S	S	S	NS	NS	S	S
NYS	S	S	S	S	NS	S	S	S
Logperch								
YS	S	S	S	S	S	NS	S	S
NYS	S	S	S	S	NS	S	S	S
Emerald shiner								
YS	S	S	S	S	NS	NS	S	S
NYS	S	S	S	S	NS	NS	S	S
Carp								
YS	S	S	S	S	NS	S	NS	S
White bass								
YS	S	S	S	S	S	NS	NS	NS

a/ S = significant and NS = not significant at $p = 0.05$ level

Table 5. Density (average number/1000 m^3 of water) of rainbow smelt YS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I					31	91	51	43	9								
II					83	284	91	34	23								
III					109	196	28	12	8								
IV	*	*	*		88	398	114	105	11								
V						57											
VI	*			675	1,703	244	13										

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II				2,707	4,523	464	84										
IV				4,519	1,273	483	69										
V					157	83	36										
VII				44	209	74	50										
VIII			48	17	178	142	*										
VI			824	471	326	134	162	14									

* not sampled

Table 6. Density (average number/1000 m^3 of water) of rainbow smelt NYS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I						12	13	43	10	15	34						
II						9		36	29		32						
III									19								
IV	*	*	*			29	6	83	62	16	31						
V						73	73	105	44								
VI	*					149	213	112	160	19							
Transect	**1978**																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II					41		14										
IV				24	76		15										
V					1,071	563	182										
VII					1,390	482	97										
VIII				21	1,317	813	*	51									
VI				18	1,756	780	204	75									

* not sampled

Table 7. Density (average number/1000 m^3 of water) of alewife YS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I													13		200	6	
II													42	48	115		
III													15		230		
IV	*	*	*											15	667	17	
V													14				
VI	*										16		12				

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II										26	108	353	125		18		
IV												375	156	37	16		
V							18	774	170	42							
VII								174	45	89							
VIII							*	87	100	16							
VI					20				33	2							

* not sampled

Table 8. Density (average number/1000 m^3 of water) of alewife NYS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I													11	34	73	33	
II													39	34	92	14	
III													25	15	174	21	
IV	*	*	*										33	39	314	60	
V												28	101	129	135		
VI	*										143	19	116	91	97		

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II										13	40	79	50	147	268		
IV												284	303	277	335		
V								159	447	1,756	105	212	73	32	89	35	
VII								80	127	1,547	123	257	133	27	49		
VIII							*	250	204	1,093	63	257	254			22	
VI								67	148	1,984	96	265	131	86	23	28	

* not sampled

Table 9. Density (average number/1000 m^3 of water) of gizzard shad YS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I																	
II																	
III																	
IV	*	*	*														
V								23	64	11	180	28					
VI	*							40		251	278	63	55				

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II																	
IV																	
V								56	72	36							
VII								55	55	50							
VIII						17	*	1,265	333	23							
VI					103	35	85	663	1,005	36	29						

* not sampled

Table 10. Density (average number/1000 m^3 of water) of gizzard shad NYS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I																	
II																	
III																	
IV	*	*	*														
V								66	279	58	140	89	158				
VI	*							114	36	30	61	70	188				

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II																	
IV																	
V										358	12	45	10	5			
VII										71		8					
VIII							*	86		144		25		10			
VI					13					650		64	20	10			

* not sampled

Table 11. Density (average number/1000 m^3 of water) of yellow perch YS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I									16	13							
II								9	53	17							
III									10								
IV	*	*	*						40	6							
V				17	293												
VI	*			6	193	15											

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II																	
IV																	
V			88	119													
VII			17	39													
VIII			40	44			*										
VI			18	81													

* not sampled

Table 12. Density (average number/1000 m^3 of water) of yellow perch NYS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I										20							
II										10							
III																	
IV	*	*	*						9	13							
V					327	91	44	12	8								
VI	*				92	110	37	9	10								

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II																	
IV																	
V				300	20												
VII				173													
VIII				207	9		*										
VI				191													

* not sampled

Table 13. Density (average number/1000 m^3 of water) of logperch YS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I								84	113	14							
II								45	147	47	25		20				
III								37	100	73	24		23				
IV	*	*	*					16	133	22			52	16			
V																	
VI	*				39	64	22		15	16	40	25	20				

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II							117	42		36			34				
IV							36										
V							12										
VII																	
VIII				92			*										
VI				417	136	45		21			14						

* not sampled

Table 14. Density (average number/1000 m3 of water) of logperch NYS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I									9								
II								12	11								
III								20	11								
IV	*	*	*					9	25								
V								53	67	10	22	24	17	27	29		
VI	*					13		21	63	24	26	17	22	39	15		

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II							12										
IV																	
V							51	23	100								
VII							65	20	29				10				
VIII				12			*	23	21								
VI				140			57	20	52					6			

* not sampled

Table 15. Density (average number/1000 m^3 of water) of emerald shiner YS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I																	
II															8		
III																	
IV	*	*	*														
V									1	182							
VI	*								19		7			78	15		

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II														65			
IV																	
V										133							
VII										295				118			
VIII							*			159				200			
VI									15	262				18			

* not sampled

Table 16. Density (average number/1000 m^3 of water) of emerald shiner NYS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I																	
II															11		
III																	
IV	*	*	*													8	
V												9			21		
VI	*								28					11	19		

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II																	
IV																	
V										14			55				
VII										17			187	8			
VIII							*			53		8	44				
VI										126		4	68				

* not sampled

Table 17. Density (average number/1000 m^3 of water) of carp YS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/3	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I																	
II																	
III								17									
IV	*	*	*										10				
V												7					
VI	*						52	48		4	27	29	9				

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	5/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/20-29
II																	
IV																	
V							28				32						
VII											18						
VIII							*				11						
VI								14			12						

* not sampled

Table 18. Density (average number/1000 m^3 of water) of white bass YS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I																	
II																	
III																	
IV	*	*	*														
V																	
VI	*						69	8		118	26	1					

Transect	1978																
	5/2-3	5/9-10	5/15-16	5/24-25	5/30-31	6/5-6	6/12-13	6/19-20	6/27-28	7/5-6	7/10-11	7/17-18	7/24-25	7/31-8/1	8/7-8	8/14-15	8/28-29
II																	
IV																	
V																	
VII																	
VIII							*	10									
VI					44	13											

* not sampled

Table 19. Density (average number/1000 m^3 of water) of white bass NYS larvae, by transect, year, and sampling period. Only densities significantly greater than zero (ANOVA) are shown.

Transect	1977																
	4/12-14	4/18-20	4/25-27	5/2-4	5/9-11	5/16-18	5/23-25	5/31-6/2	6/6-8	6/13-15	6/20-22	6/27-29	7/5-7	7/18-20	7/25-27	8/8-10	8/22-24
I																	
II																	
III																	
IV	*	*	*														
V									11								
VI	*								5								

* not sampled

Table 20. The relative abundance of larvae in the St. Clair-Detroit River system (SCDRS) in spring-summer 1977/78, compared with the relative abundance of yearlings off Harbor Beach, southern Lake Huron, in spring 1978/79 and the relative abundance of young-of-the-year in the western basin of Lake Erie in fall 1977/78.

	Average no. of larvae/1000 m^3 of water strained[a]			Catch per unit effort[b]		
	Year class		1977/78	Year class		1977/78
Species	1977	1978	ratio	1977	1978	ratio
	St. Clair River			Harbor Beach, Lake Huron		
Smelt	65.79	532.67	0.12	31.0	224.5	0.14
Alewife	66.17	100.62	0.66	8.3	12.9	0.64
	Detroit River[c]			Western Basin, Lake Erie		
Smelt	118.99	264.59	0.45	534	1358	0.39
Alewife	1.81	47.24	0.04	54	1584	0.03
Gizzard shad	35.04	77.88	0.45	5049	11512	0.44
Freshwater drum	0.41	0.62	0.66	50	86	0.58
White bass with yolk	9.59	6.13	1.56	3548	1314	2.70
without yolk	1.73	0.64	2.70			
Yellow perch	23.86	26.08	0.91	741	113	6.56

[a] The average density of larvae in the SCDRS was calculated using the estimates from only those transects and sampling periods common to both years (transects II and IV for the St. Clair River, and transects V and VI for the Detroit River for the 13 sampling periods common to 1977 and 1978).

[b] The catch per unit of effort (CPE) for yearlings at Harbor Beach, Lake Huron is expressed as the average number of fish caught in eight 10-minute tows with a Yankee standard trawl (39-foot head rope). The CPE for fall young-of-the-year catches in the western basin of Lake Erie is expressed as the number of fish caught per trawling hour. The Lake Huron data are from Ray Argyle, Great Lakes Fishery Laboratory. Data from the western basin of Lake Erie were supplied by Steven Nepszy, Ontario Ministry of Natural Resources, for smelt and freshwater drum and by Carl Baker, Ohio Department of Natural Resources, for alewives, gizzard shad, white bass, and yellow perch.

[c] Average densities of larvae on the Detroit River were calculated by using (with the noted exception) only larvae with yolk, to separate the local production of larvae in the Detroit River and lower Lake St. Clair from larvae without yolk from upstream sources upper Lake St. Clair, and Lake Huron. For smelt, alewives, and gizzard shad, the addition of older larvae from upstream sources was considerable, whereas for the other species, all larvae were more likely produced locally.

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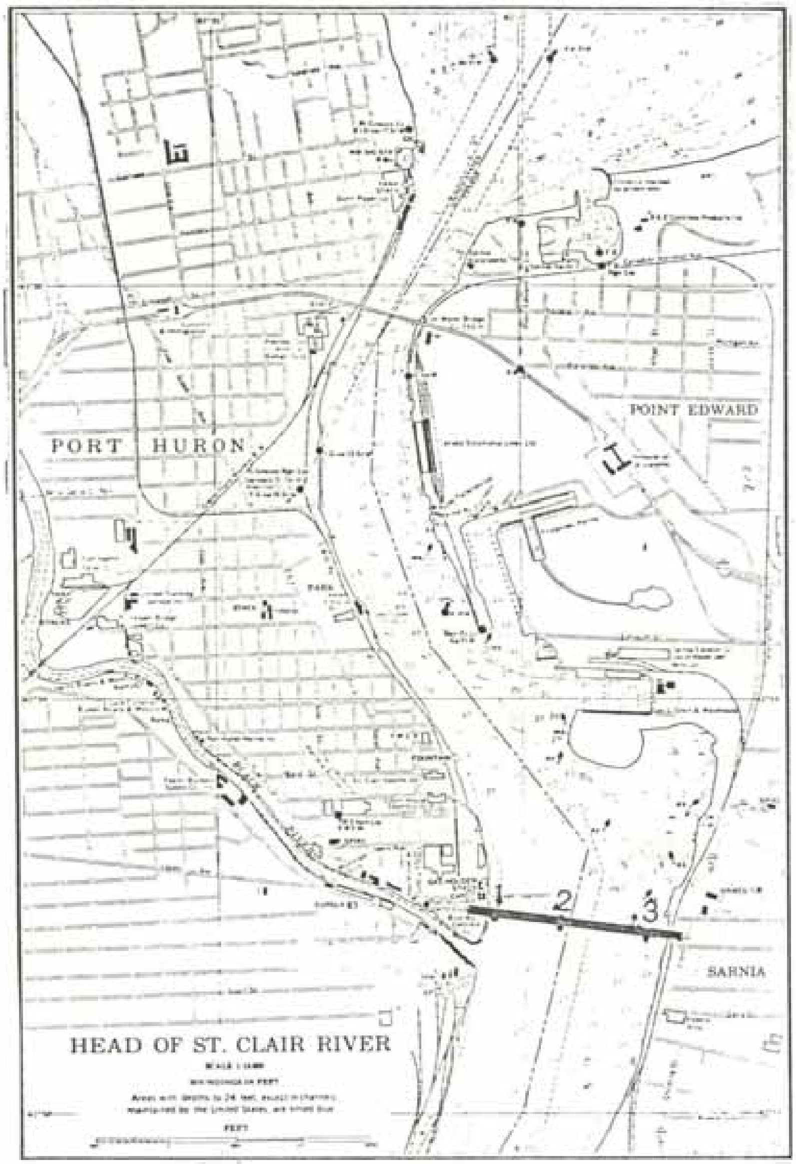


Fig. A-1. Transect I was located at Port Huron at the head of the St. Clair-Detroit River System just above the mouth of the Black River. Station 1 was on the U.S. side of the river adjacent to the Port Huron Sewage Treatment Plant about 100 m offshore; station 2 was in mid-channel immediately adjacent to the mid-channel marker, about 400 m from either shore; and station 3 was on the Canadian side about 150 m offshore. Water depth at all stations was 8.2 m.

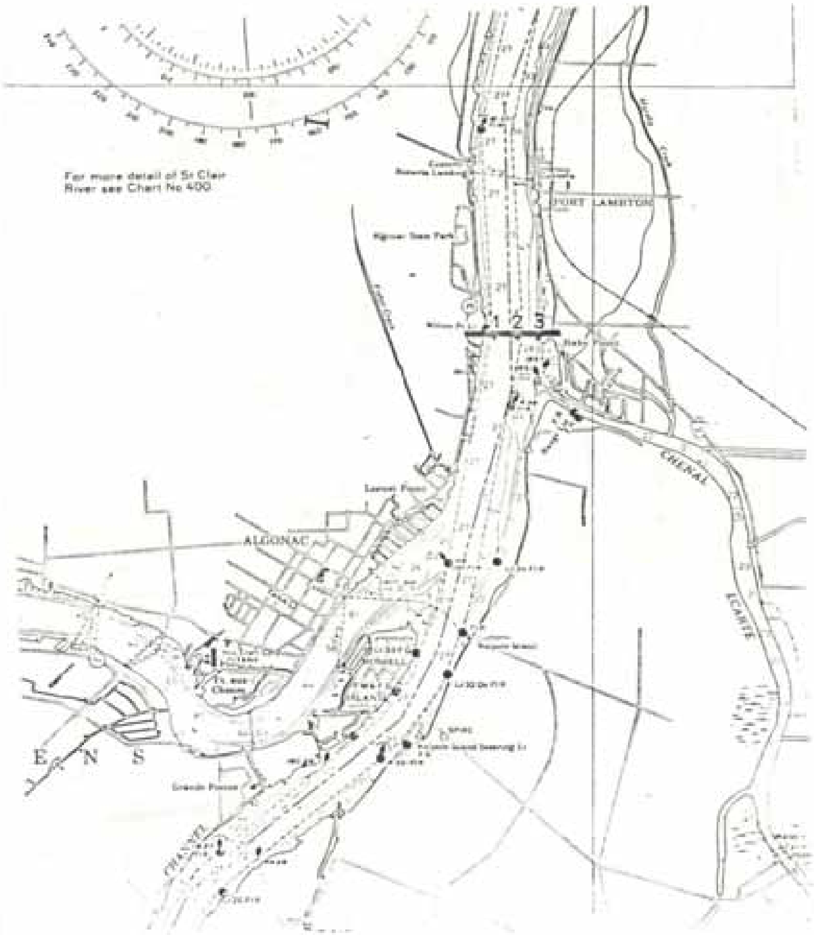


Fig. A-2. Transect II was located about 36 km downstream of transect I, near the head of Chenal Ecarte. Station 1 was on the U.S. side of the river adjacent to the Willow Point Light, about 50 m offshore; station 2 was in mid-channel, about 350 m from either shore; station 3 was located on the Canadian side, about 150 m offshore. Water depth at all stations was 8.2 m.

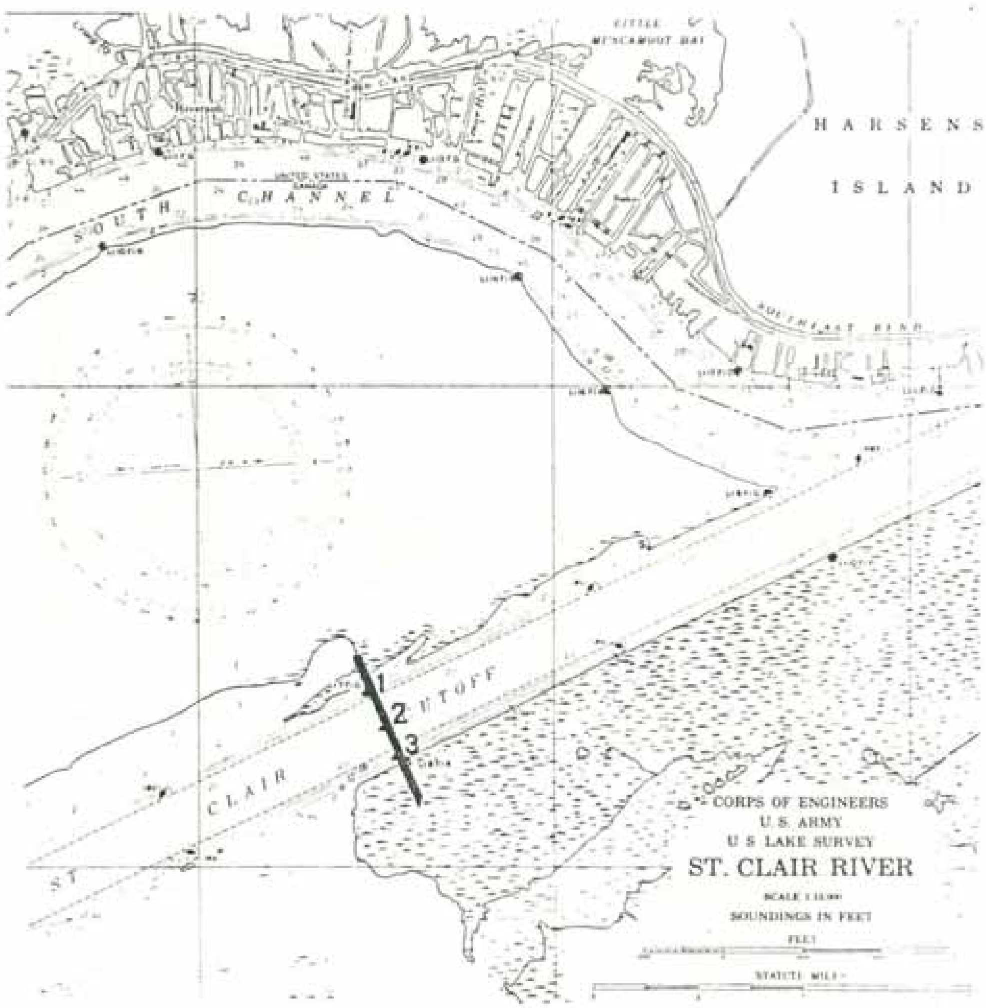


Fig. A-3. Transect III was located about 15 km downstream of transect II in the St. Clair Out-off Cnannel, at Lights 7 and 8. Station 1 was about 25 m off the north shore; station 2 was in mid-channel about 200 m from either shore; and station 3 was located about 25 m off the south shore. Water depth at stations 1, 2, and 3, respectively, was 4.5, 8.2, and 4.5 m.

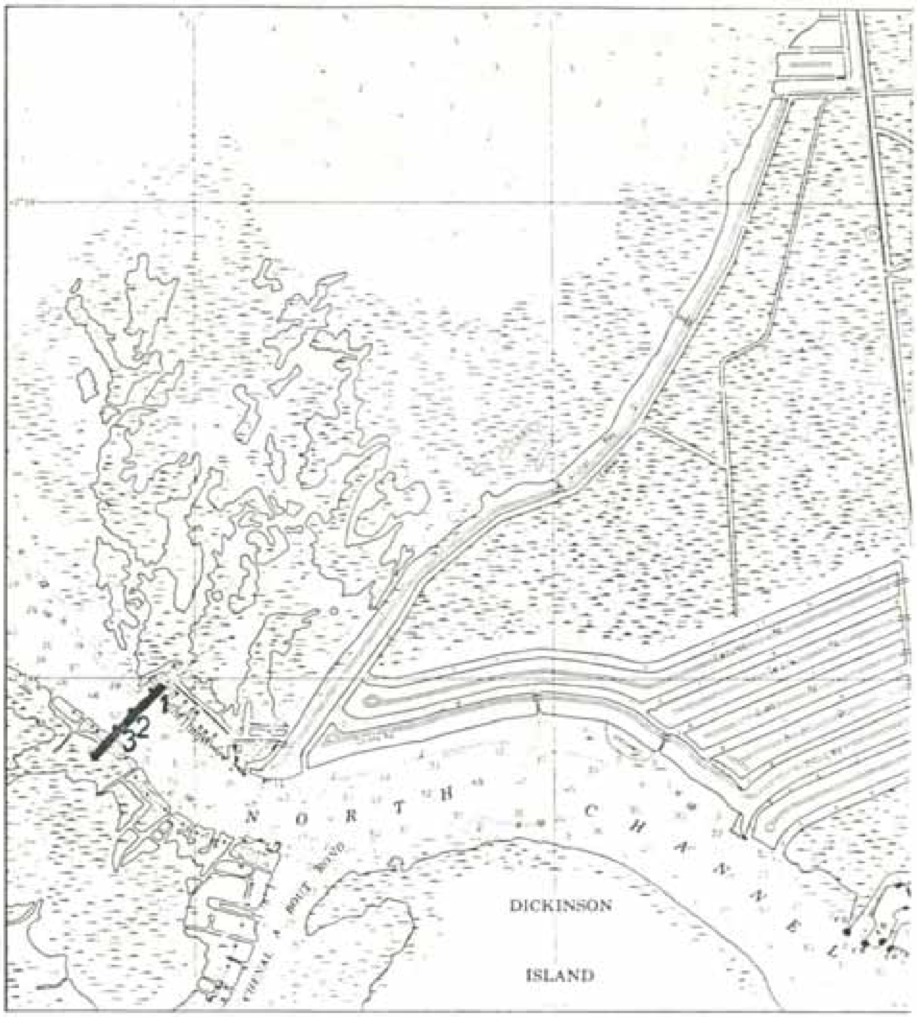


Fig. A-4. Transect IV was located about 15 km downstream of transect II at the mouth of the North Channel. Station 1 was about 25 m off the north shore; station 2 was in mid-channel about 125 m from either shore; and station 3 was about 15 m off the south shore. Water depth at stations 1, 2, and 3, respectively, was 4.5, 14.0, and 18.0 m.

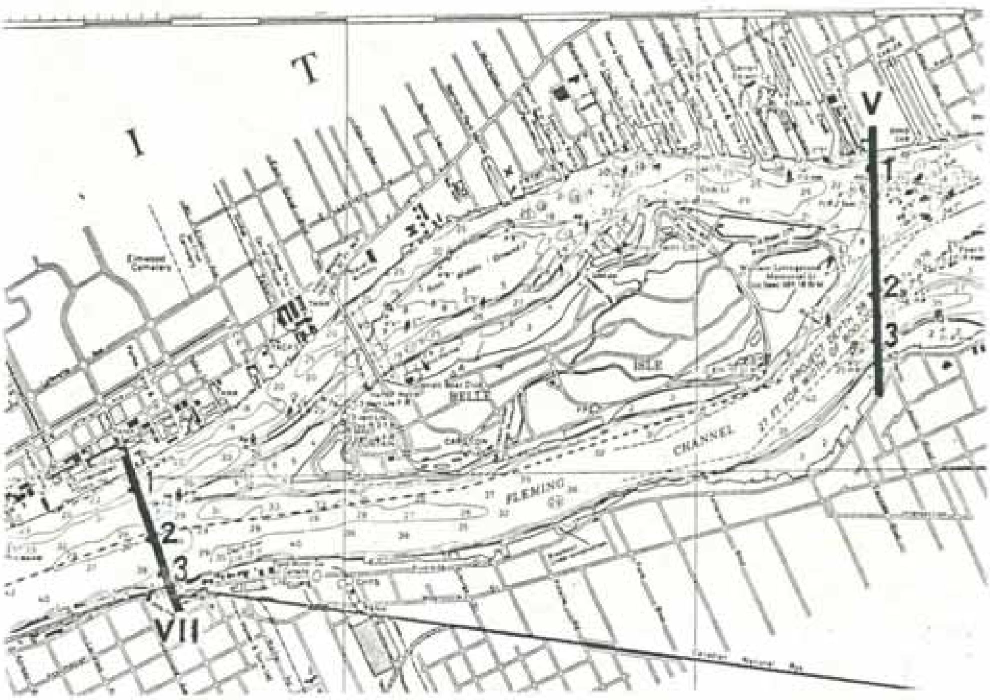


Fig. A-5. Transect V was located at the head of the Detroit River between Belle Isle and Peach Island. Station 1 was on the U.S. side of the river, about 150 m offshore; station 2 was in the middle of the shipping channel about 1.25 km from the U.S. shore and about 400 m from the Canadian shore; and station 3 was on the Canadian side about 200 m offshore. Water depth at stations 1, 2, and 3, respectively, was 5.0, 8.2, and 10.0 m.

Transect VII was located about 6 km downstream of transect V. Station 1 was on the U.S. side of the river, about 100 m offshore; ~~station was in the main shipping channel about 1000 m offshore~~; station 2 was in the main shipping channel about 1000 m from either shore; and station 3 was on the Canadian side about 150 m offshore, just downstream of the ship docking crib at the Hiram Walker and Sons Ltd. Distillery. Water depth at stations 1, 2, and 3, respectively, was 8.0, 9.0, and 9.0 m.

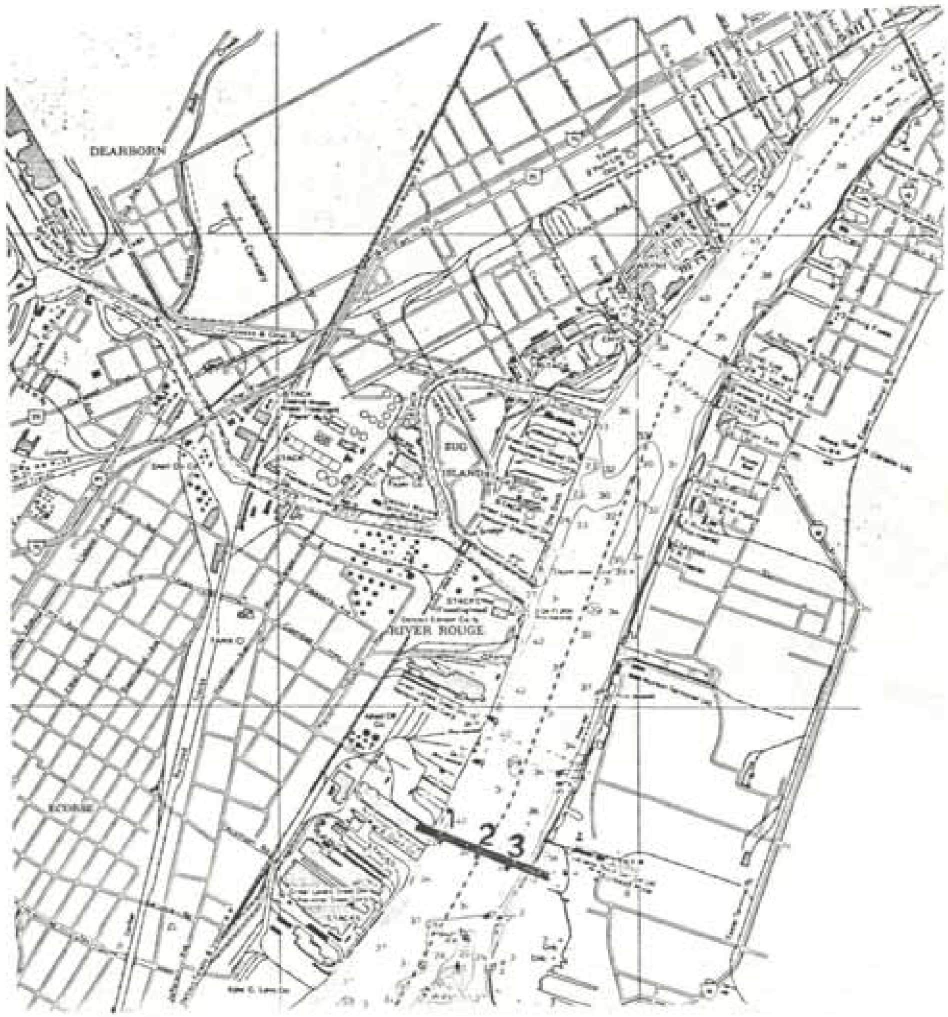


Fig. A-6. Transect VIII was located about 12 km downstream of transect VII and 1.7 km downstream of the mouth of the Rouge River Short Cut Canal. Station 1 was on the U.S. side of the river, about 100 m offshore; station 2 was in mid-channel about 400 m from either shore; and station 3 was on the Canadian side about 120 m offshore, adjacent to the Canada Rock Salt Co. Ltd. Ojibway Mine. Water depth at all stations was 9.0 m.

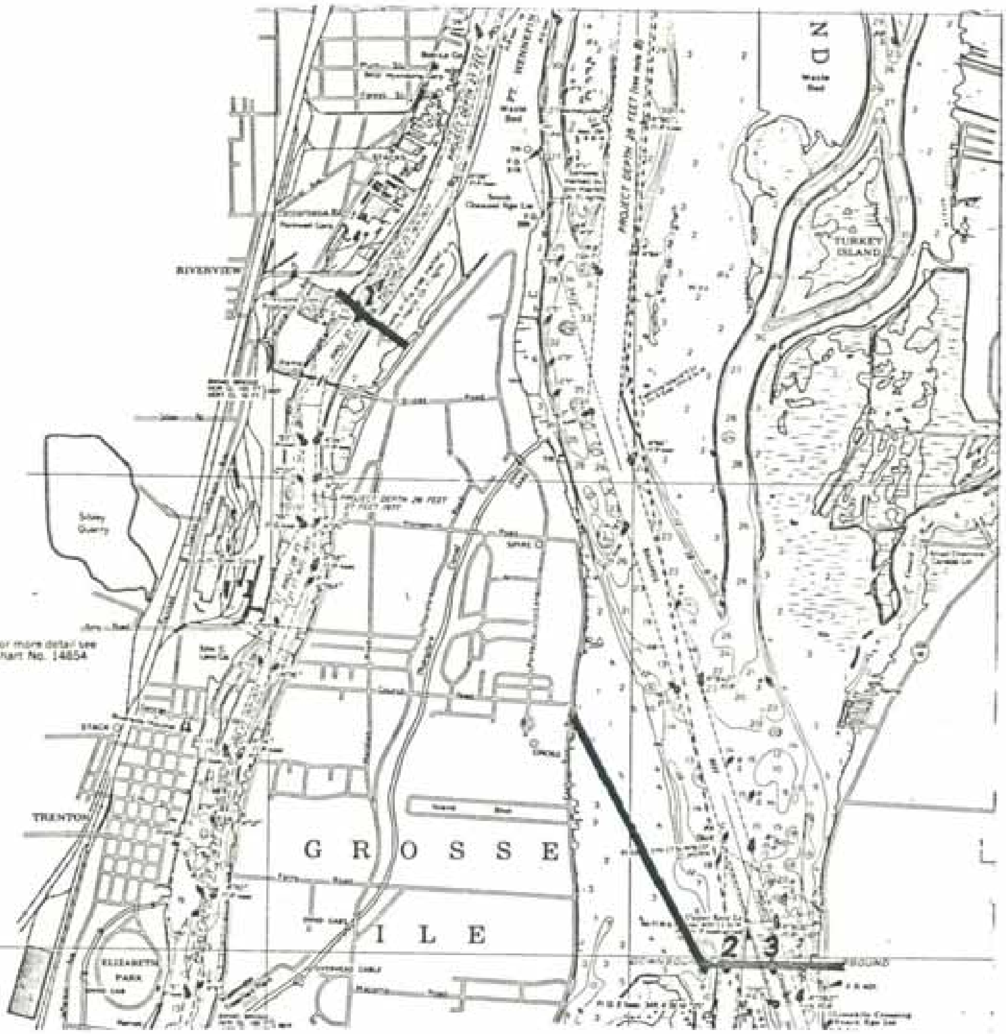


Fig. A-7. Transect VI crossed all of the three shipping channels in the lower Detroit River. Station 1 was in the Trenton Channel at Blackbuoy 25 and Red Nunbuoy 26, 150 m off the western shoreline and 450 m off the Grosse Ile shore; station 2 was on the U.S. side of the river in the Livingstone Channel at Channel Markers 25 and 26, and about 100 m off either channel shoreline; and station 3 was on the Canadian side of the river in the Amherstburg Channel at buoys 77D and R 78D, 100 m off the U.S. shoreline and 275 m off the Canadian shoreline. Water depth at all stations was 8.2 m.

Appendix B

Specifications of tow net system used by Great Lakes Fishery Laboratory staff for sampling fish larvae in the St. Clair and Detroit Rivers and Lake St. Clair in 1977-1978.

Construction Details

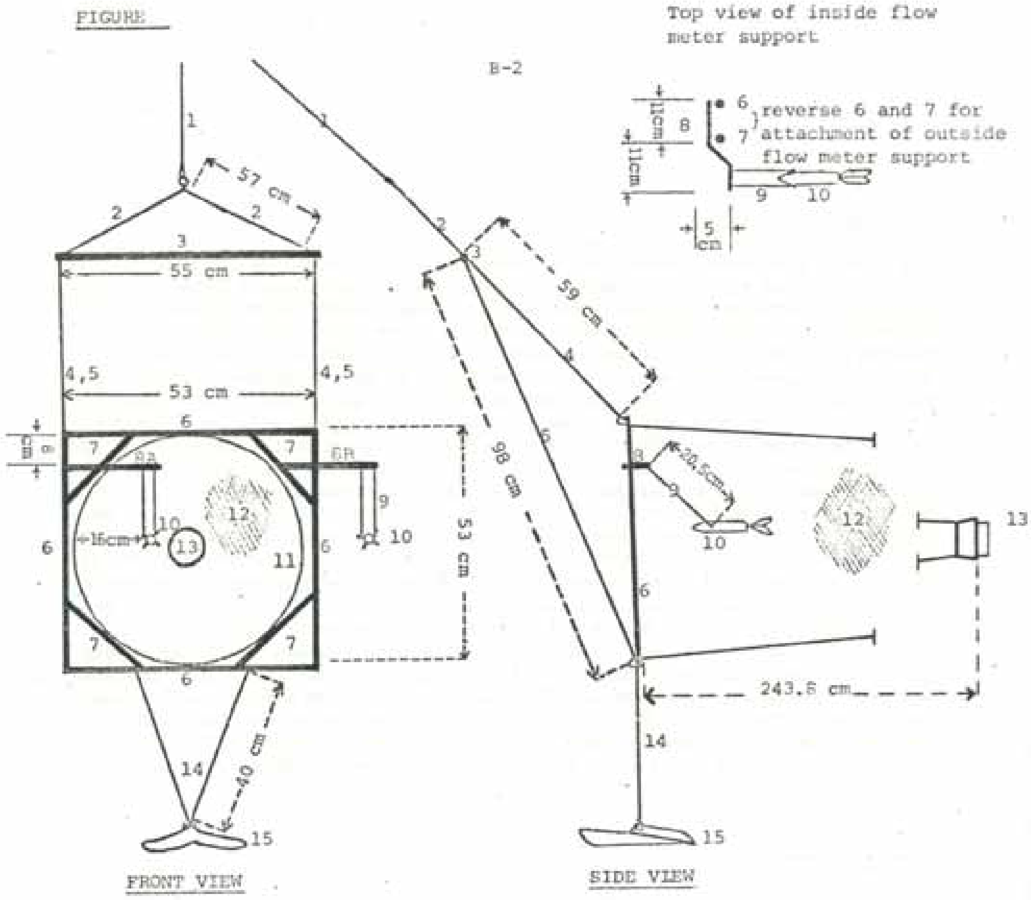
The 1/4-in galvanized steel towing cable (1) is connected to the center of the fore-bridle (2) by a 3-in, heavy duty snap swivel (see Figure B-1). A 1-in thimble is permanently fixed (with 1/8-in cable clamps) in the center of the fore-bridle, which is constructed of 1/8-in galvanized steel cable. The fore-bridle is attached to the spreader bar (3), constructed of 3/8-in cold-rolled steel, by two, 1 1/2-in clevises, which are welded at either end. Side cables (4 and 5), also constructed of 1/8-in galvanized steel cable, are connected to the spreader bar clevises and to clevises located in each corner of the net frame (6). The net frame is constructed from 3/8-in cold-rolled steel, heated, bent to form a 53-cm square, and closed by welding. Net frame corner supports (7) are welded to the frame to increase its stability. The flow meter support brackets (8) are constructed from 1/4-in cold-rolled steel and are welded to the net frame and corner supports; each bracket is bent at two 45° angles so that the free end is about 5 cm behind the mouth-plane of the net. A pair of 1/16-in holes are drilled through the free end of the bracket; the 1/16-in stainless steel flow meter cable (9) is then passed through these holes. The flow meter (10) is attached to the flow meter cables with electrical clamps. The net ring (11) is lashed to the net frame and corner supports with nylon cord; the net (12) is lashed to the net ring in the same manner. The net bucket (13) is fixed in the cod end of the net with a radiator hose clamp. The 1/8-in galvanized steel depressor cables (14) are attached to the net frame at the corner supports by 1/8-in cable clamps, and to the depressor plate (15) by a swivel-thimble arrangement permanently fixed to the center of the cable.

General Comments

The above net system will fish satisfactorily at towing speeds up to about 4 knots.

On May 17, 1977, we conducted field tests at station 3 on transect IV to determine if the net caught fish larvae as it was lowered to or raised from the depth stratum selected for sampling. In these tests we lowered the net in the usual manner to a depth of 8 m and then immediately retrieved it. We conducted nine such tests at a time when smelt larvae were in peak abundance in the test area (Appendix E). We caught no smelt larvae during these tests and therefore concluded that larvae were caught by the net only at the depth strata selected for sampling.

FIGURE



K E Y

1 -- Towing cable
2 -- Fore-bridle
3 -- Bridle spreader bar
4 -- Bridle side cables (upper)
5 -- Bridle side cables (lower)
6 -- Net frame
7 -- Net frame corner supports
8A - Inside flow meter support bracket
8B - Outside flow meter support bracket
9 -- Flow meter cable
10 -- Flow meter
11 -- Net ring
12 -- Net
13 -- Net bucket
14 -- Depression plate cables
15 -- Depression plate

MAJOR COMPONENTS

Towing Cable

Description: 1/4-in galvanized steel cable

Supplier: Local

Net Bridle

Description: See Fig. B-1 and Construction Details

Supplier: Special fabrication by Great Lakes Fishery Laboratory staff

Net Frame and Spreader Bar

Description: See Fig. B-1 and Construction Details

Supplier: Special fabrication by Great Lakes Fishery Laboratory staff

Flow Meter

Description: Model 2030 digital flow meter

Supplier[1]: General Oceanics, Inc.
5535 N.W. 7th Avenue
Miami, FL 33127

Net

Description: 50-cm cylinder-on-cone plankton net, 355 um Nitex

Supplier[1]: Ernest H. Case
Box 45
Andover, NJ 07820

Net Bucket

Description: Pint Mason jar

Supplier: Local

Depressor Plate

Description: 091 aluminum wire depressor

Supplier[1]: Wildlife Supply Company
301 Cass Street
Saginaw, MI 48602

Net Ring

Description: 50-cm net ring

Supplier[1]: Wildlife Supply Company
301 Cass Street
Saginaw, MI 48602

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[1]This does not constitute an endorsement of the product by the Government.

Appendix C

Length frequency distributions of rainbow smelt, alewife, gizzard shad, yellow perch, logperch, emerald shiner, carp, and white bass larvae captured in the St. Clair and Detroit rivers in 1977. The blackened portion of the histogram denotes larvae observed with yolk; the open portion denotes larvae observed without yolk. The transition length is defined by the 0.3 mm-length interval in the descending limb of the catch curve in which the number of larvae with yolk and those without were most nearly equal. All larvae with yolk that were shorter than or equal to this length interval were considered "yolk sac larvae" (denoted in the text as YS larvae). The larvae without yolk, shorter than this length interval, were not considered YS larvae. All larvae--both those with and those without yolk--that were longer than this length interval were considered "non-yolk sac larvae" (denoted in the text as NYS larvae).

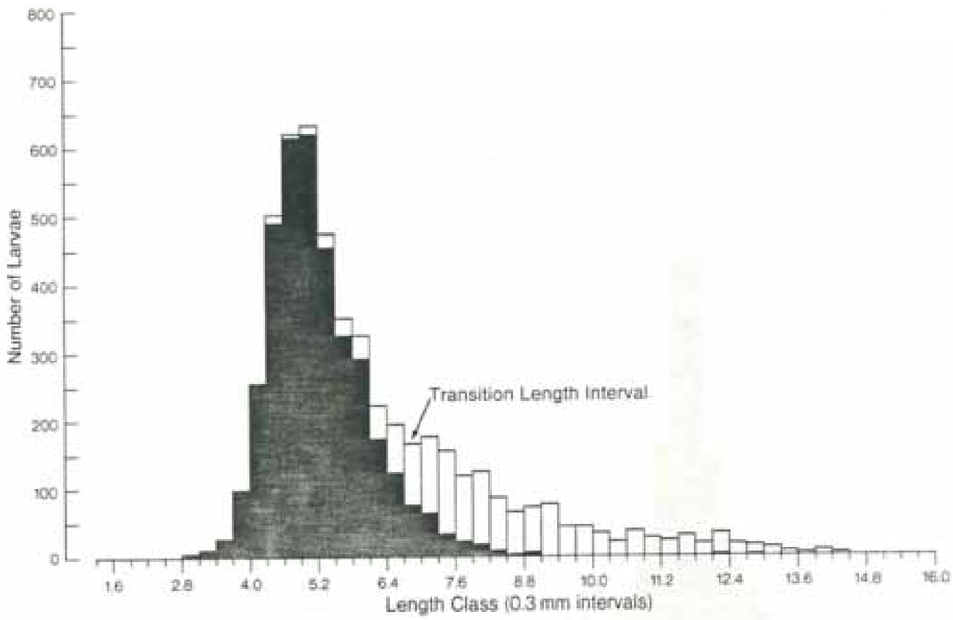

Fig. C-1. Length frequency distribution of the 1977 catch of rainbow smelt larvae in the St. Clair-Detroit River System.

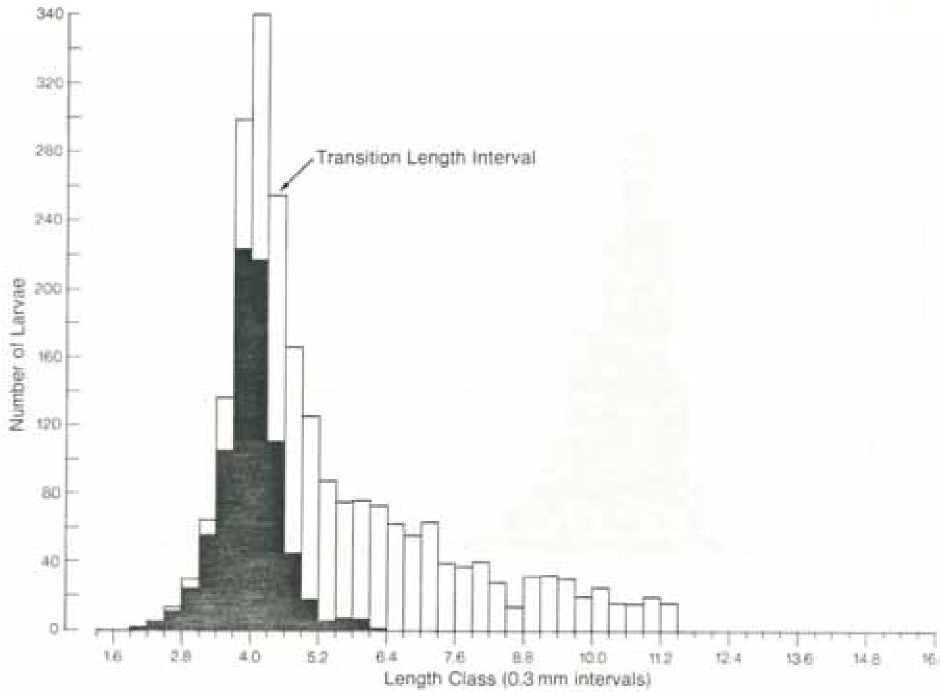

Fig. C-2. Length frequency distribution of the 1977 catch of alewife larvae in the St. Clair-Detroit River System.

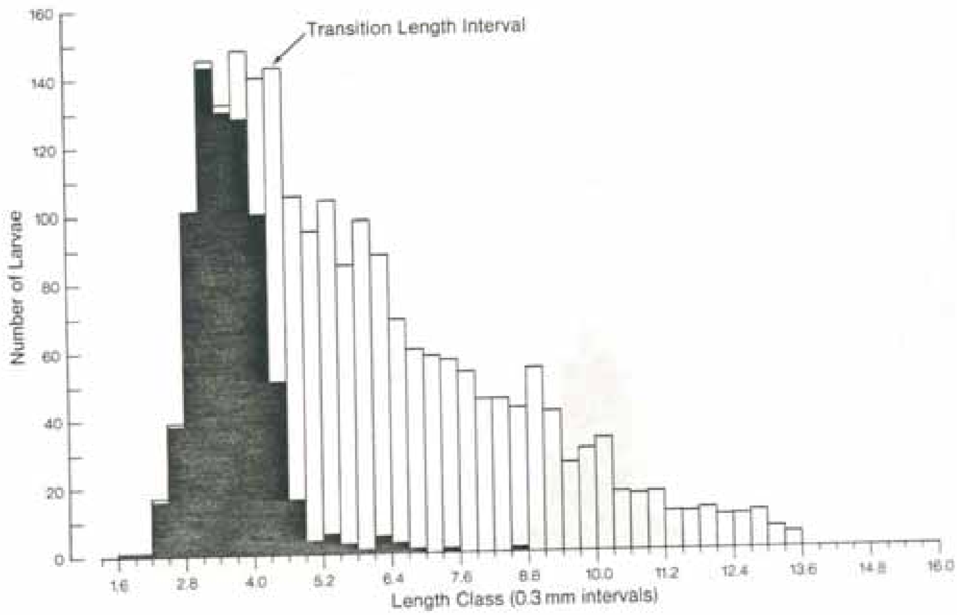

Fig. C-3. Length frequency distribution of the 1977 catch of gizzard shad larvae in the St. Clair-Detroit River System.

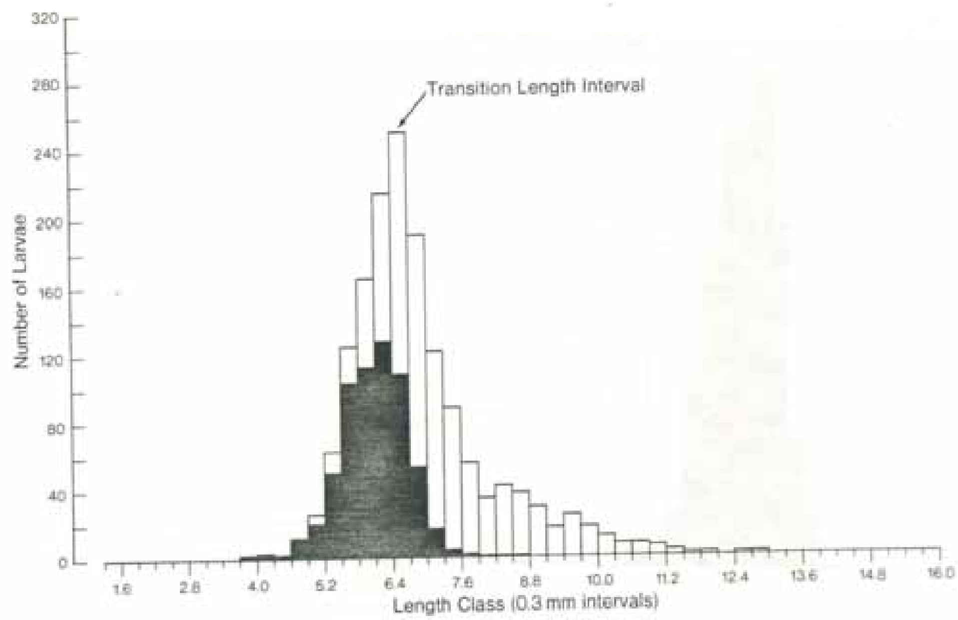

Fig. C-4. Length frequency distribution of the 1977 catch of yellow perch larvae in the St. Clair-Detroit River System.

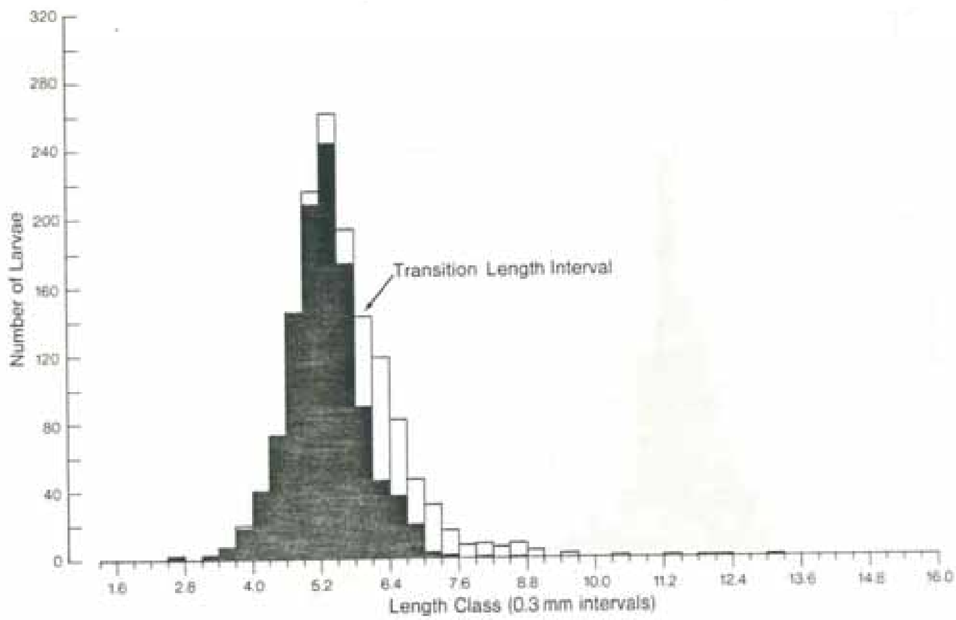

Fig. C-5. Length frequency distribution of the 1979 catch of logperch larvae in the St. Clair-Detroit River System.

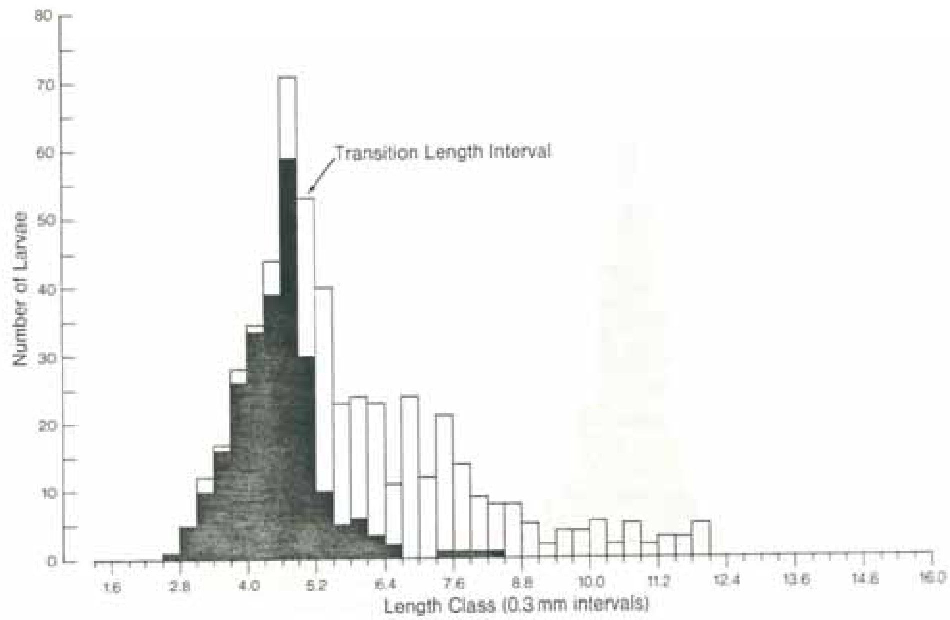

Fig. C-6. Length frequency distribution of the 1977 catch of emerald shiner larvae in the St. Clair-Detroit River System.

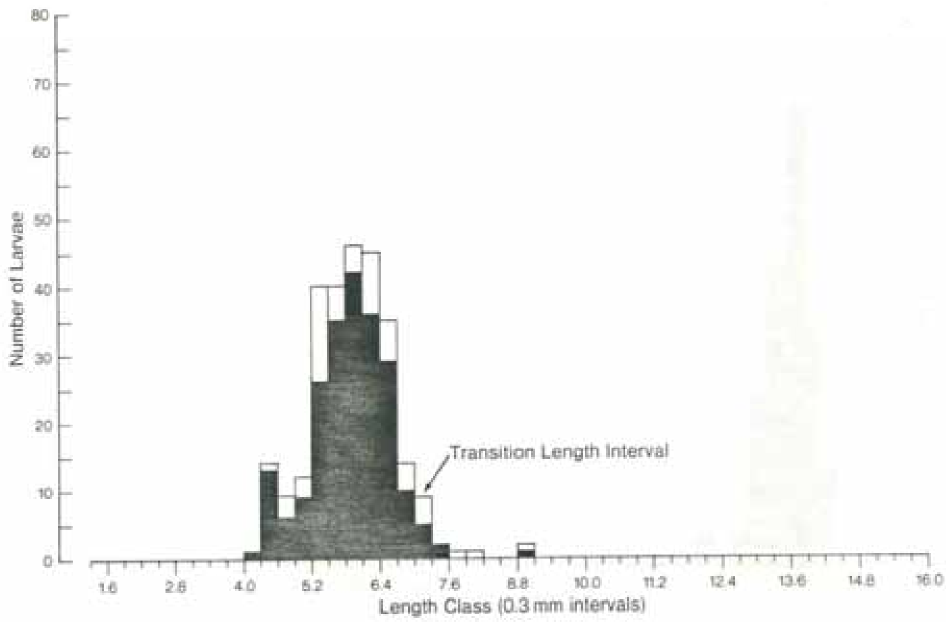

Fig. C-7. Length frequency distribution of the 1977 catch of carp larvae in the St. Clair-Detroit River System.

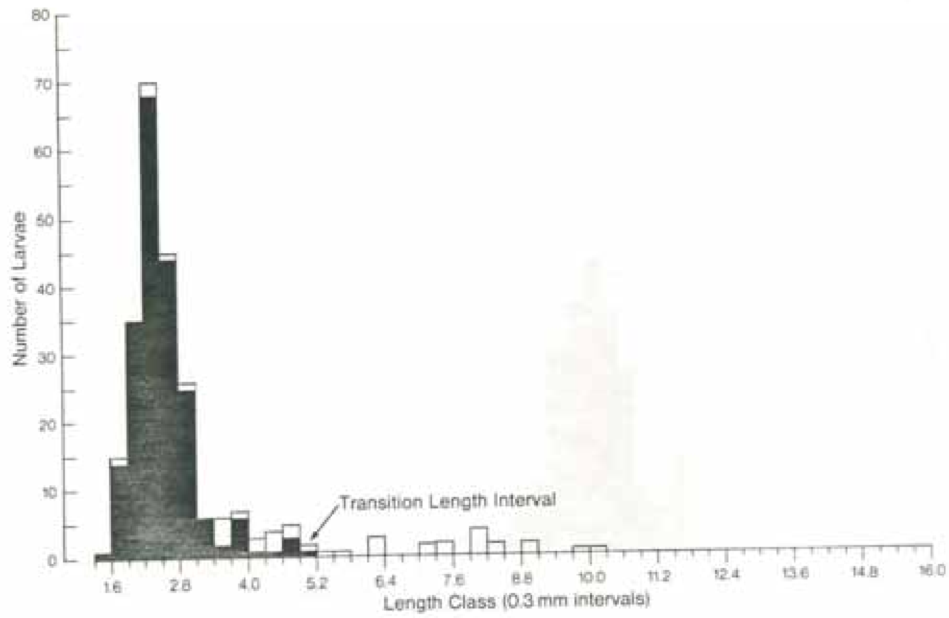

Fig. C-8. Length frequency distribution of the 1977 catch of white bass larvae in the St. Clair-Detroit River System.

Appendix D

One way analyses of variance (ANOVAs) measuring the effect of the factors period, transect, station, and depth on the densities of fish larvae in the St. Clair and Detroit rivers. Density of rainbow smelt, alewife, gizzard shad, yellow perch, logperch, emerald shiner, carp, and white bass larvae were divided into yolk sac (YS) and non-yolk sac (NYS) categories. For all other species, no such categories were made. See the text for details.

TABLE D-1. ANALYSES OF VARIANCE

YS RAINBOW SMELT, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	9	2308.3	256.48	91.595	.0000
WITHIN	1451	4062.9	2.8001		
TOTAL	1460	6371.2			

ETA= .6019 ETA-SQR= .3623

PERIOD	N	MEAN
(4)	145	.87903
(5)	144	3.0592
(6)	149	3.6009
(7)	141	2.0069
(8)	145	1.2375
(9)	149	.74406
(10)	150	.48179 -1
(11)	137	.53443 -1
(12)	149	0.
(13)	148	.21593 -1

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	252.89	50.579	12.028	.0000
WITHIN	1455	6118.3	4.2050		
TOTAL	1460	6371.2			

ETA= .1992 ETA-SQR= .0397

TRANH	N	MEAN
(1)	266	1.2483
(2)	268	1.4387
(3)	208	1.0457
(4)	230	1.4274
(5)	237	.27836
(6)	252	1.4865

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	60.080	30.040	6.9398	.0010
WITHIN	1458	6311.1	4.3286		
TOTAL	1460	6371.2			

ETA= .0971 ETA-SQR= .0094

STAN	N	MEAN
(1)	424	.85302
(2)	535	1.3258
(3)	502	1.2865

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	200.58	100.29	23.696	.0000
WITHIN	1458	6170.6	4.2323		
TOTAL	1460	6371.2			

ETA= .1774 ETA-SQR= .0315

D	N	MEAN
(1)	522	.69438
(2)	528	1.3333
(3)	411	1.5919

TABLE D-2. ANALYSES OF VARIANCE

YS RAINBOW SMELT, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	3279.5	361.43	103.60	.0000
WITHIN	576	3433.5	3.5175		
TOTAL	585	6713.0			

ETA= .6990 ETA-SQR= .4886

PERIOD	N	MEAN
(2)	104	0.
(3)	104	1.3974
(4)	103	3.6530
(5)	99	4.8261
(6)	104	3.9956
(7)	74	2.5554
(8)	92	.44012
(9)	98	0.
(10)	104	0.
(11)	104	0.

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	421.02	84.205	13.115	.0000
WITHIN	580	6291.9	6.4203		
TOTAL	585	6713.0			

ETA= .2504 ETA-SQR= .0627

TRANS	N	MEAN
(2)	179	2.3155
(4)	155	2.0607
(5)	154	.81652
(6)	156	2.4388
(7)	183	.50472
(8)	162	1.4324

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	30.383	15.192	2.2347	.1076
WITHIN	583	6682.6	6.7581		
TOTAL	585	6713.0			

ETA= .0673 ETA-SQR= .0045

STAR	N	MEAN
(1)	313	1.5885
(2)	342	1.8577
(3)	331	1.4909

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	119.36	59.678	8.8970	.0001
WITHIN	583	6593.6	6.7076		
TOTAL	585	6713.0			

ETA= .1333 ETA-SQR= .0178

D	N	MEAN
(1)	342	1.2316
(2)	342	1.7187
(3)	302	2.6884

TABLE D-3. ANALYSES OF VARIANCE

NYS RAINBOW SMELT, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	9	922.44	102.49	41.331	.0000
WITHIN	1451	3598.3	2.4798		
TOTAL	1460	4520.7			

ETA= .4517 ETA-SQR= .2040

PERIOD	N	MEAN
(4)	145	0.
(5)	144	.20789
(6)	149	1.5546
(7)	141	1.6926
(8)	149	2.2360
(9)	149	1.8360
(10)	150	.74749
(11)	137	1.1275
(12)	149	.15925
(13)	148	.67283 -1

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	248.62	49.724	16.935	.0000
WITHIN	1455	4272.1	2.9361		
TOTAL	1460	4520.7			

ETA= .2345 ETA-SQR= .0550

TRANH	N	MEAN
(1)	266	.79801
(2)	268	.77467
(3)	203	.38296
(4)	232	.95535
(5)	237	1.0109
(6)	252	1.7639

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	14.981	7.4903	2.4238	.0889
WITHIN	1458	4505.7	3.0903		
TOTAL	1460	4520.7			

ETA= .0576 ETA-SQR= .0033

STAN	N	MEAN
(1)	474	1.0387
(2)	535	1.0545
(3)	502	.82462

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	360.05	180.03	63.086	.0000
WITHIN	1458	4160.6	2.8537		
TOTAL	1460	4520.7			

ETA= .2822 ETA-SQR= .0796

D	N	MEAN
(1)	522	.32785
(2)	528	1.1490
(3)	411	1.5280

TABLE D-4. ANALYSES OF VARIANCE

NYS RAINBOW SMELT, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	2502.4	278.04	97.997	.0000
WITHIN	576	2769.2	2.8273		
TOTAL	585	5271.6			

ETA= .6893 ETA-SQR= .4747

PERIOD	N	MEAN
(2)	104	0.
(3)	104	.32394 -1
(4)	103	.51474
(5)	99	4.6204
(6)	104	3.6242
(7)	74	2.3134
(8)	52	1.1587
(9)	58	.28692
(10)	104	.61416 -1
(11)	104	0.

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	344.31	68.862	13.696	.0000
WITHIN	580	4927.2	5.0278		
TOTAL	585	5271.6			

ETA= .2556 ETA-SQR= .0653

TRANS	N	MEAN
(2)	176	.54506
(4)	155	.52387
(5)	154	1.4425
(6)	156	2.6421
(7)	163	1.1870
(8)	162	1.5045

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	10.269	5.1347	.95927	.3835
WITHIN	583	5261.3	5.3523		
TOTAL	585	5271.6			

ETA= .0441 ETA-SQR= .0019

STAN	N	MEAN
(1)	313	1.3624
(2)	342	1.2563
(3)	331	1.1207

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	197.55	98.773	15.140	.0000
WITHIN	583	5074.0	5.1617		
TOTAL	585	5271.6			

ETA= .1936 ETA-SQR= .0375

D	N	MEAN
(1)	342	.68364
(2)	342	1.3836
(3)	302	1.7707

TABLE D-5. ANALYSES OF VARIANCE

YS ALEWIFE, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	945.65	189.14	75.221	.0000
WITHIN	873	2195.0	2.5143		
TOTAL	878	3140.6			

ETA= .5487 ETA-SQR= .3011

PERIOD	N	MEAN
(11)	137	.15559
(12)	145	.15650
(13)	148	.58422
(14)	147	.75016
(15)	145	3.1307
(16)	149	.44012

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	241.59	48.317	14.550	.0000
WITHIN	873	2899.1	3.3208		
TOTAL	878	3140.6			

ETA= .2773 ETA-SQR= .0769

TRANS	N	MEAN
(1)	158	1.1240
(2)	161	1.3906
(3)	125	1.0604
(4)	143	1.5517
(5)	141	.19542
(6)	151	.26523

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	2.6226	1.3113	.36600	.6936
WITHIN	876	3138.0	3.5822		
TOTAL	878	3140.6			

ETA= .0289 ETA-SQR= .0008

STAN	N	MEAN
(1)	257	.89546
(2)	319	.90214
(3)	303	1.0139

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	23.559	11.782	3.3105	.0374
WITHIN	876	3117.1	3.5583		
TOTAL	878	3140.6			

ETA= .0866 ETA-SQR= .0075

D	N	MEAN
(1)	312	.72932
(2)	318	1.0003
(3)	248	1.1243

TABLE D-6. ANALYSES OF VARIANCE

YS ALEWIFE, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	12	476.17	39.931	15.436	.0000
WITHIN	1285	3324.1	2.5869		
TOTAL	1297	3803.3			

ETA= .3549 ETA-SQR= .1260

PERIOD	N	MEAN
(5)	55	.25259
(6)	104	.90654 -2
(7)	74	.31167
(8)	52	1.4603
(9)	58	1.3174
(10)	104	1.5004
(11)	104	.51765
(12)	104	1.6858
(13)	104	1.3154
(14)	104	.45036
(15)	103	.46028
(16)	104	.35945 -1
(17)	104	0.

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	113.03	22.606	7.9144	.0000
WITHIN	1292	3690.3	2.8563		
TOTAL	1297	3803.3			

ETA= .1724 ETA-SQR= .0297

TRANN	N	MEAN
(2)	233	1.1840
(4)	203	1.0444
(5)	202	.63979
(6)	217	.36346
(7)	234	.54044
(8)	216	.55391

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	68.611	34.305	11.895	.0000
WITHIN	1255	3734.7	2.8839		
TOTAL	1297	3803.3			

ETA= .1343 ETA-SQR= .0180

STAN	N	MEAN
(1)	405	.61420
(2)	450	.51454
(3)	434	1.0404

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	7.1522	3.5761	1.2199	.2956
WITHIN	1235	3756.2	2.5314		
TOTAL	1297	3803.3			

ETA= .0434 ETA-SQR= .0019

D	N	MEAN
(1)	450	.63464
(2)	445	.72513
(3)	395	.81625

TABLE D-7. ANALYSES OF VARIANCE

NYS ALEWIFE, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	753.22	150.64	38.561	.0000
WITHIN	873	3410.5	3.9066		
TOTAL	878	4163.7			

ETA= .4253 ETA-SQR= .1809

PERIOD	N	MEAN
(11)	137	.47687
(12)	149	.88627
(13)	148	2.1303
(14)	147	2.3261
(15)	149	3.2376
(16)	149	1.4026

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	97.931	19.586	4.2056	.0009
WITHIN	873	4065.7	4.6572		
TOTAL	878	4163.7			

ETA= .1534 ETA-SQR= .0235

TRANS	N	MEAN
(1)	158	1.3846
(2)	161	1.5532
(3)	125	1.4316
(4)	143	[illegible]
(5)	141	[illegible]
(6)	151	[illegible]

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	4.0884	2.0442	.43050	.6503
WITHIN	876	4159.6	4.7484		
TOTAL	878	4163.7			

ETA= .0313 ETA-SQR= .0010

STAN	N	MEAN
(1)	257	1.6608
(2)	319	1.8293
(3)	303	1.7639

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	272.82	136.41	30.712	.0000
WITHIN	876	3890.9	4.4416		
TOTAL	878	4163.7			

ETA= .2560 ETA-SQR= .0655

D	N	MEAN
(1)	312	1.0693
(2)	319	2.1314
(3)	248	2.2176

TABLE D-8. ANALYSES OF VARIANCE

NYS ALEWIFE, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	12	3259.9	271.66	62.282	.0000
WITHIN	1285	5604.8	4.3617		
TOTAL	1257	8864.7			

ETA= .6064 ETA-SQR= .3677

PERIOD	N	MEAN
(5)	95	.13314
(6)	104	.72403
(7)	74	.14221
(8)	52	2.1503
(9)	58	2.7315
(10)	104	4.8521
(11)	104	2.5553
(12)	104	4.1267
(13)	104	3.7375
(14)	104	2.5766
(15)	103	2.5631
(16)	104	1.3320
(17)	104	0.

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	341.36	53.272	10.317	.0000
WITHIN	1252	8524.3	6.5578		
TOTAL	1257	8864.7			

ETA= .1555 ETA-SQR= .0300

TRANS	N	MEAN
(2)	233	1.4426
(4)	203	1.5460
(5)	~~202~~	~~2.1864~~
(6)	213	2.8171
(7)	234	2.2634
(8)	216	2.6721

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	97.938	48.969	7.3829	.0006
WITHIN	1255	8766.8	6.7582		
TOTAL	1257	8864.7			

ETA= .1047 ETA-SQR= .0113

STAT	N	MEAN
(1)	405	1.5354
(2)	453	2.5336
(3)	435	2.0351

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	49.026	24.513	3.6009	.0276
WITHIN	1255	8815.7	6.8075		
TOTAL	1257	8864.7			

ETA= .0744 ETA-SQR= .0055

D	N	MEAN
(1)	453	2.0336
(2)	446	2.4238
(3)	399	2.0257

TABLE D-9. ANALYSES OF VARIANCE

YS GIZZARD SHAD, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	6	55.835	9.3058	4.3344	.0002
WITHIN	1022	2194.2	2.1470		
TOTAL	1028	2250.0			

ETA= .1575 ETA-SQR= .0248

PERIOD	N	MEAN
(8)	149	.54701
(9)	149	.36287
(10)	150	.60998
(11)	137	.91812
(12)	149	.55231
(13)	148	.46561
(14)	147	.76571 -1

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	508.47	101.69	59.735	.0000
WITHIN	1023	1741.6	1.7024		
TOTAL	1028	2250.0			

ETA= .4754 ETA-SQR= .2260

TRANH	N	MEAN
(1)	186	.17712 -1
(2)	187	.25595 -1
(3)	146	.21749 -1
(4)	167	0.
(5)	164	1.1844
(6)	179	1.7309

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	161.48	80.741	39.664	.0000
WITHIN	1026	2088.5	2.0356		
TOTAL	1028	2250.0			

ETA= .2679 ETA-SQR= .0718

STAH	N	MEAN
(1)	302	.32277
(2)	374	.13649
(3)	353	1.0391

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	14.411	7.2053	3.3068	.0370
WITHIN	1026	2235.6	2.1790		
TOTAL	1028	2250.0			

ETA= .0800 ETA-SQR= .0064

D	N	MEAN
(1)	365	.34130
(2)	374	.58337
(3)	290	.59512

TABLE D-10. ANALYSES OF VARIANCE

YS GIZZARD SHAD, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	10	708.88	70.888	30.155	.0000
WITHIN	1075	2536.5	2.3508		
TOTAL	1085	3245.4			

ETA= .4674 ETA-SQR= .2184

PERIOD	N	MEAN
(5)	95	.52820
(6)	104	.48655
(7)	74	.25216
(8)	52	2.2351
(9)	58	4.2542
(10)	104	1.1261
(11)	104	.27366
(12)	104	0.
(13)	104	0.
(14)	104	0.
(15)	103	0.

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	432.71	86.542	33.353	.0000
WITHIN	1080	2812.7	2.5547		
TOTAL	1085	3245.4			

ETA= .3651 ETA-SQR= .1333

TRANS	N	MEAN
(2)	157	0.
(4)	171	0.
(5)	173	.48713
(6)	174	1.7210
(7)	159	.44765
(8)	183	1.2456

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	18.073	9.0367	3.0437	.0481
WITHIN	1083	3227.3	2.9650		
TOTAL	1085	3245.4			

ETA= .0746 ETA-SQR= .0056

STAN	N	MEAN
(1)	345	.72406
(2)	374	.46073
(3)	367	.73756

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	7.9696	3.9848	1.3379	.2628
WITHIN	1083	3237.4	2.9783		
TOTAL	1085	3245.4			

ETA= .0496 ETA-SQR= .0025

D	N	MEAN
(1)	374	.52312
(2)	377	.65402
(3)	335	.70568

TABLE D- 11. ANALYSES OF VARIANCE

NYS GIZZARD SHAD, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	6	106.84	17.807	5.3157	.0000
WITHIN	1022	3423.5	3.3498		
TOTAL	1028	3530.4			

ETA= .1740 ETA-SQR= .0303

PERIOD	N	MEAN
(8)	149	.58765
(9)	149	.98378
(10)	150	.68470
(11)	137	.75910
(12)	149	.94326
(13)	148	1.2806
(14)	147	.47119

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	1234.5	246.90	110.02	.0000
WITHIN	1023	2295.5	2.2442		
TOTAL	1028	3530.4			

ETA= .5913 ETA-SQR= .3497

TRANH	N	MEAN
(1)	186	.17827 -1
(2)	187	.13049
(3)	146	.21749 -1
(4)	167	.74330 -1
(5)	164	2.1305
(6)	179	2.5864

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	63.377	31.689	9.3777	.0001
WITHIN	1026	3467.0	3.3791		
TOTAL	1028	3530.4			

ETA= .1340 ETA-SQR= .0180

STAH	N	MEAN
(1)	302	.83774
(2)	374	.54219
(3)	353	1.1329

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	18.329	9.1644	2.6773	.0692
WITHIN	1026	3512.0	3.4230		
TOTAL	1028	3530.4			

ETA= .0721 ETA-SQR= .0052

D	N	MEAN
(1)	365	.71944
(2)	374	1.0075
(3)	290	.74698

TABLE D-12. ANALYSES OF VARIANCE

NYS GIZZARD SHAD, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	10	640.52	64.052	29.854	.0000
WITHIN	1075	2315.0	2.1455		
TOTAL	1085	2955.5			

ETA= .4655 ETA-SQR= .2167

PERIOD	N	MEAN
(5)	95	.17266
(6)	104	.35505 -1
(7)	74	.46821 -1
(8)	52	.73447
(9)	58	.27276
(10)	104	2.7465
(11)	104	.43237
(12)	104	1.0116
(13)	104	.60061
(14)	104	.04231
(15)	123	.30635 -1

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	320.65	64.130	26.287	.0000
WITHIN	1080	2634.8	2.4397		
TOTAL	1085	2955.5			

ETA= .3294 ETA-SQR= .1085

TRANS	N	MEAN
(2)	157	0.
(4)	171	0.
(5)	173	.91421
(6)	174	1.4241
(7)	158	.51226
(8)	161	1.1512

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	9.2956	4.6478	1.7148	.1803
WITHIN	1083	2946.2	2.7104		
TOTAL	1085	2955.5			

ETA= .0561 ETA-SQR= .0031

STAN	N	MEAN
(1)	345	.77007
(2)	378	.54310
(3)	367	.65535

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	52.535	26.268	9.8357	.0001
WITHIN	1083	2903.0	2.6706		
TOTAL	1085	2955.5			

ETA= .1333 ETA-SQR= .0178

D	N	MEAN
(1)	374	.81670
(2)	377	.78251
(3)	335	.32312

TABLE D-13. ANALYSES OF VARIANCE

YS YELLOW PERCH, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	10	202.17	20.217	16.545	.0000
WITHIN	1597	1951.4	1.2219		
TOTAL	1607	2153.6	(RANDOM EFFECTS STATISTICS)		

ETA= .3064 ETA-SQR= .0939

PERIOD	N	MEAN
(4)	145	.24533
(5)	144	1.0206
(6)	149	.27891
(7)	141	.19052
(8)	145	.25557
(9)	149	1.0674
(10)	150	.53042
(11)	137	.12490
(12)	149	.85947 -1
(13)	148	.46055 -1
(14)	147	.21993 -1

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	21.686	4.3372	3.2591	.0062
WITHIN	1602	2131.9	1.3308		
TOTAL	1607	2153.6	(RANDOM EFFECTS STATISTICS)		

ETA= .1003 ETA-SQR= .0101

TRANH	N	MEAN
(1)	293	.27034
(2)	295	.44065
(3)	228	.11859
(4)	254	.34880
(5)	260	.47103
(6)	276	.42033

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	6.0270	3.0135	2.2522	.1055
WITHIN	1605	2147.6	1.3381		
TOTAL	1607	2153.6	(RANDOM EFFECTS STATISTICS)		

ETA= .0529 ETA-SQR= .0028

STAN	N	MEAN
(1)	469	.43646
(2)	587	.28446
(3)	552	.34879

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	46.598	23.299	17.748	.0000
WITHIN	1605	2107.0	1.3128		
TOTAL	1607	2153.6	(RANDOM EFFECTS STATISTICS)		

ETA= .1471 ETA-SQR= .0216

D	N	MEAN
(1)	573	.14621
(2)	582	.38052
(3)	453	.57168

TABLE D-14. ANALYSES OF VARIANCE

YS YELLOW PERCH, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	10	225.35	22.535	32.504	.0000
WITHIN	1079	748.20	.69342		
TOTAL	1089	973.55	(RANDOM EFFECTS STATISTICS)		

ETA= .4812 ETA-SQR= .2315

PERIOD	N	MEAN
(3)	104	.86650
(4)	103	1.3687
(5)	99	.33171 -1
(6)	104	0.
(7)	74	0.
(8)	92	0.
(9)	98	0.
(10)	104	0.
(11)	104	0.
(12)	104	0.
(13)	104	0.

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	31.619	6.3238	7.2773	.0000
WITHIN	1084	941.97	.86898		
TOTAL	1089	973.55	(RANDOM EFFECTS STATISTICS)		

ETA= .1802 ETA-SQR= .0325

TRANS	N	MEAN
(2)	197	0.
(4)	171	0.
(5)	175	.35867
(6)	174	.37768
(7)	190	.18668
(8)	183	.36140

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	3.4438	1.7219	1.9293	.1457
WITHIN	1087	970.11	.89250		
TOTAL	1089	973.55	(RANDOM EFFECTS STATISTICS)		

ETA= .0595 ETA-SQR= .0035

STAN	N	MEAN
(1)	345	.21194
(2)	378	.15226
(3)	367	.28031

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	11.123	5.5613	6.2808	.0019
WITHIN	1087	962.43	.88540		
TOTAL	1089	973.55	(RANDOM EFFECTS STATISTICS)		

ETA= .1069 ETA-SQR= .0114

D	N	MEAN
(1)	378	.98344 -1
(2)	378	.21842
(3)	334	.34958

TABLE D-15. ANALYSES OF VARIANCE

NYS YELLOW PERCH, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	10	281.37	28.137	16.650	.0000
WITHIN	1597	2698.9	1.6900		
TOTAL	1607	2980.2			

ETA= .3073 ETA-SQR= .0944

PERIOD	N	MEAN
(4)	145	0.
(5)	144	1.1907
(6)	149	1.1807
(7)	141	.76764
(8)	149	.56607
(9)	149	.67954
(10)	150	.68265
(11)	137	.24619
(12)	145	.15632
(13)	148	.73801 -1
(14)	147	.72061 -1

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	330.16	66.033	39.918	.0000
WITHIN	1602	2650.1	1.6542		
TOTAL	1607	2980.2			

ETA= .3328 ETA-SQR= .1108

TRANS	N	MEAN
(1)	293	.19623
(2)	295	.20439
(3)	272	.70914 -1
(4)	254	.76987
(5)	260	1.0635
(6)	273	1.2061

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	9.3865	4.6932	2.5355	.0795
WITHIN	1605	2973.8	1.8510		
TOTAL	1607	2983.2			

ETA= .0561 ETA-SQR= .0031

STAN	N	MEAN
(1)	469	.43948
(2)	587	.46176
(3)	552	.41167

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	29.567	14.783	8.0414	.0003
WITHIN	1605	2953.7	1.8384		
TOTAL	1607	2983.2			

ETA= .0996 ETA-SQR= .0099

D	N	MEAN
(1)	573	.35336
(2)	582	.51107
(3)	453	.65513

TABLE D-16. ANALYSES OF VARIANCE

NYS YELLOW PERCH, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	12	581.95	53.195	71.838	.0000
WITHIN	1077	874.05	.81009		
TOTAL	1089	1456.0			

ETA= .6322 ETA-SQR= .3997

PERIOD	N	MEAN
(3)	104	.31377 -1
(4)	103	2.5325
(5)	59	.40254
(6)	104	.14346
(7)	74	0.
(8)	52	0.
(9)	58	.31510 -1
(10)	104	0.
(11)	104	0.
(12)	104	0.
(13)	104	.32415 -1

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	53.249	10.650	8.2296	.0000
WITHIN	1084	1402.8	1.2941		
TOTAL	1089	1456.0			

ETA= .1912 ETA-SQR= .0366

TRANS	N	MEAN
(2)	157	.15675 -1
(4)	171	0.
(5)	170	.45605
(6)	174	.52247
(7)	159	.25881
(8)	162	.52777

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	9.1902	4.5951	3.4522	.0323
WITHIN	1087	1446.8	1.3310		
TOTAL	1089	1456.0			

ETA= .0794 ETA-SQR= .0063

STAN	N	MEAN
(1)	345	.17722
(2)	378	.30618
(3)	367	.40411

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	8.4717	4.2358	3.1808	.0419
WITHIN	1087	1447.6	1.3317		
TOTAL	1089	1456.0			

ETA= .0762 ETA-SQR= .0058

D	N	MEAN
(1)	378	.18856
(2)	378	.31348
(3)	334	.40542

TABLE D-17. ANALYSES OF VARIANCE,

YS LOGPERCH, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	11	591.74	53.795	24.533	.0000
WITHIN	1745	3826.3	2.1927		
TOTAL	1756	4418.0			

ETA= .3660 ETA-SQR= .1339

PERIOD	N	MEAN
(4)	145	.77127 -1
(5)	144	.37154
(6)	149	.46449
(7)	141	.34367
(8)	149	1.1435
(9)	149	2.3203
(10)	150	1.1817
(11)	137	.88356
(12)	149	.56502
(13)	148	.83183
(14)	147	.46755
(15)	149	.29068

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	170.61	34.123	14.067	.0000
WITHIN	1751	4247.4	2.4257		
TOTAL	1756	4418.0			

ETA= .1965 ETA-SQR= .0386

TRANS	N	MEAN
(1)	320	.64041
(2)	327	.56529
(3)	249	.63414
(4)	278	.83992
(5)	279	.17261
(6)	304	1.1681

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	21.551	10.776	4.2990	.0137
WITHIN	1754	4396.5	2.5065		
TOTAL	1756	4418.0			

ETA= .0698 ETA-SQR= .0049

STAN	N	MEAN
(1)	514	.64462
(2)	590	.55183
(3)	653	.68428

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	400.47	200.23	87.419	.0000
WITHIN	1754	4017.6	2.2905		
TOTAL	1756	4418.0			

ETA= .3011 ETA-SQR= .0906

D	N	MEAN
(1)	627	.20641
(2)	635	.36807
(3)	495	1.4092

TABLE D-18. ANALYSES OF VARIANCE

YS LOGPERCH, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	11	166.77	15.161	9.2921	.0000
WITHIN	1141	1926.9	1.6316		
TOTAL	1152	2093.6			

ETA= .2822 ETA-SQR= .0797

PERIOD	N	MEAN
(4)	103	1.3566
(5)	99	.68073
(6)	104	.40267
(7)	74	1.1257
(8)	52	.44366
(9)	58	.38565
(10)	104	.22758
(11)	104	.37203
(12)	104	.11162
(13)	104	.28425
(14)	104	.66722 -1
(15)	103	.14303

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	152.33	30.465	18.628	.0000
WITHIN	1147	1941.3	1.6355		
TOTAL	1152	2093.6			

ETA= .2697 ETA-SQR= .0728

TRANS	N	MEAN
(2)	214	.71252
(4)	187	.16153
(5)	186	.12417
(6)	152	1.1356
(7)	216	.14520
(8)	158	.42144

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	5.6032	2.8016	1.5967	.2030
WITHIN	1150	2088.0	1.7547		
TOTAL	1152	2093.6			

ETA= .0517 ETA-SQR= .0027

STAN	N	MEAN
(1)	376	.34671
(2)	414	.56018
(3)	403	.48717

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	158.62	79.311	48.775	.0000
WITHIN	1150	1935.0	1.6261		
TOTAL	1152	2093.6			

ETA= .2753 ETA-SQR= .0758

D	N	MEAN
(1)	414	.55266 -1
(2)	413	.32765
(3)	366	.97661

TABLE D-19. ANALYSES OF VARIANCE

NYS LOGPERCH, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	11	305.77	27.798	18.281	.0000
WITHIN	1745	2653.5	1.5206		
TOTAL	1756	2959.2			

ETA= .3214 ETA-SQR= .1033

PERIOD	N	MEAN
(4)	145	.22035 -1
(5)	144	.49435 -1
(6)	149	.15771
(7)	141	.67252 -1
(8)	149	1.0115
(9)	149	1.5598
(10)	150	.57120
(11)	137	.45568
(12)	145	.53437
(13)	140	.47454
(14)	147	.52464
(15)	145	.37488

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	384.61	76.922	52.315	.0000
WITHIN	1751	2574.6	1.4704		
TOTAL	1756	2959.2			

ETA= .3605 ETA-SQR= .1300

TRANH	N	MEAN
(1)	320	.97961 -1
(2)	322	.17575
(3)	259	.17524
(4)	278	.19861
(5)	284	1.0697
(6)	304	1.2161

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	6.9338	3.4669	2.0597	.1278
WITHIN	1754	2952.3	1.6832		
TOTAL	1756	2959.2			

ETA= .0484 ETA-SQR= .0023

STAN	N	MEAN
(1)	514	.47239
(2)	640	.56702
(3)	623	.42075

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	94.141	47.070	28.816	.0000
WITHIN	1754	2865.1	1.6335		
TOTAL	1756	2959.2			

ETA= .1784 ETA-SQR= .0318

D	N	MEAN
(1)	627	.17566
(2)	655	.45338
(3)	475	[illegible]
GRAND	1757	.48946

TABLE D-20. ANALYSES OF VARIANCE

NYS LOGPERCH, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	11	202.50	18.446	13.867	.0000
WITHIN	1151	1571.0	1.3322		
TOTAL	1162	1773.5			

ETA= .3382 ETA-SQR= .1144

PERIOD	N	MEAN
(4)	103	.72443
(5)	55	.11356
(6)	104	2.
(7)	74	1.4738
(8)	52	.78775
(9)	158	1.1424
(10)	104	.53745 -1
(11)	104	.22167
(12)	104	.18337
(13)	104	.42355
(14)	104	.33356
(15)	103	.95154 -1

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	95.861	19.172	13.562	.0000
WITHIN	1157	1678.1	1.4137		
TOTAL	1162	1773.5			

ETA= .2325 ETA-SQR= .0541

TRANS	N	MEAN
(2)	214	.12356
(4)	187	.16373 -1
(5)	186	.45236
(6)	152	.88144
(7)	216	.54515
(8)	168	.50387

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	46.178	23.089	15.507	.0000
WITHIN	1160	1727.3	1.4519		
TOTAL	1162	1773.5			

ETA= .1613 ETA-SQR= .0260

STAN	N	MEAN
(1)	276	.24025
(2)	414	.60413
(3)	433	.23460

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	56.656	28.328	19.416	.0000
WITHIN	1160	1717.9	1.4636		
TOTAL	1162	1773.5			

ETA= .1778 ETA-SQR= .0316

D	N	MEAN
(1)	414	.13233
(2)	413	.54326
(3)	366	.62815

TABLE D-21. ANALYSES OF VARIANCE

YS EMERALD SHINER, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	9	33.158	3.6842	5.9185	.0000
WITHIN	1467	913.18	.62248		
TOTAL	1476	946.34			

ETA= .1872 ETA-SQR= .0350

PERIOD	N	MEAN
(8)	149	.83578 -1
(9)	149	.20650
(10)	150	.33465
(11)	137	.82713 -1
(12)	149	.21504 -1
(13)	148	.33938 -1
(14)	147	.46413
(15)	148	.74617
(16)	149	.71046 -1
(17)	150	0.

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	44.417	8.8834	14.488	.0000
WITHIN	1471	901.92	.61314		
TOTAL	1476	946.34			

ETA= .2166 ETA-SQR= .0469

TRANS	N	MEAN
(1)	266	0.
(2)	268	.93142 -1
(3)	209	.42577 -1
(4)	239	.13121 -1
(5)	236	.25516
(6)	259	.48306

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	3.7405	1.8702	2.9246	.0540
WITHIN	1474	942.60	.63948		
TOTAL	1476	946.34			

ETA= .0629 ETA-SQR= .0040

STAN	N	MEAN
(1)	437	.11538
(2)	534	.11368
(3)	506	.21959

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	6.6658	3.3329	5.2281	.0055
WITHIN	1474	939.67	.63750		
TOTAL	1476	946.34			

ETA= .0839 ETA-SQR= .0070

D	N	MEAN
(1)	526	.61310 -1
(2)	535	.18434
(3)	416	.21754

TABLE D-22. ANALYSES OF VARIANCE

YS EMERALD SHINER, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	9	468.81	52.090	35.872	.0000
WITHIN	1011	1468.1	1.4521		
TOTAL	1020	1936.5			

ETA= .4920 ETA-SQR= .2420

PERIOD	N	MEAN
(8)	52	0.
(9)	98	.28378
(10)	104	2.1541
(11)	104	.56824 -1
(12)	104	.26435
(13)	104	.15234
(14)	104	1.1365
(15)	103	.77698 -1
(16)	104	0.
(17)	104	0.

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	69.773	13.955	7.5858	.0000
WITHIN	1015	1867.1	1.8396		
TOTAL	1020	1936.5			

ETA= .1898 ETA-SQR= .0360

TRANS	N	MEAN
(2)	176	.12740
(4)	167	.46156 -1
(5)	154	.38284
(6)	168	.67855
(7)	169	.55581
(8)	183	.72880

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	2.4070	1.2035	.63331	.5310
WITHIN	1018	1934.5	1.9003		
TOTAL	1020	1936.5			

ETA= .0353 ETA-SQR= .0012

STAN	N	MEAN
(1)	316	.45855
(2)	354	.46314
(3)	348	.35860

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	48.248	24.124	13.003	.0000
WITHIN	1018	1888.7	1.8553		
TOTAL	1020	1936.5			

ETA= .1578 ETA-SQR= .0249

D	N	MEAN
(1)	354	.18247
(2)	353	.40087
(3)	314	.72165

TABLE D-23. ANALYSES OF VARIANCE

NYS EMERALD SHINER, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	9	70.996	7.6774	11.286	.0000
WITHIN	1467	1025.9	.69798		
TOTAL	1476	1094.8			

ETA= .2545 ETA-SQR= .0648

PERIOD	N	MEAN
(8)	149	.58168 -1
(9)	148	.20574
(10)	150	.20778 -1
(11)	137	0.
(12)	149	.82666 -1
(13)	148	.29917 -1
(14)	147	.31915
(15)	149	.74124
(16)	149	.20270
(17)	150	.21622 -1

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	35.143	7.0286	9.7567	.0000
WITHIN	1471	1059.7	.72039		
TOTAL	1476	1094.8			

ETA= .1792 ETA-SQR= .0321

TRANS	N	MEAN
(1)	266	.15650 -1
(2)	268	.13546
(3)	228	.35582 -1
(4)	239	.16995
(5)	236	.71733
(6)	259	.47610

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	2.7777	1.3889	1.8746	.1538
WITHIN	1474	1092.1	.74088		
TOTAL	1476	1094.8			

ETA= .0504 ETA-SQR= .0025

STAN	N	MEAN
(1)	417	.24461
(2)	534	.15570
(3)	526	.14535

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	13.934	6.9671	9.5009	.0001
WITHIN	1474	1080.9	.73331		
TOTAL	1476	1094.8			

ETA= .1128 ETA-SQR= .0127

D	N	MEAN
(1)	526	.27713
(2)	535	.24945
(3)	415	.23700 -1

TABLE D-24. ANALYSES OF VARIANCE

NYS EMERALD SHINER, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	9	510.57	56.730	32.002	.0000
WITHIN	1011	1792.2	1.7727		
TOTAL	1020	2302.7			

ETA= .4709 ETA-SQR= .2217

PERIOD	N	MEAN
(8)	52	.11250
(9)	58	.66543 -1
(10)	104	1.4210
(11)	104	.11201
(12)	104	.54175
(13)	104	1.8668
(14)	103	.55536
(15)	103	.67354 -1
(16)	104	.95533 -1
(17)	104	0.

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	144.45	28.889	13.588	.0000
WITHIN	1015	2158.3	2.1264		
TOTAL	1020	2302.7			

ETA= .2535 ETA-SQR= .0627

TRANS	N	MEAN
(2)	175	.35857 -1
(4)	163	.20320 -1
(5)	154	.70573
(6)	168	.57321
(7)	180	.71942
(8)	183	.83357

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	8.9220	4.4610	1.9798	.1386
WITHIN	1018	2293.8	2.2533		
TOTAL	1020	2302.7			

ETA= .0622 ETA-SQR= .0039

STAN	N	MEAN
(1)	315	.41361
(2)	354	.55111
(3)	348	.43266

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	66.745	33.372	15.530	.0000
WITHIN	1018	2236.3	2.1971		
TOTAL	1020	2302.7			

ETA= .1694 ETA-SQR= .0287

D	N	MEAN
(1)	354	.85555
(2)	353	.53246
(3)	314	.22567

TABLE D-25. ANALYSES OF VARIANCE

YS, CARP, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	6	37.545	6.2575	4.7030	.0001
WITHIN	1016	1351.8	1.3305		
TOTAL	1022	1389.4			

ETA= .1644 ETA-SQR= .0270

PERIOD	N	MEAN
(7)	141	.52234
(8)	149	.54611
(9)	149	.86049 -1
(10)	150	.11692
(11)	137	.43955
(12)	149	.59336
(13)	148	.40207

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	276.70	55.341	50.583	.0000
WITHIN	1017	1112.7	1.0941		
TOTAL	1022	1389.4			

ETA= .4463 ETA-SQR= .1992

TRANS	N	MEAN
(1)	198	0.
(2)	177	.60133 -1
(3)	147	.33321
(4)	159	.18795
(5)	165	.22267
(6)	179	1.4796

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	2.2697	1.1348	.83450	.4344
WITHIN	1020	1387.1	1.3599		
TOTAL	1022	1389.4			

ETA= .0404 ETA-SQR= .0016

STAN	N	MEAN
(1)	300	.31184
(2)	373	.41976
(3)	350	.40571

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	8.3821	4.1910	3.0955	.0457
WITHIN	1020	1381.0	1.3539		
TOTAL	1022	1389.4			

ETA= .0777 ETA-SQR= .0060

D	N	MEAN
(1)	365	.27021
(2)	371	.41478
(3)	287	.49132

TABLE D-26. ANALYSES OF VARIANCE

YS CARP, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	8	49.531	6.1914	12.693	.0000
WITHIN	874	426.31	.48777		
TOTAL	882	475.84			

ETA= .3226 ETA-SQR= .1041

PERIOD	N	MEAN
(5)	59	0.
(6)	104	0.
(7)	74	.36501
(8)	92	.14043
(9)	58	0.
(10)	104	.56511 -1
(11)	104	.73223
(12)	104	.31775 -1
(13)	104	0.

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	12.055	2.4110	4.5746	.0004
WITHIN	877	463.75	.52879		
TOTAL	882	475.84			

ETA= .1594 ETA-SQR= .0254

TRANS	N	MEAN
(2)	162	0.
(4)	134	0.
(5)	134	.25373
(6)	136	.27703
(7)	162	.15172
(9)	144	.14750

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	8.6855	4.3428	8.1606	.0003
WITHIN	880	467.16	.53086		
TOTAL	882	475.84			

ETA= .1351 ETA-SQR= .0183

STAN	N	MEAN
(1)	282	.12113
(2)	346	.43852 -1
(3)	255	.28226

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	3.7756	1.8878	3.5191	.0100
WITHIN	880	472.07	.53644		
TOTAL	882	475.84			

ETA= .0891 ETA-SQR= .0079

D	N	MEAN
(1)	306	.10204
(2)	306	.16555
(3)	271	.24573

TABLE D-27. ANALYSES OF VARIANCE

YS WHITE BASS, 1977

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	6	19.412	3.2353	3.9715	.0006
WITHIN	1016	827.66	.81462		
TOTAL	1022	847.07			

ETA= .1514 ETA-SQR= .0229

PERIOD	N	MEAN
(7)	141	.35633
(8)	145	.13981
(9)	149	.51738 -1
(10)	150	.39228
(11)	137	.27638
(12)	149	.98942 -1
(13)	148	.27840 -1

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	143.89	28.778	41.622	.0000
WITHIN	1017	703.18	.69142		
TOTAL	1022	847.07			

ETA= .4122 ETA-SQR= .1699

TRANH	N	MEAN
(1)	186	0.
(2)	187	0.
(3)	147	0.
(4)	159	.20923 -1
(5)	165	.70264 -1
(6)	179	1.0026

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	6.0936	3.0468	3.6994	.0252
WITHIN	1020	840.98	.82449		
TOTAL	1022	847.07			

ETA= .0848 ETA-SQR= .0072

STAH	N	MEAN
(1)	308	.19432
(2)	373	.99311 -1
(3)	353	.28285

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	4.3249	2.1625	2.6173	.0735
WITHIN	1020	842.75	.82622		
TOTAL	1022	847.07			

ETA= .0715 ETA-SQR= .0051

D	N	MEAN
(1)	365	.14061
(2)	371	.15856
(3)	287	.29339

TABLE D-28. ANALYSES OF VARIANCE

YS WHITE BASS, 1978

PERIOD

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	7	17.378	2.4826	4.9989	.0000
WITHIN	770	382.41	.49663		
TOTAL	777	399.79			

ETA= .2085 ETA-SQR= .0435

PERIOD	N	MEAN
(4)	103	0.
(5)	55	.40373
(6)	104	.25553
(7)	74	0.
(8)	52	.28234
(9)	58	.65625 -1
(10)	104	.68233 -1
(11)	104	0.

TRANSECT

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	5	37.354	7.4708	15.913	.0000
WITHIN	772	362.43	.46947		
TOTAL	777	399.79			

ETA= .3057 ETA-SQR= .0934

TRANN	N	MEAN
(2)	143	0.
(4)	123	0.
(5)	122	.25851 -1
(6)	123	.62121
(7)	144	.22264 -1
(8)	126	.21007

STATION

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	2.4270	1.2130	2.3599	.0951
WITHIN	775	397.37	.51273		
TOTAL	777	399.79			

ETA= .0779 ETA-SQR= .0061

STAN	N	MEAN
(1)	249	.15752
(2)	273	.65674 -1
(3)	255	.16013

DEPTH

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	2	.79307 -1	.39653 -1	.76885 -1	.9260
WITHIN	775	399.71	.51575		
TOTAL	777	399.79			

ETA= .0149 ETA-SQR= .0002

D	N	MEAN
(1)	273	.15188
(2)	270	.12770
(3)	234	.13024

Appendix E

Density of fish larvae in the St. Clair and Detroit rivers, 1977 and 1978, by transect, station, period, and depth. Density of rainbow smelt, alewife, gizzard shad, yellow perch, logperch, emerald shiner, carp, and white bass larvae were divided into yolk sac (YS) and non-yolk sac (NYS) categories. For all other species, no such categories were made. See the text for details.

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DENSITY OF SMELT YS LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		I			II			III			IV			V			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	445	451
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	632	[illegible]
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	774	1418
5/9-5/11	S	0	0	61	20	61	40	137	103	21	105	41	0	0	0	0	0	2036	746
	M	24	8	45	16	85	86	102	100	55	102	113	33	0	0	0	12	2170	1455
	B	8	3	73	73	64	164	-	105	-	-	71	47	-	0	0	0	4125	2462
5/16-5/18	S	125	14	118	111	35	125	20	0	40	21	19	40	0	16	0	0	235	0
	M	71	15	70	177	143	157	141	141	213	76	185	432	7	76	0	74	563	61
	B	57	83	275	355	334	508	-	250	-	-	183	1103	-	172	35	15	457	57
5/23-5/25	S	10	50	16	0	0	65	16	0	0	0	54	52	0	0	0	0	0	0
	M	45	38	25	282	21	20	0	27	21	111	113	86	7	0	7	16	14	0
	B	74	50	68	122	15	68	-	62	-	-	105	155	-	0	27	8	37	0
5/31-6/2	S	0	50	24	0	0	0	0	0	0	0	19	0	0	0	0	0	0	0
	M	15	39	63	18	24	8	22	0	0	7	31	77	15	0	0	0	0	0
	B	3	130	25	45	68	20	-	40	-	-	110	302	-	0	0	0	8	0
6/6-6/8	S	0	0	74	0	0	0	0	0	22	0	0	20	0	0	0	0	0	0
	M	9	10	10	8	18	52	0	8	0	7	7	0	0	0	0	0	0	3
	B	12	11	0	0	0	58	-	25	-	-	20	20	-	4	0	0	0	0
6/13-6/15	S	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/20-6/22	S	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	16	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/20-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF SMELT YS LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	12	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	13	0	15	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	26	528	12	32	1167	574
	M	0	10	11	0	0	0	0	0	0	12	12	0	81	115	26	80	1404	876
	B	0	10	0	-	0	0	-	11	0	33	12	0	24	139	25	23	1641	588
5/24-5/25	S	532	667	510	332	466	573	0	0	0	0	0	0	24	35	12	13	654	123
	M	1190	1227	519	2261	1520	4550	11	0	0	35	11	0	23	78	12	101	1265	154
	B	3030	3131	2749	-	4411	9453	-	51	0	185	76	0	24	57	12	76	520	244
5/30-5/31	S	2474	1259	445	1128	826	*	0	59	12	0	49	0	572	177	26	257	[illegible]	12
	M	5082	3050	2030	674	2062	*	0	100	39	33	302	0	606	53	53	301	51	765
	B	6391	3258	7587	-	515	1485	-	392	233	204	576	37	292	41	28	417	323	434
6/5-6/6	S	37	203	85	115	101	467	12	0	12	0	0	0	38	190	45	177	72	12
	M	476	427	263	603	225	566	11	122	0	70	33	35	50	131	93	151	60	160
	B	654	552	183	-	455	574	-	177	59	159	12	131	305	128	67	111	55	171
6/12-6/13	S	117	128	0	12	47	133	11	10	13	0	0	0	*	*	*	200	*	*
	M	145	[illegible]	12	0	25	134	22	56	49	45	67	57	*	*	*	176	*	*
	B	71	232	25	-	33	210	-	58	0	60	115	65	*	*	*	184	*	*
6/19-6/20	S	0	0	0	0	0	12	0	0	451	0	0	0	12	26	0	0	*	*
	M	0	12	0	0	0	0	0	0	0	0	0	0	0	0	11	40	*	*
	B	0	40	64	-	0	26	-	12	0	0	0	24	27	0	38	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0
	M	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/28-8/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF SMELT NYS LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	TRANSECT (ROMAN NUMERALS) AND STATION: I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	8	8	8	0	0	17	0	0	0	12	0	0
	B	8	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	8	0
5/16-5/19	S	18	0	0	0	0	0	0	0	0	0	0	0	0	16	0	51	30	33
	M	7	19	8	15	0	0	0	0	8	0	0	36	40	95	6	81	212	55
	B	0	25	8	25	8	0	-	0	-	-	9	101	-	178	47	58	233	53
5/23-5/25	S	17	0	0	0	0	0	0	0	0	0	0	52	21	0	0	0	33	50
	M	22	8	0	40	0	0	0	0	7	10	10	11	119	0	71	215	454	128
	B	10	17	8	58	6	7	-	21	-	-	10	0	-	0	165	218	315	20
5/31-6/2	S	3	27	24	19	0	0	0	0	0	0	19	0	0	58	0	57	11	70
	M	49	85	26	39	17	8	7	13	0	15	86	39	60	101	117	62	163	101
	B	0	115	8	100	0	0	-	32	-	-	177	125	-	190	66	117	156	52
6/6-6/8	S	0	25	25	62	0	0	0	0	0	0	0	0	19	17	121	163	416	388
	M	18	0	10	100	27	5	16	8	0	0	65	168	72	121	117	155	128	512
	B	23	22	20	8	18	15	-	50	-	-	33	67	-	40	85	25	31	87
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	17	0	8	15	0	0	0	0	0	7	0	29	0	0	0	40	20	7
	B	17	25	50	35	15	8	-	7	-	-	7	56	-	15	0	28	15	25
6/20-6/22	S	0	19	0	0	0	21	0	0	0	0	0	0	0	0	0	*	0	0
	M	51	30	0	73	15	0	14	0	9	22	26	8	9	0	0	*	15	18
	B	47	52	36	73	55	43	-	71	-	-	83	47	-	0	0	*	25	8
6/27-6/29	S	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	8	0	0	0	0	0	9	0	0	0	0	0	0	0	0
	B	8	0	8	62	7	7	-	0	-	-	33	33	-	9	0	0	28	0
7/5-7/7	S	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	9	10	5	0	0	0	0	0	0	0	0	0	7	8	0	0	0	0
	B	9	13	10	0	0	0	-	0	-	-	10	0	-	0	22	0	10	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	25	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/20-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF SMELT NOS. LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	11	0	0	0	0	0	0	0	0	0	0	0	24	12	0	0	12	0
	M	30	0	0	12	12	11	0	0	0	0	11	0	23	11	0	34	23	0
	B	0	9	0	-	22	36	-	20	0	98	11	0	24	57	23	38	53	0
5/30-5/31	S	80	0	0	0	125	*	0	119	74	0	85	11	4644	2465	38	560	174	137
	M	71	46	0	12	187	*	96	426	610	11	1704	56	4409	372	79	2227	571	1532
	B	105	47	12	-	58	66	-	3256	1053	2075	3967	369	1805	1013	470	2154	1125	2140
6/5-6/6	S	0	0	0	0	0	0	35	33	55	32	11	23	51	884	57	510	231	242
	M	12	0	0	12	0	12	148	636	257	220	0	311	436	719	503	631	534	1232
	B	72	73	0	-	36	41	-	1320	846	943	336	1270	1244	575	1235	437	328	392
6/12-6/13	S	23	0	0	12	17	12	11	0	178	0	12	0	*	*	*	412	*	*
	M	24	0	0	0	0	12	67	80	502	68	161	68	*	*	*	273	*	*
	B	11	12	13	-	0	88	-	93	516	108	204	117	*	*	*	170	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	25	78	0	63	*	*
	M	0	0	0	0	0	0	0	0	47	0	0	46	65	202	50	120	*	*
	B	14	13	35	-	0	13	-	37	23	47	0	24	67	37	89	56	*	*
6/27-6/28	S	0	12	0	0	0	0	0	0	0	0	0	0	12	0	0	0	23	13
	M	0	0	0	0	0	0	0	0	0	24	0	11	11	12	63	12	28	26
	B	0	0	13	-	12	12	-	24	24	25	24	0	11	45	22	0	33	0
7/5-7/6	S	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	11	0
	B	37	0	0	-	12	0	-	0	0	12	13	0	0	0	0	0	13	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	13
	B	14	0	0	-	0	0	-	0	0	0	0	0	14	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	[illegible]
	B	0	14	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	51	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/28-8/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

...S LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	[illegible]	[illegible]	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	[illegible]	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	[illegible]	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	*	38	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	8	7	0	-	0	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	0	22	83	25	0	0	0	0	0	0	0	0	0	0	51	0	0	0
	M	0	0	13	15	0	55	17	0	0	0	0	11	0	0	10	0	0	0
	B	0	17	20	10	62	55	-	26	-	-	0	28	-	0	0	0	10	24
7/18-7/20	S	0	20	0	41	22	0	0	0	0	0	23	210	0	0	0	0	0	0
	M	0	0	8	24	0	0	0	0	16	0	0	0	0	0	0	0	0	0
	B	0	0	14	50	52	8	-	0	-	-	23	43	-	0	0	0	0	0
7/25-7/27	S	20	57	146	41	24	64	142	211	105	108	95	63	0	0	0	0	0	0
	M	11	163	102	72	40	21	250	270	175	308	465	699	0	0	0	0	0	0
	B	161	423	62	80	8	0	-	206	-	-	167	731	-	0	0	0	0	0
8/6-8/10	S	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	8	0	0	0	0	0	-	0	-	-	8	0	-	0	0	0	0	0
8/20-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF ALEWIFE YS LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	13	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	14	0	0	33	0	33
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	49	0	41
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	14	0	65	0	28
6/5-6/6	S	0	0	0	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	12	21	0	0	0	0	0	12	0	0	0	0	0
	B	0	0	0	-	12	0	-	0	0	0	0	0	13	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	11	0	76	0	0	21	*	*	*	0	*	*
	M	0	0	0	0	0	0	11	0	73	0	0	0	*	*	*	13	*	*
	B	0	0	0	-	0	0	-	0	35	0	0	13	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	402	0	0	79	75	79	51	0	*	*
	M	0	0	0	0	0	0	0	0	2004	0	0	399	99	25	126	13	*	*
	B	0	0	0	-	0	0	-	0	1502	25	0	618	40	12	225	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	123	0	0	72	0	12	155	0	0	76
	M	0	0	0	0	0	0	12	0	235	12	23	112	0	47	163	0	0	51
	B	0	0	0	-	0	12	-	12	317	0	0	143	0	0	185	0	0	124
7/5-7/6	S	11	0	56	12	0	12	33	0	122	35	0	86	0	0	35	0	70	336
	M	35	0	22	0	0	0	37	0	71	69	13	151	48	0	0	12	11	11
	B	76	48	78	-	0	0	-	0	115	121	0	215	0	14	57	12	0	0
7/10-7/11	S	47	0	0	0	12	0	0	0	0	0	0	26	0	12	0	0	14	0
	M	148	14	35	12	11	0	0	0	0	0	0	26	0	0	0	0	0	0
	B	302	41	49	-	0	0	-	0	0	0	0	0	0	0	13	0	0	0
7/17-7/18	S	133	47	225	320	172	188	12	0	0	0	0	0	0	0	0	0	0	0
	M	520	122	431	565	288	255	0	0	0	0	0	0	0	0	0	0	0	0
	B	512	79	503	-	338	403	-	0	0	12	0	0	0	0	0	0	0	0
7/24-7/25	S	63	53	40	51	28	255	0	0	0	0	0	0	0	0	0	0	0	0
	M	92	49	102	135	125	50	0	0	0	0	0	0	0	0	0	0	0	0
	B	85	177	312	-	328	218	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	13	0	13	14	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	13	14	0	40	14	28	0	0	0	0	0	0	0	0	0	0	0	0
	B	12	53	0	-	78	51	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	28	38	78	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	26	0	14	13	0	26	0	0	0	0	0	0	0	0	0	0	0	0
	B	13	54	0	-	40	0	-	0	0	0	0	0	0	0	0	0	0	0
8/15-8/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	27	14	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/23-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	-	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF ALEWIFE NYS LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (NORMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	D	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	D	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/19	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	0	18	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88	0	21	105
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	80	15	18	122
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	58	0	61	61	20	18
	M	0	0	0	0	0	0	0	0	0	0	0	0	24	0	476	25	0	3
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	17	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	7	0	3
	D	0	0	0	0	0	0	-	0	-	-	0	7	-	0	7	14	0	7
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	*	55	67
	M	0	0	0	0	0	0	0	0	0	0	0	0	64	0	0	*	138	1
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	221	0
6/27-6/29	S	0	0	22	0	0	0	0	0	0	0	21	0	105	22	22	0	0	61
	M	8	0	0	16	0	23	0	0	0	9	0	0	0	26	28	8	57	28
	D	0	0	6	0	14	7	-	9	-	-	8	8	-	44	28	0	22	0
7/5-7/7	S	0	45	21	45	0	22	30	0	44	30	28	0	0	26	25	0	0	135
	M	18	10	5	15	10	88	0	17	41	11	55	0	251	175	69	113	230	120
	D	9	13	10	20	41	55	-	35	-	-	41	55	-	42	0	0	159	116
7/18-7/20	S	0	20	36	21	0	0	10	20	0	48	0	47	85	0	0	46	20	21
	M	21	3	46	45	8	8	30	7	0	91	17	9	137	78	111	32	53	141
	D	23	42	62	75	52	8	-	31	-	-	23	51	-	177	140	8	115	147
7/25-7/27	S	20	15	0	103	47	21	61	0	42	86	24	42	0	0	41	0	65	21
	M	33	33	17	55	55	71	180	165	187	416	367	518	189	148	6	0	136	104
	D	102	134	124	204	49	63	-	145	-	-	25	244	-	300	25	50	152	148
8/8-8/10	S	0	22	47	22	21	0	22	0	0	42	0	93	0	0	0	0	0	0
	M	67	14	0	16	8	8	0	24	34	113	77	32	0	8	17	6	8	8
	D	96	8	5	8	32	8	-	25	-	-	31	55	-	8	8	0	0	8
8/22-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	8	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	7	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (D).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF ALEWIFE AND LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	14	0	0	12	0	0
	M	12	0	0	0	0	*	0	0	0	0	0	0	12	0	0	12	0	24
	B	12	0	0	-	0	0	-	0	0	0	12	0	27	0	0	17	0	12
6/5-6/6	S	12	0	0	0	0	0	0	0	0	0	0	0	25	0	0	43	12	0
	M	0	0	0	0	0	0	0	0	0	12	0	0	0	11	0	14	0	0
	B	21	12	0	-	12	0	-	0	0	0	0	0	13	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	13	17	0	32	*	*	*	12	*	*
	M	0	0	0	0	0	0	11	0	24	11	0	0	*	*	*	12	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	171	0	0	11	647	545	115	354	*	*
	M	0	0	0	0	0	0	161	0	356	79	0	103	297	605	185	155	*	*
	B	0	0	0	-	24	0	-	0	300	209	33	145	67	172	205	0	*	*
6/27-6/28	S	0	0	0	0	0	0	12	34	852	34	301	155	70	1401	299	12	200	103
	M	0	0	0	0	0	0	142	24	417	134	324	179	66	871	200	23	65	115
	B	0	0	0	-	0	0	-	47	840	13	48	203	45	136	211	0	83	234
7/5-7/6	S	0	0	0	25	0	0	362	133	5128	162	741	7672	629	2166	537	1000	[illegible]	[illegible]
	M	12	11	11	0	17	17	316	357	4553	611	970	4742	557	2173	1040	[illegible]	[illegible]	[illegible]
	B	25	57	25	-	12	13	-	167	2684	440	175	2363	234	1707	878	211	[illegible]	[illegible]
7/10-7/11	S	54	0	0	12	0	0	106	103	14	75	325	116	222	171	113	[illegible]	204	[illegible]
	M	25	14	0	0	11	0	261	202	0	107	291	183	142	183	53	50	270	[illegible]
	B	151	45	17	-	0	0	-	118	0	80	120	91	68	172	85	16	[illegible]	[illegible]
7/17-7/18	S	53	45	52	132	0	54	661	119	48	120	717	0	342	524	53	[illegible]	[illegible]	[illegible]
	M	62	14	78	336	165	153	545	407	0	326	755	25	143	900	81	84	[illegible]	[illegible]
	B	156	31	152	-	675	187	-	149	56	158	363	25	35	508	12	0	[illegible]	[illegible]
7/24-7/25	S	11	25	36	64	78	141	110	119	0	152	169	25	11	551	39	157	[illegible]	[illegible]
	M	47	25	102	257	174	244	51	215	50	313	133	62	61	587	107	[illegible]	[illegible]	[illegible]
	B	73	11	140	-	564	365	-	61	76	67	64	117	31	744	128	23	226	151
7/31-8/1	S	25	213	52	26	398	40	0	0	0	60	0	0	0	74	0	[illegible]	[illegible]	[illegible]
	M	203	247	83	174	885	52	112	49	0	73	76	0	0	12	11	155	155	[illegible]
	B	106	217	53	-	464	141	-	12	0	64	25	0	11	51	0	13	105	13
8/7-8/8	S	206	240	138	183	171	126	13	383	14	0	61	0	46	25	0	0	0	[illegible]
	M	298	240	122	85	356	428	13	443	0	0	294	13	12	44	12	0	124	13
	B	429	230	155	-	226	574	-	37	0	13	53	0	0	27	11	0	13	0
8/14-8/15	S	0	13	0	0	0	0	0	100	0	0	35	0	12	0	24	51	55	48
	M	25	0	43	25	13	26	0	116	0	0	101	13	0	71	46	46	24	[illegible]
	B	13	61	14	-	35	0	-	83	0	13	82	0	0	62	38	0	12	41
8/28-8/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF GIZZARD SHAD YS LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		I			II			III			IV			V			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0	0	30
	M	0	0	0	0	0	0	0	0	0	0	0	0	7	7	25	7	28	35
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	7	58	0	23	52
6/6-6/7	S	0	0	0	0	0	0	0	0	0	0	0	0	38	0	0	20	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	8	0	109	0	0	3
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	17	0	10	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	13	0	135
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	74	3	563
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	22	0	0	878
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	433	*	40	360
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	483	*	8	711
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	163	*	8	333
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	232
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	16	0	95
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	61	7	5	225
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	75
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	55
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	10	10	150
7/18-7/20	S	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/22-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF GIZZARD SHAD YS LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	12	0	*	0	0	0	12	0	0	41	0	0	25	50	0
	M	0	0	0	0	23	*	0	0	0	22	0	0	13	13	0	48	233	36
	B	0	0	0	-	23	0	-	0	0	0	12	0	0	41	0	0	352	24
6/5-6/6	S	0	0	0	0	0	0	12	0	0	21	0	0	101	0	0	24	24	12
	M	0	0	0	0	0	12	21	0	0	12	0	0	100	11	0	23	24	13
	B	0	0	0	-	0	0	-	0	0	0	0	0	40	13	0	0	49	201
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	37	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	125	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	62	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	12	0	0	0	1361	740	344	607	*	*
	M	0	0	0	0	0	0	235	0	70	168	0	11	2894	781	516	717	*	*
	B	0	0	0	-	0	0	-	0	46	185	0	36	1962	398	1143	605	*	*
6/27-6/28	S	0	0	0	0	0	0	25	0	101	0	12	96	47	35	634	35	423	1523
	M	0	0	0	0	0	0	83	0	130	24	0	112	11	0	1135	151	255	1110
	B	0	0	0	-	0	0	-	0	85	0	0	251	45	11	665	241	430	3131
7/5-7/6	S	0	0	0	0	0	0	22	0	45	0	0	49	12	0	0	32	67	33
	M	0	0	0	0	0	0	37	0	131	58	13	58	73	13	35	0	60	103
	B	0	0	0	-	0	0	-	0	46	12	13	243	0	41	24	0	13	15
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	59	46
	M	0	0	0	0	0	0	0	0	0	12	0	13	13	0	0	0	14	128
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	53
7/17-7/18	S	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	12	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/28-8/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
* = [illegible] INACCESSIBLE, - = NO FISHING EFFORT EXPENDED.

DENSITY OF GIZZARD SHAD NYS LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	422	0	108	1144
	M	0	0	0	9	0	0	0	0	0	7	0	0	7	0	103	37	57	568
	B	0	0	0	0	0	0	-	0	-	-	0	7	-	0	125	7	24	136
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1172	405	233	33
	M	0	0	0	8	0	0	0	0	0	0	0	0	68	0	898	0	144	25
	B	0	0	0	8	0	0	-	0	-	-	0	7	-	0	415	16	6	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86	18	17	0
	M	0	0	0	0	0	0	0	0	0	7	0	0	0	59	111	81	34	35
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	52	74	0	15	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102	*	158	22
	M	0	0	0	0	0	0	0	0	0	0	0	0	443	0	188	*	107	55
	B	0	0	0	5	0	0	-	0	-	-	0	0	-	9	54	*	0	87
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	21	0	91	63	0	61
	M	0	0	0	0	0	0	0	0	0	0	0	0	194	35	123	39	104	34
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	9	97	29	140	47
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	434	0	127	760	178	158
	M	0	0	0	0	0	0	0	0	0	0	0	0	753	0	10	479	221	114
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	17	11	148	45	95
7/18-7/20	S	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	64	0	0
	M	0	0	0	7	0	0	0	0	8	0	0	0	0	0	0	24	0	25
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/23-8/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF GIZZARD SHAD NYS LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		II			IV			V			VII			VIII			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	11	0	0	13	0	0	0	15	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	14	26	14	36
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	12	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	37	130	0	13	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	44	176	38	0	*	*
	B	0	0	0	-	0	0	-	0	12	0	0	24	27	12	165	42	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	12	24	0	0	0	0	0	13
	M	11	0	0	0	0	0	0	0	0	0	12	22	0	0	0	12	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	13
7/5-7/6	S	0	0	0	0	0	12	11	167	4068	0	621	441	230	260	163	1466	411	56
	M	0	0	0	12	0	0	57	255	1083	12	353	46	242	285	151	1687	1659	117
	B	0	0	0	-	0	0	-	25	475	24	13	86	250	68	0	55	352	22
7/10-7/11	S	0	0	0	0	0	0	11	0	123	13	37	39	37	0	13	26	0	13
	M	0	0	0	0	0	0	24	12	64	0	13	26	13	0	0	0	14	26
	B	0	0	0	-	0	0	-	0	14	0	0	0	0	0	0	0	0	24
7/17-7/18	S	0	0	0	0	0	0	139	12	0	93	12	0	62	158	0	323	25	62
	M	0	0	0	0	0	0	157	48	50	58	0	0	155	0	0	256	55	100
	B	0	0	0	-	0	0	-	0	0	12	0	12	0	0	0	0	14	0
7/24-7/25	S	0	0	0	0	0	0	123	36	25	12	12	13	23	13	0	160	25	0
	M	0	0	0	0	0	0	65	24	0	12	0	25	35	28	0	123	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	15	13	11	0	0
7/31-8/1	S	0	0	0	0	0	0	51	12	50	12	49	24	175	45	11	215	[illegible]	[illegible]
	M	0	0	0	0	0	0	37	24	0	0	0	12	51	12	11	71	12	27
	B	0	0	0	-	0	0	-	0	0	0	0	0	11	0	0	0	0	13
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	11	13	0	11	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	13	0	0	23	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/28-8/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE ASSIGNED   * = NO FISHING EFFORT EXPENDED

DENSITY OF YELLOW PERCH YS LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	18	0	24	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	47	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	143	0	15	25
	M	0	0	0	0	0	0	0	0	0	0	0	0	56	8	530	12	8	244
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	35	559	38	45	558
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	3
	B	8	0	0	0	0	0	-	0	-	-	0	0	-	8	23	13	38	14
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0	0	0	0
	M	7	8	0	0	7	7	0	0	0	0	0	0	0	0	0	0	15	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	20	0	0	19	0	0	0	0	0	0	0
	M	15	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	5	0	0	8	12	10	-	0	-	-	0	7	-	0	0	0	0	0
6/6-6/8	S	24	0	0	21	0	0	0	0	0	92	0	20	0	0	0	0	0	0
	M	37	10	10	67	27	5	23	8	0	37	7	0	0	0	0	0	0	0
	B	23	0	10	78	57	38	-	8	-	-	113	47	-	0	0	0	0	0
6/13-6/15	S	21	0	0	0	0	0	0	0	0	37	0	0	0	0	0	0	0	0
	M	8	0	0	23	22	0	7	0	0	14	0	0	0	0	0	0	0	0
	B	25	0	0	0	29	31	-	7	-	-	15	0	-	0	0	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	*	0	0
	B	0	0	0	15	8	0	-	0	-	-	0	8	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0
	B	0	0	0	0	7	0	-	5	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0
	B	0	0	0	10	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	8	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	15	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/20-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF YELLOW PERCH YS LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		II			IV			V			VII			VIII			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	101	0	34	12	0	0	64	0	12	0	0	0
	M	0	0	0	0	0	0	62	0	173	23	12	35	139	0	13	67	24	13
	B	0	0	0	-	0	0	-	22	343	99	12	12	135	25	0	27	14	0
5/24-5/25	S	0	0	0	0	0	0	0	0	21	0	11	0	0	12	12	0	35	11
	M	0	0	0	0	0	0	0	10	61	0	11	53	12	11	24	22	125	34
	B	0	0	0	-	0	0	-	51	425	0	0	125	12	11	179	51	137	105
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	14	0	0	0	0	0
	M	12	0	0	0	0	*	12	0	0	0	0	0	0	0	0	0	13	0
	B	0	0	0	-	0	0	-	0	0	24	0	0	13	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	12	0	0	0	0	11	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	11	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	*	*
	B	0	11	0	-	0	0	-	0	0	0	0	12	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	12	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	13	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/23-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF YELLOW PERCH NYS LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		I			II			III			IV			V			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	39	26	632	80	0	75
	M	0	0	0	0	0	0	0	0	0	0	0	0	48	46	533	0	53	218
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	62	1172	36	138	438
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	32	16	88	17	30	366
	M	0	0	0	0	0	0	0	0	0	0	0	0	20	32	127	61	87	221
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	80	225	35	113	165
5/23-5/25	S	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	114
	M	0	0	0	0	0	0	0	0	0	0	0	0	157	0	0	53	0	43
	B	0	0	0	0	0	0	-	0	-	-	10	0	-	0	27	35	45	13
5/31-6/2	S	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	61
	M	8	0	0	5	0	0	0	6	7	15	0	0	0	22	22	7	21	8
	B	0	11	0	0	5	10	-	0	-	-	8	7	-	7	7	0	24	0
6/6-6/8	S	0	0	0	21	0	0	0	0	0	0	0	20	36	51	0	41	40	33
	M	0	10	0	0	0	0	0	0	0	0	14	0	18	24	0	0	15	83
	B	12	0	0	17	5	5	-	0	-	-	20	13	-	0	0	0	0	5
6/13-6/15	S	21	0	24	0	15	0	0	0	0	0	0	0	20	0	0	18	0	0
	M	8	0	0	8	14	0	7	0	7	21	7	7	0	8	0	0	14	0
	B	61	0	41	15	7	24	-	0	-	-	7	28	-	15	0	0	0	0
6/20-6/22	S	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	8	0	8	0	0	0	0	0	0	0	0	0	0	16	*	0	0
	B	11	0	0	5	0	0	-	0	-	-	8	0	-	5	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	22	0	0	0	0
	M	0	0	0	0	0	8	0	0	5	0	16	0	0	0	0	0	0	0
	B	0	0	0	0	14	0	-	0	-	-	0	0	-	0	0	7	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	22	0	7	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	8	0	0	0	0
7/24-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/25-8/26	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF YELLOW PERCH AYS LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	12	0	25	13	14	27	0
5/24-5/25	S	0	0	0	0	0	0	0	42	43	0	34	0	0	49	364	50	70	156
	M	0	0	0	0	0	0	0	90	305	35	145	211	47	222	392	56	311	333
	B	0	0	0	-	0	0	-	345	808	76	98	659	72	183	533	63	265	419
5/30-5/31	S	0	0	0	12	0	*	0	0	50	0	0	0	41	14	0	25	0	12
	M	0	0	0	0	0	*	0	0	78	0	0	0	39	0	26	12	52	0
	B	0	0	0	-	0	0	-	0	73	17	23	12	27	41	14	13	16	12
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	71	0	0
	M	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	47	0	0	0	27	26	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	11	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	23	0	0	0	0	0	0	0	0	12	0
	M	0	53	0	0	0	0	0	0	0	0	0	0	11	12	0	0	13	0
	B	0	0	0	-	0	0	-	12	0	0	12	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	13	-	0	0	0	0	0	0	0	0	0	13	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	12	0	0	0	0	0	0	13	0	0	0
	B	0	15	0	-	0	0	-	0	0	0	0	0	0	0	13	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	13
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	13	0	0	12	0	0	0	0	0	11	0	0
	B	0	0	0	-	0	0	-	0	0	13	0	0	0	0	0	0	12	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	12	0	0	12	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/21-8/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
* [illegible] SAM[illegible] RESO[illegible] NO [illegible]ING [illegible]ORT [illegible] DEPTH

DENSITY OF LOGPERCH YS LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	8	0	18
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	15	20
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	41
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	57	112
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	17
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	23	54	14
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	8	35	207	11
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	7	0	0	0	0	0	0	11	0	0	0	0	80	13
	B	3	8	0	0	8	0	-	7	-	-	0	0	-	0	0	47	37	3
5/31-6/2	S	26	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0
	M	15	20	0	28	43	18	29	0	7	7	16	39	45	0	22	30	3	8
	B	163	228	33	115	88	41	-	194	-	-	8	59	-	0	7	7	18	8
6/6-6/8	S	0	49	50	103	45	22	18	0	22	0	0	20	0	34	0	204	253	6
	M	148	188	85	58	124	43	140	52	16	329	65	37	0	24	0	0	142	3
	B	58	121	181	168	385	155	-	188	-	-	174	180	-	0	0	8	30	5
6/13-6/15	S	0	22	0	20	15	0	0	0	0	0	0	0	0	0	0	0	18	0
	M	0	17	8	0	22	0	15	8	7	35	15	7	8	0	0	20	14	8
	B	9	25	33	135	37	54	-	288	-	-	30	28	-	22	7	0	88	13
6/20-6/22	S	0	0	0	0	0	21	0	22	0	0	0	0	0	0	0	*	0	22
	M	15	0	0	0	8	33	0	8	0	7	0	16	0	0	0	*	48	18
	B	8	0	0	28	8	88	-	57	-	-	0	0	-	18	0	*	54	80
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	15	0	5	0	5	44	0	8	0	0	0	18	8	13
	B	0	0	8	15	0	7	-	0	-	-	8	8	-	18	0	21	84	5
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	10	10	17	0	8	128	33	68	0	0	0	0	11	0
	B	0	0	0	50	0	55	-	83	-	-	31	26	-	8	0	0	25	25
7/11-7/22	S	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0
	M	0	18	0	0	0	0	10	0	0	33	17	0	0	0	0	0	0	0
	B	0	0	7	8	7	8	-	31	-	-	16	17	-	56	0	0	5	0
7/25-7/27	S	0	0	21	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0
	M	0	0	5	0	0	0	0	0	0	25	0	0	0	8	0	0	8	0
	B	17	0	0	5	18	8	-	0	-	-	0	0	-	0	0	0	5	11
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	8	40	-	0	-	-	0	0	-	0	0	0	0	0
8/20-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	[illegible]	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF LOGPERCH YS LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	23	0	0	73	0	13	241	45
	M	0	0	0	0	0	0	0	0	0	0	45	0	0	178	58	75	855	145
	B	0	0	0	-	0	0	-	0	0	33	54	0	119	114	232	253	1009	500
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	14	0	0	12	42
	M	0	0	0	0	0	*	0	0	0	0	12	11	64	27	26	24	51	43
	B	0	0	0	-	0	0	-	0	0	24	0	25	27	14	85	65	408	325
6/5-6/6	S	0	12	0	0	0	0	0	11	0	0	0	0	0	0	0	12	36	0
	M	17	22	0	0	0	12	0	0	0	0	0	0	0	0	13	55	0	40
	B	53	65	0	-	12	41	-	0	0	0	0	0	27	13	27	14	223	40
6/12-6/13	S	17	13	0	0	0	12	0	0	0	12	12	0	*	*	*	33	*	*
	M	61	47	47	0	37	45	22	56	37	79	90	11	*	*	*	101	*	*
	B	150	122	425	-	0	155	-	162	13	96	51	39	*	*	*	27	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	25	*	*
	M	0	0	32	0	13	0	12	0	35	0	12	11	11	0	25	52	*	*
	B	41	27	244	-	0	13	-	62	58	12	44	85	53	50	38	70	*	*
6/27-6/28	S	0	0	11	0	0	0	0	23	0	0	12	0	12	35	0	0	12	0
	M	0	0	12	12	0	0	12	71	13	12	0	0	0	141	0	12	36	0
	B	11	12	165	-	0	25	-	24	0	13	12	0	11	11	11	13	74	37
7/5-7/6	S	0	0	0	0	0	12	0	0	12	0	0	0	0	31	0	0	0	11
	M	12	0	11	0	0	0	12	0	0	0	0	0	0	13	0	0	0	0
	B	302	22	13	-	12	0	-	0	0	0	0	0	0	14	0	0	13	35
7/10-7/11	S	0	0	0	0	0	0	11	0	0	0	12	0	0	0	0	0	14	40
	M	25	0	0	0	0	0	0	0	0	0	0	0	0	26	0	38	23	0
	B	168	0	51	-	24	0	-	0	14	0	13	0	14	14	0	0	48	83
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	13	76	-	12	14	-	0	0	0	0	0	0	38	25	0	0	0
7/24-7/25	S	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	12	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	20
	B	166	25	69	-	0	14	-	12	0	0	0	0	0	0	0	0	24	61
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0
	B	0	0	41	-	0	0	-	0	0	0	0	0	0	0	0	0	41	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0
	M	39	0	0	0	0	13	0	0	0	13	0	0	0	0	0	0	0	0
	B	51	14	43	-	27	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/28-8/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF LOGPERCH NYS LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		I			II			III			IV			V			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	7
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	16	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	15	14	44	7	21	0
	B	0	0	0	0	0	20	-	0	-	-	0	0	-	66	25	0	33	0
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	34	61	82	198	18
	M	0	0	0	8	0	0	0	0	0	0	0	0	8	32	31	30	63	7
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	8	8	20	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	18	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	7
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	22	0	0	30	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	25	41	*	15	8
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	35	8	*	0	10
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	9	26	5	8	4	5
	B	0	0	0	8	0	0	-	5	-	-	0	0	-	0	17	0	15	5
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	8	30	0	0	30
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	8	0	0	0	35
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	32	0	8	24	0	33
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	16	7	17	0	41
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	63	0	6	8	13	4
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	16	0	0	0	11
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/22-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF LOGPERCH AYS. LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	13	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	10	0	0	17	0	*	*	*	17	*	*
	M	0	0	0	0	0	0	22	12	12	34	90	0	*	*	*	25	*	*
	B	0	0	0	-	0	0	-	35	13	24	26	0	*	*	*	14	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	12	0	0	0	11	0	0	11	*	*
	B	0	0	0	-	0	0	-	0	35	12	11	24	0	25	38	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	35	0	0	0	0
	M	0	0	0	0	0	0	0	12	117	24	23	11	23	24	0	0	0	0
	B	0	0	0	-	0	0	-	35	61	0	12	36	11	23	0	0	83	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	23	0	0	25	23	0	25	0	0	24	11
	B	0	0	0	-	0	0	-	12	0	0	13	14	0	0	0	0	13	0
7/10-7/11	S	0	0	0	0	0	0	0	13	0	0	0	13	0	0	0	0	14	0
	M	0	0	0	0	0	0	0	17	26	0	0	0	13	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	12	13	0	13	0
	M	0	0	0	0	0	0	0	0	12	0	25	0	0	0	0	38	25	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	12	51	0	13	14	12
7/24-7/25	S	0	0	0	0	0	0	0	12	0	0	35	0	0	13	0	0	0	0
	M	0	0	0	0	0	0	0	24	0	36	12	25	0	0	12	11	13	0
	B	0	0	0	-	0	0	-	24	12	0	0	0	22	15	25	0	37	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	24	12
	M	0	0	0	0	0	0	0	0	0	24	0	0	0	12	11	24	37	23
	B	0	0	0	-	0	0	-	0	0	26	0	0	0	0	0	13	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	12
	M	0	0	0	0	0	0	0	12	0	0	0	0	0	15	0	0	0	13
	B	0	0	0	-	0	0	-	12	0	0	0	0	0	14	0	0	0	14
[illegible]-?/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
[illegible]-?/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF EMERALD SHINER YS LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	8
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	7	0	0	0
6/6-6/8	S	0	0	0	21	0	0	0	0	0	0	0	0	0	0	61	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	10	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	262	0	0	0
	B	0	0	0	0	0	0	-	7	-	-	0	0	-	0	568	0	0	37
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	24	25
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	173	142	68
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	17	0
	B	0	0	0	0	16	0	-	0	-	-	0	0	-	0	0	0	27	71
[illegible]	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/22-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF EMERALD SHINER YS LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		II			IV			V			VII			VIII			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	12	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	12	0	-	0	0	0	0	0	0	0	0	0	0	13
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	12	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	13
	M	0	0	0	0	0	0	0	0	13	0	12	0	0	0	25	0	0	35
	B	0	0	0	-	0	0	-	0	24	0	0	36	11	11	55	13	25	61
7/5-7/6	S	0	0	0	0	0	0	44	0	195	0	0	86	0	91	12	0	164	0
	M	0	0	0	0	0	0	146	67	36	115	101	12	133	191	12	246	262	115
	B	0	0	0	-	0	0	-	373	126	1078	375	129	57	423	102	274	317	300
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	27
	M	0	0	0	0	0	0	12	0	0	12	0	0	0	0	13	0	14	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	27	0	0	0	0	21
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
	M	0	15	0	0	0	0	0	0	0	12	0	0	24	24	0	0	0	17
	B	0	0	30	-	0	0	-	11	0	110	12	0	12	64	0	0	57	12
7/22-7/23	S	0	0	0	0	0	0	0	0	0	23	[illegible]	0	0	0	0	11	0	0
	M	0	0	0	0	0	0	0	0	13	24	0	0	0	0	0	0	13	0
	B	13	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	24	0
7/31-8/1	S	0	0	13	0	0	0	0	0	0	0	0	0	0	22	0	0	32	12
	M	0	0	89	0	0	26	0	0	0	61	0	0	387	67	23	24	33	0
	B	0	0	145	-	13	0	-	12	0	600	113	0	342	398	87	13	105	0
8/7-8/8	S	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/28-8/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF EMERALD SHINER AVE LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	[illegible]
	M	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	202	143	158	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	35	113	157
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	55	8	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	8	24	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	66	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	20	22
	M	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	84	0	0	0	20	0
	M	0	0	0	0	0	0	0	9	0	0	0	0	0	35	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	9	0	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/11-7/13	S	0	0	0	0	0	0	0	0	0	0	113	0	0	41	0	0	0	204
	M	0	0	0	37	35	0	0	0	16	0	0	0	0	86	0	40	18	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	8	0	0
7/25-7/27	S	0	19	0	103	0	0	0	0	21	0	0	21	21	62	0	318	44	101
	M	0	0	0	72	0	0	8	0	0	0	0	0	103	58	17	55	34	18
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	8	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	21	93	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	8	0	8	15	18	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/22-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	11	-	0	-	-	0	0	-	0	0	0	0	0

[illegible] COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
[illegible] NO FISHING EFFORT EXPENDED

[illegible] EMERALD SHINER [illegible] LARVAE INC. PER 1000 CU. M. IN 1978 BY TRANSECT, STATION, [illegible]

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	11	0	0	0	0	0	0	0	12
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	12	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	24	0	0	58	0	12	0	13	0	*	*
	M	0	0	0	0	0	0	0	47	0	0	0	0	11	25	0	0	*	*
	B	0	0	0	-	0	0	-	17	0	0	11	0	0	12	0	0	*	*
6/26-6/28	S	0	0	0	0	0	0	12	11	11	0	12	0	12	0	0	12	23	25
	M	0	0	0	0	0	0	0	12	0	0	12	11	0	12	0	0	0	35
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	22	55	158	58	414	37	121	764	362	1781	1503	1555
	M	0	0	0	0	0	0	61	80	131	23	126	58	182	268	140	328	750	513
	B	0	0	0	-	0	0	-	25	57	73	113	72	68	218	11	25	365	12
7/10-7/11	S	0	0	0	0	0	0	32	0	41	13	12	26	37	37	13	57	23	66
	M	0	0	0	0	0	0	47	0	0	24	0	26	26	0	0	13	0	51
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	14
7/17-7/18	S	13	0	0	0	0	0	46	0	60	93	96	89	136	97	13	154	142	173
	M	0	0	0	0	0	0	36	24	25	58	74	13	143	36	24	64	55	63
	B	0	0	0	-	0	0	-	0	23	24	48	0	23	0	0	0	14	0
7/24-7/25	S	0	0	0	0	0	0	74	511	200	163	83	974	80	1088	423	448	62	255
	M	0	0	0	0	0	0	13	251	25	36	128	1021	12	363	95	140	0	288
	B	0	0	0	-	0	0	-	61	24	40	48	117	0	44	25	48	0	13
7/31-8/1	S	0	0	0	13	45	0	76	12	75	72	183	84	33	0	0	187	138	0
	M	13	0	0	0	55	0	0	0	12	98	25	12	64	37	11	24	24	12
	B	12	0	0	-	0	0	-	0	0	13	13	0	0	0	0	0	0	12
8/7-8/8	S	0	0	0	26	13	224	25	0	14	12	48	12	34	13	0	0	25	12
	M	13	13	0	0	13	51	0	0	13	0	0	13	0	15	0	12	0	13
	B	25	0	0	-	0	15	-	0	0	0	0	0	0	0	12	0	0	0
8/14-8/15	S	12	0	61	40	0	0	0	0	0	0	0	0	0	24	0	0	12	0
	M	12	0	0	0	0	13	0	0	0	12	0	0	0	0	0	12	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/21-[illegible]	S	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	13	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

TRANSECT (ROMAN NUMERALS) AND STATION.

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF CARP YE LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/16-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0	0	42	17
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	121	45
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	72	25	7
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	15	11	41
	M	0	0	0	0	0	0	15	19	7	0	0	0	0	0	7	55	21	71
	B	0	0	0	0	0	0	-	32	-	-	0	0	-	0	0	0	65	48
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	1	0
	B	0	0	0	0	0	0	-	8	-	-	0	0	-	0	8	0	4	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	7	7
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	26	15
	M	0	0	0	0	0	0	14	0	0	0	0	8	0	17	0	4	64	8
	B	0	0	0	0	0	12	-	0	-	-	0	0	-	0	0	*	31	23
6/27-6/29	S	0	0	0	0	0	0	0	22	0	0	0	0	21	0	23	21	40	0
	M	0	0	0	0	0	8	0	9	0	0	0	0	0	0	26	8	33	34
	B	0	0	0	0	0	0	-	5	-	-	0	0	-	0	5	42	33	17
7/5-7/7	S	0	0	0	0	0	0	0	0	0	60	0	0	0	0	0	0	0	20
	M	0	0	0	0	0	0	9	17	0	21	0	0	0	0	0	0	5	15
	B	0	0	0	20	0	0	-	5	-	-	20	9	-	0	0	10	0	17
7/18-7/20	S	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	10	7	0	0	0	0	0	8	0	0	0	0
	B	0	0	0	0	0	0	-	62	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
[illegible]-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
[illegible]	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = SAMPLE IMPOSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF CARP YOLK-SAC LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	12	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	12	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	13
6/12-6/13	S	0	0	0	0	0	0	0	0	38	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	73	0	0	23	*	*	*	13	*	*
	B	0	0	0	-	0	0	-	0	116	0	0	65	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	*	*
	M	0	0	0	0	0	0	0	12	0	0	0	0	22	0	0	11	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	13	0	0	42	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	23	0
	B	0	0	0	-	0	0	-	0	11	24	0	0	0	0	0	0	28	15
7/10-7/11	S	0	0	0	0	0	0	53	0	14	0	0	78	0	0	38	43	14	27
	M	0	0	0	0	0	0	36	0	64	0	0	57	0	0	13	13	54	0
	B	0	0	0	-	0	0	-	0	129	0	0	107	27	14	78	16	30	41
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0
	B	0	0	0	-	0	14	-	0	0	0	12	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	13	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	14	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/28-8/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF CARP AND LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	14	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
[illegible]	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF CARP [illegible] LARVAE INC. PER 1000 CU. M. IN 1976 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		II			IV			V			VII			VIII			XI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	14	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/24-8/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
[illegible] * = [illegible] EXCEPT [illegible]

DENSITY OF WHITE BASS YE LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		I			II			III			IV			V			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	D	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/19-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	D	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	35	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	225	80	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	15	25	0	0
[illegible]-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	25	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	115
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	244
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	441
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	201
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	15	31
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	13
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	20
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	7	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	20	0
[illegible]	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/23-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (D).
- = NO SAMPLE ATTEMPTED   * = NO FISHING EFFORT EXPENDED

DENSITY OF WHITE BASS YS LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	10	0	0	0	0	0	0	24	0	0	0
	B	0	0	0	-	0	0	-	10	0	0	0	11	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	27	0	0	49	0	47
	M	0	0	0	0	0	*	0	0	0	11	0	0	26	0	0	64	35	43
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	52	14	133
6/5-6/6	S	0	0	0	0	0	0	23	0	0	0	0	0	0	0	0	12	48	112
	M	0	0	0	0	0	0	11	12	0	35	0	0	0	0	13	27	12	43
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	12	77
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	12	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	13	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	50	33	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	55	13	13	13	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	40	25	13	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	23	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	22	0	0	33
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	47	23	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	14	0	12	0	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	12	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
[illegible]	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-6 METERS (M), AND 5-8 METERS (B).
- = [illegible] NOT SAMPLED. * = NO FISHING EFFORT EXPENDED

DENSITY OF WHITE BASS AYS LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
		TRANSECT (ROMAN NUMERALS) AND STATION																	
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	15
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0	20	14
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55	0	*	22
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	17	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/22-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF DEEPWATER SCULPIN LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		I			II			III			IV			V			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	8	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	21	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0
	B	17	0	0	8	16	0	-	7	-	-	0	47	-	0	0	0	24	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	3	0	7
	B	0	0	0	7	0	0	-	0	-	-	0	0	-	6	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	13	0	-	7	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	15	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/22-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF DEEPWATER SCULPIN LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	25	0	0	14	0	*	*	*	*	*	*	*	*	*
	M	34	12	0	0	0	13	0	0	0	*	*	*	*	*	*	*	*	*
	B	14	25	0	-	25	53	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	75
	M	12	12	0	0	0	27	0	0	0	12	0	0	0	17	13	0	13	0
	B	0	0	0	-	0	0	-	0	0	0	11	0	0	13	11	0	51	0
5/15-5/16	S	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0
	M	11	0	0	0	11	0	0	0	0	0	12	0	0	0	0	0	13	0
	B	0	0	0	-	0	15	-	0	0	11	24	0	0	13	25	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	13	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/21-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
[illegible]	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
[illegible]	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
[illegible]	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

[illegible] TAKEN AT DEPTHS OF 1 METER (S), 1-6 METERS (M), AND 5-6 METERS (B).
[illegible] NO FISHING EFFORT EXPENDED

DENSITY OF WALLEYE LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/19-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	15
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	8	0	16	48
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/20-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF WALLEYE LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		II			IV			V			VII			VIII			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	13	0	14	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0
	B	0	0	0	-	0	0	-	0	0	0	11	0	0	11	12	13	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	15	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/21-8/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF JOHNNY DARTER LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		I			II			III			IV			V			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	15	0	0	0	0
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	25	0	0	26
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	7	7	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	5	0	0	-	9	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	18	0	7	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	18	[illegible]	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/22-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF JOHNNY DARTER LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	XI 1	XI 2	XI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	11	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	53	13	12	0	26	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	*	*
	B	0	0	0	-	0	0	-	0	0	12	0	0	0	0	13	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	13
	B	0	0	0	-	0	0	-	0	12	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	13	0	0	14
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	13	0	-	0	0	-	0	23	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	13	0	0	0	0	0	0
7/31-8/1	S	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	13	0	0	-	0	0	-	0	12	0	0	0	0	0	0	0	0	0
8/21-8/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

[illegible] WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF UNIDENTIFIED DARTER LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		I			II			III			IV			V			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/6-6/8	S	0	0	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	8	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	7	0	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	7	0	-	9	-	-	0	0	-	0	0	7	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	7	8	0	0	0	0	0	0	0	0	0	0	0	0	8	0	50
	B	0	0	0	17	0	0	-	0	-	-	0	0	-	0	0	0	8	8
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	8	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	8
	B	0	10	0	0	8	0	-	0	-	-	0	0	-	8	8	0	0	31
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	13	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	24	20	17
[illegible]	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	8	10

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

[illegible]-STRIPED DARTER LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	II			IV			V			VII			VIII			VI		
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	12	0	0	27	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	26	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	11	0	0	0	0	0	0	0	0	12
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0
	B	12	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	19	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	14	17
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	12	0	0	0
7/31-8/1	S	12	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0
	M	0	0	13	0	0	0	0	45	0	0	0	0	0	0	0	0	0	0
	B	17	0	14	-	0	0	-	0	0	0	0	13	0	0	0	0	0	13
8/7-8/8	S	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	13	0	0	0	0	0	0	0	0	15	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	81	55	-	0	0	-	0	0	0	0	0	0	12	0	0	0	0
8/28-8/29	S	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	13	0	14	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF UNIDENTIFIED SEAFISH LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	7	0	0	0	0
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	20	0	0
	M	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	7	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	22
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	22	0	0	0	0	0	0	20	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	5	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	8	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0
	M	0	0	0	0	0	0	0	7	0	0	0	0	0	24	0	0	14	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	16	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	21	21	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	8	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	8	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/20-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF UNIDENTIFIED SCUFISH LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	*	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	12	0	0	11	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	12	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	14	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	[illegible]	0
	M	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0
	B	12	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/21-8/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

[illegible] COLLECTIONS AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
[illegible] NO FISHING EFFORT EXPENDED

DENSITY OF UNIDENTIFIED MINNOW LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		I			II			III			IV			V			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	D	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	D	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	7	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	85	17	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	35	0	275	15	50	82
	M	0	0	0	0	0	0	0	0	7	15	0	0	37	0	271	0	14	155
	D	0	0	0	0	0	0	-	0	-	-	8	0	-	0	58	25	24	28
6/6-6/8	S	48	0	0	21	0	0	0	0	0	0	0	61	19	34	81	20	554	111
	M	46	0	10	17	5	5	0	0	0	22	0	29	32	0	367	0	8	27
	D	46	22	30	25	35	15	-	0	-	-	13	0	-	0	152	0	45	76
6/13-6/15	S	21	0	0	0	0	0	0	22	18	0	0	0	0	37	224	108	37	438
	M	0	0	0	8	0	0	0	8	7	0	0	0	0	8	218	114	20	285
	D	0	8	0	23	0	8	-	7	-	-	0	0	-	30	225	7	22	205
6/20-6/22	S	0	0	0	0	0	0	0	0	0	22	0	0	0	52	0	*	20	0
	M	0	0	0	0	0	0	7	0	0	0	0	0	0	8	8	*	65	8
	D	0	0	0	0	0	0	-	18	-	-	0	0	-	26	8	*	23	8
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	42	22	137	0	0	40
	M	0	0	0	0	0	0	0	0	0	0	0	0	46	53	61	71	33	28
	D	8	0	8	0	0	0	-	0	-	-	0	0	-	18	95	107	58	28
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	57	307	153	147	191	535
	M	9	0	0	0	0	0	0	0	0	0	0	11	15	210	0	70	264	244
	D	9	0	0	10	0	0	-	0	-	-	0	0	-	58	0	30	40	43
7/18-7/20	S	0	115	11	289	88	65	0	0	0	0	0	23	277	20	105	138	247	348
	M	0	7	23	8	8	63	10	14	0	0	8	0	32	78	73	24	171	150
	D	0	8	7	0	22	8	-	0	-	-	8	0	-	16	74	0	35	18
7/25-7/27	S	0	38	42	0	0	0	0	0	0	0	0	0	0	21	83	0	87	0
	M	0	8	0	0	0	0	0	0	8	0	0	8	0	0	0	8	0	33
	D	8	0	9	0	0	0	-	0	-	-	0	8	-	0	0	8	45	0
8/8-8/10	S	21	0	24	153	337	41	0	0	22	0	21	0	23	0	0	0	0	0
	M	33	8	10	220	115	25	10	8	0	0	0	0	0	8	0	8	0	0
	D	0	0	0	82	8	8	-	0	-	-	0	0	-	0	0	0	10	0
8/20-8/24	S	0	0	0	0	0	0	0	0	0	8	0	0	19	0	0	20	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (D).
- = [illegible] * = NO FISHING EFFORT EXPENDED

DENSITY OF UNIDENTIFIED MINNOW LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		II			IV			V			VII			VIII			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	12	0	-	0	0	0	0	0	0	0	0	0	25	0
6/12-6/13	S	0	0	0	0	0	0	0	10	13	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	12	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	13	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	38	0	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	12	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	13	0	0	0	0	0	0	11	0	13	0	0	0
	B	0	0	0	-	0	0	-	0	0	13	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	11	73	128	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	11	0
	B	0	0	0	-	0	0	-	0	0	12	0	0	0	0	0	0	0	21
7/10-7/11	S	12	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	28
	B	0	0	0	-	0	0	-	0	0	0	0	0	14	0	0	0	0	14
7/17-7/18	S	0	0	0	0	0	0	0	0	0	209	0	0	86	0	0	0	0	0
	M	0	0	11	0	0	0	24	0	0	769	0	0	262	24	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	1905	0	12	454	0	0	0	0	12
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	0	[illegible]
	M	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	11	0	10
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	13	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	100	0	0	0	0	11	0	0	0	0
	M	0	0	0	0	14	0	0	0	12	61	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	217	30	0	11	13	0	0	0	0
[illegible]	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
[illegible]	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	25	13	0	0	12	0	0	0	0	0	0	0	0	0
	B	[illegible]	0	0	-	0	0	-	0	0	0	0	0	0	0	0	[illegible]	[illegible]	[illegible]
[illegible]	S	[illegible]	[illegible]	0	0	0	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	M	[illegible]	0	0	0	0	0	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	0	0	-	0	0	-	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

DENSITY OF SPOTTAIL SHINER LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		II			IV			V			VII			VIII			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	14	14	13	12	12	12
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	46	0	24
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	77	0	[illegible]
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	27	0	0	27
6/12-6/13	S	0	0	0	0	0	0	0	0	13	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	24	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	12	0	0	0	12	0	0	0	0	0	*	*
	B	0	0	0	-	0	0	-	12	23	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	12	36	0	0	0	23	0	0
	M	0	0	0	0	0	0	0	0	0	0	35	11	0	0	0	0	0	13
	B	0	0	0	-	0	12	-	0	12	0	0	0	11	0	0	0	12	12
7/5-7/6	S	0	0	0	0	0	0	11	11	24	0	0	25	0	0	0	11	47	11
	M	0	0	0	0	0	0	12	0	0	0	13	0	0	0	23	0	11	22
	B	0	0	0	-	0	0	-	0	11	0	0	14	0	0	0	0	0	0
7/10-7/11	S	0	0	0	0	0	0	53	0	68	0	0	0	12	0	0	14	14	0
	M	0	0	0	0	0	0	36	0	0	0	0	13	0	0	13	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	12	12	0	0	0	0	12	0	0	26	0	0
	M	0	0	0	0	0	0	0	12	0	35	0	13	12	24	0	0	[illegible]	[illegible]
	B	0	0	0	-	0	0	-	23	12	0	24	0	0	13	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	13	0	0	0	12	13	11	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	12	23	0	0	0	0	22	0	0
	B	0	0	0	-	0	0	-	0	12	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	13	0	0	14	0	0	0	0	24	37	0	0	22	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
	B	0	13	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	12
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	13	0	0	-	0	0	-	12	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/28-8/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

DENSITY OF WHITE SUCKER LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	7	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	7	0
5/31-6/2	S	0	0	0	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0
	B	9	0	0	0	0	0	-	8	-	-	0	0	-	0	0	0	0	0
6/6-6/8	S	31	0	25	21	23	22	0	0	0	0	17	20	0	0	0	0	0	0
	M	72	15	10	13	9	35	0	8	0	22	7	0	0	0	0	0	0	0
	B	104	11	0	34	27	15	-	0	-	-	13	7	-	0	0	0	0	0
6/13-6/15	S	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	2	7	7	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	8	8	8	0	8	-	7	-	-	7	7	-	0	0	0	0	0
6/20-6/22	S	0	8	0	0	0	0	0	0	0	0	0	20	0	0	0	*	0	0
	M	0	8	0	17	15	8	14	0	0	0	0	8	0	0	0	*	0	0
	B	0	8	14	9	8	9	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	21	0	240	65	0	0	0	0	0	0	0	21	0	0
	M	0	8	0	0	0	8	26	17	0	0	0	0	0	0	0	0	0	0
	B	8	0	16	8	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	40	22	0	172	22	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	7	20	9	19	29	0	17	190	8	0	11	0	0	0	20	0	0	0
	B	0	0	0	30	0	10	-	0	-	-	0	0	-	0	0	0	0	0
7/19-7/21	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	8	0	7	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/20-8/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = SAMPLE NOT POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF WHITE SUCKER LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	10	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	10	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	24
	B	0	0	0	-	0	0	-	0	0	0	0	0	13	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	12	12	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	12	11	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	12	0	24	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	B	0	0	13	-	12	0	-	0	0	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	12	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	12	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	12	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/10-7/11	S	0	13	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0
	B	11	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	11	13	0	0	12	13	0	0	0	0	0	0	0	0	0	0	0	0
	M	12	14	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
	B	20	0	0	-	12	0	-	0	0	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	11	0	0	0	0	0	0	84	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	13	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/21-8/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

[illegible] AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
[illegible] NO FISHING EFFORT EXPENDED

DENSITY OF WHITEFISH LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		I			II			III			IV			V			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	15	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	20	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/11-8/13	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/20-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF WHITEFISH LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		II			IV			V			VII			VIII			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	11	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	12	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	14	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/21-8/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

[illegible] LARVAE WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = [illegible] SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

[illegible] SILVERSIDE [illegible] PER 1000 CU. M IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH[a]	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
		TRANSECT (ROMAN NUMERALS) AND STATION																	
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/?-8/1?	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/2?-8/?4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

[a] [illegible] WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
[b] [illegible] * = NO FISHING EFFORT EXPENDED

[illegible]

PERIOD	STRATUM	II			IV						VII			VIII			XI		
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	12
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	12	0	0	0	0	0	0	11	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0	0	25	21
	M	0	0	0	0	0	0	13	0	0	0	0	12	0	14	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/21-8/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

[illegible] OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

DENSITY OF FRESHWATER DRUM LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	11
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	11	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/20-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE * = NO FISHING EFFORT EXPENDED

DENSITY OF FRESHWATER DRUM LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	11	12	0	0	0	0	0	0	0	0	11
	B	0	0	0	-	0	0	-	12	14	0	0	0	0	0	11	0	0	11
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	12	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/28-8/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF TROUT-PERCH LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
		TRANSECT (ROMAN NUMERALS) AND STATION																	
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/9-5/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	[illegible]	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	7	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	11
6/5-6/7	S	0	27	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	17	8	0	0	0	0	0	0	0	[illegible]	0	0	0
	B	23	11	20	0	0	0	-	4	-	-	7	0	-	0	[illegible]	0	[illegible]	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	7	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	[illegible]	0	0	0	0
	B	0	0	0	10	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	33	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	6	0	-	32	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	9	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	5	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/22-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
- = NO SAMPLE POSSIBLE   * = NO FISHING EFFORT EXPENDED

DENSITY OF TROUT-PERCH LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	0	0	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/24-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	12	0	0	27	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0
	M	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	12	0	12	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	11	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	39	36	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	B	0	0	0	-	0	0	-	0	12	12	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	12	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	17	0	17	-	0	0	-	0	0	12	0	29	0	0	0	0	0	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	14	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	23	24	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	12	13	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
	B	0	0	0	-	0	0	-	0	13	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
[illegible]	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

[illegible] COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
[illegible] NO FISHING EFFORT EXPENDED

LARVAE (NO. PER 1000 CU. M) IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	0	0	0	0	*	0	*	*	*	*	*	*	0	0	*	*	*	*
	M	0	0	0	0	*	0	*	*	*	*	*	*	0	0	0	*	*	*
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	8	0	*	*	*
4/18-4/20	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	*	*	-	0	0	0	0	0
4/25-4/27	S	0	0	0	0	0	0	0	0	0	*	*	*	0	0	0	*	0	0
	M	0	0	8	0	8	16	0	0	0	*	*	*	0	0	0	*	0	0
	B	0	0	0	16	0	0	-	0	-	-	*	*	-	0	0	*	0	0
5/2-5/4	S	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	8	16	16	0	8	0	0	0	0	8	0	0	8	0	0	0	0
	B	0	0	0	0	0	8	-	0	-	-	24	32	-	0	0	0	0	0
5/9-5/11	S	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0
	M	0	0	0	0	0	0	0	0	0	0	0	8	8	8	0	0	11	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
5/16-5/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	9	-	0	0	*	0	0
5/23-5/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	7	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	8	0	7	0	0	-	0	-	-	0	11	-	0	0	0	0	0
5/31-6/2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/6-6/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/13-6/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
6/20-6/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0
	M	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	*	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	*	0	0
6/27-6/29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/5-7/7	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/18-7/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
7/25-7/27	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/8-8/10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0
8/22-8/24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	-	0	-	-	0	0	-	0	0	0	0	0

SAMPLES ... TAKEN AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).
* = NO SAMPLE REQUIRED, - = NO FISHING EFFORT EXPENDED

DENSITY OF [illegible] LARVAE (NO. PER 1000 CU. M) IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	0	0	15	0	0	0	24	0	0	*	*	*	*	*	*	*	*	*
	M	0	0	0	0	0	0	50	0	0	*	*	*	*	*	*	*	*	*
	B	0	0	0	-	12	11	-	0	0	*	*	*	*	*	*	*	*	*
5/9-5/10	S	0	17	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	12	-	0	0	-	0	11	0	0	0	0	0	0	0	0	0
5/15-5/16	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	5	0	-	0	0	0	0	12	0	13	0	0	14	0
5/24-5/25	S	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	10	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
5/30-5/31	S	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	*	0	0	13	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/5-6/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
6/12-6/13	S	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	*	*	*	0	*	*
6/19-6/20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	*	*
6/27-6/28	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/5-7/6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/10-7/11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/17-7/18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/24-7/25	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
7/31-8/1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/7-8/8	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/14-8/15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0
8/21-8/22	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 3-6 METERS (M), AND 5-8 METERS (B).
* [illegible] - [illegible]

Appendix F

One-way analyses of variance (ANOVAs) and Duncan's k-ratio t-tests of the effect of the PERIOD x TRANSECT interaction on densities of YS and NYS rainbow smelt, alewife, gizzard shad, yellow perch, logperch, emerald shiner and white bass; and YS carp. An asterisk (*) in the significance column indicates that the overall ANOVA was significant at the P = 0.05 level.

Table F-1. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS smelt, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	59	3800.9	64.422	35.114	*
Within	1401	2570.3	1.8346		
Total	1460	6371.2			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P > .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density $^+1$]/1000 m^3)
May 9-11	VI	5.78
May 2-4	VI	5.46
May 16-18	II	4.89
May 9-11	III	4.33
May 16-18	IV	4.29
May 23-25	IV	3.94
May 16-18	I	3.73
May 9-11	IV	3.41
May 16-18	III	3.40
May 9-11	II	3.28
May 16-18	VI	3.26
May 23-25	I	2.88
May 23-25	II	2.79
May 31-June 2	IV	2.54
May 31-June 2	I	2.05
May 9-11	I	2.05
May 16-18	V	1.90
May 31-June 2	II	1.77
May 23-25	III	1.53
June 6-8	II	1.23
June 6-8	I	1.12
June 6-8	IV	.99
June 6-8	III	.82
May 23-25	VI	.82
May 31-June 2	III	.72

Table F-2. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS smelt, 1978.

Analysis of variance table

Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	58	5093.8	87.825	50.283	*
Within	927	1619.1	1.7466		
Total	985	6713.0			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P > .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density $^+1$]/1000 m^3)
May 30-31	II	7.88
May 24-25	IV	7.41
May 24-25	II	7.00
May 30-31	IV	6.83
June 5-6	IV	5.65
May 15-16	VI	5.42
June 5-6	II	5.12
May 30-31	VI	4.82
June 12-13	VI	4.76
May 24-25	VI	4.69
June 5-6	VIII	4.33
June 5-6	VI	4.25
May 30-31	VIII	4.08
May 30-31	V	3.11
June 12-13	II	2.83
May 30-31	VII	2.82
June 12-13	IV	2.50
May 15-16	VIII	2.48
June 12-13	VII	2.38
June 5-6	V	2.21
June 5-6	VII	2.13
June 12-13	V	1.68
May 24-25	VII	1.37
May 24-25	VIII	1.26
June 19-20	VI	1.11

Table F-3. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NYS smelt, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	59	1664.2	28.208	13.835	*
Within	1401	2856.4	2.0389		
Total	1460	4520.7			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P > .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
May 16-18	VI	3.81
May 23-25	VI	3.80
May 31-June 2	VI	3.54
June 6-8	VI	3.40
May 31-June 2	V	3.20
May 31-June 2	IV	2.39
May 23-May 25	V	2.32
May 16-18	V	2.24
May 31-June 2	I	2.08
June 6-8	IV	1.89
June 20-22	II	1.81
June 6-8	V	1.76
June 6-8	II	1.70
June 20-22	I	1.63
June 20-22	IV	1.55
June 13-15	VI	1.27
May 31-June 2	II	1.26
June 13-15	IV	1.12
May 16-18	IV	1.08
June 6-8	I	1.08
May 23-25	IV	1.08
May 23-25	I	1.05
May 16-18	I	1.02
May 16-18	II	1.01
June 6-8	III	.99
June 13-15	I	.81

Table F-4. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NYS smelt, 1978.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	58	3600.7	62.081	34.443	*
Within	927	1670.9	1.8024		
Total	985	5271.6			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P > .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
May 30-31	VI	6.52
May 30-31	VIII	6.51
June 5-6	VI	6.25
June 5-6	VIII	5.81
June 12-13	VI	5.42
June 5-6	V	4.62
May 30-31	V	4.61
June 19-20	VI	4.06
May 30-31	VII	3.87
June 5-6	VII	3.57
June 12-13	V	3.39
May 30-31	IV	3.10
June 12-13	VII	2.86
June 19-20	VIII	2.84
May 30-31	II	2.41
May 24-25	IV	1.36
May 24-25	VIII	1.35
May 24-25	VI	1.18
June 12-13	II	1.01
June 12-13	IV	.92

Table F-5. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS alewife, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	35	1870.7	53.448	35.478	*
Within	843	1270.0	1.5065		
Total	878	3140.6			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P < .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density $^+1$]/1000 m^3)
July 25-27	IV	5.56
July 25-27	III	5.05
July 25-27	I	4.29
July 25-27	II	4.00
July 18-20	II	2.15
July 5-7	II	1.70
July 18-20	IV	1.53
August 8-10	IV	1.48
July 5-7	I	1.06
July 5-7	V	0.91
June 20-22	VI	0.82
July 5-7	VI	0.82
July 5-7	III	0.73
August 8-10	I	0.72

Table F-6. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS alewife, 1978.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	76	2021.2	26.594	18.220	*
Within	1221	1782.2	1.4596		
Total	1297	3803.3			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
July 17-18	IV	5.52
July 17-18	II	4.66
July 24-25	IV	4.25
July 24-25	II	3.85
June 19-20	VIII	3.17
June 27-28	V	3.13
July 5-6	VII	2.76
July 10-11	II	2.63
June 27-28	VIII	2.40
June 19-20	V	2.31
July 31-August 1	IV	2.10
June 19-20	VII	2.06
July 5-6	V	1.97
July 5-6	II	1.82
June 27-28	VII	1.67
May 30-31	VI	1.61
August 7-8	II	1.49
June 27-28	VI	1.36
June 12-13	V	1.25
July 5-6	VI	1.09
July 5-6	VIII	1.07
August 7-8	IV	.99

Table F-7. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NYS alewife, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	35	1258.9	35.970	10.439	*
Within	843	2904.7	3.4457		
Total	878	4163.7			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P > .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
July 25-27	III	3.92
July 25-27	IV	3.88
July 18-20	V	3.52
July 25-27	II	3.30
July 5-7	VI	3.15
July 18-20	VI	3.12
August 8-10	IV	3.12
July 25-27	VI	3.08
June 20-22	VI	3.06
July 25-27	V	2.73
July 25-27	I	2.67
July 5-7	V	2.43
July 5-7	II	2.28
June 27-29	V	2.24
July 18-20	I	2.14
July 18-20	IV	2.09
July 5-7	III	1.98
August 8-10	I	1.86
July 5-7	IV	1.78
July 18-20	II	1.70
July 18-20	III	1.30
August 8-10	III	1.23
June 27-29	VI	1.22
August 8-10	II	1.22
July 5-7	I	1.12

Table F-8. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NY3 alewife, 1978.

Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
		Analysis of variance table			
Between	76	5783.7	76.101	30.158	*
Within	1221	3081.0	2.5234		
Total	1297	8864.7			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
July 5-6	VI	7.46
July 5-6	VIII	6.76
July 5-6	VII	6.66
July 5-6	V	6.60
June 19-20	VIII	5.31
August 7-8	IV	5.29
August 7-8	II	5.09
June 27-28	V	4.84
July 24-25	IV	4.66
June 27-28	VIII	4.62
July 17-18	VI	4.57
July 17-18	IV	4.46
July 10-11	VII	4.40
July 17-18	VIII	4.27
July 24-25	VI	4.22
July 24-25	VII	4.22
July 17-18	V	4.17
July 10-11	VIII	4.16
July 31-August 1	IV	4.15
June 27-28	VII	3.95
July 17-18	VII	3.94
July 31-August 1	II	3.91
July 31-August 1	VI	3.75
July 10-11	VI	3.72
July 24-25	VIII	3.63
June 27-28	VI	3.61
June 19-20	VI	3.49
July 17-18	II	3.39
July 10-11	V	3.37
July 24-25	V	3.02
July 24-25	II	2.71
June 19-20	V	2.41
August 14-15	VI	2.33
June 19-20	VII	2.19
August 7-8	V	1.90
July 10-11	II	1.82
July 31-August 1	VII	1.74
August 14-15	V	1.63
August 14-15	VIII	1.43
August 7-8	VII	1.41
August 7-8	VI	1.22
July 5-6	II	1.10
July 31-August 1	V	1.06

Table F-9. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS gizzard shad, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	41	838.14	20.443	14.291	*
Within	987	1411.9	1.4305		
Total	1028	2250.0			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P > .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
June 20-22	VI	3.53
June 13-15	VI	2.72
June 20-22	V	2.71
July 5-7	VI	2.14
June 27-29	VI	2.03
June 6-8	V	1.86
May 31-June 2	VI	1.81
May 31-June 2	V	1.36
June 27-29	V	1.14
June 13-15	V	.75

Table F-10. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS gizzard shad, 1978.

Analysis of variance table

Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	64	2091.6	32.682	29.034	*
Within	1025	1153.8	1.1256		
Total	1089	3245.4			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
June 19-20	VIII	6.76
June 19-20	VI	6.44
June 27-28	VI	5.81
June 12-13	VI	3.58
June 27-28	V	3.34
June 27-28	VIII	2.86
May 30-31	VI	2.28
July 5-6	VI	2.16
June 27-28	VII	1.75
July 5-6	V	1.70
July 10-11	VI	1.58
July 5-6	VII	1.48
June 5-6	VI	1.46
June 19-20	V	1.39
June 19-20	VII	1.28
July 5-6	VIII	1.25
June 5-6	VIII	1.18

Table F-11. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NYS gizzard shad, 1977.

Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
	Analysis of variance table				
Between	41	1666.5	40.648	21.525	*
Within	987	1863.8	1.8884		
Total	1028	3530.4			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P > .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
July 5-7	VI	4.92
May 31-June 2	VI	3.24
June 6-8	V	2.89
June 27-29	VI	2.71
June 27-29	V	2.68
June 6-8	VI	2.61
June 20-22	V	2.55
June 6-8	V	2.36
June 20-22	VI	2.33
July 5-7	V	2.32
May 31-June 2	V	2.08
June 13-15	VI	1.59

Table F-12. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NYS gizzard shad, 1978.

Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
		Analysis of variance table			
Between	64	1462.3	22.848	15.684	*
Within	1025	1493.2	1.4568		
Total	1089	2955.5			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
July 5-6	VI	5.29
July 5-6	VIII	4.31
July 5-6	V	4.13
June 19-20	VIII	3.35
July 5-6	VII	2.83
July 17-18	VI	2.58
July 31-August 1	VI	1.76
July 24-25	V	1.71
July 31-August 1	VIII	1.52
July 17-18	V	1.44
July 10-11	V	1.24
July 24-25	VI	1.22
July 31-August 1	V	1.88
July 17-18	VIII	1.08
May 30-31	VI	.95
July 17-18	VII	.91

Table F-13. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS yellow perch, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	65	698.82	10.751	11.396	*
Within	1542	1454.8	.94345		
Total	1607	2153.6			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
May 9-11	V	3.27
May 9-11	VI	2.85
June 6-8	II	2.28
June 6-8	IV	1.96
June 6-8	I	1.22
June 13-15	II	1.06
May 2-4	V	.95
May 16-18	VI	.94
June 13-15	I	.89
June 13-15	IV	.86
May 31-June 2	II	.66
June 6-8	III	.64
May 2-4	VI	.58

Table F-14. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS yellow perch, 1978.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	64	407.39	6.3654	11.523	*
Within	1025	566.20	0.55239		
Total	1089	973.59			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
May 24-25	VI	2.79
May 15-16	V	2.27
May 24-25	VIII	2.23
May 24-25	V	1.96
May 15-16	VIII	1.42
May 24-25	VII	1.17
May 15-16	VI	.86
May 15-16	VII	.70

Table F-15. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NYS yellow perch, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	65	1323.7	20.365	18.957	*
Within	1542	1656.5	1.0743		
Total	1607	2980.2			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
May 9-11	V	3.93
May 16-18	VI	3.90
May 9-11	VI	3.21
May 16-18	V	2.93
May 23-25	VI	2.57
May 23-25	V	1.44
May 31-June 2	VI	1.25
June 6-8	V	1.21
June 6-8	VI	1.11
June 6-8	IV	1.07
June 13-15	I	1.02
June 13-15	II	.99
June 13-15	IV	.86
May 31-June 2	V	.84

Table F-16. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NYS yellow perch, 1978.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	64	944.56	14.759	29.576	*
Within	1025	511.48	.49901		
Total	1089	1456.0			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
May 24-25	VI	4.38
May 24-25	VIII	4.14
May 24-25	V	3.25
May 24-25	VII	3.09
May 30-31	V	1.36
May 30-31	VIII	.78

Table F-17. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS logperch, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	71	1351.3	19.033	10.458	*
Within	1685	3066.7	1.82		
Total	1756	4418.0			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
June 6-8	II	3.54
June 6-8	I	3.39
June 6-8	IV	2.75
May 16-18	VI	2.45
June 6-8	III	2.36
May 31-June 2	II	2.22
June 20-22	VI	2.17
May 31-June 2	I	2.11
May 9-11	VI	2.06
July 5-7	IV	1.93
June 13-15	II	1.77
June 20-22	II	1.51
June 6-8	VI	1.47
June 27-29	VI	1.45
June 13-15	III	1.40
May 23-25	VI	1.39
June 13-15	IV	1.20
July 18-20	IV	1.19
June 13-15	I	1.18
June 13-15	VI	1.09
July 5-7	VI	1.08
May 31-June 2	IV	1.03
July 5-7	II	.99
June 20-22	III	.98
July 5-7	III	.92
May 31-June 2	III	.88

Table F-18. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS logperch, 1978.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	70	730.83	10.440	8.5955	*
Within	1122	1362.8	1.2146		
Total	1192	2093.6			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
May 24-25	VI	4.46
May 30-31	VI	2.85
May 24-25	VIII	2.53
June 12-13	II	2.51
June 5-6	VI	1.40
June 19-20	VI	1.23
June 12-13	IV	1.06
July 10-11	VI	1.05
July 24-25	II	1.01
July 5-6	II	.96
June 19-20	II	.95
June 12-13	V	.84

Table F-19. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NYS logperch, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	71	909.78	12.814	10.535	*
Within	1685	2049.5	1.2163		
Total	1756	2959.2			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
June 6-8	VI	2.98
June 6-8	V	2.98
May 31-June 2	V	2.45
June 13-15	VI	2.08
July 18-20	VI	1.90
June 27-29	V	1.52
June 20-22	VI	1.43
July 25-27	V	1.41
July 5-7	V	1.40
July 18-20	V	1.20
May 31-June 2	VI	1.19
June 20-22	V	1.16
June 27-29	VI	1.11
May 31-June 2	III	1.03
July 5-7	VI	1.00
May 16-18	VI	.98
June 6-8	IV	.90
July 25-27	VI	.85
June 6-8	II	.81
June 6-8	I	.80
June 6-8	III	.73
May 31-June 2	II	.71
June 13-15	V	.70
May 31-June 2	IV	.68

Table F-20. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NYS logperch, 1978.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	70	525.26	7.5037	6.7425	*
Within	1122	1248.7	1.1129		
Total	1192	1773.9			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
June 12-13	VI	3.17
May 24-25	VI	3.08
June 27-28	V	2.34
June 12-13	VII	2.17
June 12-13	V	1.79
June 19-20	VI	1.77
June 27-28	VIII	1.58
June 27-28	VI	1.44
June 19-20	VIII	1.41
June 27-28	VII	1.35
June 12-13	II	1.06
June 19-20	V	1.01
July 24-25	VII	1.00
July 31-August 1	VI	.97
May 24-25	VIII	.92
June 19-20	VII	.90

Table F-21. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS emerald shiner, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	59	212.78	3.6064	6.9664	*
Within	1417	733.56	.51769		
Total	1476	946.34			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
July 18-20	VI	2.22
June 13-15	V	1.66
July 25-27	VI	.73 |
June 6-8	VI	.63 |
July 25-27	II	.54 |
June 20-22	VI	.47 |
June 6-8	V	.42 |

Table F-22. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS emerald shiner, 1978.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	59	866.32	14.683	13.180	*
Within	961	1070.6	1.1140		
Total	1020	1936.9			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P > .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
July 5-6	VI	3.97
July 5-6	V	3.28
July 31-August 1	VIII	3.15
July 5-6	VII	2.99
July 5-6	VIII	2.80
July 31-August 1	VII	1.58
July 31-August 1	II	1.08
June 27-28	VI	.80
July 31-August 1	VI	.77

Table F-23. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NYS emerald shiner, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	59	227.96	3.8638	6.3158	*
Within	1417	866.88	.61177		
Total	1476	1094.8			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
July 25-27	VI	2.05
June 6-8	VI	1.44
August 8-10	IV	1.12
July 25-27	V	.98
July 18-20	VI	.83
July 25-27	II	.80
June 27-29	V	.51

Table F-24. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NYS emerald shiner, 1978.

	Analysis of variance table				
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	59	1041.5	17.653	13.451	*
Within	961	1261.2	1.3124		
Total	1020	2302.7			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P > .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
July 5-6	VI	4.29
July 5-6	VIII	3.64
July 24-25	VII	3.03
July 24-25	VIII	2.80
July 24-25	V	2.69
July 24-25	VI	2.57
July 5-6	VII	1.77
July 31-August 1	VII	1.76
July 5-6	V	1.59
July 17-18	VIII	1.15
July 17-18	VI	1.09

Table F-25. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS carp, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	41	470.79	11.483	12.263	*
Within	981	918.59	.93638		
Total	1022	1389.4			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P > .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
May 23-25	VI	2.67
June 20-22	VI	2.53
May 31-June 2	VI	1.98
June 27-29	VI	1.95
July 5-7	IV	1.02
May 31-June 2	III	.98
June 27-29	V	.89
July 5-7	VI	.79
June 13-15	VI	.65

Table F-26. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS carp, 1978.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	52	108.27	2.0820	4.7013	*
Within	830	367.58	.44286		
Total	882	475.84			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
July 10-11	V	1.29
June 12-13	V	1.24
June 19-20	VI	1.22
July 10-11	VI	1.15
July 10-11	VII	1.13
July 10-11	VIII	.79

Table F-27. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS white bass, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	41	284.41	6.9367	12.094	*
Within	981	562.66	.57356		
Total	1022	847.07			

Duncan's K-ratio t-test. Vertical lines span non-significant (P > .05) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
June 13-15	VI	2.18 |
June 20-22	VI	2.10 |
May 23-25	VI	1.93 | |
May 31-June 2	VI	.51 |
June 27-29	VI	.42 |

Table F-28. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for YS white bass, 1978.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	46	131.79	2.8651	7.8151	*
Within	731	267.99	.36661		
Total	777	399.79			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P > .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
May 30-31	VI	2.03
June 5-6	VI	1.36 |
June 19-20	VIII	1.34 |

Table F-29. ANOVA of the PERIOD x TRANSECT interaction and the accompanying multiple comparison Duncan's K-ratio, t-test for NYS white bass, 1977.

Analysis of variance table					
Source of variation	Degrees of freedom	Sum of squares	Mean square	F-statistic	Significance
Between	41	27.062	.66005	4.4639	*
Within	981	145.05	.14786		
Total	1022	172.12			

Duncan's K-ratio t-test. Vertical lines span non-significant ($P > .05$) differences. Only means significantly greater than zero/1000 m^3 are shown.

Period	Transect	Mean (ln of the [density +1]/1000 m^3)
June 6-8	V	.82 |
June 6-8	VI	.67 |

Appendix G

Average total length (mm) of rainbow smelt, alewife, gizzard shad, yellow perch, logperch, emerald shiner, carp, and white bass captured in the St. Clair and Detroit rivers, 1977 and 1978, by transect, station, period, and depth.

AVERAGE LENGTH(MM) OF SMELT IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/18-4/20	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/25-4/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	5.7	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/2-5/4	S	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.1	5.0	4.5
	M	-	-	-	-	-	4.7	-	-	-	-	-	-	-	-	-	-	4.5	4.5
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0	4.5
5/9-5/11	S	-	-	5.1	5.6	4.9	5.0	5.0	5.3	5.1	5.6	5.4	6.2	-	-	-	-	5.0	4.8
	M	5.8	6.3	4.5	5.2	5.1	5.1	5.3	5.5	5.4	5.2	5.1	6.2	6.5	-	-	6.5	5.0	4.5
	B	6.4	4.6	5.1	5.6	4.7	5.0	-	4.8	-	-	5.4	5.4	-	-	-	-	5.1	5.0
5/16-5/18	S	6.0	6.4	5.9	5.5	5.4	5.6	5.2	-	5.1	5.5	6.7	6.1	-	6.6	-	6.9	5.9	7.3
	M	5.9	6.9	5.8	5.9	5.6	5.8	5.8	5.7	6.0	6.0	6.0	6.2	7.6	7.1	6.3	6.4	6.4	6.8
	B	6.0	6.4	5.8	6.1	5.8	5.8	-	5.8	-	-	5.9	6.3	-	7.0	6.7	6.6	6.1	6.8
5/23-5/25	S	7.6	5.8	5.8	-	-	5.5	6.4	-	-	-	5.7	7.5	7.1	-	-	-	9.0	8.1
	M	7.2	6.5	4.7	6.6	5.7	6.0	-	5.9	6.1	6.1	6.5	6.1	8.7	7.0	7.7	8.3	8.0	7.9
	B	6.9	6.4	5.9	7.0	6.6	6.2	-	6.4	-	-	6.6	6.2	-	8.2	8.3	8.0	8.3	8.6
5/31-6/2	S	6.6	6.9	6.9	12.7	-	-	6.3	7.0	5.8	-	8.2	-	-	8.0	7.0	7.7	7.1	8.3
	M	7.7	7.4	6.9	7.5	6.1	7.5	6.4	7.3	6.5	8.3	7.7	7.0	7.8	8.7	8.3	8.5	8.4	10.1
	B	7.9	7.6	6.9	8.5	5.7	5.9	-	6.0	-	-	7.7	6.8	-	8.7	6.8	8.2	8.1	10.0
6/6-6/8	S	-	8.7	6.0	7.8	-	-	-	-	6.1	-	-	7.0	12.2	7.8	14.4	8.6	9.5	13.3
	M	7.8	5.7	7.7	8.7	7.2	6.0	8.1	6.8	-	6.8	7.7	8.4	9.9	8.2	15.8	8.3	10.0	12.1
	B	8.0	8.4	7.7	6.7	8.2	5.7	-	7.0	-	-	7.4	8.4	-	8.5	15.3	9.4	9.2	12.4
6/13-6/15	S	-	-	-	-	4.1	-	-	-	-	-	-	-	6.0	-	-	-	-	-
	M	7.7	-	8.5	10.0	-	-	-	-	-	7.0	6.9	8.7	-	-	-	9.9	9.3	13.2
	B	8.6	10.1	10.1	10.6	9.8	7.0	-	6.1	-	-	7.8	9.9	-	8.4	-	9.2	8.4	9.0
6/20-6/22	S	-	8.7	-	-	-	8.2	-	-	-	5.3	-	-	-	-	-	-	-	-
	M	11.5	9.3	-	9.2	10.8	-	9.4	-	11.1	8.9	9.1	9.4	11.3	16.4	15.1	-	12.3	8.5
	B	8.6	9.2	9.6	10.2	8.3	9.8	-	5.5	-	-	9.2	9.1	-	14.6	-	-	9.6	14.2
6/27-6/29	S	-	-	-	9.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	11.8	-	-	-	-	-	11.7	-	-	-	-	-	-	-	16.8
	B	11.0	-	12.8	12.8	11.9	9.7	-	-	-	-	11.0	12.2	-	14.0	34.2	-	10.7	-
7/5-7/7	S	11.9	14.7	14.5	-	-	-	-	-	-	-	-	-	-	-	-	14.5	-	-
	M	13.2	13.1	6.3	-	-	-	-	11.0	12.5	16.4	-	-	11.6	7.6	9.9	11.1	17.5	14.5
	B	8.2	14.1	7.7	4.8	-	-	-	-	-	-	12.6	4.0	-	13.5	17.7	13.8	15.9	18.8
7/18-7/20	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.6	-	-
7/25-7/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.6
	B	-	-	-	-	-	5.0	-	-	-	-	-	-	-	-	-	-	-	-
8/8-8/10	S	-	-	-	-	-	5.6	-	-	-	-	-	-	-	-	-	-	-	7.4
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	-	-	-
	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/20-8/24	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.6	-
	M	-	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF SMELT IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/10	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	-	5.8	-	-
5/15-5/16	S	-	-	-	-	-	-	-	-	-	-	-	-	5.2	5.1	5.0	5.4	5.C	4.5
	M	-	6.3	4.C	-	-	-	-	-	-	4.8	5.1	-	5.4	5.3	5.0	5.1	4.5	4.5
	B	-	5.4	-	-	-	-	-	4.9	-	4.6	4.2	-	5.4	5.1	5.4	5.3	5.1	5.1
5/24-5/25	S	5.8	5.5	5.3	5.4	5.5	5.5	-	-	-	-	-	-	7.6	6.8	4.3	5.2	5.1	4.5
	M	5.6	5.5	5.5	5.6	6.C	5.5	6.8	-	-	4.7	6.9	-	7.5	5.8	6.5	6.5	5.C	5.1
	B	5.5	5.3	5.5	-	5.7	5.5	-	6.9	-	6.9	6.8	-	7.3	7.4	7.3	6.7	5.2	5.1
5/30-5/31	S	6.2	6.0	5.7	6.2	6.5	-	-	7.4	7.6	-	7.5	7.4	7.7	8.0	7.4	7.6	7.5	6.C
	M	6.2	6.1	5.5	6.C	6.5	-	7.9	7.8	7.7	6.9	7.6	7.8	7.7	7.5	7.1	7.6	7.6	7.7
	B	6.1	6.1	5.8	-	6.2	6.2	-	7.8	7.6	8.0	7.8	8.0	7.8	7.6	7.8	7.7	7.6	7.7
6/5-6/6	S	6.0	5.7	5.4	5.6	6.1	6.1	7.4	7.8	8.6	7.2	7.7	8.3	7.6	8.0	7.4	7.7	7.6	6.2
	M	5.7	5.8	5.6	5.9	5.5	6.2	7.7	8.0	9.4	7.6	6.8	8.4	8.4	8.0	8.C	7.7	8.C	6.3
	B	6.0	5.8	5.7	-	6.4	6.2	-	8.1	9.2	7.7	7.9	8.6	7.9	7.7	7.9	7.7	7.5	6.5
6/12-6/13	S	7.1	5.6	-	7.3	5.9	6.3	6.7	7.0	10.3	-	7.4	-	-	-	-	7.3	-	-
	M	7.3	5.7	5.3	-	6.1	6.2	7.5	6.9	9.5	7.0	7.2	7.9	-	-	-	7.7	-	-
	B	8.7	6.0	5.5	-	6.2	6.8	-	7.0	9.9	6.8	7.3	8.0	-	-	-	7.2	-	-
6/19-6/20	S	-	-	-	-	-	5.0	-	-	4.3	-	-	-	9.1	9.7	-	8.8	-	-
	M	-	5.7	-	16.3	-	-	-	-	10.0	-	-	8.7	10.8	10.2	8.2	9.2	-	-
	B	15.1	7.1	6.8	-	-	6.5	-	7.6	7.4	8.3	-	7.8	8.3	11.5	7.6	10.2	-	-
6/27-6/28	S	-	7.6	-	-	-	-	-	-	20.1	-	-	-	7.5	-	-	-	8.4	8.2
	M	-	6.4	-	18.5	-	-	-	6.4	-	9.1	-	10.7	11.4	10.4	12.1	6.4	9.6	5.3
	B	16.3	-	10.9	-	15.9	7.3	-	13.5	10.4	8.4	9.6	6.9	9.6	8.5	16.9	-	12.2	-
7/5-7/6	S	-	-	-	-	-	-	-	19.5	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	14.6	30.1	-	-	15.2	-	-	-	-	9.1	-
	B	12.8	-	-	-	12.7	16.1	-	10.4	-	9.8	13.4	26.8	-	28.5	-	23.9	10.3	-
7/10-7/11	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	18.1	-	-	-	-	17.8	-	-	-	18.1	-	-	9.7	-	16.3
	B	14.1	-	-	-	-	-	-	-	-	-	25.6	-	0.0	-	-	-	-	-
7/17-7/18	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	25.8	-	-	-	-	-	-	33.7	-	-
7/24-7/25	S	-	-	-	-	-	-	-	-	-	-	-	16.5	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	23.1	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/31-8/1	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	25.0	-	-	-	-	-	-	-	-
8/7-8/8	S	-	-	-	-	-	-	-	-	22.1	-	-	-	-	-	-	-	11.6	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.2
	B	-	8.8	27.4	-	-	-	-	-	-	-	20.1	-	-	22.0	-	-	-	-
8/14-8/15	S	-	-	-	-	-	-	-	-	-	-	9.5	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/28-8/29	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF ALEWIFE IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/18-4/20	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/25-4/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/2-5/4	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/11	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/16-5/18	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/23-5/25	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/31-6/2	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	-	7.9	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	-	5.5	6.2
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5	7.2	6.0	5.9
6/6-6/8	S	-	-	-	-	-	-	-	-	-	-	-	-	5.6	-	5.6	5.7	4.8	6.3
	M	-	-	-	-	-	-	-	-	-	-	-	-	7.8	-	6.1	6.7	-	10.4
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.3	-	-	-
6/13-6/15	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	4.8	-	5.2
	B	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	7.6	7.8	-	6.5
6/20-6/22	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	5.8	5.9
	M	-	-	-	-	-	-	-	-	-	-	-	-	5.4	-	4.0	-	5.4	5.0
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7	-
6/27-6/29	S	-	-	6.1	-	-	-	-	-	-	-	4.7	-	5.9	5.6	9.4	-	-	5.6
	M	4.7	-	-	4.0	-	7.5	-	-	-	9.1	4.2	-	-	6.7	6.0	5.1	6.7	5.5
	B	-	-	5.0	4.6	5.0	4.7	-	7.5	-	-	5.0	7.4	-	7.2	10.0	-	6.4	-
7/5-7/7	S	-	5.0	4.3	4.8	-	5.0	4.9	-	4.9	4.8	4.9	-	-	6.2	13.1	-	4.6	7.2
	M	4.9	4.7	4.5	4.7	4.8	4.6	4.7	4.8	4.9	4.5	5.1	4.4	5.7	6.5	12.1	6.4	6.5	6.5
	B	4.8	4.4	4.6	6.7	4.5	4.5	-	4.6	-	-	4.9	5.4	-	8.4	-	-	6.0	6.3
7/18-7/20	S	14.7	8.0	12.7	6.3	4.3	-	8.8	5.3	-	11.8	4.3	4.4	11.7	-	-	12.3	7.5	7.4
	M	10.7	14.2	12.4	7.5	4.6	10.4	7.3	7.4	3.6	11.9	5.9	9.4	9.7	7.0	9.5	13.7	7.7	7.8
	B	11.8	8.8	10.2	6.0	5.0	6.5	-	10.1	-	-	6.0	5.3	-	7.7	9.6	7.6	6.3	6.5
7/25-7/27	S	5.7	5.8	4.7	12.0	4.5	4.3	4.5	4.1	4.4	5.6	4.2	4.9	-	12.9	15.7	-	6.4	7.5
	M	5.9	4.3	5.5	12.2	4.5	4.8	4.8	4.5	4.9	6.3	5.1	4.6	10.3	7.6	14.0	12.0	7.2	6.5
	B	5.4	4.2	7.7	7.5	4.4	5.8	-	6.0	-	-	6.7	4.5	-	7.7	13.5	5.5	5.6	5.0
8/8-8/10	S	4.5	8.4	6.4	5.1	5.2	-	6.2	-	-	5.0	-	5.1	-	-	-	-	-	-
	M	6.2	6.5	16.1	7.6	5.0	11.6	-	5.0	4.8	8.0	5.1	5.1	-	12.5	8.1	10.5	6.8	11.8
	B	4.9	11.9	13.4	13.4	5.9	6.1	-	4.9	-	-	6.4	5.4	-	10.9	10.2	-	-	8.5
8/20-8/24	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.4
	M	-	-	5.5	-	-	-	-	-	14.6	5.1	-	-	-	-	-	-	-	15.7
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF ALEWIFE IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		II			IV			V			VII			VIII			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/10	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/15-5/16	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/24-5/25	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	-
5/30-5/31	S	-	-	-	-	-	-	-	-	-	-	-	-	4.2	-	-	4.4	-	3.8
	M	5.6	-	-	-	-	-	-	-	-	-	-	-	5.9	-	-	4.4	-	4.3
	B	5.0	-	-	-	-	-	-	-	-	-	5.2	-	5.1	3.4	-	4.3	-	4.4
6/5-6/6	S	5.3	-	-	-	-	-	4.3	-	-	-	-	-	6.4	-	-	6.1	5.0	-
	M	-	-	-	-	-	4.5	4.5	-	-	4.9	-	-	4.5	4.8	-	7.6	-	-
	B	8.0	4.8	-	-	4.6	-	-	-	-	-	-	-	5.0	-	-	-	-	-
6/12-6/13	S	-	-	-	-	-	-	4.2	-	4.5	5.2	-	4.6	-	-	-	5.1	-	-
	M	-	-	-	-	-	-	4.3	-	4.4	4.7	-	-	-	-	-	4.7	-	-
	B	-	-	-	-	-	-	-	-	4.4	-	-	4.2	-	-	-	-	-	-
6/19-6/20	S	-	-	-	-	-	-	-	-	4.5	-	-	4.3	5.3	5.5	4.7	5.0	-	-
	M	-	-	-	-	-	-	5.5	-	4.3	5.1	-	4.4	5.0	5.6	4.6	5.3	-	-
	B	-	-	-	-	8.0	-	-	-	4.3	5.3	4.9	4.3	4.7	5.1	4.7	-	-	-
6/27-6/28	S	-	-	-	-	-	-	5.1	6.4	7.4	5.3	7.6	5.8	5.5	7.0	6.6	4.4	6.0	6.1
	M	-	-	-	-	-	-	5.5	8.8	6.0	5.1	7.0	5.4	5.3	7.2	5.2	10.4	6.4	5.5
	B	-	-	-	-	-	3.8	-	5.2	6.4	5.6	7.0	5.7	6.6	7.3	5.5	-	7.2	4.8
7/5-7/6	S	4.1	-	4.1	5.6	-	4.5	5.7	15.5	11.3	6.5	10.5	8.5	6.8	8.4	9.6	7.7	6.5	6.2
	M	4.5	5.1	4.4	-	4.5	5.1	5.4	12.4	9.2	5.6	9.5	8.5	6.6	8.2	9.0	8.1	7.0	8.2
	B	5.2	4.8	4.4	-	5.5	4.9	-	12.8	7.5	5.8	10.2	7.0	6.6	7.1	8.6	7.9	6.8	8.5
7/10-7/11	S	4.5	-	-	4.7	4.[illegible]	-	6.7	6.5	19.2	7.2	6.8	6.8	6.7	6.6	7.4	6.8	6.5	8.2
	M	4.5	4.6	4.3	4.1	7.3	-	6.2	6.5	18.2	5.4	6.1	7.3	6.2	6.8	9.2	6.1	6.6	6.7
	B	4.6	4.5	4.5	-	-	-	-	6.4	14.2	6.6	7.3	6.9	5.5	6.7	8.6	6.2	8.8	6.6
7/17-7/18	S	4.4	4.3	4.4	4.5	4.2	4.4	7.1	8.7	15.0	6.5	7.0	14.7	7.7	7.4	9.8	7.0	7.5	6.5
	M	4.2	4.0	4.2	4.6	4.5	4.4	6.9	8.3	13.9	7.0	6.9	11.8	7.1	7.1	9.1	8.1	7.4	7.1
	B	4.4	4.4	4.4	-	4.8	4.5	-	7.5	9.2	7.9	7.1	10.5	6.1	7.3	10.3	-	7.2	7.8
7/24-7/25	S	4.3	4.4	4.5	4.7	5.0	4.5	10.8	11.1	16.5	7.4	11.4	16.1	5.5	10.1	9.7	10.5	8.0	8.5
	M	4.6	4.3	4.6	4.9	4.8	4.9	10.9	11.3	11.4	8.0	11.1	12.3	10.0	10.4	10.4	10.1	8.4	10.5
	B	4.5	4.3	4.5	-	4.8	4.7	-	10.5	11.9	7.9	9.4	11.2	8.8	9.8	11.4	10.1	8.5	9.5
7/31-8/1	S	5.3	5.3	4.7	4.9	5.2	5.2	15.6	16.3	17.2	9.5	14.9	16.1	17.3	11.8	-	13.6	8.9	12.8
	M	6.0	5.5	5.2	6.5	5.2	4.7	10.1	13.1	15.6	9.9	9.8	14.7	18.6	11.4	13.2	12.9	9.1	11.5
	B	7.0	5.3	7.9	-	5.4	4.9	-	15.6	-	11.6	9.8	-	10.5	8.1	12.2	11.5	9.1	11.3
8/7-8/8	S	6.2	5.1	6.5	5.4	5.1	5.4	12.7	9.9	10.7	15.2	17.1	13.5	10.5	12.5	-	-	-	12.7
	M	5.8	5.1	5.8	4.8	5.4	5.4	11.5	10.4	13.3	16.2	10.3	10.4	11.5	12.4	10.5	15.3	11.5	13.2
	B	7.1	5.2	6.3	-	5.2	5.1	-	10.1	13.6	12.6	9.7	-	-	9.6	11.1	-	8.8	-
8/14-8/15	S	15.6	4.8	-	-	-	-	12.1	10.5	16.5	-	7.4	13.1	10.7	13.5	8.3	11.7	11.5	13.3
	M	9.6	-	8.3	7.6	8.7	9.7	-	9.9	-	15.3	10.6	10.1	-	8.3	9.9	12.8	9.7	12.4
	B	17.0	6.3	4.7	-	9.3	-	-	8.7	-	11.1	8.2	-	-	7.9	10.2	-	8.1	10.6
8/28-8/29	S	-	-	17.0	-	-	17.9	-	-	-	-	-	-	16.7	-	-	15.6	-	16.5
	M	16.1	-	-	-	-	-	-	-	-	-	17.6	-	-	-	-	-	-	-
	B	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF GIZZARD SHAD IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/18-4/20	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/25-4/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/2-5/4	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/11	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/16-5/18	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/23-5/25	S	-	-	-	5.2	-	-	-	-	-	-	-	-	-	-	-	4.2	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/31-6/2	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8	-	8.2	7.6
	M	-	-	-	5.6	-	-	-	-	-	6.2	-	-	5.4	3.5	8.1	5.5	7.5	8.2
	B	-	-	-	-	-	-	-	-	-	-	-	8.5	-	3.9	6.7	6.0	5.4	7.2
6/6-6/8	S	-	-	-	-	-	-	-	-	-	-	-	-	3.6	-	7.1	6.4	7.3	5.4
	M	-	-	-	13.0	-	-	-	-	-	-	-	-	7.2	-	6.3	-	6.5	5.1
	B	-	-	-	9.2	-	-	-	-	-	-	-	7.8	-	-	5.2	9.3	7.4	-
6/13-6/15	S	-	-	-	-	-	-	-	-	-	-	-	-	-	16.3	8.1	6.2	7.5	3.2
	M	-	-	-	-	-	-	-	-	-	10.0	-	-	-	10.3	7.8	6.6	8.0	3.5
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	9.7	9.0	-	7.6	3.3
6/20-6/22	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4	-	5.3	3.7
	M	-	-	-	-	-	-	-	-	-	-	-	-	5.1	-	4.5	-	5.6	3.8
	B	-	-	-	4.8	-	-	-	-	-	-	-	-	-	6.8	4.3	-	4.0	4.1
6/27-6/29	S	-	-	-	-	-	-	-	-	-	-	-	-	6.6	-	8.9	5.2	-	4.3
	M	-	-	-	-	-	4.8	-	-	-	-	-	-	6.0	8.3	6.0	4.5	6.8	4.3
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	6.4	5.0	6.5	4.1
7/5-7/7	S	-	-	-	-	-	-	-	-	-	-	-	-	7.2	-	13.6	6.8	7.5	6.6
	M	-	-	-	-	-	-	-	-	-	-	-	-	7.8	-	6.1	8.0	8.1	6.6
	B	4.7	-	-	-	-	-	-	-	-	-	-	-	-	10.8	5.9	6.8	6.5	5.6
7/18-7/20	S	-	-	-	7.8	-	-	-	-	-	15.3	-	-	-	-	-	12.8	-	-
	M	-	-	-	10.2	-	-	-	-	4.6	-	-	-	-	-	-	10.0	-	11.3
	B	-	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/25-7/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19.5	-	-	-
	M	-	-	-	-	-	-	-	-	16.6	13.7	-	-	-	-	-	-	-	12.0
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/8-8/10	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/23-8/24	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF GIZZARD SHAD IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II			IV			V			VII			VIII			VI		
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/10	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/15-5/16	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/24-5/25	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/30-5/31	S	-	-	-	4.4	-	-	-	-	-	4.1	-	-	3.8	-	-	3.8	4.1	-
	M	-	-	-	-	4.3	-	-	-	-	4.5	-	-	4.7	4.6	-	3.9	4.3	4.4
	B	-	-	-	-	4.3	-	-	-	-	-	3.5	-	-	3.9	5.1	5.8	4.2	5.0
6/5-6/6	S	-	-	-	-	-	-	3.6	-	-	3.9	-	-	3.5	-	-	5.4	3.5	4.0
	M	-	-	-	-	-	4.3	3.5	-	-	4.6	-	-	3.5	3.1	-	3.3	3.3	3.1
	B	-	-	-	-	-	-	-	-	-	-	-	-	4.0	3.9	-	-	3.1	3.7
6/12-6/13	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	-	-
6/19-6/20	S	-	-	-	-	-	-	-	-	4.2	-	-	-	4.0	4.2	3.5	3.7	-	-
	M	-	-	-	-	-	-	3.8	-	3.9	3.9	-	3.6	3.9	4.2	3.5	3.7	-	-
	B	-	-	-	-	-	-	-	-	5.2	4.1	-	4.3	4.0	4.1	3.8	3.8	-	-
6/27-6/28	S	-	-	-	-	-	-	3.3	-	4.0	-	6.5	5.9	3.5	4.0	3.6	3.1	3.5	4.0
	M	5.2	-	-	-	-	-	3.4	-	4.0	3.6	7.2	4.8	4.0	-	4.1	3.7	3.5	3.5
	B	-	-	-	-	-	-	-	-	4.0	-	-	4.2	4.1	4.2	4.0	3.5	3.5	3.3
7/5-7/6	S	-	-	-	-	-	4.5	5.8	10.6	11.4	-	9.3	9.9	7.7	8.6	11.5	6.8	7.1	5.3
	M	-	-	-	5.4	-	-	7.1	10.4	10.9	5.5	9.4	7.1	6.9	10.6	8.9	7.3	7.4	6.8
	B	-	-	-	-	-	-	-	10.4	10.1	5.5	4.6	5.6	7.6	7.8	4.3	7.0	8.1	5.6
7/10-7/11	S	-	-	-	-	-	-	5.4	-	17.7	7.9	6.9	7.0	6.9	4.2	9.0	8.6	4.2	4.8
	M	-	-	-	-	-	-	7.4	6.9	14.2	4.0	10.0	7.6	5.1	-	-	-	5.1	4.4
	B	-	-	-	-	-	-	-	-	7.7	-	-	-	-	-	-	-	-	4.5
7/17-7/18	S	-	-	-	-	-	-	9.3	6.8	-	8.2	10.8	-	7.6	7.2	-	7.9	9.6	9.0
	M	-	-	-	-	-	-	7.7	8.7	14.3	6.0	-	-	8.7	-	-	7.5	8.2	8.7
	B	-	-	-	-	-	-	-	-	-	5.2	-	8.9	-	-	-	-	5.2	-
7/24-7/25	S	-	-	-	-	-	-	8.9	11.9	12.6	8.0	13.1	9.0	9.1	7.2	-	7.7	7.8	-
	M	-	-	-	-	-	-	8.5	8.1	-	7.4	8.5	9.8	8.3	9.9	-	8.0	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	11.0	6.5	7.5	-	-
7/31-8/1	S	-	-	-	-	-	-	12.3	13.1	14.4	8.9	12.7	14.1	11.8	14.1	13.2	10.9	9.6	12.3
	M	-	-	-	-	-	-	7.5	10.9	-	-	-	12.2	11.5	11.6	15.7	11.4	9.5	12.4
	B	-	-	-	-	-	-	-	-	-	-	-	-	10.0	-	-	-	-	13.6
8/7-8/8	S	-	-	-	-	-	-	-	-	-	-	19.7	17.4	11.2	12.8	14.1	12.1	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	13.2	-	-	11.4	14.5	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/14-8/15	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/28-8/29	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF YELLOW PERCH IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
4/12-4/14	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/18-4/20	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/25-4/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/2-5/4	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	6.3	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	6.2	-	6.1	-	6.2	6.0
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	-	6.0	6.1
5/9-5/11	S	-	-	-	-	-	-	-	-	-	-	-	-	7.7	7.1	6.8	7.7	6.1	6.4
	M	-	-	-	-	-	-	-	-	-	-	-	-	6.5	6.8	6.8	5.9	6.7	6.5
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	6.9	6.6	6.7	6.5
5/16-5/18	S	-	-	-	-	-	-	-	-	-	-	-	-	7.9	9.2	9.1	7.0	9.3	8.9
	M	6.3	-	-	-	-	-	-	-	-	-	-	-	7.9	9.4	8.0	7.6	8.4	6.5
	B	6.4	-	-	-	-	-	-	-	-	-	-	-	-	8.0	8.0	7.7	7.5	8.0
5/23-5/25	S	-	7.0	-	-	-	-	-	-	-	-	-	-	9.1	-	-	7.6	-	10.0
	M	6.5	6.4	-	-	6.4	6.6	-	-	-	-	-	-	8.8	9.1	-	8.3	6.3	7.5
	B	-	-	-	-	-	-	-	-	-	-	7.0	-	-	7.7	9.0	7.9	8.7	7.4
5/31-6/2	S	-	9.4	-	-	-	-	-	5.2	4.2	-	6.3	-	-	-	16.4	8.6	-	10.2
	M	6.6	6.2	-	6.9	5.7	-	5.9	6.9	7.0	7.3	-	-	-	9.3	9.0	10.0	7.6	10.5
	B	6.4	7.4	-	6.6	6.3	6.4	-	-	-	-	6.8	7.1	-	9.8	8.0	-	7.6	12.5
6/6-6/8	S	5.8	-	-	6.4	-	-	-	-	-	5.9	-	6.4	9.7	11.3	21.2	11.4	6.1	10.5
	M	6.0	6.1	5.7	5.9	6.0	5.6	6.1	5.7	-	6.0	7.1	-	9.1	14.6	19.2	15.1	12.6	9.5
	B	6.6	6.7	5.8	6.4	6.0	6.1	-	5.9	-	-	6.2	6.2	-	-	-	-	-	11.0
6/13-6/15	S	6.6	-	6.8	-	8.2	-	-	-	-	6.1	-	-	9.1	-	-	8.9	-	-
	M	7.6	-	-	6.7	6.2	-	6.9	-	8.0	7.1	6.8	8.6	6.4	6.9	13.2	-	8.0	8.5
	B	6.8	7.2	7.7	7.1	6.5	6.6	-	6.0	-	-	6.8	7.3	-	7.1	-	-	-	-
6/20-6/22	S	-	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	7.0	-	8.6	-	-	-	-	-	-	6.7	5.8	-	-	9.7	-	-	-
	B	8.3	-	-	6.7	5.9	-	-	-	-	-	7.1	6.7	-	7.7	-	-	-	5.8
6/27-6/29	S	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7	-	-	-	-
	M	-	-	-	-	-	10.0	-	-	6.5	-	6.6	-	-	-	-	-	-	-
	B	-	-	-	6.8	7.3	-	-	6.3	-	-	-	-	-	6.1	-	10.4	-	-
7/5-7/7	S	-	-	-	-	-	-	-	-	-	-	-	-	-	10.7	-	-	-	-
	M	6.0	-	-	-	-	-	5.1	-	-	6.3	6.9	-	10.6	-	5.5	-	-	-
	B	-	-	-	6.2	-	-	-	-	-	-	-	-	-	5.4	7.9	-	-	-
7/18-7/20	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	-	-	-	7.6
7/25-7/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0	-	-	-
	B	-	-	-	-	-	-	-	4.8	-	-	-	-	-	-	-	-	-	6.8
8/8-8/10	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/20-8/24	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF YELLOW PERCH IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		II			IV			V			VII			VIII			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/10	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.5	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/15-5/16	S	-	-	-	-	-	-	6.1	6.8	5.9	6.4	-	-	6.1	-	6.1	-	-	-
	M	-	-	-	-	-	-	6.1	-	5.8	5.6	6.7	6.4	5.9	-	6.4	6.0	5.8	5.2
	B	-	-	-	-	-	-	-	6.5	6.0	6.0	6.7	6.4	5.9	6.6	7.3	6.4	6.9	-
5/24-5/25	S	-	-	-	-	-	-	-	7.8	7.5	-	7.3	-	-	8.2	8.3	7.9	7.4	8.1
	M	-	-	-	-	-	-	-	8.3	8.0	9.0	8.2	7.9	7.3	8.1	8.0	7.9	7.4	7.9
	B	-	-	-	-	-	-	-	7.8	7.4	8.5	8.2	7.6	7.5	8.1	7.6	7.2	7.4	7.7
5/30-5/31	S	-	-	-	6.8	-	-	-	-	10.0	-	-	-	8.1	10.0	-	9.0	-	10.4
	M	6.2	-	-	-	-	-	6.6	-	10.6	-	-	-	9.0	-	10.6	8.3	7.6	-
	B	-	-	-	-	-	-	-	-	9.7	7.6	8.4	9.8	8.6	9.5	9.4	9.5	7.0	7.1
6/5-6/6	S	-	-	-	-	-	-	-	-	-	-	-	-	-	11.8	-	8.5	-	-
	M	-	-	-	6.7	-	-	7.7	-	9.8	-	-	-	-	-	-	14.3	-	-
	B	-	-	-	-	-	-	-	-	9.6	-	-	-	8.9	7.3	-	-	-	-
6/12-6/13	S	-	-	-	-	-	-	9.2	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	6.0	-	-	-	-	-	-	-	-	-	-	-	-
6/19-6/20	S	-	-	6.0	-	-	-	-	-	7.1	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	-	-	-	-
	B	-	5.5	-	-	-	-	-	-	-	-	-	5.3	-	-	-	-	-	-
6/27-6/28	S	-	-	-	-	-	-	-	9.0	-	-	-	-	-	-	-	-	7.6	-
	M	-	9.0	-	-	-	-	-	-	-	-	6.0	-	7.7	7.1	-	-	8.6	-
	B	-	-	-	-	-	-	-	9.1	-	-	8.0	-	-	-	-	-	-	-
7/5-7/6	S	-	-	-	-	-	6.7	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	5.5	-	-	8.3	-	-	-	-	-	-	-	-	-	-	8.7	-
7/10-7/11	S	-	-	-	-	-	-	-	-	-	-	6.7	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	7.0	-	-	-	-	-	-	7.9	6.6	-	-
	B	-	8.4	-	-	-	-	-	-	-	-	-	-	-	-	7.7	-	-	-
7/17-7/18	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	7.7	-	-	-	-	-	-	-	-	-	8.1
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/24-7/25	S	-	-	-	-	-	-	6.5	-	-	-	-	-	-	-	-	5.8	-	-
	M	-	-	-	-	6.7	-	6.9	-	-	8.3	-	-	-	6.4	-	7.8	-	-
	B	-	6.2	-	-	-	-	-	12.3	-	7.2	-	-	-	-	-	-	8.7	-
7/31-8/1	S	-	-	-	-	-	-	-	-	-	7.2	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	7.2	-	-	7.1	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/7-8/8	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/14-8/15	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/28-8/29	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF LOG PERCH IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		I			II			III			IV			V			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/18-4/20	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/25-4/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/2-5/4	S	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	-	5.4
5/9-5/11	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	-	5.3	5.2
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	5.3
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	5.4
5/16-5/18	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5	-	5.4
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	-	5.8	5.6	6.4
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	5.4	5.6	5.9
5/23-5/25	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	5.3	-	-	-	-	-	-	5.6	-	-	-	-	5.4	5.3
	B	-	-	-	-	4.8	-	-	5.9	-	-	-	-	-	-	-	5.4	5.0	5.0
5/31-6/2	S	6.0	4.9	5.0	-	-	-	5.5	5.5	5.6	-	-	-	-	6.9	-	-	6.4	-
	M	5.3	5.3	5.4	5.4	5.1	5.2	5.6	5.5	5.5	6.5	5.9	6.0	6.6	6.9	6.9	6.7	7.1	4.6
	B	5.5	5.6	5.2	5.9	5.3	6.3	-	5.6	-	-	5.1	5.7	-	7.1	6.5	-	6.5	4.6
6/6-6/8	S	-	5.8	4.8	5.8	5.6	5.1	5.3	-	6.1	-	-	6.1	-	6.6	8.7	6.3	6.6	8.6
	M	5.5	5.3	5.4	6.2	5.4	5.1	5.6	5.4	5.7	5.8	5.8	5.7	6.4	6.4	8.1	7.2	6.6	6.3
	B	5.5	5.0	5.4	5.5	5.2	5.4	-	5.7	-	-	5.5	5.4	-	6.2	7.0	6.2	5.8	5.1
6/13-6/15	S	-	6.0	-	5.8	4.8	-	-	-	-	-	-	-	-	-	-	6.9	5.9	-
	M	-	5.3	5.5	-	4.8	-	4.4	5.3	5.5	5.7	4.8	5.8	5.5	6.4	-	6.4	6.4	7.1
	B	5.6	5.5	5.8	5.6	5.1	5.2	-	5.2	-	-	5.3	5.2	-	6.5	5.3	6.4	5.9	4.7
6/20-6/22	S	-	-	-	-	-	5.1	-	5.6	-	-	-	-	-	-	-	-	-	5.2
	M	5.3	-	-	-	4.8	5.6	-	5.3	5.9	5.6	-	5.2	-	8.9	8.4	-	6.0	6.3
	B	3.9	-	-	5.6	5.9	5.4	-	5.4	-	-	-	6.5	-	6.9	8.9	-	5.1	6.0
6/27-6/29	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.2	7.2	-	-
	M	6.2	-	-	-	4.4	-	5.2	-	5.5	5.2	-	5.1	7.4	6.4	6.2	5.5	6.2	6.7
	B	-	-	5.3	5.8	-	4.5	-	6.9	-	-	5.0	5.0	-	5.6	6.9	4.7	5.3	6.3
7/5-7/7	S	4.7	4.9	-	-	-	-	5.1	5.6	4.5	-	-	-	-	5.8	9.1	5.9	-	-
	M	4.8	-	-	-	3.9	5.6	5.2	4.7	4.4	5.8	6.0	5.1	5.7	6.0	6.8	6.4	5.2	5.8
	B	-	-	-	5.6	-	5.6	-	5.3	-	-	5.2	5.3	-	5.6	5.5	-	5.1	5.8
7/19-7/20	S	-	-	-	-	-	-	-	-	-	5.5	-	-	-	-	-	-	9.5	-
	M	-	4.4	-	-	-	-	4.9	-	-	5.3	5.2	-	7.1	5.7	7.6	6.9	-	6.5
	B	-	-	5.3	5.3	5.3	5.2	-	4.5	-	-	5.3	5.3	-	6.3	8.8	7.0	5.5	7.1
7/25-7/27	S	-	-	3.6	-	-	-	-	-	-	-	5.1	-	-	-	-	-	-	-
	M	-	-	4.4	-	-	-	-	-	-	5.2	-	-	8.0	6.4	6.8	10.6	6.7	7.1
	B	4.3	-	-	5.1	4.1	4.6	-	-	-	-	-	-	-	6.3	-	6.6	6.6	6.0
8/8-8/10	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	5.0	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	4.4	4.5	-	-	-	-	-	-	-	-	-	-	-	-
8/20-8/24	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.1
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7	-	-	-	-
	B	4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF LOG PERCH IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
		TRANSECT (ROMAN NUMERALS) AND STATION																	
5/2-5/3	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/10	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/15-5/16	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-
5/24-5/25	S	-	-	-	-	-	-	-	-	-	-	5.3	-	-	4.8	-	5.8	5.E	5.5
	M	-	-	-	-	-	-	-	-	-	-	5.2	-	-	5.4	5.8	5.4	5.8	5.7
	B	-	-	-	-	-	-	-	-	-	5.7	5.7	-	5.5	5.5	5.E	5.5	5.E	5.E
5/30-5/31	S	-	-	-	-	-	-	-	-	-	-	-	-	-	5.1	-	-	5.7	5.1
	M	-	-	-	-	-	-	-	-	-	-	5.1	4.6	4.5	5.0	5.1	4.6	5.7	5.5
	B	-	-	-	-	-	-	-	-	-	5.2	-	5.3	5.3	5.8	5.4	5.1	5.7	5.5
6/5-6/6	S	-	4.9	-	-	-	-	-	5.5	-	-	-	-	-	-	-	5.2	5.4	-
	M	4.9	5.1	-	-	-	5.3	-	-	-	-	-	-	-	-	5.3	5.5	-	5.E
	B	5.3	5.5	-	-	5.3	5.5	-	-	-	-	-	-	4.8	6.0	4.8	5.3	5.4	5.5
6/12-6/13	S	6.3	5.3	-	-	-	6.2	-	7.1	-	6.3	6.4	-	-	-	-	6.5	-	-
	M	5.6	5.7	5.2	-	5.7	5.8	6.6	6.0	6.0	6.5	6.7	6.6	-	-	-	6.E	-	-
	B	5.6	5.7	5.E	-	-	5.E	-	6.3	6.4	6.6	6.5	5.9	-	-	-	6.E	-	-
6/19-6/20	S	-	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	6.5	-	-
	M	-	-	5.3	-	5.4	-	6.3	-	6.7	-	5.9	6.5	6.6	-	6.4	6.2	-	-
	B	6.0	5.3	5.4	-	-	5.4	-	6.2	6.5	6.1	6.3	6.4	5.4	6.2	6.E	6.1	-	-
6/27-6/28	S	-	-	4.2	-	-	-	-	6.1	-	-	6.0	-	6.4	6.7	-	5.2	6.0	-
	M	-	-	5.1	4.5	-	-	6.2	6.3	6.9	7.0	6.6	7.2	8.2	6.3	-	5.7	6.0	6.7
	B	5.0	5.5	5.1	-	-	5.4	-	6.2	7.6	5.8	6.3	7.6	6.3	7.0	4.5	4.1	6.2	4.E
7/5-7/6	S	-	-	-	-	-	5.7	-	-	6.0	-	-	-	-	5.2	-	-	-	4.5
	M	5.4	-	5.5	-	-	-	4.5	8.4	-	-	7.6	7.3	-	6.9	-	-	8.1	5.1
	B	5.4	5.4	5.4	-	5.5	-	-	8.6	-	-	7.0	7.9	-	5.0	-	-	6.0	4.7
7/10-7/11	S	-	-	-	-	-	-	6.1	6.4	-	-	4.8	8.0	-	-	-	6.0	5.E	5.7
	M	5.5	-	-	-	-	-	-	6.E	9.8	-	6.3	6.0	7.5	5.4	-	6.1	5.5	-
	B	5.4	-	5.7	-	5.4	-	-	6.1	4.5	-	5.8	6.1	5.7	6.1	6.4	-	4.E	4.E
7/17-7/18	S	-	-	-	-	-	-	-	-	-	-	6.1	-	-	7.6	8.8	-	6.4	6.0
	M	-	-	-	-	-	-	-	6.1	9.4	-	6.5	-	-	-	-	8.0	7.3	-
	B	-	4.6	5.4	-	5.4	4.5	-	6.6	6.2	-	6.2	-	7.1	6.1	4.9	7.8	7.0	7.2
7/24-7/25	S	-	4.0	-	-	-	-	-	7.3	-	-	7.4	-	-	6.5	-	-	5.3	-
	M	4.6	-	-	5.9	-	-	6.5	7.6	-	6.4	6.8	7.6	-	6.2	8.4	6.7	6.5	4.9
	B	5.3	4.7	4.8	-	-	4.4	-	7.6	7.2	6.1	-	-	8.4	6.3	7.3	-	6.6	4.E
7/31-8/1	S	-	-	-	-	-	-	-	-	-	-	-	-	8.1	6.5	-	5.4	6.5	6.4
	M	-	-	-	-	-	-	-	6.2	-	7.3	5.6	-	5.0	6.7	11.1	6.7	6.7	10.0
	B	-	-	5.0	-	-	-	-	6.6	-	7.5	6.5	-	10.5	-	-	6.4	5.3	-
8/7-8/8	S	5.0	-	-	-	-	-	-	5.0	-	-	-	-	-	10.3	-	-	6.0	6.2
	M	4.9	-	-	-	-	5.7	-	6.0	-	6.2	6.5	-	-	9.1	-	-	-	7.4
	B	4.7	4.6	5.2	-	4.9	-	-	6.5	-	-	6.0	-	-	8.8	-	-	-	9.2
8/14-8/15	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	5.6	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/28-8/29	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	-	-	5.E

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF EMERALD SHINER IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		I			II			III			IV			V			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/18-4/20	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/25-4/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/2-5/4	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/11	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/16-5/18	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/23-5/25	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/31-6/2	S	-	-	-	-	-	-	-	-	11.4	-	-	-	-	-	-	-	-	5.9
	M	-	-	-	12.1	-	-	-	-	-	-	-	-	-	-	3.2	-	4.4	4.5
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3	-	-	-
6/6-6/8	S	-	-	-	4.4	-	-	-	-	-	-	-	-	4.9	-	6.0	6.8	6.5	4.8
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	6.2	5.9	6.9
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	6.3	-	-
6/13-6/15	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6	4.8	-	-	-
	B	-	-	-	-	-	-	-	4.3	-	-	-	-	-	-	4.9	-	-	5.0
6/20-6/22	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1	6.4
	M	-	-	-	-	-	-	5.0	-	-	-	-	-	5.3	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/27-6/29	S	-	-	-	-	-	-	-	-	-	-	-	-	6.4	5.1	-	-	6.5	-
	M	-	-	-	-	-	-	-	5.3	-	-	-	-	-	7.9	-	-	-	4.5
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	-	-
7/5-7/7	S	-	-	-	-	-	-	-	-	-	-	-	-	9.1	5.7	13.8	6.1	5.0	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	4.6	-	6.8	7.0	5.3	5.2
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	-	5.1	4.8
7/18-7/20	S	-	-	-	-	-	-	-	-	-	-	7.9	-	-	6.9	-	13.3	-	8.0
	M	-	-	-	7.3	6.8	-	-	-	5.8	-	-	-	-	6.1	-	10.1	5.3	4.1
	B	-	-	-	4.9	-	-	-	-	-	-	-	-	-	-	-	4.1	3.9	4.5
7/25-7/27	S	-	9.2	-	10.7	-	-	-	-	8.9	-	-	10.4	15.3	8.7	15.7	11.9	9.4	9.8
	M	-	-	-	8.7	-	4.4	6.5	-	-	-	-	-	7.4	7.3	18.0	12.2	5.8	8.3
	B	-	-	-	4.9	3.1	-	-	-	-	-	-	-	-	12.8	9.1	20.0	4.0	4.4
8/8-8/10	S	-	-	-	-	-	-	-	-	-	-	6.9	6.5	-	-	-	16.1	-	-
	M	-	-	-	-	-	-	-	11.8	-	11.5	7.8	9.4	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/20-8/24	S	-	-	-	13.2	-	-	-	24.0	-	-	-	-	-	-	22.4	-	-	23.6
	M	19.3	-	-	-	-	-	-	-	11.3	-	-	-	-	-	29.6	34.6	-	-
	B	-	-	-	-	-	7.9	-	-	-	-	-	-	-	33.7	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF EMERALD SHINER IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	-	-	-	-	-	-	-	-	42.0	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/10	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/15-5/16	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/24-5/25	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	6.8	-	-	-	-	-	-	-	6.4
5/30-5/31	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/5-6/6	S	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	3.9	-	-	-	-	5.6	-	-	-	-	-	-	-	5.0
6/12-6/13	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/19-6/20	S	-	-	-	-	-	-	-	8.5	-	-	7.6	-	8.7	-	8.2	5.0	-	-
	M	-	-	-	-	-	-	-	8.9	-	-	-	-	5.4	5.5	-	4.8	-	-
	B	-	-	-	-	-	-	-	7.7	-	5.0	8.5	-	-	5.9	-	-	-	-
6/27-6/28	S	-	-	-	-	-	-	5.4	5.8	8.5	-	9.4	-	6.3	-	-	6.7	7.5	5.0
	M	-	-	-	-	-	-	-	9.8	3.9	-	6.5	5.9	-	7.9	3.4	-	4.5	5.3
	B	-	-	-	-	-	-	-	-	4.0	-	-	4.2	3.1	4.6	3.9	3.4	3.5	3.4
7/5-7/6	S	-	-	-	-	-	-	4.9	6.7	5.6	5.2	6.4	5.2	5.5	6.9	6.9	6.3	5.7	5.5
	M	-	-	-	-	-	-	4.5	5.8	5.4	4.8	5.7	5.0	5.5	5.7	6.1	5.6	5.5	5.8
	B	-	-	-	-	-	-	-	4.6	5.2	4.7	5.0	5.2	5.5	5.3	5.0	4.8	5.5	5.0
7/10-7/11	S	-	-	-	-	-	-	5.5	-	8.4	5.2	6.8	6.4	5.8	5.8	5.8	5.3	5.5	6.5
	M	-	-	-	-	-	-	5.2	-	-	5.4	-	5.5	5.9	-	4.2	5.7	4.3	7.2
	B	-	-	-	-	-	-	-	-	-	-	-	-	4.2	-	-	-	-	4.8
7/17-7/18	S	6.0	-	-	-	-	-	6.3	5.0	12.9	5.9	6.4	9.1	6.0	7.1	6.6	6.3	6.1	6.3
	M	-	3.7	-	-	-	-	5.3	5.5	8.6	5.5	6.1	6.4	5.9	4.9	6.5	6.2	5.5	5.8
	B	-	-	4.8	-	-	-	-	5.0	11.2	4.3	5.9	-	5.9	5.5	-	-	4.5	4.1
7/24-7/25	S	-	-	-	-	-	-	6.3	9.2	9.6	6.6	7.4	9.9	7.9	8.1	8.6	7.5	6.7	5.8
	M	-	-	-	-	-	-	6.7	9.7	7.7	5.9	8.0	10.0	6.0	6.9	9.3	7.8	4.6	5.8
	B	4.0	-	-	-	-	-	-	9.4	9.3	5.6	6.1	8.8	-	7.5	8.9	8.5	4.5	6.8
7/31-8/1	S	-	4.9	4.2	8.8	5.8	-	6.5	14.3	11.4	6.2	11.4	12.6	8.2	4.8	-	6.6	5.9	8.1
	M	5.3	-	4.4	-	5.5	4.4	-	24.1	16.0	5.5	5.9	12.2	4.5	5.8	5.8	6.3	6.4	12.0
	B	5.3	-	4.2	-	4.4	-	-	4.6	-	4.3	4.4	-	4.0	4.3	4.4	4.2	4.4	10.4
8/7-8/8	S	-	-	-	5.5	5.3	5.4	6.9	5.1	18.1	9.1	6.0	15.1	8.1	6.2	-	-	6.1	6.3
	M	5.8	5.2	-	-	6.1	5.5	-	-	10.2	-	-	10.6	-	5.5	-	6.3	-	5.9
	B	5.7	-	-	-	-	5.5	-	-	-	-	-	-	-	-	5.4	-	-	-
8/14-8/15	S	6.7	-	9.0	6.3	-	-	-	-	-	-	4.9	-	-	8.0	-	-	6.3	-
	M	11.0	-	-	-	-	5.6	-	-	-	5.7	-	-	-	-	-	5.9	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/28-8/29	S	12.8	-	-	-	-	-	-	-	-	31.2	-	-	-	-	-	-	-	-
	M	12.2	-	6.9	-	6.4	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF CARP IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	I 1	I 2	I 3	II 1	II 2	II 3	III 1	III 2	III 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VI 1	VI 2	VI 3
		TRANSECT (ROMAN NUMERALS) AND STATION																	
4/12-4/14	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/18-4/20	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/25-4/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/2-5/4	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/11	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/16-5/18	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/23-5/25	S	-	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	-	6.5	5.6
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	5.5	6.7
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.9	6.7	5.6
5/31-6/2	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	6.6	6.0	6.1
	M	-	-	-	-	-	-	6.1	6.2	5.4	-	-	-	-	-	6.0	6.2	6.1	5.6
	B	-	-	-	-	-	-	-	5.7	-	-	-	-	-	-	-	6.1	6.2	5.7
6/6-6/8	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.6
	M	-	-	-	-	-	-	-	-	-	-	-	5.1	-	5.9	-	9.2	4.6	-
	B	-	-	-	-	-	-	-	6.7	-	-	-	-	-	-	8.3	6.1	7.0	-
6/13-6/15	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6
	M	-	-	-	-	-	-	-	-	-	5.1	-	-	-	5.5	-	-	5.4	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	-	-	5.4	6.1
6/20-6/22	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	5.6
	M	-	-	-	-	-	-	6.3	-	-	-	-	5.8	-	6.2	-	-	6.2	5.7
	B	-	-	-	-	-	6.3	-	-	-	-	-	-	-	-	-	-	6.4	6.2
6/27-6/29	S	-	-	-	-	-	-	-	5.9	-	-	-	-	6.4	-	6.6	7.3	6.2	-
	M	-	-	-	-	-	6.3	-	6.3	-	-	-	-	-	-	5.5	6.9	6.1	6.2
	B	-	-	-	-	-	-	-	6.5	-	-	-	-	-	5.7	5.8	6.0	6.6	6.0
7/5-7/7	S	-	-	-	-	-	-	5.3	6.0	-	6.5	-	-	-	6.8	-	7.5	6.6	5.4
	M	-	-	-	-	-	-	5.6	6.6	-	6.5	-	-	7.0	-	-	6.5	5.9	5.2
	B	-	-	-	5.9	-	-	-	6.3	-	-	6.4	6.2	-	6.8	-	4.8	5.3	5.0
7/18-7/20	S	-	-	-	-	-	-	-	5.5	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	6.4	5.7	5.6	6.9	-	-	-	-	7.0	-	-	6.0	-
	B	-	-	-	-	-	-	-	5.6	-	-	-	-	-	6.9	-	5.7	-	-
7/25-7/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	5.2	-	-	-	-	5.9	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	6.0	-	-	-	-	-	-	-	-	-	-
8/8-8/10	S	-	-	-	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-
8/20-8/24	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF CARP IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

TRANSECT (ROMAN NUMERALS) AND STATION

PERIOD	DEPTH	II 1	II 2	II 3	IV 1	IV 2	IV 3	V 1	V 2	V 3	VII 1	VII 2	VII 3	VIII 1	VIII 2	VIII 3	VI 1	VI 2	VI 3
5/2-5/3	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/10	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/15-5/16	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/24-5/25	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/30-5/31	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	-
	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/5-6/6	S	-	-	-	-	-	-	-	-	-	6.0	-	-	-	-	-	6.1	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	6.1	-
	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6
6/12-6/13	S	-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	5.9	-	-	6.4	-	-	-	5.1	-	-
	D	-	-	-	-	-	-	-	-	6.1	-	-	6.0	-	-	-	-	-	-
6/19-6/20	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-
	M	-	-	-	-	-	-	-	5.7	-	-	-	-	5.7	-	-	6.3	-	-
	D	-	-	-	-	-	-	-	-	-	-	-	-	4.9	-	-	5.4	-	-
6/27-6/28	S	-	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	6.2	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/5-7/6	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7	-	6.3
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8	6.4	-
	D	-	-	-	-	-	-	-	-	5.9	5.8	-	-	-	-	-	-	6.6	6.2
7/10-7/11	S	-	-	-	-	-	-	5.4	-	5.8	-	7.2	5.5	-	-	5.5	6.3	5.7	6.5
	M	-	-	-	-	-	-	5.4	-	5.8	-	7.4	6.0	-	-	5.5	6.0	5.8	-
	D	-	-	-	-	-	-	-	-	5.3	-	7.0	5.9	5.0	5.9	6.1	6.3	5.4	6.0
7/17-7/18	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1	-
	D	-	-	-	-	-	-	-	-	-	-	6.1	-	-	-	-	-	7.6	-
7/24-7/25	S	-	-	-	-	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	6.9	-	-	-	-	-	-	-	-	-	5.9	-
	D	-	-	-	-	-	6.4	-	-	-	-	5.1	-	-	-	-	-	-	-
7/31-8/1	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D	-	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/7-8/8	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D	-	-	5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/14-8/15	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/28-8/29	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (D).

AVERAGE LENGTH(MM) OF WHITE BASS IN 1977 BY TRANSECT, STATION, PERIOD, AND DEPTH

PERIOD	DEPTH	I			II			III			IV			V			VI		
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4/12-4/14	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/18-4/20	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/25-4/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/2-5/4	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/11	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/16-5/18	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/23-5/25	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	3.3	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	3.1	-
5/31-6/2	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2	-	4.3	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7	3.3	-	7.7
6/6-6/8	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.4	-	7.5	7.6
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	-	8.6	6.1
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	-	-	-
6/13-6/15	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	-	2.5
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	-	2.7
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5
6/20-6/22	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7	3.0
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7	2.2
6/27-6/29	S	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	4.2	3.1	-	2.2
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	5.0	-	-	-	-	3.6	3.8	-
7/5-7/7	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3	-
7/18-7/20	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	-
7/25-7/27	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/8-8/10	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/20-8/24	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).

AVERAGE LENGTH(MM) OF WHITE BASS IN 1978 BY TRANSECT, STATION, PERIOD, AND DEPTH

		TRANSECT (ROMAN NUMERALS) AND STATION																	
		II			IV			V			VII			VIII			VI		
PERIOD	DEPTH	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
5/2-5/3	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/9-5/10	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/15-5/16	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/24-5/25	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	4.2	-	-	-	-	-	-	4.3	-	-	-
	B	-	-	-	-	-	-	-	4.5	-	-	-	4.8	-	-	-	-	-	-
5/30-5/31	S	-	-	-	-	-	-	-	-	-	-	-	-	3.1	-	-	3.1	-	2.E
	M	-	-	-	-	-	-	-	-	-	3.7	-	-	2.9	-	-	2.E	3.3	3.2
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	3.2	3.2
6/5-6/6	S	-	-	-	-	-	-	3.1	-	-	-	-	-	-	-	-	2.5	3.C	2.5
	M	-	-	-	-	-	-	3.9	3.5	-	3.7	-	-	-	-	4.2	3.C	2.E	2.E
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.E	2.5
6/12-6/13	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.E	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/19-6/20	S	-	-	-	-	-	-	-	-	-	-	-	-	3.1	3.4	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	2.9	3.1	2.6	3.1	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	2.9	2.6	3.1	-	-	-
6/27-6/28	S	-	-	-	-	-	-	-	-	-	-	-	-	3.8	-	-	3.E	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.C
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	-	-	2.E
7/5-7/6	S	-	-	-	-	-	-	-	5.0	12.5	-	-	-	4.6	-	-	4.1	4.4	4.7
	M	-	-	-	-	-	-	-	-	-	-	4.5	-	4.1	-	-	4.4	4.5	-
	B	-	-	-	-	-	-	-	4.4	-	-	-	-	-	4.4	-	4.C	4.5	-
7/10-7/11	S	-	-	-	-	-	-	5.C	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/17-7/18	S	-	-	-	-	-	-	-	-	-	-	4.4	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	4.2	-	-	4.3	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	4.9	-	-	-	-	-	-	-	-
7/24-7/25	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/31-8/1	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/7-8/8	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/14-8/15	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/28-8/29	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAMPLES WERE COLLECTED AT DEPTHS OF 1 METER (S), 1-4 METERS (M), AND 5-8 METERS (B).